Public-data File 88-4

MINERAL POTENTIAL OF ALASKA MENTAL HEALTH TRUST AND REPLACEMENT POOL LANDS

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Alaska Division of
Geological and Geophysical Surveys

January 1988

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CHAPTER 1

MINERAL POTENTIAL OF ALASKA MENTAL HEALTH LANDS

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MINERAL POTENTIAL OF ALASKA MENTAL HEALTH TRUST AND REPLACEMENT POOL LANDS

INTRODUCTION

A team of nine DGGS employees (table 1) have been involved either full or part-time on the Mental Health Trust mineral assessment since October, 1987. They have been assissted by seven part-time employees (student interns or contractors). The general method of attack used was to analyze a "data stack" for each quadrangle at a scale of 1:250,000. The various layers of the data stack were developed by a literature search and were compiled on 1:250,000 scale transparent acetate overlays to facilitate the integration of various levels in the stack. Typical components of a stack include such information as geology, geochemistry, mining claims, mineral occurrences, etc.

Once the data stacks were compiled, two or three separate geologists analyzed each quadrangle data package in areas of Mental Health Trust or potential replacement-pool lands - carefully scrutinizing all elements of the data for signals indicating the presence of one or more of 29 mineral deposit types (Section III, p. 1-13 to 1-39). Specific indicator criteria for each deposit type are listed in Section III. A potential score of 1 to 5 was determined for each area of interest using the criteria listed in Section I, pp. 1-2 to 1.3. Also, whil analyzing this data, each township was scored for quality of information available, by criteria listed in Section II, pp. 1.4 to 1.12. The mineral potential scores are heavily dependent on the level of information available. Despite the best efforts of the analysts, a good forecast of mineral potential cannot be made in the absence or good background information. Thus mineral scores in areas of low data quality should be viewed as very uncertain.

Recognizing the inherent limitation imposed by lack of data, mineral potential/data quality maps were prepared for all impacted 1:250,000 scale quadrangles. These are presented as a group of 45, 1:250,000 scale mylar maps (fig. 1 and appendix B) showing the location of Mental Health Trust lands, and lands designated by the state which may be considered for replacement of lands lost to the original Mental Health Trust. The maps also depict the mineral potential of lands within and near the above Mental Health lands. Deposit types for lands having a mineral potential of 3 or greater are numerically coded to

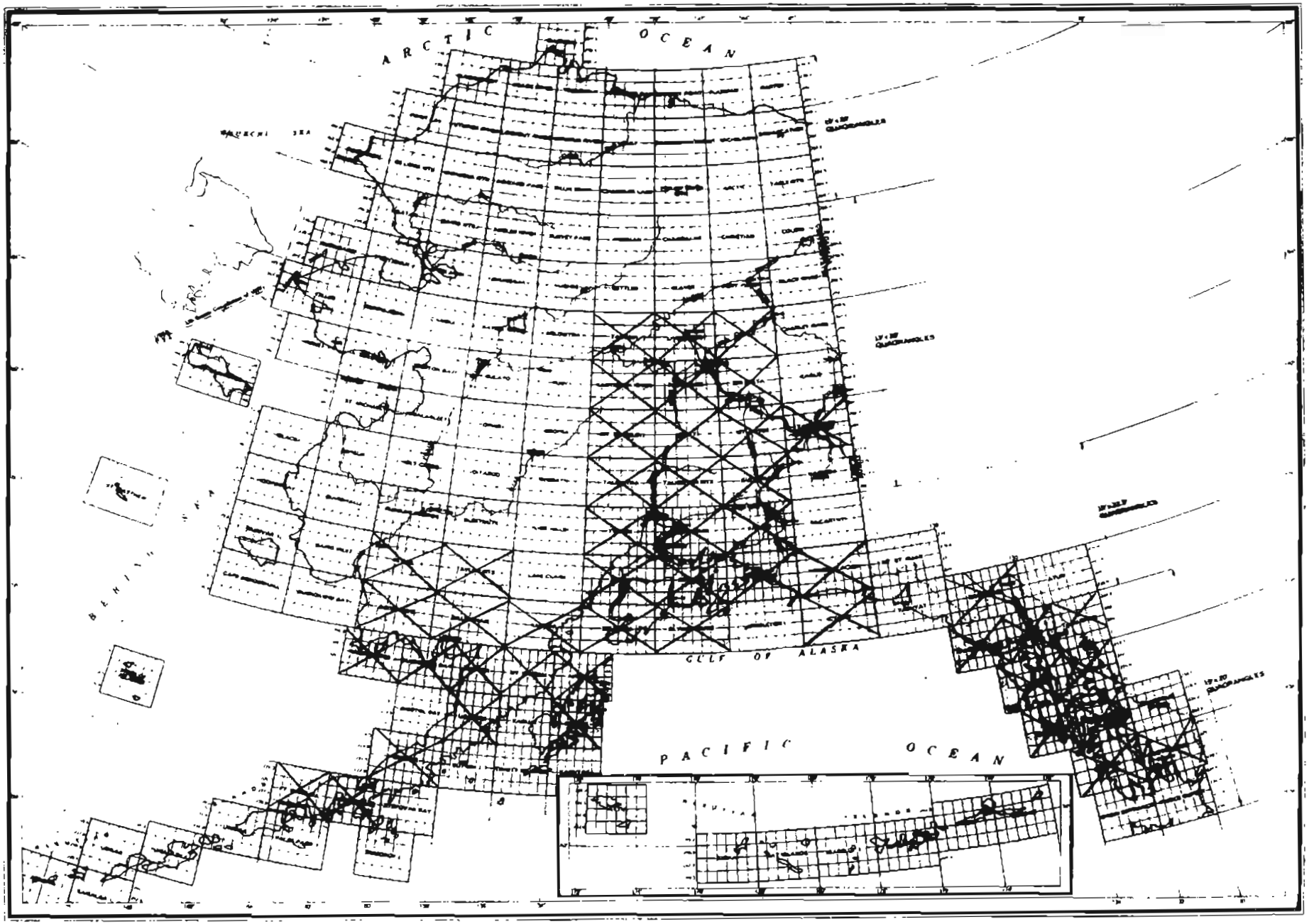


Figure 1. Quadrangles containing Mental Health Trust and Replacement Pool Lands

SECTION I: Mineral Potential Map

This overlay should portray a score for each cell, in our case township, linked to favorability for one or more of the 25 deposit types. Coming up with this score will involve a mental evaluation of geologic, historical, etc factors that are favorable for the occurrence of mineral deposits. Some call this a multivariate system; in the NORWAAP project we'll let the computer on our shoulders compute the scores. Let's take a crack at a five fold breakdown: Very High (5), High (4), Moderate (3), Low (2), Very Low (1).

Determining whether the geological environment is favorable will require learning most of the key features of the 25 deposit types.

Possible Scoring Criteria might be:

Very High (5)

.Geological environment very favorable

.Significant mineral deposits known

.Numerous active mining claims

.Geophysical and geochemical signatures favorable

.Very favorable metallogenic and tectonic terrane

High (4)

.Geological environment very favorable

.On trend or in some unit which hosts significant mineral occurrences nearby

.Significant deposits not known at present

.Some mining claim activity

.Geochemical and geophysical signatures favorable

.Favorable metallogenic and tectonic terrane

Moderate (3)

.Geologic environment favorable

.Significant deposits not known

.Low mining claim activity

.Geochemical and geophysical signatures may be favorable

.Cell may be distantly on trend with cells of higher favorability

Low (2)

.Some aspects of geological environment may be favorable, generally not

favorable

.Few if any known deposits

.Little or no mining claim activity

.Geochemical and geophysical signatures generally negative

.Little bedrock exposed nearby (but don't forget placers and S.S.-hosted uranium)

.Generally unfavorable metallogenic and tectonic terrane

Very Low (1)

.Geologic environment generally unfavorable

.Little bedrock exposed, little possibility for placers or S.S.-hosted metals

.No known mineral occurrences

.Unfavorable geochemistry or geophysics

.Off trend with more favorable areas

.No mining claim activity

.Unfavorable metallogenic and tectonic terrane

SECTION II: Data Quality Map

This should be an attempt to assess the level of geologic, geochemical, mineral data available in each township. We might as well use the five fold breakdown: Very poor (1), Poor (2), Fair (3), Good (4), And Very good (5).

Possible criteria for assigning a level to a particular township might be:

Very Good (5)

.Detailed (1:63,360 or larger) geologic mapping, numerous units/cell broken out, alteration zones, gossans shown (examples p. 7, 8)

.Comprehansive geochemical data base, ½ mile spacing, possibly soil and rock chip geochem also (p. 10)

.Good aeromag, ½ to 1 mile spacing

.Other geophysical data

.Detailed studies of mines or prospects

.Good surficial geology

Good (4)

.Detailed (1:63,360 or larger) geologic mapping

.Ordinary geochemical coverage 1 sample per mile^2 to 1 sample per 5 miles^2 (p. 11)

.Aeromag coverage ½ to 1 mile spacing

.Some prospect studies

Fair (3)

.Good, careful 1:250,000 or 1:125,000 geologic mapping with units pertinent to mineral deposits shown

.Regional low density geophysical coverage

.Low density geochemical data base like AMRAP (p. 12)

.Some deposit studies

Poor (2)

.Lower quality 1:250,000 geologic mapping units generalized, pertinent units to mineral deposits not shown (p. 9)

.Regional low density geophysical coverage

.Low density geochem

.Few if any local deposit studies

Very Poor (1)

.Only geologic mapping 1:1 million or similar grossly generalized maps

.Low density or no regional geophysical coverage

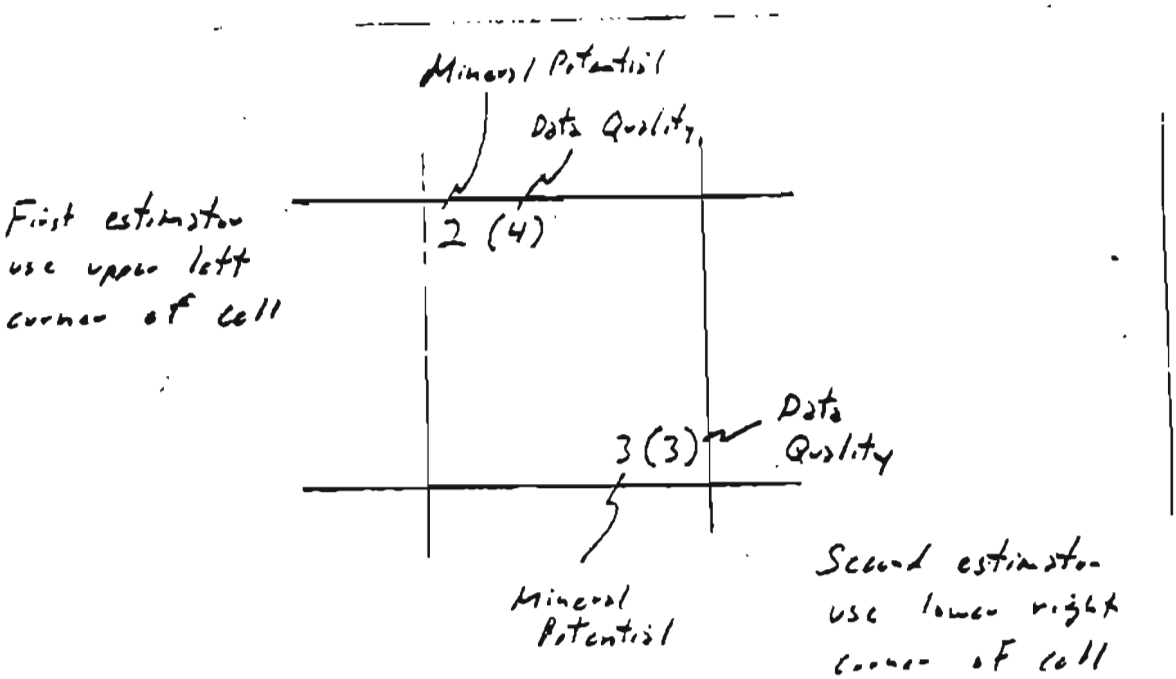
.Poor geochemical data base

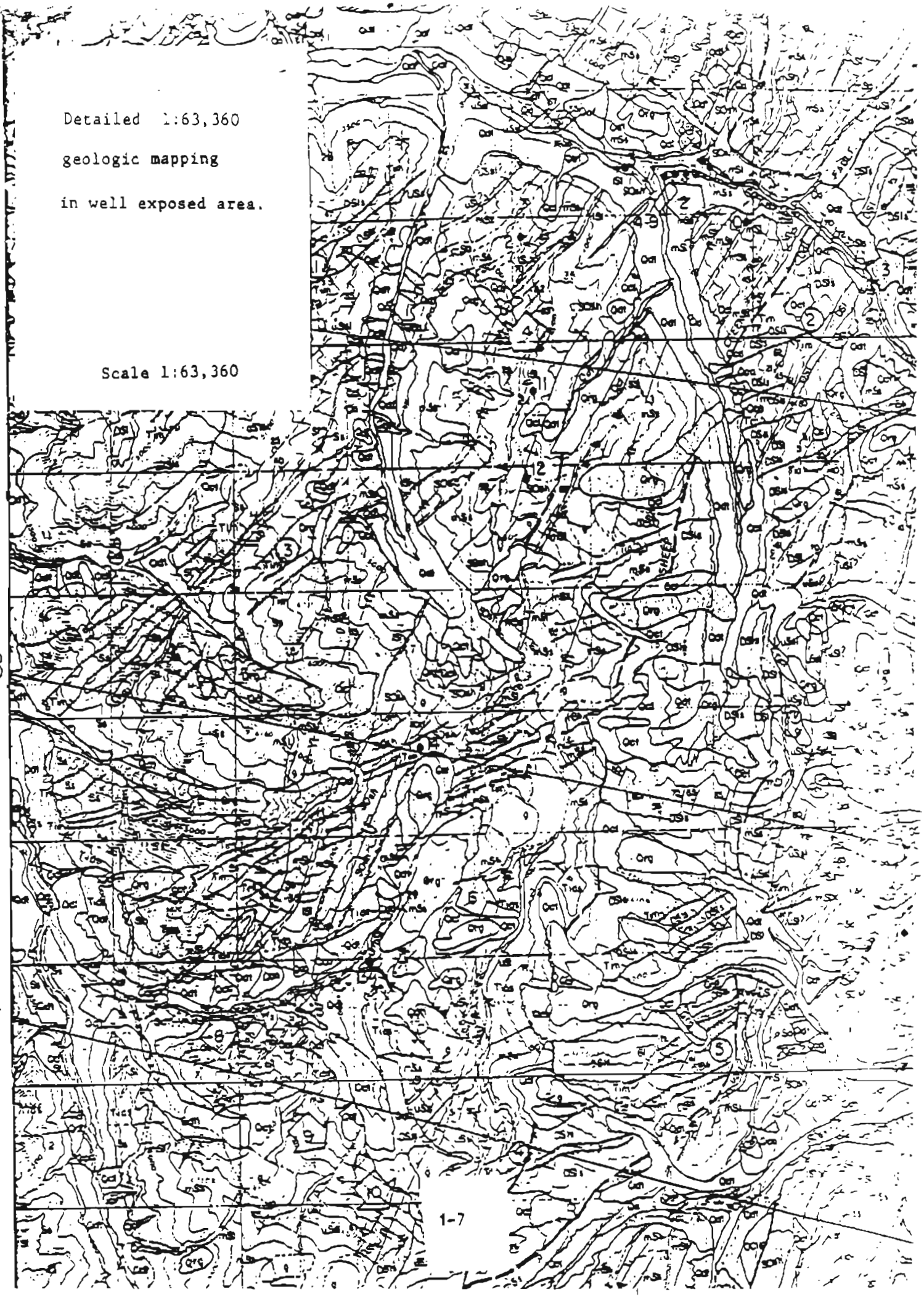
.General lack of information

Map Portrayal of Scores

For the initial worksheet, let's compile the mineral potential scores and data quality scores together. Later, we will brainstorm best method of presenting the data to non specialists.

So, for each township (i.e., use a mylar with township grid),




Detailed 1:63,360
geologic mapping
in well exposed area.
Scale 1:63,360
A
B
C
1-7

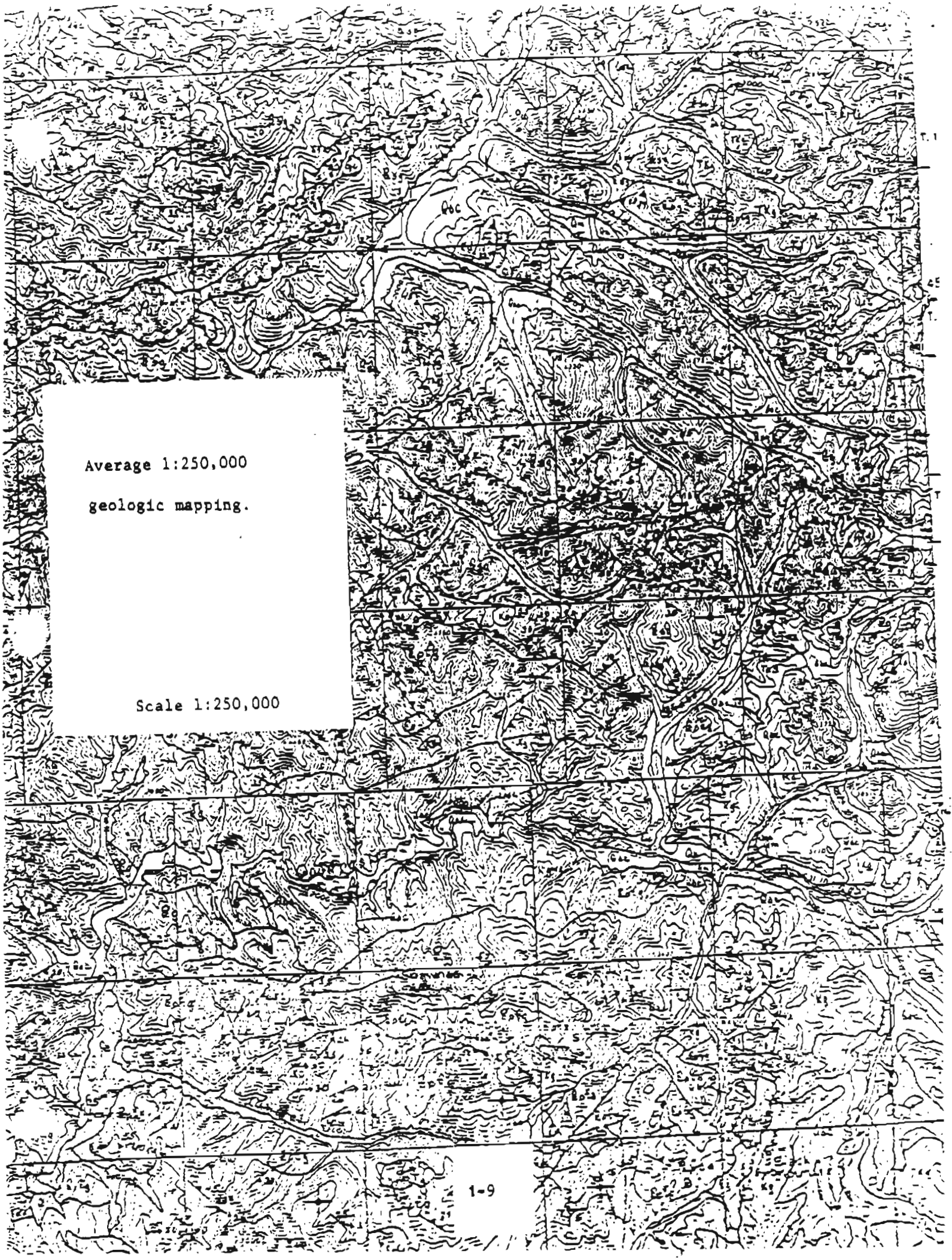


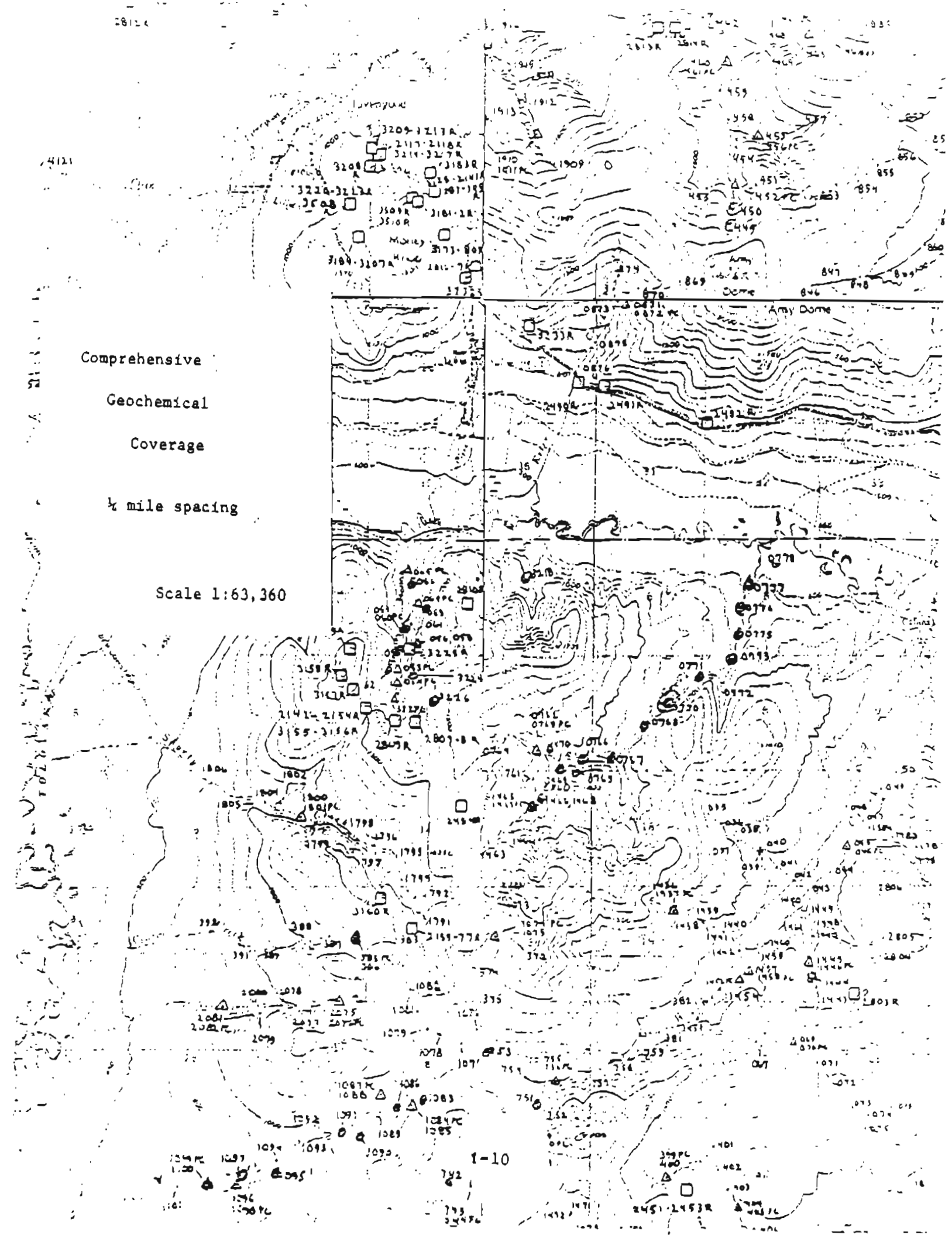
Detailed 1:63,360

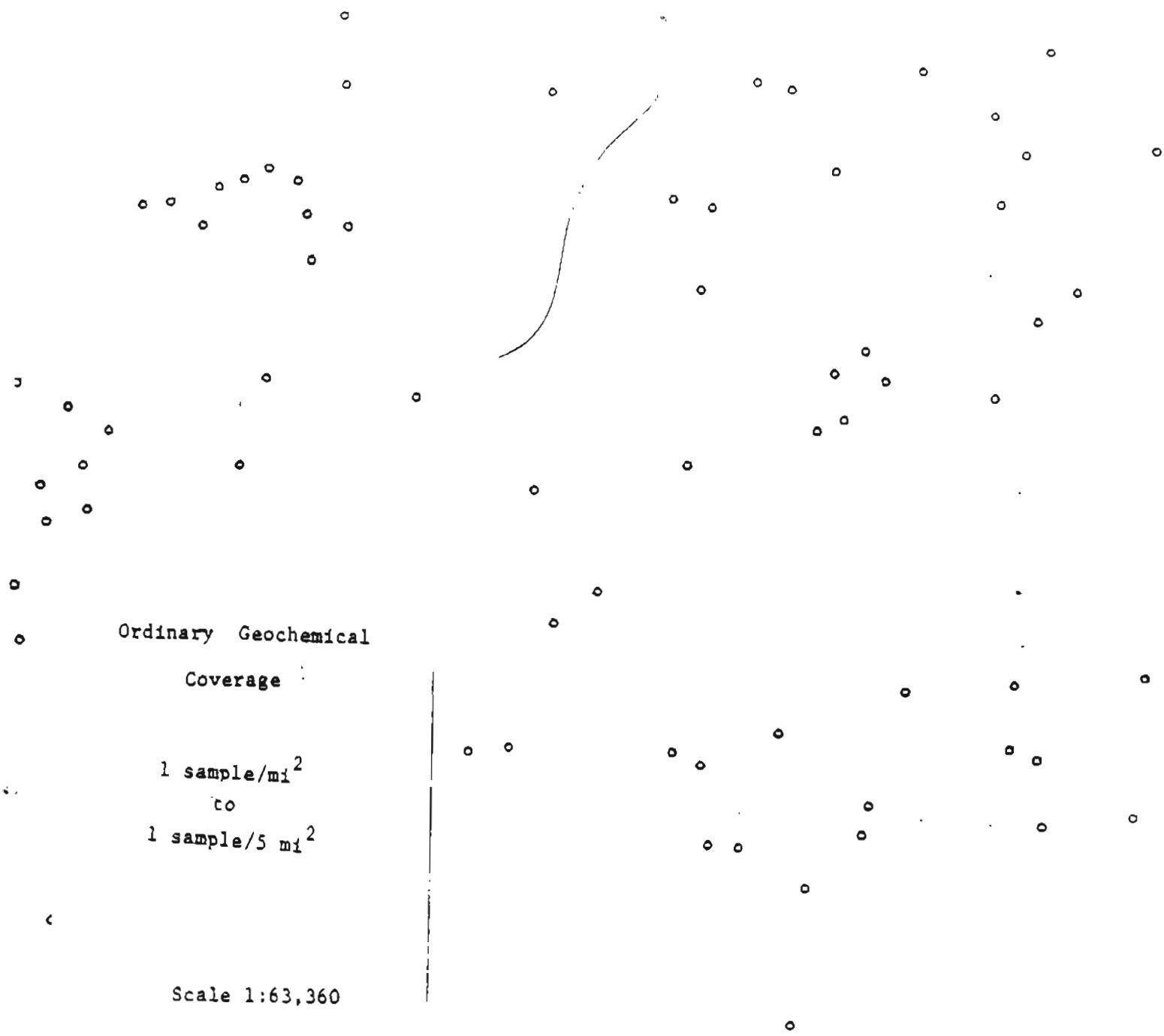
geologic mapping

in poorly exposed area.

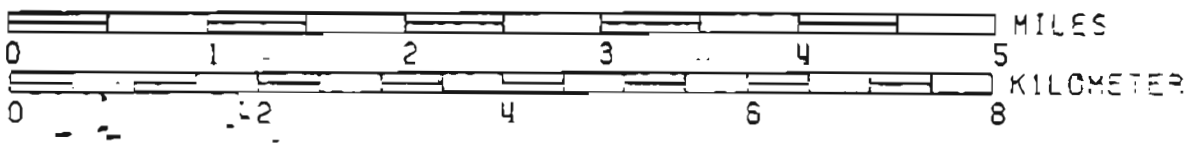
Scale 1:63,360


Average 1:250,000
geologic mapping.
Scale 1:250,000


Comprehensive
Geochemical
Coverage
½ mile spacing
Scale 1:63,360
Amy Dome



UNIVERSAL TRANSVERSE MERCATOR PROJECTION
SCALE 1:63360



Low density
geochem survey
such as AMRAP
and NURE

0.2 samples/mi^2

Scale 1:250,000

SCALE 1:250,000

SECTION III: Sediment Hosted Zn, Pb, (Ag, Ba) Deposits

.Large scale (100s km) fault-bounded epicratonic and intracratonic sedimentary basins

.Smaller (10's km) fault-bounded subbasins with rapid changes of thickness and lithofacies

.Slump breccias, intraformational conglomerates, local soft sediment folding/faulting

.Middle Proterozoic and Lower-Middle Paleozoic ages have been most productive

.Chert and barite in small scale basins

.Minor volcanics and tuff in section

.Thick marine sedimentary sequences in basin

.Shallow marine lithologies: shale-carbonate-dolomite-(evaporite?)-chert-bedded barite

.Geochem Zn, Cu, Pb, Ba, Mn, (Cu, Sn, As at Sullivan)

.Basin edges may be reflected in gravity gradients

Volcanogenic Massive Sulfide Deposits

.Submarine volcanic rocks

.Mostly mafic volcanics - Cu-Au type, mafic to felsic - Zn-Pb-Cu type

.Evidence for synvolcanic rifting - bimodal compositions, abrupt thickening

.Known VMS deposits in same interval and area. They tend to cluster

.Fe-Mn chert in section (exhalite)

.Anomalous carbonates, Fe-rich (exhalite)

.Zones of chlorie-tale or muscovite-quartz

.Geochem Cu, Zn (Au) if mafic, or Zn, Pb, Cu, Bu (Ag) if felsic.

.Spilitic (ab -ep-chl-carb) alteration of volcanics

.FeOx gossan in favorable strata, tuffs, blk shale etc

.Pyroclastic rocks in section "Agglomerate, mill rock"

.If metamorphosed, felsics go to felsic schists or gneisses; black shales to basalts to greenschists or amphibolites; calcareous rocks to calc silicates. Silicious volcanics often miscalled metaquartzites

.Aeromag useful in tracking mafic volcanics or, less commonly, other magnetic horizons

Stratiform Barite

.Thin to thick (to 15 m) barite beds in sequence of dark chert, siliceous shale, limestone and siltstone

.Lateral extent of beds often several hundred meters

.Barite rosettes, nodules common in sediments

.Ord-Miss strata productive in U.S.

.Synsedimentary textures e.g. graded bedding, laminated barite, continuity of beds

.Geochem Ba

Hot Spring Gold-Silver Deposits

.Common in Tertiary felsic volcanic fields, extrusive plus intrusives

.Evidence for shallow, hot spring activity e.g. sinters, alteration.

.Can be large tonnage deposits in stockworks

.Host can be carbonate (Carlin) or volcanic or sedimentary

.Much complex high angle faulting

.Favorable environments include: (1) Caldera rim fracture zones, (2) Complex felsic volcanic centers with domes, flows plugs; faulting (3) Complex basin - range faulting (4) Complex lake basins with volcanic tuffs, ash flows, etc

.Hydrothermal brecciation, silica commented breccia/conglomerate

.Large (to several km^2) areas of intense silicification

.Alteration is argillic with quartz, adularia, alunite, Kaolinite, sericite

.Zones of stockwork quartz or chalcedony veins

.Greyish or bluish quartz veinlets (contain sulfides)

.Typical minerals are native gold, pyrite, stibnite, cinnabar, arsenopyrite, fluorite, (sphalerite), Ag-sulfosalts

.Geochemistry Au, Ag, As, Sb, (F, Sn, Mo)

.Associated placers and placer claims

Gold-Silver-Base Metal Veins

.Many characteristics similar to Hot Spring type, but thought to be generally deeper in system, with basic metals increasing with depth.

.Occur in strong fracture systems like caldera rings, basin-range faults, domes-faulted areas

.Silicification along veins, but not pervasive

.Irregular patchy argillic alteration

.Narrow fracture zones with sulfides, strong barren fractures with dikes.

.Most deposits either (1) Veins, stockworks, or replacements in volcanic rocks or (2) replacements and veins in associated sedimentary rocks

.If veins intersect premineral sediments, suspect large low grade Au, Ag accumulations in silicifed sediments around vein

.Multicolored, local gossans

.Geochem Ag, Ag, Cu, Pb, Zn, As, Sb

Polymetal Gold-Silver Veins

.Associated with major volcanic piles dominated by intermediate calc-alkalic porphyritic volcanic rocks i.e. rhyodacites, trachyandesites, quartz latites.

.Associated sediments often volcaniclastic

.Evidence of volcanoplutonic environment e.g. intrusive relations between igneous rocks

.Porphyritic domes and flow-dome complexes most favorable

.Large areas of argillic - sulfate alteration and silicification.

.May be associated with deeper porphyry copper systems

.Much fracturing and brecciation of silicified areas

.Multicolored gossans

.Sometimes fault controlled

.Ore mineralogy dominantly sulfosalts e.g. enargite, tetrahedrite-tennantite, Ag-sulfosalts, and pyrite +- bismuthinite, native gold, tellurides, chalcopyrite, galena, sphalerite

.Geochem Au, Ag, As, Sb, Bi, Hg, (Mo, Te, Ba)

.Associated placers and placer claims

Tungsten-Gold Veins

.Hosts variable from bimodal felsic-mafic volcanics to black slate or metamorphic equivalents

.Veins concordant and discordent, mineralized veins often one of many sets

.Ore mineralogy typically native gold, scheelite+-arsenopyrite, stibnite, pyrite, sulfosalts in quartz gangue

.Alteration minor, some silicification

.Veins can be stratabound (e.g. Fairbanks) or clustered in favorable structural sites or both

.Known deposits of this type

.Associated placers and placer claims

.Geochem Au, Ag, As, Sb

Porphyry Cu, Mo

.Shallow, small porphyritic plutons

.Quartz monzonite to granodiorite composition usually; syenite, monzonite, diorite less common

.Extensive pyritic alteration

.Known deposits

.peripheral mag highs sometimes

.Tertiary/Mesozoic intrusive ages most favorable

.Evidence for volcanoplutonic setting, caldera resurgence, ring fractures

.Porphyritic with sugary groundmass, multiple intrusion

.Passive emplacement: diking, brecciation, stoping

.I-type or Magnetite type intrusives

.Host rocks - variable, almost anything

.Much stockwork fracturing and microveining

.Alteration type - potassic/phyllic, argillic

.Geochem

Cu, Pb, Zn, Ag Typical
Te, Mn, Ba, As, Bi, also used

Porphyry Mo, W

.Shallow, small siliceous porphyritic plutons

.Quartz monzonite to granodiorite porphyry usually - I type

.Composite multiphase intrusions, complex igneous history, evidence for cupolas

.Known deposits of this type

.Extensive pyritic alteration

.Rhyolite dikes, especially garnet-bearing

.Cogenetic rhyolitic volcanics

.Abundant veining, stockwork fracturing, brecciation of host and intrusive

.Weak mag high in intrusive

.Flourite rich system

.Part of magmatic arc paralleling tectonic grain

.Tertiary (or Mesozoic) intrusive ages

.Geochem Mo, W, Sn, Ag, Zn, Pb, F, As

.Aeromag - poss lows in highly altered stocks

.Multicolored gossans

.Tendency to be found on edges of regional gravity lows (possibly reflecting deep batholith)

Skarn Cu, Fe, Au

.Diorite to grandiorite porphyries, many dikes

.Abundant veining - Secondary biotite, Kspar, Actinolite, Qtz-sericite-py

.Mag highs over intrusives and contact zones

.Abundant carbonate in section

.Irregular, extensive pluton-limestone contacts

.Known deposits in area

.Geochem
Cu, Zn, Mo, As, Au, Bi

Skarn W (Cu)

.Equigranular to porphyritic biotite-Kspar granite, low hornblende

.Late Mesozoic age of intrusive favorable

.Pegmatite/aplite dikes common

.Propylitic alteration of intrusive (chl-ep-carb-ab)

.Absence of intense veining

.Mag anomalies around intrusives

.Thick carbonate sequences

.Shallow dipping pluton-limestone contacts

.Reentrants and irregularities in pluton-limestone contact

.Significant lengths of pluton-limestone contact

.Geochem
W, Cu, Mo, Sn, Bi, Be

.Known deposits

Skarn Pb-Zn

.Felsic dike swarms (granodiorite to granitic)

.Abundant carbonate in section

.Regional propylitization

.Fault control of skarns

.Geochem
Zn, Pb, Ag

Greisen-Stockwork-Skarn Sn

.High level granite to alkali granite stocks and dikes, rhyolitic to coarse grained texture-often S-type without hornblende.

.Abundant coarse grained muscovite +garnets, tourmaline, idocrase, fluorite in intrusive and contact rocks

.Poss Mag highs in contact rocks

.Irregular, shallow-dipping, contacts

.Abundant carbonates in section for skarns

.Geochem
Str sed Pb, Zn, Cu, Ag, Be, F, Mo,
Pan Con, Sn, W

.Known tin occurrences or placer tin nearby

.Multiphase intrusive (3-10 km ^{2} common)

.Evidence for cupolas or cusps over pluton

.Deposits may be greisen veins, stockwork, or disseminations in intrusive or skarns in adjacent carbonate

.Sometimes closed gravity low over intrusives

Replacement/Veins of Fluorite-Beryllium

.Regional occurrence linked to Sn systems cutting carbonate sequences, may be distal edges of system.

.Stockworks or vein sets cutting marmorized limestone with fluorite, quartz, ± beryllium silicates in vein material

.Felsic dikes common

.Known occurrences or nearby Sn systems

.Geochem F, Be, (Sn, U)

Mafic-Ultramafic Cu-Ni-PGE (Excluding Komatiites)

.Presence of extensive plutonic ultramafic/ mafic rocks, especially troctolite

.Lack of hornblende in gabbros, except in hydrous alteration phases

.Thick layered cyclic mafic-ultramafic sequences, or plugs

.Sulfide-bearing diabase sills and chill phases

.Known Cu, Ni, or PGE phases, especially in basal zones

.Geochem Cu, Ni, Co, Au, PGE

.Contact of ultramafic plutons with silicious host rocks

.Strong magnetic anomalies

Mafic-Ultramafic Cr

.Abundant ultramafic rocks, layered or plug-like, especially dunite and hartzburgite with pods and veins of dunite in hartzburgite

.Cumulate and tectonized rocks in section

.Strong magnetic anomalies

.Geochem Cr, Cu, Ni, PGE

Mafic-Ultramafic Asbestos

.Presence of olivine bearing ultramafics, especially dunite

.Veins of serpentinite in serpentinized ultramafics

.Strong mag. anomalies

Shale Hosted and Redbed Copper

.Rift basins or shallow marine basins over rifts, often intracratonic, sometimes in tectonic belts

.Presence of (1) conglomerate-sandstone redbeds with basalt flows (2) thin bedded organic shale/limestone (host) (3) Evaporites at top of sequence

.Ore occurs in both reduced and oxidized part of section. Chalcocite, bornite, chalcopyrite, galena, sphalerite, pyrite common ore minerals. Occasionally grades laterally to zinc-rich shale over 10's of km.

.Known occurrences

.Geochem Cu, Mo, Pb, V, Zn, Ag, U

.Radiometric anomalies in shale

Iron Formation (BIF)

.Typically of Proterozoic age (2.2 m.y.)

.Large epicontinental basins, close to Archean cratons

.Thought to be of volcanic exhalative origin

.Banded, red silicious sediments and cherts common in sequence

.Great lateral extent

.Iron minerals variable: Fe-phyllosificates, Fe-carbonates, Fe-oxides, Fe-sulfides, and metamorphic products

.Sedimentary sequence often includes much chert and dolomite as well as volcanic derived tuffs and tuffaceous shales

.Supergene enrichment by silica removal common, either at base of weathering zone or along fractures

.Aeromag anomalies over magnetite-facies

Sedimentary Ironstone

.Evidence of shallow epicratonic landlocked basins

.Often oolitic (Clinton-type), sandy, clayey

.Abundant fossils, rip up clasts, ripple marks, crossbedding and other shallow water features

.Usually Phanerozoic age, climate controlled

.Low rate of sedimentation and availability of sediment

.Iron-oxide coated sand grains, iron oxide cement of clastic and bioclastic material common

.Thin beds of Fe-Phyllosilicate or Fe-oxide

.May overlie or be interstratified with coal seams

.Grade laterally into ferruginous sand and clay with sediments.

.Ore material 20-50 percent Fe

Carbonate Hosted Zn, Pb

.Basic margin shallow water carbonates, reefs etc., as host rocks

.Deep adjacent sedimentary basins, often growth-fault controlled, often in or adjacent to stable platforms

.Stratabound galena-sphalerite-pyrite replacements and veins, Sometimes with Cu, Co, Ni, Lower to Middle Paleozoic ages productive in U.S.

.Gangue-calcite, dolomite, quartz, clays, barite, fluorite

.Numerous lateral and vertical facies changes near limestone-dolomite transition

.Solution collapse breccias or algal reefs favorable sites

.Intersection of deep seated faults with favorable carbonates

.Precambrian basement knobs and highs

.Geochem
Zn, Pb, Cu, Bu, F; generally weak anomalies

.Known occurrences

.Evidence for hydrocarbons

Carbonate Hosted Cu

.Similar to Carb Hosted Pb, Zn

.Shallow water carbonates, reefs, etc. adjacent to basin controlled by growth faults

.Areas of hydrothermal dolomite and breccia in carbonates

.Geochem Cu, Co, (Pb, Zn) generally weak anomalies

.Known occurrences

.Evidence for hydrocarbons

Sandstone Hosted Uranium

.Suitable U-enriched source rocks, e.g., granites, alkaline complexes, acid volcanics or tuffs

.Stable structural setting usually

.Sandstone-bearing sedimentary basins flanking host, usually continental sandstones or shoreline fluvial

.Fluvial depositional environment., braided streams, fans, lacustrine, deltaic.

.Unconformity at base of sandstone sequence, channels cut into impermeable shales

.Host - clean quartzose or arkosic sandstone interbedded with mudstone. Tuffaceous or feldspathic with plant material or pyrite Qtz-only sandstone or graywackes unfavorable

.Known deposits

.Radiometric highs in region

.Geochem U, V, Cu, Mo, Ba, As, Se

Igneous Associated Uranium

.Associated with S-type leucogranites, often 2-mica

.Thick sialic crust

.Granites enriched in U (8-20 ppm), often Sn and W as well. Uranium as uraninite or in zircon, monazite, apatite

.Deposits are of four types (1) primary disseminations in late stage granitic phases (2) mineralization in aplites and pegmatites (3) epigenetic veins and fracture fillings (4) Secondary hydrothermal veins and disseminations in overlying clastic rocks.

.Known occurrences or nearby Sn, W systems

.Distal areas around Sn systems

.Carboniferous to Tertiary ages productive

.Regional radiometric anomalies

.Geochem U, (Cu, As, Mo, Sn, F)

Placer Sn, Au

.Historical placer mining

.Drainages or beaches downslope from known or potential lode or paleoplacer sources

.Mining claim activity along drainages

.Deep weathering of source rocks and moderately incised drainage system

.Absence of extensive glaciation (usually true)

Placer #1

- Historical placer mining.
- Drainages or beaches downslope from known or potential lode or paleoplacer sources.
- Mining claim activity along drainages.
- Deep weathering of source rocks and moderately incised drainage system.
- Absence of extensive glaciation (usually true).
- Geochem Pt, Pd, (Cr, Au)

Lode Hg, Au

- On trend with other deposits in Iditarod and Kuskokwim Group Rocks.
- Presence of dikes of variable composition, ideally, altered diabase.
- Evidence of faulting or other structural conduits.
- Geochem Hg, Sb, As, (Cu, Pb, Zn, Ag, Au)

APPENDIX A

MINERALS, COAL, AND AGGREGATE POTENTIAL

OF

ALASKA MENTAL HEALTH TRUST AND RELATED LANDS

BY THE STAFF

ALASKA DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS

January 4, 1988

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OF

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Alaska Division of Geological and Geophysical Surveys

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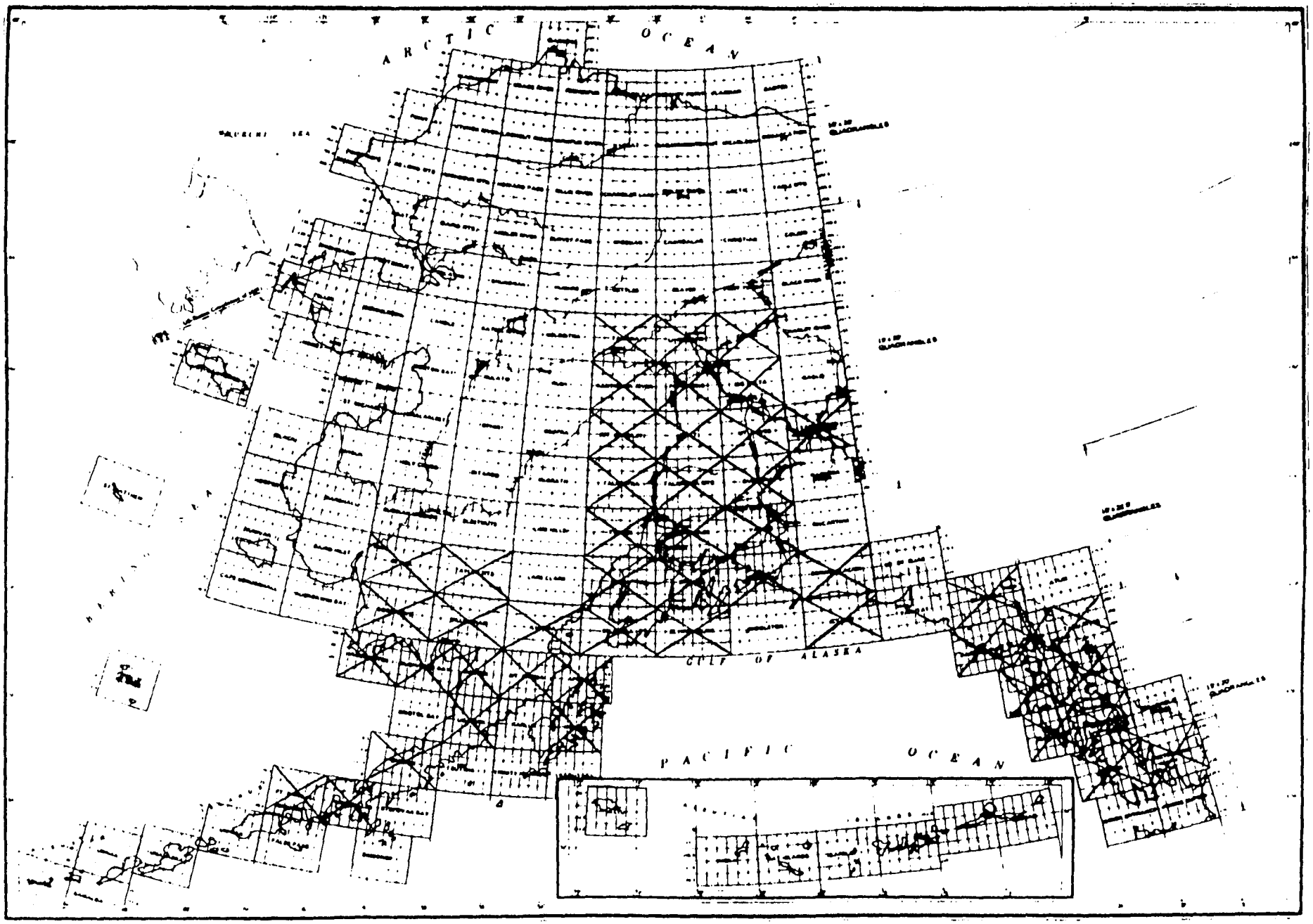
APPENDIX A Maps of Mineral Potential of Alaska Mental Health Lands
APPENDIX B Maps of Coal Potential of Alaska Mental Health Lands
APPENDIX C Maps of Sand and Gravel Potential of Alaska Mental Helath Lands

INTRODUCTION

In mid-September, 1987, the Minerals and Materials section of DGGS was asked to prepare a summary of existing knowledge on mineral, coal, and building aggregate in 1 million acres of Mental Health Trust lands. This request was subsequently enlarged in stages to include 8.3 million additional acres of potential Trust Replacement-Pool lands. The final assessment request involves parts of 49, 1:250,000 scale quadrangles (fig. 1).

The chapters in this report describe methodology, preparation, and criteria used in developing the summarized commodity potentials depicted in 3 separate map folios accompanying this text and included as appendices A to C. Information pertinent to each commodity type is presented in one of three separate chapters: Chapter 1 - Minerals; Chapter 2 - Coal; Chapter 3 - Sand and Gravel (aggregate).

Eleven permanent DGGS staff members and eight part-time DGGS employees have been assigned to this project since October, 1987.



[illegible] Wealth Trust and Restatement of Lands

CHAPTER 1

MINERAL POTENTIAL OF ALASKA MENTAL HEALTH LANDS

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MINERAL POTENTIAL OF ALASKA MENTAL HEALTH TRUST LANDS

BY

M.A. Wiltse, K.Clautice, L.E. Burns, W.G. Gilbert, G.D. March, J. Tam, G.H. Pessel, T. E. Smith, T.K. Bundtzen, M.S. Robinson, A. Bakke, P. Duce, E. Fogel, G. Colter, C. Moddrow, C. Peterson, J. Keener

Table .. Alaska Division of Geological & Geophysical Surveys staff and temporary employees (*) participating in the minerals assessment of the Alaska mental health trust lands.

	REGION	QUADS.	ASSESSMENT TEAM
10	INTERIOR	✓BIG DELTA ✓	M.A. WILTSE
		✓CIRCLE ✓	A. BAKKE *
		✓FAIRBANKS ✓	P. Duce *
		✓HEALY	
		✓KANTISHNA R. ✓	
		✓LIVENGOOD ✓	
		✓MT. HAYES ✓	
		✓MT. MCKINLEY	
		✓TANACROSS ✓	
		✓TANANA ✓	
15	SOUTHERN I	✓ANCHORAGE ✓	K. CLAUTICE
		✓BETHEL ✓	T.E. SMITH
		✓DILLINGHAM ✓	J. Keener *
		✓GOODNEWS BAY ✓	
		✓GULKANA ✓	
		✓TALKEETNA ✓	
		✓TALKEETNA MTS. ✓	
		✓TAYLOR MTS. ✓	
		✓TYONEK ✓	
		✓VALDEZ ✓	
19	SOUTHERN II	~~AFOGNAK~~ ✓	L. BURNS
		✓BERING GLACIER	G. PESSEL
		✓BLYING SOUND ✓	C. Modrow *
		✓CHIGNIK ✓	C. Peterson *
		COLD BAY ✓	
		~~COLD BAY~~	
		✓CORDOVA ✓	
		✓HAGEMEISTER IS. ✓	
		ICY BAY	
		✓ILLIAMNA ✓	
		✓KENAI ✓	
		KODIAK	
		✓MT. KATMAI ✓	
		✓NAKNEK ✓	
		NUSHAGAK BAY	
		✓PORT MOLLER ✓	
		SELDOVIA ✓	
		✓SEWARD ✓	
		UGASHIK ✓	
13	SOUTHEASTERN	✓CRAIG	W.G. GILBERT
		✓JUNEAU ✓	T.K. BUNDTZEN
		✓KETCHIKAN ✓	E. FOGEL *
		✓MT. FAIRWEATHER	
		✓PETERSBURG ✓	
		✓PORT ALEXANDER ✓	
		SITKA	
		✓~~SKAGWAY~~ ✓	
		✓SUMDUM	
		✓TAKU RIVER	

R&D - SAND & GRAVEL

ATLIN

BRISTOL BAY

CHAPTER 1

MINERAL POTENTIAL OF ALASKA MENTAL HEALTH TRUST LANDS

INTRODUCTION

A team of nine DGGS employees (table 1) have been involved either full or part-time on the Mental Health Trust mineral assessment since October, 1987. They have been assissted by seven part-time employees (student interns or contractors). The general method of attack used was to analyze a "data stack" for each quadrangle at a scale of 1:250,000. The various layers of the data stack were developed by a literature search and were compiled on 1:250,000 scale transparent acetate overlays to facilitate the integration of various levels in the stack. Typical components of a stack include such information as geology, geochemistry, mining claims, mineral occurrences, etc.

Once the data stacks were compiled, two or three separate geologists analyzed each quadrangle data package in areas of Mental Health Trust or potential replacement-pool lands - carefully scrutinizing all elements of the data for signals indicating the presence of one or more of 29 mineral deposit types (Section III, p. 1-13 to 1-39). Specific indicator criteria for each deposit type are listed in Section III. A potential score of 1 to 5 was determined for each area of interest using the criteria listed in Section I, pp. 1-2 to 1.3. Also, whil analyzing this data, each township was scored for quality of information available, by criteria listed in Section II, pp. 1.4 to 1.12. The mineral potential scores are heavily dependent on the level of information available. Despite the best efforts of the analysts, a good forecast of mineral potential cannot be made in the absence of good background information. Thus mineral scores in areas of low data quality should be viewed as very uncertain.

Recognizing the inherent limitation imposed by lack of data, mineral potential/data quality maps were prepared for all impacted 1:250,000 scale quadrangles. These are presented as a group of 47, 1:250,000 scale mylar maps (appendix A) showing the location of Mental Health Trust lands, and lands designated by the state which may be considered for replacement of lands lost to the original Mental Health Trust. The maps also depict the mineral potential of lands within and near the above Mental Health lands. Deposit types for lands having a mineral potential of 3 or greater are numerically coded to identify pertinent deposit types. Data quality is presented on a Township basis in the map legend.

In summary, the products for the mineral assessment of the Mental Health Trust lands include:

43

1.- 47 mineral potential/data quality maps at 1:250,000 scale.

2.- Explanatory information in chapter 1 of this report.

SECTION I: Mineral Potential Map

This overlay should portray a score for each cell, in our case township, linked to favorability for one or more of the 25 deposit types. Coming up with this score will involve a mental evaluation of geologic, historical, etc factors that are favorable for the occurrence of mineral deposits. Some call this a multivariate system; in the NORWAAP project we'll let the computer on our shoulders compute the scores. Let's take a crack at a five fold breakdown: Very High (5), High (4), Moderate (3), Low (2), Very Low (1).

Determining whether the geological environment is favorable will require learning most of the key features of the 25 deposit types.

Possible Scoring Criteria might be:

Very High (5)

.Geological environment very favorable

.Significant mineral deposits known

.Numerous active mining claims

.Geophysical and geochemical signatures favorable

.Very favorable metallogenic and tectonic terrane

High (4)

.Geological environment very favorable

.On trend or in some unit which hosts significant mineral occurrences nearby

.Significant deposits not known at present

.Some mining claim activity

.Geochemical and geophysical signatures favorable

.Favorable metallogenic and tectonic terrane

Moderate (3)

.Geologic environment favorable

.Significant deposits not known

.Low mining claim activity

.Geochemical and geophysical signatures may be favorable

.Cell may be distantly on trend with cells of higher favorability

Low (2)

.Some aspects of geological environment may be favorable, generally not

favorable

.Few if any known deposits

.Little or no mining claim activity

.Geochemical and geophysical signatures generally negative

.Little bedrock exposed nearby (but don't forget placers and S.S.-hosted uranium)

.Generally unfavorable metallogenic and tectonic terrane

Very Low (1)

.Geologic environment generally unfavorable

.Little bedrock exposed, little possibility for placers or S.S.-hosted metals

.No known mineral occurrences

.Unfavorable geochemistry or geophysics

.Off trend with more favorable areas

.No mining claim activity

.Unfavorable metallogenic and tectonic terrane

SECTION II: Data Quality Map

This should be an attempt to assess the level of geologic, geochemical, mineral data available in each township. We might as well use the five fold breakdown: Very poor (1), Poor (2), Fair (3), Good (4), And Very good (5).

Possible criteria for assigning a level to a particular township might be:

Very Good (5)

.Detailed (1:63,360 or larger) geologic mapping, numerous units/cell broken out, alteration zones, gossans shown (examples p. 7, 8)

.Comprehensive geochemical data base, ¼ mile spacing, possibly soil and rock chip geochem also (p. 10)

.Good aeromag, ½ to 1 mile spacing

.Other geophysical data

.Detailed studies of mines or prospects

.Good surficial geology

Good (4)

.Detailed (1:63,360 or larger) geologic mapping

.Ordinary geochemical coverage 1 sample per mile^2 to 1 sample per 5 miles^2 (p. 11)

.Aeromag coverage ½ to 1 mile spacing

.Some prospect studies

Fair (3)

.Good, careful 1:250,000 or 1:125,000 geologic mapping with units pertinent to mineral deposits shown

.Regional low density geophysical coverage

.Low density geochemical data base like AMRAP (p. 12)

.Some deposit studies

Poor (2)

.Lower quality 1:250,000 geologic mapping units generalized, pertinent units to mineral deposits not shown (p. 9)

.Regional low density geophysical coverage

.Low density geochem

.Few if any local deposit studies

Very Poor (1)

.Only geologic mapping 1:1 million or similar grossly generalized maps

.Low density or no regional geophysical coverage

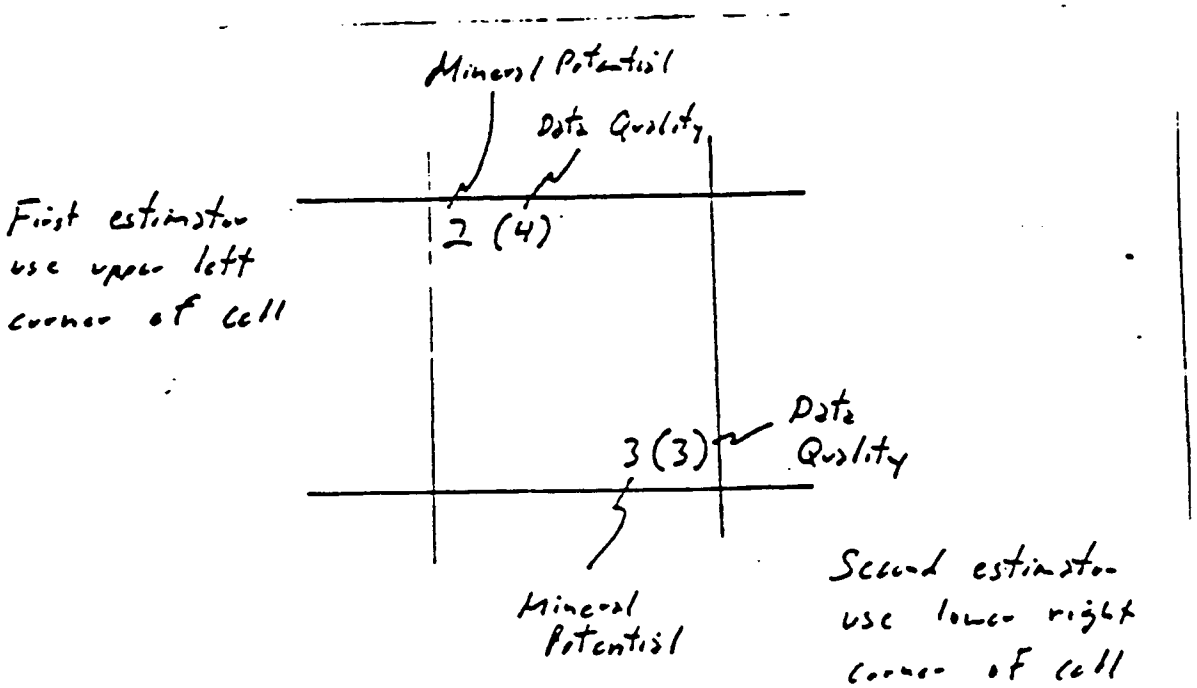
.Poor geochemical data base

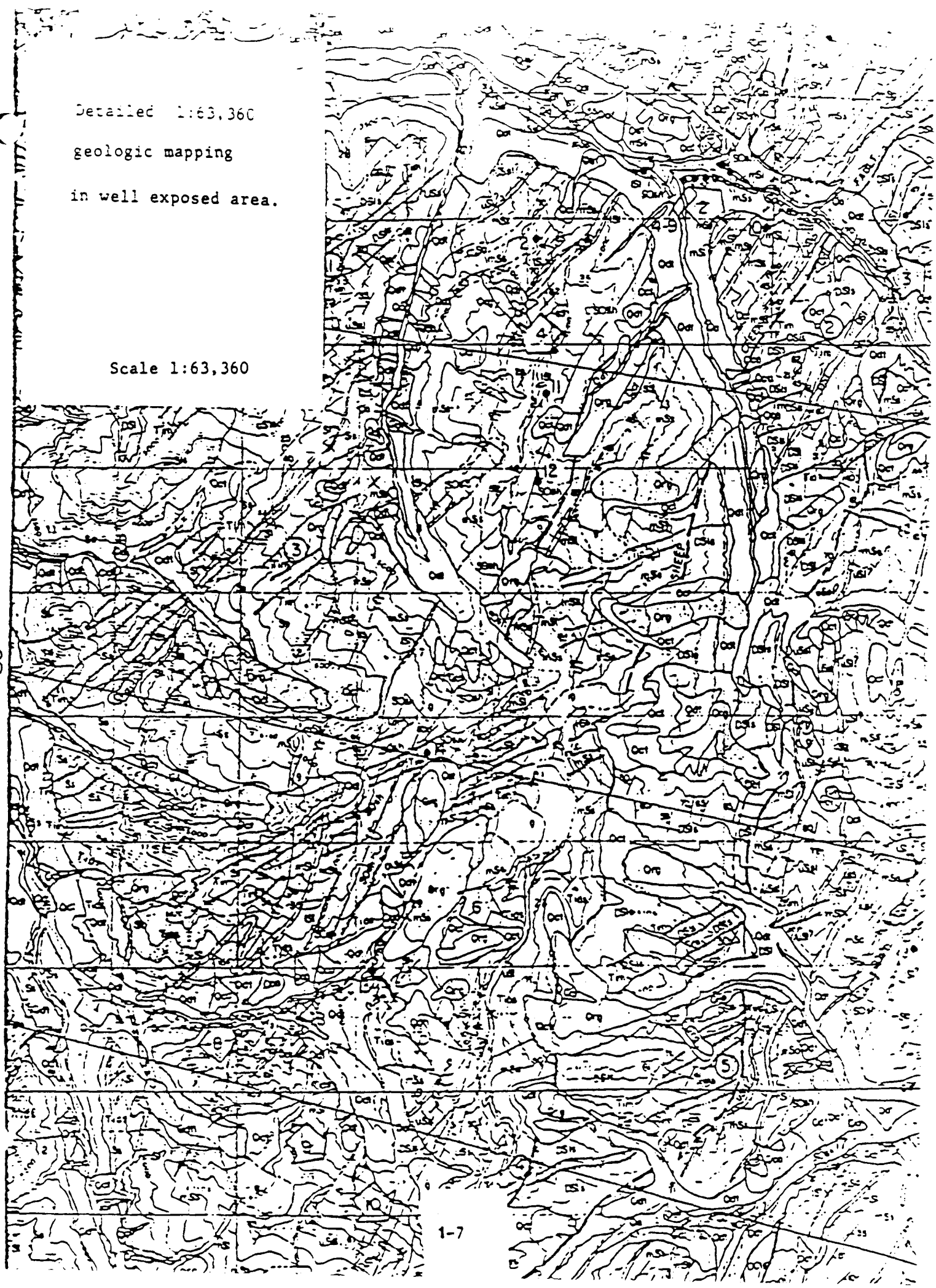
.General lack of information

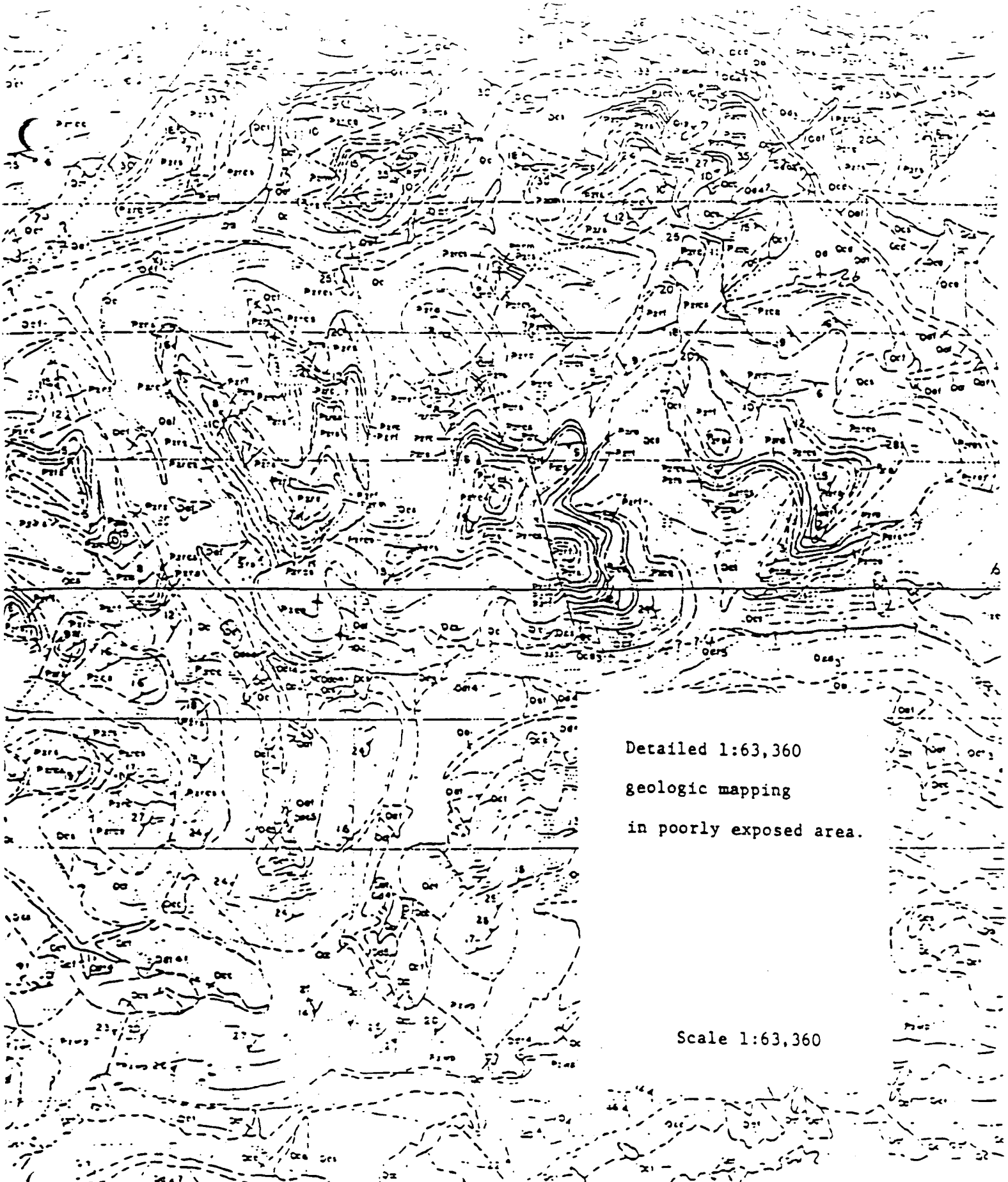
Map Portrayal of Scores

For the initial worksheet, let's compile the mineral potential scores and data quality scores together. Later, we will brainstorm best method of presenting the data to non specialists.

So, for each township (i.e., use a mylar with township grid),




Detailed 1:63,360
geologic mapping
in well exposed area.
Scale 1:63,360

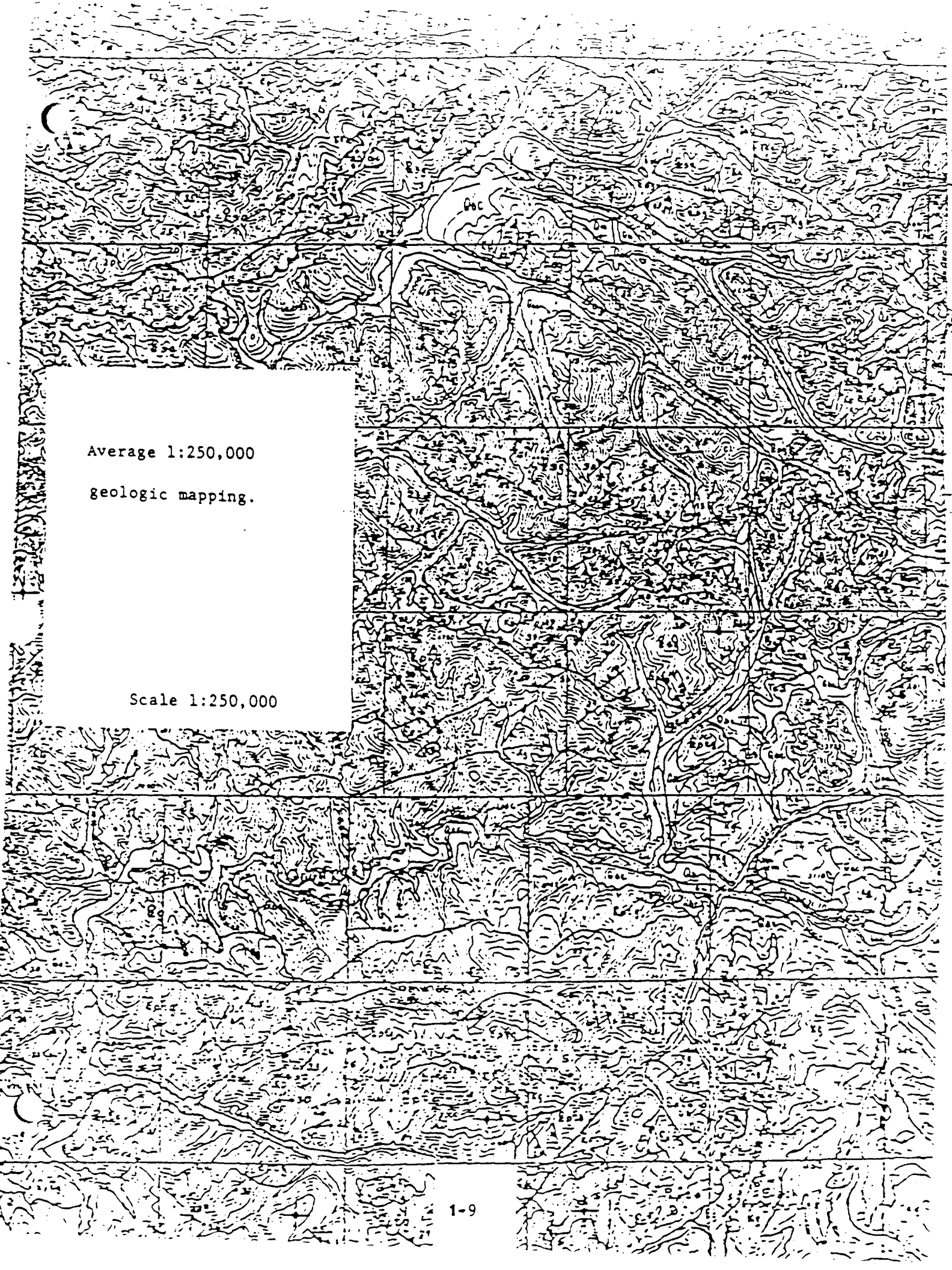


Detailed 1:63,360

geologic mapping

in poorly exposed area.

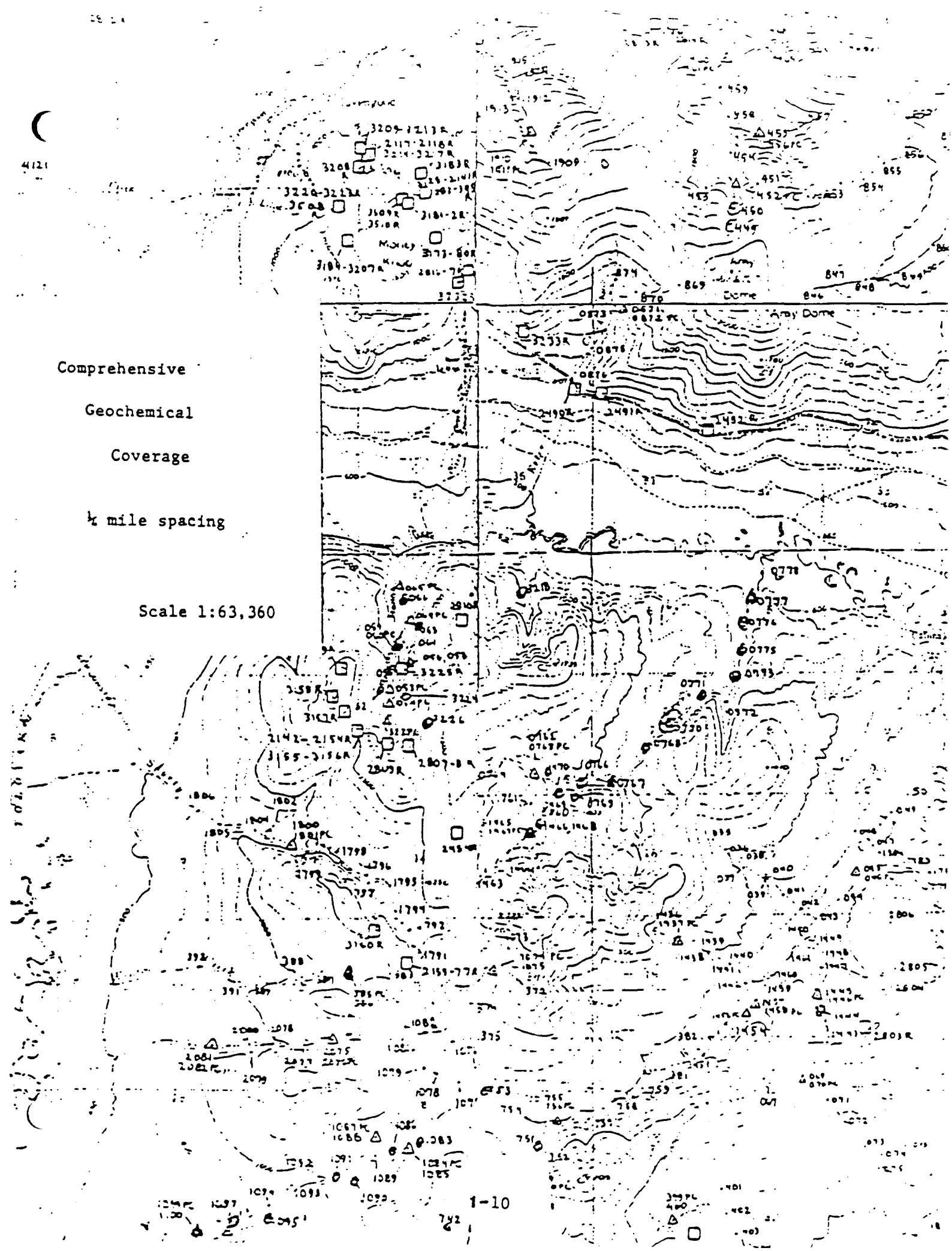
Scale 1:63,360

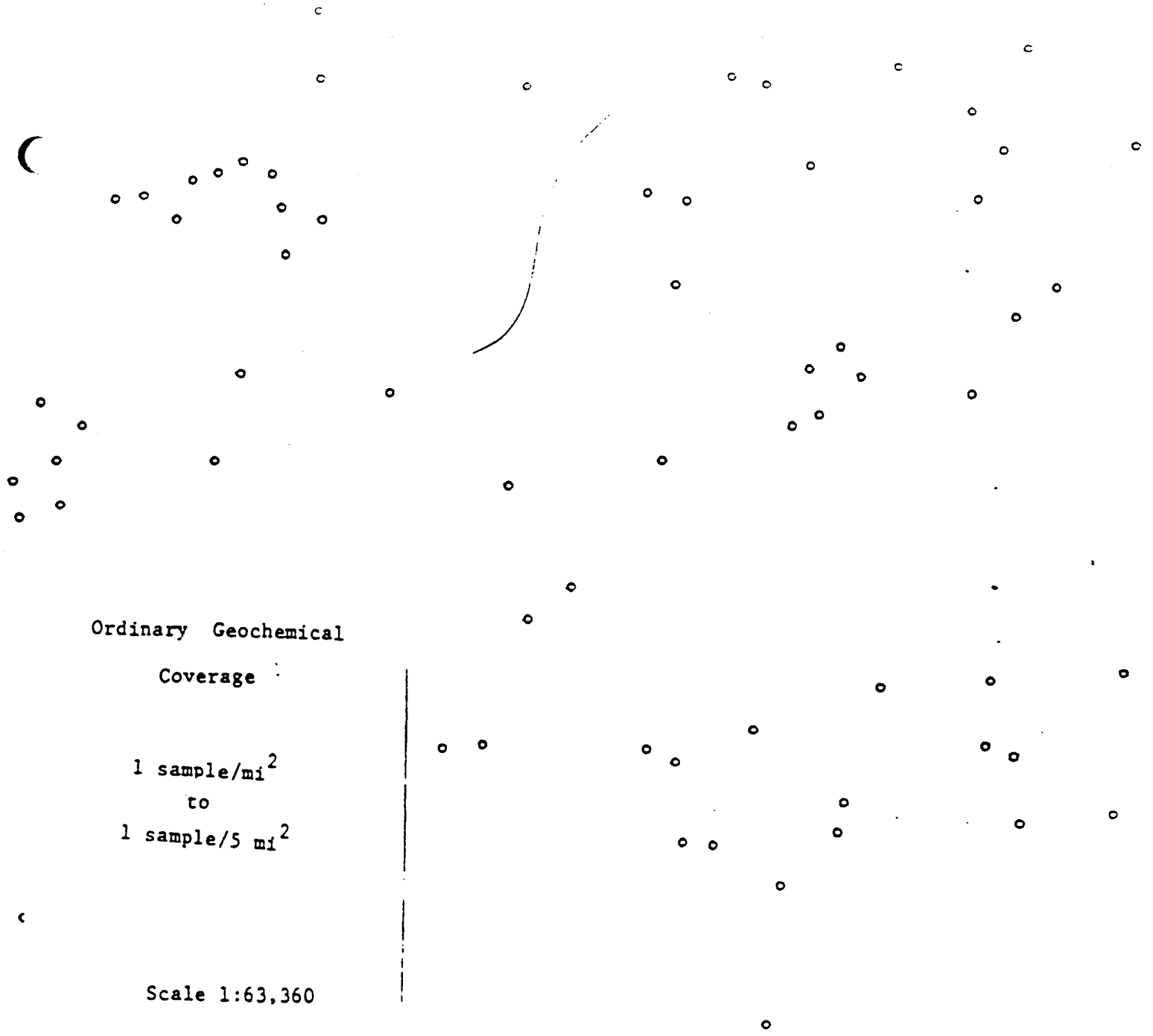


Average 1:250,000

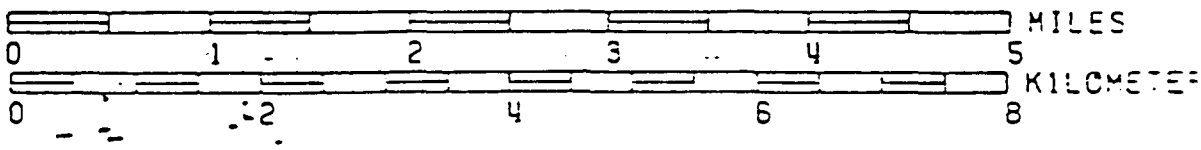
geologic mapping.

Scale 1:250,000


Comprehensive
Geochemical
Coverage
½ mile spacing
Scale 1:63,360



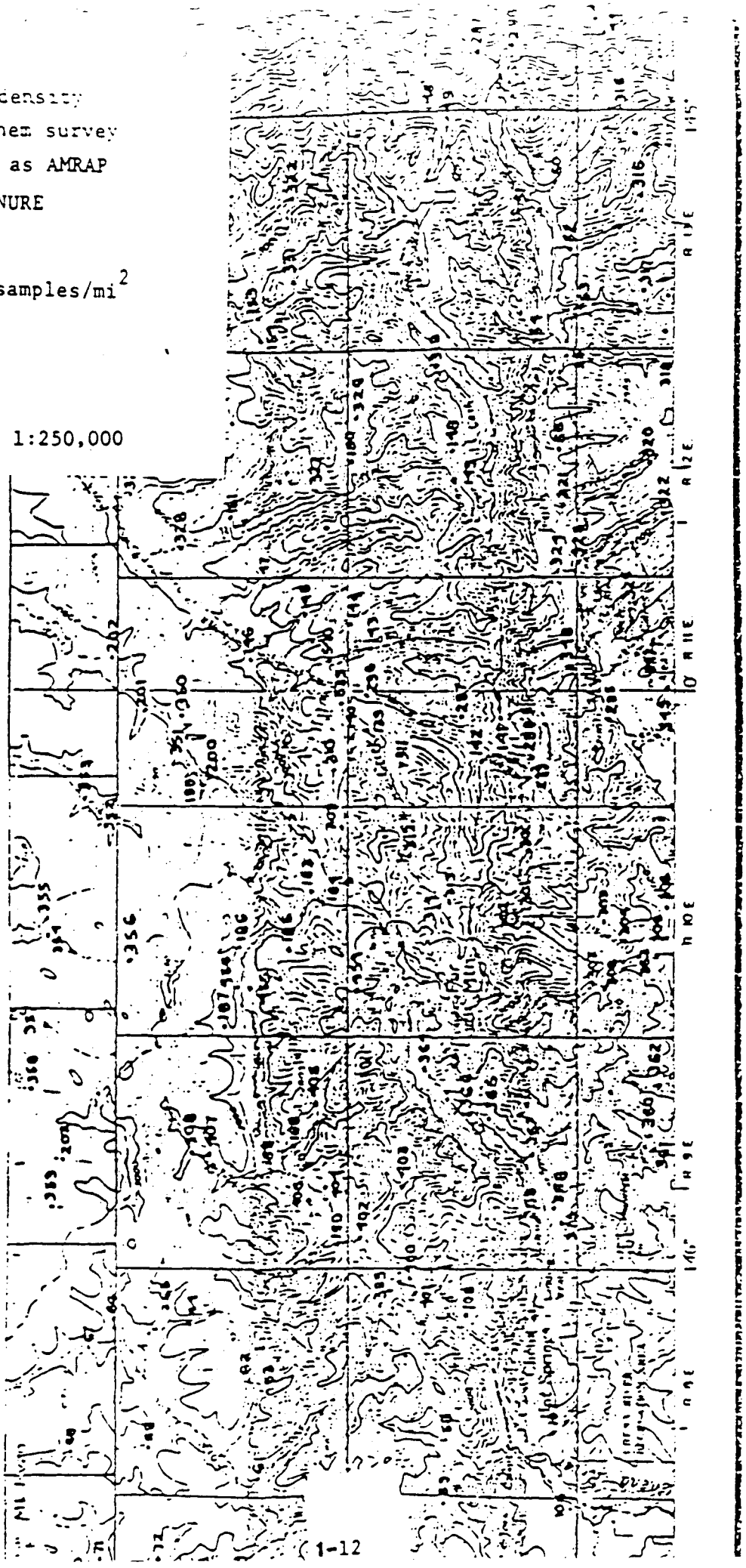
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
SCALE 1:63360



Low density
geochem survey
such as AMRAP
and NURE

0.2 samples/mi^2

Scale 1:250,000



SECTION III: Sediment Hosted Zn, Pb, (Ag, Ba) Deposits

.Large scale (100s km) fault-bounded epicratonic and intracratonic sedimentary basins

.Smaller (10's km) fault-bounded subbasins with rapid changes of thickness and lithofacies

.Slump breccias, intraformational conglomerates, local soft sediment folding/faulting

.Middle Proterozoic and Lower-Middle Paleozoic ages have been most productive

.Chert and barite in small scale basins

.Minor volcanics and tuff in section

.Thick marine sedimentary sequences in basin

.Shallow marine lithologies: shale-carbonate-dolomite-(evaporite?)-chert-bedded barite

.Geochem Zn, Cu, Pb, Ba, Mn, (Cu, Sn, As at Sullivan)

.Basin edges may be reflected in gravity gradients

Volcanogenic Massive Sulfide Deposits

.Submarine volcanic rocks

.Mostly mafic volcanics - Cu-Au type, mafic to felsic - Zn-Pb-Cu type

.Evidence for synvolcanic rifting - bimodal compositions, abrupt thickening

.Known VMS deposits in same interval and area. They tend to cluster

.Fe-Mn chert in section (exhalite)

.Anomalous carbonates, Fe-rich (exhalite)

.Zones of chlorie-tale or muscovite-quartz

.Geochem Cu, Zn (Au) if mafic, or Zn, Pb, Cu, Bu (Ag) if felsic.

.Spilitic (ab -ep-chl-carb) alteration of volcanics

.FeOx gossan in favorable strata, tuffs, blk shale etc

.Pyroclastic rocks in section "Agglomerate, mill rock"

.If metamorphosed, felsics go to felsic schists or gneisses; black shales to basalts to greenschists or amphibolites; calcareous rocks to calc silicates. Silicious volcanics often miscalled metaquartzites

.Aeromag useful in tracking mafic volcanics or, less commonly, other magnetic horizons

Stratiform Barite

.Thin to thick (to 15 m) barite beds in sequence of dark chert, siliceous shale, limestone and siltstone

.Lateral extent of beds often several hundred meters

.Barite rosettes, nodules common in sediments

.Ord-Miss strata productive in U.S.

.Synsedimentary textures e.g. graded bedding, laminated barite, continuity of beds

.Geochem Ba

4

Hot Spring Gold-Silver Deposits

.Common in Tertiary felsic volcanic fields, extrusive plus intrusives

.Evidence for shallow, hot spring activity e.g. sinters, alteration.

.Can be large tonnage deposits in stockworks

.Host can be carbonate (Carlin) or volcanic or sedimentary

.Much complex high angle faulting

.Favorable environments include: (1) Caldera rim fracture zones, (2) Complex felsic volcanic centers with domes, flows plugs; faulting (3) Complex basin - range faulting (4) Complex lake basins with volcanic tuffs, ash flows, etc

.Hydrothermal brecciation, silica commented breccia/conglomerate

.Large (to several km^2) areas of intense silicification

.Alteration is argillic with quartz, adularia, alunite, Kaolinite, sericite

.Zones of stockwork quartz or chalcedony veins

.Greyish or bluish quartz veinlets (contain sulfides)

.Typical minerals are native gold, pyrite, stibnite, cinnabar, arsenopyrite, fluorite, (sphalerite), Ag-sulfosalts

.Geochemistry Au, Ag, As, Sb, (F, Sn, Mo)

.Associated placers and placer claims

5

Gold-Silver-Base Metal Veins

.Many characteristics similar to Hot Spring type, but thought to be generally deeper in system, with basic metals increasing with depth.

.Occur in strong fracture systems like caldera rings, basin-range faults, domes-faulted areas

.Silicification along veins, but not pervasive

.Irregular patchy argillic alteration

.Narrow fracture zones with sulfides, strong barren fractures with dikes.

.Most deposits either (1) Veins, stockworks, or replacements in volcanic rocks or (2) replacements and veins in associated sedimentary rocks

.If veins intersect premineral sediments, suspect large low grade Au, Ag accumulations in silicifed sediments around vein

.Multicolored, local gossans

.Geochem Ag, Ag, Cu, Pb, Zn, As, Sb

Polymetal Gold-Silver Veins

.Associated with major volcanic piles dominated by intermediate calc-alkalic porphyritic volcanic rocks i.e. rhyodacites, trachyandesites, quartz latites.

.Associated sediments often volcaniclastic

.Evidence of volcanoplutonic environment e.g. intrusive relations between igneous rocks

.Porphyritic domes and flow-dome complexes most favorable

.Large areas of argillic - sulfate alteration and silicification.

.May be associated with deeper porphyry copper systems

.Much fracturing and brecciation of silicified areas

.Multicolored gossans

.Sometimes fault controlled

.Ore mineralogy dominantly sulfosalts e.g. enargite, tetrahedrite-tennantite, Ag-sulfosalts, and pyrite +- bismuthinite, native gold, tellurides, chalcopyrite, galena, sphalerite

.Geochem Au, Ag, As, Sb, Bi, Hg, (Mo, Te, Ba)

.Associated placers and placer claims

Tungsten-Gold Veins

.Hosts variable from bimodal felsic-mafic volcanics to black slate or metamorphic equivalents

.Veins concordant and discordent, mineralized veins often one of many sets

.Ore mineralogy typically native gold, scheelite+-arsenopyrite, stibnite, pyrite, sulfosalts in quartz gangue

.Alteration minor, some silicification

.Veins can be stratabound (e.g. Fairbanks) or clustered in favorable structural sites or both

.Known deposits of this type

.Associated placers and placer claims

.Geochem Au, Ag, As, Sb

8

Porphyry Cu, Mo

.Shallow, small porphyritic plutons

.Quartz monzonite to granodiorite composition usually; syenite, monzonite, diorite less common

.Extensive pyritic alteration

.Known deposits

.peripheral mag highs sometimes

.Tertiary/Mesozoic intrusive ages most favorable

.Evidence for volcanoplutonic setting, caldera resurgence, ring fractures

.Porphyritic with sugary groundmass, multiple intrusion

.Passive emplacement: diking, brecciation, stoping

.I-type or Magnetite type intrusives

.Host rocks - variable, almost anything

.Much stockwork fracturing and microveining

.Alteration type - potassic/phyllic, argillic

.Geochem

Cu, Pb, Zn, Ag Typical
Te, Mn, Ba, As, Bi, also used

Porphyry Mo, W

.Shallow, small siliceous porphyritic plutons

.Quartz monzonite to granodiorite porphyry usually - I type

.Composite multiphase intrusions, complex igneous history, evidence for cupolas

.Known deposits of this type

.Extensive pyritic alteration

.Rhyolite dikes, especially garnet-bearing

.Cogenetic rhyolitic volcanics

.Abundant veining, stockwork fracturing, brecciation of host and intrusive

.Weak mag high in intrusive

.Flourite rich system

.Part of magmatic arc paralleling tectonic grain

.Tertiary (or Mesozoic) intrusive ages

.Geochem Mo, W, Sn, Ag, Zn, Pb, F, As

.Aeromag - poss lows in highly altered stocks

.Multicolored gossans

.Tendency to be found on edges of regional gravity lows (possibly reflecting deep batholith)

Skarn Cu, Fe, Au

.Diorite to grandiorite porphyries, many dikes

.Abundant veining - Secondary biotite, Kspar, Actinolite, Qtz-sericite-py

.Mag highs over intrusives and contact zones

.Abundant carbonate in section

.Irregular, extensive pluton-limestone contacts

.Known deposits in area

.Geochem
Cu, Zn, Mo, As, Au, Bi

//

Skarn W (Cu)

.Equigranular to porphyritic biotite-Kspar granite, low hornblende

.Late Mesozoic age of intrusive favorable

.Pegmatite/aplite dikes common

.Propylitic alteration of intrusive (chl-ep-carb-ab)

.Absence of intense veining

.Mag anomalies around intrusives

.Thick carbonate sequences

.Shallow dipping pluton-limestone contacts

.Reentrants and irregularities in pluton-limestone contact

.Significant lengths of pluton-limestone contact

.Geochem
W, Cu, Mo, Sn, Bi, Be

.Known deposits

Skarn Pb-Zn

.Felsic dike swarms (granodiorite to granitic)

.Abundant carbonate in section

.Regional propylitization

.Fault control of skarns

.Geochem
Zn, Pb, Ag

Greisen-Stockwork-Skarn Sn

.High level granite to alkali granite stocks and dikes, rhyolitic to coarse grained texture-often S-type without hornblende.

.Abundant coarse grained muscovite +garnets, tourmaline, idocrase, fluorite in intrusive and contact rocks

.Poss Mag highs in contact rocks

.Irregular, shallow-dipping, contacts

.Abundant carbonates in section for skarns

.Geochem
Str sed Pb, Zn, Cu, Ag, Be, F, Mo,
Pan Con, Sn, W

.Known tin occurrences or placer tin nearby

.Multiphase intrusive (3-10 km^2 common)

.Evidence for cupolas or cusps over pluton

.Deposits may be greisen veins, stockwork, or disseminations in intrusive or skarns in adjacent carbonate

.Sometimes closed gravity low over intrusives

14

Replacement/Veins of Fluorite-Beryllium

.Regional occurrence linked to Sn systems cutting carbonate sequences, may be distal edges of system.

.Stockworks or vein sets cutting marmorized limestone with fluorite, quartz, ± beryllium silicates in vein material

.Felsic dikes common

.Known occurrences or nearby Sn systems

.Geochem F, Be, (Sn, U)

15

Mafic-Ultramafic Cu-Ni-PGE (Excluding Komatiites)

.Presence of extensive plutonic ultramafic/ mafic rocks, especially troctolite

.Lack of hornblende in gabbros, except in hydrous alteration phases

.Thick layered cyclic mafic-ultramafic sequences, or plugs

.Sulfide-bearing diabase sills and chill phases

.Known Cu, Ni, or PGE phases, especially in basal zones

.Geochem Cu, Ni, Co, Au, PGE

.Contact of ultramafic plutons with silicious host rocks

.Strong magnetic anomalies

16

Mafic-Ultramafic Cr

.Abundant ultramafic rocks, layered or plug-like, especially dunite and hartzburgite with pods and veins of dunite in hartzburgite

.Cumulate and tectonized rocks in section

.Strong magnetic anomalies

.Geochem Cr, Cu, Ni, PGE

Mafic-Ultramafic Asbestos

.Presence of olivine bearing ultramafics, especially dunite

.Veins of serpentinite in serpentinized ultramafics

.Strong mag. anomalies

18

Shale Hosted and Redbed Copper

.Rift basins or shallow marine basins over rifts, often intracratonic, sometimes in tectonic belts

.Presence of (1) conglomerate-sandstone redbeds with basalt flows (2) thin bedded organic shale/limestone (host) (3) Evaporites at top of sequence

.Ore occurs in both reduced and oxidized part of section. Chalcocite, bornite, chalcopyrite, galena, sphalerite, pyrite common ore minerals. Occasionally grades laterally to zinc-rich shale over 10's of km.

.Known occurrences

.Geochem Cu, Mo, Pb, V, Zn, Ag, U

.Radiometric anomalies in shale

19

Iron Formation (BIF)

.Typically of Proterozoic age (2.2 m.y.)

.Large epicontinental basins, close to Archean cratons

.Thought to be of volcanic exhalative origin

.Banded, red silicious sediments and cherts common in sequence

.Great lateral extent

.Iron minerals variable: Fe-phyllosificates, Fe-carbonates, Fe-oxides, Fe-sulfides, and metamorphic products

.Sedimentary sequence often includes much chert and dolomite as well as volcanic derived tuffs and tuffaceous shales

.Supergene enrichment by silica removal common, either at base of weathering zone or along fractures

.Aeromag anomalies over magnetite-facies

2.0

Sedimentary Ironstone

.Evidence of shallow epicratonic landlocked basins

.Often oolitic (Clinton-type), sandy, clayey

.Abundant fossils, rip up clasts, ripple marks, crossbedding and other shallow water features

.Usually Phanerozoic age, climate controlled

.Low rate of sedimentation and availability of sediment

.Iron-oxide coated sand grains, iron oxide cement of clastic and bioclastic material common

.Thin beds of Fe-Phyllosilicate or Fe-oxide

.May overlie or be interstratified with coal seams

.Grade laterally into ferruginous sand and clay with sediments.

.Ore material 20-50 percent Fe

2/

Carbonate Hosted Zn, Pb

.Basic margin shallow water carbonates, reefs etc., as host rocks

.Deep adjacent sedimentary basins, often growth-fault controlled, often in or adjacent to stable platforms

.Stratabound galena-sphalerite-pyrite replacements and veins, Sometimes with Cu, Co, Ni, Lower to Middle Paleozoic ages productive in U.S.

.Gangue-calcite, dolomite, quartz, clays, barite, fluorite

.Numerous lateral and vertical facies changes near limestone-dolomite transition

.Solution collapse breccias or algal reefs favorable sites

.Intersection of deep seated faults with favorable carbonates

.Precambrian basement knobs and highs

.Geochem
Zn, Pb, Cu, Bu, F; generally weak anomalies

.Known occurrences

.Evidence for hydrocarbons

22

Carbonate Hosted Cu

.Similar to Carb Hosted Pb, Zn

.Shallow water carbonates, reefs, etc. adjacent to basin controlled by growth faults

.Areas of hydrothermal dolomite and breccia in carbonates

.Geochem Cu, Co, (Pb, Zn) generally weak anomalies

.Known occurrences

.Evidence for hydrocarbons

Sandstone Hosted Uranium

.Suitable U-enriched source rocks, e.g., granites, alkaline complexes, acid volcanics or tuffs

.Stable structural setting usually

.Sandstone-bearing sedimentary basins flanking host, usually continental sandstones or shoreline fluvial

.Fluvial depositional environment., braided streams, fans, lacustrine, deltaic.

.Unconformity at base of sandstone sequence, channels cut into impermeable shales

.Host - clean quartzose or arkosic sandstone interbedded with mudstone. Tuffaceous or feldspathic with plant material or pyrite Qtz-only sandstone or graywackes unfavorable

.Known deposits

.Radiometric highs in region

.Geochem U, V, Cu, Mo, Ba, As, Se

24

Igneous Associated Uranium

.Associated with S-type leucogranites, often 2-mica

.Thick sialic crust

.Granites enriched in U (8-20 ppm), often Sn and W as well. Uranium as uraninite or in zircon, monazite, apatite

.Deposits are of four types (1) primary disseminations in late stage granitic phases (2) mineralization in aplites and pegmatites (3) epigenetic veins and fracture fillings (4) Secondary hydrothermal veins and disseminations in overlying clastic rocks.

.Known occurrences or nearby Sn, W systems

.Distal areas around Sn systems

.Carboniferous to Tertiary ages productive

.Regional radiometric anomalies

.Geochem U, (Cu, As, Mo, Sn, F)

29

Lode Hg, Au

- On trend with other deposits in Nemuk and Kuskokwim Group Rocks.
- Presence of dikes of variable composition, ideally, altered diabase.
- Evidence of faulting or other structural conduits.
- Geochem Hg, Sb, As, (Cu, Pb, Zn, Ag, Au)

EVALUATION OF COAL RESOURCES ON ALASKAN MENTAL HEALTH AND DESIGNATED POOL LANDS

By

R.D. Merritt and M.A. Belowich

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EVALUATION OF COAL RESOURCES ON ALASKAN MENTAL HEALTH AND DESIGNATED POOL LANDS

INTRODUCTION

This report summarizes the coal resources on Alaskan Mental Health and Designated Pool Lands. It contains (1) a description of the criteria that were used to make the evaluations, including definitions; (2) 55 inch:mile (1:63,360) quadrangles with coal-potential scorings by class (I-V) and data quality (a-c); (3) a summary of pertinent geologic and coal resource information on each 1:63,360 quadrangle; (4) a legend explaining map symbols; and (5) a specific list of references for those 1:250,000 quadrangles with Mental Health or Designated Pool Lands holding coal potential and for which site-specific coal-resource and point-source coal data were obtained (Exhibit A).

Areas with coal-potential scorings of V (very high potential) and IV (high potential) are considerably more important than those lands classified III (moderate potential) or lower. Detailed coal-potential scorings were made only on those inch:mile quadrangles with Class II (low potential) Coal Land or above. Those inch:mile quadrangles with Mental Health or Pool Lands for which no differentiation in coal potential could be made at Class II or above should be considered to be Class I (very low potential) in their entirety. Needless to say, the majority of Alaskan Mental Health and Designated Pool Lands are Class I Coal Land.

Resource-calculations should only be considered when assigning monetary values to given parcels. Estimated ranges in coal resources were computed only on very high potential (Class V) coal lands and are listed on the inch:mile maps. They have been calculated at three levels or degrees of geologic assurance: (1) the measured-resource category has a relative high degree of geologic assurance; (2) the indicated-resource category holds a moderate degree of geologic assurance; and (3) the inferred-resource category holds a low degree of geologic assurance.

Of the original 47 1:250,000-scale quadrangles containing Mental Health or Designated Pool Lands that were evaluated, 18 quadrangles have no known coal resources. Hence, these were initially culled and automatically rated in their entirety as Class I Coal Land of very low potential. They are:

1. Afognak
2. Atlin
3. Big Delta
4. Blying Sound
5. Dillingham
6. Fort Yukon
7. Goodnews Bay
8. Hagemeister Island
9. Iliamna
10. Kantishna River
11. Ketchikan
12. Mt. Katmai
13. Seward
14. Skagway
15. Sumdum
16. Taku River
17. Taylor Mountains
18. Valdez

Although the remaining 29 quadrangles are known to contain coal resources, preliminary evaluations showed that 19 of these either had coal resources outside of Mental-Health or Designated Pool-Land areas, or had coal resources too deep to be considered even marginally economic at this time. These quadrangles are:

19. Bering Glacier
20. Bethel
21. Bristol Bay
22. Chignik
23. Circle
24. Cordova
25. Craig
26. Juneau
27. Livengood
28. Mt. Fairweather
29. Mt. Hayes
30. Mt. McKinley
31. Naknek
32. Petersburg
33. Port Alexander
34. Sitka
35. Tanacross
36. Tanana
37. Ugashik

The remaining 10 1:250,000 quadrangles contain Mental-Health and Designated Pool-Land areas that required detailed assessments of coal potential. These quadrangles are:

38. Anchorage
39. Fairbanks
40. Gulkana
41. Healy
42. Kenai
43. Port Moller
44. Seldovia
45. Talkeetna
46. Talkeetna Mountains
47. Tyonek

CRITERIA USED FOR THE EVALUATION OF COAL RESOURCES ON MENTAL HEALTH AND POOL LANDS

Part 1: Class

Class V Coal Land: very high potential..Estimated more than 90 percent chance of locating mineable coal resources. Resources of mineable coal are known or almost certain based on drilling, detailed mapping, field observations, and/or outcrop measurements. Tonnages of potentially mineable coal resources are estimated based on low, moderate, and high degrees of geologic assurance in order to bracket the possible range of resource magnitude, as follows;

- Measured resources---with a high degree of geologic assurance, the area of coal resource is within 1/4 mile of points of thickness measurement.

- Indicated resources---with a moderate degree of geologic assurance, the area of coal resource is extended 3/4 mile from points of thickness measurement.

- Inferred resources---with a low degree of geologic assurance, the area of coal resource is extended 3 miles from points of thickness measurement.

Class IV Coal Land: high potential.....Estimated 70-90 percent chance of locating mineable coal resources. Resources of mineable coal are very likely based on the conservative projection of the continuity of coal-bearing rock units from adjacent lands.

Class III Coal Land: moderate potential.Estimated 30-70 percent chance of locating mineable deposits of coal. Resources of mineable coal are likely based on the reasonable inference of the continuity of coal-bearing rock units from surrounding areas.

Class II Coal Land: low potential.....Estimated 10-30 percent chance of locating mineable coal resources. Resources of mineable coal are unlikely based on the distant extrapolation of the continuity of coal-bearing rock units from more removed areas.

Class I Coal Land: very low potential...Estimated 0-10 percent chance of locating mineable coal resources. Resources of mineable coal are known not to be present or are very unlikely based on drilling, field observations, and/or outcrop measurements. In many cases, surface formations are restricted to basement rock or other barren strata.

Part 2: Data quality modifiers

(a) Good to very good data base, including;

- detailed geologic mapping
- drilling information
- existing coal leases
- current or prior mining
- extensive coal quantity and quality data

(b) Fair data base, including;

- regional geologic mapping
- some exploration and coal prospects
- filed coal-prospecting permits
- some field data and measurements
- some coal quantity and quality data

(c) Poor to very poor data base, including;

- little to no geologic mapping
- almost no exploration for coal
- no filed coal prospecting permits
- very little field data and measurements
- very little coal quantity and quality data

COAL-POTENTIAL CLASSIFICATIONS BY QUADRANGLE

Anchorage Quadrangle

Mental Health and Designated Pool Lands are widespread in the Matanuska Valley and the Knik Arm area north of Anchorage. Small resources of potentially mineable coal are found in the Little Susitna field near Houston. The coal resources of the west-central Anchorage quadrangle, as presently known, are generally too deep to be considered economic at this time.

Mental Health and Designated Pool Lands overlap parts of all the coal fields of the Matanuska Valley with the exception of the Anthracite Ridge field. The fields substantially affected are Wishbone Hill, Young Creek, Castle Mountain, and Chickaloon. The coals here are bituminous in rank and occur in the Paleocene Chickaloon Formation. The mineable coals of this unit are found in the upper 1,400 ft and range generally from 3- to 8-ft thick. Coals in the Premier group of the Wishbone Hill field locally attain thicknesses of 20 ft or more.

Anchorage B-8 Quadrangle

Mental-Health and Designated Pool-Land areas are located to the west of Knik Arm. Oil-well logs show aggregate coal thicknesses up to 73 ft in the top 2,000 ft of strata. The subbituminous coals occur in the Tertiary Kenai Group, and have been generally classified as moderate potential (III) because the resources are believed to be too deep for economically-viable surface mining.

Anchorage C-4 Quadrangle

Minor coal-bearing Chickaloon Formation rocks are known to occur in the valleys of lower Carbon and Coal Creeks. One parcel on lower Carbon Creek is Mental-Health Land. At best, this area can be considered to have moderate potential (III).

Anchorage C-5 Quadrangle

Mental Health and Designated Pool Lands are found in the northwest portion of this 1:63,360 quadrangle. A parcel in the extreme northwest corner, which is a minor extension of coal resources in the Knob Hill area, has been classified as very high potential (V) coal land. Drilling by industry in the Knob Creek area has proven several million tons of potentially mineable coal resources. A 1.5 mi wide by 3.0 mi long belt in the Little Granite Creek area has been classified as high potential (IV). Prevalent outcrops of the

Chickaloon Formation here show generally thin high-volatile bituminous coal seams.

Anchorage C-6 Quadrangle

Mental Health and Designated Pool Lands are found in the northern part of this quadrangle, which contains the bulk of the known coal resources of the Wishbone Hill district of the Matanuska coal field. Abundant drilling in the area by industry shows coal aggregate thicknesses to nearly 100 ft in beds up to 20-ft thick. Surface-mineable resources are mainly limited to coals in the Moose Creek and Eska areas, but the high-volatile bituminous coals of the district may be mined by underground methods in other areas.

Anchorage C-7 Quadrangle

This inch:mile quadrangle contains scattered parcels of Mental Health Lands. Designated Pool Lands are found in the southeast and northeast portions of the quadrangle. A 1-2 mi wide belt of coal-bearing rocks stretches through the middle reaches of the quadrangle north of the Little Susitna River. This belt is an eastward extension of the Little Susitna Field. The subbituminous coal beds are generally thin and probably cannot be economically surface-mined. Two oil-well drilling logs in the quadrangle show aggregate coal thicknesses of 31 ft and 87 ft respectively in the upper 2000 ft of strata.

Anchorage C-8 Quadrangle

This quadrangle includes scattered parcels of Mental-Health and Designated Pool Lands. It contains the coals of the Little Susitna field in the Houston area (Class IV Coal Land), which have been profitably mined in the past. Subbituminous coals to 6-ft thick have been observed in outcrop, and beds to 10-ft thick are known from drilling data to occur in the upper 2,000 ft of strata.

Anchorage D-2 Quadrangle

Pool lands cover the northern part of this quadrangle. Isolated coal-bearing rocks have been found in the Billy Creek area in the northwestern part of the quadrangle. However, this area has been classified as low potential (II) coal land.

Anchorage D-3 Quadrangle

Contains Pool Lands in the northern part of the quadrangle. Minor coal-bearing rocks occur in the Caribou Creek-Billy Creek area in the northeast part of the quadrangle. Coals of the Anthracite Ridge field in the southern part of the quadrangle are not included in the Designated Pool-Land areas.

Anchorage D-4 Quadrangle

This quadrangle contains Mental Health Lands in the southwestern portion and Designated Pool Lands covering large areas. It includes the Chickaloon coal field, the extreme eastern part of the Castle Mountain field, and the west end of the Anthracite Ridge field. Because the mineability of the coals in these fields has not been firmly established, they are classed as high potential (IV) rather than very high potential (V) coal lands. Coals of the Chickaloon field generally average less than 5-ft thick but range up to 16-ft thick. They are generally of medium- to low-volatile bituminous rank. Drilling data show coals to 5-ft thick in the Coal Creek area and aggregate coal thicknesses to over 40-ft in 800-ft of strata.

Anchorage D-5 Quadrangle

Mental Health and Pool Lands occur over the southern two-thirds of this quadrangle. Coal fields included are Castle Mountain, Young Creek, and the Knob Hill area of Wishbone Hill. The medium- to low-volatile bituminous coals of the Castle Mountain field average less than 5-ft thick but range up to 9-ft thick. These coals have been profitably mined in the past. High-volatile bituminous coals of the Young Creek field in outcrop are generally thin (less than 3-ft), but a bed up to 30-ft thick has been discovered near Red Mountain. The Castle Mountain and Young Creek fields have been classified as high potential (IV) coal lands. Several millions of tons of potentially surface-mineable coals are known to occur in the Knob Hill area at the eastern end of the Wishbone Hill district. This area has been classified as very high potential (V) coal land.

Anchorage D-6 Quadrangle

This quadrangle contains Mental-Health and Designated Pool-Land areas in its southern part. It encompasses a northeastern section of the Wishbone Hill district, including coal-bearing rocks of the Chickaloon Formation near the upper reaches of Eska and Knob Creeks. The high-volatile bituminous coals in this area have been classified as very high potential (V) coal lands.

Fairbanks Quadrangle

Mental Health Lands compose three townships in south-central Fairbanks Quadrangle---T. 9 S., R. 5 W; T. 9 S., R. 6 W; and T. 10 S., R. 6 W. Portions of two coal fields of the Nenana basin are affected; these are Rex Creek field and the northern part of Hosanna Creek field. Coals here are subbituminous C and Miocene in age. They occur in the Suntrana and Lignite Creek Formations of the Usibelli Group. In this area, the Suntrana Formation varies from 750-ft to 1,065-ft thick and the Lignite Creek Formation varies from 515-ft to 945-ft thick. Coals of the Suntrana Formation range to 38-ft thick in drill holes and to 31-ft thick in outcrop section. Coals are thinner but more numerous in the Lignite Creek Formation; here, they are generally 3- to 5-ft thick but range up to 8-ft thick.

Fairbanks A-3 Quadrangle

Mental Health Land includes the eastern part of T. 9 S., R. 5 W. This area contains the eastern extremity of Rex Creek field along Buzzard Creek, and has been classified in part as high potential (IV) coal land. Coals of the Lignite Creek Formation here are thin and subbituminous.

Fairbanks A-4 Quadrangle

Mental Health Lands are located in T. 10 S., R. 6 W; T. 9 S., R. 6 W.; and the western part of T. 9 S., R. 5 W., T. 10 S., R. 6 W. has abundant outcrop and drilling point-source data. This quadrangle contains the bulk of the coal resources in Fairbanks quadrangle. These resources are found mainly in the vicinity of lower Marguerite, Emma, Bonanza, and McAdam Creeks. Coals range to 38-ft thick; the thickest beds are seams No. 1, No. 2, and No. 6. Dips of strata are slight, averaging 6°.

Gulkana Quadrangle

Designated Pool Lands cover the western portions of A-6, B-6, and C-6 quadrangles. Continental sedimentary rocks of the Copper River field have been found in drill logs and outcrops locally in the southwestern portion of Gulkana quadrangle. Several hundred feet of coal-bearing rocks include sandstones, conglomerates, siltstones, claystones, and beds of lignitic coal locally. A 930-ft drill hole near Lake Louise Road shows over 100-ft of coal-bearing rock beginning some 100-ft below the surface. This coal-bearing zone thickens to the north to more than 2,000-ft thick and has been included in the Eocene (?) Gakona Formation.

Gulkana A-6 Quadrangle

Coal-bearing rocks crop out in the vicinity of Slide Mountain, but elsewhere lie beneath Quaternary deposits. Lignitic coals to 20-ft thick have been reported from drill logs in the vicinity of Old Man Lake.

Gulkana B-6, C-6 Quadrangles

Designated pool lands in the western parts of these quadrangles do not contain coal-bearing rocks in outcrop, but it is expected that they lie beneath prevalent Quaternary deposits of this region.

Healy Quadrangle

Mental Health Lands include three townships mostly in the Healy D-4 Quadrangle (T. 11 S., R. 7 W.; T. 12 S., R. 7 W.; and T. 12 S., R. 6 W.), but are also found in Healy D-5 Quadrangle. Potentially mineable coals occur exclusively though in Healy D-4 Quadrangle and are found in the Healy Creek field and the western end of Hosanna Creek field. Dips of coal beds are generally steeper in Healy Creek field (averaging 30°) than in the Hosanna Creek field (averaging 15°). The coals are generally subbituminous C and are contained in the Healy Creek, Suntrana, and Lignite Creek Formations (Oligocene-Miocene age) of the Usibelli Group. Healy Creek Formation coals

are thick (to 65-ft, generally 10-30 ft) and lenticular, Suntrana Formation coals are thick (to 60-ft) and relatively continuous, and Lignite Creek Formation coals are thin (less 11-ft) and discontinuous. Seams No. 1, No. 2, and No. 6 of the Suntrana Formation are the thickest individual beds.

Healy D-4 Quadrangle

Mental Health Lands include the western end of the Hosanna Creek field and the Healy Creek field. The western Hosanna Creek field is the site of the Usibelli Coal Mine. Healy Creek is the site of significant past mining activity. Because of past, present, and potential future mining the Hosanna Creek field and Healy Creek field should clearly be classified as very high potential (V) coal land.

Healy D-5 Quadrangle

Includes a small strip of Mental Health Land along the eastern border of the quadrangle. This area is generally not thought to contain significant potentially mineable coal.

Kenai Quadrangle

Mental Health Lands in this quadrangle encompass areas along the Kenai River and in isolated townships on the Kenai Peninsula. The former areas are classified in their entirety as very low potential (I). Pool lands of this quadrangle encompass extreme southern extensions of the rocks of the Beluga coal field (on the western shore of Cook Inlet); portions of the Kenai field south of Cape Kasilof (eastern shore of Cook Inlet); and Kalgin Island in Cook Inlet. The southern Beluga area coals are evidently of the Miocene Tyonek Formation. The lignitic to subbituminous C coals that crop out on beaches south of Cape Kasilof on the Kenai Peninsula belong to the Pliocene Sterling Formation.

Kenai A-4 Quadrangle

Includes parcels of Designated Pool Lands along Cook Inlet coastal areas in the northwest part of the quadrangle. Outcrop coals of the Sterling Formation range in thickness to 5-ft and are lignitic to subbituminous C rank. A drill hole north of Falls Creek penetrates 17 ft of coal in 2,000 ft of strata. This area can be classified at best as moderate potential (III).

Kenai A-5 Quadrangle

Includes Mental Health Land in one section in the vicinity of Ninilchik and Designated Pool Lands along the Cook Inlet coast. Drilling by industry has shown coal beds to 15-ft thick on lower Deep Creek. Outcrop data show coals to 5-ft thick in coastal areas just north of Ninilchik. These parcels have been classified as moderate potential (III) coal land.

Kenai B-4 Quadrangle

Includes parcels of Mental Health and Pool Lands along the coast south of Cape Kasilof. One drill hole shows an aggregate coal thickness of 9 ft in 2000 ft. This land has generally been classified as low potential (II).

Kenai B-6 Quadrangle

Includes a parcel of Designated Pool Land on southern Kalgin Island in Cook Inlet. One oil-well log shows an aggregate 55 ft of coal in 2,000 ft of strata. This area has been classified as moderate potential (III) coal land.

Kenai D-5 Quadrangle

Designated Pool Lands encompass the northwestern portion of the quadrangle in the vicinity of the McArthur River delta. Oil-well logs along the coast show aggregate coal thicknesses ranging to 53 ft in 2,000 ft of strata. This coal-bearing zone is evidently in the Tyonek Formation and appears to be extreme southern extensions of the rocks of the Beluga coal field. This area has been classified as moderate potential (III) coal land.

Kenai D-6 Quadrangle

Pool Lands encompass the northeastern portion of this quadrangle. One drill hole shows an aggregate coal thickness of 15 ft in 2000 ft of strata. At best, this area can be rated as moderate potential (III) coal land.

Port Moller Quadrangle

Pool Lands encompass the coastal region north of Coal Valley from Mud Bay to Point Divide, and include the Moller Spit and areas northwest of Herendeen Bay. The Herendeen Bay coal field is located in this quadrangle.

The affected coals on Pool Lands are part of the Cretaceous age Coal Valley Member of the Chignik Formation. They are high-volatile bituminous in rank. The coals range to 8-ft thick but generally average 2- to 4-ft thick.

Port Moller D-2 Quadrangle

Pool Lands cover coastal regions in the vicinity of Mud Bay and Moller Spit. The high potential (Class IV) coals of upper Coal Valley are not within Designated Pool-Land areas. However, outcrops of thin coals occur along the coast west of the hot spring; this area is classified as moderate potential (III).

Port Moller D-3 Quadrangle

Includes Designated Pool-Land areas near Point Divide and northwestern Herendeen Bay that are classified as moderate (III) or low (II) potential. High-potential (IV) coal lands in the vicinities of Coal Point, Coal Bluff, and Mine Harbor are not contained in Pool-Land areas.

Seldovia Quadrangle

Designated Pool Lands encompass most coastal areas of the Kenai Peninsula south of Anchor Point and southwest of Fox Creek Canyon including the Homer area. Isolated parcels of Mental Health Lands are found in the hills north of Homer and on the Homer Spit.

All the coals of this quadrangle are included in the Kenai coal field and are Miocene to Pliocene in age. They include the Sterling Formation north of Anchor Point and east of McNeil Canyon and also in the upper reaches of Homer Escarpment. Coals south of Anchor Point and west of McNeil Canyon are in the Beluga Formation. The coals range to 7-ft thick but generally average 2- to 4-ft thick.

Seldovia C-4 Quadrangle

This quadrangle contains pool lands along the coast from Homer to Cottonwood Creek and includes most of the Homer Escarpment. A small parcel of Mental Health Land occupies the southern part of Homer Spit.

Subbituminous coals of the Beluga Formation to 5-ft thick occur southwest of McNeil Canyon and subbituminous coals of the Sterling Formation occur northeast of the canyon. The area includes the potentially mineable B-D beds and the Bradley Seam. In the vicinity of McNeil Canyon, total aggregate coal thickness ranges to about 18 ft in 360 ft of strata.

Seldovia C-5 Quadrangle

Includes Designated Pool Lands along the Cook Inlet coast, Anchor River, and inland approximately 4 miles, and two sections of Mental Health Lands. Beluga Formation subbituminous C coals range to 7-ft thick. The Cooper Bed near Homer has been mined extensively in the past. Coastal regions with abundant outcrop data have been classified as high potential (IV) coal lands.

Seldovia D-3 Quadrangle

Contains Designated Pool Lands at the head of Kachemak Bay in the vicinity of Fox Creek Canyon. The coals are within the Sterling Formation, are subbituminous to lignitic, and range up to 5-ft thick. A 3-4 mile wide strip of land north of Kachemak Bay and along the lower reaches of Fox River has been classified as high potential (IV) coal land. Extensions of this area to the northeast along upper Fox River are classified as moderate potential (III) coal land.

Seldovia D-4 Quadrangle

Includes Designated Pool-Land areas in the southern part of the quadrangle along the coast of Kachemak Bay. Subbituminous C coals of the Sterling Formation here range to 6-ft thick. Areas along Eastland and Falls Creeks have been classified as high potential (IV) coal land. To the west in the vicinity of Bald Mountain, it has been classified as low potential (II) coal land.

Seldovia D-5 Quadrangle

Designated Pool Lands include two parcels along the Cook Inlet coast. The northern region has outcropping coals in the vicinity of Happy Creek; the southern region includes areas along the lower Anchor River. In both instances, they have been classified as moderate potential (III) coal land.

Talkeetna Quadrangle

This quadrangle contains the northern portion of the Yentna coal field. Coals belong to the Miocene Tyonek Formation and the Pliocene Sterling Formation. Most of the coal resources of the quadrangle are located near the Peter Hills and Fairview Mountain and do not occur on Mental-Health or Designated Pool-Land areas. Parcels of Mental-Health Lands occur around Talkeetna and Pool Lands along the lower Chulitna River.

Talkeetna B-1 Quadrangle

Minor areas of Tertiary Tyonek and Sterling Formations occur within this quadrangle but none in the Mental-Health parcels located near Talkeetna. These areas are considered to have low (II) to very low (I) coal potential.

Talkeetna C-1 Quadrangle

Designated Pool Lands encompass about two-thirds of this quadrangle. An outcrop of Tertiary Kenai Group (undivided) strata occurs near Troublesome Creek. This specific area is classified as moderate potential (III) coal land and the remainder of the region as low potential (II) coal land.

Talkeetna C-2 Quadrangle

Includes a large parcel of Designated Pool Lands in the central portion of the quadrangle along the lower Tokositna River. Two small areas of moderate potential (III) coal lands have been defined by the outcrop extent of Tertiary Kenai Group coal-bearing rocks north of the Peter Hills. Coal beds in the area are generally thin (less 4-ft) and discontinuous.

Talkeetna D-1 Quadrangle

Designated Pool Lands encompass the eastern and southeastern part of the quadrangle. No Tertiary coal-bearing rocks crop out in this region. Hence, this area has been classified as low potential (II) coal land.

Talkeetna Mountains Quadrangle

Designated Pool Lands cover extensive portions of this quadrangle in two separate areas---the upper Chulitna River south of Broad Pass and most of the central and eastern parts of the quadrangle. No Tertiary coal-bearing rocks crop out in the upper Chulitna River area. In the Talkeetna Mountains quadrangle, the main areas of coal-bearing rocks occur in the vicinity of Watana Creek in the northern part, in the southeastern portion north of Little Nelchina River, and in the southwestern part near Montana Creek. In the

Watana Creek area, there are numerous lignitic coal beds to 2-ft thick. Coals in the Nelchina area are considered to be a part of the Copper River field. Coals to 5-ft thick occur on upper Montana Creek in the southwestern part of the quadrangle.

Talkeetna Mountains A-1, A-2, B-1, and B-2 Quadrangles

Pool Lands cover the entire quadrangle. Tertiary coal-bearing rocks crop out in scattered areas along Tyone, Red, Yacko, and Billy Creeks and include thin beds of lignite. These areas have been classified as low (II) to moderate (III) potential.

Talkeetna Mountains C-6 Quadrangle

Pool Lands encompass the northwest portion of the quadrangle. No coal-bearing rocks crop out in the region and it has been classified as low potential (II).

Talkeetna Mountains D-3 Quadrangle

Pool Lands encompass the southern half of the quadrangle. Lignite beds of the Watana district range to 2-ft thick in a 500-ft section of coal-bearing strata. A large area along lower Watana Creek has been classified as moderate potential (III) coal land.

Talkeetna Mountains D-6 Quadrangle

Pool Lands encompass most of the quadrangle but no coal-bearing rocks crop out in the region. It has been classified as low potential (II).

Tyonek Quadrangle

Mental Health and Pool Lands encompass the extreme eastern side of the quadrangle and most of its southern half. These lands contain major resources of mineable subbituminous coal mostly in the Beluga coal field. Other coal resources lie at depth in the lower Susitna basin, an area classically referred to as the Susitna field.

Coals of the Beluga field are thick (to over 50-ft thick) and of subbituminous C rank. They occur in the Miocene Tyonek Formation.

Tyonek A-1 Quadrangle

Includes a large area of Pool Lands mostly offshore in the Turnagain Arm region. One drill log shows 12 ft of coal in 2,000 ft of strata. Land areas in this quadrangle are classed as moderate potential (III). Any offshore coal resources must clearly be considered as very low potential (I) at this time.

Tyonek A-2 Quadrangle

Includes the extreme southern reaches of the Susitna Flats. Pool Lands extend offshore into the bay of Cook Inlet. At best, the landward portions of this quadrangle can be classified as moderate potential (III).

Tyonek A-3 Quadrangle

Mental-Health and Pool Lands encompass the lower Beluga River region. One oil-well log immediately west of the quadrangle boundary shows 80-ft of coal in the upper 1,000-ft of strata. Significant coal resources are believed to occur in the lower Beluga River region. Hence, a large portion of this area at the west side of the quadrangle has been classified as very high potential (V) coal land.

Tyonek A-4 Quadrangle

Mental-Health Land encompasses the northern two-thirds of the onshore portion of this quadrangle. They include a large part of the coal resources in the lower Chuitna River and Beluga River areas. Exploration by industry since the late 1960s has proven major resources of potentially mineable subbituminous coal in the Beluga coal field. For this reason, all of this region has to be classified as very high potential (V) coal land.

Tyonek A-5 Quadrangle

Mental Health Lands of this quadrangle include major resources of subbituminous coal in the upper Chuitna River region south of Castle Mountain fault. Coal development has been planned here by industry for many years. Hence, it has been classified as very high potential (V) coal land. Areas to the south that are more poorly known are classified as high potential (IV) coal land.

Tyonek A-6 Quadrangle

Designated Pool Lands occupy a large parcel in the southeast quadrant of this quadrangle along lower McArthur River. A small part of this is classified as high potential (IV) coal land, but the majority is classified as moderate potential (III) coal land.

Tyonek B-1 Quadrangle

Mental Health Lands cover most of the eastern half of the quadrangle while Pool Lands cover most of the western half of the quadrangle. All of this area is classified as moderate potential (III) coal land.

Tyonek B-2 Quadrangle

Designated Pool Lands cover the northern third of this quadrangle encompassing a large area of the lower Susitna River delta. This area is classified as moderate potential (III) coal land.

Tyonek B-3 Quadrangle

Designated Pool Lands encompass most of the southeastern half of this quadrangle. It contains a part of the Beluga field that has been classified as very high potential (V) coal land. A large area east of this and along the lower Theodore River has been classified as high potential (IV) coal land.

Tyonek B-4 Quadrangle

Mental Health Lands encompass only the southwestern part and extreme southern margin of the quadrangle. The latter area includes a strip of very high potential (V) coal land at the southeastern edge of the quadrangle.

Tyonek B-5 Quadrangle

Mental Health Land encompasses the southeastern portion of this quadrangle including a small area of very high potential (V) coal land and an area of high potential (IV) coal land. Other portions of the quadrangle contain major coal resources that are not within Mental Health Lands.

Tyonek C-1 Quadrangle

Mental Health and Designated Pool Lands occur in the eastern portion of the quadrangle east of the Susitna River. Drilling data shows an aggregate 72 ft of coal in 2,000 ft of strata at one location. All of this region is classified as moderate potential (III) coal land.

Tyonek D-1 Quadrangle

Mental Health Lands include parcels in the eastern half of the quadrangle east of the Susitna River. The river includes no coal-bearing outcrops but it has been classified as moderate potential (III) coal land because it lies in a known coal-bearing province.

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DEFINITIONS

Deposit...Naturally occurring concentration of coal in the earth's crust such that economic extraction is currently or potentially feasible; a coal resource.

Depth limits...Only coals within the 500-ft overburden limit are considered in the high-assurance category; coals to 1,000-ft overburden limit are considered in the moderate-assurance category; and coals to the 2,000-ft overburden limit are considered in the low-assurance category.

Estimate...A determination as to the amount or tonnage of coal in an area.

Geologic assurance...State or degree of confidence or certainty of the existence of the estimated quantity of resources based on: 1) distance from points of observation and measurement; 2) abundance and quality of geologic data; and 3) correlations of coal-bearing units and coal beds.

Inferred...A low degree of geologic assurance.

Indicated...A moderate degree of geologic assurance.

Measured...A high degree of geologic assurance.

Mineable...A coal deposit or resource of sufficient quality, thickness, and continuity to be economically developed at the current time; developable.

Overburden...All rock including coal and/or unconsolidated material overlying a specified coal bed.

Point of measurement...The exact location of an outcrop, trench, adit, or drill hole where a coal bed has been measured for thickness.

Point-source data...Site-specific coal data as shown on maps for drill holes and outcrop measurements.

Quality...An informal classification of coal relating to its suitability for use for a particular purpose.

Quantity...The amount or tonnage of coal.

Rank...The classification of coals according to their degree of metamorphism, progressive alteration, or coalification (maturation) in the natural series including lignite, subbituminous coal, bituminous coal, and anthracite.

Square mile...640 acres.

Thickness limits...For bituminous coals and anthracites, those beds over 1-ft thick are considered potentially mineable; for subbituminous coals and lignites, beds over 2.5-ft thick are considered potentially mineable.

Tonnage factor...Approximate weights of unbroken coal in the ground, as follows: anthracite = 2,000 tons/acre-ft; bituminous coal = 1,800 tons/acre-ft; subbituminous coal = 1,770 tons/acre-ft; and lignite = 1,750 tons/acre-ft.

Tonnage formula...An arithmetic calculation including the following factors and product:

Area underlain by coal	X	Acre:mi^2 conversion factor	X	Tonnage factor	X	Total aggregate thickness	=
mi^2	X	640 acres/mi^2	X	1,770 tons/acre-ft	X	25 ft	=

estimated tonnage

Tons...All estimates are in short tons; a short ton is equal to 0.907 metric ton.

SURVEY OF SAND AND GRAVEL POTENTIAL OF LEGISLATIVELY DESIGNATED REPLACEMENT POOL LANDS IN ALASKA

BY

R.D. Reger

Chapter 3

Survey of the sand-and-gravel potential of Legislatively Designated Replacement Pool Lands in Alaska

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Chapter 3

Sand-and-gravel potential

Introduction

Following an initial evaluation of the sand-and-gravel potential of about 1.0 million acres of Mental Health Grant (Trust) Lands in Alaska (Reger, 1987) and receipt in Fairbanks of an initial set of topographic maps (1:63,360 scale) showing boundaries of 61 parcels (table 3-1), a survey of the sand-and-gravel potential of about 8.6 million acres of Legislatively Designated (Replacement) Pool Lands was initiated. This evaluation was conducted by one senior DGGS geologist, who has extensive experience mapping surficial geology in Alaska. The purpose of this chapter is to summarize the results of his evaluation.

Rationale and Methodology

The aggregate survey is based on landforms. Field and laboratory studies of Alaskan landforms and their materials demonstrate that each landform has a definite composition or range of composition wherever that feature occurs (Kreig and Reger, 1976, 1982). By identifying the landforms in each parcel, a reliable estimation can be made of the chances of locating high-quality sand-and-gravel deposits in the parcel.

For this study, five classes of aggregate lands are identified; they range from lands with very high potential for sand and gravel (high-quality deposits are known or almost certain) to lands with very low potential (high-quality deposits are known to be absent or very unlikely)(table 3-2). For each class, an estimate is made of the rater's confidence that high-quality sand and gravel will be found in the parcel (based on the type of landforms present and the percentage of the parcel they occupy), criteria are established for each aggregate-land class, and dominant landforms that typify that aggregate-land class are identified.

For each parcel, the rater first identified dominant landforms, assigned a value for aggregate potential (on a scale of I through V), and then subjectively assigned a value for the quality of the data upon which the aggregate potential is based. Five data-quality classes (ranging from very good to very poor) were developed for this study based on the reliability of available geologic information (table 3-3). Obviously, estimates of aggregate potential based on high-quality information are much more reliable than estimates based on low-quality information.

In actual practice, because of the large area involved in this evaluation, a three-stage screening process was initiated. The initial step involved screening available 1:63,360- or larger scale geologic maps; data on these maps are judged to be good to very good in quality and class I through V aggregate lands can readily be identified on them. The second stage involved screening 1:125,000- and 1:250,000-scale geologic maps, which provide fair to poor data because surficial-geologic units are typically composed of more than one landform; only obvious class I through V aggregate lands could be reliably identified on these maps and extensive supplemental map interpretation was necessary. The final stage involved rapid screening of 1:63,360-scale topographic maps in areas where geologic data are lacking. Only obvious landforms, such as glacier-scoured bedrock, braided floodplains, and large

alluvial fans, could be reliably identified by this method; data quality is judged to be very poor compared to areas where field work and photointerpretation verify a wide variety of landforms. The short duration of this project prevented interpretation of aerial photographs, which could provide good to excellent data but is a very time-consuming process.

Data Presentation

A total of 8,615,818 acres, representing 61 parcels designated for specific purposes by the State of Alaska Legislature, were evaluated for the likelihood that they contain high-quality deposits of sand and gravel (table 3-1). On each of the 227 accompanying 1:63,360-scale topographic maps, areas of uniform aggregate potential and data quality are outlined and values for each area are given by a composite symbol within a circle. In each symbol, the aggregate potential is expressed as a Roman numeral in the numerator and the data-quality value is expressed as an Arabic number in the denominator. Although aggregate rating never changes in a given parcel across a quadrangle boundary, the data-quality value in a given parcel frequently changes across a quadrangle boundary because different sources of information are available for different quadrangles. A total of 79 published technical reports were consulted during this study; authors and year of publication of source documents are given on each map in the lower right margin. Numerous unpublished sources of information supplemented published data.

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DLWM Parcel Number	Size (acres x 10^3)	Legislatively Designated Area	Topographic Quadrangle(s)
01	8.3	Mendenhall Wetlands State Game Refuge	Juneau B-2
02	300.8	Susitna Flats State Game Refuge	Tyonek A-1, A-2, A-3, B-1, B-2, B-3
03	161.0	Trading Bay State Game Refuge	Kenai D-4, D-5, D-6; Tyonek A-4, A-5, A-6
04	1.7	Creamer's Field Migratory Waterfowl Refuge	Fairbanks D-2
05	10.9	Goose Bay State Game Refuge	Anchorage B-8; Tyonek B-1
06	39.4	Potter Point State Game Refuge	Anchorage A-8; Tyonek A-1
07	4.8	Chilkat River State Habitat Area	Skagway B-3
08	1,786.0	Tanana Valley State Forest	Big Delta A-1, A-2, A-3, A-4, A-5, B-3, B-4, B-5, B-6, C-4, C-5, C-6, D-6; Circle A-6; Fairbanks B-1, C-1, C-3, C-4, C-5, C-6, D-1, D-3, D-4, D-5, D-6; Kantishna River C-1, D-1; Livengood A-1, A-2, A-3, A-4, A-5, A-6, B-3, B-4; Mt. Hayes C-1, C-2, D-1, D-2, D-3; Tanacross A-5, B-3, B-4, B-5, B-6, C-4, C-5, C-6, D-6; Tanana A-1
09	247.0	Haines State Forest Resource Management Area	Atlin A-8, B-8; Skagway A-1, A-2, A-3, B-1, B-2, B-3, B-4, C-3, C-4

Table 3-1. Parcel identifier numbers, sizes, and topographic base maps for 61 parcels of legislatively designated replacement pool lands evaluated for sand-and-gravel potential.

DLWM Parcel Number	Size (acres x 10^3)	Legislatively Designated Area	Topographic Quadrangle(s)
10	6.0	Chilkat State Park	Skagway A-1, A-2
11	495.0	Chugach State Park	Anchorage A-5, A-6, A-7, A-8, B-5, B-6, B-7, C-6; Seward D-6, D-7, D-8
12	120.0	Kachemak Bay State Park	Seldovia B-3, B-4, C-3, C-4
13	208.3	Kachemak Bay State Wilderness Park	Seldovia A-3, A-4, B-3, B-4
14	421.1	Denali State Park	Talkeetna C-1, C-2, D-1; Talkeetna Mts. C-6, D-6
16	14.4	Bettles Bay State Marine Park	Seward D-4
17		Sawmill Bay State Marine Park	Valdez A-8
18		Shoup Bay State Marine Park	Valdez A-7, A-8
19		South Esther Island State Marine Park	Seward D-3
20		Surprise Cove State Marine Park	Seward C-4, D-4
21		Ziegler Cove State Marine Park	Seward D-4
22		Horseshoe Bay State Marine Park	Seward A-3
23		Oliver Inlet State Marine Park	Juneau A-1
24		Chilkat Islands State Marine Park	Skagway A-1
25		Sullivan Island State Marine Park	Juneau D-4
26		Shelter Island State Marine Park	Juneau B-3
27		Saint James Bay State Marine Park	Juneau C-4

Table 3-1 (continued)

DLWM Parcel Number	Size (acres x 10^3)	Legislatively Designated Area	Topographic Quadrangle(s)
28		Taku Harbor State Marine Park	Juneau A-1
29		Funter Bay State Marine Park	Juneau A-3, B-3
30		Joe Mace Island State Marine Park	Petersburg B-5
31		Thoms Place State Marine Park	Petersburg A-1
32		Beecher Pass State Marine Park	Petersburg C-3, C-4
33		Dall Bay State Marine Park	Ketchikan A-4
34		Security Bay State Marine Park	Port Alexander D-1, D-2
35	22.7	Nancy Lake State Recreation Area	Tyonek C-1
36	254.1	Chena River State Recreation Area	Big Delta C-5, C-6, D-5, D-6; Circle A-5, A-6
37	2.7	Kenai River Special Management Area	Kenai B-1, B-2, B-3, C-2, C-3, C-4; Seward B-7, B-8
38	49.0	Alaska Chilkat Bald Eagle Preserve	Skagway B-2, B-3, C-3
39	132.5	Matanuska Valley Moose Range	Anchorage C-5, C-6, D-4, D-5, D-6
40	1,350.0	Nelchina Public Use Area	Anchorage D-1, D-2, D-3, D-4; Gulkana A-6, B-6, C-6; Talkeetna Mts A-1, A-2, A-3, A-4, B-1, B-2, B-3, B-4, C-1, C-2, C-3, C-4, D-2, D-3, D-4; Valdez D-8
41	5.1	Hatcher Pass Public Use Area	Anchorage C-6, D-6
42	9.7	Walrus Islands State Game Sanctuary	Hagemeister Island C-1, C-2, D-1, D-2

Table 3-1 (continued)

DLWM Parcel Number	Size (acres x 10^3)	Legislatively Designated Area	Topographic Quadrangle(s)
43	83.8	McNeil River State Game Sanctuary	Iliamna A-4, A-5; Mt Katmai D-2, D-3
44	26.0	Palmer Hay Flats State Game Refuge	Anchorage B-6, B-7, C-6, C-7
45	14.0	Cape Newenham State Game Refuge	Hagemeister Island C-6, D-5, D-6
46	181.4	Izembek (Lagoon) State Game Refuge	Cold Bay B-3, B-4*
47	127.0	Port Moller Critical Habitat Area	Port Moller D-1, D-2, D-3, D-4, D-5
48	72.0	Port Heiden Critical Habitat Area	Chignik D-2, D-3, D-4
49	26.0	Cinder River Critical Habitat Area	Bristol Bay B-1
50	8.0	Egegik Critical Habitat Area	Naknek A-5
51	46.0	Pilot Point Critical Habitat Area	Ugashik B-5, B-6, C-5, C-6
52	3.5	Kalgin Island Critical Habitat Area	Kenai B-6
53	7.1	Fox River Flats Critical Habitat Area	Seldovia D-3
54	222.0	Kachemak Bay Critical Habitat Area	Seldovia B-4, B-5, B-6, C-3, C-4, C-5, D-3, D-4, D-5
55	2.5	Clam Gulch Critical Habitat Area	Kenai A-4, A-5, B-4; Seldovia D-5
56	597.0	Copper River Delta Critical Habitat Area	Cordova A-2, B-2, B-3, B-4, B-5, B-6, C-2, C-3, C-5**
57	19.0	Anchor River and Fritz Creek Critical Habitat Area	Seldovia C-4, C-5, D-4, D-5

* Cold Bay A-3 and B-2 Quadrangle base maps have not been prepared by the USGS.

** Cordova A-3 and A-4 Quadrangle base maps have not been prepared by the USGS.

Table -1 (continued)

DLWM Parcel Number	Size (acres x 10^3)	Legislatively Designated Area	Topographic Quadrangle(s)
58	1,428.3	Wood-Tikchik State Park	Bethel A-1, B-1, C-1; Dillingham B-7, B-8, C-7, C-8, D-6, D-7, D-8; Goodnews Bay B-1, C-1, D-1; Taylor Mts A-6, A-7, A-8, B-6, B-7, B-8, C-8
59	11.0	Shuyak Island State Park	Afognak C-1/C-2, C-2/C-3
60	3.6	Captain Cook State Recreation Area	Kenai D-3
61	6.0	Caines Head State Recreation Area	Blying Sound D-7; Seward A-7
62	72.2	Delta Junction Bison Range Area	Mt Hayes C-2, C-3, D-2, D-3, D-4

Table 3-1 (continued)

Aggregate and Class	Potential	Estimated chance of locating high-quality sand-and-gravel deposits*	Criteria	Dominant Landforms
V	Very High (5)	Greater than 90 percent	1. High-quality deposits are known based on field observations, laboratory tests, or both. 2. High-quality deposits are almost certain based on the widespread presence of diagnostically favorable landforms identified on aerial photographs.	1. Active floodplain of braided stream 2. Abandoned floodplain of braided stream 3. Inactive floodplain of braide stream 4. Outwash plain or fan or valle train 5. Tailings mound or ridge 6. Beach, spit, or marine bar 7. Stream terrace
IV	High (4)	70 to 90 percent	1. Significant high-quality deposits are not known in the area. 2. High-quality deposits are very likely based on very favorable landforms identified on aerial photographs, but field observations or laboratory tests have not been accomplished.	1. Active floodplains of meander and transitional streams 2. Abandoned floodplains of mean and transitional streams 3. Inactive floodplains of meand and transitional streams 4. Large abandoned meltwater cha 5. Esker 6. Kame terrace 7. Granular delta and fan delta
III	Moderate (3)	30 to 70 percent	1. Significant deposits of sand and gravel are not known in the general area. 2. High-quality deposits are likely based on the presence of favorable landforms identified on aerial photographs, but field observations, or laboratory tests, or both have not been accomplished.	1. Kame 2. Complex ice-stagnation topography 3. Ablation moraine 4. Granular alluvial fan 5. Artificial embankment and fill feature 6. Coarse-grained volcanic pyroclastic tongue of blanket
II	Low (2)	10 to 30 percent	1. Few (if any) known deposits of sand and gravel of any size. 2. High-quality deposits are unlikely based on the presence of unfavorable landforms identified on aerial photographs, but field observations or laboratory tests, or both have not been accomplished.	1. Fine-grained alluvial fan 2. Fine-grained delta and fandelta 3. Colluvial fan, apron, and sheet 4. Debris flow 5. Landslide and slump 6. Solifluction lobe complex and sheet 7. Drumlin 8. Rogen moraine 9. Ground-moraine plain or sheet
I	Very low (1)	0 to 10 percent	1. High-quality deposits are known to be absent based on field observations, laboratory tests, or both. 2. High-quality deposits are very unlikely based on the widespread presence of diagnostically unfavorable landforms identified on aerial photographs, by field observations, laboratory tests, or all of the above.	1. Avalanche mound or tongue 2. Mudflow tongue or complex 3. Rock glacier 4. Talus cone or apron 5. Fan, apron, or sheet of retransported loess 6. Fan, apron, or sheet of retransported sand 7. Eolian sand dune, sheet, or dune complex 8. Loess blanket 9. Lake plain or basin 10. Thaw lake basin 11. Glaciolacustrine plain 12. Tidal flat 13. Elevated tidal flat 14. Swamp 15. Bedrock 16. Fine-grained volcanic pyroclastic blanket 17. Glacier 18. Deep lake or ocean

Less than 10 percent by weight of total silt and clay (passing No. 200 seive).

Table 3-2. Relationships between aggregate-land class and dominant lanforms for DGGS evaluation of sand-and-gravel potential of Mental Health Replacement Pool Lands in Alaska.

:egate Class	Potential	Estimated chance of locating high-quality sand-and-gravel deposits*	Criteria	Dominant Landforms
V	Very High (5)	Greater than 90 percent	1. High-quality deposits are known based on field observations, laboratory tests, or both. 2. High-quality deposits are almost certain based on the widespread presence of diagnostically favorable landforms identified on aerial photographs.	1. Active floodplain of braided stream 2. Abandoned floodplain of braided stream 3. Inactive floodplain of braided stream 4. Outwash plain or fan or valley train 5. Tailings mound or ridge 6. Beach, spit, or marine bar 7. Stream terrace
V	High (4)	70 to 90 percent	1. Significant high-quality deposits are not known in the area. 2. High-quality deposits are very likely based on very favorable landforms identified on aerial photographs, but field observations or laboratory tests have not been accomplished.	1. Active floodplains of meandering and transitional streams 2. Abandoned floodplains of meanderi and transitional streams 3. Inactive floodplains of meanderir and transitional streams 4. Large abandoned meltwater channel 5. Esker 6. Kame terrace 7. Granular delta and fan delta
I	Moderate (3)	30 to 70 percent	1. Significant deposits of sand and gravel are not known in the general area. 2. High-quality deposits are likely based on the presence of favorable landforms identified on aerial photographs, but field observations, or laboratory tests, or both have not been accomplished.	1. Kame 2. Complex ice-stagnation topography 3. Ablation moraine 4. Granular alluvial fan 5. Artificial embankment and fill feature 6. Coarse-grained volcanic pyroclastic tongue of blanket
I	Low (2)	10 to 30 percent	1. Few (if any) known deposits of sand and gravel of any size. 2. High-quality deposits are unlikely based on the presence of unfavorable landforms identified on aerial photographs, but field observations or laboratory tests, or both have not been accomplished.	1. Fine-grained alluvial fan 2. Fine-grained delta and fandelta 3. Colluvial fan, apron, and sheet 4. Debris flow 5. Landslide and slump 6. Solifluction lobe complex and sheet 7. Drumlin 8. Rogen moraine 9. Ground-moraine plain or sheet
I	Very low (1)	0 to 10 percent	1. High-quality deposits are known to be absent based on field observations, laboratory tests, or both. 2. High-quality deposits are very unlikely based on the widespread presence of diagnostically unfavorable landforms identified on aerial photographs, by field observations, laboratory tests, or all of the above.	1. Avalanche mound or tongue 2. Mudflow tongue or complex 3. Rock glacier 4. Talus cone or apron 5. Fan, apron, or sheet of retransported loess 6. Fan, apron, or sheet of retransported sand 7. Eolian sand dune, sheet, or dune complex 8. Loess blanket 9. Lake plain or basin 10. Thaw lake basin 11. Glaciolacustrine plain 12. Tidal flat 13. Elevated tidal flat 14. Swamp 15. Bedrock 16. Fine-grained volcanic pyroclastic blanket 17. Glacier 18. Deep lake or ocean

:ss than 10 percent by weight of total silt and clay (passing No. 200 seive).

Table 3-2. Relationships between aggregate-land class and dominant lanforms for DGGS evaluation of sand-and-gravel potential of Mental Health Replacement Pool Lands in Alaska.

Data-quality Class	Criteria
Very Good (5)	o One or more 1:63,360- or larger scale geologic maps are available; they are verified by numerous detailed field observations, or multiple laboratory tests, or both.
Good (4)	o A 1:63,360- or larger scale geologic map is available; it is partially verified by field studies, a few laboratory tests, or both.
Fair (3)	o A 1:250,000- or 1:125,000-scale geologic map is available; it is known to be generally reliable because of limited field observations, a few laboratory tests, or both.
Poor (2)	o A 1:250,000-scale geologic map is available but has not been well verified by field observations, or laboratory tests, or both (reconnaissance series); major landforms identified on the map are composite and identification of individual landforms is not possible.
Very Poor (1)	o Only 1:1,000,000-scale geologic mapping is available. o Only some major (obvious) landforms can be separated on 1:63,360-scale topographic maps.

Table 3-3. Criteria for data-quality classes for DGGS sand-and-gravel evaluation of Mental Health Replacement Pool Lands in Alaska.

ATTACHMENT I

DIVISION OF LAND AND WATER RESOURCES MANAGEMENT
COMPUTER LISTING OF
MENTAL HEALTH TRUST LANDS

DATE: 01/31/05

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C022S019E01	MH 4	131	640	640
C022S019E02	MH 4	131	618	618
C022S019E03	MH 4	131	430	430
C022S019E04	MH 4	131	220	220
C022S019E05	MH 4	131	35	35
C022S019E11	MH 4	131	31	31
C022S019E12	MH 4	131	160	160
C022S020E01	MH 4	132	640	640
C022S020E02	MH 4	132	640	640
C022S020E03	MH 4	132	640	640
C022S020E04	MH 4	132	640	640
C022S020E05	MH 4	132	640	640
C022S020E06	MH 4	132	695	695
C022S020E07	MH 4	132	300	300
C022S020E08	MH 4	132	285	285
C022S020E09	MH 4	132	341	341
C022S020E10	MH 4	132	465	465
C022S020E11	MH 4	132	630	630
C022S020E12	MH 4	132	640	640
C022S020E13	MH 4	132	270	270
C022S020E14	MH 4	132	75	75
C022S021E01	MH 4	133	640	640
C022S021E02	MH 4	133	640	640
C022S021E03	MH 4	133	640	640
C022S021E04	MH 4	133	640	640
C022S021E05	MH 4	133	640	640
C022S021E06	MH 4	133	641	641
C022S021E07	MH 4	133	643	643
C022S021E08	MH 4	133	640	640
C022S021E09	MH 4	133	640	640
C022S021E10	MH 4	133	640	640
C022S021E11	MH 4	133	640	640
C022S021E12	MH 4	133	640	640
C022S021E13	MH 4	133	640	640
C022S021E14	MH 4	133	640	640
C022S021E15	MH 4	133	640	640
C022S021E16	MH 4	133	640	640
C022S021E17	MH 4	133	640	640
C022S021E18	MH 4	133	554	554
C022S021E19	MH 4	133	18	18
C022S021E20	MH 4	133	246	246
C022S021E21	MH 4	133	560	560
C022S021E22	MH 4	133	620	620
C022S021E23	MH 4	133	637	637
C022S021E24	MH 4	133	640	640
C022S021E25	MH 4	133	640	640
C022S021E26	MH 4	133	633	633
C022S021E27	MH 4	133	350	350
C022S021E28	MH 4	133	35	35
C022S021E35	MH 4	133	190	190
C022S021E36	MH 4	133	581	581
C022S022E01	MH 4	134	640	640
C022S022E02	MH 4	134	640	640
C022S022E03	MH 4	134	640	640
C022S022E04	MH 4	134	640	640

1 2 3 4 —9

DATE: 01 1/86 PAGE: 2

SECTION	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C022S022E05	MH 3 134	640		640
C022S022E06	MH 3 134	640		640
C022S022E07	MH 3 134	643		643
C022S022E08	MH 3 134	640		640
C022S022E09	MH 3 134	640		640
C022S022E10	MH 3 134	640		640
C022S022E11	MH 3 134	640		640
C022S022E12	MH 3 134	640		640
C022S022E13	MH 3 134	640		640
C022S022E14	MH 3 134	640		640
C022S022E15	MH 3 134	640		640
C022S022E16	MH 3 134	640		640
C022S022E17	MH 3 134	640		640
C022S022E18	MH 3 134	644		644
C022S022E19	MH 3 134	646		646
C022S022E20	MH 3 134	640		640
C022S022E21	MH 3 134	640		640
C022S022E22	MH 3 134	640		640
C022S022E23	MH 3 134	640		640
C022S022E24	MH 3 134	640		640
C022S022E25	MH 3 134	632		632
C022S022E26	MH 3 134	640		640
C022S022E27	MH 3 134	640		640
C022S022E28	MH 3 134	640		640
C022S022E29	MH 3 134	640		640
C022S022E30	MH 4 134	648		648
C022S022E31	MH 4 134	649		649
C022S022E32	MH 4 134	640		640
C022S022E33	MH 4 134	640		640
C022S022E34	MH 4 134	572		572
C022S022E35	MH 4 134	420		420
C022S022E36	MH 4 134	113		113
C023S021E01	MH 4 135	28		28
C023S022E04	MH 4 135	54		54
C023S022E05	MH 4 135	134		134
C023S022E06	MH 4 135	157		157
C026S054E08	MH 2 16	90		90
C026S054E09	MH 1 16	370		370
C026S054E10	MH 2 16	220		220
C026S054E14	MH 2 16	240		240
C026S054E15	MH 1 16	630		630
C026S054E16	MH 2 16	640		640
C026S054E17	MH 2 16	615		615
C026S054E18	MH 2 16	110		110
C026S054E20	MH 2 16	265		265
C026S054E21	MH 2 16	640		640
C026S054E22	MH 1 16	640		640
C026S054E23	MH 2 16	617		617
C026S054E24	MH 2 16	225		225
C026S054E25	MH 2 16	630		630
C026S054E26	MH 1 16	640		640
C026S054E27	MH 2 16	640		640
C026S054E28	MH 4 16	410		410
C026S054E29	MH 4 16	5		5
C026S054E33	MH 4 16	30		30

DATE: 01.

PAGE: 3

SECTION	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C026S054E34	MH	16	540		540
C026S054E35	MH	16	640		640
C026S054E36	MH	16	640		640
C026S055E11	MH	16	5		5
C026S055E12	MH	16	160		160
C026S055E13	MH	16	640		640
C026S055E14	MH	16	305		305
C026S055E15	MH	16	45		45
C026S055E22	MH	16	135		135
C026S055E23	MH	16	640		640
C026S055E24	MH	137	9		9
C026S055E24	MH	16	631		631
C026S055E25	MH	16	640		640
C026S055E26	MH	16	640		640
C026S055E27	MH	16	595		595
C026S055E28	MH	16	235		235
C026S055E29	MH	16	5		5
C026S055E30	MH	16	225		225
C026S055E31	MH	16	611		611
C026S055E32	MH	16	545		545
C026S055E33	MH	16	640		640
C026S055E34	MH	16	640		640
C026S055E35	MH	16	640		640
C026S055E36	MH	16	639		639
C026S056E05	MH	16	75		75
C026S056E06	MH	16	20		20
C026S056E07	MH	16	497		497
C026S056E08	MH	16	430		430
C026S056E16	MH	16	10		10
C026S056E17	MH	16	605		605
C026S056E18	MH	16	615		615
C026S056E19	MH	16	617		617
C026S056E20	MH	16	640		640
C026S056E21	MH	16	120		120
C026S056E28	MH	16	60		60
C026S056E29	MH	16	600		600
C026S056E30	MH	16	618		618
C026S056E31	MH	16	620		620
C026S056E32	MH	16	245		245
C027S054E01	MH	16	456		456
C027S054E02	MH	16	451		451
C027S054E03	MH	16	106		106
C027S054E11	MH	16	370		370
C027S054E12	MH	16	640		640
C027S054E13	MH	16	500		500
C027S054E24	MH	16	80		80
C027S055E01	MH	16	456		456
C027S055E02	MH	16	326		326
C027S055E03	MH	16	456		456
C027S055E04	MH	16	456		456
C027S055E05	MH	16	456		456
C027S055E06	MH	16	443		443
C027S055E07	MH	16	621		621
C027S055E08	MH	16	640		640
C027S055E09	MH	16	640		640

DATE: [illegible]

SECTI	MH CASE WITH TA OR PAT		ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
C029S057E16	MH	1 16	314		314
C029S057E17	MH	1 16	404		404
C029S057E18	MH	2 16	554		554
C029S057E19	MH	2 16	587		587
C029S057E20	MH	2 16	610		610
C029S057E21	MH	1 16	640		640
C029S057E22	MH	1 16	640		640
C029S057E23	MH	1 16	640		640
C029S057E24	MH	2 16	280		280
C029S057E25	MH	2 16	356		356
C029S057E26	MH	1 16	640		640
C029S057E27	MH	1 16	640		640
C029S057E28	MH	2 16	640		640
C029S057E29	MH	2 16	640		640
C029S057E30	MH	2 16	575		575
C029S057E31	MH	2 153		20	20
C029S057E31	MH	2 16	588		588
C029S057E32	MH	2 16	640		640
C029S057E33	MH	2 16	640		640
C029S057E34	MH	2 16	640		640
C029S057E35	MH	1 16	640		640
C029S057E36	MH	1 16	100		100
C030S056E01	MH	2 153		130	130
C030S056E13	MH	2 16	15		15
C030S056E14	MH	2 16	125		125
C030S056E23	MH	2 16	380		380
C030S056E24	MH	2 16	620		620
C030S056E25	MH	1 16	625		625
C030S056E26	MH	1 16	75		75
C030S056E36	MH	3 16	120		120
C030S057E01	MH	1 16	825		825
C030S057E02	MH	2 16	825		825
C030S057E03	MH	2 16	825		825
C030S057E04	MH	2 16	820		820
C030S057E04	MH	2 153		5	5
C030S057E05	MH	1 153		260	260
C030S057E05	MH	1 16	555		555
C030S057E06	MH	2 16	95		95
C030S057E06	MH	2 153		430	430
C030S057E08	MH	2 153		205	205
C030S057E09	MH	2 153		391	391
C030S057E09	MH	2 16	160		160
C030S057E10	MH	2 153		65	65
C030S057E10	MH	2 16	575		575
C030S057E11	MH	2 16	640		640
C030S057E12	MH	2 16	640		640
C030S057E13	MH	2 16	640		640
C030S057E14	MH	2 16	640		640
C030S057E15	MH	2 153		346	346
C030S057E15	MH	2 16	110		110
C030S057E16	MH	2 153		81	81
C030S057E19	MH	2 16	485		485
C030S057E20	MH	4 16	400		400
C030S057E21	MH	2 16	460		460
C030S057E22	MH	2 16	570		570

SECTIL	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C030S057E23	MH 2	640		640
C030S057E24	MH 2	640		640
C030S057E25	MH 1	640		640
C030S057E26	MH 2	640		640
C030S057E27	MH 2	640		640
C030S057E28	MH 2	640		640
C030S057E29	MH 2	640		640
C030S057E30	MH 2	616		616
C030S057E31	MH 3	210		210
C030S057E32	MH 3	255		255
C030S057E33	MH 3	280		280
C030S057E34	MH 1	320		320
C030S057E35	MH 2	330		330
C030S057E36	MH 2	345		345
C030S058E06	MH 1	400		400
C030S058E07	MH 1	57		57
C030S058E08	MH 1	141		141
C030S058E14	MH 2	40		40
C030S058E15	MH 2	3		3
C030S058E17	MH 1	365		365
C030S058E19	MH 1	498		498
C030S058E29	MH 3	10		10
C030S058E30	MH 3	598		598
C030S058E31	MH 2	540		540
C030S058E32	MH 2	105		105
C030S059E01	MH 2	360		360
C030S059E02	MH 1	252		252
C030S059E03	MH 2	369		369
C030S059E09	MH 3	2		2
C030S059E10	MH 1	3		3
C030S059E12	MH 1	84		84
C030S059E15	MH 4	215		215
C030S059E19	MH 2	74		74
C030S059E22	MH 3	400		400
C030S059E23	MH 3	115		115
C030S059E26	MH 1	53		53
C030S059E27	MH 3	40		40
C030S059E29	MH 1	6		6
C030S059E30	MH 1	3		3
C030S059E33	MH 1	6		6
C030S059E34	MH 3	39		39
C030S059E35	MH 1	37		37
C031S059E01	MH 3	292		292
C031S059E02	MH 3	305		305
C031S059E03	MH 1	11		11
C031S059E09	MH 1	9		9
C031S059E11	MH 1	290		290
C031S059E12	MH 1	84		84
C031S059E13	MH 1	277		277
C031S059E14	MH 1	2		2
C031S059E21	MH 3	61		61
C031S059E22	MH 1	26		26
C031S059E24	MH 1	15		15
C031S060E06	MH 3	12		12
C031S060E07	MH 4	79		79

MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C031S060E08 MH 1	93	15	15
C031S060E17 MH 4	93	110	110
C031S060E17 MH 4	72	53	53
C031S060E18 MH 4	72	80	80
C031S060E18 MH 4	93	356	356
C031S060E19 MH 4	72	171	171
C031S060E20 MH 4	72	161	161
C031S060E28 MH 1	72	11	11
C031S060E29 MH 4	72	208	208
C031S060E30 MH 4	72	29	29
C031S060E31 MH 4	72	178	178
C031S060E32 MH 4	72	68	68
C032S059E11 MH 3	72	222	222
C032S059E13 MH 1	72	191	191
C032S059E24 MH 1	72	200	200
C032S059E25 MH 1	72	134	134
C032S060E04 MH 4	72	123	123
C032S060E05 MH 4	72	400	400
C032S060E06 MH 1	72	180	180
C032S060E07 MH 1	72	139	139
C032S060E08 MH 1	72	533	533
C032S060E09 MH 4	72	335	335
C032S060E15 MH 4	72	62	62
C032S060E17 MH 1	72	36	36
C032S060E21 MH 1	72	148	148
C032S060E22 MH 4	72	68	68
C032S060E30 MH 1	72	5	5
C039S064E02 MH 2	92	161	161
C039S064E03 MH 1	92	112	112
C039S064E10 MH 1	92	73	73
C039S064E11 MH 2	92	399	399
C039S064E12 MH 2	92	136	136
C039S064E13 MH 2	92	97	97
C039S064E13 MH 2	81	1	1
C039S064E14 MH 1	92	33	33
C039S064E14 MH 1	81	3	3
C039S064E24 MH 2	92	165	165
C039S064E25 MH 2	92	300	300
C039S064E36 MH 2	92	390	390
C039S065E31 MH 2	92	5	5
C040S058E01 MH	38	160	160
C040S058E01 MH 1	106	320	320
C040S058E02 MH 1	38	320	320
C040S058E02 MH 1	106	160	160
C040S058E03 MH 1	38	640	640
C040S058E09 MH 1	38	640	640
C040S058E10 MH 1	38	640	640
C040S058E11 MH 1	106	120	120
C040S058E11 MH 1	38	400	400
C040S058E12 MH 1	106	234	234
C040S058E13 MH 1	38	94	94
C040S058E13 MH 1	106	139	139
C040S058E14 MH 1	38	200	200
C040S058E14 MH 1	106	403	403
C040S058E15 MH 1	38	640	640

SECTI...	MH	CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C040S058E21	MH	38	446		446
C040S058E22	MH	38	304		304
C040S058E23	MH	38	63		63
C040S059E03	MH	38	160		160
C040S059E04	MH	38	520		520
C040S059E05	MH	38	160		160
C040S059E06	MH	106	75		75
C040S059E06	MH	38	118		118
C040S059E07	MH	38	23		23
C040S059E09	MH	38	160		160
C040S059E10	MH	38	144		144
C040S059E17	MH	38	336		336
C040S059E18	MH	38	70		70
C040S064E01	MH	92	95		95
C040S064E01	MH	98	35		35
C040S064E01	MH	81	1		1
C040S064E12	MH	81	9		9
C040S064E12	MH	98	62		62
C040S064E13	MH	107	1		1
C040S064E13	MH	81	19		19
C040S064E14	MH	107	4		4
C040S064E24	MH	81	1		1
C040S065E06	MH	92	23		23
C040S065E06	MH	98	9		9
C040S065E07	MH	98	52		52
C040S065E13	MH	137	21		21
C040S065E13	MH	107	3		3
C040S065E14	MH	107	8		8
C040S065E14	MH	81	5		5
C040S065E18	MH	107	8		8
C040S065E18	MH	81	40		40
C040S065E19	MH	107	8		8
C040S065E19	MH	81	31		31
C040S065E23	MH	107	1		1
C040S065E23	MH	81	42		42
C040S065E24	MH	137	59		59
C040S065E24	MH	49	22		22
C040S065E25	MH	137	26		26
C040S065E25	MH	81	2		2
C040S065E25	MH	49	100		100
C040S065E26	MH	81	339		339
C040S065E26	MH	137	1		1
C040S065E26	MH	107	1		1
C040S065E30	MH	107	1		1
C040S065E30	MH	81	8		8
C040S065E35	MH	81	168		168
C040S066E19	MH	137	4		4
C040S066E30	MH	137	6		6
C040S066E32	MH	81	16		16
C040S066E33	MH	81	61		61
C040S066E36	MH	137	2		2
C041S066E01	MH	180	176		176
C041S066E01	MH	81	214		214
C041S066E02	MH	180	42		42
C041S066E02	MH	81	269		269

SECT1	MH CASE WITH TA OR PAT	ACRES PAT	ACRES 1.	TOTAL ACRES PAT & TA
C041S066E03	MH 2	81	1	1
C041S066E04	MH 2	81	279	279
C041S066E05	MH 2	81	2	2
C041S066E10	MH 2	81	116	116
C041S066E11	MH 2	81	201	201
C041S066E12	MH 2	81	245	245
C041S067E06	MH 2	81	34	34
C041S067E06	MH 2	180	20	20
C041S067E06	MH 2	98	2	2
C041S067E07	MH 2	81	320	320
C041S067E07	MH 2	98	1	1
C041S067E08	MH 2	81	31	31
C041S067E08	MH 2	98	1	1
C041S067E08	MH 2	50	77	77
C041S067E09	MH 3	81	1	1
C041S067E15	MH 3	98	1	1
C041S067E16	MH 4	50	279	279
C041S067E17	MH 3	50	175	175
C041S067E21	MH 4	50	121	121
C041S067E22	MH 5	50	28	28
C041S067E36	MH 5	51	75	75
C042S055E25	MH 3	78	21	21
C042S055E36	MH 3	137	1	1
C042S055E36	MH 3	81	1	1
C042S055E36	MH 3	78	42	42
C042S067E01	MH 3	51	485	485
C042S067E02	MH 4	51	80	80
C042S067E11	MH 3	51	210	210
C042S067E12	MH 4	51	636	636
C042S067E13	MH 3	51	105	105
C042S068E04	MH 3	81	5	5
C042S068E05	MH 4	51	14	14
C042S068E05	MH 4	81	5	5
C042S068E06	MH 5	51	140	140
C042S068E07	MH 3	51	609	609
C042S068E08	MH 3	51	384	384
C042S068E09	MH 3	51	4	4
C042S068E09	MH 3	81	2	2
C042S068E09	MH 3	137	12	12
C042S068E09	MH 3	48	9	9
C042S068E10	MH 3	137	12	12
C042S068E10	MH 3	48	67	67
C042S068E15	MH 3	137	1	1
C042S068E15	MH 3	48	2	2
C042S068E16	MH 5	51	116	116
C042S068E17	MH 5	51	373	373
C042S068E18	MH 4	51	485	485
C042S068E20	MH 4	51	72	72
C042S068E21	MH 4	51	4	4
C055S063E02	MH 4	10	8	8
C055S063E03	MH 4	10	208	208
C055S063E09	MH 4	10	61	61
C055S063E10	MH 4	10	406	406
C055S063E15	MH 4	10	97	97
C055S063E15	MH 4	94	104	104

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C055S063E16	MH 4 94	17		17
C055S063E16	MH 4 52	15		15
C055S063E16	MH 4 10	93		93
C055S063E20	MH 3 47	5		5
C055S063E21	MH 4 47	16		16
C055S063E22	MH 4 94	229		229
C055S063E22	MH 4 47	1		1
C055S063E25	MH 4 54	115		115
C055S063E26	MH 4 94	95		95
C055S063E27	MH 4 94	66		66
C055S063E28	MH 3 47	14		14
C055S063E29	MH 3 47	33		33
C055S063E32	MH 3 47	7		7
C055S063E33	MH 3 47	10		10
C055S063E34	MH 3 47	6		6
C055S063E36	MH 4 47	10		10
C055S064E30	MH 4 54	75		75
C055S064E31	MH 4 47	51		51
C055S064E31	MH 4 54	446		446
C055S064E32	MH 4 54	390		390
C056S063E01	MH 4 47	2		2
C056S063E02	MH 3 47	10		10
C056S063E03	MH 3 47	52		52
C056S063E04	MH 3 47	5		5
C056S063E10	MH 3 47	4		4
C056S063E11	MH 3 47	46		46
C056S063E12	MH 3 47	25		25
C056S063E13	MH 3 47	33		33
C056S063E14	MH 3 47	5		5
C056S063E23	MH 3 47	16		16
C056S063E24	MH 3 47	44		44
C056S064E04	MH 4 47	1		1
C056S064E04	MH 4 54	7		7
C056S064E05	MH 4 54	297		297
C056S064E05	MH 4 47	9	1	10
C056S064E06	MH 4 54	34		34
C056S064E06	MH 4 47	1		1
C056S064E08	MH 4 47	1		1
C056S064E18	MH 3 47	3		3
C056S064E19	MH 3 47	10		10
C058S079E18	MH 3 84	230		230
C058S079E19	MH 3 84	357		357
C058S079E20	MH 3 84	469		469
C058S079E21	MH 3 53	160		160
C058S079E22	MH 0 53	302		302
C058S079E26	MH 0 53	209		209
C058S079E27	MH 0 53	1		1
C058S079E28	MH 0 53	227		227
C058S079E29	MH 0 53	89		89
C058S079E29	MH 0 84	346		346
C058S079E32	MH 0 84	579		579
C058S079E33	MH 0 84	31		31
C058S079E33	MH 0 85	9		9
C058S079E33	MH 0 53	117		117
C058S079E34	MH 0 84	493		493

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
C058S079E35	MH 3	84	548	548
C059S079E03	MH 3	84	554	554
C059S079E04	MH 3	53	15	15
C059S079E04	MH 3	84	112	112
C059S079E05	MH 3	84	320	320
C059S079E09	MH 3	84	163	163
C059S079E10	MH 3	84	476	476
C059S079E14	MH 3	84	320	320
C059S079E15	MH 3	84	341	341
C059S079E21	MH 3	84	416	416
C059S079E22	MH 3	84	70	70
C059S079E23	MH 3	84	616	616
C059S079E26	MH 3	84	430	430
C059S079E34	MH 3	84	2	2
C059S079E35	MH 3	84	546	546
C060S079E02	MH 3	84	585	585
C060S079E11	MH 0	84	420	420
C060S079E13	MH 0	84	159	159
C060S079E14	MH 0	84	346	346
C060S079E23	MH 0	84	81	81
C060S079E24	MH 0	84	317	317
C060S079E25	MH 0	84	442	442
C060S079E25	MH 0	82	32	32
C060S079E26	MH 0	84	10	10
C062S083E24	MH 3	19	88	88
C062S083E25	MH 3	19	4	4
C062S083E36	MH 3	85	36	36
C062S083E36	MH 3	19	7	7
C062S084E19	MH 3	95	148	148
C062S084E19	MH 3	19	334	334
C062S084E20	MH 0	95	44	44
C062S084E29	MH 3	95	116	116
C062S084E30	MH 3	95	103	103
C062S084E30	MH 3	19	90	90
C062S084E31	MH 3	85	126	126
C062S084E31	MH 3	19	50	50
C063S084E06	MH 3	85	248	248
C063S084E07	MH 3	85	104	104
C063S084E08	MH 4	85	118	118
C063S084E17	MH 4	85	206	206
C063S084E19	MH 0	85	25	25
C063S084E20	MH 4	85	200	200
C063S084E29	MH 3	85	30	30
C063S084E30	MH 3	85	169	169
C063S084E31	MH 3	85	221	221
C063S084E32	MH 3	85	180	180
C064S084E05	MH 3	85	373	373
C064S084E06	MH 0	85	65	65
C064S084E08	MH 3	85	10	10
C070S086E32	MH 3	99	40	40
C071S086E04	MH 3	99	166	166
C071S086E05	MH 3	99	85	85
C074S081E05	MH 2	83	43	43
C074S081E05	MH 2	82	6	6
C074S081E08	MH 2	83	32	32

SECTI..	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C074S081E08	MH 2	82	7		7
C074S089E12	MH 3	82	285		285
C074S089E13	MH 3	82	397		397
C074S089E14	MH 0	82	14		14
C074S089E24	MH 0	82	35		35
C074S089E24	MH 0	85	8		8
C074S089E25	MH 10	42	20		20
C074S089E26	MH 4	42	100		100
C074S089E35	MH 4	42	170		170
C074S089E36	MH 4	42	510		510
C074S090E05	MH 3	82	42		42
C074S090E06	MH 3	82	2		2
C074S090E07	MH 3	82	273		273
C074S090E08	MH 3	82	20		20
C074S090E18	MH 3	82	320		320
C074S090E19	MH 3	82	263		263
C074S090E20	MH 3	82	5		5
C074S090E28	MH 3	82	10		10
C074S090E29	MH 3	82	143		143
C074S090E30	MH 0	82	18		18
C074S090E31	MH 0	42	20		20
C074S090E32	MH 3	82	48		48
C074S090E33	MH 3	82	210		210
C074S090E34	MH 3	43		80	80
C075S089E01	MH 4	42	380		380
C075S089E12	MH 3	42	30		30
C075S090E02	MH 3	43		315	315
C075S090E03	MH 3	43	10	588	598
C075S090E04	MH 0	43		50	50
C075S090E04	MH 0	82	1		1
C075S090E05	MH 4	82	1		1
C075S090E05	MH 4	42	85		85
C076S090E06	MH 4	42	480		480
C075S090E07	MH 4	42	580		580
C075S090E08	MH 4	42	540		540
C075S090E09	MH 0	43		46	46
C075S090E09	MH 0	42	8		8
C075S090E10	MH 3	43		421	421
C075S090E11	MH 3	43		340	340
C075S090E13	MH 3	43		60	60
C075S090E14	MH 3	43		150	150
C075S090E15	MH 0	43		110	110
C075S090E15	MH 0	42	30		30
C075S090E16	MH 4	42	404		404
C075S090E17	MH 3	42	635		635
C075S090E18	MH 3	42	217		217
C075S090E20	MH 3	42	415		415
C075S090E21	MH 4	42	520		520
C075S090E22	MH 4	42	550		550
C075S090E23	MH 4	42	100		100
C075S090E24	MH 4	43		190	190
C075S090E25	MH 0	41	10		10
C075S090E26	MH 4	42	250		250
C075S090E27	MH 4	42	625		625
C075S090E28	MH 4	42	280		280

SECTI..	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C075S090E34	MH 4	42	140		140
C075S090E35	MH 4	42	335		335
C075S090E36	MH 4	42	120		120
C075S091E18	MH 3	43		300	300
C075S091E19	MH 3	43		300	300
C075S091E20	MH 3	43		15	15
C075S091E28	MH 3	43		300	300
C075S091E29	MH 4	43		446	446
C075S091E30	MH 4	43		2	2
C075S091E30	MH 4	41	25		25
C075S091E31	MH 3	42	16		16
C075S091E31	MH 3	41	375		375
C075S091E32	MH 4	43		72	72
C075S091E32	MH 4	41	179		179
C075S091E33	MH 4	43		220	220
C075S091E34	MH 4	43		300	300
C075S091E35	MH -	82	64		64
C075S091E36	MH 0	82	96		96
C076S090E01	MH 1	42	225		225
C076S090E02	MH 4	42	22		22
C076S091E01	MH	82	51		51
C076S091E02	MH 4	43		7	7
C076S091E02	MH 4	82	56		56
C076S091E03	MH 4	43		240	240
C076S091E04	MH 0	41	38		38
C076S091E04	MH 4	43		15	15
C076S091E04	MH 4	82	1		1
C076S091E05	MH 3	41	267		267
C076S091E05	MH 3	42	5		5
C076S091E06	MH 4	42	425		425
C076S091E07	MH 4	42	195		195
C076S091E08	MH 4	42	180		180
C076S091E10	MH	43	10	20	30
C076S091E11	MH 4	43	29	40	69
C076S091E11	MH	82	94		94
F001N001E02	MH 5	26	640		640
F001N001E03	MH 5	26	320		320
F001N001E04	MH 4	26	480		480
F001N001E05	MH 4	26	320		320
F001N001E11	MH 2	26	450		450
F001N001E12	MH 2	26	160		160
F001N001E13	MH 2	26	520		520
F001N001E17	MH 4	26	40		40
F001N001E18	MH 4	26	20		20
F001N001E32	MH 2	26	120		120
F001N001E34	MH 2	26	320		320
F001N001E35	MH 2	26	640		640
F001N004E19	MH 3	27	635		635
F001N004E20	MH 3	27	640		640
F001N004E21	MH 3	27	640		640
F001N004E22	MH 3	27	640		640
F001N004E23	MH 3	27	640		640
F001N004E24	MH 3	27	640		640
F001N004E25	MH 3	27	320		320
F001N004E27	MH 3	27	160		160

SECTIO	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F001N004E28	MH	3 27	395		395
F001N004E29	MH	3 27	428		428
F001N004E30	MH	3 27	318		318
F001N004E31	MH	3 27	320		320
F001N004E32	MH	3 27	460		460
F001N004E33	MH	3 27	155		155
F001N004E34	MH	3 27	120		120
F001N004E35	MH	3 27	280		280
F001N004E36	MH	3 27	480		480
F001N006E01	MH	3 110	640		640
F001N006E02	MH	3 110	640		640
F001N006E03	MH	3 110	640		640
F001N006E04	MH	3 110	640		640
F001N006E05	MH	3 110	640		640
F001N006E06	MH	3 110	628		628
F001N006E07	MH	3 110	631		631
F001N006E08	MH	3 110	640		640
F001N006E09	MH	3 110	640		640
F001N006E10	MH	3 110	640		640
F001N006E11	MH	3 110	640		640
F001N006E12	MH	3 110	640		640
F001N006E13	MH	3 110	640		640
F001N006E14	MH	3 110	640		640
F001N006E15	MH	3 110	590		590
F001N006E16	MH	3 110	630		630
F001N006E17	MH	3 110	640		640
F001N006E18	MH	3 110	619		619
F001N006E19	MH	3 110	628		628
F001N006E20	MH	3 110	640		640
F001N006E21	MH	3 110	615		615
F001N006E22	MH	3 110	565		565
F001N006E23	MH	3 110	640		640
F001N006E24	MH	3 110	640		640
F001N006E25	MH	3 110	640		640
F001N006E26	MH	3 110	640		640
F001N006E27	MH	3 110	640		640
F001N006E28	MH	3 110	640		640
F001N006E29	MH	3 110	640		640
F001N006E30	MH	3 110	637		637
F001N006E31	MH	3 110	639		639
F001N006E32	MH	3 110	640		640
F001N006E33	MH	3 110	640		640
F001N006E34	MH	3 110	640		640
F001N006E35	MH	3 110	640		640
F001N006E36	MH	3 110	640		640
F001N007E01	MH	3 112	640		640
F001N007E02	MH	3 112	640		640
F001N007E03	MH	3 112	640		640
F001N007E04	MH	3 112	640		640
F001N007E05	MH	3 112	640		640
F001N007E06	MH	3 112	629		629
F001N007E07	MH	3 112	631		631
F001N007E08	MH	3 112	640		640
F001N007E09	MH	3 112	640		640
F001N007E10	MH	3 112	640		640

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T..	TOTAL ACRES PAT & TA
F001N007E11	MH 3	112	635	635
F001N007E12	MH 3	112	640	640
F001N007E13	MH 3	112	640	640
F001N007E14	MH 3	112	640	640
F001N007E15	MH 3	112	640	640
F001N007E16	MH 3	112	640	640
F001N007E17	MH 3	112	640	640
F001N007E18	MH 3	112	592	592
F001N007E19	MH 3	112	555	555
F001N007E20	MH 3	112	640	640
F001N007E21	MH 3	112	640	640
F001N007E22	MH 3	112	640	640
F001N007E23	MH 3	112	640	640
F001N007E24	MH 3	112	640	640
F001N007E25	MH 3	112	640	640
F001N007E26	MH 3	112	640	640
F001N007E27	MH 3	112	640	640
F001N007E28	MH 3	112	640	640
F001N007E29	MH 3	112	640	640
F001N007E30	MH 3	112	637	637
F001N007E31	MH 3	112	639	639
F001N007E32	MH 3	112	640	640
F001N007E33	MH 3	112	640	640
F001N007E34	MH 3	112	640	640
F001N007E35	MH 3	112	640	640
F001N007E36	MH 3	112	640	640
F002N006E01	MH 3	114	640	640
F002N006E02	MH 3	114	640	640
F002N006E03	MH 3	114	640	640
F002N006E10	MH 3	114	640	640
F002N006E11	MH 3	114	640	640
F002N006E12	MH 3	114	640	640
F002N006E13	MH 2	114	640	640
F002N006E14	MH 2	114	640	640
F002N006E15	MH 2	114	640	640
F002N006E22	MH 2	114	640	640
F002N006E23	MH 2	114	640	640
F002N006E24	MH 2	114	640	640
F002N006E25	MH 2	114	640	640
F002N006E26	MH 2	114	640	640
F002N006E27	MH 2	114	640	640
F002N006E34	MH 3	114	640	640
F002N006E35	MH 3	114	640	640
F002N006E36	MH 3	114	640	640
F002N007E01	MH 3	115	606	606
F002N007E02	MH 3	115	640	640
F002N007E03	MH 3	115	640	640
F002N007E04	MH 3	115	640	640
F002N007E05	MH 3	115	640	640
F002N007E06	MH 3	115	616	616
F002N007E07	MH 3	115	618	618
F002N007E08	MH 3	115	640	640
F002N007E09	MH 3	115	640	640
F002N007E10	MH 3	115	640	640
F002N007E11	MH 3	115	640	640

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F002N007E12	MH 2	115	627	627
F002N007E13	MH 2	115	640	640
F002N007E14	MH 2	115	640	640
F002N007E15	MH 2	115	640	640
F002N007E16	MH 2	115	640	640
F002N007E17	MH 2	115	640	640
F002N007E18	MH 2	115	620	620
F002N007E19	MH 2	115	622	622
F002N007E20	MH 2	115	640	640
F002N007E21	MH 2	115	640	640
F002N007E22	MH 2	115	640	640
F002N007E23	MH 2	115	640	640
F002N007E24	MH 3	115	640	640
F002N007E25	MH 3	115	640	640
F002N007E26	MH 3	115	640	640
F002N007E27	MH 3	115	640	640
F002N007E28	MH 3	115	640	640
F002N007E29	MH 3	115	640	640
F002N007E30	MH 2	115	625	625
F002N007E31	MH 3	115	627	627
F002N007E32	MH 3	115	640	640
F002N007E33	MH 3	115	640	640
F002N007E34	MH 3	115	640	640
F002N007E35	MH 3	115	640	640
F002N007E36	MH 3	115	640	640
F002N008E01	MH 3	117	640	640
F002N008E02	MH 3	117	640	640
F002N008E03	MH 3	117	640	640
F002N008E04	MH 3	117	640	640
F002N008E05	MH 3	117	640	640
F002N008E06	MH 3	117	529	529
F002N008E07	MH 3	117	593	593
F002N008E08	MH 2	117	640	640
F002N008E09	MH 2	117	640	640
F002N008E10	MH 2	117	640	640
F002N008E11	MH 2	117	640	640
F002N008E12	MH 2	117	640	640
F002N008E13	MH 2	117	640	640
F002N008E14	MH 2	117	640	640
F002N008E15	MH 2	117	640	640
F002N008E16	MH 2	117	640	640
F002N008E17	MH 2	117	640	640
F002N008E18	MH 2	117	620	620
F003N007E22	MH 2	118	640	640
F003N007E23	MH 2	118	640	640
F003N007E24	MH 2	118	640	640
F003N007E25	MH 2	118	640	640
F003N007E26	MH 2	118	640	640
F003N007E27	MH 2	118	640	640
F003N007E34	MH 2	118	640	640
F003N007E35	MH 3	118	640	640
F003N007E36	MH 3	118	640	640
F003N008E19	MH 1	118	610	610
F003N008E20	MH 3	118	637	637
F003N008E21	MH 3	118	592	592

SECTI..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
F003N008E22	MH 3 118		374	374
F003N008E23	MH 3 118		577	577
F003N008E24	MH 3 118		640	640
F003N008E25	MH 3 118		495	495
F003N008E26	MH 3 118		280	280
F003N008E27	MH 3 118		636	636
F003N008E28	MH 3 118		456	456
F003N008E29	MH 3 118		391	391
F003N008E30	MH 3 118		590	590
F003N008E31	MH 3 118		397	397
F003N008E32	MH 3 118		635	635
F003N008E33	MH 3 118		640	640
F003N008E34	MH 3 118		640	640
F003N008E35	MH 3 118		590	590
F003N008E36	MH 3 118		615	615
F001S001E01	MH 3 26	560		560
F001S001E03	MH 3 26	280		280
F001S001E09	MH 0 26	160	80	240
F001S001E10	MH 0 26	120		120
F001S001E11	MH 0 26	146		146
F001S001E25	MH 0 26	160		160
F001S001E34	MH 0 26	40		40
F001S003E01	MH 3 29	636		636
F001S003E02	MH 3 29	637		637
F001S003E09	MH 0 30		320	320
F001S003E10	MH 0 30		320	320
F001S003E11	MH 3 29		640	640
F001S003E12	MH 3 29		640	640
F001S003E13	MH 0 30		25	25
F001S003E13	MH 0 29		555	555
F001S003E14	MH 0 29		590	590
F001S003E15	MH 0 30		640	640
F001S003E16	MH 0 30		640	640
F001S003E19	MH 0 30	15	573	588
F001S003E20	MH 0 30		640	640
F001S003E21	MH 0 30		640	640
F001S003E22	MH 0 30		370	370
F001S003E23	MH 0 29		250	250
F001S003E24	MH 0 29		320	320
F001S003E27	MH 0 30		375	375
F001S003E28	MH 0 30		455	455
F001S003E29	MH 0 30	158	390	548
F001S003E30	MH 0 30	382	130	512
F001S003E31	MH 0 30	381		381
F001S003E32	MH 0 30	569	40	609
F001S003E33	MH 0 30		540	540
F001S003E34	MH 0 30		480	480
F001S004E01	MH 0 28	10	555	565
F001S004E02	MH 3 28	5	605	610
F001S004E03	MH 3 28	396		396
F001S004E04	MH 3 29	480		480
F001S004E05	MH 3 29	596		596
F001S004E06	MH 3 29	589		589
F001S004E07	MH 3 29		516	516
F001S004E08	MH 3 29		440	440

SECT.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
F001S002W27	MH 0	66		66
F001S002W28	MH 2	80		80
F001S002W28	MH 2	103		103
F001S002W28	MH 2	37		37
F001S002W30	MH 2	279		279
F001S002W31	MH 2	30		30
F001S002W32	MH 2	114		114
F001S002W33	MH 0	8		8
F001S002W34	MH 0	165		165
F001S002W35	MH 0	15		15
F001S003W01	MH 2	80		80
F001S003W02	MH 5	160		160
F001S003W11	MH 5	40		40
F001S003W12	MH 2	34	80	114
F001S003W13	MH 5		320	320
F001S003W13	MH 5	240		240
F001S003W14	MH 5	560		560
F001S003W15	MH 5	640		640
F001S003W17	MH 2	320		320
F001S003W18	MH 2	597		597
F001S003W19	MH 2	601		601
F001S003W20	MH 2	600		600
F001S003W20	MH 2	35		35
F001S003W21	MH 2	640		640
F001S003W22	MH 2	640		640
F001S003W23	MH 2	640		640
F001S003W24	MH 5	640		640
F001S003W25	MH 2	640		640
F001S003W26	MH 5	640		640
F001S003W27	MH 5	640		640
F001S003W28	MH 2	640		640
F001S003W29	MH 2	640		640
F001S003W30	MH 2	603		603
F001S003W31	MH 2	602		602
F001S003W32	MH 2	640		640
F001S003W33	MH 5	640		640
F001S003W34	MH 5	640		640
F001S003W35	MH 2	640		640
F001S003W36	MH 2	640		640
F003S004W05	MH 2	641		641
F003S004W06	MH 2	613		613
F003S004W07	MH 2	545		545
F003S004W08	MH 0	597		597
F003S004W17	MH 0	325		325
F004S007W01	MH 2	640		640
F004S007W02	MH 2	640		640
F004S007W03	MH 2	427		427
F004S007W04	MH 3	640		640
F004S007W05	MH 3	640		640
F004S007W06	MH 2	629		629
F004S007W07	MH 3	631		631
F004S007W08	MH 2	640		640
F004S007W09	MH 2	544		544
F004S007W11	MH 0	633		633
F004S007W12	MH 0	521		521

SECTI..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F004S007W13	MH 0	32	156	156
F004S007W14	MH 0	32	114	114
F004S007W17	MH 0	32	81	81
F004S007W18	MH 0	32	191	191
F004S007W19	MH 0	32	367	367
F004S007W30	MH 0	32	558	558
F004S008W01	MH 2	32	321	321
F004S008W02	MH 2	32	640	640
F004S008W03	MH 0	32	184	184
F004S008W04	MH 0	32	631	631
F004S008W05	MH 0	32	579	579
F004S008W06	MH 0	32	629	629
F004S008W07	MH 0	32	595	595
F004S008W08	MH 0	32	602	602
F004S008W09	MH 0	32	618	618
F004S008W10	MH 0	32	181	181
F004S008W11	MH 2	32	320	320
F004S008W13	MH 0	32	160	160
F004S008W14	MH 0	32	10	10
F004S008W15	MH 0	32	106	106
F004S008W17	MH 0	32	582	582
F004S008W18	MH 0	32	622	622
F004S008W19	MH 0	32	608	608
F004S008W20	MH 0	32	591	591
F004S008W21	MH 0	32	632	632
F004S008W22	MH 0	32	440	440
F004S008W23	MH 0	32	21	21
F004S008W25	MH 0	32	120	120
F004S008W26	MH 0	32	74	74
F004S008W27	MH 0	32	564	564
F004S008W28	MH 0	32	617	617
F004S008W29	MH 0	32	415	415
F004S008W30	MH 0	32	581	581
F004S008W31	MH 0	32	598	598
F004S008W32	MH 0	32	573	573
F004S008W34	MH 0	32	373	373
F004S008W35	MH 0	32	505	505
F006S008W01	MH 0	34	480	480
F006S008W02	MH 0	34	640	640
F006S008W03	MH 0	34	640	640
F006S008W10	MH 0	34	640	640
F006S008W11	MH 0	34	640	640
F006S008W12	MH 0	34	640	640
F006S008W13	MH 0	34	640	640
F006S008W14	MH 0	34	640	640
F006S008W15	MH 0	34	580	580
F006S008W22	MH 0	34	640	640
F006S008W23	MH 0	34	640	640
F006S008W24	MH 0	34	636	636
F006S008W25	MH 0	34	280	280
F006S008W26	MH 0	34	640	640
F006S008W27	MH 0	34	640	640
F006S008W28	MH 0	34	320	320
F006S008W32	MH 0	34	100	100
F006S008W34	MH 0	34	640	640

SECTION	MH	CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F006S008W35	MH	3	34	640	640
F006S008W36	MH	3	34	40	40
F009S005W07	MH	4	36	596	596
F009S005W08	MH	4	36	640	640
F009S005W09	MH	3	36	640	640
F009S005W10	MH	3	36	640	640
F009S005W11	MH	3	36	640	640
F009S005W12	MH	3	36	640	640
F009S005W13	MH	3	36	640	640
F009S005W14	MH	3	36	640	640
F009S005W15	MH	3	36	640	640
F009S005W16	MH	4	36	640	640
F009S005W17	MH	4	36	640	640
F009S005W18	MH	3	36	597	597
F009S005W19	MH	3	36	600	600
F009S005W20	MH	5	36	640	640
F009S005W21	MH	5	36	640	640
F009S005W22	MH	3	36	640	640
F009S005W23	MH	3	36	640	640
F009S005W24	MH	3	36	640	640
F009S005W25	MH	3	36	640	640
F009S005W26	MH	5	36	640	640
F009S005W27	MH	5	36	640	640
F009S005W28	MH	5	36	640	640
F009S005W29	MH	5	36	640	640
F009S005W30	MH	5	36	601	601
F009S005W31	MH	5	36	603	603
F009S005W32	MH	5	36	640	640
F009S005W33	MH	5	36	640	640
F009S005W34	MH	5	36	640	640
F009S005W35	MH	5	36	640	640
F009S005W36	MH	5	36	640	640
F009S006W07	MH	4	36	597	597
F009S006W08	MH	4	36	640	640
F009S006W09	MH	4	36	640	640
F009S006W10	MH	4	36	640	640
F009S006W11	MH	4	36	640	640
F009S006W12	MH	4	36	640	640
F009S006W13	MH	3	36	640	640
F009S006W14	MH	3	36	640	640
F009S006W15	MH	3	36	480	480
F009S006W17	MH	3	36	480	480
F009S006W18	MH	4	36	599	599
F009S006W19	MH	4	36	601	601
F009S006W20	MH	3	36	320	320
F009S006W22	MH	3	36	320	320
F009S006W23	MH	3	36	640	640
F009S006W24	MH	3	36	640	640
F009S006W25	MH	3	36	640	640
F009S006W26	MH	3	36	640	640
F009S006W27	MH	3	36	320	320
F009S006W29	MH	3	36	320	320
F009S006W30	MH	3	36	603	603
F009S006W31	MH	5	36	604	604
F009S006W32	MH	5	36	320	320

SECTI..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F009S006W34	MH 5	36	320	320
F009S006W35	MH 5	36	640	640
F010S006W01	MH 5	36	640	640
F010S006W02	MH 5	36	639	639
F010S006W03	MH 5	36	319	319
F010S006W05	MH 5	36	320	320
F010S006W06	MH 5	36	606	606
F010S006W07	MH 5	36	304	304
F010S006W08	MH 5	36	160	160
F010S006W10	MH 5	36	320	320
F010S006W11	MH 5	36	640	640
F010S006W12	MH 5	36	640	640
F011S007W01	MH 3	120	640	640
F011S007W02	MH 3	120	640	640
F011S007W03	MH 3	120	640	640
F011S007W04	MH 3	120	640	640
F011S007W05	MH 3	120	640	640
F011S007W06	MH 3	120	617	617
F011S007W07	MH 3	120	619	619
F011S007W08	MH 3	120	640	640
F011S007W09	MH 3	120	640	640
F011S007W10	MH 3	120	640	640
F011S007W11	MH 3	120	640	640
F011S007W12	MH 3	120	640	640
F011S007W13	MH 3	120	640	640
F011S007W14	MH 3	120	640	640
F011S007W15	MH 3	120	640	640
F011S007W17	MH 3	120	640	640
F011S007W18	MH 3	120	622	622
F011S007W19	MH 3	120	624	624
F011S007W20	MH 3	120	640	640
F011S007W21	MH 3	120	640	640
F011S007W22	MH 3	120	640	640
F011S007W23	MH 3	120	640	640
F011S007W24	MH 3	120	640	640
F011S007W25	MH 3	120	640	640
F011S007W26	MH 3	120	640	640
F011S007W27	MH 3	120	640	640
F011S007W28	MH 3	120	640	640
F011S007W29	MH 3	120	600	600
F011S007W29	MH 3	22	40	40
F011S007W30	MH 3	120	626	626
F011S007W31	MH 3	120	474	474
F011S007W32	MH 3	22	640	640
F011S007W33	MH 3	77	640	640
F011S007W34	MH 3	77	640	640
F011S007W35	MH 3	120	615	615
F011S023W31	MH 3	108	627	627
F011S023W32	MH 3	108	640	640
F011S023W33	MH 3	108	613	613
F011S024W20	MH 3	108	640	640
F011S024W21	MH 3	108	640	640
F011S024W22	MH 3	108	640	640
F011S024W23	MH 3	108	640	640
F011S024W24	MH 3	108	640	640

SECTIO.	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F011S024W25	MH 3	108		640	640
F011S024W26	MH 3	108		640	640
F011S024W27	MH 3	108		640	640
F011S024W28	MH 3	108		640	640
F011S024W29	MH 3	108		640	640
F011S024W32	MH 3	108		640	640
F011S024W33	MH 3	108		640	640
F011S024W34	MH 3	108		640	640
F011S024W35	MH 3	108		640	640
F011S024W36	MH 3	108		640	640
F012S006W01	MH 3	122	640		640
F012S006W02	MH 3	122	640		640
F012S006W03	MH 3	122	640		640
F012S006W04	MH 3	122	640		640
F012S006W05	MH 3	122	640		640
F012S006W06	MH 3	122	629		629
F012S006W07	MH 3	122	630		630
F012S006W08	MH 3	122	640		640
F012S006W09	MH 3	122	633		633
F012S006W10	MH 3	22	640		640
F012S006W11	MH 3	22	640		640
F012S006W12	MH 3	122	320		320
F012S006W12	MH 3	22	320		320
F012S006W13	MH 3	22	329		329
F012S006W13	MH 3	122	324		324
F012S006W14	MH 3	122	320		320
F012S006W14	MH 3	22	320		320
F012S006W15	MH 3	122	640		640
F012S006W17	MH 3	122	640		640
F012S006W18	MH 3	122	632		632
F012S006W19	MH 3	122	635		635
F012S006W20	MH 3	122	640		640
F012S006W21	MH 3	122	640		640
F012S006W22	MH 3	122	640		640
F012S006W23	MH 3	122	646		646
F012S006W24	MH 3	122	626		626
F012S006W25	MH 3	122		640	640
F012S006W26	MH 3	122		640	640
F012S006W27	MH 3	122		640	640
F012S006W28	MH 3	122		640	640
F012S006W29	MH 3	122		577	577
F012S006W30	MH 3	122		585	585
F012S006W31	MH 3	122		639	639
F012S006W32	MH 3	122		640	640
F012S006W33	MH 3	122		640	640
F012S006W34	MH 3	122		640	640
F012S006W35	MH 3	122		640	640
F012S006W36	MH 3	122		640	640
F012S007W01	MH 3	121	640		640
F012S007W02	MH 3	121	640		640
F012S007W03	MH 3	77	640		640
F012S007W04	MH 3	22	240		240
F012S007W04	MH 3	77	400		400
F012S007W05	MH 3	22	480		480
F012S007W08	MH 3	121	333		333

SECTI	MH CASE WITH TA OR PAT		ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
F012S007W09	MH 3	121	640		640
F012S007W10	MH 3	121	640		640
F012S007W11	MH 3	121	640		640
F012S007W12	MH 3	121	640		640
F012S007W13	MH 3	121	640		640
F012S007W14	MH 3	121	640		640
F012S007W15	MH 3	121	640		640
F012S007W17	MH 3	121	215		215
F012S007W20	MH 2	121	49		49
F012S007W21	MH 3	121	320		320
F012S007W21	MH 3	22	160		160
F012S007W22	MH 3	121	320		320
F012S007W22	MH 3	22	320		320
F012S007W23	MH 3	121	400		400
F012S007W23	MH 3	22	240		240
F012S007W24	MH 3	121	623		623
F012S007W25	MH 3	121	630		630
F012S007W26	MH 3	121	635		635
F012S007W27	MH 3	121	640		640
F012S007W28	MH 3	121	541		541
F012S007W29	MH 3	121	55		55
F012S007W32	MH 3	121	291		291
F012S007W33	MH 3	121	640		640
F012S007W34	MH 3	121	640		640
F012S007W35	MH 3	121		577	577
F012S007W36	MH 3	121		575	575
F012S023W04	MH 0	108		640	640
F012S023W05	MH 3	108		615	615
F012S023W06	MH 0	108		628	628
F012S023W07	MH 0	108		630	630
F012S023W08	MH 0	108		555	555
F012S023W09	MH 0	108		640	640
F012S023W16	MH 0	108		640	640
F012S023W17	MH 0	108		640	640
F012S023W18	MH 0	108		632	632
F012S023W19	MH 0	108		634	634
F012S023W20	MH 0	108		640	640
F012S023W21	MH 0	108		640	640
F012S024W01	MH 0	108		640	640
F012S024W02	MH 0	108		640	640
F012S024W03	MH 0	108		640	640
F012S024W04	MH 0	108		595	595
F012S024W05	MH 3	108		555	555
F012S024W06	MH 3	108		625	625
F012S024W07	MH 3	108		587	587
F012S024W08	MH 3	108		50	50
F012S024W09	MH 0	108		640	640
F012S024W10	MH 3	108		640	640
F012S024W11	MH 0	108		640	640
F012S024W12	MH 3	108		635	635
F012S024W13	MH 3	108		640	640
F012S024W14	MH 3	108		640	640
F012S024W15	MH 0	108		640	640
F012S024W16	MH 0	108		640	640
F012S024W17	MH 0	108		550	550

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SECTION	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F012S024W18	MH 0 108		629	629
F012S024W19	MH 0 108		626	626
F012S024W20	MH 0 108		640	640
F012S024W21	MH 0 108		629	629
F012S024W22	MH 0 108		640	640
F012S024W23	MH 3 108		640	640
F012S024W24	MH 0 108		640	640
F012S024W25	MH 0 108		640	640
F012S024W26	MH 0 108		640	640
F012S024W27	MH 0 108		640	640
F012S024W28	MH 0 108		640	640
F012S024W29	MH 0 108		640	640
F012S024W30	MH 0 108		633	633
F012S024W31	MH 0 108		635	635
F012S024W32	MH 0 108		640	640
F012S024W33	MH 0 108		640	640
F012S024W34	MH 0 108		640	640
F012S024W35	MH 0 108		640	640
F012S024W36	MH 0 108		640	640
F012S025W01	MH 3 108		640	640
F012S025W02	MH 3 108		640	640
F012S025W11	MH 0 108		640	640
F012S025W12	MH 0 108		553	553
F012S025W13	MH 0 108		640	640
F012S025W14	MH 0 108		640	640
F012S025W23	MH 0 108		640	640
F012S025W24	MH 0 108		640	640
F012S025W25	MH 0 108		640	640
F012S025W26	MH 0 108		640	640
F012S025W35	MH 0 108		640	640
F012S025W36	MH 0 108		640	640
F001N001W05	MH 2 26	160		160
F001N001W06	MH 2 26	40		40
F001N001W07	MH 2 26	39		39
F001N001W17	MH 2 26	80		80
F001N001W18	MH 2 26	80		80
F001N001W19	MH 4 75	317		317
F001N001W20	MH 4 75	320		320
F001N001W29	MH 2 26	3		3
F001N002W01	MH 2 126	160		160
F001N002W11	MH 2 126	180		180
F001N002W13	MH 2 126	20		20
F001N002W19	MH 5 126	641		641
F001N002W22	MH 5 126	40		40
F001N002W23	MH 2 126	115		115
F001N002W24	MH 2 126	80		80
F001N002W26	MH 2 126	110		110
F001N002W27	MH 2 126	80		80
F001N002W28	MH 5 126	2		2
F001N002W30	MH 5 126	270		270
F001N002W31	MH 5 126	483		483
F001N002W33	MH 5 126	30		30
F001N002W34	MH 2 126	232		232
F001N002W35	MH 2 126	159	4	163
F001N003W08	MH 2 126	40		40

SECTI.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F001N003W09	MH 2 126	160		160
F001N003W11	MH 5 126	49		49
F001N003W13	MH 5 126	217		217
F001N003W14	MH 2 126	333		333
F001N003W15	MH 2 126	414		414
F001N003W17	MH 2 126	150		150
F001N003W22	MH 2 126		20	20
F001N003W23	MH 2 126		240	240
F001N003W25	MH 5 126	40		40
F001N003W26	MH 5 126		200	200
F001N003W27	MH 5 126		40	40
F001N003W36	MH 5 126	256		256
F004N022W17	MH 0 148		10	10
S016N002E01	MH 0 119	78	230	308
S016N002E02	MH 0 119		64	64
S016N002E04	MH 0 119		203	203
S016N002E05	MH 0 119		381	381
S016N002E06	MH 0 119		345	345
S016N002E07	MH 0 119		415	415
S016N002E08	MH 0 119		222	222
S016N002E09	MH 0 119	7	295	302
S016N002E10	MH 0 119	2	420	422
S016N002E11	MH 0 119		610	610
S016N002E12	MH 0 119		640	640
S016N002E13	MH 0 119		640	640
S016N002E14	MH 0 119		640	640
S016N002E15	MH 0 119		640	640
S016N002E16	MH 0 119		597	597
S016N002E17	MH 0 119		284	284
S016N002E19	MH 0 119		302	302
S016N002E20	MH 0 119		160	160
S016N002E21	MH 0 119		640	640
S016N002E22	MH 0 119		640	640
S016N002E23	MH 0 119		640	640
S016N002E24	MH 0 119		640	640
S016N002E25	MH 0 119		640	640
S016N002E26	MH 0 119		640	640
S016N002E27	MH 0 119		640	640
S016N002E28	MH 0 119		640	640
S016N002E30	MH 0 119		606	606
S016N002E31	MH 0 119		607	607
S016N002E33	MH 0 119		640	640
S016N002E34	MH 0 119		640	640
S016N002E35	MH 0 119		640	640
S016N002E36	MH 0 119		640	640
S017N002E23	MH 0 163	40		40
S017N002E25	MH 0 163	15		15
S018N001E01	MH 0 31	479		479
S018N001E12	MH 0 31	160		160
S018N001E31	MH 0 31	40		40
S018N002E03	MH 0 31	160		160
S018N002E04	MH 0 31	480		480
S018N002E05	MH 0 31	600		600
S018N002E06	MH 0 31	310		310
S018N002E07	MH 0 31	371		371

SECTI.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T..	TOTAL ACRES PAT & TA
S018N003E07	MH 0	141	377	377
S018N003E08	MH 0	141	251	251
S019N001E25	MH 0	31	640	640
S019N002E28	MH 0	31	480	480
S019N002E29	MH 0	31	640	640
S019N002L30	MH 0	31	616	616
S019N002E31	MH 0	31	618	618
S019N002E32	MH 0	31	640	640
S019N002E33	MH 0	31	640	640
S019N003E01	MH 0	124	639	639
S019N003E04	MH 0	124	640	640
S019N003E05	MH 0	124	640	640
S019N003E06	MH 0	124	595	595
S019N003E08	MH 0	124	80	80
S019N003E09	MH 0	124	520	520
S019N003E10	MH 0	124	560	560
S019N003E11	MH 0	124	320	320
S019N003E13	MH 0	124	240	240
S019N003E14	MH 0	124	240	240
S019N003E15	MH 0	124	160	160
S019N003E17	MH 0	124	640	640
S019N003E18	MH 0	124	612	612
S019N003E19	MH 0	124	535	535
S019N003E20	MH 0	124	240	240
S019N003E25	MH 0	124	513	513
S019N003E26	MH 0	124	171	171
S019N003E27	MH 0	124	202	202
S019N003E32	MH 0	124	227	227
S019N003E33	MH 0	124	542	542
S019N004E02	MH 0	166	80	80
S019N004E07	MH 0	166	40	40
S019N004E08	MH 0	166	120	120
S019N004E17	MH 0	166	5	5
S019N004E18	MH 0	166	82	82
S019N004E19	MH 0	166	11	11
S019N004E22	MH 0	166	6	6
S019N005E01	MH 0	166	640	640
S019N005E02	MH 0	166	617	617
S019N005E03	MH 0	166	33	11	44
S019N005E04	MH 0	166	78	78
S019N005E06	MH 0	166	284	284
S019N005E07	MH 0	166	13	13
S019N005E08	MH 0	166	5	5
S019N005E12	MH 0	166	640	640
S019N006E04	MH 0	37	160	160
S019N006E04	MH 0	23	480	480
S019N006E05	MH 0	37	280	280
S019N006E05	MH 0	23	360	360
S019N006E06	MH 0	23	609	609
S020N005E01	MH 0	125	640	640
S020N005E02	MH 0	125	640	640
S020N005E03	MH 0	125	640	640
S020N005E04	MH 0	125	640	640
S020N005E05	MH 0	125	640	640
S020N005E06	MH 0	125	607	607

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T	TOTAL ACRES PAT & TA
S020N005E07	MH 0 125		607	607
S020N005E08	MH 0 125	240		240
S020N005E08	MH 0 37	120		120
S020N005E08	MH 0 23	280		280
S020N005E09	MH 0 23	640		640
S020N005E10	MH 0 23	640		640
S020N005E11	MH 0 23	640		640
S020N005E12	MH 0 23	640		640
S020N005E13	MH 0 23	640		640
S020N005E14	MH 0 23	640		640
S020N005E15	MH 0 125	320		320
S020N005E15	MH 0 23	320		320
S020N005E17	MH 0 23	640		640
S020N005E18	MH 0 23	600		600
S020N005E19	MH 0 23	602		602
S020N005E20	MH 0 23	160		160
S020N005E20	MH 0 37	480		480
S020N005E21	MH 0 125	160		160
S020N005E21	MH 0 37	480		480
S020N005E22	MH 0 23	320		320
S020N005E22	MH 0 125	80		80
S020N005E22	MH 0 37	240		240
S020N005E23	MH 0 125	160		160
S020N005E23	MH 0 23	440		440
S020N005E24	MH 0 23	640		640
S020N005E27	MH 0 37	160		160
S020N005E28	MH 0 37	320		320
S020N005E28	MH 0 23	240		240
S020N005E29	MH 0 37	120		120
S020N005E29	MH 0 23	520		520
S020N005E30	MH 0 125	160		160
S020N005E30	MH 0 23	284		284
S020N005E31	MH 0 125	160		160
S020N005E31	MH 0 23	607		607
S020N005E32	MH 0 125	107		107
S020N005E32	MH 0 23	600		600
S020N005E33	MH 0 37	40		40
S020N005E33	MH 0 23	200		200
S020N005E34	MH 0 37	120		120
S020N005E34	MH 0 23	200		200
S020N005E35	MH 0 37	35		35
S020N005E35	MH 0 23	200		200
S020N006E01	MH 0 23	640		640
S020N006E02	MH 0 23	641		641
S020N006E03	MH 0 23	640		640
S020N006E04	MH 0 23	640		640
S020N006E05	MH 0 23	640		640
S020N006E06	MH 0 23	598		598
S020N006E07	MH 0 23	600		600
S020N006E08	MH 0 23	640		640
S020N006E09	MH 0 23	640		640
S020N006E10	MH 0 23	640		640
S020N006E11	MH 0 23	640		640
S020N006E12	MH 0 23	640		640
S020N006E13	MH 0 23	608		608

SECTIO.	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S020N006E14	MH	0 23	640		640
S020N006E15	MH	0 23	640		640
S020N006E17	MH	0 23	640		640
S020N006E18	MH	0 23	442		442
S020N006E19	MH	0 23	604		604
S020N006E20	MH	0 23	640		640
S020N006E21	MH	0 23	640		640
S020N006E22	MH	0 23	640		640
S020N006E23	MH	0 139	5		5
S020N006E23	MH	0 40	485		485
S020N006E23	MH	0 23	25		25
S020N006E24	MH	0 23	313		313
S020N006E24	MH	0 139	36		36
S020N006E25	MH	0 139	3		3
S020N006E25	MH	0 23	515		515
S020N006E26	MH	0 23	421		421
S020N006E27	MH	0 23	402		402
S020N006E28	MH	0 23	400		400
S020N006E29	MH	0 139	160		160
S020N006E29	MH	0 23	120		120
S020N006E30	MH	0 139	141		141
S020N006E30	MH	0 23	40		40
S020N006E31	MH	0 37	246		246
S020N006E31	MH	0 23	127		127
S020N006E31	MH	0 139	177		177
S020N006E32	MH	0 37	461		461
S020N006E32	MH	0 23	21		21
S020N006E33	MH	0 23	44		44
S020N006E33	MH	0 37	414		414
S020N006E34	MH	0 139		466	466
S020N006E34	MH	0 124		221	221
S020N006E34	MH	0 37	14		14
S020N006E35	MH	0 139		600	600
S020N006E35	MH	0 124		360	360
S020N006E36	MH	0 139		540	540
S020N006E36	MH	0 124		520	520
S020N007E19	MH	0 139	37		37
S001S014W34	MH	0 171		3	3
S005S013W29	MH	0 145	250		250
S006S013W35	MH	0 80	15		15
S006S014W02	MH	0 140	43		43
S007S013W01	MH	0 21	33		33
S007S013W01	MH	0 80	10		10
S007S013W02	MH	0 80	4		4
S007S013W25	MH	0 129		400	400
S007S013W26	MH	0 129		210	210
S007S013W35	MH	0 129		380	380
S007S013W36	MH	0 129		640	640
S008S013W01	MH	0 128		316	316
S008S013W02	MH	0 128		378	378
S008S013W09	MH	0 128		4	4
S008S013W10	MH	0 128		262	262
S008S013W10	MH	0 39			
S008S013W11	MH	0 128		585	585
S008S013W12	MH	0 128		640	640

SECTI	MH	CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S008S013W13	MH	128		640	640
S008S013W14	MH	128		601	601
S008S013W15	MH	128		25	25
S008S013W16	MH	128	12		12
S008S013W17	MH	128	3		3
S008S013W18	MH	128	16		16
S008S013W19	MH	128	3	276	279
S008S013W20	MH	128	13	187	200
S008S013W21	MH	128	5	374	379
S008S013W22	MH	128		460	460
S008S013W23	MH	128	4	180	184
S008S013W24	MH	128	10	513	523
S008S013W25	MH	128		170	170
S008S013W26	MH	128		632	632
S008S013W27	MH	128		637	637
S008S013W28	MH	128	5	464	469
S008S013W29	MH	128		464	464
S008S013W30	MH	128		638	638
S008S013W31	MH	128		639	639
S008S013W32	MH	128		640	640
S008S013W33	MH	128		639	639
S008S013W34	MH	128		640	640
S008S013W35	MH	128		640	640
S008S013W36	MH	128		500	500
S027S019W32	MH	3	4		4
S029S018W31	MH	18	5		5
S029S019W32	MH	18	34		34
S029S019W33	MH	18	50		50
S029S019W34	MH	18	17		17
S029S019W36	MH	18	29		29
S002N012W02	MH	138	20		20
S002N012W03	MH	138	45		45
S002N012W04	MH	138	28		28
S003N011W30	MH	138	77		77
S003N012W01	MH	138	23		23
S003N012W02	MH	138	158		158
S003N012W33	MH	138	50		50
S005N008W01	MH	25	400	161	561
S005N008W02	MH	25	240		240
S005N008W03	MH	25	601	39	640
S005N008W04	MH	25	640		640
S005N008W05	MH	25	320		320
S005N008W06	MH	25	382		382
S005N008W07	MH	25	38		38
S005N008W08	MH	25	400		400
S005N008W09	MH	25	560		560
S005N008W10	MH	25	200		200
S005N008W11	MH	25	400		400
S005N008W14	MH	25		32	32
S005N008W17	MH	25	80		80
S005N008W19	MH	25	317		317
S005N008W20	MH	25	400		400
S005N008W21	MH	25	449		449
S005N008W22	MH	25	395		395
S005N008W23	MH	25	320		320

SECTIO..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S005N008W24	MH 0	25	358	358
S005N008W25	MH 0	25	611	611
S005N008W26	MH 0	25	514	514
S005N008W27	MH 0	25	260	260
S005N008W28	MH 0	25	576	576
S005N008W29	MH 0	25	453	140 593
S005N008W30	MH 0	25	637	637
S005N008W31	MH 0	25	639	639
S005N008W32	MH 0	25	319	319
S005N008W33	MH 0	25	633	633
S005N008W34	MH 0	25	640	640
S005N008W35	MH 0	25	339	339
S005N009W01	MH 0	25	400	400
S005N009W06	MH 0	25	494	494
S005N009W07	MH 0	25	356	356
S005N009W08	MH 0	25	120	120
S005N009W09	MH 0	25	10	10
S005N009W11	MH 0	25	43	43
S005N009W12	MH 0	25	129	129
S005N009W13	MH 0	25	40	40
S005N009W14	MH 0	25	20	20
S005N009W18	MH 0	25	155	155
S005N009W19	MH 0	25	79	79
S005N009W21	MH 0	25	160	160
S005N009W22	MH 0	25	31	31
S005N009W23	MH 0	25	67	67
S005N009W24	MH 0	25	400	400
S005N009W25	MH 0	25	320	320
S005N009W28	MH 0	25	321	321
S005N009W29	MH 0	25	400	400
S005N009W31	MH 0	25	27	27
S005N009W32	MH 0	25	550	550
S005N009W33	MH 0	25	619	619
S005N009W34	MH 0	25	640	640
S005N009W35	MH 0	25	320	320
S005N010W01	MH 0	25	466	466
S005N010W02	MH 0	25	555	555
S005N010W03	MH 0	25	640	640
S005N010W04	MH 0	25	446	446
S005N010W05	MH 0	25	160	160
S005N010W06	MH 0	25	165	165
S005N010W07	MH 0	25	90	90
S005N010W08	MH 0	25	120	120
S005N010W09	MH 0	25	558	558
S005N010W10	MH 0	25	440	440
S005N010W11	MH 0	25	552	7 559
S005N010W12	MH 0	25	636	636
S005N010W13	MH 0	25	321	321
S005N010W14	MH 0	25	233	40 273
S005N010W15	MH 0	25	40	40
S005N010W17	MH 0	25	80	80
S005N010W18	MH 0	25	435	435
S005N010W19	MH 0	25	7	7
S005N010W20	MH 0	25	200	200
S005N010W21	MH 0	25	120	120

SECTI...	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S005N010W23	MH	0	80		80
S005N010W24	MH	0	80		80
S005N010W26	MH	0	160		160
S005N010W27	MH	0	240		240
S005N010W30	MH	0	43		43
S005N010W31	MH	0	202		202
S005N010W32	MH	0	20	3	23
S005N010W33	MH	0	61		61
S005N010W34	MH	0	56		56
S005N010W35	MH	0	91		91
S005N011W06	MH	0	159		159
S005N011W06	MH	0	30		30
S005N012W01	MH	0	14		14
S006N010W30	MH	0	307		307
S006N010W31	MH	0	434		434
S006N011W03	MH	0		160	160
S006N011W04	MH	0		80	80
S006N011W05	MH	0		320	320
S006N011W06	MH	0		390	390
S006N011W07	MH	0		231	231
S006N011W09	MH	0		360	360
S006N011W10	MH	0		520	520
S006N011W15	MH	0		340	340
S006N011W16	MH	0		600	600
S006N011W17	MH	0		320	320
S006N011W20	MH	0		320	320
S006N011W21	MH	0		160	160
S006N011W22	MH	0	640		640
S006N011W23	MH	0	640		640
S006N011W24	MH	0	640		640
S006N011W25	MH	0	640		640
S006N011W26	MH	0	640		640
S006N011W27	MH	0	560		560
S006N011W28	MH	0	320		320
S006N011W29	MH	0	160		160
S006N011W31	MH	0	14	1	15
S006N011W33	MH	0	198	3	201
S006N011W34	MH	0	313	13	326
S006N011W35	MH	0	120	160	280
S007N010W06	MH	0	610		610
S007N011W01	MH	0	277		277
S007N011W02	MH	0	371		371
S007N011W04	MH	0	30		30
S007N011W05	MH	0	4		4
S007N011W06	MH	0		79	79
S007N011W07	MH	0	39	68	107
S007N011W08	MH	0	1	24	25
S007N011W09	MH	0		322	322
S007N011W10	MH	0		160	160
S007N011W13	MH	0		584	584
S007N011W14	MH	0		153	153
S007N011W15	MH	0		480	480
S007N011W16	MH	0		244	244
S007N011W19	MH	0	429		429
S007N011W20	MH	0	605		605

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S007N011W21	MH 0	25	280	280
S007N011W22	MH 0	25	541	541
S007N011W27	MH 0	25	507	507
S007N011W28	MH 0	25	177	177
S007N011W29	MH 0	25	40	40
S007N011W30	MH 0	25	263	263
S007N011W31	MH 0	25	360	360
S007N011W32	MH 0	25	640	640
S007N011W33	MH 0	25	160	160
S007N011W34	MH 0	25	320	320
S007N012W02	MH 0	25	80	80
S007N012W03	MH 0	6	404	404
S007N012W03	MH 0	25	40	40
S007N012W04	MH 0	6	167	167
S007N012W09	MH 0	6	503	503
S007N012W10	MH 0	6	54	54
S007N012W13	MH 0	25	5	5
S007N012W15	MH 0	25	40	40
S007N012W21	MH 0	25	47	47
S007N012W23	MH 0	25	40	80 120
S007N012W27	MH 0	25	65	6 71
S007N012W28	MH 0	25	46	46
S007N012W34	MH 0	25	97	97
S008N010W18	MH 0	25	88	88
S008N010W19	MH 0	25	143	143
S008N010W30	MH 0	25	603	603
S008N010W31	MH 0	25	578	578
S008N011W13	MH 0	25	96	96
S008N011W14	MH 0	25	185	185
S008N011W15	MH 0	25	118	118
S008N011W17	MH 0	25	2	2
S008N011W20	MH 0	25	346	5 351
S008N011W21	MH 0	25	356	356
S008N011W22	MH 0	25	255	255
S008N011W23	MH 0	25	161	161
S008N011W25	MH 0	25	608	608
S008N011W26	MH 0	25	204	204
S008N011W28	MH 0	25	320	142 462
S008N011W29	MH 0	25	542	542
S008N011W30	MH 0	25	86	86
S008N011W31	MH 0	25	81	81
S008N011W32	MH 0	25	200	200
S008N011W33	MH 0	25	68	68
S008N011W34	MH 0	25	158	158
S008N011W35	MH 0	25	124	124
S008N011W36	MH 0	25	475	475
S008N012W34	MH 0	6	57	57
S008N012W35	MH 0	6	10	10
S011N003W10	MH 0	20	34	34
S011N003W10	MH 0	8	160	160
S011N003W11	MH 0	8	70	70
S011N003W14	MH 0	8	195	195
S012N003W04	MH 0	143	80	80
S012N003W30	MH 0	6	219	219
S012N003W31	MH 0	6	138	138

SECTI.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S012N003W32	MH 0 6	47		47
S012N003W33	MH 0 143	8		8
S012N004W15	MH 0 6	24		24
S012N004W22	MH 0 6	32		32
S012N004W23	MH 0 6	20		20
S012N004W25	MH 0 6	268		268
S012N004W26	MH 0 6	5		5
S012N011W03	MH 0 70		640	640
S012N011W04	MH 0 70		640	640
S012N011W05	MH 0 70		640	640
S012N011W06	MH 0 70		578	578
S012N011W07	MH 0 70		580	580
S012N011W08	MH 0 70		640	640
S012N011W09	MH 0 70		640	640
S012N011W10	MH 0 70		640	640
S012N011W15	MH 0 70		640	640
S012N011W16	MH 0 70		640	640
S012N011W17	MH 0 70		640	640
S012N011W18	MH 0 70		582	582
S012N011W19	MH 0 70		211	211
S012N011W20	MH 0 70		492	492
S012N011W21	MH 0 70		640	640
S012N011W22	MH 0 70		640	640
S012N011W27	MH 0 70		175	175
S012N011W28	MH 0 70		180	180
S012N011W29	MH 0 70		48	48
S012N012W01	MH 0 58	640		640
S012N012W02	MH 0 58	640		640
S012N012W03	MH 0 58	640		640
S012N012W04	MH 0 58	640		640
S012N012W05	MH 0 58	640		640
S012N012W06	MH 0 58	596		596
S012N012W07	MH 0 58	598		598
S012N012W08	MH 0 58	640		640
S012N012W09	MH 0 58	640		640
S012N012W10	MH 0 58	640		640
S012N012W11	MH 0 58	640		640
S012N012W12	MH 0 58	640		640
S012N012W13	MH 0 58	640		640
S012N012W14	MH 0 58	640		640
S012N012W15	MH 0 58	640		640
S012N012W16	MH 0 58	640		640
S012N012W17	MH 0 58	640		640
S012N012W18	MH 0 58	599		599
S012N012W19	MH 0 71			
S012N012W19	MH 0 58	601		601
S012N012W20	MH 0 58	640		640
S012N012W20	MH 0 71			
S012N012W21	MH 0 71			
S012N012W21	MH 0 58	640		640
S012N012W22	MH 0 58	550		550
S012N012W22	MH 0 71			
S012N012W23	MH 0 58	135		135
S012N012W24	MH 0 58	385		385
S012N012W27	MH 0 58	540		540

SECTI.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S012N012W27	MH 71			
S012N012W28	MH 71			
S012N012W28	MH 58	640		640
S012N012W29	MH 58	640		640
S012N012W29	MH 71			
S012N012W30	MH 71			
S012N012W30	MH 58	603		603
S012N012W31	MH 58	605		605
S012N012W31	MH 71			
S012N012W32	MH 71			
S012N012W32	MH 58	640		640
S012N012W33	MH 58	640		640
S012N012W33	MH 71			
S012N012W34	MH 71			
S012N012W34	MH 58	540		540
S012N013W01	MH 59	640		640
S012N013W02	MH 59	640		640
S012N013W03	MH 59	640		640
S012N013W04	MH 59	640		640
S012N013W05	MH 59	640		640
S012N013W06	MH 59	599		599
S012N013W07	MH 59	601		601
S012N013W08	MH 59	640		640
S012N013W09	MH 59	640		640
S012N013W10	MH 59	640		640
S012N013W11	MH 59	640		640
S012N013W12	MH 59	640		640
S012N013W13	MH 59	640		640
S012N013W14	MH 59	640		640
S012N013W15	MH 59	640		640
S012N013W16	MH 59	640		640
S012N013W17	MH 59	640		640
S012N013W18	MH 59	603		603
S012N013W19	MH 59	605		605
S012N013W20	MH 59	640		640
S012N013W21	MH 59	640		640
S012N013W22	MH 59	640		640
S012N013W23	MH 59	640		640
S012N013W24	MH 59	640		640
S012N013W25	MH 59	640		640
S012N013W26	MH 59	640		640
S012N013W27	MH 59	640		640
S012N013W28	MH 59	640		640
S012N013W29	MH 59	640		640
S012N013W30	MH 59	606		606
S012N013W31	MH 59	608		608
S012N013W32	MH 59	640		640
S012N013W33	MH 59	640		640
S012N013W34	MH 59	640		640
S012N013W35	MH 59	640		640
S012N013W36	MH 59	640		640
S013N001W05	MH 154		40	40
S013N001W06	MH 154		276	276
S013N003W07	MH 76	28		28
S013N003W09	MH 151	40		40

SECTIO..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S013N003W18	MH	2		1
S013N003W21	MH	152		40
S013N003W28	MH	89		10
S013N003W28	MH	1		70
S013N003W33	MH	143		300
S013N003W34	MH	174		20
S013N010W04	MH	57		640
S013N010W05	MH	57		640
S013N010W06	MH	57		630
S013N010W07	MH	57		632
S013N010W08	MH	57		640
S013N010W09	MH	57		640
S013N010W16	MH	57		640
S013N010W17	MH	57		640
S013N010W18	MH	57		634
S013N010W19	MH	57		636
S013N010W20	MH	57		640
S013N010W21	MH	57		640
S013N010W28	MH	57		640
S013N010W29	MH	57		640
S013N010W30	MH	57		637
S013N010W31	MH	57		639
S013N010W32	MH	57		640
S013N010W33	MH	57		640
S013N011W01	MH	61		640
S013N011W02	MH	61		640
S013N011W03	MH	61		640
S013N011W04	MH	61		640
S013N011W05	MH	61		640
S013N011W06	MH	61		630
S013N011W07	MH	61		632
S013N011W08	MH	61		640
S013N011W09	MH	61		640
S013N011W10	MH	61		640
S013N011W11	MH	61		640
S013N011W12	MH	61		640
S013N011W13	MH	61		640
S013N011W14	MH	61		640
S013N011W15	MH	61		640
S013N011W16	MH	61		640
S013N011W17	MH	61		640
S013N011W18	MH	61		634
S013N011W19	MH	61		636
S013N011W20	MH	61		640
S013N011W21	MH	61		640
S013N011W22	MH	61		640
S013N011W23	MH	61		640
S013N011W24	MH	61		640
S013N011W25	MH	61		640
S013N011W26	MH	61		640
S013N011W27	MH	61		640
S013N011W28	MH	61		640
S013N011W29	MH	61		640
S013N011W30	MH	61		627
S013N011W31	MH	61		639

SECTIL	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S013N011W32	MH 61	640		640
S013N011W33	MH 61	640		640
S013N011W34	MH 61	640		640
S013N011W35	MH 61	640		640
S013N011W36	MH 61	640		640
S013N012W01	MH 63	640		640
S013N012W02	MH 63	640		640
S013N012W03	MH 63	640		640
S013N012W04	MH 63	640		640
S013N012W05	MH 63	640		640
S013N012W06	MH 63	630		630
S013N012W07	MH 63	632		632
S013N012W08	MH 63	640		640
S013N012W09	MH 63	640		640
S013N012W10	MH 63	640		640
S013N012W11	MH 63	640		640
S013N012W12	MH 63	640		640
S013N012W13	MH 63	640		640
S013N012W14	MH 63	640		640
S013N012W15	MH 63	640		640
S013N012W16	MH 63	640		640
S013N012W17	MH 63	640		640
S013N012W18	MH 63	634		634
S013N012W19	MH 63	636		636
S013N012W20	MH 63	640		640
S013N012W21	MH 63	640		640
S013N012W22	MH 63	640		640
S013N012W23	MH 63	640		640
S013N012W24	MH 63	640		640
S013N012W25	MH 63	640		640
S013N012W26	MH 63	640		640
S013N012W27	MH 63	640		640
S013N012W28	MH 63	640		640
S013N012W29	MH 63	640		640
S013N012W30	MH 63	637		637
S013N012W31	MH 63	639		639
S013N012W32	MH 63	640		640
S013N012W33	MH 63	640		640
S013N012W34	MH 63	640		640
S013N012W35	MH 63	640		640
S013N012W36	MH 63	640		640
S013N013W01	MH 65	640		640
S013N013W02	MH 65	640		640
S013N013W03	MH 65	640		640
S013N013W04	MH 65	640		640
S013N013W05	MH 65	640		640
S013N013W06	MH 65	630		630
S013N013W07	MH 65	632		632
S013N013W08	MH 65	640		640
S013N013W09	MH 65	640		640
S013N013W10	MH 65	640		640
S013N013W11	MH 65	640		640
S013N013W12	MH 65	640		640
S013N013W13	MH 65	640		640
S013N013W14	MH 65	640		640

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S013N013W15	MH 0	65	640	640
S013N013W16	MH 0	65	640	640
S013N013W17	MH 0	65	640	640
S013N013W18	MH 0	65	634	634
S013N013W19	MH 0	65	636	636
S013N013W20	MH 0	65	640	640
S013N013W21	MH 0	65	640	640
S013N013W22	MH 0	65	640	640
S013N013W23	MH 0	65	640	640
S013N013W24	MH 0	65	640	640
S013N013W25	MH 0	65	640	640
S013N013W26	MH 0	65	640	640
S013N013W27	MH 0	65	640	640
S013N013W28	MH 0	65	640	640
S013N013W29	MH 0	65	640	640
S013N013W30	MH 0	65	637	637
S013N013W31	MH 0	65	639	639
S013N013W32	MH 0	65	640	640
S013N013W33	MH 0	65	640	640
S013N013W34	MH 0	65	640	640
S013N013W35	MH 0	65	640	640
S013N013W36	MH 0	65	640	640
S014N002W13	MH 0	56	40	40
S014N002W14	MH 0	56	257	257
S014N002W23	MH 0	56	320	320
S014N002W24	MH 0	56	480	480
S014N004W04	MH 0	86	617	617
S014N004W05	MH 0	86	640	640
S014N004W06	MH 0	86	616	616
S014N004W07	MH 0	86	618	618
S014N004W08	MH 0	86	640	640
S014N004W09	MH 0	86	626	626
S014N004W12	MH 0	170	14	14
S014N004W16	MH 0	86	640	640
S014N004W17	MH 0	86	640	640
S014N004W18	MH 0	86	620	620
S014N004W19	MH 0	86	622	622
S014N004W20	MH 0	86	640	640
S014N004W21	MH 0	86	640	640
S014N004W30	MH 0	86	431	431
S014N004W31	MH 0	170	290	290
S014N004W31	MH 0	86	151	151
S014N004W32	MH 0	170	40	40
S014N004W34	MH 0	170	80	80
S014N004W35	MH 0	170	40	40
S014N005W01	MH 0	86	640	640
S014N005W02	MH 0	86	640	640
S014N005W03	MH 0	86	640	640
S014N005W04	MH 0	86	640	640
S014N005W05	MH 0	86	640	640
S014N005W06	MH 0	86	620	620
S014N005W07	MH 0	86	622	622
S014N005W08	MH 0	86	620	620
S014N005W09	MH 0	86	640	640
S014N005W10	MH 0	86	640	640

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S014N005W11	MH 0	86	640	640
S014N005W12	MH 0	86	640	640
S014N005W13	MH 0	86	640	640
S014N005W14	MH 0	86	640	640
S014N005W15	MH 0	86	640	640
S014N005W16	MH 0	86	640	640
S014N005W17	MH 0	86	640	640
S014N005W18	MH 0	86	623	623
S014N005W19	MH 0	86	625	625
S014N005W20	MH 0	86	640	640
S014N005W21	MH 0	86	640	640
S014N005W22	MH 0	86	640	640
S014N005W23	MH 0	86	640	640
S014N005W24	MH 0	86	640	640
S014N005W25	MH 0	86	526	526
S014N005W26	MH 0	86	640	640
S014N005W27	MH 0	86	640	640
S014N005W28	MH 0	86	640	640
S014N005W29	MH 0	86	640	640
S014N005W30	MH 0	86	627	627
S014N005W31	MH 0	86	480	480
S014N005W32	MH 0	86	400	400
S014N005W33	MH 0	86	413	413
S014N005W34	MH 0	86	540	540
S014N005W35	MH 0	86	491	491
S014N005W36	MH 0	86	586	586
S014N006W01	MH 0	86	150	150
S014N006W12	MH 0	86	236	236
S014N012W01	MH 0	67	640	640
S014N012W02	MH 0	67	640	640
S014N012W03	MH 0	67	640	640
S014N012W04	MH 0	67	640	640
S014N012W05	MH 0	67	640	640
S014N012W06	MH 0	67	620	620
S014N012W07	MH 0	67	622	622
S014N012W08	MH 0	67	640	640
S014N012W09	MH 0	67	640	640
S014N012W10	MH 0	67	640	640
S014N012W11	MH 0	67	640	640
S014N012W12	MH 0	67	640	640
S014N012W13	MH 0	67	640	640
S014N012W14	MH 0	67	640	640
S014N012W15	MH 0	67	640	640
S014N012W16	MH 0	67	640	640
S014N012W17	MH 0	67	640	640
S014N012W18	MH 0	67	623	623
S014N012W19	MH 0	67	625	625
S014N012W20	MH 0	67	640	640
S014N012W21	MH 0	67	640	640
S014N012W22	MH 0	67	640	640
S014N012W23	MH 0	67	640	640
S014N012W24	MH 0	67	640	640
S014N012W25	MH 0	67	640	640
S014N012W26	MH 0	67	640	640
S014N012W27	MH 0	67	640	640

SECTI.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S014N012W28	MH 0	67	640	640
S014N012W29	MH 0	67	640	640
S014N012W30	MH 0	67	627	627
S014N012W31	MH 0	67	629	629
S014N012W32	MH 0	67	640	640
S014N012W33	MH 0	67	640	640
S014N012W34	MH 0	67	640	640
S014N012W35	MH 0	67	640	640
S014N012W36	MH 0	67	640	640
S014N013W01	MH 0	69	640	640
S014N013W02	MH 0	69	640	640
S014N013W03	MH 0	69	640	640
S014N013W10	MH 0	69	640	640
S014N013W11	MH 0	69	640	640
S014N013W12	MH 0	69	640	640
S014N013W13	MH 0	69	640	640
S014N013W14	MH 0	69	640	640
S014N013W15	MH 0	69	640	640
S014N013W22	MH 0	69	640	640
S014N013W23	MH 0	69	640	640
S014N013W24	MH 0	69	640	640
S014N013W25	MH 0	69	640	640
S014N013W26	MH 0	69	640	640
S014N013W27	MH 0	69	640	640
S014N013W34	MH 0	69	640	640
S014N013W35	MH 0	69	640	640
S014N013W36	MH 0	69	640	640
S015N003W05	MH 0	146	160	160
S015N003W06	MH 0	146	204	204
S015N003W08	MH 0	146	163	163
S015N003W09	MH 0	141	32	32
S015N003W10	MH 0	141	19	19
S015N003W18	MH 0	146	406	406
S015N003W19	MH 0	146	47	47
S015N004W05	MH 0	86	640	640
S015N004W06	MH 0	86	604	604
S015N004W07	MH 0	86	606	606
S015N004W08	MH 0	86	640	640
S015N004W17	MH 0	86	640	640
S015N004W18	MH 0	86	608	608
S015N004W19	MH 0	86	610	610
S015N004W20	MH 0	86	640	640
S015N004W29	MH 0	86	640	640
S015N004W30	MH 0	86	616	616
S015N004W31	MH 0	86	618	618
S015N004W32	MH 0	86	640	640
S015N005W01	MH 0	87	640	640
S015N005W02	MH 0	87	640	640
S015N005W03	MH 0	87	640	640
S015N005W04	MH 0	87	640	640
S015N005W05	MH 0	87	640	640
S015N005W06	MH 0	87	609	609
S015N005W07	MH 0	87	611	611
S015N005W08	MH 0	87	640	640
S015N005W09	MH 0	87	343	343

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SECT.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S015N005W09	MH	86	315	315
S015N005W10	MH	86	65	65
S015N005W10	MH	87	577	577
S015N005W11	MH	87	640	640
S015N005W12	MH	87	640	640
S015N005W13	MH	87	640	640
S015N005W14	MH	87	605	605
S015N005W14	MH	86	36	36
S015N005W15	MH	87	118	118
S015N005W15	MH	86	502	502
S015N005W16	MH	87	5	5
S015N005W16	MH	86	640	640
S015N005W17	MH	87	439	439
S015N005W17	MH	86	219	219
S015N005W18	MH	87	613	613
S015N005W19	MH	87	537	537
S015N005W19	MH	86	80	80
S015N005W20	MH	86	601	601
S015N005W20	MH	87	36	36
S015N005W21	MH	86	640	640
S015N005W22	MH	86	640	640
S015N005W23	MH	86	460	460
S015N005W23	MH	87	167	167
S015N005W24	MH	87	626	626
S015N005W24	MH	86	16	16
S015N005W25	MH	86	394	394
S015N005W25	MH	87	224	224
S015N005W26	MH	86	640	640
S015N005W27	MH	86	640	640
S015N005W28	MH	86	640	640
S015N005W29	MH	86	640	640
S015N005W30	MH	87	236	236
S015N005W30	MH	86	415	415
S015N005W31	MH	86	565	565
S015N005W31	MH	87	42	42
S015N005W32	MH	86	640	640
S015N005W33	MH	86	640	640
S015N005W34	MH	86	640	640
S015N005W35	MH	86	640	640
S015N005W36	MH	87	39	39
S015N005W36	MH	86	601	601
S015N006W36	MH	86	8	8
S016N002W05	MH	169	40	40
S016N003W02	MH	160	250	250
S016N003W03	MH	160	40	40
S016N003W03	MH	139	10	10
S016N003W06	MH	160	60	60
S016N003W09	MH	160	5	5
S016N003W10	MH	160	120	120
S016N003W12	MH	160	40	40
S016N003W13	MH	160	40	40
S016N003W14	MH	160	40	40
S016N003W15	MH	160	120	120
S016N003W23	MH	160	160	160
S016N003W27	MH	160	40	40

SECTIO	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S016N003W34	MH	160	40	40
S017N001W05	MH	164	120	120
S017N001W18	MH	164	38	38
S017N002W02	MH	165	161	161
S017N002W03	MH	165	40	40
S017N002W06	MH	165	198	198
S017N002W08	MH	165	80	80
S017N002W08	MH	139	4	4
S017N002W12	MH	165	40	40
S017N002W13	MH	165	40	40
S017N002W14	MH	165	80	80
S017N002W17	MH	165	40	40
S017N002W19	MH	165	158	158
S017N002W21	MH	165	80	80
S017N002W23	MH	165	160	160
S017N002W31	MH	165	80	80
S017N002W32	MH	165	80	80
S017N002W35	MH	165	80	80
S017N004W01	MH	55	640	640
S017N004W02	MH	55	640	640
S017N004W03	MH	55	640	640
S017N004W04	MH	55	640	640
S017N004W05	MH	55	640	640
S017N004W06	MH	55	626	626
S017N004W07	MH	55	632	632
S017N004W08	MH	55	640	640
S017N004W09	MH	55	640	640
S017N004W10	MH	55	640	640
S017N004W11	MH	55	275	275
S017N004W12	MH	55	309	309
S017N004W13	MH	55	322	322
S017N004W14	MH	55	278	278
S017N004W15	MH	55	534	534
S017N004W16	MH	55	640	640
S017N004W17	MH	55	640	640
S017N004W18	MH	55	634	634
S017N004W19	MH	55	558	558
S017N004W20	MH	55	640	640
S017N004W21	MH	55	640	640
S017N004W22	MH	55	640	640
S017N004W23	MH	55	631	631
S017N004W24	MH	55	400	400
S017N004W25	MH	55	15	15
S017N004W26	MH	55	48	48
S017N004W27	MH	55	223	223
S017N004W28	MH	55	263	263
S017N004W29	MH	55	624	624
S017N004W30	MH	55	536	536
S017N004W31	MH	55	507	507
S017N004W32	MH	55	234	234
S017N004W33	MH	55	503	503
S017N004W34	MH	55	265	265
S017N004W35	MH	55	65	65
S018N001W05	MH	167	643	643
S018N001W06	MH	167	618	618

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S018N001W07	MH 0	167	618	618
S018N001W29	MH 0	167	55	55
S018N001W32	MH 0	167	25	25
S018N002W28	MH 0	157	130	130
S018N002W34	MH 0	157	1	1
S018N002W35	MH 0	157	40	40
S018N003W05	MH 0	161	80	80
S018N003W07	MH 0	161	463	463
S018N003W08	MH 0	161	80	80
S018N003W20	MH 0	161	80	80
S018N003W21	MH 0	161	160	160
S018N003W23	MH 0	161	80	80
S018N003W25	MH 0	139	10	10
S018N003W28	MH 0	161	480	480
S018N003W29	MH 0	161	160	160
S018N003W30	MH 0	161	392	392
S018N003W35	MH 0	161	40	40
S018N003W35	MH 0	139	16	16
S020N004W07	MH 0	158	16	16
S020N004W08	MH 0	158	80	80
S020N004W09	MH 0	158	160	160
S020N004W17	MH 0	158	40	40
S020N004W18	MH 0	158	70	70
S020N004W30	MH 0	158	160	160
S020N004W31	MH 0	158	271	271
S020N004W34	MH 0	158	160	160
S020N004W35	MH 0	158	240	240
S020N005W12	MH 0	168	97	97
S021N004W05	MH 0	159	120	120
S021N004W06	MH 0	159	40	40
S021N004W07	MH 0	159	78	78
S021N004W08	MH 0	159	80	80
S021N004W19	MH 0	159	78	78
S021N004W30	MH 0	159	194	194
S025N004W30	MH 0	45	78	78
S025N005W01	MH 0	45	20	20
S025N005W13	MH 0	45	22	22
S025N005W25	MH 0	45	40	40
S026N004W06	MH 0	45	619	619
S026N004W07	MH 0	45	594	594
S026N004W18	MH 0	45	530	530
S026N004W19	MH 0	109	15	15
S026N004W30	MH 0	109	85	85
S026N004W31	MH 0	109	20	20
S026N005W02	MH 0	45	488	488
S026N005W11	MH 0	45	180	180
S026N005W12	MH 0	45	640	640
S026N005W13	MH 0	45	520	520
S026N005W14	MH 0	45	210	210
S026N005W23	MH 0	45	53	53

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SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	PAT & TA
C022S019E01	MH 4	131	640	640
C022S019E02	MH 4	131	618	618
C022S019E03	MH 4	131	430	430
C022S019E04	MH 4	131	220	220
C022S019E05	MH 4	131	35	35
C022S019E11	MH 4	131	31	31
C022S019E12	MH 4	131	160	160
C022S020E01	MH 0	132	640	640
C022S020E02	MH 4	132	640	640
C022S020E03	MH 0	132	640	640
C022S020E04	MH 0	132	640	640
C022S020E05	MH 0	132	640	640
C022S020E06	MH 4	132	695	695
C022S020E07	MH 4	132	300	300
C022S020E08	MH 4	132	285	285
C022S020E09	MH 4	132	341	341
C022S020E10	MH 4	132	465	465
C022S020E11	MH 4	132	630	630
C022S020E12	MH 4	132	640	640
C022S020E13	MH 4	132	270	270
C022S020E14	MH 4	132	75	75
C022S021E01	MH 0	133	640	640
C022S021E02	MH 0	133	640	640
C022S021E03	MH 0	133	640	640
C022S021E04	MH 0	133	640	640
C022S021E05	MH 0	133	640	640
C022S021E06	MH 0	133	641	641
C022S021E07	MH 4	133	643	643
C022S021E08	MH 0	133	640	640
C022S021E09	MH 0	133	640	640
C022S021E10	MH 0	133	640	640
C022S021E11	MH 0	133	640	640
C022S021E12	MH 0	133	640	640
C022S021E13	MH 0	133	640	640
C022S021E14	MH 0	133	640	640
C022S021E15	MH 0	133	640	640
C022S021E16	MH 0	133	640	640
C022S021E17	MH 4	133	640	640
C022S021E18	MH 4	133	554	554
C022S021E19	MH 4	133	18	18
C022S021E20	MH 4	133	246	246
C022S021E21	MH 4	133	560	560
C022S021E22	MH 4	133	620	620
C022S021E23	MH 4	133	637	637
C022S021E24	MH 4	133	640	640
C022S021E25	MH 4	133	640	640
C022S021E26	MH 4	133	633	633
C022S021E27	MH 4	133	350	350
C022S021E28	MH 4	133	35	35
C022S021E35	MH 4	133	190	190
C022S021E36	MH 4	133	581	581
C022S022E01	MH 0	134	640	640
C022S022E02	MH 0	134	640	640
C022S022E03	MH 0	134	640	640
C022S022E04	MH 0	134	640	640

SECTION	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C026S054E34	MH	16	540	540
C026S054E35	MH	16	640	640
C026S054E36	MH	16	640	640
C026S055E11	MH	16	5	5
C026S055E12	MH	16	160	160
C026S055E13	MH	16	640	640
C026S055E14	MH	16	305	305
C026S055E15	MH	16	45	45
C026S055E22	MH	16	135	135
C026S055E23	MH	16	640	640
C026S055E24	MH	137	9	9
C026S055E24	MH	16	631	631
C026S055E25	MH	16	640	640
C026S055E26	MH	16	640	640
C026S055E27	MH	16	595	595
C026S055E28	MH	16	235	235
C026S055E29	MH	16	5	5
C026S055E30	MH	16	225	225
C026S055E31	MH	16	611	611
C026S055E32	MH	16	545	545
C026S055E33	MH	16	640	640
C026S055E34	MH	16	640	640
C026S055E35	MH	16	640	640
C026S055E36	MH	16	639	639
C026S056E05	MH	16	75	75
C026S056E06	MH	16	20	20
C026S056E07	MH	16	497	497
C026S056E08	MH	16	430	430
C026S056E16	MH	16	10	10
C026S056E17	MH	16	605	605
C026S056E18	MH	16	615	615
C026S056E19	MH	16	617	617
C026S056E20	MH	16	640	640
C026S056E21	MH	16	120	120
C026S056E28	MH	16	60	60
C026S056E29	MH	16	600	600
C026S056E30	MH	16	618	618
C026S056E31	MH	16	620	620
C026S056E32	MH	16	245	245
C027S054E01	MH	16	456	456
C027S054E02	MH	16	451	451
C027S054E03	MH	16	106	106
C027S054E11	MH	16	370	370
C027S054E12	MH	16	640	640
C027S054E13	MH	16	500	500
C027S054E24	MH	16	80	80
C027S055E01	MH	16	456	456
C027S055E02	MH	16	326	326
C027S055E03	MH	16	456	456
C027S055E04	MH	16	456	456
C027S055E05	MH	16	456	456
C027S055E06	MH	16	443	443
C027S055E07	MH	16	621	621
C027S055E08	MH	16	640	640
C027S055E09	MH	16	640	640

SECTION	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C027S055E10	MH 2	16	640		640
C027S055E11	MH 2	16	640		640
C027S055E12	MH 2	16	630		630
C027S055E13	MH 2	16	270		270
C027S055E14	MH 2	16	640		640
C027S055E15	MH 2	16	640		640
C027S055E16	MH 1	16	640		640
C027S055E17	MH 1	16	640		640
C027S055E18	MH 2	16	623		623
C027S055E19	MH 2	16	585		585
C027S055E20	MH 1	16	550		550
C027S055E21	MH 1	16	595		595
C027S055E22	MH 1	16	640		640
C027S055E23	MH 2	16	640		640
C027S055E24	MH 2	16	235		235
C027S055E25	MH 2	16	390		390
C027S055E26	MH 2	16	640		640
C027S055E27	MH 1	16	640		640
C027S055E28	MH 1	16	630		630
C027S055E29	MH 3	16	605		605
C027S055E30	MH 3	16	179		179
C027S055E32	MH 3	16	335		335
C027S055E33	MH 3	16	640		640
C027S055E34	MH 1	16	640		640
C027S055E35	MH 1	16	640		640
C027S055E36	MH 3	16	640		640
C027S056E06	MH 2	16	371		371
C027S056E07	MH 2	16	150		150
C027S056E31	MH 2	16	80		80
C028S053E08	MH 3	16	37		37
C028S053E09	MH 2	16	100		100
C028S053E11	MH 2	16	25		25
C028S053E12	MH 2	16	170		170
C028S053E13	MH 3	16	600		600
C028S053E14	MH 1	16	431		431
C028S053E15	MH 1	16	490		490
C028S053E16	MH 1	16	480		480
C028S053E21	MH 5	16	140		140
C028S053E22	MH 2	16	635		635
C028S053E23	MH 1	16	640		640
C028S053E24	MH 1	16	516		516
C028S053E25	MH 2	16	640		640
C028S053E26	MH 2	16	535		535
C028S053E27	MH 5	16	170		170
C028S053E35	MH 5	16	5		5
C028S053E36	MH 2	16	275		275
C028S054E07	MH 2	16	10		10
C028S054E13	MH 2	16	125		125
C028S054E14	MH 2	16	280		280
C028S054E15	MH 2	16	325		325
C028S054E16	MH 2	16	305		305
C028S054E17	MH 2	16	415		415
C028S054E18	MH 2	16	636		636
C028S054E19	MH 3	16	686		686
C028S054E20	MH 1	16	640		640

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SECT1	MH CASE WITH TA OR PAT		ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
C028S054E21	MH 4	16	522		522
C028S054E22	MH 4	16	560		560
C028S054E23	MH 2	16	533		533
C028S054E24	MH 2	16	591		591
C028S054E25	MH 1	16	640		640
C028S054E26	MH 1	16	640		640
C028S054E27	MH 4	16	615		615
C028S054E29	MH 5	16	640		640
C028S054E30	MH 2	16	688		688
C028S054E31	MH 2	16	650		650
C028S054E32	MH 3	16	640		640
C028S054E33	MH 5	16	508		508
C028S054E34	MH 3	16	640		640
C028S054E35	MH 3	16	640		640
C028S054E36	MH 2	16	640		640
C028S055E01	MH 3	16	640		640
C028S055E02	MH 1	16	640		640
C028S055E03	MH 1	16	580	24	604
C028S055E04	MH 3	16	640		640
C028S055E09	MH 3	16	590		590
C028S055E10	MH 3	16	535		535
C028S055E11	MH 1	16	635		635
C028S055E12	MH 1	16	640		640
C028S055E13	MH 1	16	640		640
C028S055E14	MH 4	16	640		640
C028S055E15	MH 4	16	640		640
C028S055E16	MH 4	16	580		580
C028S055E17	MH 3	16	85		85
C028S055E18	MH 3	16	150		150
C028S055E19	MH 3	16	402		402
C028S055E20	MH 3	16	640		640
C028S055E21	MH 3	16	640		640
C028S055E22	MH 4	16	430	40	470
C028S055E23	MH 4	16	40		40
C028S055E24	MH 4	16	640		640
C028S055E25	MH 4	16	270		270
C028S055E26	MH 4	16	380		380
C028S055E27	MH 1	16	225		225
C028S055E28	MH 1	16	380		380
C028S055E29	MH 1	16	279		279
C028S055E30	MH 1	16	255		255
C028S055E35	MH 1	16	40		40
C028S055E36	MH 1	16	137		137
C028S056E05	MH 3	16	10		10
C028S056E06	MH 3	16	481		481
C028S056E07	MH 3	16	633		633
C028S056E08	MH 3	16	325		325
C028S056E17	MH 3	16	400		400
C028S056E18	MH 3	16	634		634
C028S056E19	MH 1	16	636		636
C028S056E20	MH 3	16	50		50
C028S056E30	MH 1	16	113		113
C028S056E31	MH 1	16	10		10
C028S056E34	MH 3	16	320		320
C029S054E01	MH 5	16	809		809

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SECT1	MH CASE WITH TA OR PAT		ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
C029S054E02	MH 2	16	751		751
C029S054E03	MH 2	16	104		104
C029S054E11	MH 4	16	90		90
C029S054E12	MH 4	16	40		40
C029S055E01	MH 2	16	824		824
C029S055E02	MH 2	16	824		824
C029S055E03	MH 2	16	824		824
C029S055E04	MH 2	16	824		824
C029S055E05	MH 2	16	784		784
C029S055E06	MH 4	16	649		649
C029S055E09	MH 4	16	185		185
C029S055E10	MH 4	16	420		420
C029S055E11	MH 4	16	610		610
C029S055E12	MH 2	16	640		640
C029S055E13	MH 3	16	80		80
C029S056E01	MH 1	16	34		34
C029S056E05	MH 1	16	638		638
C029S056E06	MH 2	16	578		578
C029S056E07	MH 1	16	580		580
C029S056E08	MH 1	16	640		640
C029S056E09	MH 1	16	640		640
C029S056E10	MH 1	16	640		640
C029S056E11	MH 1	16	640		640
C029S056E12	MH 1	16	640		640
C029S056E13	MH 3	16	440		440
C029S056E14	MH 1	16	582		582
C029S056E15	MH 1	16	640		640
C029S056E16	MH 2	16	640		640
C029S056E17	MH 2	16	640		640
C029S056E18	MH 3	16	522		522
C029S056E20	MH 2	16	175		175
C029S056E21	MH 2	16	430		430
C029S056E22	MH 4	16	635		635
C029S056E23	MH 2	16	640		640
C029S056E24	MH 1	16	557		557
C029S056E25	MH 1	16	640		640
C029S056E26	MH 2	16	460		460
C029S056E26	MH 2	153		90	90
C029S056E27	MH 4	16	115		115
C029S056E35	MH 2	153		238	238
C029S056E35	MH 2	16	5		5
C029S056E36	MH 2	153		340	340
C029S056E36	MH 2	16	280		280
C029S057E03	MH 2	16	110		110
C029S057E04	MH 2	16	548		548
C029S057E05	MH 2	16	439		439
C029S057E06	MH 1	16	415		415
C029S057E07	MH 1	16	601		601
C029S057E08	MH 1	16	640		640
C029S057E09	MH 1	16	216		216
C029S057E10	MH 2	16	525		525
C029S057E11	MH 2	16	150		150
C029S057E13	MH 2	16	110		110
C029S057E14	MH 2	16	620		620
C029S057E15	MH 1	16	560		560

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SECT1	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
C029S057E16	MH 1 16	314		314
C029S057E17	MH 1 16	404		404
C029S057E18	MH 2 16	554		554
C029S057E19	MH 2 16	587		587
C029S057E20	MH 2 16	610		610
C029S057E21	MH 1 16	640		640
C029S057E22	MH 1 16	640		640
C029S057E23	MH 1 16	640		640
C029S057E24	MH 2 16	280		280
C029S057E25	MH 2 16	356		356
C029S057E26	MH 1 16	640		640
C029S057E27	MH 1 16	640		640
C029S057E28	MH 2 16	640		640
C029S057E29	MH 2 16	640		640
C029S057E30	MH 2 16	575		575
C029S057E31	MH 2 153		20	20
C029S057E31	MH 2 16	588		588
C029S057E32	MH 2 16	640		640
C029S057E33	MH 2 16	640		640
C029S057E34	MH 2 16	640		640
C029S057E35	MH 1 16	640		640
C029S057E36	MH 1 16	100		100
C030S056E01	MH 2 153		130	130
C030S056E13	MH 2 16	15		15
C030S056E14	MH 2 16	125		125
C030S056E23	MH 2 16	380		380
C030S056E24	MH 2 16	620		620
C030S056E25	MH 1 16	625		625
C030S056E26	MH 1 16	75		75
C030S056E36	MH 3 16	120		120
C030S057E01	MH 1 16	825		825
C030S057E02	MH 2 16	825		825
C030S057E03	MH 2 16	825		825
C030S057E04	MH 2 16	820		820
C030S057E04	MH 2 153		5	5
C030S057E05	MH 1 153		260	260
C030S057E05	MH 1 16	555		555
C030S057E06	MH 2 16	95		95
C030S057E06	MH 2 153		430	430
C030S057E08	MH 2 153		205	205
C030S057E09	MH 2 153		391	391
C030S057E09	MH 2 16	160		160
C030S057E10	MH 2 153		65	65
C030S057E10	MH 2 16	575		575
C030S057E11	MH 2 16	640		640
C030S057E12	MH 2 16	640		640
C030S057E13	MH 2 16	640		640
C030S057E14	MH 2 16	640		640
C030S057E15	MH 2 153		346	346
C030S057E15	MH 2 16	110		110
C030S057E16	MH 2 153		81	81
C030S057E19	MH 2 16	485		485
C030S057E20	MH 4 16	400		400
C030S057E21	MH 2 16	460		460
C030S057E22	MH 2 16	570		570

SECTIL	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C030S057E23	MH 2	640		640
C030S057E24	MH 2	640		640
C030S057E25	MH 1	640		640
C030S057E26	MH 2	640		640
C030S057E27	MH 2	640		640
C030S057E28	MH 2	640		640
C030S057E29	MH 2	640		640
C030S057E30	MH 2	616		616
C030S057E31	MH 3	210		210
C030S057E32	MH 3	255		255
C030S057E33	MH 3	280		280
C030S057E34	MH 1	320		320
C030S057E35	MH 2	330		330
C030S057E36	MH 2	345		345
C030S058E06	MH 1	400		400
C030S058E07	MH 1	57		57
C030S058E08	MH 1	141		141
C030S058E14	MH 2	40		40
C030S058E15	MH 2	3		3
C030S058E17	MH 1	365		365
C030S058E19	MH 1	498		498
C030S058E29	MH 3	10		10
C030S058E30	MH 3	598		598
C030S058E31	MH 2	540		540
C030S058E32	MH 2	105		105
C030S059E01	MH 2	360		360
C030S059E02	MH 1	252		252
C030S059E03	MH 2	369		369
C030S059E09	MH 3	2		2
C030S059E10	MH 1	3		3
C030S059E12	MH 1	84		84
C030S059E15	MH 4	215		215
C030S059E19	MH 2	74		74
C030S059E22	MH 3	400		400
C030S059E23	MH 3	115		115
C030S059E26	MH 1	53		53
C030S059E27	MH 3	40		40
C030S059E29	MH 1	6		6
C030S059E30	MH 1	3		3
C030S059E33	MH 1	6		6
C030S059E34	MH 3	39		39
C030S059E35	MH 1	37		37
C031S059E01	MH 3	292		292
C031S059E02	MH 3	305		305
C031S059E03	MH 1	11		11
C031S059E09	MH 1	9		9
C031S059E11	MH 1	290		290
C031S059E12	MH 5	84		84
C031S059E13	MH 1	277		277
C031S059E14	MH 1	2		2
C031S059E21	MH 3	61		61
C031S059E22	MH 1	26		26
C031S059E24	MH 1	15		15
C031S060E06	MH 3	12		12
C031S060E07	MH #4	79		79

MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C031S060E08 MH 1	93	15	15
C031S060E17 MH 4	93	110	110
C031S060E17 MH 4	72	53	53
C031S060E18 MH 4	72	80	80
C031S060E18 MH 4	93	356	356
C031S060E19 MH 4	72	171	171
C031S060E20 MH 4	72	161	161
C031S060E28 MH 1	72	11	11
C031S060E29 MH 4	72	208	208
C031S060E30 MH 4	72	29	29
C031S060E31 MH 4	72	178	178
C031S060E32 MH 4	72	68	68
C032S059E11 MH 3	72	222	222
C032S059E13 MH 1	72	191	191
C032S059E24 MH 1	72	200	200
C032S059E25 MH 1	72	134	134
C032S060E04 MH 4	72	123	123
C032S060E05 MH 4	72	400	400
C032S060E06 MH 1	72	180	180
C032S060E07 MH 1	72	139	139
C032S060E08 MH 1	72	533	533
C032S060E09 MH 4	72	335	335
C032S060E15 MH 4	72	62	62
C032S060E17 MH 1	72	36	36
C032S060E21 MH 1	72	148	148
C032S060E22 MH 4	72	68	68
C032S060E30 MH 1	72	5	5
C039S064E02 MH 2	92	161	161
C039S064E03 MH 1	92	112	112
C039S064E10 MH 1	92	73	73
C039S064E11 MH 2	92	399	399
C039S064E12 MH 2	92	136	136
C039S064E13 MH 2	92	97	97
C039S064E13 MH 2	81	1	1
C039S064E14 MH 1	92	33	33
C039S064E14 MH 1	81	3	3
C039S064E24 MH 2	92	165	165
C039S064E25 MH 2	92	300	300
C039S064E36 MH 2	92	390	390
C039S065E31 MH 2	92	5	5
C040S058E01 MH 1	38	160	160
C040S058E01 MH 1	106	320	320
C040S058E02 MH 1	38	320	320
C040S058E02 MH 1	106	160	160
C040S058E03 MH 1	38	640	640
C040S058E09 MH 1	38	640	640
C040S058E10 MH 1	38	640	640
C040S058E11 MH 1	106	120	120
C040S058E11 MH 1	38	400	400
C040S058E12 MH 1	106	234	234
C040S058E13 MH 1	38	94	94
C040S058E13 MH 1	106	139	139
C040S058E14 MH 1	38	200	200
C040S058E14 MH 1	106	403	403
C040S058E15 MH 1	38	640	640

SECTI...	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C040S058E21	MH 1	38	446	446
C040S058E22	MH 1	38	304	304
C040S058E23	MH 1	38	63	63
C040S059E03	MH 1	38	160	160
C040S059E04	MH 1	38	520	520
C040S059E05	MH 1	38	160	160
C040S059E06	MH 1	106	75	75
C040S059E06	MH 1	38	118	118
C040S059E07	MH 1	38	23	23
C040S059E09	MH 1	38	160	160
C040S059E10	MH 1	38	144	144
C040S059E17	MH 1	38	336	336
C040S059E18	MH 1	38	70	70
C040S064E01	MH 1	92	95	95
C040S064E01	MH 1	98	35	35
C040S064E01	MH 1	81	1	1
C040S064E12	MH 1	81	9	9
C040S064E12	MH 1	98	62	62
C040S064E13	MH 1	107	1	1
C040S064E13	MH 1	81	19	19
C040S064E14	MH 1	107	4	4
C040S064E24	MH 1	81	1	1
C040S065E06	MH 2	92	23	23
C040S065E06	MH 2	98	9	9
C040S065E07	MH 2	98	52	52
C040S065E13	MH 2	137	21	21
C040S065E13	MH 2	107	3	3
C040S065E14	MH 3	107	8	8
C040S065E14	MH 2	81	5	5
C040S065E18	MH 2	107	8	8
C040S065E18	MH 2	81	40	40
C040S065E19	MH 2	107	8	8
C040S065E19	MH 2	81	31	31
C040S065E23	MH 2	107	1	1
C040S065E23	MH 2	81	42	42
C040S065E24	MH 2	137	59	59
C040S065E24	MH 2	49	22	22
C040S065E25	MH 2	137	26	26
C040S065E25	MH 2	81	2	2
C040S065E25	MH 2	49	100	100
C040S065E26	MH 2	81	339	339
C040S065E26	MH 2	137	1	1
C040S065E26	MH 2	107	1	1
C040S065E30	MH 2	107	1	1
C040S065E30	MH 2	81	8	8
C040S065E35	MH 2	81	168	168
C040S066E19	MH 2	137	4	4
C040S066E30	MH 2	137	6	6
C040S066E32	MH 2	81	16	16
C040S066E33	MH 2	81	61	61
C040S066E36	MH 3	137	2	2
C041S066E01	MH 2	180	176	176
C041S066E01	MH 2	81	214	214
C041S066E02	MH 2	180	42	42
C041S066E02	MH 2	81	269	269

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
C041S066E03	MH 2	81	1	1
C041S066E04	MH 2	81	279	279
C041S066E05	MH 2	81	2	2
C041S066E10	MH 2	81	116	116
C041S066E11	MH 2	81	201	201
C041S066E12	MH 2	81	245	245
C041S067E06	MH 2	81	34	34
C041S067E06	MH 2	180	20	20
C041S067E06	MH 2	98	2	2
C041S067E07	MH 2	81	320	320
C041S067E07	MH 2	98	1	1
C041S067E08	MH 2	81	31	31
C041S067E08	MH 2	98	1	1
C041S067E08	MH 2	50	77	77
C041S067E09	MH 3	81	1	1
C041S067E15	MH 3	98	1	1
C041S067E16	MH 4	50	279	279
C041S067E17	MH 3	50	175	175
C041S067E21	MH 4	50	121	121
C041S067E22	MH 5	50	28	28
C041S067E36	MH 5	51	75	75
C042S055E25	MH 3	78	21	21
C042S055E36	MH 3	137	1	1
C042S055E36	MH 3	81	1	1
C042S055E36	MH 3	78	42	42
C042S067E01	MH 3	51	485	485
C042S067E02	MH 4	51	80	80
C042S067E11	MH 3	51	210	210
C042S067E12	MH 4	51	636	636
C042S067E13	MH 3	51	105	105
C042S068E04	MH 3	81	5	5
C042S068E05	MH 4	51	14	14
C042S068E05	MH 4	81	5	5
C042S068E06	MH 5	51	140	140
C042S068E07	MH 3	51	609	609
C042S068E08	MH 3	51	384	384
C042S068E09	MH 3	51	4	4
C042S068E09	MH 3	81	2	2
C042S068E09	MH 3	137	12	12
C042S068E09	MH 3	48	9	9
C042S068E10	MH 3	137	12	12
C042S068E10	MH 3	48	67	67
C042S068E15	MH 3	137	1	1
C042S068E15	MH 3	48	2	2
C042S068E16	MH 5	51	116	116
C042S068E17	MH 5	51	373	373
C042S068E18	MH 4	51	485	485
C042S068E20	MH 4	51	72	72
C042S068E21	MH 4	51	4	4
C055S063E02	MH 4	10	8	8
C055S063E03	MH 4	10	208	208
C055S063E09	MH 4	10	61	61
C055S063E10	MH 4	10	406	406
C055S063E15	MH 4	10	97	97
C055S063E15	MH 4	94	104	104

SECTI...	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C055S063E16	MH4	94	17	17
C055S063E16	MH4	52	15	15
C055S063E16	MH4	10	93	93
C055S063E20	MH3	47	5	5
C055S063E21	MH4	47	16	16
C055S063E22	MH4	94	229	229
C055S063E22	MH4	47	1	1
C055S063E25	MH4	54	115	115
C055S063E26	MH4	94	95	95
C055S063E27	MH4	94	66	66
C055S063E28	MH3	47	14	14
C055S063E29	MH3	47	33	33
C055S063E32	MH3	47	7	7
C055S063E33	MH3	47	10	10
C055S063E34	MH3	47	6	6
C055S063E36	MH4	47	10	10
C055S064E30	MH4	54	75	75
C055S064E31	MH4	47	51	51
C055S064E31	MH4	54	446	446
C055S064E32	MH4	54	390	390
C056S063E01	MH4	47	2	2
C056S063E02	MH3	47	10	10
C056S063E03	MH3	47	52	52
C056S063E04	MH3	47	5	5
C056S063E10	MH3	47	4	4
C056S063E11	MH3	47	46	46
C056S063E12	MH3	47	25	25
C056S063E13	MH3	47	33	33
C056S063E14	MH3	47	5	5
C056S063E23	MH3	47	16	16
C056S063E24	MH3	47	44	44
C056S064E04	MH4	47	1	1
C056S064E04	MH4	54	7	7
C056S064E05	MH4	54	297	297
C056S064E05	MH4	47	9 1	10
C056S064E06	MH4	54	34	34
C056S064E06	MH4	47	1	1
C056S064E08	MH4	47	1	1
C056S064E18	MH3	47	3	3
C056S064E19	MH3	47	10	10
C058S079E18	MH3	84	230	230
C058S079E19	MH3	84	357	357
C058S079E20	MH3	84	469	469
C058S079E21	MH3	53	160	160
C058S079E22	MH0	53	302	302
C058S079E26	MH0	53	209	209
C058S079E27	MH0	53	1	1
C058S079E28	MH0	53	227	227
C058S079E29	MH0	53	89	89
C058S079E29	MH0	84	346	346
C058S079E32	MH0	84	579	579
C058S079E33	MH0	84	31	31
C058S079E33	MH0	85	9	9
C058S079E33	MH0	53	117	117
C058S079E34	MH0	84	493	493

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
C058S079E35	MH 3	84	548	548
C059S079E03	MH 3	84	554	554
C059S079E04	MH 3	53	15	15
C059S079E04	MH 3	84	112	112
C059S079E05	MH 3	84	320	320
C059S079E09	MH 3	84	163	163
C059S079E10	MH 3	84	476	476
C059S079E14	MH 3	84	320	320
C059S079E15	MH 3	84	341	341
C059S079E21	MH 3	84	416	416
C059S079E22	MH 3	84	70	70
C059S079E23	MH 3	84	616	616
C059S079E26	MH 3	84	430	430
C059S079E34	MH 3	84	2	2
C059S079E35	MH 3	84	546	546
C060S079E02	MH 3	84	585	585
C060S079E11	MH 0	84	420	420
C060S079E13	MH 0	84	159	159
C060S079E14	MH 0	84	346	346
C060S079E23	MH 0	84	81	81
C060S079E24	MH 0	84	317	317
C060S079E25	MH 0	84	442	442
C060S079E25	MH 0	82	32	32
C060S079E26	MH 0	84	10	10
C062S083E24	MH 3	19	88	88
C062S083E25	MH 3	19	4	4
C062S083E36	MH 3	85	36	36
C062S083E36	MH 3	19	7	7
C062S084E19	MH 3	95	148	148
C062S084E19	MH 3	19	334	334
C062S084E20	MH 0	95	44	44
C062S084E29	MH 3	95	116	116
C062S084E30	MH 3	95	103	103
C062S084E30	MH 3	19	90	90
C062S084E31	MH 3	85	126	126
C062S084E31	MH 3	19	50	50
C063S084E06	MH 3	85	248	248
C063S084E07	MH 3	85	104	104
C063S084E08	MH 4	85	118	118
C063S084E17	MH 4	85	206	206
C063S084E19	MH 0	85	25	25
C063S084E20	MH 4	85	200	200
C063S084E29	MH 3	85	30	30
C063S084E30	MH 3	85	169	169
C063S084E31	MH 3	85	221	221
C063S084E32	MH 3	85	180	180
C064S084E05	MH 3	85	373	373
C064S084E06	MH 0	85	65	65
C064S084E08	MH 3	85	10	10
C070S086E32	MH 3	99	40	40
C071S086E04	MH 3	99	166	166
C071S086E05	MH 3	99	85	85
C074S081E05	MH 2	83	43	43
C074S081E05	MH 2	82	6	6
C074S081E08	MH 2	83	32	32

SECTI...	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C074S081E08	MH 2	82	7		7
C074S089E12	MH 3	82	285		285
C074S089E13	MH 3	82	397		397
C074S089E14	MH 0	82	14		14
C074S089E24	MH 0	82	35		35
C074S089E24	MH 0	85	8		8
C074S089E25	MH 0	42	20		20
C074S089E26	MH 4	42	100		100
C074S089E35	MH 4	42	170		170
C074S089E36	MH 4	42	510		510
C074S090E05	MH 3	82	42		42
C074S090E06	MH 3	82	2		2
C074S090E07	MH 3	82	273		273
C074S090E08	MH 3	82	20		20
C074S090E18	MH 3	82	320		320
C074S090E19	MH 3	82	263		263
C074S090E20	MH 3	82	5		5
C074S090E28	MH 3	82	10		10
C074S090E29	MH 3	82	143		143
C074S090E30	MH 0	82	18		18
C074S090E31	MH 0	42	20		20
C074S090E32	MH 3	82	48		48
C074S090E33	MH 3	82	210		210
C074S090E34	MH 3	43		80	80
C075S089E01	MH 4	42	380		380
C075S089E12	MH 3	42	30		30
C075S090E02	MH 3	43		315	315
C075S090E03	MH 3	43	10	588	598
C075S090E04	MH 0	43		50	50
C075S090E04	MH 0	82	1		1
C075S090E05	MH 4	82	1		1
C075S090E05	MH 4	42	85		85
C075S090E06	MH 4	42	480		480
C075S090E07	MH 4	42	580		580
C075S090E08	MH 4	42	540		540
C075S090E09	MH 0	43		46	46
C075S090E09	MH 0	42	8		8
C075S090E10	MH 3	43		421	421
C075S090E11	MH 3	43		340	340
C075S090E13	MH 3	43		60	60
C075S090E14	MH 3	43		150	150
C075S090E15	MH 0	43		110	110
C075S090E15	MH 0	42	30		30
C075S090E16	MH 4	42	404		404
C075S090E17	MH 3	42	635		635
C075S090E18	MH 3	42	217		217
C075S090E20	MH 3	42	415		415
C075S090E21	MH 4	42	520		520
C075S090E22	MH 4	42	550		550
C075S090E23	MH 4	42	100		100
C075S090E24	MH 4	43		190	190
C075S090E25	MH 0	41	10		10
C075S090E26	MH 4	42	250		250
C075S090E27	MH 4	42	625		625
C075S090E28	MH 4	42	280		280

SECTION	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
C075S090E34	MH 4	42	140		140
C075S090E35	MH 4	42	335		335
C075S090E36	MH 4	42	120		120
C075S091E18	MH 3	43		300	300
C075S091E19	MH 3	43		300	300
C075S091E20	MH 3	43		15	15
C075S091E28	MH 3	43		300	300
C075S091E29	MH 4	43		446	446
C075S091E30	MH 4	43		2	2
C075S091E30	MH 4	41	25		25
C075S091E31	MH 3	42	16		16
C075S091E31	MH 3	41	375		375
C075S091E32	MH 4	43		72	72
C075S091E32	MH 4	41	179		179
C075S091E33	MH 4	43		220	220
C075S091E34	MH 4	43		300	300
C075S091E35	MH 4	82	64		64
C075S091E36	MH 0	82	96		96
C076S090E01	MH 4	42	225		225
C076S090E02	MH 4	42	22		22
C076S091E01	MH 0	82	51		51
C076S091E02	MH 4	43		7	7
C076S091E02	MH 4	82	56		56
C076S091E03	MH 4	43		240	240
C076S091E04	MH 4	41	38		38
C076S091E04	MH 4	43		15	15
C076S091E04	MH 4	82	1		1
C076S091E05	MH 3	41	267		267
C076S091E05	MH 3	42	5		5
C076S091E06	MH 4	42	425		425
C076S091E07	MH 4	42	195		195
C076S091E08	MH 4	42	180		180
C076S091E10	MH 0	43	10	20	30
C076S091E11	MH 4	43	29	40	69
C076S091E11	MH 4	82	94		94
F001N001E02	MH 5	26	640		640
F001N001E03	MH 5	26	320		320
F001N001E04	MH 4	26	480		480
F001N001E05	MH 4	26	320		320
F001N001E11	MH 2	26	450		450
F001N001E12	MH 2	26	160		160
F001N001E13	MH 2	26	520		520
F001N001E17	MH 4	26	40		40
F001N001E18	MH 4	26	20		20
F001N001E32	MH 2	26	120		120
F001N001E34	MH 2	26	320		320
F001N001E35	MH 2	26	640		640
F001N004E19	MH 3	27	635		635
F001N004E20	MH 3	27	640		640
F001N004E21	MH 3	27	640		640
F001N004E22	MH 3	27	640		640
F001N004E23	MH 3	27	640		640
F001N004E24	MH 3	27	640		640
F001N004E25	MH 3	27	320		320
F001N004E27	MH 3	27	160		160

DATE: 0. SECTIO	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F001N004E28	MH 3	27	395		395
F001N004E29	MH 3	27	428		428
F001N004E30	MH 3	27	318		318
F001N004E31	MH 3	27	320		320
F001N004E32	MH 3	27	460		460
F001N004E33	MH 3	27	155		155
F001N004E34	MH 3	27	120		120
F001N004E35	MH 3	27	280		280
F001N004E36	MH 3	27	480		480
F001N006E01	MH 3	110	640		640
F001N006E02	MH 3	110	640		640
F001N006E03	MH 3	110	640		640
F001N006E04	MH 3	110	640		640
F001N006E05	MH 3	110	640		640
F001N006E06	MH 3	110	628		628
F001N006E07	MH 3	110	631		631
F001N006E08	MH 3	110	640		640
F001N006E09	MH 3	110	640		640
F001N006E10	MH 3	110	640		640
F001N006E11	MH 3	110	640		640
F001N006E12	MH 3	110	640		640
F001N006E13	MH 3	110	640		640
F001N006E14	MH 3	110	640		640
F001N006E15	MH 3	110	590		590
F001N006E16	MH 3	110	630		630
F001N006E17	MH 3	110	640		640
F001N006E18	MH 3	110	619		619
F001N006E19	MH 3	110	628		628
F001N006E20	MH 3	110	640		640
F001N006E21	MH 3	110	615		615
F001N006E22	MH 3	110	565		565
F001N006E23	MH 3	110	640		640
F001N006E24	MH 3	110	640		640
F001N006E25	MH 3	110	640		640
F001N006E26	MH 3	110	640		640
F001N006E27	MH 3	110	640		640
F001N006E28	MH 3	110	640		640
F001N006E29	MH 3	110	640		640
F001N006E30	MH 3	110	637		637
F001N006E31	MH 3	110	639		639
F001N006E32	MH 3	110	640		640
F001N006E33	MH 3	110	640		640
F001N006E34	MH 3	110	640		640
F001N006E35	MH 3	110	640		640
F001N006E36	MH 3	110	640		640
F001N007E01	MH 3	112	640		640
F001N007E02	MH 3	112	640		640
F001N007E03	MH 3	112	640		640
F001N007E04	MH 3	112	640		640
F001N007E05	MH 3	112	640		640
F001N007E06	MH 3	112	629		629
F001N007E07	MH 3	112	631		631
F001N007E08	MH 3	112	640		640
F001N007E09	MH 3	112	640		640
F001N007E10	MH 3	112	640		640

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T..	TOTAL ACRES PAT & TA
F001N007E11	MH 3	112	635	635
F001N007E12	MH 3	112	640	640
F001N007E13	MH 3	112	640	640
F001N007E14	MH 3	112	640	640
F001N007E15	MH 3	112	640	640
F001N007E16	MH 3	112	640	640
F001N007E17	MH 3	112	640	640
F001N007E18	MH 3	112	592	592
F001N007E19	MH 3	112	555	555
F001N007E20	MH 3	112	640	640
F001N007E21	MH 3	112	640	640
F001N007E22	MH 3	112	640	640
F001N007E23	MH 3	112	640	640
F001N007E24	MH 3	112	640	640
F001N007E25	MH 3	112	640	640
F001N007E26	MH 3	112	640	640
F001N007E27	MH 3	112	640	640
F001N007E28	MH 3	112	640	640
F001N007E29	MH 3	112	640	640
F001N007E30	MH 3	112	637	637
F001N007E31	MH 3	112	639	639
F001N007E32	MH 3	112	640	640
F001N007E33	MH 3	112	640	640
F001N007E34	MH 3	112	640	640
F001N007E35	MH 3	112	640	640
F001N007E36	MH 3	112	640	640
F002N006E01	MH 3	114	640	640
F002N006E02	MH 3	114	640	640
F002N006E03	MH 3	114	640	640
F002N006E10	MH 3	114	640	640
F002N006E11	MH 3	114	640	640
F002N006E12	MH 3	114	640	640
F002N006E13	MH 2	114	640	640
F002N006E14	MH 2	114	640	640
F002N006E15	MH 2	114	640	640
F002N006E22	MH 2	114	640	640
F002N006E23	MH 2	114	640	640
F002N006E24	MH 2	114	640	640
F002N006E25	MH 2	114	640	640
F002N006E26	MH 2	114	640	640
F002N006E27	MH 2	114	640	640
F002N006E34	MH 3	114	640	640
F002N006E35	MH 3	114	640	640
F002N006E36	MH 3	114	640	640
F002N007E01	MH 3	115	606	606
F002N007E02	MH 3	115	640	640
F002N007E03	MH 3	115	640	640
F002N007E04	MH 3	115	640	640
F002N007E05	MH 3	115	640	640
F002N007E06	MH 3	115	616	616
F002N007E07	MH 3	115	618	618
F002N007E08	MH 3	115	640	640
F002N007E09	MH 3	115	640	640
F002N007E10	MH 3	115	640	640
F002N007E11	MH 3	115	640	640

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SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F002N007E12	MH 2 115	627		627
F002N007E13	MH 2 115	640		640
F002N007E14	MH 2 115	640		640
F002N007E15	MH 2 115	640		640
F002N007E16	MH 2 115	640		640
F002N007E17	MH 2 115	640		640
F002N007E18	MH 2 115	620		620
F002N007E19	MH 2 115	622		622
F002N007E20	MH 2 115	640		640
F002N007E21	MH 2 115	640		640
F002N007E22	MH 2 115	640		640
F002N007E23	MH 2 115	640		640
F002N007E24	MH 3 115	640		640
F002N007E25	MH 3 115	640		640
F002N007E26	MH 3 115	640		640
F002N007E27	MH 3 115	640		640
F002N007E28	MH 3 115	640		640
F002N007E29	MH 3 115	640		640
F002N007E30	MH 2 115	625		625
F002N007E31	MH 3 115	627		627
F002N007E32	MH 3 115	640		640
F002N007E33	MH 3 115	640		640
F002N007E34	MH 3 115	640		640
F002N007E35	MH 3 115	640		640
F002N007E36	MH 3 115	640		640
F002N008E01	MH 3 117	640		640
F002N008E02	MH 3 117	640		640
F002N008E03	MH 3 117	640		640
F002N008E04	MH 3 117	640		640
F002N008E05	MH 3 117	640		640
F002N008E06	MH 3 117	529		529
F002N008E07	MH 3 117	593		593
F002N008E08	MH 2 117	640		640
F002N008E09	MH 2 117	640		640
F002N008E10	MH 2 117	640		640
F002N008E11	MH 2 117	640		640
F002N008E12	MH 2 117	640		640
F002N008E13	MH 2 117	640		640
F002N008E14	MH 2 117	640		640
F002N008E15	MH 2 117	640		640
F002N008E16	MH 2 117	640		640
F002N008E17	MH 2 117	640		640
F002N008E18	MH 2 117	620		620
F003N007E22	MH 2 118		640	640
F003N007E23	MH 2 118		640	640
F003N007E24	MH 2 118		640	640
F003N007E25	MH 2 118		640	640
F003N007E26	MH 2 118		640	640
F003N007E27	MH 2 118		640	640
F003N007E34	MH 2 118		640	640
F003N007E35	MH 3 118		640	640
F003N007E36	MH 3 118		640	640
F003N008E19	MH 1 118		610	610
F003N008E20	MH 3 118		637	637
F003N008E21	MH 3 118		592	592

SECTI..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T/	TOTAL ACRES PAT & TA
F003N008E22	MH 3 118		374	374
F003N008E23	MH 3 118		577	577
F003N008E24	MH 3 118		640	640
F003N008E25	MH 3 118		495	495
F003N008E26	MH 3 118		280	280
F003N008E27	MH 3 118		636	636
F003N008E28	MH 3 118		456	456
F003N008E29	MH 3 118		391	391
F003N008E30	MH 3 118		590	590
F003N008E31	MH 3 118		397	397
F003N008E32	MH 3 118		635	635
F003N008E33	MH 3 118		640	640
F003N008E34	MH 3 118		640	640
F003N008E35	MH 3 118		590	590
F003N008E36	MH 3 118		615	615
F001S001E01	MH 3 26	560		560
F001S001E03	MH 3 26	280		280
F001S001E09	MH 0 26	160	80	240
F001S001E10	MH 0 26	120		120
F001S001E11	MH 0 26	146		146
F001S001E25	MH 0 26	160		160
F001S001E34	MH 0 26	40		40
F001S003E01	MH 3 29	636		636
F001S003E02	MH 3 29	637		637
F001S003E09	MH 0 30		320	320
F001S003E10	MH 0 30		320	320
F001S003E11	MH 3 29		640	640
F001S003E12	MH 3 29		640	640
F001S003E13	MH 0 30		25	25
F001S003E13	MH 0 29		555	555
F001S003E14	MH 0 29		590	590
F001S003E15	MH 0 30		640	640
F001S003E16	MH 0 30		640	640
F001S003E19	MH 0 30	15	573	588
F001S003E20	MH 0 30		640	640
F001S003E21	MH 0 30		640	640
F001S003E22	MH 0 30		370	370
F001S003E23	MH 0 29		250	250
F001S003E24	MH 0 29		320	320
F001S003E27	MH 0 30		375	375
F001S003E28	MH 0 30		455	455
F001S003E29	MH 0 30	158	390	548
F001S003E30	MH 0 30	382	130	512
F001S003E31	MH 0 30	381		381
F001S003E32	MH 0 30	569	40	609
F001S003E33	MH 0 30		540	540
F001S003E34	MH 0 30		480	480
F001S004E01	MH 0 28	10	555	565
F001S004E02	MH 3 28	5	605	610
F001S004E03	MH 3 28	396		396
F001S004E04	MH 3 29	480		480
F001S004E05	MH 3 29	596		596
F001S004E06	MH 3 29	589		589
F001S004E07	MH 3 29		516	516
F001S004E08	MH 3 29		440	440

SECTION	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F001S004E09	MH 0	29	193	193
F001S004E10	MH 0	28	280	280
F001S004E11	MH 0	28	625	625
F001S004E12	MH 0	28	640	640
F001S004E13	MH 3	28	640	640
F001S004E14	MH 0	28	640	640
F001S004E15	MH 0	28	320	320
F001S004E17	MH 0	29	30	30
F001S004E18	MH 3	29	65	65
F001S004E22	MH 3	28	160	160
F001S004E23	MH 3	28	320	320
F001S004E24	MH 3	28	320	320
F002S001E01	MH 0	26	51	51
F002S001E02	MH 0	26	126 122	248
F002S001E03	MH 0	26	20 140	160
F002S001E04	MH 0	26	205	205
F002S001E05	MH 0	26	67	67
F002S001E09	MH 0	26	60	60
F002S001E10	MH 0	26	102	102
F002S001E11	MH 0	26	90	90
F002S001E12	MH 0	26	113	113
F002S001E13	MH 0	26	20	20
F002S003E33	MH 0	173	200	200
F003S003E04	MH 0	173	320	320
F003S003E09	MH 0	173	440	440
F003S003E10	MH 0	173	40	40
F003S003E15	MH 0	173	400	400
F003S003E16	MH 0	173	640	640
F003S003E21	MH 0	173	480	480
F003S003E22	MH 0	173	640	640
F003S003E26	MH 0	173	160	160
F003S003E27	MH 0	173	640	640
F003S003E28	MH 0	173	640	640
F003S003E33	MH 0	173	284	284
F003S003E34	MH 0	173	297	297
F003S003E35	MH 0	173	240	240
F005S004E01	MH 0	44	640	640
F005S004E02	MH 0	44	560	560
F005S004E03	MH 0	44	400	400
F005S004E04	MH 0	44	80 110	190
F005S004E05	MH 0	44	480	480
F005S004E06	MH 0	44	500	500
F005S004E07	MH 0	44	300	300
F005S004E08	MH 0	44	97 480	577
F005S004E09	MH 0	44	80	80
F005S004E10	MH 2	44	640	640
F005S004E11	MH 2	44	640	640
F005S004E12	MH 2	44	640	640
F005S004E13	MH 2	44	578	578
F005S004E14	MH 2	44	503	503
F005S004E15	MH 2	44	520	520
F005S004E16	MH 2	44	20	20
F005S004E17	MH 0	44	2 480	482
F005S004E18	MH 0	44	180	180
F005S004E19	MH 0	44	300	300

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SECTIO.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F005S004E20	MH 0	44	500	500
F005S004E21	MH 0	44	61	70	131
F005S004E23	MH 0	44	98		98
F005S004E25	MH 0	44	160		160
F005S004E27	MH 0	100	40		40
F005S004E28	MH 0	100	100		100
F005S004E28	MH 0	44	20	20	40
F005S004E29	MH 0	44	12	203	215
F005S004E30	MH 0	44		480	480
F005S004E31	MH 0	44		490	490
F005S004E32	MH 0	44		180	180
F005S004E35	MH 0	44	334		334
F006S004E03	MH 2	44	40		40
F006S004E04	MH 0	44	240		240
F006S004E05	MH 0	44	20	300	320
F006S004E06	MH 0	44		450	450
F006S004E07	MH 0	44		200	200
F006S004E08	MH 0	44	1	450	451
F006S004E09	MH 2	44	357	120	477
F006S004E10	MH 2	44	240		240
F006S004E11	MH 2	44	40		40
F006S004E13	MH 2	44	400		400
F006S004E14	MH 2	44	103		103
F006S004E15	MH 0	44	46	450	496
F006S004E16	MH 0	44		150	150
F006S004E17	MH 0	44		150	150
F006S004E21	MH 0	44		40	40
F006S004E22	MH 0	44	1	200	201
F006S004E23	MH 0	44	138	150	288
F006S004E24	MH 2	44	620		620
F006S004E25	MH 0	44	336		336
F006S004E26	MH 0	44	31	150	181
F006S004E27	MH 0	44		40	40
F006S004E35	MH 0	44		40	40
F006S005E18	MH 2	44	497		497
F007S005E12	MH 1	73	83		83
F007S005E13	MH 2	73	67		67
F007S006E07	MH 4	73	142		142
F007S006E18	MH 4	73	46		46
F001S001W15	MH 0	127	5		5
F001S001W24	MH 0	74	35		35
F001S001W25	MH 0	74	160		160
F001S002W02	MH 2	126	6		6
F001S002W04	MH 2	126	163		163
F001S002W06	MH 5	126	40		40
F001S002W07	MH 5	126	11		11
F001S002W08	MH 5	126	1		1
F001S002W10	MH 5	126	276		276
F001S002W13	MH 0	126	3		3
F001S002W14	MH 0	126	25		25
F001S002W18	MH 5	126	244		244
F001S002W19	MH 5	26	254		254
F001S002W25	MH 0	126	32		32
F001S002W26	MH 0	26	37		37
F001S002W26	MH 0	126	38		38

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SECTI

MH CASE WITH TA OR PAT		ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
F001S002W27	MH 0	66		66
F001S002W28	MH 2	80		80
F001S002W28	MH 2	103		103
F001S002W28	MH 2	37		37
F001S002W30	MH 2	279		279
F001S002W31	MH 2	30		30
F001S002W32	MH 2	114		114
F001S002W33	MH 0	8		8
F001S002W34	MH 0	165		165
F001S002W35	MH 0	15		15
F001S003W01	MH 2	80		80
F001S003W02	MH 5	160		160
F001S003W11	MH 5	40		40
F001S003W12	MH 2	34	80	114
F001S003W13	MH 5		320	320
F001S003W13	MH 5	240		240
F001S003W14	MH 5	560		560
F001S003W15	MH 5	640		640
F001S003W17	MH 2	320		320
F001S003W18	MH 2	597		597
F001S003W19	MH 2	601		601
F001S003W20	MH 2	600		600
F001S003W20	MH 2	35		35
F001S003W21	MH 2	640		640
F001S003W22	MH 2	640		640
F001S003W23	MH 2	640		640
F001S003W24	MH 5	640		640
F001S003W25	MH 2	640		640
F001S003W26	MH 5	640		640
F001S003W27	MH 5	640		640
F001S003W28	MH 2	640		640
F001S003W29	MH 2	640		640
F001S003W30	MH 2	603		603
F001S003W31	MH 2	602		602
F001S003W32	MH 2	640		640
F001S003W33	MH 5	640		640
F001S003W34	MH 5	640		640
F001S003W35	MH 2	640		640
F001S003W36	MH 2	640		640
F003S004W05	MH 2	641		641
F003S004W06	MH 2	613		613
F003S004W07	MH 2	545		545
F003S004W08	MH 0	597		597
F003S004W17	MH 0	325		325
F004S007W01	MH 2	640		640
F004S007W02	MH 2	640		640
F004S007W03	MH 2	427		427
F004S007W04	MH 3	640		640
F004S007W05	MH 3	640		640
F004S007W06	MH 2	629		629
F004S007W07	MH 3	631		631
F004S007W08	MH 2	640		640
F004S007W09	MH 2	544		544
F004S007W11	MH 0	633		633
F004S007W12	MH 0	521		521

SECTI..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F004S007W13	MH 0 32	156		156
F004S007W14	MH 0 32	114		114
F004S007W17	MH 0 32	81		81
F004S007W18	MH 0 32	191		191
F004S007W19	MH 0 32	367		367
F004S007W30	MH 0 32	558		558
F004S008W01	MH 2 32	321		321
F004S008W02	MH 2 32	640		640
F004S008W03	MH 0 32	184		184
F004S008W04	MH 0 32	631		631
F004S008W05	MH 0 32	579		579
F004S008W06	MH 0 32	629		629
F004S008W07	MH 0 32	595		595
F004S008W08	MH 0 32	602		602
F004S008W09	MH 0 32	618		618
F004S008W10	MH 0 32	181		181
F004S008W11	MH 2 32	320		320
F004S008W13	MH 0 32	160		160
F004S008W14	MH 0 32	10		10
F004S008W15	MH 0 32	106		106
F004S008W17	MH 0 32	582		582
F004S008W18	MH 0 32	622		622
F004S008W19	MH 0 32	608		608
F004S008W20	MH 0 32	591		591
F004S008W21	MH 0 32	632		632
F004S008W22	MH 0 32	440		440
F004S008W23	MH 0 32	21		21
F004S008W25	MH 0 32	120		120
F004S008W26	MH 0 32	74		74
F004S008W27	MH 0 32	564		564
F004S008W28	MH 0 32	617		617
F004S008W29	MH 0 32	415		415
F004S008W30	MH 0 32	581		581
F004S008W31	MH 0 32	598		598
F004S008W32	MH 0 32	573		573
F004S008W34	MH 0 32	373		373
F004S008W35	MH 0 32	505		505
F006S008W01	MH 0 34		480	480
F006S008W02	MH 0 34		640	640
F006S008W03	MH 0 34		640	640
F006S008W10	MH 0 34		640	640
F006S008W11	MH 0 34		640	640
F006S008W12	MH 0 34		640	640
F006S008W13	MH 0 34		640	640
F006S008W14	MH 0 34		640	640
F006S008W15	MH 0 34		580	580
F006S008W22	MH 0 34		640	640
F006S008W23	MH 0 34		640	640
F006S008W24	MH 0 34		636	636
F006S008W25	MH 0 34		280	280
F006S008W26	MH 0 34		640	640
F006S008W27	MH 0 34		640	640
F006S008W28	MH 0 34		320	320
F006S008W32	MH 0 34		100	100
F006S008W34	MH 0 34		640	640

SECTION	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F006S008W35	MH 0	34		640	640
F006S008W36	MH 0	34		40	40
F009S005W07	MH 4	36	596		596
F009S005W08	MH 4	36	640		640
F009S005W09	MH 3	36		640	640
F009S005W10	MH 3	36		640	640
F009S005W11	MH 3	36		640	640
F009S005W12	MH 3	36		640	640
F009S005W13	MH 3	36		640	640
F009S005W14	MH 3	36		640	640
F009S005W15	MH 3	36		640	640
F009S005W16	MH 4	36		640	640
F009S005W17	MH 4	36	640		640
F009S005W18	MH 3	36	597		597
F009S005W19	MH 3	36	600		600
F009S005W20	MH 5	36	640		640
F009S005W21	MH 5	36		640	640
F009S005W22	MH 3	36		640	640
F009S005W23	MH 3	36		640	640
F009S005W24	MH 3	36		640	640
F009S005W25	MH 3	36		640	640
F009S005W26	MH 5	36		640	640
F009S005W27	MH 5	36		640	640
F009S005W28	MH 5	36		640	640
F009S005W29	MH 5	36	640		640
F009S005W30	MH 5	36	601		601
F009S005W31	MH 5	36	603		603
F009S005W32	MH 5	36	640		640
F009S005W33	MH 5	36		640	640
F009S005W34	MH 5	36		640	640
F009S005W35	MH 5	36		640	640
F009S005W36	MH 5	36		640	640
F009S006W07	MH 4	36		597	597
F009S006W08	MH 4	36		640	640
F009S006W09	MH 4	36		640	640
F009S006W10	MH 4	36	640		640
F009S006W11	MH 4	36	640		640
F009S006W12	MH 4	36	640		640
F009S006W13	MH 3	36	640		640
F009S006W14	MH 3	36	640		640
F009S006W15	MH 3	36	480		480
F009S006W17	MH 3	36	480		480
F009S006W18	MH 4	36		599	599
F009S006W19	MH 4	36	601		601
F009S006W20	MH 3	36	320		320
F009S006W22	MH 3	36	320		320
F009S006W23	MH 3	36	640		640
F009S006W24	MH 3	36	640		640
F009S006W25	MH 3	36	640		640
F009S006W26	MH 3	36	640		640
F009S006W27	MH 3	36	320		320
F009S006W29	MH 3	36	320		320
F009S006W30	MH 3	36	603		603
F009S006W31	MH 5	36	604		604
F009S006W32	MH 5	36	320		320

SECTI..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F009S006W34	MH 5	36	320	320
F009S006W35	MH 5	36	640	640
F010S006W01	MH 5	36	640	640
F010S006W02	MH 5	36	639	639
F010S006W03	MH 5	36	319	319
F010S006W05	MH 5	36	320	320
F010S006W06	MH 5	36	606	606
F010S006W07	MH 5	36	304	304
F010S006W08	MH 5	36	160	160
F010S006W10	MH 5	36	320	320
F010S006W11	MH 5	36	640	640
F010S006W12	MH 5	36	640	640
F011S007W01	MH 3	120	640	640
F011S007W02	MH 3	120	640	640
F011S007W03	MH 3	120	640	640
F011S007W04	MH 3	120	640	640
F011S007W05	MH 3	120	640	640
F011S007W06	MH 3	120	617	617
F011S007W07	MH 3	120	619	619
F011S007W08	MH 3	120	640	640
F011S007W09	MH 3	120	640	640
F011S007W10	MH 3	120	640	640
F011S007W11	MH 3	120	640	640
F011S007W12	MH 3	120	640	640
F011S007W13	MH 3	120	640	640
F011S007W14	MH 3	120	640	640
F011S007W15	MH 3	120	640	640
F011S007W17	MH 3	120	640	640
F011S007W18	MH 3	120	622	622
F011S007W19	MH 3	120	624	624
F011S007W20	MH 3	120	640	640
F011S007W21	MH 3	120	640	640
F011S007W22	MH 3	120	640	640
F011S007W23	MH 3	120	640	640
F011S007W24	MH 3	120	640	640
F011S007W25	MH 3	120	640	640
F011S007W26	MH 3	120	640	640
F011S007W27	MH 3	120	640	640
F011S007W28	MH 3	120	640	640
F011S007W29	MH 3	120	600	600
F011S007W29	MH 3	22	40	40
F011S007W30	MH 3	120	626	626
F011S007W31	MH 3	120	474	474
F011S007W32	MH 3	22	640	640
F011S007W33	MH 3	77	640	640
F011S007W34	MH 3	77	640	640
F011S007W35	MH 3	120	615	615
F011S023W31	MH 3	108	627	627
F011S023W32	MH 3	108	640	640
F011S023W33	MH 3	108	613	613
F011S024W20	MH 3	108	640	640
F011S024W21	MH 3	108	640	640
F011S024W22	MH 3	108	640	640
F011S024W23	MH 0	108	640	640
F011S024W24	MH 3	108	640	640

SECTIO..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F011S024W25	MH 3 108		640	640
F011S024N26	MH 0 108		640	640
F011S024W27	MH 0 108		640	640
F011S024N28	MH 3 108		640	640
F011S024W29	MH 3 108		640	640
F011S024W32	MH 3 108		640	640
F011S024W33	MH 3 108		640	640
F011S024W34	MH 0 108		640	640
F011S024W35	MH 0 108		640	640
F011S024W36	MH 3 108		640	640
F012S006W01	MH 3 122	640		640
F012S006W02	MH 3 122	640		640
F012S006W03	MH 3 122	640		640
F012S006W04	MH 3 122	640		640
F012S006W05	MH 3 122	640		640
F012S006W06	MH 3 122	629		629
F012S006W07	MH 3 122	630		630
F012S006W08	MH 3 122	640		640
F012S006W09	MH 3 122	633		633
F012S006W10	MH 3 22	640		640
F012S006W11	MH 3 22	640		640
F012S006W12	MH 3 122	320		320
F012S006W12	MH 3 22	320		320
F012S006W13	MH 3 22	329		329
F012S006W13	MH 3 122	324		324
F012S006W14	MH 3 122	320		320
F012S006W14	MH 3 22	320		320
F012S006W15	MH 3 122	640		640
F012S006W17	MH 3 122	640		640
F012S006W18	MH 3 122	632		632
F012S006W19	MH 3 122	635		635
F012S006W20	MH 3 122	640		640
F012S006W21	MH 3 122	640		640
F012S006W22	MH 3 122	640		640
F012S006W23	MH 3 122	646		646
F012S006W24	MH 3 122	626		626
F012S006W25	MH 3 122		640	640
F012S006W26	MH 3 122		640	640
F012S006W27	MH 3 122		640	640
F012S006W28	MH 3 122		640	640
F012S006W29	MH 3 122		577	577
F012S006W30	MH 3 122		585	585
F012S006W31	MH 3 122		639	639
F012S006W32	MH 3 122		640	640
F012S006W33	MH 3 122		640	640
F012S006W34	MH 3 122		640	640
F012S006W35	MH 3 122		640	640
F012S006W36	MH 3 122		640	640
F012S007W01	MH 3 121	640		640
F012S007W02	MH 3 121	640		640
F012S007W03	MH 3 77	640		640
E012S007W04	MH 3 22	240		240
F012S007W04	MH 3 77	400		400
F012S007W05	MH 3 22	480		480
F012S007W08	MH 3 121	333		333

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F012S007W09	MH 3 121	640		640
F012S007W10	MH 3 121	640		640
F012S007W11	MH 3 121	640		640
F012S007W12	MH 3 121	640		640
F012S007W13	MH 3 121	640		640
F012S007W14	MH 3 121	640		640
F012S007W15	MH 3 121	640		640
F012S007W17	MH 3 121	215		215
F012S007W20	MH 2 121	49		49
F012S007W21	MH 3 121	320		320
F012S007W21	MH 3 22	160		160
F012S007W22	MH 3 121	320		320
F012S007W22	MH 3 22	320		320
F012S007W23	MH 3 121	400		400
F012S007W23	MH 3 22	240		240
F012S007W24	MH 3 121	623		623
F012S007W25	MH 3 121	630		630
F012S007W26	MH 3 121	635		635
F012S007W27	MH 3 121	640		640
F012S007W28	MH 3 121	541		541
F012S007W29	MH 3 121	55		55
F012S007W32	MH 3 121	291		291
F012S007W33	MH 3 121	640		640
F012S007W34	MH 3 121	640		640
F012S007W35	MH 3 121		577	577
F012S007W36	MH 3 121		575	575
F012S023W04	MH 0 108		640	640
F012S023W05	MH 3 108		615	615
F012S023W06	MH 0 108		628	628
F012S023W07	MH 0 108		630	630
F012S023W08	MH 0 108		555	555
F012S023W09	MH 0 108		640	640
F012S023W16	MH 0 108		640	640
F012S023W17	MH 0 108		640	640
F012S023W18	MH 0 108		632	632
F012S023W19	MH 0 108		634	634
F012S023W20	MH 0 108		640	640
F012S023W21	MH 0 108		640	640
F012S024W01	MH 0 108		640	640
F012S024W02	MH 0 108		640	640
F012S024W03	MH 0 108		640	640
F012S024W04	MH 0 108		595	595
F012S024W05	MH 3 108		555	555
F012S024W06	MH 3 108		625	625
F012S024W07	MH 3 108		587	587
F012S024W08	MH 3 108		50	50
F012S024W09	MH 0 108		640	640
F012S024W10	MH 0 108		640	640
F012S024W11	MH 0 108		640	640
F012S024W12	MH 3 108		635	635
F012S024W13	MH 3 108		640	640
F012S024W14	MH 3 108		640	640
F012S024W15	MH 0 108		640	640
F012S024W16	MH 0 108		640	640
F012S024W17	MH 0 108		550	550

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F012S024W18	MH 0 108		629	629
F012S024W19	MH 0 108		626	626
F012S024W20	MH 0 108		640	640
F012S024W21	MH 0 108		629	629
F012S024W22	MH 0 108		640	640
F012S024W23	MH 3 108		640	640
F012S024W24	MH 0 108		640	640
F012S024W25	MH 0 108		640	640
F012S024W26	MH 0 108		640	640
F012S024W27	MH 0 108		640	640
F012S024W28	MH 0 108		640	640
F012S024W29	MH 0 108		640	640
F012S024W30	MH 0 108		633	633
F012S024W31	MH 0 108		635	635
F012S024W32	MH 0 108		640	640
F012S024W33	MH 0 108		640	640
F012S024W34	MH 0 108		640	640
F012S024W35	MH 0 108		640	640
F012S024W36	MH 0 108		640	640
F012S025W01	MH 3 108		640	640
F012S025W02	MH 3 108		640	640
F012S025W11	MH 0 108		640	640
F012S025W12	MH 0 108		553	553
F012S025W13	MH 0 108		640	640
F012S025W14	MH 0 108		640	640
F012S025W23	MH 0 108		640	640
F012S025W24	MH 0 108		640	640
F012S025W25	MH 0 108		640	640
F012S025W26	MH 0 108		640	640
F012S025W35	MH 0 108		640	640
F012S025W36	MH 0 108		640	640
F001N001W05	MH 2 26	160		160
F001N001W06	MH 2 26	40		40
F001N001W07	MH 2 26	39		39
F001N001W17	MH 2 26	80		80
F001N001W18	MH 2 26	80		80
F001N001W19	MH 4 75	317		317
F001N001W20	MH 4 75	320		320
F001N001W29	MH 02 26	3		3
F001N002W01	MH 2 126	160		160
F001N002W11	MH 2 126	180		180
F001N002W13	MH 2 126	20		20
F001N002W19	MH 5 126	641		641
F001N002W22	MH 5 126	40		40
F001N002W23	MH 2 126	115		115
F001N002W24	MH 2 126	80		80
F001N002W26	MH 2 126	110		110
F001N002W27	MH 2 126	80		80
F001N002W28	MH 5 126	2		2
F001N002W30	MH 5 126	270		270
F001N002W31	MH 5 126	483		483
F001N002W33	MH 5 126	30		30
F001N002W34	MH 2 126	232		232
F001N002W35	MH 2 126	159	4	163
F001N003W08	MH 2 126	40		40

SECTI.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
F001N003W09	MH 2 126	160		160
F001N003W11	MH 5 126	49		49
F001N003W13	MH 5 126	217		217
F001N003W14	MH 2 126	333		333
F001N003W15	MH 2 126	414		414
F001N003W17	MH 2 126	150		150
F001N003W22	MH 2 126		20	20
F001N003W23	MH 2 126		240	240
F001N003W25	MH 5 126	40		40
F001N003W26	MH 5 126		200	200
F001N003W27	MH 5 126		40	40
F001N003W36	MH 5 126	256		256
F004N022W17	MH 0 148		10	10
S016N002E01	MH 0 119	78	230	308
S016N002E02	MH 0 119		64	64
S016N002E04	MH 0 119		203	203
S016N002E05	MH 0 119		381	381
S016N002E06	MH 0 119		345	345
S016N002E07	MH 0 119		415	415
S016N002E08	MH 0 119		222	222
S016N002E09	MH 0 119	7	295	302
S016N002E10	MH 0 119	2	420	422
S016N002E11	MH 0 119		610	610
S016N002E12	MH 0 119		640	640
S016N002E13	MH 0 119		640	640
S016N002E14	MH 0 119		640	640
S016N002E15	MH 0 119		640	640
S016N002E16	MH 0 119		597	597
S016N002E17	MH 0 119		284	284
S016N002E19	MH 0 119		302	302
S016N002E20	MH 0 119		160	160
S016N002E21	MH 0 119		640	640
S016N002E22	MH 0 119		640	640
S016N002E23	MH 0 119		640	640
S016N002E24	MH 0 119		640	640
S016N002E25	MH 0 119		640	640
S016N002E26	MH 0 119		640	640
S016N002E27	MH 0 119		640	640
S016N002E28	MH 0 119		640	640
S016N002E30	MH 0 119		606	606
S016N002E31	MH 0 119		607	607
S016N002E33	MH 0 119		640	640
S016N002E34	MH 0 119		640	640
S016N002E35	MH 0 119		640	640
S016N002E36	MH 0 119		640	640
S017N002E23	MH 0 163	40		40
S017N002E25	MH 0 163	15		15
S018N001E01	MH 0 31	479		479
S018N001E12	MH 0 31	160		160
S018N001E31	MH 0 31	40		40
S018N002E03	MH 0 31	160		160
S018N002E04	MH 0 31	480		480
S018N002E05	MH 0 31	600		600
S018N002E06	MH 0 31	310		310
S018N002E07	MH 0 31	371		371

SECTI.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES T..	TOTAL ACRES PAT & TA
S018N003E07	MH 8 141	377		377
S018N003E08	MH 8 141	251		251
S019N001E25	MH 0 31	640		640
S019N002E28	MH 0 31	480		480
S019N002E29	MH 0 31	640		640
S019N002E30	MH 0 31	616		616
S019N002E31	MH 0 31	618		618
S019N002E32	MH 0 31	640		640
S019N002E33	MH 0 31	640		640
S019N003E01	MH 0 124		639	639
S019N003E04	MH 0 124		640	640
S019N003E05	MH 0 124		640	640
S019N003E06	MH 0 124		595	595
S019N003E08	MH 0 124	80		80
S019N003E09	MH 0 124	520		520
S019N003E10	MH 0 124	560		560
S019N003E11	MH 0 124	320		320
S019N003E13	MH 0 124	240		240
S019N003E14	MH 0 124	240		240
S019N003E15	MH 0 124	160		160
S019N003E17	MH 0 124	640		640
S019N003E18	MH 0 124	612		612
S019N003E19	MH 0 124	535		535
S019N003E20	MH 0 124	240		240
S019N003E25	MH 0 124		513	513
S019N003E26	MH 0 124		171	171
S019N003E27	MH 0 124		202	202
S019N003E32	MH 0 124	227		227
S019N003E33	MH 0 124		542	542
S019N004E02	MH 0 166	80		80
S019N004E07	MH 0 166	40		40
S019N004E08	MH 0 166	120		120
S019N004E17	MH 0 166	5		5
S019N004E18	MH 0 166	82		82
S019N004E19	MH 0 166	11		11
S019N004E22	MH 0 166	6		6
S019N005E01	MH 0 166	640		640
S019N005E02	MH 0 166	617		617
S019N005E03	MH 0 166	33	11	44
S019N005E04	MH 0 166	78		78
S019N005E06	MH 0 166	284		284
S019N005E07	MH 0 166		13	13
S019N005E08	MH 0 166		5	5
S019N005E12	MH 0 166	640		640
S019N006E04	MH 0 37	160		160
S019N006E04	MH 0 23	480		480
S019N006E05	MH 0 37	280		280
S019N006E05	MH 0 23	360		360
S019N006E06	MH 0 23	609		609
S020N005E01	MH 0 125		640	640
S020N005E02	MH 0 125		640	640
S020N005E03	MH 0 125		640	640
S020N005E04	MH 0 125		640	640
S020N005E05	MH 0 125		640	640
S020N005E06	MH 0 125		607	607

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S020N005E07	MH 0 125		607	607
S020N005E08	MH 0 125	240		240
S020N005E08	MH 0 37	120		120
S020N005E08	MH 0 23	280		280
S020N005E09	MH 0 23	640		640
S020N005E10	MH 0 23	640		640
S020N005E11	MH 0 23	640		640
S020N005E12	MH 0 23	640		640
S020N005E13	MH 0 23	640		640
S020N005E14	MH 0 23	640		640
S020N005E15	MH 0 125	320		320
S020N005E15	MH 0 23	320		320
S020N005E17	MH 0 23	640		640
S020N005E18	MH 0 23	600		600
S020N005E19	MH 0 23	602		602
S020N005E20	MH 0 23	160		160
S020N005E20	MH 0 37	480		480
S020N005E21	MH 0 125	160		160
S020N005E21	MH 0 37	480		480
S020N005E22	MH 0 23	320		320
S020N005E22	MH 0 125	80		80
S020N005E22	MH 0 37	240		240
S020N005E23	MH 0 125	160		160
S020N005E23	MH 0 23	440		440
S020N005E24	MH 0 23	640		640
S020N005E27	MH 0 37	160		160
S020N005E28	MH 0 37	320		320
S020N005E28	MH 0 23	240		240
S020N005E29	MH 0 37	120		120
S020N005E29	MH 0 23	520		520
S020N005E30	MH 0 125	160		160
S020N005E30	MH 0 23	284		284
S020N005E31	MH 0 125	160		160
S020N005E31	MH 0 23	607		607
S020N005E32	MH 0 125	107		107
S020N005E32	MH 0 23	600		600
S020N005E33	MH 0 37	40		40
S020N005E33	MH 0 23	200		200
S020N005E34	MH 0 37	120		120
S020N005E34	MH 0 23	200		200
S020N005E35	MH 0 37	35		35
S020N005E35	MH 0 23	200		200
S020N006E01	MH 0 23	640		640
S020N006E02	MH 0 23	641		641
S020N006E03	MH 0 23	640		640
S020N006E04	MH 0 23	640		640
S020N006E05	MH 0 23	640		640
S020N006E06	MH 0 23	598		598
S020N006E07	MH 0 23	600		600
S020N006E08	MH 0 23	640		640
S020N006E09	MH 0 23	640		640
S020N006E10	MH 0 23	640		640
S020N006E11	MH 0 23	640		640
S020N006E12	MH 0 23	640		640
S020N006E13	MH 0 23	608		608

SECTIO.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S020N006E14	MH 0 23	640		640
S020N006E15	MH 0 23	640		640
S020N006E17	MH 0 23	640		640
S020N006E18	MH 0 23	442		442
S020N006E19	MH 0 23	604		604
S020N006E20	MH 0 23	640		640
S020N006E21	MH 0 23	640		640
S020N006E22	MH 0 23	640		640
S020N006E23	MH 0 139	5		5
S020N006E23	MH 0 40	485		485
S020N006E23	MH 0 23	25		25
S020N006E24	MH 0 23	313		313
S020N006E24	MH 0 139	36		36
S020N006E25	MH 0 139	3		3
S020N006E25	MH 0 23	515		515
S020N006E26	MH 0 23	421		421
S020N006E27	MH 0 23	402		402
S020N006E28	MH 0 23	400		400
S020N006E29	MH 0 139	160		160
S020N006E29	MH 0 23	120		120
S020N006E30	MH 0 139	141		141
S020N006E30	MH 0 23	40		40
S020N006E31	MH 0 37	246		246
S020N006E31	MH 0 23	127		127
S020N006E31	MH 0 139	177		177
S020N006E32	MH 0 37	461		461
S020N006E32	MH 0 23	21		21
S020N006E33	MH 0 23	44		44
S020N006E33	MH 0 37	414		414
S020N006E34	MH 0 139		466	466
S020N006E34	MH 0 124		221	221
S020N006E34	MH 0 37	14		14
S020N006E35	MH 0 139		600	600
S020N006E35	MH 0 124		360	360
S020N006E36	MH 0 139		540	540
S020N006E36	MH 0 124		520	520
S020N007E19	MH 0 139	37		37
S001S014W34	MH 0 171		3	3
S005S013W29	MH 0 145	250		250
S006S013W35	MH 0 80	15		15
S006S014W02	MH 0 140	43		43
S007S013W01	MH 0 21	33		33
S007S013W01	MH 0 80	10		10
S007S013W02	MH 0 80	4		4
S007S013W25	MH 0 129		400	400
S007S013W26	MH 0 129		210	210
S007S013W35	MH 0 129		380	380
S007S013W36	MH 0 129		640	640
S008S013W01	MH 0 128		316	316
S008S013W02	MH 0 128		378	378
S008S013W09	MH 0 128		4	4
S008S013W10	MH 0 128		262	262
S008S013W10	MH 0 39			
S008S013W11	MH 0 128		585	585
S008S013W12	MH 0 128		640	640

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S008S013W13	MH 0 128		640	640
S008S013W14	MH 0 128		601	601
S008S013W15	MH 0 128		25	25
S008S013W16	MH 0 128	12		12
S008S013W17	MH 0 128	3		3
S008S013W18	MH 0 128	16		16
S008S013W19	MH 0 128	3	276	279
S008S013W20	MH 0 128	13	187	200
S008S013W21	MH 0 128	5	374	379
S008S013W22	MH 0 128		460	460
S008S013W23	MH 0 128	4	180	184
S008S013W24	MH 0 128	10	513	523
S008S013W25	MH 0 128		170	170
S008S013W26	MH 0 128		632	632
S008S013W27	MH 0 128		637	637
S008S013W28	MH 0 128	5	464	469
S008S013W29	MH 0 128		464	464
S008S013W30	MH 0 128		638	638
S008S013W31	MH 0 128		639	639
S008S013W32	MH 0 128		640	640
S008S013W33	MH 0 128		639	639
S008S013W34	MH 0 128		640	640
S008S013W35	MH 0 128		640	640
S008S013W36	MH 0 128		500	500
S027S019W32	MH 0 3	4		4
S029S018W31	MH 0 18	5		5
S029S019W32	MH 0 18	34		34
S029S019W33	MH 0 18	50		50
S029S019W34	MH 0 18	17		17
S029S019W36	MH 0 18	29		29
S002N012W02	MH 0 138	20		20
S002N012W03	MH 0 138	45		45
S002N012W04	MH 0 138	28		28
S003N011N30	MH 0 138	77		77
S003N012W01	MH 0 138	23		23
S003N012W02	MH 0 138	158		158
S003N012W33	MH 0 138	50		50
S005N008W01	MH 0 25	400	161	561
S005N008W02	MH 0 25	240		240
S005N008W03	MH 0 25	601	39	640
S005N008W04	MH 0 25	640		640
S005N008W05	MH 0 25	320		320
S005N008W06	MH 0 25	382		382
S005N008W07	MH 0 25	38		38
S005N008W08	MH 0 25	400		400
S005N008W09	MH 0 25	560		560
S005N008W10	MH 0 25	200		200
S005N008W11	MH 0 25	400		400
S005N008W14	MH 0 25		32	32
S005N008W17	MH 0 25	80		80
S005N008W19	MH 0 25	317		317
S005N008W20	MH 0 25	400		400
S005N008W21	MH 0 25	449		449
S005N008W22	MH 0 25	395		395
S005N008W23	MH 0 25	320		320

SECTIO..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S005N008W24	MH 0 25	358		358
S005N008W25	MH 0 25	611		611
S005N008W26	MH 0 25	514		514
S005N008W27	MH 0 25	260		260
S005N008W28	MH 0 25	576		576
S005N008W29	MH 0 25	453	140	593
S005N008W30	MH 0 25	637		637
S005N008W31	MH 0 25	639		639
S005N008W32	MH 0 25	319		319
S005N008W33	MH 0 25	633		633
S005N008W34	MH 0 25	640		640
S005N008W35	MH 0 25	339		339
S005N009W01	MH 0 25	400		400
S005N009W06	MH 0 25	494		494
S005N009W07	MH 0 25	356		356
S005N009W08	MH 0 25	120		120
S005N009W09	MH 0 25	10		10
S005N009W11	MH 0 25	43		43
S005N009W12	MH 0 25	129		129
S005N009W13	MH 0 25	40		40
S005N009W14	MH 0 25	20		20
S005N009W18	MH 0 25	155		155
S005N009W19	MH 0 25	79		79
S005N009W21	MH 0 25	160		160
S005N009W22	MH 0 25	31		31
S005N009W23	MH 0 25	67		67
S005N009W24	MH 0 25	400		400
S005N009W25	MH 0 25	320		320
S005N009W28	MH 0 25	321		321
S005N009W29	MH 0 25	400		400
S005N009W31	MH 0 25	27		27
S005N009W32	MH 0 25	550		550
S005N009W33	MH 0 25	619		619
S005N009W34	MH 0 25	640		640
S005N009W35	MH 0 25	320		320
S005N010W01	MH 0 25	466		466
S005N010W02	MH 0 25	555		555
S005N010W03	MH 0 25	640		640
S005N010W04	MH 0 25	446		446
S005N010W05	MH 0 25	160		160
S005N010W06	MH 0 25	165		165
S005N010W07	MH 0 25	90		90
S005N010W08	MH 0 25	120		120
S005N010W09	MH 0 25	558		558
S005N010W10	MH 0 25	440		440
S005N010W11	MH 0 25	552	7	559
S005N010W12	MH 0 25	636		636
S005N010W13	MH 0 25	321		321
S005N010W14	MH 0 25	233	40	273
S005N010W15	MH 0 25	40		40
S005N010W17	MH 0 25	80		80
S005N010W18	MH 0 25	435		435
S005N010W19	MH 0 25	7		7
S005N010W20	MH 0 25	200		200
S005N010W21	MH 0 25	120		120

SECTI..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S005N010W23	MH	25	80	80
S005N010W24	MH	25	80	80
S005N010W26	MH	25	160	160
S005N010W27	MH	25	240	240
S005N010W30	MH	25	43	43
S005N010W31	MH	25	202	202
S005N010W32	MH	25	20	3 23
S005N010W33	MH	25	61	61
S005N010W34	MH	25	56	56
S005N010W35	MH	25	91	91
S005N011W06	MH	79	159	159
S005N011W06	MH	46	30	30
S005N012W01	MH	79	14	14
S006N010W30	MH	25	307	307
S006N010W31	MH	25	434	434
S006N011W03	MH	25	160	160
S006N011W04	MH	25	80	80
S006N011W05	MH	25	320	320
S006N011W06	MH	25	390	390
S006N011W07	MH	25	231	231
S006N011W09	MH	25	360	360
S006N011W10	MH	25	520	520
S006N011W15	MH	25	340	340
S006N011W16	MH	25	600	600
S006N011W17	MH	25	320	320
S006N011W20	MH	25	320	320
S006N011W21	MH	25	160	160
S006N011W22	MH	25	640	640
S006N011W23	MH	25	640	640
S006N011W24	MH	25	640	640
S006N011W25	MH	25	640	640
S006N011W26	MH	25	640	640
S006N011W27	MH	25	560	560
S006N011W28	MH	25	320	320
S006N011W29	MH	25	160	160
S006N011W31	MH	25	14	1 15
S006N011W33	MH	25	198	3 201
S006N011W34	MH	25	313	13 326
S006N011W35	MH	25	120	160 280
S007N010W06	MH	25	610	610
S007N011W01	MH	25	277	277
S007N011W02	MH	25	371	371
S007N011W04	MH	25	30	30
S007N011W05	MH	97	4	4
S007N011W06	MH	25	79	79
S007N011W07	MH	25	39	68 107
S007N011W08	MH	25	1	24 25
S007N011W09	MH	25	322	322
S007N011W10	MH	25	160	160
S007N011W13	MH	25	584	584
S007N011W14	MH	25	153	153
S007N011W15	MH	25	480	480
S007N011W16	MH	25	244	244
S007N011W19	MH	25	429	429
S007N011W20	MH	25	605	605

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S007N011W21	MH 0	25	280	280
S007N011W22	MH 0	25	541	541
S007N011W27	MH 0	25	507	507
S007N011W28	MH 0	25	177	177
S007N011W29	MH 0	25	40	40
S007N011W30	MH 0	25	263	263
S007N011W31	MH 0	25	360	360
S007N011W32	MH 0	25	640	640
S007N011W33	MH 0	25	160	160
S007N011W34	MH 0	25	320	320
S007N012W02	MH 0	25	80	80
S007N012W03	MH 0	6	404	404
S007N012W03	MH 0	25	40	40
S007N012W04	MH 0	6	167	167
S007N012W09	MH 0	6	503	503
S007N012W10	MH 0	6	54	54
S007N012W13	MH 0	25	5	5
S007N012W15	MH 0	25	40	40
S007N012W21	MH 0	25	47	47
S007N012W23	MH 0	25	40 80	120
S007N012W27	MH 0	25	65 6	71
S007N012W28	MH 0	25	46	46
S007N012W34	MH 0	25	97	97
S008N010W18	MH 0	25	88	88
S008N010W19	MH 0	25	143	143
S008N010W30	MH 0	25	603	603
S008N010W31	MH 0	25	578	578
S008N011W13	MH 0	25	96	96
S008N011W14	MH 0	25	185	185
S008N011W15	MH 0	25	118	118
S008N011W17	MH 0	25	2	2
S008N011W20	MH 0	25	346 5	351
S008N011W21	MH 0	25	356	356
S008N011W22	MH 0	25	255	255
S008N011W23	MH 0	25	161	161
S008N011W25	MH 0	25	608	608
S008N011W26	MH 0	25	204	204
S008N011W28	MH 0	25	320 142	462
S008N011W29	MH 0	25	542	542
S008N011W30	MH 0	25	86	86
S008N011W31	MH 0	25	81	81
S008N011W32	MH 0	25	200	200
S008N011W33	MH 0	25	68	68
S008N011W34	MH 0	25	158	158
S008N011W35	MH 0	25	124	124
S008N011W36	MH 0	25	475	475
S008N012W34	MH 0	6	57	57
S008N012W35	MH 0	6	10	10
S011N003W10	MH 0	20	34	34
S011N003W10	MH 0	8	160	160
S011N003W11	MH 0	8	70	70
S011N003W14	MH 0	8	195	195
S012N003W04	MH 0	143	80	80
S012N003W30	MH 0	6	219	219
S012N003W31	MH 0	6	138	138

SECTI.	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA.	TOTAL ACRES PAT & TA
S012N003W32	MH 0	6	47	47
S012N003W33	MH 0	143	8	8
S012N004W15	MH 0	6	24	24
S012N004W22	MH 0	6	32	32
S012N004W23	MH 0	6	20	20
S012N004W25	MH 0	6	268	268
S012N004W26	MH 0	6	5	5
S012N011W03	MH 0	70	640	640
S012N011W04	MH 0	70	640	640
S012N011W05	MH 0	70	640	640
S012N011W06	MH 0	70	578	578
S012N011W07	MH 0	70	580	580
S012N011W08	MH 0	70	640	640
S012N011W09	MH 0	70	640	640
S012N011W10	MH 0	70	640	640
S012N011W15	MH 0	70	640	640
S012N011W16	MH 0	70	640	640
S012N011W17	MH 0	70	640	640
S012N011W18	MH 0	70	582	582
S012N011W19	MH 0	70	211	211
S012N011W20	MH 0	70	492	492
S012N011W21	MH 0	70	640	640
S012N011W22	MH 0	70	640	640
S012N011W27	MH 0	70	175	175
S012N011W28	MH 0	70	180	180
S012N011W29	MH 0	70	48	48
S012N012W01	MH 0	58	640	640
S012N012W02	MH 0	58	640	640
S012N012W03	MH 0	58	640	640
S012N012W04	MH 0	58	640	640
S012N012W05	MH 0	58	640	640
S012N012W06	MH 0	58	596	596
S012N012W07	MH 0	58	598	598
S012N012W08	MH 0	58	640	640
S012N012W09	MH 0	58	640	640
S012N012W10	MH 0	58	640	640
S012N012W11	MH 0	58	640	640
S012N012W12	MH 0	58	640	640
S012N012W13	MH 0	58	640	640
S012N012W14	MH 0	58	640	640
S012N012W15	MH 0	58	640	640
S012N012W16	MH 0	58	640	640
S012N012W17	MH 0	58	640	640
S012N012W18	MH 0	58	599	599
S012N012W19	MH 0	71		
S012N012W19	MH 0	58	601	601
S012N012W20	MH 0	58	640	640
S012N012W20	MH 0	71		
S012N012W21	MH 0	71		
S012N012W21	MH 0	58	640	640
S012N012W22	MH 0	58	550	550
S012N012W22	MH 0	71		
S012N012W23	MH 0	58	135	135
S012N012W24	MH 0	58	385	385
S012N012W27	MH 0	58	540	540

SECTI.	MH CASE WITH TA OR PAT		ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S012N012W27	MH	71			
S012N012W28	MH	71			
S012N012W28	MH	58	640		640
S012N012W29	MH	58	640		640
S012N012W29	MH	71			
S012N012W30	MH	71			
S012N012W30	MH	58	603		603
S012N012W31	MH	58	605		605
S012N012W31	MH	71			
S012N012W32	MH	71			
S012N012W32	MH	58	640		640
S012N012W33	MH	58	640		640
S012N012W33	MH	71			
S012N012W34	MH	71			
S012N012W34	MH	58	540		540
S012N013W01	MH	59	640		640
S012N013W02	MH	59	640		640
S012N013W03	MH	59	640		640
S012N013W04	MH	59	640		640
S012N013W05	MH	59	640		640
S012N013W06	MH	59	599		599
S012N013W07	MH	59	601		601
S012N013W08	MH	59	640		640
S012N013W09	MH	59	640		640
S012N013W10	MH	59	640		640
S012N013W11	MH	59	640		640
S012N013W12	MH	59	640		640
S012N013W13	MH	59	640		640
S012N013W14	MH	59	640		640
S012N013W15	MH	59	640		640
S012N013W16	MH	59	640		640
S012N013W17	MH	59	640		640
S012N013W18	MH	59	603		603
S012N013W19	MH	59	605		605
S012N013W20	MH	59	640		640
S012N013W21	MH	59	640		640
S012N013W22	MH	59	640		640
S012N013W23	MH	59	640		640
S012N013W24	MH	59	640		640
S012N013W25	MH	59	640		640
S012N013W26	MH	59	640		640
S012N013W27	MH	59	640		640
S012N013W28	MH	59	640		640
S012N013W29	MH	59	640		640
S012N013W30	MH	59	606		606
S012N013W31	MH	59	608		608
S012N013W32	MH	59	640		640
S012N013W33	MH	59	640		640
S012N013W34	MH	59	640		640
S012N013W35	MH	59	640		640
S012N013W36	MH	59	640		640
S013N001W05	MH	154		40	40
S013N001W06	MH	154		276	276
S013N003W07	MH	76	28		28
S013N003W09	MH	151	40		40

SECTIO..	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S013N003W18	MH 0	2		1
S013N003W21	MH 0	152		40
S013N003W28	MH 0	89		10
S013N003W28	MH 0	1		70
S013N003W33	MH 0	143		300
S013N003W34	MH 0	174		20
S013N010W04	MH 0	57		640
S013N010W05	MH 0	57		640
S013N010W06	MH 0	57		630
S013N010W07	MH 0	57		632
S013N010W08	MH 0	57		640
S013N010W09	MH 0	57		640
S013N010W16	MH 0	57		640
S013N010W17	MH 0	57		640
S013N010W18	MH 0	57		634
S013N010W19	MH 0	57		636
S013N010W20	MH 0	57		640
S013N010W21	MH 0	57		640
S013N010W28	MH 0	57		640
S013N010W29	MH 0	57		640
S013N010W30	MH 0	57		637
S013N010W31	MH 0	57		639
S013N010W32	MH 0	57		640
S013N010W33	MH 0	57		640
S013N011W01	MH 0	61		640
S013N011W02	MH 0	61		640
S013N011W03	MH 0	61		640
S013N011W04	MH 0	61		640
S013N011W05	MH 0	61		640
S013N011W06	MH 0	61		630
S013N011W07	MH 0	61		632
S013N011W08	MH 0	61		640
S013N011W09	MH 0	61		640
S013N011W10	MH 0	61		640
S013N011W11	MH 0	61		640
S013N011W12	MH 0	61		640
S013N011W13	MH 0	61		640
S013N011W14	MH 0	61		640
S013N011W15	MH 0	61		640
S013N011W16	MH 0	61		640
S013N011W17	MH 0	61		640
S013N011W18	MH 0	61		634
S013N011W19	MH 0	61		636
S013N011W20	MH 0	61		640
S013N011W21	MH 0	61		640
S013N011W22	MH 0	61		640
S013N011W23	MH 0	61		640
S013N011W24	MH 0	61		640
S013N011W25	MH 0	61		640
S013N011W26	MH 0	61		640
S013N011W27	MH 0	61		640
S013N011W28	MH 0	61		640
S013N011W29	MH 0	61		640
S013N011W30	MH 0	61		627
S013N011W31	MH 0	61		639

SECTIL	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S013N011W32	MH 0	61	640	640
S013N011W33	MH 0	61	640	640
S013N011W34	MH 0	61	640	640
S013N011W35	MH 0	61	640	640
S013N011W36	MH 0	61	640	640
S013N012W01	MH 0	63	640	640
S013N012W02	MH 0	63	640	640
S013N012W03	MH 0	63	640	640
S013N012W04	MH 0	63	640	640
S013N012W05	MH 0	63	640	640
S013N012W06	MH 0	63	630	630
S013N012W07	MH 0	63	632	632
S013N012W08	MH 0	63	640	640
S013N012W09	MH 0	63	640	640
S013N012W10	MH 0	63	640	640
S013N012W11	MH 0	63	640	640
S013N012W12	MH 0	63	640	640
S013N012W13	MH 0	63	640	640
S013N012W14	MH 0	63	640	640
S013N012W15	MH 0	63	640	640
S013N012W16	MH 0	63	640	640
S013N012W17	MH 0	63	640	640
S013N012W18	MH 0	63	634	634
S013N012W19	MH 0	63	636	636
S013N012W20	MH 0	63	640	640
S013N012W21	MH 0	63	640	640
S013N012W22	MH 0	63	640	640
S013N012W23	MH 0	63	640	640
S013N012W24	MH 0	63	640	640
S013N012W25	MH 0	63	640	640
S013N012W26	MH 0	63	640	640
S013N012W27	MH 0	63	640	640
S013N012W28	MH 0	63	640	640
S013N012W29	MH 0	63	640	640
S013N012W30	MH 0	63	637	637
S013N012W31	MH 0	63	639	639
S013N012W32	MH 0	63	640	640
S013N012W33	MH 0	63	640	640
S013N012W34	MH 0	63	640	640
S013N012W35	MH 0	63	640	640
S013N012W36	MH 0	63	640	640
S013N013W01	MH 0	65	640	640
S013N013W02	MH 0	65	640	640
S013N013W03	MH 0	65	640	640
S013N013W04	MH 0	65	640	640
S013N013W05	MH 0	65	640	640
S013N013W06	MH 0	65	630	630
S013N013W07	MH 0	65	632	632
S013N013W08	MH 0	65	640	640
S013N013W09	MH 0	65	640	640
S013N013W10	MH 0	65	640	640
S013N013W11	MH 0	65	640	640
S013N013W12	MH 0	65	640	640
S013N013W13	MH 0	65	640	640
S013N013W14	MH 0	65	640	640

SECTI...	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S013N013W15	MH 0	65	640	640
S013N013W16	MH 0	65	640	640
S013N013W17	MH 0	65	640	640
S013N013W18	MH 0	65	634	634
S013N013W19	MH 0	65	636	636
S013N013W20	MH 0	65	640	640
S013N013W21	MH 0	65	640	640
S013N013W22	MH 0	65	640	640
S013N013W23	MH 0	65	640	640
S013N013W24	MH 0	65	640	640
S013N013W25	MH 0	65	640	640
S013N013W26	MH 0	65	640	640
S013N013W27	MH 0	65	640	640
S013N013W28	MH 0	65	640	640
S013N013W29	MH 0	65	640	640
S013N013W30	MH 0	65	637	637
S013N013W31	MH 0	65	639	639
S013N013W32	MH 0	65	640	640
S013N013W33	MH 0	65	640	640
S013N013W34	MH 0	65	640	640
S013N013W35	MH 0	65	640	640
S013N013W36	MH 0	65	640	640
S014N002W13	MH 0	56	40	40
S014N002W14	MH 0	56	257	257
S014N002W23	MH 0	56	320	320
S014N002W24	MH 0	56	480	480
S014N004W04	MH 0	86	617	617
S014N004W05	MH 0	86	640	640
S014N004W06	MH 0	86	616	616
S014N004W07	MH 0	86	618	618
S014N004W08	MH 0	86	640	640
S014N004W09	MH 0	86	626	626
S014N004W12	MH 0	170	14	14
S014N004W16	MH 0	86	640	640
S014N004W17	MH 0	86	640	640
S014N004W18	MH 0	86	620	620
S014N004W19	MH 0	86	622	622
S014N004W20	MH 0	86	640	640
S014N004W21	MH 0	86	640	640
S014N004W30	MH 0	86	431	431
S014N004W31	MH 0	170	290	290
S014N004W31	MH 0	86	151	151
S014N004W32	MH 0	170	40	40
S014N004W34	MH 0	170	80	80
S014N004W35	MH 0	170	40	40
S014N005W01	MH 0	86	640	640
S014N005W02	MH 0	86	640	640
S014N005W03	MH 0	86	640	640
S014N005W04	MH 0	86	640	640
S014N005W05	MH 0	86	640	640
S014N005W06	MH 0	86	620	620
S014N005W07	MH 0	86	622	622
S014N005W08	MH 0	86	620	620
S014N005W09	MH 0	86	640	640
S014N005W10	MH 0	86	640	640

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S014N005W11	MH 0 86	640		640
S014N005W12	MH 0 86	640		640
S014N005W13	MH 0 86	640		640
S014N005W14	MH 0 86	640		640
S014N005W15	MH 0 86	640		640
S014N005W16	MH 0 86	640		640
S014N005W17	MH 0 86	640		640
S014N005W18	MH 0 86	623		623
S014N005W19	MH 0 86	625		625
S014N005W20	MH 0 86	640		640
S014N005W21	MH 0 86	640		640
S014N005W22	MH 0 86	640		640
S014N005W23	MH 0 86	640		640
S014N005W24	MH 0 86	640		640
S014N005W25	MH 0 86	526		526
S014N005W26	MH 0 86	640		640
S014N005W27	MH 0 86	640		640
S014N005W28	MH 0 86	640		640
S014N005W29	MH 0 86	640		640
S014N005W30	MH 0 86	627		627
S014N005W31	MH 0 86	480		480
S014N005W32	MH 0 86	400		400
S014N005W33	MH 0 86	413		413
S014N005W34	MH 0 86	540		540
S014N005W35	MH 0 86	491		491
S014N005W36	MH 0 86	586		586
S014N006W01	MH 0 86	150		150
S014N006W12	MH 0 86	236		236
S014N012W01	MH 0 67	640		640
S014N012W02	MH 0 67	640		640
S014N012W03	MH 0 67	640		640
S014N012W04	MH 0 67	640		640
S014N012W05	MH 0 67	640		640
S014N012W06	MH 0 67	620		620
S014N012W07	MH 0 67	622		622
S014N012W08	MH 0 67	640		640
S014N012W09	MH 0 67	640		640
S014N012W10	MH 0 67	640		640
S014N012W11	MH 0 67	640		640
S014N012W12	MH 0 67	640		640
S014N012W13	MH 0 67	640		640
S014N012W14	MH 0 67	640		640
S014N012W15	MH 0 67	640		640
S014N012W16	MH 0 67	640		640
S014N012W17	MH 0 67	640		640
S014N012W18	MH 0 67	623		623
S014N012W19	MH 0 67	625		625
S014N012W20	MH 0 67	640		640
S014N012W21	MH 0 67	640		640
S014N012W22	MH 0 67	640		640
S014N012W23	MH 0 67	640		640
S014N012W24	MH 0 67	640		640
S014N012W25	MH 0 67	640		640
S014N012W26	MH 0 67	640		640
S014N012W27	MH 0 67	640		640

SECTI	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S014N012W28	MH 0	67	640	640
S014N012W29	MH 0	67	640	640
S014N012W30	MH 0	67	627	627
S014N012W31	MH 0	67	629	629
S014N012W32	MH 0	67	640	640
S014N012W33	MH 0	67	640	640
S014N012W34	MH 0	67	640	640
S014N012W35	MH 0	67	640	640
S014N012W36	MH 0	67	640	640
S014N013W01	MH 0	69	640	640
S014N013W02	MH 0	69	640	640
S014N013W03	MH 0	69	640	640
S014N013W10	MH 0	69	640	640
S014N013W11	MH 0	69	640	640
S014N013W12	MH 0	69	640	640
S014N013W13	MH 0	69	640	640
S014N013W14	MH 0	69	640	640
S014N013W15	MH 0	69	640	640
S014N013W22	MH 0	69	640	640
S014N013W23	MH 0	69	640	640
S014N013W24	MH 0	69	640	640
S014N013W25	MH 0	69	640	640
S014N013W26	MH 0	69	640	640
S014N013W27	MH 0	69	640	640
S014N013W34	MH 0	69	640	640
S014N013W35	MH 0	69	640	640
S014N013W36	MH 0	69	640	640
S015N003W05	MH 0	146	160	160
S015N003W06	MH 0	146	204	204
S015N003W08	MH 0	146	163	163
S015N003W09	MH 0	141	32	32
S015N003W10	MH 0	141	19	19
S015N003W18	MH 0	146	406	406
S015N003W19	MH 0	146	47	47
S015N004W05	MH 0	86	640	640
S015N004W06	MH 0	86	604	604
S015N004W07	MH 0	86	606	606
S015N004W08	MH 0	86	640	640
S015N004W17	MH 0	86	640	640
S015N004W18	MH 0	86	608	608
S015N004W19	MH 0	86	610	610
S015N004W20	MH 0	86	640	640
S015N004W29	MH 0	86	640	640
S015N004W30	MH 0	86	616	616
S015N004W31	MH 0	86	618	618
S015N004W32	MH 0	86	640	640
S015N005W01	MH 0	87	640	640
S015N005W02	MH 0	87	640	640
S015N005W03	MH 0	87	640	640
S015N005W04	MH 0	87	640	640
S015N005W05	MH 0	87	640	640
S015N005W06	MH 0	87	609	609
S015N005W07	MH 0	87	611	611
S015N005W08	MH 0	87	640	640
S015N005W09	MH 0	87	343	343

SECT.	MH	CASE WITH TA OR PAT	ACRES PAT	ACRES T.	TOTAL ACRES PAT & TA
S015N005W09	MH	86	315		315
S015N005W10	MH	86	65		65
S015N005W10	MH	87	577		577
S015N005W11	MH	87	640		640
S015N005W12	MH	87	640		640
S015N005W13	MH	87	640		640
S015N005W14	MH	87	605		605
S015N005W14	MH	86	36		36
S015N005W15	MH	87	118		118
S015N005W15	MH	86	502		502
S015N005W16	MH	87	5		5
S015N005W16	MH	86	640		640
S015N005W17	MH	87	439		439
S015N005W17	MH	86	219		219
S015N005W18	MH	87	613		613
S015N005W19	MH	87	537		537
S015N005W19	MH	86	80		80
S015N005W20	MH	86	601		601
S015N005W20	MH	87	36		36
S015N005W21	MH	86	640		640
S015N005W22	MH	86	640		640
S015N005W23	MH	86	460		460
S015N005W23	MH	87	167		167
S015N005W24	MH	87	626		626
S015N005W24	MH	86	16		16
S015N005W25	MH	86	394		394
S015N005W25	MH	87	224		224
S015N005W26	MH	86	640		640
S015N005W27	MH	86	640		640
S015N005W28	MH	86	640		640
S015N005W29	MH	86	640		640
S015N005W30	MH	87	236		236
S015N005W30	MH	86	415		415
S015N005W31	MH	86	565		565
S015N005W31	MH	87	42		42
S015N005W32	MH	86	640		640
S015N005W33	MH	86	640		640
S015N005W34	MH	86	640		640
S015N005W35	MH	86	640		640
S015N005W36	MH	87	39		39
S015N005W36	MH	86	601		601
S015N006W36	MH	86	8		8
S016N002W05	MH	169	40		40
S016N003W02	MH	160	250		250
S016N003W03	MH	160	40		40
S016N003W03	MH	139	10		10
S016N003W06	MH	160	60		60
S016N003W09	MH	160	5		5
S016N003W10	MH	160	120		120
S016N003W12	MH	160	40		40
S016N003W13	MH	160	40		40
S016N003W14	MH	160	40		40
S016N003W15	MH	160	120		120
S016N003W23	MH	160	160		160
S016N003W27	MH	160	40		40

SECTIO	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S016N003W34	MH 0 160	40		40
S017N001W05	MH 0 164	120		120
S017N001W18	MH 0 164	38		38
S017N002W02	MH 0 165	161		161
S017N002W03	MH 0 165	40		40
S017N002W06	MH 0 165	198		198
S017N002W08	MH 0 165	80		80
S017N002W08	MH 0 139	4		4
S017N002W12	MH 0 165	40		40
S017N002W13	MH 0 165	40		40
S017N002W14	MH 0 165	80		80
S017N002W17	MH 0 165	40		40
S017N002W19	MH 0 165	158		158
S017N002W21	MH 0 165	80		80
S017N002W23	MH 0 165	160		160
S017N002W31	MH 0 165	80		80
S017N002W32	MH 0 165	80		80
S017N002W35	MH 0 165	80		80
S017N004W01	MH 0 55	640		640
S017N004W02	MH 0 55	640		640
S017N004W03	MH 0 55	640		640
S017N004W04	MH 0 55	640		640
S017N004W05	MH 0 55	640		640
S017N004W06	MH 0 55	626		626
S017N004W07	MH 0 55	632		632
S017N004W08	MH 0 55	640		640
S017N004W09	MH 0 55	640		640
S017N004W10	MH 0 55	640		640
S017N004W11	MH 0 55	275		275
S017N004W12	MH 0 55	309		309
S017N004W13	MH 0 55	322		322
S017N004W14	MH 0 55	278		278
S017N004W15	MH 0 55	534		534
S017N004W16	MH 0 55	640		640
S017N004W17	MH 0 55	640		640
S017N004W18	MH 0 55	634		634
S017N004W19	MH 0 55	558		558
S017N004W20	MH 0 55	640		640
S017N004W21	MH 0 55	640		640
S017N004W22	MH 0 55	640		640
S017N004W23	MH 0 55	631		631
S017N004W24	MH 0 55	400		400
S017N004W25	MH 0 55	15		15
S017N004W26	MH 0 55	48		48
S017N004W27	MH 0 55	223		223
S017N004W28	MH 0 55	263		263
S017N004W29	MH 0 55	624		624
S017N004W30	MH 0 55	536		536
S017N004W31	MH 0 55	507		507
S017N004W32	MH 0 55	234		234
S017N004W33	MH 0 55	503		503
S017N004W34	MH 0 55	265		265
S017N004W35	MH 0 55	65		65
S018N001W05	MH 0 167	643		643
S018N001W06	MH 0 167	618		618

SECTIL	MH CASE WITH TA OR PAT	ACRES PAT	ACRES TA	TOTAL ACRES PAT & TA
S018N001W07	MH 0	167	618	618
S018N001W29	MH 0	167	55	55
S018N001W32	MH 0	167	25	25
S018N002W28	MH 0	157	130	130
S018N002W34	MH 0	157	1	1
S018N002W35	MH 0	157	40	40
S018N003W05	MH 0	161	80	80
S018N003W07	MH 0	161	463	463
S018N003W08	MH 0	161	80	80
S018N003W20	MH 0	161	80	80
S018N003W21	MH 0	161	160	160
S018N003W23	MH 0	161	80	80
S018N003W25	MH 0	139	10	10
S018N003W28	MH 0	161	480	480
S018N003W29	MH 0	161	160	160
S018N003W30	MH 0	161	392	392
S018N003W35	MH 0	161	40	40
S018N003W35	MH 0	139	16	16
S020N004W07	MH 0	158	16	16
S020N004W08	MH 0	158	80	80
S020N004W09	MH 0	158	160	160
S020N004W17	MH 0	158	40	40
S020N004W18	MH 0	158	70	70
S020N004W30	MH 0	158	160	160
S020N004W31	MH 0	158	271	271
S020N004W34	MH 0	158	160	160
S020N004W35	MH 0	158	240	240
S020N005W12	MH 0	168	97	97
S021N004W05	MH 0	159	120	120
S021N004W06	MH 0	159	40	40
S021N004W07	MH 0	159	78	78
S021N004W08	MH 0	159	80	80
S021N004W19	MH 0	159	78	78
S021N004W30	MH 0	159	194	194
S025N004W30	MH 0	45	78	78
S025N005W01	MH 0	45	20	20
S025N005W13	MH 0	45	22	22
S025N005W25	MH 0	45	40	40
S026N004W06	MH 0	45	619	619
S026N004W07	MH 0	45	594	594
S026N004W18	MH 0	45	530	530
S026N004W19	MH 0	109	15	15
S026N004W30	MH 0	109	85	85
S026N004W31	MH 0	109	20	20
S026N005W02	MH 0	45	488	488
S026N005W11	MH 0	45	180	180
S026N005W12	MH 0	45	640	640
S026N005W13	MH 0	45	520	520
S026N005W14	MH 0	45	210	210
S026N005W23	MH 0	45	53	53

APPENDIX B-1

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR SEDIMENTARY EXHALATIVE DEPOSITS

TABLE 2. NET PRESENT VALUE OF 4 % NSR AND 3 % NPI OF VARIOUS MINERAL DEPOSIT TYPES INCLUDED IN THIS INVESTIGATION.

	MINERAL DEPOSIT TYPE	MINE LIFE	ANNUAL NSR	ANNUAL NPI	10 % PW FACTOR	PW 4% NSR	PW 3% NPI
1	SEDIMENTARY EXHALATIVE						
	SEDEXSEO.SEE	20	$47,646,779	$26,601,044	8.514	$405,664,676	$226,481,289
	SEDEXLIK.SEE	10	$16,155,303	$9,065,142	6.144	$99,258,182	$55,696,232
2a	CYPRUS MASSIVE SULFIDE						
	CYPKI.SEE	15	$4,477,397	$2,132,660	7.606	$34,055,082	$16,221,012
2b	KUROKO MASSIVE SULFIDE						
	VMSHAINE.SEE	20	$6,200,335	$3,316,125	8.514	$52,789,652	$28,233,488
	VMSH2.SEE	10	$12,400,671	$7,264,126	6.144	$76,189,723	$44,630,790
	VMSHRP.SEE	20	$5,173,722	$2,716,491	8.514	$44,049,069	$23,128,204
	VMSLIBEL.SEE	20	$6,200,335	$3,087,749	8.514	$52,789,652	$26,289,095
3	BEDDED BARITE						
	BARHAINE.SEE	10	$3,038,921	($372,879)	6.144	$18,671,131	($2,290,969)
4	HOT SPRINGS AU-AG						
	RYANA.SEE	10	$752,525	($97,465)	6.144	$4,623,514	($598,825)
	RYANB.SEE	10	$845,211	($114,539)	6.144	$5,192,976	($703,728)
	RYANC.SEE	7	$1,390,968	($64,500)	4.868	$6,771,232	($313,986)
	HSAULB.SEE	20	$5,555,842	($435,407)	8.514	$47,302,439	($3,707,055)
	HSAUGERT.SEE	20	$5,579,074	($417,806)	8.514	$47,500,236	($3,557,200)
	BIGHURAH.SEE	10	$647,572	($97,464)	6.144	$3,978,682	($598,819)
	ILLCRKH.SEE	10	$439,545	($511,561)	6.144	$2,700,564	($3,143,031)
	DEMOCRAU.SEE	10	$647,572	($97,465)	6.144	$3,978,682	($598,825)
	SWMAU.SEE	7	$1,043,060	($420,132)	4.868	$5,077,616	($2,045,203)
5	EPITHERMAL QTZ-ALU AU						
	EQASEA.SEE	10	$11,999,467	$5,755,928	6.144	$73,724,725	$35,364,422

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	POLTHAIN.SEE CUT& FILL	10	$3,971,059	$2,084,841	6.144	$24,398,186	$12,809,263
	POLKHAIN.SEE SQ SET	10	$4,972,474	$2,819,080	6.144	$30,550,880	$17,320,428
	POLTGOLD.SEE	10	$3,965,659	$2,099,388	6.144	$24,365,009	$12,898,640
	POLTSALT.SEE	10	$3,971,059	$2,084,841	6.144	$24,398,186	$12,809,263
	LSAHAIN.SEE CUT & FILL	10	$1,582,965	$521,679	6.144	$9,725,737	$3,205,196
	LSAOHAIN.SEE OPEN STOPE	10	$1,503,738	$687,670	6.144	$9,238,966	$4,225,044
	LSAOCHAND.SEE	10	$1,502,305	$668,970	6.144	$9,230,162	$4,110,152
	KENSINGT.SEE LONGHOLE	10	$3,040,861	($570,176)	6.144	$18,683,050	($3,503,161)
6	CREEDE EPITHERMAL						
	CRDSEA.SEE CUT & FILL	15	$18,152,035	$9,375,269	7.606	$138,064,378	$71,308,296
7	W VEINS						
	WVENTM.SEE	15	$1,288,204	$297,975	7.606	$9,798,080	$2,266,398
8a	PORPHYRY CU-MO						
	PCMTB.SEE	30	$51,310,641	$15,151,568	9.427	$483,705,413	$142,833,832
8b	PORPHYRY CU-AU						
	PEBBLE.SEE	20	$12,432,829	$1,000	8.514	$105,853,106	$8,514
	PCAHLIV.SEE	20	$18,679,678	$5,931,774	8.514	$159,038,778	$50,503,124
	PCAMLIV.SEE	15	$6,170,322	$1,435,647	7.606	$46,931,469	$10,919,531
	PCALLIV.SEE	10	$2,321,960	($338,083)	6.144	$14,266,122	($2,077,182)
9	CLIMAX MOLYBDENUM						
	CLMOCNE.SEE	20	$34,519,058	$11,148,667	8.514	$293,895,260	$94,919,751
	CLMOBCNE.SEE	20	$34,519,058	$13,936,093	8.514	$293,895,260	$118,651,896
10	CU SKARNS						
	COPSSEA.SEE	10	$3,382,448	$1,163,455	6.144	$20,781,761	$7,148,268
11	W SKARNS						
	TUNSEA.SEE	15	$4,061,337	$1,354,355	7.606	$30,890,529	$10,301,224
12	ZN-PB SKARNS						
	ZNPBSEA.SEE	15	$6,672,915	$3,732,719	7.606	$50,754,191	$28,391,061

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13	SN GREISENS						
	TINCHENA.SEE	20	$3,349,685	($330,483)	8.514	$28,519,218	($2,813,732)
	TINZACK.SEE	20	$3,349,685	($113,453)	8.514	$28,519,218	($965,939)
14	REPLACEMENT FLUORITE						
	NOT APPLICABLE						
15	NORIL'SK CU-NI-PGE						
	NORSEA.SEE	20	$16,758,989	$3,897,757	8.514	$142,686,032	$33,185,503
16	PODIFORM CHROMITE						
	CHRMKE.SEE	2	$1,802,407	$913,066	1.736	$3,128,979	$1,585,083
17	ASBESTOS						
	NOT APPLICABLE						
18	SHALE/RED BED CU						
	NOT APPLICABLE						
19	BANDED IRON FORM						
	NOT APPLICABLE						
20	IRONSTONE						
	NOT APPLICABLE						
21	CARBONATE ZN-PB						
	NOT APPLICABLE						
22	CARBONATE						
	NOT APPLICABLE						
23	SANDSTONE URANIUM						
	SSUHEA.SEE	20	$17,310,702	$10,192,974	8.514	$147,383,317	$86,782,981
24	CARBONATITE REE						

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	CARBOK.SEE	30	$22,200,096	$9,807,047	9.427	$209,280,305	$92,451,032
25	PLACER AU	10	$1,956,456	$595,576	6.144	$12,020,466	$3,659,219
26	ALLUVIAL PLACER SN						
27	BULK MINEABLE AU SEE TYPE 4						
28	PLACER PGE						
29	ALMADEN HG						
	HGALRD.SEE	15	$5,539,456	($293,503)	7.606	$42,133,102	($2,232,384)
						$0	
30	INTRUSIVE RELATED AU					$0	
	FTKFBKS.SEE	16	$5,712,348	($756,265)	7.824	$44,693,411	($5,917,017)
	STONEBOY	16	$5,712,348	($756,265)	7.824	$44,693,411	($5,917,017)
	VACRRMAU.SEE	16	$5,711,885	($675,198)	7.824	$44,689,788	($5,282,749)
31	COAL						
	SCMA.SEE 5%NSR ($34.06/ton)	20	$2,104,500		8.514	$17,917,713	
	SCMA.SEE12%NSR($40.00/ton)	20	$6,375,000		8.514	$54,276,750	

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1. DESCRIPTIVE MODEL OF SEDIMENTARY EXHALATIVE Zn-Pb.

By Joseph A. Briskey

APPROXIMATE SYNONYMS Shale-hosted Zn-Pb; sediment hosted massive sulfide Zn-Pb.

DESCRIPTION Stratiform basinal accumulations of sulfide and sulfate minerals interbedded with euxinic marine sediments form sheet- or lens-like tabular ore bodies up to a few tens of meters thick, and may be distributed through a stratigraphic interval over 1,000 m.

GENERAL REFERENCES Large (1980, 1981, 1983).

GEOLOGICAL ENVIRONMENT

Rock Types Euxinic marine sedimentary rocks including: black (dark) shale, siltstone, sandstone, chert, dolostone, micritic limestone, and turbidites. Local evaporitic sections in contemporaneous shelf facies. Volcanic rocks, commonly of bimodal composition, are present locally in the sedimentary basin; Tuffites are the most common. Slump breccias, fan conglomerates, and similar deposits, as well as facies and thickness changes, are commonly associated with synsedimentary faults.

Textures Contrasting sedimentary thicknesses and facies changes across hinge zones. Slump breccias and conglomerates near synsedimentary faults.

Age Range Known deposits are Middle Proterozoic (1,700-1,400 m.y.); Cambrian to Carboniferous (530-300 m.y.).

Depositional Environment Marine epicratonic embayments and intracratonic basins, with smaller local restricted basins (second- and third-order basins).

Tectonic Setting(s) Epicratonic embayments and intracratonic basins are associated with hinge zones controlled by synsedimentary faults, typically forming half-grabens. Within these grabens (first-order basins), penecontemporaneous vertical tectonism forms smaller basins (second-order basins) and associated rises. Smaller third-order basins (tens of kilometers) within the second-order basins (10^2-10^3 km) are the morphological traps from the stratiform sulfides.

Associated Deposit Types Bedded barite deposits.

DEPOSIT DESCRIPTION

Mineralogy Pyrite, pyrrhotite, sphalerite, galena, sporadic barite and chalcopyrite, and minor to trace amounts of marcasite, arsenopyrite, bismuthinite, molybdenite, enargite, millerite, freibergite, cobaltite, cassiterite, vallerite, and melnikovite.

Texture/Structure Finely crystalline and disseminated, monomineralic sulfide laminae are typical. Metamorphosed examples are coarsely crystalline and massive.

Alteration Stockwork and disseminated sulfide and alteration (silicification, tourmalization, carbonate depletion, albitization, chloritization, dolomitization) minerals possibly representing the feeder zone of these deposits commonly present beneath or adjacent to the stratiform deposits. Some deposits have no reported alteration. Celsian, Ba-muscovite, and ammonium clay minerals may be present.

Ore Controls Within larger fault-controlled basins, small local basins form the morphological traps that contain the stratiform sulfide and sulfate minerals. The faults are synsedimentary and serve as feeders for the stratiform deposits. Euxinic facies.

Weathering Surface oxidation may form large gossans containing abundant carbonates, sulfates, and silicates of lead, zinc, and copper.

Geochemical Signature Metal zoning includes lateral Cu-Pb-Zn-Ba sequence extending outward from feeder zone; or a vertical Cu-Zn-Pb-Ba sequence extending upward. NH_4 anomalies may be present. Exhalative chert interbedded with stratiform sulfide and sulfate minerals; peripheral hematite-chert formations. Local (within 2 km) Zn, Pb, and Mn haloes. Highest expected background in black shales: Pb = 500 ppm; Zn = 1,300 ppm; Cu = 750 ppm; Ba = 1,300 ppm; In carbonates: Pb = 9 ppm; Zn = 20; Cu = 7 ppm; Ba = 10.

EXAMPLES

Sullivan mine, CNBC	(Hamilton and others, 1982)
Meggen mine, GRMY	(Krebs, 1981)
Navan, Silvermines, Tynagh, IRLD	(Boyce and others, 1983; Taylor, 1984)

GRADE AND TONNAGE MODEL OF SEDIMENTARY EXHALATIVE Zn-Pb
After W. David Menzie and Dan L. Mosier

COMMENTS Deposits in this model include most commonly identified deposits of this type. Nevertheless, examination of the distribution of silver grade suggests the presence of two subtypes. Lead grades are significantly correlated with silver grades ($r = 0.77$, $n = 39$). Upper ten percent of deposits contain an minimum of 130 million tonnes at 13.0% Zn, 7.7% Pb, and 160 grams/tonne Ag. Total contained metal: 16.9 million tonnes Zn, 10.0 million tonnes Pb, and 20.8 billion grams Ag. Gross metal value in 1987 would have been $25.4 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 6.5 million tonnes per year or 18,000 tonnes/day.

Gross Value of Annual Production $1.27 billion.

Net Present Value of 4% NSR $51.0 million times 8.514 is $434.2 million

Comments, Assumptions, Specifications: SEX
Sed Ex, Southeast, Open Pit

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Sedimentary Exhalative Zn-Pb
Total Ore Tonnage: 130 mil mtons
Mining Method: Open Pit
Beneficiation Method: Mobile Crush, S.A.G., Float
Extraction Rate: 95%
Dilution/Waste Rate: 5%
Proposed Mine Life: 20 yrs
Proposed Daily Production: 18,000 MTPD
Maximum Ore Depth: 400 m
Stripping Ratio: 5:1
Haulage Distance/Road Requirements: 30km new roads, 80 km haul
Distance From Power: Portable
Pre-Production Development: 40 mil mton stripping
Production Development:

Equipment: Electric Shovel / Truck
Concentrate Production: 3 Products, 6,000 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .2 ha/day
Burden/Waste rate-mtpd: 85,000 MTPD
Burden/Waste depth & haul-m: 150m, 4,000m
Ore rate-mtpd: 18,000 MTPD
Ore depth & haul-m: 170 m, 3,000 m
Conveyor length & slope-km & %: 1 km, 10%
Water needs-cm/day: 7,200 m³/day
Drainage, head & distance-cm/day, m & km: 50,000 m³/day, 400 m 1.5 km
Concentrate (dry) rate-mtpd: 6,000 MTPD
Tails (dry) rate-mtpd: 12,000 MTPD
Production water needs-cm/day: 15,000 m³/day make-up
Portable Power needs-kW: 83.5 MW
Wastewater-L/sec: 50 L/sec
Concentrate haul-km: 80 km
Employee housing-men: 500 men
Other: Marine Terminal operation - $1,883/day
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 18,000, 17,000, 13,500 MTPD
Mill operating costs-$/day: $161,455
Working capital time-weeks: 13 weeks
Development time-days: 400 stripping days
Clearing needs-ha: 800 ha

Stripping needs-mt: 40 mil tons
Stripping depth & haul-m: 70m, 2,200 m
Restoration area-ha: 2,200 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $265,614
Access roads, length & width-km & m: 30km, 15m
Airstrip length & width-m: 1,400 m, 18m
Powerline length & power-km & mW: po-table
Dike & Dam needs-cm/fill: 500,000 m3
Climate/Weather factors: Severe
Other: Deep Water- Marine Terminal $42,556,000 (yr-round)
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 265,614
Mining Costs-$/yr: 95,621,040
Mining Costs-$/mt: 14.76
Milling Costs-$/day: 161,455
Milling Costs-$/yr: 58,123,800
Milling Costs-$/mt: 8.97
Infrastructure Costs-$/day: 226,589
Infrastructure Costs-$/yr: 81,572,040
Infrastructure Costs-$/mt: 12.59
Total Operating Costs-$/day: 653,658
Total Operating Costs-$/yr: 235,316,880
Total Operating Costs-$/mt: 36.31
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 24,170,874
Heavy Equipment (fixed life)-$: 105,628,820 *
Mine Rehabilitation-$: 20,483,100 *
Engr. & Const. Mgmt.-$: 9,318,433 *
Other:
Remaining Mine Capital-$: 80,529,513 ~
Total Mine Capital-$: 240,130,740

MILL CAPITAL COSTS:

Mill Working Capital-$: 14,692,405
Light Vehicles (short life)-$: 2,153,349 *
Other:
Remaining Mill Capital-$: 60,874,022 ~
Total Mill Capital-$: 77,719,776

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 28,433,159 *

Other: Marine Terminal - $42,556,000 *
Remaining Infrastructure Capital-$: 64,797,492 ~
Total Infrastructure Capital-$: 135,786,651

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 38,863,279 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 206,201,027 *
Sum of Total Mine, Mill & Infr. Costs-$: 453,637,167
Exploration Cost-$: 45,363,720 *

Overall Capital Cost-$: 499,000,880
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

SEDEX Gross
Cox & Singer 90%
Grade:

13% Zn = 286 lb/mt
7.7% Pb = 170 lb/mt
160 gm/mT Ag = 5.14 opmT

List of Assumptions File:SEDEXSEO.SEE Date:07/07/93 Time:21:30:54

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 09/87
End of Time Zero 09/87
Evaluation Date 09/87
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

	Minimum ROR, Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	09/87	24,170,874	WC	Mid Year	20.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	09/87	105,628,820	MACRS	Mid Year	10.0	0		0	.....
3	09/97	105,628,820	MACRS	Mid Year	10.0	0		0	.....
4	09/87	20,483,100	MACRS	Mid Year	20.0	0		0	.....
5	09/87	9,318,433	MACRS	Mid Year	20.0	0		0	.....
6	09/87	80,529,513	MACRS	Mid Year	20.0	0		0	.....
7	09/87	14,692,405	WC	Mid Year	20.0	0		0	.....
8	09/87	2,153,349	MACRS	Mid Year	4.0	0		0	.....
9	09/91	2,153,349	MACRS	Mid Year	4.0	0		0	.....
10	09/95	2,153,349	MACRS	Mid Year	4.0	0		0	.....
11	09/99	2,153,349	MACRS	Mid Year	4.0	0		0	.....
12	09/03	2,153,349	MACRS	Mid Year	4.0	0		0	.....
13	09/87	60,874,022	MACRS	Mid Year	20.0	0		0	.....
14	09/87	135,786,651	MACRS	Mid Year	20.0	0		0	.....
15	09/87	45,363,720	EXPL-X	Mid Year	20.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	10/87	End	6,480,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	10/87	End	0.13	Constant	0.000
S3	PB GRADE %	N/A:	10/87	End	0.077	Constant	0.000
S4	AG GRADE OPT	N/A:	10/87	End	5.14	Constant	0.000
S5	ZN $/TONNE	N/A:	10/87	End	803.56	Constant	0.000
S6	PB $/TONNE	N/A:	10/87	End	658.78	Constant	0.000
S7	AG$/TROY OZ	N/A:	10/87	End	7.86	Constant	0.000
S8	MINING COSTS	Annual:	10/87	End	95,621,040.00	Constant	0.000
S9	MILLING COSTS	Annual:	10/87	End	58,123,800.00	Constant	0.000
S10	INFRA COSTS	Annual:	10/87	End	81,572,040.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S11	TRANS COSTS	Annual:	10/87	End	36,000,000.00	Constant	0.000
S12	MINE RECOVERY RATE	N/A:	10/87	End	0.95	Constant	0.000
S13	MILL RECOVERY RATE	N/A:	10/87	End	0.85	Constant	0.000
S14	SMELTER RATE	N/A:	10/87	End	0.01	Constant	0.000
S15	MHT ROYALTY RATE	N/A:	10/87	End	0.04	Constant	0.000

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* Project Equations *
****

General Equations
==========

E1 . ZN REV S1*S2*S5*S12*S13
E2 . PB REV S1*S3*S6*S12*S13
E3 . AG REV S1*S4*S7*S12*S13

Revenues
==========

E4 . GROSS REVENUE E1+E2+E3

Operating Costs
==========

E6 . OPER COSTS (S8+S9+S10+S10+S11)

Royalties
==========

E7 . MHT ROYALTY S15*(E4-E5-S11)

Processing Costs
==========

E5 . SMELTING CHARGES S14*E4

Cash Flows

NPV =$3,343,482,298 DCFROR= 96.8% GROR = 22.0% PWROR = 96.8% Pay Back= 1.03 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		546,612,047	546,612,047	546,612,047	546,612,047	546,612,047	546,612,047	546,612,047
PB REV		265,429,182	265,429,182	265,429,182	265,429,182	265,429,182	265,429,182	265,429,182
AG REV		211,399,133	211,399,133	211,399,133	211,399,133	211,399,133	211,399,133	211,399,133
GROSS REVENUE		1023440362	1023440362	1023440362	1023440362	1023440362	1023440362	1023440362
Total Revenue		1023440362	1023440362	1023440362	1023440362	1023440362	1023440362	1023440362
-SMELTING CHARGES		-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404
-Total Smelting Cost		-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404
Net Smelt Ret.		1013205958	1013205958	1013205958	1013205958	1013205958	1013205958	1013205958
-MHT ROYALTY		-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238
-Total Royalties		-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238
Net Revenue		974,117,720	974,117,720	974,117,720	974,117,720	974,117,720	974,117,720	974,117,720
-OPER COSTS		-352888920	-352888920	-352888920	-352888920	-352888920	-352888920	-352888920
-Total Oper Costs		-352888920	-352888920	-352888920	-352888920	-352888920	-352888920	-352888920
-Dev, IDC	-31,754,604							
-Depreciation	-22,613,409	-41,981,658	-36,113,195	-31,399,084	-27,947,038	-24,819,220	-22,333,362	-21,073,244
-Amortization	-226,819	-2,721,823	-2,721,823	-2,721,823	-2,721,823	-2,495,005		
-Write Off								
Before Depltn	-54,594,831	576,525,319	582,393,781	587,107,893	590,559,938	593,914,575	598,895,438	600,155,556
100% Limit		576,525,319	582,393,781	587,107,893	590,559,938	593,914,575	598,895,438	600,155,556
Percent Depln		146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658
Prev Exp Expl		31,754,604						
-Depletion		-114363054	-146117658	-146117658	-146117658	-146117658	-146117658	-146117658
-Total D,D & A	-54,594,831	-159066535	-184952677	-180238565	-176786520	-173431883	-168451020	-167190902
Taxable	-54,594,831	462,162,265	436,276,123	440,990,235	444,442,280	447,796,917	452,777,780	454,037,898
-Tax Due	18,562,243	-157135170	-148333882	-149936680	-171643609	-172939170	-174862779	-175349436
Net Income	-36,032,589	305,027,095	287,942,241	291,053,555	272,798,672	274,857,748	277,915,001	278,688,462
+Depreciation	22,613,409	41,981,658	36,113,195	31,399,084	27,947,038	24,819,220	22,333,362	21,073,244
+Depletion		114,363,054	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658
+Amortization	226,819	2,721,823	2,721,823	2,721,823	2,721,823	2,495,005		
+Write Off								
-Capital Costs	-467246283				-2,153,349			
Cash Flow	-480438644	464,093,630	472,894,918	471,292,120	447,431,842	448,289,630	446,366,021	445,879,364

Year	8	9	10	11	12	13	14	15
ZN REV	546,612,047	546,612,047	546,612,047	546,612,047	546,612,047	546,612,047	546,612,047	546,612,047
PB REV	265,429,182	265,429,182	265,429,182	265,429,182	265,429,182	265,429,182	265,429,182	265,429,182
AG REV	211,399,133	211,399,133	211,399,133	211,399,133	211,399,133	211,399,133	211,399,133	211,399,133
GROSS REVENUE	1023440362	1023440362	1023440362	1023440362	1023440362	1023440362	1023440362	1023440362
Total Revenue	1023440362	1023440362	1023440362	1023440362	1023440362	1023440362	1023440362	1023440362
-SMELTING CHARGES	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404
-Total Smelting Cost	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404
Net Smelt Ret.	1013205958	1013205958	1013205958	1013205958	1013205958	1013205958	1013205958	1013205958
-MHT ROYALTY	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238
-Total Royalties	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238
Net Revenue	974,117,720	974,117,720	974,117,720	974,117,720	974,117,720	974,117,720	974,117,720	974,117,720
-OPER COSTS	-352888920	-352888920	-352888920	-352888920	-352888920	-352888920	-352888920	-352888920
-Total Oper Costs	-352888920	-352888920	-352888920	-352888920	-352888920	-352888920	-352888920	-352888920
-Dev, IDC								
-Depreciation	-21,291,909	-21,426,493	-28,124,377	-32,978,853	-29,579,969	-26,672,443	-23,835,002	-21,753,468
-Amortization								
-Write Off								
Before Depltn	599,936,891	599,802,306	593,104,423	588,249,946	591,648,831	594,556,357	597,393,798	599,475,332
100% Limit	599,936,891	599,802,306	593,104,423	588,249,946	591,648,831	594,556,357	597,393,798	599,475,332
Percent Depln	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658
Prev Exp Expl								
-Depletion	-146117658	-146117658	-146117658	-146117658	-146117658	-146117658	-146117658	-146117658
-Total D,D & A	-167409567	-167544151	-174242035	-179096511	-175697627	-172790101	-169952660	-167871126
Taxable	453,819,233	453,684,648	446,986,765	442,132,288	445,531,173	448,438,699	451,276,140	453,357,674
-Tax Due	-175264988	-175213011	-172626288	-170751490	-172064139	-173187025	-174282845	-175086734
Net Income	278,554,245	278,471,637	274,360,476	271,380,799	273,467,034	275,251,673	276,993,295	278,270,941
+Depreciation	21,291,909	21,426,493	28,124,377	32,978,853	29,579,969	26,672,443	23,835,002	21,753,468
+Depletion	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658
+Amortization								
+Write Off								
-Capital Costs	-2,153,349		-105628820		-2,153,349			
Cash Flow	443,810,463	446,015,789	342,973,691	450,477,310	447,011,312	448,041,774	446,945,955	446,142,066

Year	16	17	18	19	20	Salvage
ZN REV	546,612,047	546,612,047	546,612,047	546,612,047	546,612,047	
PB REV	265,429,182	265,429,182	265,429,182	265,429,182	265,429,182	
AG REV	211,399,133	211,399,133	211,399,133	211,399,133	211,399,133	
GROSS REVENUE	1023440362	1023440362	1023440362	1023440362	1023440362	
Total Revenue	1023440362	1023440362	1023440362	1023440362	1023440362	38,863,279
-SMELTING CHARGES	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	
-Total Smelting Cost	-10,234,404	-10,234,404	-10,234,404	-10,234,404	-10,234,404	
Net Smelt Ret.	1013205958	1013205958	1013205958	1013205958	1013205958	
-MHT ROYALTY	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	
-Total Royalties	-39,088,238	-39,088,238	-39,088,238	-39,088,238	-39,088,238	
Net Revenue	974,117,720	974,117,720	974,117,720	974,117,720	974,117,720	
-OPER COSTS	-352888920	-352888920	-352888920	-352888920	-352888920	
-Total Oper Costs	-352888920	-352888920	-352888920	-352888920	-352888920	
-Dev, IDC						
-Depreciation	-21,291,909	-21,426,493	-21,022,741	-20,888,156	-10,444,078	
-Amortization						
-Write Off						-38,863,279
Before Depltn	599,936,891	599,802,306	600,206,059	600,340,644	610,784,722	
100% Limit	599,936,891	599,802,306	600,206,059	600,340,644	610,784,722	
Percent Depln	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	
Prev Exp Expl						
-Depletion	-146117658	-146117658	-146117658	-146117658	-146117658	
-Total D,D & A	-167409567	-167544151	-167140399	-167005814	-156561736	-38,863,279
Taxable	453,819,233	453,684,648	454,088,401	454,222,986	464,667,064	
-Tax Due	-175264988	-175213011	-175368941	-175420917	-179454420	
Net Income	278,554,245	278,471,637	278,719,461	278,802,069	285,212,644	
+Depreciation	21,291,909	21,426,493	21,022,741	20,888,156	10,444,078	
+Depletion	146,117,658	146,117,658	146,117,658	146,117,658	146,117,658	
+Amortization						
+Write Off						38,863,279
-Capital Costs	-2,153,349					
Cash Flow	443,810,463	446,015,789	445,859,859	445,807,883	441,774,380	38,863,279

List of Assumptions File:SEDEXSEO.SEE Date:07/26/93 Time:18:09:57

SEDIMENTARY EXHALATIVE ZN-PB-AG, SOUTHEAST, OPEN PIT

****
* Project Definition *
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Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

******** Minimum ROR, Inflation & Exponents ********* ****** Tax Rates ******

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2008	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2009	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2010	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2011	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	24,170,874	WC	Mid Year	20.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	105,628,820	MACRS	Mid Year	13.0	0			0 .....
3	04/02	105,628,820	MACRS	Mid Year	10.0	0			0 .....
4	04/89	20,483,100	MACRS	Mid Year	23.0	0			0 .....
5	04/89	9,318,433	MACRS	Mid Year	23.0	0			0 .....
6	04/89	80,529,513	MACRS	Mid Year	23.0	0			0 .....
7	04/89	14,692,405	WC	Mid Year	23.0	0			0 .....
8	04/89	2,153,349	MACRS	Mid Year	4.0	0			0 .....
9	04/93	2,153,349	MACRS	Mid Year	4.0	0			0 .....
10	04/97	2,153,349	MACRS	Mid Year	4.0	0			0 .....
11	04/01	2,153,349	MACRS	Mid Year	4.0	0			0 .....
12	04/05	2,153,349	MACRS	Mid Year	4.0	0			0 .....
13	04/89	60,874,022	MACRS	Mid Year	23.0	0			0 .....
14	04/89	135,786,651	MACRS	Mid Year	23.0	0			0 .....
15	04/89	45,363,720	EXPL-X	Mid Year	23.0	0			0 .....
16	04/09	2,153,349	MACRS	Mid Year	4.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	6,480,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.13	Constant	0.000
S3	PB GRADE %	N/A:	04/92	End	0.077	Constant	0.000
S4	AG GRADE OPT	N/A:	04/92	End	5.14	Constant	0.000
S5	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S6	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S7	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S8	MINING COSTS	Annual:	04/92	End	95,621,040.00	Constant	0.000
S9	MILLING COSTS	Annual:	04/92	End	58,123,800.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S10	INFRA COSTS	Annual:	04/92	End	81,572,040.00	Constant	0.000
S11	TRANS COSTS	Annual:	04/92	End	36,000,000.00	Constant	0.000
S12	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S13	MILL RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S14	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S15	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S5*S12*S13
E2 . PB REV	S1*S3*S6*S12*S13
E3 . AG REV	S1*S4*S7*S12*S13

Revenues
==========

E4 . GROSS REVENUE	E1+E2+E3

Operating Costs
==========

E6 . OPER COSTS	(S8+S9+S10+S10+S11)

Royalties
==========

E7 . MHT ROYALTY	S15*(E4-E5-S11)

Processing Costs
==========

E5 . SMELTING CHARGES	S14*E4

SEDIMENTARY EXHALATIVE ZN-PB-AG, SOUTHEAST, OPEN PIT

Cash Flows

NPV =$4,530,669,358 DCFROR=126.4% GROR = 23.7% PWROR =126.4% Pay Back= 0.79 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
ZN REV		819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671
PB REV		310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854
AG REV		110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857
GROSS REVENUE		1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382
Total Revenue		1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382
-SMELTING CHARGES		-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904
-Total Smelting Cost		-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904
Net Smelt Ret.		1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478
-MHT ROYALTY		-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779
-Total Royalties		-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779
Net Revenue		1179,546,699	1179,546,699	1179,546,699	1179,546,699	1179,546,699	1179,546,699	1179,546,699
-OPER COSTS		-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920
-Total Oper Costs		-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920
-Dev, IDC	-31,754,604							
-Depreciation	-15,893,509	-29,155,514	-26,982,323	-25,164,174	-22,973,524	-21,306,244	-20,526,980	-19,660,550
-Amortization	-8,165,470	-2,721,823	-2,721,823					
-Write Off								
Before Depltn	-55,813,582	794,780,441	796,953,633	801,493,605	803,684,255	805,351,534	806,130,798	806,997,228
100% Limit		794,780,441	796,953,633	801,493,605	803,684,255	805,351,534	806,130,798	806,997,228
Percent Depln		176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005
Prev Exp Expl		31,754,604						
-Depletion		-145,177,401	-176,932,005	-176,932,005	-176,932,005	-176,932,005	-176,932,005	-176,932,005
-Total D,D & A	-55,813,582	-177,054,738	-206,636,151	-202,096,179	-199,905,529	-198,238,249	-197,458,985	-196,592,555
Taxable	-55,813,582	649,603,040	620,021,628	624,561,600	626,752,250	628,419,530	629,198,794	630,065,224
-Tax Due	18,976,618	-220,865,034	-210,807,353	-212,350,944	-242,051,719	-242,695,622	-242,996,574	-243,331,189
Net Income	-36,836,964	428,738,007	409,214,274	412,210,656	384,700,531	385,723,907	386,202,219	386,734,034
+Depreciation	15,893,509	29,155,514	26,982,323	25,164,174	22,973,524	21,306,244	20,526,980	19,660,550
+Depletion		145,177,401	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005
+Amortization	8,165,470	2,721,823	2,721,823					
+Write Off								
-Capital Costs	-467,246,283		-2,153,349				-2,153,349	
Cash Flow	-480,024,269	605,792,745	613,697,076	614,306,835	584,606,060	583,962,156	581,507,856	583,326,589

Year	1999	2000	2001	2002	2003	2004	2005	2006
ZN REV	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671
PB REV	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854
AG REV	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857
GROSS REVENUE	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382
Total Revenue	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382
-SMELTING CHARGES	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904
-Total Smelting Cost	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904
Net Smelt Ret.	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478
-MHT ROYALTY	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779
-Total Royalties	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779
Net Revenue	1179,546,699	1179,546,699	1179,546,699	1179,546,699	1179,546,699	1179,546,699	1179,546,699	1179,546,699
-OPER COSTS	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920
-Total Oper Costs	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920
-Dev, IDC								
-Depreciation	-19,256,798	-19,122,213	-19,525,966	-30,223,432	-38,269,985	-31,579,974	-26,188,828	-23,889,724
-Amortization								
-Write Off								
Before Depltn	807,400,981	807,535,566	807,131,813	796,434,346	788,387,794	795,077,805	800,468,951	802,768,055
100% Limit	807,400,981	807,535,566	807,131,813	796,434,346	788,387,794	795,077,805	800,468,951	802,768,055
Percent Depln	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005
Prev Exp Expl								
-Depletion	-176,932,005	-176,932,005	-176,932,005	-176,932,005	-176,932,005	-176,932,005	-176,932,005	-176,932,005
-Total D,D & A	-196,188,802	-196,054,218	-196,457,971	-207,155,437	-215,201,990	-208,511,979	-203,120,832	-200,821,729
Taxable	630,468,976	630,603,561	630,199,808	619,502,342	611,455,789	618,145,800	623,536,946	625,836,050
-Tax Due	-243,487,119	-243,539,095	-243,383,166	-239,251,804	-236,144,226	-238,727,908	-240,809,969	-241,697,883
Net Income	386,981,858	387,064,466	386,816,642	380,250,537	375,311,563	379,417,892	382,726,978	384,138,168
+Depreciation	19,256,798	19,122,213	19,525,966	30,223,432	38,269,985	31,579,974	26,188,828	23,889,724
+Depletion	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005
+Amortization								
+Write Off								
-Capital Costs			-2,153,349	-105,628,820			-2,153,349	
Cash Flow	583,170,660	583,118,684	581,121,264	481,777,155	590,513,553	587,929,871	583,694,461	584,959,896

Year	2007	2008	2009	2010	2011	Salvage
ZN REV	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	
PB REV	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	
AG REV	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	
GROSS REVENUE	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	
Total Revenue	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	38,863,279
-SMELTING CHARGES	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	
-Total Smelting Cost	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	
Net Smelt Ret.	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	
-MHT ROYALTY	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	
-Total Royalties	-47,647,779	-47,647,779	-47,647,779	-47,647,779	-47,647,779	
Net Revenue	1179,546,699	1179,546,699	1179,546,699	1179,546,699	1179,546,699	
-OPER COSTS	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	
-Total Oper Costs	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	
-Dev, IDC						
-Depreciation	-21,539,021	-20,539,125	-20,942,878	-21,077,462	-20,673,709	-36,677,519
-Amortization						
-Write Off						-38,863,279
Before Depltn	805,118,758	806,118,654	805,714,901	805,580,317	805,984,069	-36,677,519
100% Limit	805,118,758	806,118,654	805,714,901	805,580,317	805,984,069	
Percent Depln	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	
Prev Exp Expl						
-Depletion	-176,932,005	-176,932,005	-176,932,005	-176,932,005	-176,932,005	
-Total D,D & A	-198,471,025	-197,471,130	-197,874,883	-198,009,467	-197,605,714	-75,540,798
Taxable	628,186,753	629,186,649	628,782,896	628,648,312	629,052,065	-36,677,519
-Tax Due	-242,605,724	-242,991,884	-242,835,954	-242,783,978	-242,939,907	14,164,858
Net Income	385,581,029	386,194,765	385,946,942	385,864,334	386,112,157	-22,512,661
+Depreciation	21,539,021	20,539,125	20,942,878	21,077,462	20,673,709	36,677,519
+Depletion	176,932,005	176,932,005	176,932,005	176,932,005	176,932,005	
+Amortization						
+Write Off						38,863,279
-Capital Costs			-2,153,349			
Cash Flow	584,052,055	583,665,895	581,668,475	583,873,801	583,717,871	53,028,137

List of Assumptions File:SEDEXSEO.SEE Date:11/17/93 Time:15:39:40

SEDIMENTARY EXHALATIVE ZN-PB-AG, SOUTHEAST, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	24,170,874	WC	Mid Year	20.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	105,628,820	MACRS	Mid Year	13.0	0			0 .....
3	04/02	105,628,820	MACRS	Mid Year	10.0	0			0 .....
4	04/89	20,483,100	MACRS	Mid Year	23.0	0			0 .....
5	04/89	9,318,433	MACRS	Mid Year	23.0	0			0 .....
6	04/89	80,529,513	MACRS	Mid Year	23.0	0			0 .....
7	04/89	14,692,405	WC	Mid Year	23.0	0			0 .....
8	04/89	2,153,349	MACRS	Mid Year	4.0	0			0 .....
9	04/93	2,153,349	MACRS	Mid Year	4.0	0			0 .....
10	04/97	2,153,349	MACRS	Mid Year	4.0	0			0 .....
11	04/01	2,153,349	MACRS	Mid Year	4.0	0			0 .....
12	04/05	2,153,349	MACRS	Mid Year	4.0	0			0 .....
13	04/89	60,874,022	MACRS	Mid Year	23.0	0			0 .....
14	04/89	135,786,651	MACRS	Mid Year	23.0	0			0 .....
15	04/89	45,363,720	EXPL-X	Mid Year	23.0	0			0 .....
16	04/09	2,153,349	MACRS	Mid Year	4.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	6,480,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.13	Constant	0.000
S3	PB GRADE %	N/A:	04/92	End	0.077	Constant	0.000
S4	AG GRADE OPT	N/A:	04/92	End	5.14	Constant	0.000
S5	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S6	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S7	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S8	MINING COSTS	Annual:	04/92	End	95,621,040.00	Constant	0.000
S9	MILLING COSTS	Annual:	04/92	End	58,123,800.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S10	INFRA COSTS	Annual:	04/92	End	81,572,040.00	Constant	0.000
S11	TRANS COSTS	Annual:	04/92	End	36,000,000.00	Constant	0.000
S12	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S13	MILL RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S14	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S15	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S16	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========
E1 . ZN REV S1*S2*S5*S12*S13
E2 . PB REV S1*S3*S6*S12*S13
E3 . AG REV S1*S4*S7*S12*S13

Revenues
==========
E4 . GROSS REVENUE E1+E2+E3

Operating Costs
==========
E6 . OPER COSTS (S8+S9+S10+S10+S11)

Special Taxes
==========
E8 . MHT NPI S16*(E4-E6)

Royalties
==========
E7 . MHT ROYALTY S15*(E4-E5-S11)

Processing Costs
==========
E5 . SMELTING CHARGES S14*E4

SEDIMENTARY EXHALATIVE ZN-PB-AG, SOUTHEAST, OPEN PIT

Cash Flows

NPV =$4,665,748,113 DCFROR=129.8% GROR = 23.9% PWROR =129.8% Pay Back= 0.77 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671
PB REV		310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854
AG REV		110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857
GROSS REVENUE		1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382
Total Revenue		1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382
-SMELTING CHARGES		-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904
-Total Smelting Cost		-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904
Net Smelt Ret.		1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478
Net Revenue		1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478
-OPER COSTS		-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920
-Total Oper Costs		-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920
-MHT NPI		-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044
-Total Sev. Ad Valor		-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044
-Dev, IDC	-31,754,604							
-Depreciation	-15,893,509	-29,155,514	-26,982,323	-25,164,174	-22,973,524	-21,306,244	-20,526,980	-19,660,550
-Amortization	-8,165,470	-2,721,823	-2,721,823					
-Write Off								
Before Depltn	-55,813,582	815,827,176	818,000,368	822,540,340	824,730,990	826,398,270	827,177,534	828,043,964
100% Limit		815,827,176	818,000,368	822,540,340	824,730,990	826,398,270	827,177,534	828,043,964
Percent Depln		184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172
Prev Exp Expl		31,754,604						
-Depletion		-152,324,568	-184,079,172	-184,079,172	-184,079,172	-184,079,172	-184,079,172	-184,079,172
-Total D,D & A	-55,813,582	-184,201,905	-213,783,318	-209,243,346	-207,052,696	-205,385,416	-204,606,152	-203,739,722
Taxable	-55,813,582	663,502,609	633,921,196	638,461,168	640,651,819	642,319,098	643,098,362	643,964,792
-Tax Due	18,976,618	-225,590,887	-215,533,207	-217,076,797	-247,419,732	-248,063,636	-248,364,587	-248,699,203
Net Income	-36,836,964	437,911,722	418,387,990	421,384,371	393,232,086	394,255,462	394,733,775	395,265,589
+Depreciation	15,893,509	29,155,514	26,982,323	25,164,174	22,973,524	21,306,244	20,526,980	19,660,550
+Depletion		152,324,568	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172
+Amortization	8,165,470	2,721,823	2,721,823					
+Write Off								
-Capital Costs	-467,246,283		-2,153,349				-2,153,349	
Cash Flow	-480,024,269	622,113,627	630,017,958	630,627,717	600,284,782	599,640,878	597,186,578	599,005,311

Year	8	9	10	11	12	13	14	15
ZN REV	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671
PB REV	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854
AG REV	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857
GROSS REVENUE	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382
Total Revenue	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382
-SMELTING CHARGES	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904
-Total Smelting Cost	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904
Net Smelt Ret.	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478
Net Revenue	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478
-OPER COSTS	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920
-Total Oper Costs	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920
-MHT NPI	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044
-Total Sev. Ad Valor	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044
-Dev, IDC								
-Depreciation	-19,256,798	-19,122,213	-19,525,966	-30,223,432	-38,269,985	-31,579,974	-26,188,828	-23,889,724
-Amortization								
-Write Off								
Before Depltn	828,447,717	828,582,301	828,178,548	817,481,082	809,434,529	816,124,540	821,515,686	823,814,790
100% Limit	828,447,717	828,582,301	828,178,548	817,481,082	809,434,529	816,124,540	821,515,686	823,814,790
Percent Depln	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172
Prev Exp Expl								
-Depletion	-184,079,172	-184,079,172	-184,079,172	-184,079,172	-184,079,172	-184,079,172	-184,079,172	-184,079,172
-Total D,D & A	-203,335,969	-203,201,385	-203,605,138	-214,302,604	-222,349,157	-215,659,146	-210,267,999	-207,968,896
Taxable	644,368,545	644,503,129	644,099,376	633,401,910	625,355,357	632,045,368	637,436,515	639,735,618
-Tax Due	-248,855,132	-248,907,108	-248,751,179	-244,619,818	-241,512,239	-244,095,921	-246,177,982	-247,065,896
Net Income	395,513,413	395,596,021	395,348,197	388,782,092	383,843,118	387,949,447	391,258,533	392,669,723
+Depreciation	19,256,798	19,122,213	19,525,966	30,223,432	38,269,985	31,579,974	26,188,828	23,889,724
+Depletion	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172
+Amortization								
+Write Off								
-Capital Costs			-2,153,349	-105,628,820			-2,153,349	
Cash Flow	598,849,382	598,797,406	596,799,986	497,455,876	606,192,275	603,608,593	599,373,183	600,638,618

Year	16	17	18	19	20	Salvage
ZN REV	819,346,671	819,346,671	819,346,671	819,346,671	819,346,671	
PB REV	310,240,854	310,240,854	310,240,854	310,240,854	310,240,854	
AG REV	110,002,857	110,002,857	110,002,857	110,002,857	110,002,857	
GROSS REVENUE	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	
Total Revenue	1239,590,382	1239,590,382	1239,590,382	1239,590,382	1239,590,382	38,863,279
-SMELTING CHARGES	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	
-Total Smelting Cost	-12,395,904	-12,395,904	-12,395,904	-12,395,904	-12,395,904	
Net Smelt Ret.	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	
Net Revenue	1227,194,478	1227,194,478	1227,194,478	1227,194,478	1227,194,478	
-OPER COSTS	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	
-Total Oper Costs	-352,888,920	-352,888,920	-352,888,920	-352,888,920	-352,888,920	
-MHT NPI	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	
-Total Sev. Ad Valor	-26,601,044	-26,601,044	-26,601,044	-26,601,044	-26,601,044	
-Dev, IDC						
-Depreciation	-21,539,021	-20,539,125	-20,942,878	-21,077,462	-20,673,709	-36,677,519
-Amortization						
-Write Off						-38,863,279
Before Depltn	826,165,493	827,165,389	826,761,636	826,627,052	827,030,805	-36,677,519
100% Limit	826,165,493	827,165,389	826,761,636	826,627,052	827,030,805	
Percent Depln	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	
Prev Exp Expl						
-Depletion	-184,079,172	-184,079,172	-184,079,172	-184,079,172	-184,079,172	
-Total D,D & A	-205,618,192	-204,618,297	-205,022,050	-205,156,634	-204,752,881	-75,540,798
Taxable	642,086,322	643,086,217	642,682,464	642,547,880	642,951,633	-36,677,519
-Tax Due	-247,973,737	-248,359,897	-248,203,968	-248,151,991	-248,307,921	14,164,858
Net Income	394,112,584	394,726,320	394,478,497	394,395,889	394,643,712	-22,512,661
+Depreciation	21,539,021	20,539,125	20,942,878	21,077,462	20,673,709	36,677,519
+Depletion	184,079,172	184,079,172	184,079,172	184,079,172	184,079,172	
+Amortization						
+Write Off						38,863,279
-Capital Costs			-2,153,349			
Cash Flow	599,730,777	599,344,617	597,347,197	599,552,523	599,396,593	53,028,137

1. DESCRIPTIVE MODEL OF SEDIMENTARY EXHALATIVE Zn-Pb.

By Joseph A. Briskey

APPROXIMATE SYNONYMS Shale-hosted Zn-Pb; sediment hosted massive sulfide Zn-Pb.

DESCRIPTION Stratiform basinal accumulations of sulfide and sulfate minerals interbedded with euxinic marine sediments form sheet- or lens-like tabular ore bodies up to a few tens of meters thick, and may be distributed through a stratigraphic interval over 1,000 m.

GENERAL REFERENCES Large (1980, 1981, 1983).

GEOLOGICAL ENVIRONMENT

Rock Types Euxinic marine sedimentary rocks including: black (dark) shale, siltstone, sandstone, chert, dolostone, micritic limestone, and turbidites. Local evaporitic sections in contemporaneous shelf facies. Volcanic rocks, commonly of bimodal composition, are present locally in the sedimentary basin; Tuffites are the most common. Slump breccias, fan conglomerates, and similar deposits, as well as facies and thickness changes, are commonly associated with synsedimentary faults.

Textures Contrasting sedimentary thicknesses and facies changes across hinge zones. Slump breccias and conglomerates near synsedimentary faults.

Age Range Known deposits are Middle Proterozoic (1,700-1,400 m.y.); Cambrian to Carboniferous (530-300 m.y.).

Depositional Environment Marine epicratonic embayments and intracratonic basins, with smaller local restricted basins (second- and third-order basins).

Tectonic Setting(s) Epicratonic embayments and intracratonic basins are associated with hinge zones controlled by synsedimentary faults, typically forming half-grabens. Within these grabens (first-order basins), penecontemporaneous vertical tectonism forms smaller basins (second-order basins) and associated rises. Smaller third-order basins (tens of kilometers) within the second-order basins (10^2-10^3 km) are the morphological traps from the stratiform sulfides.

Associated Deposit Types Bedded barite deposits.

DEPOSIT DESCRIPTION

Mineralogy Pyrite, pyrrhotite, shpalerite, galena, sporadic barite and chalcopyrite, and minor to trace amounts of marcasite, arsenopyrite, bismuthinite, molybdenite, enargite, millerite, freibergite, cobaltite, cassiterite, vallerilte, and melnikovite.

Texture/Structure Finely crystalline and disseminated, monomineralic sulfide laminae are typical. Metamorphosed examples are coarsely crystalline and massive.

Alteration Stockwork and disseminated sulfide and alteration (silicification, tourmalization, carbonate depletion, albitization, chloritization, dolomitization) minerals possibly representing the feeder zone of these deposits commonly present beneath or adjacent to the stratiform deposits. Some deposits have no reported alteration. Celsian, Ba-muscovite, and ammonium clay minerals may be present.

Ore Controls Within larger fault-controlled basins, small local basins form the morphological traps that contain the stratiform sulfide and sulfate minerals. The faults are synsedimentary and serve as feeders for the stratiform deposits. Euxinic facies.

Weathering Surface oxidation may form large gossans containing abundant carbonates, sulfates, and silicates of lead, zinc, and copper.

Geochemical Signature Metal zoning includes lateral Cu-Pb-Zn-Ba sequence extending outward from feeder zone; or a vertical Cu-Zn-Pb-Ba sequence extending upward. NH_4 anomalies may be present. Exhalative chert interbedded with stratiform sulfide and sulfate minerals; peripheral hematite-chert formations. Local (within 2 km) Zn, Pb, and Mn haloes. Highest expected background in black shales: Pb = 500 ppm; Zn = 1,300 ppm; Cu = 750 ppm; Ba = 1,300 ppm; in carbonates: Pb = 9 ppm; Zn = 20; Cu = 7 ppm; Ba = 10.

EXAMPLES

Sullivan mine, CNBC	(Hamilton and others, 1982)
Meggen mine, GRMY	(Krebs, 1981)
Navan, Silvermines, Tynagh, IRLD	(Boyce and others, 1983; Taylor, 1984)

GRADE AND TONNAGE MODEL OF SEDIMENTARY EXHALATIVE Zn-Pb

After W. David Menzie and Dan L. Mosier

COMMENTS Deposits in this model include most commonly identified deposits of this type. Nevertheless, examination of the distribution of silver grade suggests the presence of two subtypes. Lead grades are significantly correlated with silver grades ($r = 0.77$, $n = 39$). Upper ten percent of deposits contain an minimum of 130 million tonnes at 13.0% Zn, 7.7% Pb, and 160 grams/tonne Ag. Total contained metal: 16.9 million tonnes Zn, 10.0 million tonnes Pb, and 20.8 billion grams Ag. Gross metal value in 1987 would have been $25.4 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 6.5 million tonnes per year or 18,000 tonnes/day.

Gross Value of Annual Production $1.27 billion.

Net Present Value of 4% NSR $51.0 million times 8.514 is $434.2 million

Comments, Assumptions, Specifications: LIK
Adjacent to Red Dog, Assumes use of existing Delong Mt. Road & barge terminal

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Sedimentary Exhalative - LIK
Total Ore Tonnage: 22 mil mtons
Mining Method: Open Pit
Beneficiation Method: Crush. S.A.G. . Float
Extraction Rate: 95%
Dilution/Waste Rate: 5%
Proposed Mine Life: 10 yrs
Proposed Daily Production: 6,100 MTPD
Maximum Ore Depth: 250 m
Stripping Ratio: 5:1
Haulage Distance/Road Requirements:
120 km haul 30 km new roads
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: F.E.L. Diesel Shovels, Trucks
Concentrate Production: 1,000 MTPD 2 pods

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .1 ha/day
Burden/Waste rate-mtpd: 27,800 MTPD
Burden/Waste depth & haul-m: 140 m, 3,500 m
Ore rate-mtpd: 6,100 MTPD
Ore depth & haul-m: 175 m, 2,500 m
Conveyor length & slope-km & %:
Water needs-cm/day: 2,500 m³/day
Drainage, head & distance-cm/day, m & km:
40,000 m³/day, 200 m, 1.5 km
Concentrate (dry) rate-mtpd: 1,000 MTPD
Tails (dry) rate-mtpd: 5,100 MTPD
Production water needs-cm/day: 5,500 m³/day M.U.
Portable Power needs-kW: 3,000 Kw
Wastewater-L/sec: 30 L/sec
Concentrate haul-km: 120 km
Employee housing-men: 400 men
Other: $ 16,500/day toll - DMRTS
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 6,100, 5,500 MTPD
Mill operating costs-$/day: $55,638
Working capital time-weeks: 13
Development time-days: 300 days stripping
Clearing needs-ha: 400 ha

Stripping needs-mt: 10 mil mtons
Stripping depth & haul-m: 70 m, 2,200 m
Restoration area-ha: 800 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: 111,878
Access roads, length & width-km & m: 30 km, 15 m
Airstrip length & width-m: 1,400 m, 18 m
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 200,000 m³
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 111,878
Mining Costs-$/yr: 40,276,080
Mining Costs-$/mt: 18.34
Milling Costs-$/day: 55,638
Milling Costs-$/yr: 20,029,680
Milling Costs-$/mt: 9.12
Infrastructure Costs-$/day: 63,342
Infrastructure Costs-$/yr: 22,803,120
Infrastructure Costs-$/mt: 10.38
Total Operating Costs-$/day: 230,858
Total Operating Costs-$/yr: 83,108,880
Total Operating Costs-$/mt: 37.85
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 10180898
Heavy Equipment (fixed life)-$: 20,560,760 *
Mine Rehabilitation-$: 7,448,400 *
Engr. & Const. Mgmt.-$: 3,291,763 *
Other:
Remaining Mine Capital-$: 24,520,368 -
Total Mine Capital-$: 66002189

MILL CAPITAL COSTS:

Mill Working Capital-$: 5,063,058
Light Vehicles (short life)-$: 1,476,061 *
Other:
Remaining Mill Capital-$: 23,538,649 -
Total Mill Capital-$: 30,077,768

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 15,623,363 *

Other:_____
Remaining Infrastructure Capital-$: 27,996,735
Total Infrastructure Capital-$: 43,620,098

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 15,243,956 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 76,055,752 *
Sum of Total Mine, Mill & Infr. Costs-$: 139,700 055
Exploration Cost-$: 13,970,000 *

Overall Capital Cost-$: 153,670,060
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:SEDEXLIK.SEE Date:07/26/93 Time:18:21:42

LIK SEDEX ZN-PB-AG, NORTHWEST, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR,Inflation & Exponents					Tax Rates		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,180,898	WC	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	20,560,760	MACRS	Mid Year	13.0	0			0 .....
3	04/89	7,448,400	MACRS	Mid Year	13.0	0			0 .....
4	04/89	3,291,763	MACRS	Mid Year	13.0	0			0 .....
5	04/89	24,520,368	MACRS	Mid Year	13.0	0			0 .....
6	.....	0	MACRS	Mid Year	7.0	0			0 .....
7	04/89	5,063,058	WC	Mid Year	13.0	0			0 .....
8	04/89	1,476,061	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,476,061	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,476,061	MACRS	Mid Year	4.0	0			0 .....
11	04/89	27,996,735	MACRS	Mid Year	13.0	0			0 .....
12	.....	0	MACRS	Mid Year	7.0	0			0 .....
13	04/89	23,538,649	MACRS	Mid Year	13.0	0			0 .....
14	04/89	15,623,363	MACRS	Mid Year	13.0	0			0 .....
15	04/89	13,970,000	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	2,196,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.13	Constant	0.000
S3	PB GRADE %	N/A:	04/92	End	0.077	Constant	0.000
S4	AG GRADE OPT	N/A:	04/92	End	5.14	Constant	0.000
S5	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S6	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S7	AG$/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S8	MINING COSTS	Annual:	04/92	End	40,276,080.00	Constant	0.000
S9	MILLING COSTS	Annual:	04/92	End	20,029,680.00	Constant	0.000
S10	INFRA COSTS	Annual:	04/92	End	22,803,120.00	Constant	0.000
S11	TRANS COSTS	Annual:	04/92	End	12,000,000.00	Constant	0.000
S12	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S13	MILL RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S14	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S15	MET ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S5*S12*S13

Equations continued

E2 . PB REV	S1*S3*S6*S12*S13
E3 . AG REV	S1*S4*S7*S12*S13

Revenues
==========

E4 . GROSS REVENUE	E1+E2+E3

Operating Costs
==========

E6 . OPER COSTS	(S8+S9+S10+S10+S11)

Royalties
==========

E7 . MHT ROYALTY	S15*(E4-E5-S11)

Processing Costs
==========

E5 . SMELTING CHARGES	S14*E4

LIK SEDEX ZN-PB-AG, NORTHWEST, OPEN PIT

Cash Flows

NPV =$1,112,934,707 DCFROR=143.1% GROR = 36.4% PWROR =143.1% Pay Back= 0.70 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
ZN REV		277,667,483	277,667,483	277,667,483	277,667,483	277,667,483	277,667,483	277,667,483
PB REV		105,137,178	105,137,178	105,137,178	105,137,178	105,137,178	105,137,178	105,137,178
AG REV		37,278,746	37,278,746	37,278,746	37,278,746	37,278,746	37,278,746	37,278,746
GROSS REVENUE		420,083,407	420,083,407	420,083,407	420,083,407	420,083,407	420,083,407	420,083,407
Total Revenue		420,083,407	420,083,407	420,083,407	420,083,407	420,083,407	420,083,407	420,083,407
-SMELTING CHARGES		-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834
-Total Smelting Cost		-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834
Net Smelt Ret.		415,882,573	415,882,573	415,882,573	415,882,573	415,882,573	415,882,573	415,882,573
-MHT ROYALTY		-16,155,303	-16,155,303	-16,155,303	-16,155,303	-16,155,303	-16,155,303	-16,155,303
-Total Royalties		-16,155,303	-16,155,303	-16,155,303	-16,155,303	-16,155,303	-16,155,303	-16,155,303
Net Revenue		399,727,270	399,727,270	399,727,270	399,727,270	399,727,270	399,727,270	399,727,270
-OPER COSTS		-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000
-Total Oper Costs		-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000
-Dev, IDC	-9,779,000							
-Depreciation	-9,829,018	-18,018,144	-15,423,533	-13,242,286	-10,949,539	-9,137,258	-8,036,674	-6,963,480
-Amortization	-2,514,600	-838,200	-838,200					
-Write Off								
Before Depltn	-22,122,618	262,958,927	265,553,537	268,572,985	270,865,731	272,678,012	273,778,597	274,851,790
100% Limit		262,958,927	265,553,537	268,572,985	270,865,731	272,678,012	273,778,597	274,851,790
Percent Depln		59,959,091	59,959,091	59,959,091	59,959,091	59,959,091	59,959,091	59,959,091
Prev Exp Expl		9,779,000						
-Depletion		-50,180,091	-59,959,091	-59,959,091	-59,959,091	-59,959,091	-59,959,091	-59,959,091
-Total D,D & A	-22,122,618	-69,036,434	-76,220,823	-73,201,376	-70,908,629	-69,096,349	-67,995,764	-66,922,571
Taxable	-22,122,618	212,778,836	205,594,447	208,613,894	210,906,641	212,718,921	213,819,506	214,892,699
-Tax Due	7,521,690	-72,344,804	-69,902,112	-70,928,724	-81,452,145	-82,152,047	-82,577,093	-82,991,560
Net Income	-14,600,928	140,434,032	135,692,335	137,685,170	129,454,496	130,566,874	131,242,413	131,901,139
+Depreciation	9,829,018	18,018,144	15,423,533	13,242,286	10,949,539	9,137,258	8,036,674	6,963,480
+Depletion		50,180,091	59,959,091	59,959,091	59,959,091	59,959,091	59,959,091	59,959,091
+Amortization	2,514,600	838,200	838,200					
+Write Off								
-Capital Costs	-143,891,055		-1,476,061				-1,476,061	
Cash Flow	-146,148,365	209,470,466	210,437,097	210,886,546	200,363,125	199,663,223	197,762,116	198,823,710

Year	1999	2000	2001	Salvage
ZN REV	277,667,483	277,667,483	277,667,483	
PB REV	105,137,178	105,137,178	105,137,178	
AG REV	37,278,746	37,278,746	37,278,746	
GROSS REVENUE	420,083,407	420,083,407	420,083,407	
Total Revenue	420,083,407	420,083,407	420,083,407	15,243,956
-SMELTING CHARGES	-4,200,834	-4,200,834	-4,200,834	
-Total Smelting Cost	-4,200,834	-4,200,834	-4,200,834	
Net Smelt Ret.	415,882,573	415,882,573	415,882,573	
-MHT ROYALTY	-16,155,303	-16,155,303	-16,155,303	
-Total Royalties	-16,155,303	-16,155,303	-16,155,303	
Net Revenue	399,727,270	399,727,270	399,727,270	
-OPER COSTS	-117,912,000	-117,912,000	-117,912,000	
-Total Oper Costs	-117,912,000	-117,912,000	-117,912,000	
-Dev, IDC				
-Depreciation	-6,686,719	-6,594,465	-6,502,211	-16,024,894
-Amortization				
-Write Off				-15,243,956
Before Depltn	275,128,551	275,220,805	275,313,059	-16,024,894
100% Limit	275,128,551	275,220,805	275,313,059	
Percent Depln	59,959,091	59,959,091	59,959,091	
Prev Exp Expl				
-Depletion	-59,959,091	-59,959,091	-59,959,091	
-Total D,D & A	-66,645,810	-66,553,556	-66,461,302	-31,268,850
Taxable	215,169,461	215,261,714	215,353,968	-16,024,894
-Tax Due	-83,098,446	-83,134,074	-83,169,703	6,188,814
Net Income	132,071,015	132,127,640	132,184,266	-9,836,080
+Depreciation	6,686,719	6,594,465	6,502,211	16,024,894
+Depletion	59,959,091	59,959,091	59,959,091	
+Amortization				
+Write Off				15,243,956
-Capital Costs				
Cash Flow	198,716,824	198,681,196	198,645,568	21,432,770

List of Assumptions File:SEDEXLIK.SEE Date:01/04/80 Time:05:27:52

LIK SEDEX ZN-PB-AG, NORTHWEST, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion:Constant Rate	: $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,180,898	WC	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	20,560,760	MACRS	Mid Year	13.0	0		0	.....
3	04/89	7,448,400	MACRS	Mid Year	13.0	0		0	.....
4	04/89	3,291,763	MACRS	Mid Year	13.0	0		0	.....
5	04/89	24,520,368	MACRS	Mid Year	13.0	0		0	.....
6	.....	0	MACRS	Mid Year	7.0	0		0	.....
7	04/89	5,063,058	WC	Mid Year	13.0	0		0	.....
8	04/89	1,476,061	MACRS	Mid Year	4.0	0		0	.....
9	04/93	1,476,061	MACRS	Mid Year	4.0	0		0	.....
10	04/97	1,476,061	MACRS	Mid Year	4.0	0		0	.....
11	04/89	27,996,735	MACRS	Mid Year	13.0	0		0	.....
12	.....	0	MACRS	Mid Year	7.0	0		0	.....
13	04/89	23,538,649	MACRS	Mid Year	13.0	0		0	.....
14	04/89	15,623,363	MACRS	Mid Year	13.0	0		0	.....
15	04/89	13,970,000	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	2,196,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.13	Constant	0.000
S3	PB GRADE %	N/A:	04/92	End	0.077	Constant	0.000
S4	AG GRADE OPT	N/A:	04/92	End	5.14	Constant	0.000
S5	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S6	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S7	AG$/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S8	MINING COSTS	Annual:	04/92	End	40,276,080.00	Constant	0.000
S9	MILLING COSTS	Annual:	04/92	End	20,029,680.00	Constant	0.000
S10	INFRA COSTS	Annual:	04/92	End	22,803,120.00	Constant	0.000
S11	TRANS COSTS	Annual:	04/92	End	12,000,000.00	Constant	0.000
S12	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S13	MILL RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S14	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S15	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S16	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV S1*S2*S5*S12*S13

Equations continued

E2 . PB REV S1*S3*S6*S12*S13

E3 . AG REV S1*S4*S7*S12*S13

Revenues
==========

E4 . GROSS REVENUE E1+E2+E3

Operating Costs
==========

E6 . OPER COSTS (S8+S9+S10+S10+S11)

Special Taxes
==========

E8 . MHT NPI S16*(E4-E6)

Royalties
==========

E7 . MHT ROYALTY S15*(E4-E5-S11)

Processing Costs
==========

E5 . SMELTING CHARGES S14*E4

LIK SEDEX ZN-PB-AG, NORTHWEST, OPEN PIT

Cash Flows

NPV =$1,145,962,244 DCFROR=146.9% GROR = 36.8% PWROR =146.9% Pay Back= 0.68 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		277,667,483	277,667,483	277,667,483	277,667,483	277,667,483	277,667,483	277,667,483
PB REV		105,137,178	105,137,178	105,137,178	105,137,178	105,137,178	105,137,178	105,137,178
AG REV		37,278,746	37,278,746	37,278,746	37,278,746	37,278,746	37,278,746	37,278,746
GROSS REVENUE		420,083,407	420,083,407	420,083,407	420,083,407	420,083,407	420,083,407	420,083,407
Total Revenue		420,083,407	420,083,407	420,083,407	420,083,407	420,083,407	420,083,407	420,083,407
-SMELTING CHARGES		-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834
-Total Smelting Cost		-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834	-4,200,834
Net Smelt Ret.		415,882,573	415,882,573	415,882,573	415,882,573	415,882,573	415,882,573	415,882,573
Net Revenue		415,882,573	415,882,573	415,882,573	415,882,573	415,882,573	415,882,573	415,882,573
-OPER COSTS		-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000
-Total Oper Costs		-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000	-117,912,000
-MHT NPI		-9,065,142	-9,065,142	-9,065,142	-9,065,142	-9,065,142	-9,065,142	-9,065,142
-Total Sev. Ad Valor		-9,065,142	-9,065,142	-9,065,142	-9,065,142	-9,065,142	-9,065,142	-9,065,142
-Dev, IDC	-9,779,000							
-Depreciation	-9,829,018	-18,018,144	-15,423,533	-13,242,286	-10,949,539	-9,137,258	-8,036,674	-6,963,480
-Amortization	-2,514,600	-838,200	-838,200					
-Write Off								
Before Depltn	-22,122,618	270,049,087	272,643,698	275,663,145	277,955,892	279,768,173	280,868,757	281,941,950
100% Limit		270,049,087	272,643,698	275,663,145	277,955,892	279,768,173	280,868,757	281,941,950
Percent Depln		62,382,386	62,382,386	62,382,386	62,382,386	62,382,386	62,382,386	62,382,386
Prev Exp Expl		9,779,000						
-Depletion		-52,603,386	-62,382,386	-62,382,386	-62,382,386	-62,382,386	-62,382,386	-62,382,386
-Total D,D & A	-22,122,618	-71,459,730	-78,644,119	-75,624,672	-73,331,925	-71,519,644	-70,419,059	-69,345,866
Taxable	-22,122,618	217,445,701	210,261,312	213,280,759	215,573,506	217,385,787	218,486,371	219,559,564
-Tax Due	7,521,690	-73,931,538	-71,488,846	-72,515,458	-83,254,488	-83,954,391	-84,379,437	-84,793,904
Net Income	-14,600,928	143,514,163	138,772,466	140,765,301	132,319,018	133,431,396	134,106,935	134,765,661
+Depreciation	9,829,018	18,018,144	15,423,533	13,242,286	10,949,539	9,137,258	8,036,674	6,963,480
+Depletion		52,603,386	62,382,386	62,382,386	62,382,386	62,382,386	62,382,386	62,382,386
+Amortization	2,514,600	838,200	838,200					
+Write Off								
-Capital Costs	-143,891,055		-1,476,061				-1,476,061	
Cash Flow	-146,148,365	214,973,892	215,940,524	216,389,973	205,650,943	204,951,040	203,049,933	204,111,527

Year	8	9	10	Salvage
ZN REV	277,667,483	277,667,483	277,667,483	
PB REV	105,137,178	105,137,178	105,137,178	
AG REV	37,278,746	37,278,746	37,278,746	
GROSS REVENUE	420,083,407	420,083,407	420,083,407	
Total Revenue	420,083,407	420,083,407	420,083,407	15,243,956
-SMELTING CHARGES	-4,200,834	-4,200,834	-4,200,834	
-Total Smelting Cost	-4,200,834	-4,200,834	-4,200,834	
Net Smelt Ret.	415,882,573	415,882,573	415,882,573	
Net Revenue	415,882,573	415,882,573	415,882,573	
-OPER COSTS	-117,912,000	-117,912,000	-117,912,000	
-Total Oper Costs	-117,912,000	-117,912,000	-117,912,000	
-MHT NPI	-9,065,142	-9,065,142	-9,065,142	
-Total Sev. Ad Valor	-9,065,142	-9,065,142	-9,065,142	
-Dev, IDC				
-Depreciation	-6,686,719	-6,594,465	-6,502,211	-16,024,894
-Amortization				
-Write Off				-15,243,956
Before Depltn	282,218,712	282,310,966	282,403,219	-16,024,894
100% Limit	282,218,712	282,310,966	282,403,219	
Percent Depln	62,382,386	62,382,386	62,382,386	
Prev Exp Expl				
-Depletion	-62,382,386	-62,382,386	-62,382,386	
-Total D,D & A	-69,069,105	-68,976,851	-68,884,597	-31,268,850
Taxable	219,836,326	219,928,580	220,020,833	-16,024,894
-Tax Due	-84,900,789	-84,936,417	-84,972,046	6,188,814
Net Income	134,935,537	134,992,162	135,048,788	-9,836,080
+Depreciation	6,686,719	6,594,465	6,502,211	16,024,894
+Depletion	62,382,386	62,382,386	62,382,386	
+Amortization				
+Write Off				15,243,956
-Capital Costs				
Cash Flow	204,004,642	203,969,013	203,933,385	21,432,770

APPENDIX B-2a

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR CYPRUS MASSIVE SULFIDE DEPOSITS

2a. DESCRIPTIVE MODEL OF CYPRUS MASSIVE SULFIDE

By Donald A. Singer

APPROXIMATE SYNONYMS Cupreous pyrite.

DESCRIPTION Massive pyrite, chalcopyrite, and sphalerite in pillow basalts.

GENERAL REFERENCES Franklin, and others (1981).

GEOLOGICAL ENVIRONMENT

Rock Types Ophiolite assemblage: tectonized dunite and harzburgite, gabbro, sheeted diabase dikes, pillow basalts, and fine-grained metasedimentary rocks such as chert and phyllite.

Textures Diabase dikes, pillow basalts, and in some cases brecciated basalt.

Age Range Archean(?) to Tertiary -- majority are Ordovician or Cretaceous.

Depositional Environment Submarine hot spring along axial grabens in oceanic or back-arc spreading ridges. Hot springs related to submarine volcanoes producing seamounts.

Tectonic Setting(s) Ophiolites. May be adjacent to steep normal faults.

Associated Deposit Types Mn and Fe-rich cherts regionally.

DEPOSIT DESCRIPTION

Mineralogy Massive: pyrite + chalcopyrite + sphalerite ± marcasite ± pyrrhotite. Stringer (stockwork): pyrite + pyrrhotite, minor chalcopyrite and sphalerite (cobalt, gold, and silver present in minor amounts).

Texture/Structure Massive sulfides (>60 percent sulfides) with underlying sulfide stockwork or stringer zone. Sulfides brecciated and recemented. Rarely preserved fossil worm tubes.

Alteration Stringer zone -- feldspar destruction, abundant quartz and chalcedony, abundant chlorite, some illite and calcite. Some deposits overlain by ochre (Mn-poor, Fe-rich bedded sediment containing goethite, maghemite, and quartz).

Ore Controls Pillow basalt or mafic volcanic breccia, diabase dikes below; ores rarely localized in sediments above pillows. May be local faulting.

Weathering Massive limonite gossans. Gold in stream sediments.

Geochemical Signature General loss of Ca and Na and introduction and redistribution of Mn and Fe in the stringer zone.

EXAMPLES

Cyprus deposits, CYPS	(Constantinou and Govett, 1973)
Oxec, QUAT	(Petersen and Zantop, 1980)
York Harbour, CNNF	(Duke and Hutchinson, 1974)
Turner-Albright, USOR	(Koski and Derkey, 1981)

GRADE AND TONNAGE MODEL OF CYPRUS MASSIVE SULFIDE
After Donald A. Singer and Dan L. Mosier

DATA REFERENCE Mosier and others (1983).

COMMENTS Massive sulfide deposits from Mosier and others (1983) which had only mafic or ultramafic rocks immediately above through 500 m below, and had either pillow basalt or diabase dikes in the sequence were included in these plots. Upper ten percent of deposits contain an minimum of 17 million tonnes at 3.9% Cu, 2.1% Zn, 33 grams/tonne Ag, and 1.9 grams/tonne Au. Total contained metal: 0.66 million tonnes Cu, 0.36 million tonnes Zn, 560 million grams Ag and 0.03 million grams Au. Gross metal value in 1987 would have been $1.59 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.7 million tonnes per year or 4,700 tonnes/day.

Gross Value of Annual Production $159 million.

Net Present Value of 4% NSR 6.4 million times 6.144 is 39.3 million.

Comments, Assumptions, Specifications: CYP
Cyprus Massive Sulfide Cover Sinker Upper 10% data Knight Island Area Adit Haulage

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Cyprus Massive Sulfide
Total Ore Tonnage: 17 mil mtons
Mining Method: Sublevel Stope
Beneficiation Method: Crush, Grind & Float
Extraction Rate: _____
Dilution/Waste Rate: _____
Proposed Mine Life: 15 years
Proposed Daily Production: 3,150 MTPD
Maximum Ore Depth: _____
Stripping Ratio: —
Haulage Distance/Road Requirements: 5 km max.
Distance From Power: Portable
Pre-Production Development: _____

Production Development: _____

Equipment: LHD's & Trucks, Jumbos
Concentrate Production: 600 MTPD - 2 products

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: —
Drifting & face-m/day & sqm: .2m/day 15 m²
Raises & face-m/day & sqm: .3/day 4 m²
Inclines & face-m/day & sqm: .3 m/day 15 m²
Ore pockets/day-mtpd: —
Stope preparation/day-stopes & sqm: .008 8000 m²
Ore rate-mtpd: 3,150 MTPD
Hoist depth, rate & time-m, mtph, hr/day: 500 m 100 MTPH 5 hrs/day
Haul distance-m: 2,300 m
Compressed air-cm/min: 115 m³/min
Ventilation-cm/min: 12,000 m³/min.
Conveyor length & slope-km & %: 1 km, 6%
Water needs-cm/hr & hr/day: 15 m³/hr .16 hrs/day
Drainage, head-cm/day & m: 1500 m³/day, 200 m
Concentrate (dry) rate-mtpd: 600 MTPD
Tails (dry) rate-mtpd: 2,550 MTPD
Production water needs-cm/day: 2,500 m³/day m.u., 8,000 m³/day recycle
Portable Power needs-kW: 5,400 kW
Wastewater-L/sec: 5 l/sec
Concentrate haul-km: 5 km
Employee housing-men: 75 men
Other: _____
Other: _____

B.(For Capital Costs)

Concentrate feeds-mtpd: 3150 mTPD, 2,750 mTPD
Mill operating costs-$/day: $35,911 /day
Working capital time-weeks: 13
Development time-days:
Shaft sinking & face-m & sqm: 500m, 20 m²
Drifting & face-m & sqm: 2,000 m ea:1, 20 m²
Raises & face-m & sqm: 150 m 4 m²
Inclines & face-m & sqm: 1200 m, 15 m²
Ore pockets-mt: 4,700 mt
Stope preparations-stopes & sqm: 4, 8 000 m²
Dewatering; head, dys & rate-m, dys & cm/day:
None
Rehabilitation (total tonnage)-mt: 3,150 mTPD
Contractors-1 or 2: 2
Mine operating costs-$/day: $56,119 /day
Access roads, length & width-km & m: 5km 15m
Airstrip length & width-m: 1200 m 18m
Townsite cost-$: $ 2,094,862
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 30,000 m³
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 56,119
Mining Costs-$/yr: 20,202,840
Mining Costs-$/mt: 17.82
Milling Costs-$/day: 35,911
Milling Costs-$/yr: 12,927,960
Milling Costs-$/mt: 11.40
Infrastructure Costs-$/day: 24,724
Infrastructure Costs-$/yr: 8,900,640
Infrastructure Costs-$/mt: 7.85
Total Operating Costs-$/day: 116,754
Total Operating Costs-$/yr: 42,031,440
Total Operating Costs-$/mt: 37.06
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 5106829
Heavy Equipment (fixed life)-$: 11,197,207 *
Mine Rehabilitation-$: 1,649,106 *
Engr. & Const. Mgmt.-$: 4,825,055 *
Other:
Remaining Mine Capital-$: 17,918,877
Total Mine Capital Cost-$: 40,697,074

MILL CAPITAL COSTS:

Mill Working Capital-$: 3,267,901
Light Vehicles (short life)-$: 1,172,019 *
Other:
Remaining Mill Capital-$: 17,471,080 ~
Total Mill Capital Cost-$: 21,911,000

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 10,348,241 *
Other:
Remaining Infrastructure Capital-$: 9,626,273 ~
Total Infrastructure Capital-$: 19,974,514

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 8,374,730 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 45,016,230 *
Sum of Total Mine, Mill & Infr. Costs-$: 82,582,588
Exploration Cost-$: 8,258,260 *

Overall Capital Cost-$: 90,840,847
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:CYPKI.SEE Date:12/28/93 Time:13:18:32

CYPRUS TYPE VMS KNIGHT ISLAND

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	5,106,829	WC	Mid Year	15.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	11,197,207	MACRS	Mid Year	10.0	0		0	.....
3	04/02	11,197,207	MACRS	Mid Year	10.0	0		0	.....
4	04/89	1,649,106	MACRS	Mid Year	15.0	0		0	.....
5	04/89	4,825,055	MACRS	Mid Year	15.0	0		0	.....
6	04/89	17,918,877	MACRS	Mid Year	15.0	0		0	.....
7	04/89	3,267,901	WC	Mid Year	15.0	0		0	.....
8	04/89	1,172,019	MACRS	Mid Year	4.0	0		0	.....
9	04/93	1,172,019	MACRS	Mid Year	4.0	0		0	.....
10	04/97	1,172,019	MACRS	Mid Year	4.0	0		0	.....
11	04/01	1,172,019	MACRS	Mid Year	4.0	0		0	.....
12	04/05	1,172,019	MACRS	Mid Year	4.0	0		0	.....
13	.....	0	MACRS	Mid Year	7.0	0		0	.....
14	04/89	17,471,080	MACRS	Mid Year	15.0	0		0	.....
15	04/89	10,348,241	MACRS	Mid Year	15.0	0		0	.....
16	04/89	9,626,273	MACRS	Mid Year	15.0	0		0	.....
17	04/89	8,374,730	EXPL-X	Mid Year	15.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	1,133,333.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.021	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.039	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	1.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.061	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	20,202,840.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	12,927,960.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S14	INFRA COSTS	Annual:	04/92	End	8,900,640.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	NPI ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

CYPRUS TYPE VMS KNIGHT ISLAND

Cash Flows

NPV =$284,509,799 DCFROR= 57.3% GROR = 21.2% PWROR = 57.3% Pay Back= 1.73 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325
CU REV		75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342
AG REV		3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029
AU REV		17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427
GROSS REVENUE		118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122
Total Revenue		118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122
-SMELTING CHARGES		-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201
-Total Smelting Cost		-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201
Net Smelt Ret.		117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921
-MHT ROYALTY		-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397
-Total Royalties		-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397
Net Revenue		112,857,524	112,857,524	112,857,524	112,857,524	112,857,524	112,857,524	112,857,524
-OPER COSTS		-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440
-Total Oper Costs		-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440
-Dev, IDC	-5,862,311							
-Depreciation	-4,504,657	-8,329,674	-7,412,359	-6,634,410	-5,607,574	-4,826,421	-4,751,585	-4,824,837
-Amortization	-1,507,451	-502,484	-502,484					
-Write Off								
Before Depltn	-11,874,419	56,593,926	57,511,241	58,791,674	59,818,510	60,599,663	60,674,499	60,601,248
100% Limit		56,593,926	57,511,241	58,791,674	59,818,510	60,599,663	60,674,499	60,601,248
Percent Depln		16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629
Prev Exp Expl		5,862,311						
-Depletion		-11,066,318	-16,928,629	-16,928,629	-16,928,629	-16,928,629	-16,928,629	-16,928,629
-Total D,D & A	-11,874,419	-19,898,476	-24,843,472	-23,563,039	-22,536,202	-21,755,050	-21,680,214	-21,753,465
Taxable	-11,874,419	45,527,608	40,582,613	41,863,045	42,889,882	43,671,035	43,745,870	43,672,619
-Tax Due	4,037,303	-15,479,387	-13,798,088	-14,233,435	-16,564,072	-16,865,754	-16,894,655	-16,866,365
Net Income	-7,837,117	30,048,222	26,784,524	27,629,610	26,325,809	26,805,281	26,851,215	26,806,253
+Depreciation	4,504,657	8,329,674	7,412,359	6,634,410	5,607,574	4,826,421	4,751,585	4,824,837
+Depletion		11,066,318	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629
+Amortization	1,507,451	502,484	502,484					
+Write Off								
-Capital Costs	-85,095,007		-1,172,019				-1,172,019	
Cash Flow	-86,920,015	49,946,697	50,455,977	51,192,649	48,862,012	48,560,331	47,359,410	48,559,719

Year	8	9	10	11	12	13	14	15
ZN REV	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325
CU REV	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342
AG REV	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029
AU REV	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427
GROSS REVENUE	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122
Total Revenue	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122
-SMELTING CHARGES	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201
-Total Smelting Cost	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201
Net Smelt Ret.	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921
-MHT ROYALTY	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397
-Total Royalties	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397	-4,477,397
Net Revenue	112,857,524	112,857,524	112,857,524	112,857,524	112,857,524	112,857,524	112,857,524	112,857,524
-OPER COSTS	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440
-Total Oper Costs	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440
-Dev, IDC								
-Depreciation	-4,605,083	-4,531,832	-4,384,675	-5,210,737	-5,886,760	-5,410,410	-5,307,684	-3,297,196
-Amortization								
-Write Off								
Before Depltn	60,821,001	60,894,252	61,041,409	60,215,347	59,539,324	60,015,675	60,118,401	62,128,888
100% Limit	60,821,001	60,894,252	61,041,409	60,215,347	59,539,324	60,015,675	60,118,401	62,128,888
Percent Depln	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629
Prev Exp Expl								
-Depletion	-16,928,629	-16,928,629	-16,928,629	-16,928,629	-16,928,629	-16,928,629	-16,928,629	-16,928,629
-Total D,D & A	-21,533,712	-21,460,461	-21,313,304	-22,139,366	-22,815,389	-22,339,038	-22,236,312	-20,225,825
Taxable	43,892,372	43,965,624	44,112,780	43,286,718	42,610,695	43,087,046	43,189,772	45,200,259
-Tax Due	-16,951,234	-16,979,524	-17,036,356	-16,717,331	-16,456,251	-16,640,217	-16,679,890	-17,456,340
Net Income	26,941,138	26,986,100	27,076,424	26,569,388	26,154,445	26,446,829	26,509,882	27,743,919
+Depreciation	4,605,083	4,531,832	4,384,675	5,210,737	5,886,760	5,410,410	5,307,684	3,297,196
+Depletion	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629	16,928,629
+Amortization								
+Write Off								
-Capital Costs			-1,172,019	-11,197,207			-1,172,019	
Cash Flow	48,474,850	48,446,560	47,217,710	37,511,547	48,969,834	48,785,867	47,574,175	47,969,744

Year	Salvage
ZN REV	
CU REV	
AG REV	
AU REV	
GROSS REVENUE	
Total Revenue	8,374,730
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-4,567,246
-Amortization	
-Write Off	-8,374,730
Before Depltn	-4,567,246
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-12,941,976
Taxable	-4,567,246
-Tax Due	1,763,870
Net Income	-2,803,375
+Depreciation	4,567,246
+Depletion	
+Amortization	
+Write Off	8,374,730
-Capital Costs	
Cash Flow	10,138,600

List of Assumptions File:CYPKI.SEE Date:03/28/94 Time:14:48:01

CYPRUS TYPE VMS KNIGHT ISLAND, ADIT ENTRY

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	5,106,829	WC	Mid Year	15.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	11,197,207	MACRS	Mid Year	10.0	0			0 .....
3	04/02	11,197,207	MACRS	Mid Year	10.0	0			0 .....
4	04/89	1,649,106	MACRS	Mid Year	15.0	0			0 .....
5	04/89	4,825,055	MACRS	Mid Year	15.0	0			0 .....
6	04/89	17,918,877	MACRS	Mid Year	15.0	0			0 .....
7	04/89	3,267,901	WC	Mid Year	15.0	0			0 .....
8	04/89	1,172,019	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,172,019	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,172,019	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,172,019	MACRS	Mid Year	4.0	0			0 .....
12	04/05	1,172,019	MACRS	Mid Year	4.0	0			0 .....
13	04/89	17,471,080	MACRS	Mid Year	15.0	0			0 .....
14	04/89	10,348,241	MACRS	Mid Year	15.0	0			0 .....
15	04/89	8,374,730	EXPL-X	Mid Year	15.0	0			0 .....
16	04/89	9,626,273	MACRS	Mid Year	15.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,133,333.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.02	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.039	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	1.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.06	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	20,202,840.00	Constant	0.000
S13	MILLIG COSTS	Annual:	04/92	End	12,927,960.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	8,900,640.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	S12+S13+S14+S15

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTER CHARGES	S18*E6

CYPRUS TYPE VMS KNIGHT ISLAND

Cash Flows

NPV =$297,621,524 DCFROR= 59.3% GROR = 21.5% PWROR = 59.3% Pay Back= 1.67 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325
CU REV		75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342
AG REV		3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029
AU REV		17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427
GROSS REVENUE		118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122
Total Revenue		118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122
-SMELTING CHARGES		-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201
-Total Smelting Cost		-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201
Net Smelt Ret.		117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921
Net Revenue		117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921
-OPER COSTS		-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440
-Total Oper Costs		-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440
-MHT NPI		-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660
-Total Sev. Ad Valor		-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660
-Dev, IDC	-5,862,311							
-Depreciation	-4,504,657	-8,329,674	-7,412,359	-6,634,410	-5,607,574	-4,826,421	-4,751,585	-4,824,837
-Amortization	-1,507,451	-502,484	-502,484					
-Write Off								
Before Depltn	-11,874,419	58,938,662	59,855,978	61,136,410	62,163,247	62,944,400	63,019,235	62,945,984
100% Limit		58,938,662	59,855,978	61,136,410	62,163,247	62,944,400	63,019,235	62,945,984
Percent Depln		17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238
Prev Exp Expl		5,862,311						
-Depletion		-11,737,927	-17,600,238	-17,600,238	-17,600,238	-17,600,238	-17,600,238	-17,600,238
-Total D,D & A	-11,874,419	-20,570,085	-25,515,081	-24,234,649	-23,207,812	-22,426,659	-22,351,824	-22,425,075
Taxable	-11,874,419	47,200,735	42,255,739	43,536,172	44,563,009	45,344,161	45,418,997	45,345,746
-Tax Due	4,037,303	-16,048,250	-14,366,951	-14,802,298	-17,210,234	-17,511,915	-17,540,817	-17,512,527
Net Income	-7,837,117	31,152,485	27,888,788	28,733,873	27,352,775	27,832,246	27,878,180	27,833,219
+Depreciation	4,504,657	8,329,674	7,412,359	6,634,410	5,607,574	4,826,421	4,751,585	4,824,837
+Depletion		11,737,927	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238
+Amortization	1,507,451	502,484	502,484					
+Write Off								
-Capital Costs	-85,095,007		-1,172,019				-1,172,019	
Cash Flow	-86,920,015	51,722,571	52,231,850	52,968,522	50,560,587	50,258,905	49,057,985	50,258,294

Year	8	9	10	11	12	13	14	15
ZN REV	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325	21,930,325
CU REV	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342	75,147,342
AG REV	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029	3,546,029
AU REV	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427	17,896,427
GROSS REVENUE	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122
Total Revenue	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122	118,520,122
-SMELTING CHARGES	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201
-Total Smelting Cost	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201	-1,185,201
Net Smelt Ret.	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921
Net Revenue	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921	117,334,921
-OPER COSTS	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440
-Total Oper Costs	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440	-47,431,440
-MHT NPI	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660
-Total Sev. Ad Valor	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660	-2,132,660
-Dev, IDC								
-Depreciation	-4,605,083	-4,531,832	-4,384,675	-5,210,737	-5,886,760	-5,410,410	-5,307,684	-3,297,196
-Amortization								
-Write Off								
Before Depltn	63,165,737	63,238,989	63,386,145	62,560,083	61,884,060	62,360,411	62,463,137	64,473,624
100% Limit	63,165,737	63,238,989	63,386,145	62,560,083	61,884,060	62,360,411	62,463,137	64,473,624
Percent Depln	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238
Prev Exp Expl								
-Depletion	-17,600,238	-17,600,238	-17,600,238	-17,600,238	-17,600,238	-17,600,238	-17,600,238	-17,600,238
-Total D,D & A	-22,205,321	-22,132,070	-21,984,914	-22,810,975	-23,486,998	-23,010,648	-22,907,922	-20,897,435
Taxable	45,565,499	45,638,751	45,785,907	44,959,845	44,283,822	44,760,173	44,862,899	46,873,386
-Tax Due	-17,597,396	-17,625,685	-17,682,517	-17,363,492	-17,102,412	-17,286,379	-17,326,052	-18,102,502
Net Income	27,968,103	28,013,065	28,103,390	27,596,353	27,181,410	27,473,794	27,536,847	28,770,884
+Depreciation	4,605,083	4,531,832	4,384,675	5,210,737	5,886,760	5,410,410	5,307,684	3,297,196
+Depletion	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238	17,600,238
+Amortization								
+Write Off								
-Capital Costs			-1,172,019	-11,197,207			-1,172,019	
Cash Flow	50,173,425	50,145,135	48,916,284	39,210,121	50,668,408	50,484,442	49,272,750	49,668,319

Year	Salvage
ZN REV	
CU REV	
AG REV	
AU REV	
GROSS REVENUE	
Total Revenue	8,374,730
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-4,567,246
-Amortization	
-Write Off	-8,374,730
Before Depltn	-4,567,246
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-12,941,976
Taxable	-4,567,246
-Tax Due	1,763,870
Net Income	-2,803,375
+Depreciation	4,567,246
+Depletion	
+Amortization	
+Write Off	8,374,730
-Capital Costs	
Cash Flow	10,138,600

APPENDIX B-2b

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

KUROKO MASSIVE SULFIDE DEPOSITS

2b. DESCRIPTIVE MODEL OF KUROKO MASSIVE SULF...
By Donald A. Singer

APPROXIMATE SYNONYMS Noranda type, volcanogenic massive sulfide, felsic to intermediate volcanic type.

DESCRIPTION Copper- and zinc-bearing massive sulfide deposits in marine volcanic rocks of intermediate to felsic composition.

GENERAL REFERENCES Ishihara (1974), Franklin and others (1981), Hutchinson and others (1982), Ohmoto and Skinner (1983).

GEOLOGICAL ENVIRONMENT

Rock Types Marine rhyolite, dacite, and subordinate basalt and associated sediments, principally organic-rich mudstone or shale. Pyritic, siliceous shale. Some basalt.

Textures Flows, tuffs, pyroclastics, breccias, bedded sediment, and in some cases felsic domes.

Age Range Archean through Cenozoic.

Depositional Environment Hot springs related to marine volcanism, probably with anoxic marine conditions. Lead-rich deposits associated with abundant fine-grained volcanogenic sediments.

Tectonic Setting(s) Island arc. Local extensional tectonic activity, faults, or fractures. Archean greenstone belt.

Associated Deposit Types Epithermal quartz-adularia veins in Japan are regionally associated but younger than kuroko deposits. Volcanogenic Mn, Algoma Fe.

DEPOSIT DESCRIPTION

Mineralogy Upper stratiform massive zone (black ore) -- pyrite + sphalerite + chalcopyrite ± pyrrhotite ± galena ± barite ± tetrahedrite - tennantite ± bornite; lower stratiform massive zone (yellow ore) -- pyrite + chalcopyrite (gold and silver). Gahnite in metamorphosed deposits. Gypsum/anhydrite present in some deposits.

Texture/Structure Massive (>60 percent sulfides); in some cases, an underlying zone of ore stockwork, stringers or disseminated sulfides or sulfide-matrix breccia. Also slumped and redeposited ore with graded bedding.

Alteration Adjacent to and blanketing massive sulfide in some deposits -- zeolites, monmorillonite (and chlorite?); stringer (stockwork) zone -- silica, chlorite, and sericite; below stringer -- chlorite and albite. Cordierite and anthophyllite in footwall of metamorphosed deposits, graphitic schist in hanging wall.

Ore Controls Toward the more felsic top of volcanic or volcanic-sedimentary sequence. Near center of felsic volcanism. May be locally brecciated or have felsic dome nearby. Pyritic siliceous rock (exhalite) may mark horizon at which deposits occur. Proximity to deposits may be indicated by sulfide clasts in volcanic breccias. Some deposits may be gravity-transported and deposited in paleo depressions in the seafloor. In Japan, best deposits have mudstone in handing wall.

Weathering Yellow, red, and brown gossans. Gahnite in stream sediments near some deposits.

Geochemical Signature Gossan may be high in Pb and typically Au is pr. .nt. Adjacent to deposit-enriched in Mg and Zn, depleted in Na. Within deposits -- Cu, Zn, Pb, Ba, As, Ag, Au, Se, Sn, Bi, Fe.

EXAMPLES

Kidd Creek, CNON	(Walker and others, 1975)
Mt. Lyell, AUTS	(Corbett, 1981)
Brittania, CNBC	(Payne and others, 1980)
Buchans, CNNF	(Swanson and others, 1981)

GRADE AND TONNAGE MODEL OF KUROKO MASSIVE SULFIDE
After Donald A. Singer and Dan L. Mosier

DATA REFERENCE Mosier and others (1983).

COMMENTS Includes all deposits listed by Mosier and others (1983) that are associated with felsic or intermediate volcanic rocks. Tonnage is correlated with copper grade ($r = -0.17$) and with gold grade ($r = -0.19$, $n = 238$). Zinc grade is correlated with lead grade ($r = 0.55$, $n = 184$) and with silver grade ($r = 0.52$, $n = 249$). Lead grade is correlated with silver ($r = 0.55$, $n = 153$) and with gold grade ($r = 0.34$, $n = 124$). Gold and silver grades are correlated ($r = 0.39$, $n = 227$). Upper ten percent of the deposits contain an minimum of 18 million tonnes at 8.7% Zn, 3.5% Cu, 1.9% Pb, 100 grams/tonne Ag, and 2.3 grams/tonne Au. Total contained metal: 1.6 million tonnes Zn, 0.63 million tonnes Cu, 0.34 tonnes Pb, 1.8 billion grams Ag and 41.4 million grams Au. Gross value in 1987 would have been $3.69 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.8 million tonnes per year or 5,000 tonnes/day.

Gross Value of Annual Production $369 million.

Net Present Value of 4% NSR $14.8 million times 6.144 is $90.9 million.

Comments, Assumptions, Specifications: VMSS, Haines Area
360 days/yr - 20 yr - Kuroko Type
Sublevel Stope

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Volcanogenic Massive Sulfide (kuroko)
Total Ore Tonnage: 18 million tons
Mining Method: Sublevel Stoping
Beneficiation Method: Crush, Grind & Float
Extraction Rate: 85%
Dilution/Waste Rate: 15%
Proposed Mine Life: 20 yrs.
Proposed Daily Production: 2,500 mt
Maximum Ore Depth: 500 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 50 km
15 km new road
Distance From Power: 50 km
Pre-Production Development:

Production Development:

Equipment: Jumbos, LHDs, Conveyor, Drum Hoist
Concentrate Production: 550 MTPD - 3 products

INPUT VARIABLES:

A. (For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: .2 m/day, 15 m
Raises & face-m/day & sqm: -
Inclines & face-m/day & sqm: .21 m/day 15 m²
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .006, 8,000 m²
Ore rate-mtpd: 2,500 MTPD
Hoist depth, rate & time-m, mtph, hr/day:
500 m, 210 MTPH, 16 hrs
Haul distance-m: 650 m
Compressed air-cm/min: 175 m³/min.
Ventilation-cm/min: 8,500 m³/min
Conveyor length & slope-km & %: 1 km 10%
Water needs-cm/hr & hr/day: 10 m³/hr, 16 hrs/day
Drainage, head-cm/day & m: 1,500 m³/day, 500 m
Concentrate (dry) rate-mtpd: 550 MTPD
Tails (dry) rate-mtpd: 1950 MTPD
Production water needs-cm/day: 2150 m³/day
Portable Power needs-kW: -
Wastewater-L/sec: 3 l/s
Concentrate haul-km: 50 km
Employee housing-men: 60 men
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 2,500, 2,300, 2100 mTPD
Mill operating costs-$/day: $32,753/day
Working capital time-weeks: 13
Development time-days: —
Shaft sinking & face-m & sqm: 500m, 45 m²
Drifting & face-m & sqm: —
Raises & face-m & sqm: 750 m, 4m²
Inclines & face-m & sqm: 1,500 m, 15 m²
Ore pockets-mt: 3,750 mT
Stope preparations-stopes & sqm: 2, 8000 m²
Dewatering; head, dys & rate-m, dys & cm/day:
500m, 200 days, 1,500 m³/day
Rehabilitation (total tonnage)-mt: 2500 mTPD
Contractors-1 or 2: 1
Mine operating costs-$/day: $79,110/day
Access roads, length & width-km & m: 15km, 15m
Airstrip length & width-m: 1200 m, 18m
Townsite cost-$: 1,675,890
Powerline length & power-km & mW: 50km, 8.2mW
Dike & Dam needs-cm/fill: 20,000 m²
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 79,110
Mining Costs-$/yr: 28,479,600
Mining Costs-$/mt: 31.64
Milling Costs-$/day: 32,753
Milling Costs-$/yr: 11,791,080
Milling Costs-$/mt: 13.10
Infrastructure Costs-$/day: 16,168
Infrastructure Costs-$/yr: 5,820,480
Infrastructure Costs-$/mt: 6.47
Total Operating Costs-$/day: 128,031
Total Operating Costs-$/yr: 46,091,160
Total Operating Costs-$/mt: 51.21
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 7199010
Heavy Equipment (fixed life)-$: 4,708,535 *
Mine Rehabilitation-$: 1,525,254 *
Engr. & Const. Mgmt.-$: 4,899,985 *
Other:
Remaining Mine Capital-$: 21,975,927
Total Mine Capital Cost-$: 40,308,711

MILL CAPITAL COSTS:

Mill Working Capital-$: 2,980,523
Light Vehicles (short life)-$: 1,081,198 *
Other:
Remaining Mill Capital-$: 16,439,761 ~
Total Mill Capital Cost-$: 20,501,482

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 9032,807 *
Other:
Remaining Infrastructure Capital-$: 15,648,170 ~
Total Infrastructure Capital-$: 24,680,977

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 10,179,533 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 54,063,858 *
Sum of Total Mine, Mill & Infr. Costs-$: 85,491,170
Exploration Cost-$: 8,549,120 *

Overall Capital Cost-$: 94,040,287
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:VMSHAINE.SEE Date:07/07/93 Time:07:25:17

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* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 09/87
End of Time Zero 09/87
Evaluation Date 09/87
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	09/87	7,199,010	WC	Mid Year	20.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	09/87	4,708,535	MACRS	Mid Year	10.0	0			0 .....
3	09/97	4,708,535	MACRS	Mid Year	10.0	0			0 .....
4	09/87	1,525,254	MACRS	Mid Year	20.0	0			0 .....
5	09/87	4,899,985	MACRS	Mid Year	20.0	0			0 .....
6	09/87	21,975,927	MACRS	Mid Year	20.0	0			0 .....
7	09/87	2,980,523	WC	Mid Year	20.0	0			0 .....
8	09/87	1,081,198	MACRS	Mid Year	4.0	0			0 .....
9	09/89	1,081,198	MACRS	Mid Year	4.0	0			0 .....
10	09/93	1,081,198	MACRS	Mid Year	4.0	0			0 .....
11	09/97	1,081,198	MACRS	Mid Year	4.0	0			0 .....
12	09/01	1,081,198	MACRS	Mid Year	4.0	0			0 .....
13	09/05	1,081,198	MACRS	Mid Year	4.0	0			0 .....
14	09/87	16,439,761	MACRS	Mid Year	20.0	0			0 .....
15	09/87	9,032,807	MACRS	Mid Year	20.0	0			0 .....
16	09/87	15,648,170	MACRS	Mid Year	20.0	0			0 .....
17	09/87	8,549,120	EXPL-X	Mid Year	20.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	10/87	End	900,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	10/87	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	10/87	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	10/87	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	10/87	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	10/87	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	10/87	End	803.56	Constant	0.000
S8	CU $/TONNE	N/A:	10/87	End	1,756.02	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	10/87	End	658.78	Constant	0.000
S10	AG $/TROY OZ	N/A:	10/87	End	7.86	Constant	0.000
S11	AU $/TROY OZ	N/A:	10/87	End	461.26	Constant	0.000
S12	MINING COSTS	Annual:	10/87	End	28,479,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	10/87	End	11,791,080.00	Constant	0.000
S14	INFRA COSTS	Annual:	10/87	End	5,820,480.00	Constant	0.000
S15	TRANS COSTS	Annual:	10/87	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	10/87	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	10/87	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	10/87	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	10/87	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

Cash Flows

NPV =$418,924,134 DCFROR= 67.2% GROR = 19.9% PWROR = 67.2% Pay Back= 1.48 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		48,132,842	48,132,842	48,132,842	48,132,842	48,132,842	48,132,842	48,132,842
CU REV		42,315,692	42,315,692	42,315,692	42,315,692	42,315,692	42,315,692	42,315,692
PB REV		8,617,831	8,617,831	8,617,831	8,617,831	8,617,831	8,617,831	8,617,831
AG REV		17,317,152	17,317,152	17,317,152	17,317,152	17,317,152	17,317,152	17,317,152
AU REV		23,500,736	23,500,736	23,500,736	23,500,736	23,500,736	23,500,736	23,500,736
GROSS REVENUE		139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252
Total Revenue		139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252
-SMELTING CHARGES		-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843
-Total Smelting Cost		-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843
Net Smelt Ret.		138,485,410	138,485,410	138,485,410	138,485,410	138,485,410	138,485,410	138,485,410
-MHT ROYALTY		-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416
-Total Royalties		-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416
Net Revenue		133,161,994	133,161,994	133,161,994	133,161,994	133,161,994	133,161,994	133,161,994
-OPER COSTS		-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Total Oper Costs		-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Dev, IDC	-5,984,384							
-Depreciation	-3,348,224	-6,271,598	-5,793,270	-5,377,073	-4,676,235	-4,156,397	-4,044,992	-3,857,677
-Amortization	-42,746	-512,947	-512,947	-512,947	-512,947	-470,202		
-Write Off								
Before Depltn	-9,375,354	74,886,288	75,364,617	75,780,814	76,481,652	77,044,235	77,625,841	77,813,157
100% Limit		74,886,288	75,364,617	75,780,814	76,481,652	77,044,235	77,625,841	77,813,157
Percent Depln		19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299
Prev Exp Expl		5,984,384						
-Depletion		-13,989,915	-19,974,299	-19,974,299	-19,974,299	-19,974,299	-19,974,299	-19,974,299
-Total D,D & A	-9,375,354	-20,774,460	-26,280,516	-25,864,319	-25,163,481	-24,600,898	-24,019,291	-23,831,976
Taxable	-9,375,354	60,896,373	55,390,318	55,806,515	56,507,353	57,069,936	57,651,542	57,838,858
-Tax Due	3,187,620	-20,704,767	-18,832,708	-18,974,215	-21,823,140	-22,040,409	-22,265,026	-22,337,367
Net Income	-6,187,734	40,191,606	36,557,610	36,832,300	34,684,213	35,029,526	35,386,517	35,501,491
+Depreciation	3,348,224	6,271,598	5,793,270	5,377,073	4,676,235	4,156,397	4,044,992	3,857,677
+Depletion		13,989,915	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299
+Amortization	42,746	512,947	512,947	512,947	512,947	470,202		
+Write Off								
-Capital Costs	-88,055,906		-1,081,198				-1,081,198	
Cash Flow	-90,852,670	60,966,067	61,756,928	62,696,619	59,847,694	59,630,424	58,324,610	59,333,467

Year	8	9	10	11	12	13	14	15
ZN REV	48,132,842	48,132,842	48,132,842	48,132,842	48,132,842	48,132,842	48,132,842	48,132,842
CU REV	42,315,692	42,315,692	42,315,692	42,315,692	42,315,692	42,315,692	42,315,692	42,315,692
PB REV	8,617,831	8,617,831	8,617,831	8,617,831	8,617,831	8,617,831	8,617,831	8,617,831
AG REV	17,317,152	17,317,152	17,317,152	17,317,152	17,317,152	17,317,152	17,317,152	17,317,152
AU REV	23,500,736	23,500,736	23,500,736	23,500,736	23,500,736	23,500,736	23,500,736	23,500,736
GROSS REVENUE	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252
Total Revenue	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252
-SMELTING CHARGES	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843
-Total Smelting Cost	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843
Net Smelt Ret.	138,485,410	138,485,410	138,485,410	138,485,410	138,485,410	138,485,410	138,485,410	138,485,410
-MHT ROYALTY	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416
-Total Royalties	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416
Net Revenue	133,161,994	133,161,994	133,161,994	133,161,994	133,161,994	133,161,994	133,161,994	133,161,994
-OPER COSTS	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Total Oper Costs	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Dev, IDC								
-Depreciation	-3,613,037	-3,545,462	-4,064,751	-4,354,719	-3,982,487	-3,779,307	-3,873,547	-3,854,334
-Amortization								
-Write Off								
Before Depltn	78,057,797	78,125,372	77,606,083	77,316,114	77,688,346	77,891,527	77,797,287	77,816,500
100% Limit	78,057,797	78,125,372	77,606,083	77,316,114	77,688,346	77,891,527	77,797,287	77,816,500
Percent Depln	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299
Prev Exp Expl								
-Depletion	-19,974,299	-19,974,299	-19,974,299	-19,974,299	-19,974,299	-19,974,299	-19,974,299	-19,974,299
-Total D,D & A	-23,587,336	-23,519,761	-24,039,050	-24,329,018	-23,956,786	-23,753,606	-23,847,846	-23,828,633
Taxable	58,083,498	58,151,072	57,631,784	57,341,815	57,714,047	57,917,228	57,822,988	57,842,201
-Tax Due	-22,431,847	-22,457,944	-22,257,395	-22,145,409	-22,289,165	-22,367,633	-22,331,238	-22,338,658
Net Income	35,651,651	35,693,128	35,374,389	35,196,406	35,424,882	35,549,594	35,491,750	35,503,543
+Depreciation	3,613,037	3,545,462	4,064,751	4,354,719	3,982,487	3,779,307	3,873,547	3,854,334
+Depletion	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299
+Amortization								
+Write Off								
-Capital Costs			-5,789,733				-1,081,198	
Cash Flow	59,238,987	59,212,889	53,623,706	59,525,425	59,381,669	59,303,200	58,258,398	59,332,176

Year	16	17	18	19	20	Salvage
ZN REV	48,132,842	48,132,842	48,132,842	48,132,842	48,132,842	
CU REV	42,315,692	42,315,692	42,315,692	42,315,692	42,315,692	
PB REV	8,617,831	8,617,831	8,617,831	8,617,831	8,617,831	
AG REV	17,317,152	17,317,152	17,317,152	17,317,152	17,317,152	
AU REV	23,500,736	23,500,736	23,500,736	23,500,736	23,500,736	
GROSS REVENUE	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	
Total Revenue	139,884,252	139,884,252	139,884,252	139,884,252	139,884,252	10,179,533
-SMELTING CHARGES	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	
-Total Smelting Cost	-1,398,843	-1,398,843	-1,398,843	-1,398,843	-1,398,843	
Net Smelt Ret.	138,485,410	138,485,410	138,485,410	138,485,410	138,485,410	
-MHT ROYALTY	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	
-Total Royalties	-5,323,416	-5,323,416	-5,323,416	-5,323,416	-5,323,416	
Net Revenue	133,161,994	133,161,994	133,161,994	133,161,994	133,161,994	
-OPER COSTS	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	
-Total Oper Costs	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	
-Dev, IDC						
-Depreciation	-3,613,037	-3,545,462	-3,748,187	-3,815,762	-1,907,881	-202,725
-Amortization						
-Write Off						-10,179,533
Before Depltn	78,057,797	78,125,372	77,922,647	77,855,072	79,762,953	-202,725
100% Limit	78,057,797	78,125,372	77,922,647	77,855,072	79,762,953	
Percent Depln	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	
Prev Exp Expl						
-Depletion	-19,974,299	-19,974,299	-19,974,299	-19,974,299	-19,974,299	
-Total D,D & A	-23,587,336	-23,519,761	-23,722,486	-23,790,061	-21,882,180	-10,382,258
Taxable	58,083,498	58,151,072	57,948,348	57,880,773	59,788,654	-202,725
-Tax Due	-22,431,847	-22,457,944	-22,379,652	-22,353,555	-23,090,378	78,292
Net Income	35,651,651	35,693,128	35,568,696	35,527,218	36,698,276	-124,432
+Depreciation	3,613,037	3,545,462	3,748,187	3,815,762	1,907,881	202,725
+Depletion	19,974,299	19,974,299	19,974,299	19,974,299	19,974,299	
+Amortization						
+Write Off						10,179,533
-Capital Costs			-1,081,198			
Cash Flow	59,238,987	59,212,889	58,209,984	59,317,279	58,580,455	10,257,825

List of Assumptions File:VMSHAINE.SEE Date:07/26/93 Time:16:42:19

VMS (KOROKO), HAINES AREA, SUBLEVEL STOPING

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

	Minimum ROR, Inflation & Exponents					Tax Rates		
	Compound	With	Minimum	Infltion:	Constant	State	Federal	Effect.
Year	Exponents	Eval Date	ROR	Rate	: $ ROR	Rate	Rate	Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2008	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2009	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2010	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2011	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	7,199,010	WC	Mid Year	20.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,708,535	MACRS	Mid Year	10.0	0		0	.....
3	04/02	4,708,535	MACRS	Mid Year	10.0	0		0	.....
4	04/89	1,525,254	MACRS	Mid Year	20.0	0		0	.....
5	04/89	4,899,985	MACRS	Mid Year	20.0	0		0	.....
6	04/89	21,975,927	MACRS	Mid Year	20.0	0		0	.....
7	04/89	2,980,523	WC	Mid Year	20.0	0		0	.....
8	04/89	1,081,198	MACRS	Mid Year	4.0	0		0	.....
9	04/93	1,081,198	MACRS	Mid Year	4.0	0		0	.....
10	04/97	1,081,198	MACRS	Mid Year	4.0	0		0	.....
11	04/01	1,081,198	MACRS	Mid Year	4.0	0		0	.....
12	04/05	1,081,198	MACRS	Mid Year	4.0	0		0	.....
13	04/09	1,081,198	MACRS	Mid Year	4.0	0		0	.....
14	04/89	16,439,761	MACRS	Mid Year	20.0	0		0	.....
15	04/89	9,032,807	MACRS	Mid Year	20.0	0		0	.....
16	04/89	15,648,170	MACRS	Mid Year	20.0	0		0	.....
17	04/89	8,549,120	EXPL-X	Mid Year	20.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	900,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	28,479,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	11,791,080.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	5,820,480.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VMS (KOROKO), HAINES AREA, SUBLEVEL STOPING

Cash Flows

NPV =$541,587,543 DCFROR= 84.1% GROR = 21.2% PWROR = 84.1% Pay Back= 1.19 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
ZN REV		72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948
CU REV		53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248
PB REV		10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755
AG REV		9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088
AU REV		17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632
GROSS REVENUE		162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
Total Revenue		162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
-SMELTING CHARGES		-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
-Total Smelting Cost		-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
Net Smelt Ret.		160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
-MHT ROYALTY		-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335
-Total Royalties		-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335
Net Revenue		154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049
-OPER COSTS		-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Total Oper Costs		-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Dev, IDC	-5,984,384							
-Depreciation	-3,348,224	-6,271,598	-5,793,270	-5,377,073	-4,676,235	-4,156,397	-4,044,992	-3,857,677
-Amortization	-1,538,842	-512,947	-512,947					
-Write Off								
Before Depltn	-10,871,450	95,932,343	96,410,672	97,339,816	98,040,654	98,560,491	98,671,896	98,859,212
100% Limit		95,932,343	96,410,672	97,339,816	98,040,654	98,560,491	98,671,896	98,859,212
Percent Depln		23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207
Prev Exp Expl		5,984,384						
-Depletion		-17,146,823	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207
-Total D,D & A	-10,871,450	-23,931,368	-29,437,424	-28,508,280	-27,807,442	-27,287,605	-27,176,200	-26,988,884
Taxable	-10,871,450	78,785,520	73,279,465	74,208,609	74,909,447	75,429,284	75,540,689	75,728,005
-Tax Due	3,696,293	-26,787,077	-24,915,018	-25,230,927	-28,930,028	-29,130,789	-29,173,814	-29,246,155
Net Income	-7,175,157	51,998,443	48,364,447	48,977,682	45,979,418	46,298,495	46,366,875	46,481,849
+Depreciation	3,348,224	6,271,598	5,793,270	5,377,073	4,676,235	4,156,397	4,044,992	3,857,677
+Depletion		17,146,823	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207
+Amortization	1,538,842	512,947	512,947					
+Write Off								
-Capital Costs	-88,055,906		-1,081,198				-1,081,198	
Cash Flow	-90,343,997	75,929,812	76,720,673	77,485,962	73,786,860	73,586,099	72,461,877	73,470,733

Year	1999	2000	2001	2002	2003	2004	2005	2006
ZN REV	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948
CU REV	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248
PB REV	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755
AG REV	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088
AU REV	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632
GROSS REVENUE	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
Total Revenue	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
-SMELTING CHARGES	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
-Total Smelting Cost	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
Net Smelt Ret.	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
-MHT ROYALTY	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335
-Total Royalties	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335
Net Revenue	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049
-OPER COSTS	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Total Oper Costs	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Dev, IDC								
-Depreciation	-3,613,037	-3,545,462	-3,593,897	-3,978,036	-4,151,995	-3,914,913	-3,982,031	-3,941,122
-Amortization								
-Write Off								
Before Depltn	99,103,852	99,171,427	99,122,991	98,738,852	98,564,894	98,801,976	98,734,857	98,775,767
100% Limit	99,103,852	99,171,427	99,122,991	98,738,852	98,564,894	98,801,976	98,734,857	98,775,767
Percent Depln	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207
Prev Exp Expl								
-Depletion	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207
-Total D,D & A	-26,744,244	-26,676,669	-26,725,105	-27,109,244	-27,283,202	-27,046,120	-27,113,239	-27,072,329
Taxable	75,972,644	76,040,219	75,991,784	75,607,645	75,433,687	75,670,769	75,603,650	75,644,560
-Tax Due	-29,340,635	-29,366,733	-29,348,027	-29,199,672	-29,132,490	-29,224,051	-29,198,130	-29,213,929
Net Income	46,632,009	46,673,487	46,643,757	46,407,972	46,301,197	46,446,718	46,405,520	46,430,631
+Depreciation	3,613,037	3,545,462	3,593,897	3,978,036	4,151,995	3,914,913	3,982,031	3,941,122
+Depletion	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207
+Amortization								
+Write Off								
-Capital Costs			-1,081,198	-4,708,535			-1,081,198	
Cash Flow	73,376,253	73,350,156	72,287,664	68,808,681	73,584,399	73,492,838	72,437,561	73,502,960

Year	2007	2008	2009	2010	2011	Salvage
ZN REV	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	
CU REV	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	
PB REV	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	
AG REV	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	
AU REV	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	
GROSS REVENUE	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	
Total Revenue	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	10,179,533
-SMELTING CHARGES	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	
-Total Smelting Cost	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	
Net Smelt Ret.	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	
-MET ROYALTY	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	
-Total Royalties	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	
Net Revenue	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	
-OPER COSTS	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	
-Total Oper Costs	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	
-Dev, IDC						
-Depreciation	-3,651,609	-3,545,462	-3,748,187	-3,815,762	-2,062,170	-357,014
-Amortization						
-Write Off						-10,179,533
Before Depltn	99,065,279	99,171,427	98,968,702	98,901,127	100,654,719	-357,014
100% Limit	99,065,279	99,171,427	98,968,702	98,901,127	100,654,719	
Percent Depln	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	
Prev Exp Expl						
-Depletion	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	
-Total D,D & A	-26,782,817	-26,676,669	-26,879,394	-26,946,969	-25,193,377	-10,536,547
Taxable	75,934,072	76,040,219	75,837,495	75,769,920	77,523,511	-357,014
-Tax Due	-29,325,739	-29,366,733	-29,288,440	-29,262,343	-29,939,580	137,879
Net Income	46,608,333	46,673,487	46,549,054	46,507,577	47,583,931	-219,135
+Depreciation	3,651,609	3,545,462	3,748,187	3,815,762	2,062,170	357,014
+Depletion	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	
+Amortization						
+Write Off						10,179,533
-Capital Costs			-1,081,198			
Cash Flow	73,391,150	73,350,156	72,347,250	73,454,546	72,777,309	10,317,412

List of Assumptions File:VMSHAINE.SEE Date:11/19/93 Time:08:06:34

VMS (KOROKO), HAINES AREA, SUBLEVEL STOPING

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

	Minimum ROR,Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion:Constant Rate	: $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount	Rec'd	Date Rec'd
1	04/89	7,199,010	WC	Mid Year	20.0	0			0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount	Rec'd	Date Rec'd
2	04/89	4,708,535	MACRS	Mid Year	10.0	0			0	.....
3	04/02	4,708,535	MACRS	Mid Year	10.0	0			0	.....
4	04/89	1,525,254	MACRS	Mid Year	20.0	0			0	.....
5	04/89	4,899,985	MACRS	Mid Year	20.0	0			0	.....
6	04/89	21,975,927	MACRS	Mid Year	20.0	0			0	.....
7	04/89	2,980,523	WC	Mid Year	20.0	0			0	.....
8	04/89	1,081,198	MACRS	Mid Year	4.0	0			0	.....
9	04/93	1,081,198	MACRS	Mid Year	4.0	0			0	.....
10	04/97	1,081,198	MACRS	Mid Year	4.0	0			0	.....
11	04/01	1,081,198	MACRS	Mid Year	4.0	0			0	.....
12	04/05	1,081,198	MACRS	Mid Year	4.0	0			0	.....
13	04/09	1,081,198	MACRS	Mid Year	4.0	0			0	.....
14	04/89	16,439,761	MACRS	Mid Year	20.0	0			0	.....
15	04/89	9,032,807	MACRS	Mid Year	20.0	0			0	.....
16	04/89	15,648,170	MACRS	Mid Year	20.0	0			0	.....
17	04/89	8,549,120	EXPL-X	Mid Year	20.0	0			0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	900,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	28,479,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	11,791,080.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	5,820,480.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VMS (KUROKO), HAINES AREA, SUBLEVEL STOPING

Cash Flows

NPV =$559,941,811 DCFROR= 86.5% GROR = 21.4% PWROR = 86.5% Pay Back= 1.15 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948
CU REV		53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248
PB REV		10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755
AG REV		9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088
AU REV		17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632
GROSS REVENUE		162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
Total Revenue		162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
-SMELTING CHARGES		-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
-Total Smelting Cost		-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
Net Smelt Ret.		160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
Net Revenue		160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
-OPER COSTS		-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Total Oper Costs		-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-MHT NPI		-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125
-Total Sev. Ad Valor		-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125
-Dev, IDC	-5,984,384							
-Depreciation	-3,348,224	-6,271,598	-5,793,270	-5,377,073	-4,676,235	-4,156,397	-4,044,992	-3,857,677
-Amortization	-1,538,842	-512,947	-512,947					
-Write Off								
Before Depltn	-10,871,450	98,816,554	99,294,882	100,224,026	100,924,864	101,444,701	101,556,106	101,743,422
100% Limit		98,816,554	99,294,882	100,224,026	100,924,864	101,444,701	101,556,106	101,743,422
Percent Depln		24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258
Prev Exp Expl		5,984,384						
-Depletion		-18,076,874	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258
-Total D,D & A	-10,871,450	-24,861,419	-30,367,474	-29,438,330	-28,737,492	-28,217,655	-28,106,250	-27,918,934
Taxable	-10,871,450	80,739,680	75,233,624	76,162,769	76,863,607	77,383,444	77,494,849	77,682,164
-Tax Due	3,696,293	-27,451,491	-25,579,432	-25,895,341	-29,684,725	-29,885,486	-29,928,511	-30,000,852
Net Income	-7,175,157	53,288,189	49,654,192	50,267,427	47,178,882	47,497,958	47,566,338	47,681,312
+Depreciation	3,348,224	6,271,598	5,793,270	5,377,073	4,676,235	4,156,397	4,044,992	3,857,677
+Depletion		18,076,874	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258
+Amortization	1,538,842	512,947	512,947					
+Write Off								
-Capital Costs	-88,055,906		-1,081,198				-1,081,198	
Cash Flow	-90,343,997	78,149,608	78,940,468	79,705,757	75,916,374	75,715,613	74,591,390	75,600,247

Year	8	9	10	11	12	13	14	15
ZN REV	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948
CU REV	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248
PB REV	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755
AG REV	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088
AU REV	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632
GROSS REVENUE	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
Total Revenue	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
-SMELTING CHARGES	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
-Total Smelting Cost	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
Net Smelt Ret.	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
Net Revenue	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
-OPER COSTS	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-Total Oper Costs	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160
-MHT NPI	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125
-Total Sev. Ad Valor	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125
-Dev, IDC								
-Depreciation	-3,613,037	-3,545,462	-3,593,897	-3,978,036	-4,151,995	-3,914,913	-3,982,031	-3,941,122
-Amortization								
-Write Off								
Before Depltn	101,988,062	102,055,637	102,007,201	101,623,062	101,449,104	101,686,186	101,619,067	101,659,977
100% Limit	101,988,062	102,055,637	102,007,201	101,623,062	101,449,104	101,686,186	101,619,067	101,659,977
Percent Depln	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258
Prev Exp Expl								
-Depletion	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258
-Total D,D & A	-27,674,295	-27,606,720	-27,655,155	-28,039,294	-28,213,252	-27,976,170	-28,043,289	-28,002,379
Taxable	77,926,804	77,994,379	77,945,944	77,561,805	77,387,846	77,624,929	77,557,810	77,598,720
-Tax Due	-30,095,332	-30,121,429	-30,102,723	-29,954,369	-29,887,186	-29,978,747	-29,952,826	-29,968,625
Net Income	47,831,472	47,872,950	47,843,220	47,607,436	47,500,660	47,646,181	47,604,984	47,630,094
+Depreciation	3,613,037	3,545,462	3,593,897	3,978,036	4,151,995	3,914,913	3,982,031	3,941,122
+Depletion	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258
+Amortization								
+Write Off								
-Capital Costs			-1,081,198	-4,708,535			-1,081,198	
Cash Flow	75,505,767	75,479,670	74,417,177	70,938,195	75,713,912	75,622,351	74,567,075	75,632,473

Year	16	17	18	19	20	Salvage
ZN REV	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	
CU REV	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	
PB REV	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	
AG REV	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	
AU REV	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	
GROSS REVENUE	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	
Total Revenue	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	10,179,533
-SMELTING CHARGES	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	
-Total Smelting Cost	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	
Net Smelt Ret.	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	
Net Revenue	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	
-OPER COSTS	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	
-Total Oper Costs	-51,491,160	-51,491,160	-51,491,160	-51,491,160	-51,491,160	
-MHT NPI	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	
-Total Sev. Ad Valor	-3,316,125	-3,316,125	-3,316,125	-3,316,125	-3,316,125	
-Dev, IDC						
-Depreciation	-3,651,609	-3,545,462	-3,748,187	-3,815,762	-2,062,170	-357,014
-Amortization						
-Write Off						-10,179,533
Before Depltn	101,949,490	102,055,637	101,852,912	101,785,337	103,538,929	-357,014
100% Limit	101,949,490	102,055,637	101,852,912	101,785,337	103,538,929	
Percent Depln	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	
Prev Exp Expl						
-Depletion	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	
-Total D,D & A	-27,712,867	-27,606,720	-27,809,444	-27,877,019	-26,123,428	-10,536,547
Taxable	77,888,232	77,994,379	77,791,654	77,724,080	79,477,671	-357,014
-Tax Due	-30,080,435	-30,121,429	-30,043,137	-30,017,040	-30,694,277	137,879
Net Income	47,807,797	47,872,950	47,748,518	47,707,040	48,783,395	-219,135
+Depreciation	3,651,609	3,545,462	3,748,187	3,815,762	2,062,170	357,014
+Depletion	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	
+Amortization						
+Write Off						10,179,533
-Capital Costs			-1,081,198			
Cash Flow	75,520,664	75,479,670	74,476,764	75,584,059	74,906,822	10,317,412

2b. DESCRIPTIVE MODEL OF KUROKO MASSIVE SULFIDE
By Donald A. Singer

APPROXIMATE SYNONYMS Noranda type, volcanogenic massive sulfide, felsic to intermediate volcanic type.

DESCRIPTION Copper- and zinc-bearing massive sulfide deposits in marine volcanic rocks of intermediate to felsic composition.

GENERAL REFERENCES Ishihara (1974), Franklin and others (1981), Hutchinson and others (1982), Ohmoto and Skinner (1983).

GEOLOGICAL ENVIRONMENT

Rock Types Marine rhyolite, dacite, and subordinate basalt and associated sediments, principally organic-rich mudstone or shale. Pyritic, siliceous shale. Some basalt.

Textures Flows, tuffs, pyroclastics, breccias, bedded sediment, and in some cases felsic domes.

Age Range Archean through Cenozoic.

Depositional Environment Hot springs related to marine volcanism, probably with anoxic marine conditions. Lead-rich deposits associated with abundant fine-grained volcanogenic sediments.

Tectonic Setting(s) Island arc. Local extensional tectonic activity, faults, or fractures. Archean greenstone belt.

Associated Deposit Types Epithermal quartz-adularia veins in Japan are regionally associated but younger than kuroko deposits. Volcanogenic Mn, Algoma Fe.

DEPOSIT DESCRIPTION

Mineralogy Upper stratiform massive zone (black ore) -- pyrite + sphalerite + chalcopyrite ± pyrrhotite ± galena ± barite ± tetrahedrite - tennantite ± bornite; lower stratiform massive zone (yellow ore) -- pyrite + chalcopyrite (gold and silver). Gahnite in metamorphosed deposits. Gypsum/anhydrite present in some deposits.

Texture/Structure Massive (>60 percent sulfides); in some cases, an underlying zone of ore stockwork, stringers or disseminated sulfides or sulfide-matrix breccia. Also slumped and redeposited ore with graded bedding.

Alteration Adjacent to and blanketing massive sulfide in some deposits -- zeolites, monmorillonite (and chlorite?); stringer (stockwork) zone -- silica, chlorite, and sericite; below stringer -- chlorite and albite. Cordierite and anthophyllite in footwall of metamorphosed deposits, graphitic schist in hanging wall.

Ore Controls Toward the more felsic top of volcanic or volcanic-sedimentary sequence. Near center of felsic volcanism. May be locally brecciated or have felsic dome nearby. Pyritic siliceous rock (exhalite) may mark horizon at which deposits occur. Proximity to deposits may be indicated by sulfide clasts in volcanic breccias. Some deposits may be gravity-transported and deposited in paleo depressions in the seafloor. In Japan, best deposits have mudstone in handing wall.

Weathering Yellow, red, and brown gossans. Gahnite in stream sediments near some deposits.

Geochemical Signature Gossan may be high in Pb and typically Au is present. Adjacent to deposit-enriched in Mg and Zn, depleted in Na. Within deposits -- Cu, Zn, Pb, Ba, As, Ag, Au, Se, Sn, Bi, Fe.

EXAMPLES

Kidd Creek, CNON	(Walker and others, 1975)
Mt. Lyell, AUTS	(Corbett, 1981)
Brittania, CNBC	(Payne and others, 1980)
Buchans, CNNF	(Swanson and others, 1981)

GRADE AND TONNAGE MODEL OF KUROKO MASSIVE SULFIDE
After Donald A. Singer and Dan L. Mosier

DATA REFERENCE Mosier and others (1983).

COMMENTS Includes all deposits listed by Mosier and others (1983) that are associated with felsic or intermediate volcanic rocks. Tonnage is correlated with copper grade ($r = -0.17$) and with gold grade ($r = -0.19$, $n = 238$). Zinc grade is correlated with lead grade ($r = 0.55$, $n = 184$) and with silver grade ($r = 0.52$, $n = 249$). Lead grade is correlated with silver ($r = 0.55$, $n = 153$) and with gold grade ($r = 0.34$, $n = 124$). Gold and silver grades are correlated ($r = 0.39$, $n = 227$). Upper ten percent of the deposits contain an minimum of 18 million tonnes at 8.7% Zn, 3.5% Cu, 1.9% Pb, 100 grams/tonne Ag, and 2.3 grams/tonne Au. Total contained metal: 1.6 million tonnes Zn, 0.63 million tonnes Cu, 0.34 tonnes Pb, 1.8 billion grams Ag and 41.4 million grams Au. Gross value in 1987 would have been $3.69 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.8 million tonnes per year or 5,000 tonnes/day.

Gross Value of Annual Production $369 million.

Net Present Value of 4% NSR $14.8 million times 6.144 is $90.9 million.

Comments, Assumptions, Specifications: VMST Haines Area
360 days/yr 10 YR Sublevel Stoping

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Volcanogenic Massive Sulfide (Kuroko)
Total Ore Tonnage: 18 mil mt
Mining Method: Sublevel Stoping
Beneficiation Method: Crush, S.A.G., & Float
Extraction Rate: 85%
Dilution/Waste Rate: 15%
Proposed Mine Life: 10 yrs
Proposed Daily Production: 5,000 MTPD
Maximum Ore Depth: 500 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 504 m, 15 km new road
Distance From Power: 50 km
Pre-Production Development:

Production Development:

Equipment: Jumbos, L.H.D./Truck, Conveyor, Hoists
Concentrate Production: 1100 MTPD - 3 ords

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: .2 m/day, 20 m^2
Raises & face-m/day & sqm: .2 m/day, 4 m^2
Inclines & face-m/day & sqm: .42 m/day, 20 m^2
Ore pockets/day-mtpd:
Stope preparation/day-stopes & sqm: .012, 8,000 m^2
Ore rate-mtpd: 5,000 MTPD
Hoist depth, rate & time-m, mtph, hr/day:
500 m, 325 MTPH, 16 hrs ; 500 m, 100 MTPH, 5 hrs
Haul distance-m: 650 m
Compressed air-cm/min: 350 m^3/min
Ventilation-cm/min: 17,000 m^3/min
Conveyor length & slope-km & %: 1 km, 10%
Water needs-cm/hr & hr/day: 15 m^3/hr, 16 hrs
Drainage, head-cm/day & m: 500 m 1500 m^3/day
Concentrate (dry) rate-mtpd: 1100 MTPD
Tails (dry) rate-mtpd: 3,900 MTPD
Production water needs-cm/day: 4,300 m^3/day
Portable Power needs-kW: -
Wastewater-L/sec: 6 L/s
Concentrate haul-km: 504 m
Employee housing-men: 100 men
Other:
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 5,000, 4,600, 4200 mTPD
Mill operating costs-$/day: 44,249
Working capital time-weeks: 13
Development time-days: _____
Shaft sinking & face-m & sqm: 500m 45m², 500m, 30m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 400m, 4m²
Inclines & face-m & sqm: 1,500m, 20m²
Ore pockets-mt: 7,500 mT
Stope preparations-stopes & sqm: 2, 8,000m²
Dewatering; head, dys & rate-m, dys & cm/day: 550m, 200 days, 1,500 m³/day
Rehabilitation (total tonnage)-mt: 5,000 mTPD
Contractors-1 or 2: 1
Mine operating costs-$/day: 126,454
Access roads, length & width-km & m: 15km, 15m
Airstrip length & width-m: 1200 m, 18m
Townsite cost-$: 2,793,150
Powerline length & power-km & mW: 50 km, 13.5mW
Dike & Dam needs-cm/fill: 30,000 m³
Climate/Weather factors: Seve-e
Other: _____
Other: _____

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 126,454
Mining Costs-$/yr: 45,523,440
Mining Costs-$/mt: 25.29
Milling Costs-$/day: 44,249
Milling Costs-$/yr: 15,929,640
Milling Costs-$/mt: 8.85
Infrastructure Costs-$/day: 26,852
Infrastructure Costs-$/yr: 9,666,722
Infrastructure Costs-$/mt: 5.37
Total Operating Costs-$/day: 197,555
Total Operating Costs-$/yr: 71,119,800
Total Operating Costs-$/mt: 39.51
Other: _____
Other: _____

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 11,507,314
Heavy Equipment (fixed life)-$: 11,097,145 *
Mine Rehabilitation-$: 1,928,272 *
Engr. & Const. Mgmt.-$: 6,900,075 *
Other: _____
Remaining Mine Capital-$: 32,512,438
Total Mine Capital Cost-$: 63945,244

MILL CAPITAL COSTS:

Mill Working Capital-$: 4,026,659
Light Vehicles (short life)-$: 1,377,098 *
Other:
Remaining Mill Capital-$: 22,670,741 ~
Total Mill Capital Cost-$: 28,074,498

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 13,595,700 *
Other:
Remaining Infrastructure Capital-$: 18,767,905 ~
Total Infrastructure Capital-$: 32,363,605

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 15,533,973 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 73,951,084 *
Sum of Total Mine, Mill & Infr. Costs-$: 124,383,347
Exploration Cost-$: 12,438,335 *

Overall Capital Cost-$: 136,821,682
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:VMSH2.SEE Date:07/07/93 Time:08:22:15

Project Definition

Type of Analysis ..... Mining
Project Start Date 09/87
End of Time Zero 09/87
Evaluation Date 09/87
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	09/87	11,097,145	MACRS	Mid Year	10.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	09/87	1,928,272	MACRS	Mid Year	10.0	0		0	.....
3	09/87	6,900,075	MACRS	Mid Year	10.0	0		0	.....
4	09/87	32,512,438	MACRS	Mid Year	10.0	0		0	.....
5	09/87	11,507,314	WC	Mid Year	10.0	0		0	.....
6	09/87	1,377,098	MACRS	Mid Year	4.0	0		0	.....
7	09/91	1,377,098	MACRS	Mid Year	4.0	0		0	.....
8	09/95	1,377,098	MACRS	Mid Year	4.0	0		0	.....
9	09/87	22,670,741	MACRS	Mid Year	10.0	0		0	.....
10	09/87	4,026,659	WC	Mid Year	10.0	0		0	.....
11	09/87	13,595,700	MACRS	Mid Year	10.0	0		0	.....
12	09/87	18,767,905	MACRS	Mid Year	10.0	0		0	.....
13	09/87	12,438,335	EXPL-X	Mid Year	10.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
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#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	10/87	End	1,800,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	10/87	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	10/87	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	10/87	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	10/87	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	10/87	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	10/87	End	803.56	Constant	0.000
S8	CU $/TONNE	N/A:	10/87	End	1,756.02	Constant	0.000
S9	PB $/TONNE	N/A:	10/87	End	658.78	Constant	0.000
S10	AG $/TROY OZ	N/A:	10/87	End	7.86	Constant	0.000
S11	AU $/TROY OZ	N/A:	10/87	End	461.26	Constant	0.000
S12	MINING COSTS	Annual:	10/87	End	45,523,440.00	Constant	0.000
S13	MILLING COSTS	Annual:	10/87	End	15,929,640.00	Constant	0.000
S14	INFRA COSTS	Annual:	10/87	End	9,666,722.00	Constant	0.000
S15	TRANS COSTS	Annual:	10/87	End	10,800,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	10/87	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	10/87	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	10/87	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	10/87	End	0.04	Constant	0.000

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* Project Equations *
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General Equations
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E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

Cash Flows

NPV =$704,245,199 DCFROR=106.7% GROR = 32.5% PWROR =106.7% Pay Back= 0.93 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		96,265,684	96,265,684	96,265,684	96,265,684	96,265,684	96,265,684	96,265,684
CU REV		84,631,384	84,631,384	84,631,384	84,631,384	84,631,384	84,631,384	84,631,384
PB REV		17,235,661	17,235,661	17,235,661	17,235,661	17,235,661	17,235,661	17,235,661
AG REV		34,634,304	34,634,304	34,634,304	34,634,304	34,634,304	34,634,304	34,634,304
AU REV		47,001,471	47,001,471	47,001,471	47,001,471	47,001,471	47,001,471	47,001,471
GROSS REVENUE		279,768,505	279,768,505	279,768,505	279,768,505	279,768,505	279,768,505	279,768,505
Total Revenue		279,768,505	279,768,505	279,768,505	279,768,505	279,768,505	279,768,505	279,768,505
-SMELTING CHARGES		-2,797,685	-2,797,685	-2,797,685	-2,797,685	-2,797,685	-2,797,685	-2,797,685
-Total Smelting Cost		-2,797,685	-2,797,685	-2,797,685	-2,797,685	-2,797,685	-2,797,685	-2,797,685
Net Smelt Ret.		276,970,820	276,970,820	276,970,820	276,970,820	276,970,820	276,970,820	276,970,820
-MHT ROYALTY		-10,646,833	-10,646,833	-10,646,833	-10,646,833	-10,646,833	-10,646,833	-10,646,833
-Total Royalties		-10,646,833	-10,646,833	-10,646,833	-10,646,833	-10,646,833	-10,646,833	-10,646,833
Net Revenue		266,323,987	266,323,987	266,323,987	266,323,987	266,323,987	266,323,987	266,323,987
-OPER COSTS		-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802
-Total Oper Costs		-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802
-Dev, IDC	-8,706,835							
-Depreciation	-11,091,502	-19,861,421	-15,734,214	-12,552,943	-10,334,988	-8,440,128	-7,301,509	-7,215,440
-Amortization	-62,192	-746,300	-746,300	-746,300	-746,300	-684,108		
-Write Off								
Before Depltn	-19,860,528	163,796,464	167,923,671	171,104,942	173,322,897	175,279,949	177,102,676	177,188,745
100% Limit		163,796,464	167,923,671	171,104,942	173,322,897	175,279,949	177,102,676	177,188,745
Percent Depln		39,948,598	39,948,598	39,948,598	39,948,598	39,948,598	39,948,598	39,948,598
Prev Exp Expl		8,706,835						
-Depletion		-31,241,764	-39,948,598	-39,948,598	-39,948,598	-39,948,598	-39,948,598	-39,948,598
-Total D,D & A	-19,860,528	-51,849,485	-56,429,112	-53,247,842	-51,029,886	-49,072,834	-47,250,107	-47,164,038
Taxable	-19,860,528	132,554,700	127,975,073	131,156,344	133,374,299	135,331,351	137,154,078	137,240,147
-Tax Due	6,752,580	-45,068,598	-43,511,525	-44,593,157	-51,509,154	-52,264,968	-52,968,905	-53,002,145
Net Income	-13,107,949	87,486,102	84,463,548	86,563,187	81,865,145	83,066,383	84,185,173	84,238,002
+Depreciation	11,091,502	19,861,421	15,734,214	12,552,943	10,334,988	8,440,128	7,301,509	7,215,440
+Depletion		31,241,764	39,948,598	39,948,598	39,948,598	39,948,598	39,948,598	39,948,598
+Amortization	62,192	746,300	746,300	746,300	746,300	684,108		
+Write Off								
-Capital Costs	-128114848				-1,377,098			
Cash Flow	-130069102	139,335,587	140,892,660	139,811,028	131,517,933	132,139,217	131,435,280	131,402,040

Year	8	9	10	Salvage
ZN REV	96,265,684	96,265,684	96,265,684	
CU REV	84,631,384	84,631,384	84,631,384	
PB REV	17,235,661	17,235,661	17,235,661	
AG REV	34,634,304	34,634,304	34,634,304	
AU REV	47,001,471	47,001,471	47,001,471	
GROSS REVENUE	279,768,505	279,768,505	279,768,505	
Total Revenue	279,768,505	279,768,505	279,768,505	15,533,973
-SMELTING CHARGES	-2,797,685	-2,797,685	-2,797,685	
-Total Smelting Cost	-2,797,685	-2,797,685	-2,797,685	
Net Smelt Ret.	276,970,820	276,970,820	276,970,820	
-MHT ROYALTY	-10,646,833	-10,646,833	-10,646,833	
-Total Royalties	-10,646,833	-10,646,833	-10,646,833	
Net Revenue	266,323,987	266,323,987	266,323,987	
-OPER COSTS	-81,919,802	-81,919,802	-81,919,802	
-Total Oper Costs	-81,919,802	-81,919,802	-81,919,802	
-Dev, IDC				
-Depreciation	-7,473,646	-7,559,715	-3,779,857	-258,206
-Amortization				
-Write Off				-15,533,973
Before Depltn	176,930,539	176,844,470	180,624,328	-258,206
100% Limit	176,930,539	176,844,470	180,624,328	
Percent Depln	39,948,598	39,948,598	39,948,598	
Prev Exp Expl				
-Depletion	-39,948,598	-39,948,598	-39,948,598	
-Total D,D & A	-47,422,244	-47,508,313	-43,728,455	-15,792,179
Taxable	136,981,941	136,895,872	140,675,730	-258,206
-Tax Due	-52,902,426	-52,869,186	-54,328,967	99,719
Net Income	84,079,515	84,026,686	86,346,763	-158,487
+Depreciation	7,473,646	7,559,715	3,779,857	258,206
+Depletion	39,948,598	39,948,598	39,948,598	
+Amortization				
+Write Off				15,533,973
-Capital Costs	-1,377,098			
Cash Flow	130,124,662	131,534,999	130,075,218	15,633,692

List of Assumptions File:VMSH2.SEE Date:07/26/93 Time:16:59:48

VMS (KOROKO), HAINES AREA, SUBLEVEL STOPING, 10 YR MINE LIFE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

	Minimum ROR,Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion:Constant Rate	: $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	11,097,145	MACRS	Mid Year	10.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,928,272	MACRS	Mid Year	10.0	0		0	.....
3	04/89	6,900,075	MACRS	Mid Year	10.0	0		0	.....
4	04/89	32,512,438	MACRS	Mid Year	10.0	0		0	.....
5	04/89	11,507,314	WC	Mid Year	10.0	0		0	.....
6	04/89	1,377,098	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,377,098	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,377,098	MACRS	Mid Year	4.0	0		0	.....
9	04/89	22,670,741	MACRS	Mid Year	10.0	0		0	.....
10	04/89	4,026,659	WC	Mid Year	10.0	0		0	.....
11	04/89	13,595,700	MACRS	Mid Year	10.0	0		0	.....
12	04/89	18,767,905	MACRS	Mid Year	10.0	0		0	.....
13	04/89	12,438,335	EXPL-X	Mid Year	10.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,800,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	45,523,440.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	15,929,640.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	9,666,722.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	10,800,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *

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General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VMS (KOROKO), HAINES AREA, SUBLEVEL STOPING, 10 YR MINE LIFE

Cash Flows

NPV =$882,024,399 DCFROR=130.4% GROR = 35.1% PWROR =130.4% Pay Back= 0.76 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
ZN REV		144,297,896	144,297,896	144,297,896	144,297,896	144,297,896	144,297,896	144,297,896
CU REV		107,110,496	107,110,496	107,110,496	107,110,496	107,110,496	107,110,496	107,110,496
PB REV		20,145,510	20,145,510	20,145,510	20,145,510	20,145,510	20,145,510	20,145,510
AG REV		18,022,176	18,022,176	18,022,176	18,022,176	18,022,176	18,022,176	18,022,176
AU REV		34,481,264	34,481,264	34,481,264	34,481,264	34,481,264	34,481,264	34,481,264
GROSS REVENUE		324,057,342	324,057,342	324,057,342	324,057,342	324,057,342	324,057,342	324,057,342
Total Revenue		324,057,342	324,057,342	324,057,342	324,057,342	324,057,342	324,057,342	324,057,342
-SMELTING CHARGES		-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573
-Total Smelting Cost		-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573
Net Smelt Ret.		320,816,768	320,816,768	320,816,768	320,816,768	320,816,768	320,816,768	320,816,768
-MHT ROYALTY		-12,400,671	-12,400,671	-12,400,671	-12,400,671	-12,400,671	-12,400,671	-12,400,671
-Total Royalties		-12,400,671	-12,400,671	-12,400,671	-12,400,671	-12,400,671	-12,400,671	-12,400,671
Net Revenue		308,416,097	308,416,097	308,416,097	308,416,097	308,416,097	308,416,097	308,416,097
-OPER COSTS		-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802
-Total Oper Costs		-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802
-Dev, IDC	-8,706,835							
-Depreciation	-11,091,502	-19,861,421	-16,078,488	-13,069,355	-10,248,919	-8,095,853	-7,473,646	-7,559,715
-Amortization	-2,238,900	-746,300	-746,300					
-Write Off								
Before Depltn	-22,037,237	205,888,574	209,671,507	213,426,940	216,247,376	218,400,442	219,022,649	218,936,581
100% Limit		205,888,574	209,671,507	213,426,940	216,247,376	218,400,442	219,022,649	218,936,581
Percent Depln		46,262,415	46,262,415	46,262,415	46,262,415	46,262,415	46,262,415	46,262,415
Prev Exp Expl		8,706,835						
-Depletion		-37,555,580	-46,262,415	-46,262,415	-46,262,415	-46,262,415	-46,262,415	-46,262,415
-Total D,D & A	-22,037,237	-58,163,302	-63,087,203	-59,331,770	-56,511,334	-54,358,268	-53,736,061	-53,822,129
Taxable	-22,037,237	168,332,994	163,409,093	167,164,526	169,984,961	172,138,028	172,760,235	172,674,166
-Tax Due	7,492,661	-57,233,218	-55,559,091	-56,835,939	-65,648,192	-66,479,706	-66,720,003	-66,686,763
Net Income	-14,544,576	111,099,776	107,850,001	110,328,587	104,336,769	105,658,321	106,040,232	105,987,403
+Depreciation	11,091,502	19,861,421	16,078,488	13,069,355	10,248,919	8,095,853	7,473,646	7,559,715
+Depletion		37,555,580	46,262,415	46,262,415	46,262,415	46,262,415	46,262,415	46,262,415
+Amortization	2,238,900	746,300	746,300					
+Write Off								
-Capital Costs	-128114848		-1,377,098				-1,377,098	
Cash Flow	-129329021	169,263,078	169,560,106	169,660,357	160,848,103	160,016,589	158,399,195	159,809,532

Year	1999	2000	2001	Salvage
ZN REV	144,297,896	144,297,896	144,297,896	
CU REV	107,110,496	107,110,496	107,110,496	
PB REV	20,145,510	20,145,510	20,145,510	
AG REV	18,022,176	18,022,176	18,022,176	
AU REV	34,481,264	34,481,264	34,481,264	
GROSS REVENUE	324,057,342	324,057,342	324,057,342	
Total Revenue	324,057,342	324,057,342	324,057,342	15,533,973
-SMELTING CHARGES	-3,240,573	-3,240,573	-3,240,573	
-Total Smelting Cost	-3,240,573	-3,240,573	-3,240,573	
Net Smelt Ret.	320,816,768	320,816,768	320,816,768	
-MHT ROYALTY	-12,400,671	-12,400,671	-12,400,671	
-Total Royalties	-12,400,671	-12,400,671	-12,400,671	
Net Revenue	308,416,097	308,416,097	308,416,097	
-OPER COSTS	-81,919,802	-81,919,802	-81,919,802	
-Total Oper Costs	-81,919,802	-81,919,802	-81,919,802	
-Dev, IDC				
-Depreciation	-7,301,509	-7,215,440	-3,607,720	
-Amortization				
-Write Off				-15,533,973
Before Depltn	219,194,786	219,280,855	222,888,575	
100% Limit	219,194,786	219,280,855	222,888,575	
Percent Depln	46,262,415	46,262,415	46,262,415	
Prev Exp Expl				
-Depletion	-46,262,415	-46,262,415	-46,262,415	
-Total D,D & A	-53,563,924	-53,477,855	-49,870,135	-15,533,973
Taxable	172,932,372	173,018,440	176,626,161	
-Tax Due	-66,786,482	-66,819,722	-68,213,023	
Net Income	106,145,890	106,198,719	108,413,137	
+Depreciation	7,301,509	7,215,440	3,607,720	
+Depletion	46,262,415	46,262,415	46,262,415	
+Amortization				
+Write Off				15,533,973
-Capital Costs				
Cash Flow	159,709,813	159,676,574	158,283,272	15,533,973

List of Assumptions File:VMSH2.SEE Date:11/18/93 Time:10:41:00

VMS (KOROKO), HAINES AREA, SUBLEVEL STOPING, 10 YR MINE LIFE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	11,097,145	MACRS	Mid Year	10.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,928,272	MACRS	Mid Year	10.0	0			0 .....
3	04/89	6,900,075	MACRS	Mid Year	10.0	0			0 .....
4	04/89	32,512,438	MACRS	Mid Year	10.0	0			0 .....
5	04/89	11,507,314	WC	Mid Year	10.0	0			0 .....
6	04/89	1,377,098	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,377,098	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,377,098	MACRS	Mid Year	4.0	0			0 .....
9	04/89	22,670,741	MACRS	Mid Year	10.0	0			0 .....
10	04/89	4,026,659	WC	Mid Year	10.0	0			0 .....
11	04/89	13,595,700	MACRS	Mid Year	10.0	0			0 .....
12	04/89	18,767,905	MACRS	Mid Year	10.0	0			0 .....
13	04/89	12,438,335	EXPL-X	Mid Year	10.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,800,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	45,523,440.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	15,929,640.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	9,666,722.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	10,800,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****

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*           Project Equations              *
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General Equations
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E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VMS (KOROKO), HAINES AREA, SUBLEVEL STOPING, 10 YR MINE LIFE

Cash Flows

NPV =$906,187,575 DCFROR=133.5% GROR = 35.4% PWROR =133.5% Pay Back= 0.75 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		144,297,896	144,297,896	144,297,896	144,297,896	144,297,896	144,297,896	144,297,896
CU REV		107,110,496	107,110,496	107,110,496	107,110,496	107,110,496	107,110,496	107,110,496
PB REV		20,145,510	20,145,510	20,145,510	20,145,510	20,145,510	20,145,510	20,145,510
AG REV		18,022,176	18,022,176	18,022,176	18,022,176	18,022,176	18,022,176	18,022,176
AU REV		34,481,264	34,481,264	34,481,264	34,481,264	34,481,264	34,481,264	34,481,264
GROSS REVENUE		324,057,342	324,057,342	324,057,342	324,057,342	324,057,342	324,057,342	324,057,342
Total Revenue		324,057,342	324,057,342	324,057,342	324,057,342	324,057,342	324,057,342	324,057,342
-SMELTING CHARGES		-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573
-Total Smelting Cost		-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573	-3,240,573
Net Smelt Ret.		320,816,768	320,816,768	320,816,768	320,816,768	320,816,768	320,816,768	320,816,768
Net Revenue		320,816,768	320,816,768	320,816,768	320,816,768	320,816,768	320,816,768	320,816,768
-OPER COSTS		-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802
-Total Oper Costs		-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802	-81,919,802
-MHT NPI		-7,264,126	-7,264,126	-7,264,126	-7,264,126	-7,264,126	-7,264,126	-7,264,126
-Total Sev. Ad Valor		-7,264,126	-7,264,126	-7,264,126	-7,264,126	-7,264,126	-7,264,126	-7,264,126
-Dev, IDC	-8,706,835							
-Depreciation	-11,091,502	-19,861,421	-16,078,488	-13,069,355	-10,248,919	-8,095,853	-7,473,646	-7,559,715
-Amortization	-2,238,900	-746,300	-746,300					
-Write Off								
Before Depltn	-22,037,237	211,025,118	214,808,052	218,563,485	221,383,920	223,536,987	224,159,194	224,073,125
100% Limit		211,025,118	214,808,052	218,563,485	221,383,920	223,536,987	224,159,194	224,073,125
Percent Depln		48,122,515	48,122,515	48,122,515	48,122,515	48,122,515	48,122,515	48,122,515
Prev Exp Expl		8,706,835						
-Depletion		-39,415,681	-48,122,515	-48,122,515	-48,122,515	-48,122,515	-48,122,515	-48,122,515
-Total D,D & A	-22,037,237	-60,023,402	-64,947,303	-61,191,870	-58,371,435	-56,218,368	-55,596,161	-55,682,230
Taxable	-22,037,237	171,609,438	166,685,536	170,440,970	173,261,405	175,414,471	176,036,678	175,950,610
-Tax Due	7,492,661	-58,347,209	-56,673,082	-57,949,930	-66,913,555	-67,745,069	-67,985,365	-67,952,126
Net Income	-14,544,576	113,262,229	110,012,454	112,491,040	106,347,851	107,669,403	108,051,313	107,998,484
+Depreciation	11,091,502	19,861,421	16,078,488	13,069,355	10,248,919	8,095,853	7,473,646	7,559,715
+Depletion		39,415,681	48,122,515	48,122,515	48,122,515	48,122,515	48,122,515	48,122,515
+Amortization	2,238,900	746,300	746,300					
+Write Off								
-Capital Costs	-128114848		-1,377,098				-1,377,098	
Cash Flow	-129329021	173,285,631	173,582,660	173,682,910	164,719,285	163,887,771	162,270,377	163,680,714

Year	8	9	10	Salvage
ZN REV	144,297,896	144,297,896	144,297,896	
CU REV	107,110,496	107,110,496	107,110,496	
PB REV	20,145,510	20,145,510	20,145,510	
AG REV	18,022,176	18,022,176	18,022,176	
AU REV	34,481,264	34,481,264	34,481,264	
GROSS REVENUE	324,057,342	324,057,342	324,057,342	
Total Revenue	324,057,342	324,057,342	324,057,342	15,533,973
-SMELTING CHARGES	-3,240,573	-3,240,573	-3,240,573	
-Total Smelting Cost	-3,240,573	-3,240,573	-3,240,573	
Net Smelt Ret.	320,816,768	320,816,768	320,816,768	
Net Revenue	320,816,768	320,816,768	320,816,768	
-OPER COSTS	-81,919,802	-81,919,802	-81,919,802	
-Total Oper Costs	-81,919,802	-81,919,802	-81,919,802	
-MHT NPI	-7,264,126	-7,264,126	-7,264,126	
-Total Sev. Ad Valor	-7,264,126	-7,264,126	-7,264,126	
-Dev, IDC				
-Depreciation	-7,301,509	-7,215,440	-3,607,720	
-Amortization				
-Write Off				-15,533,973
Before Depltn	224,331,331	224,417,400	228,025,120	
100% Limit	224,331,331	224,417,400	228,025,120	
Percent Depln	48,122,515	48,122,515	48,122,515	
Prev Exp Expl				
-Depletion	-48,122,515	-48,122,515	-48,122,515	
-Total D,D & A	-55,424,024	-55,337,956	-51,730,235	-15,533,973
Taxable	176,208,816	176,294,884	179,902,605	
-Tax Due	-68,051,845	-68,085,084	-69,478,386	
Net Income	108,156,971	108,209,800	110,424,219	
+Depreciation	7,301,509	7,215,440	3,607,720	
+Depletion	48,122,515	48,122,515	48,122,515	
+Amortization				
+Write Off				15,533,973
-Capital Costs				
Cash Flow	163,580,995	163,547,756	162,154,454	15,533,973

2b. DESCRIPTIVE MODEL OF KUROKO MASSIVE SULFI
By Donald A. Singer

APPROXIMATE SYNONYMS Noranda type, volcanogenic massive sulfide, felsic to intermediate volcanic type.

DESCRIPTION Copper- and zinc-bearing massive sulfide deposits in marine volcanic rocks of intermediate to felsic composition.

GENERAL REFERENCES Ishihara (1974), Franklin and others (1981), Hutchinson and others (1982), Ohmoto and Skinner (1983).

GEOLOGICAL ENVIRONMENT

Rock Types Marine rhyolite, dacite, and subordinate basalt and associated sediments, principally organic-rich mudstone or shale. Pyritic, siliceous shale. Some basalt.

Textures Flows, tuffs, pyroclastics, breccias, bedded sediment, and in some cases felsic domes.

Age Range Archean through Cenozoic.

Depositional Environment Hot springs related to marine volcanism, probably with anoxic marine conditions. Lead-rich deposits associated with abundant fine-grained volcanogenic sediments.

Tectonic Setting(s) Island arc. Local extensional tectonic activity, faults, or fractures. Archean greenstone belt.

Associated Deposit Types Epithermal quartz-adularia veins in Japan are regionally associated but younger than kuroko deposits. Volcanogenic Mn, Algoma Fe.

DEPOSIT DESCRIPTION

Mineralogy Upper stratiform massive zone (black ore) -- pyrite + sphalerite + chalcopyrite ± pyrrhotite ± galena ± barite ± tetrahedrite - tennantite ± bornite; lower stratiform massive zone (yellow ore) -- pyrite + chalcopyrite (gold and silver). Gahnite in metamorphosed deposits. Gypsum/anhydrite present in some deposits.

Texture/Structure Massive (>60 percent sulfides); in some cases, an underlying zone of ore stockwork, stringers or disseminated sulfides or sulfide-matrix breccia. Also slumped and redeposited ore with graded bedding.

Alteration Adjacent to and blanketing massive sulfide in some deposits -- zeolites, monmorillonite (and chlorite?); stringer (stockwork) zone -- silica, chlorite, and sericite; below stringer -- chlorite and albite. Cordierite and anthophyllite in footwall of metamorphosed deposits, graphitic schist in hanging wall.

Ore Controls Toward the more felsic top of volcanic or volcanic-sedimentary sequence. Near center of felsic volcanism. May be locally brecciated or have felsic dome nearby. Pyritic siliceous rock (exhalite) may mark horizon at which deposits occur. Proximity to deposits may be indicated by sulfide clasts in volcanic breccias. Some deposits may be gravity-transported and deposited in paleo depressions in the seafloor. In Japan, best deposits have mudstone in handing wall.

Weathering Yellow, red, and brown gossans. Gahnite in stream sediments near some deposits.

Geochemical Signature Gossan may be high in Pb and typically Au is present. Adjacent to deposit-enriched in Mg and Zn, depleted in Na. Within deposits -- Cu, Zn, Pb, Ba, As, Ag, Au, Se, Sn, Bi, Fe.

EXAMPLES

Kidd Creek, CNON	(Walker and others, 1975)
Mt. Lyell, AUTS	(Corbett, 1981)
Brittania, CNBC	(Payne and others, 1980)
Buchans, CNNF	(Swanson and others, 1981)

GRADE AND TONNAGE MODEL OF KUROKO MASSIVE SULFIDE
After Donald A. Singer and Dan L. Mosier

DATA REFERENCE Mosier and others (1983).

COMMENTS Includes all deposits listed by Mosier and others (1983) that are associated with felsic or intermediate volcanic rocks. Tonnage is correlated with copper grade ($r = -0.17$) and with gold grade ($r = -0.19$, $n = 238$). Zinc grade is correlated with lead grade ($r = 0.55$, $n = 184$) and with silver grade ($r = 0.52$, $n = 249$). Lead grade is correlated with silver ($r = 0.55$, $n = 153$) and with gold grade ($r = 0.34$, $n = 124$). Gold and silver grades are correlated ($r = 0.39$, $n = 227$). Upper ten percent of the deposits contain an minimum of 18 million tonnes at 8.7% Zn, 3.5% Cu, 1.9% Pb, 100 grams/tonne Ag, and 2.3 grams/tonne Au. Total contained metal: 1.6 million tonnes Zn, 0.63 million tonnes Cu, 0.34 tonnes Pb, 1.8 billion grams Ag and 41.4 million grams Au. Gross value in 1987 would have been $3.69 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.8 million tonnes per year or 5,000 tonnes/day.

Gross Value of Annual Production $369 million.

Net Present Value of 4% NSR $14.8 million times 6.144 is $90.9 million.

Comments, Assumptions, Specifications: VMS, Haines Area
360 day/yr operation Kuroko-type

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Volcanogenic Massive Sulfide (Kuroko-type)
Total Ore Tonnage: 18 mil mtons
Mining Method: Room & Pillar
Beneficiation Method: Crush, Grind & Float
Extraction Rate: 85%
Dilution/Waste Rate: 20
Proposed Mine Life: 20 yrs
Proposed Daily Production: 2,100 MTPD
Maximum Ore Depth: 500 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 50 km, 15 km new road
Distance From Power: 50 km
Pre-Production Development: Shaft, drift, ore pocket, etc.
Production Development:

Equipment: Jumbos, L.H.Ds, Conveyor, Drum Hoist
Concentrate Production: 550 MTPD - 3 products

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: .75 m/day - 15 m²
Raises & face-m/day & sqm: -
Inclines & face-m/day & sqm: -
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .0014 panel/day, 40,000 m²
Ore rate-mtpd: 2,100 MTPH
Hoist depth, rate & time-m, mtph, hr/day: 500 m, 175 MTPH, 16 hrs
Haul distance-m: 650 m
Compressed air-cm/min: 60 m³/min
Ventilation-cm/min: 4000 m³/min
Conveyor length & slope-km & %: 1 km, 10%
Water needs-cm/hr & hr/day: 7 m³/hr, 16 hrs
Drainage, head-cm/day & m: 1,500 m³/day, 500 m
Concentrate (dry) rate-mtpd: 550 MTPD - 3 p-ods.
Tails (dry) rate-mtpd: 1,550 MTPD
Production water needs-cm/day: 1,800 m³/day
Portable Power needs-kW: -
Wastewater-L/sec: 3 L/s
Concentrate haul-km: 50 km
Employee housing-men: 50 men
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 2,100, 1900 1,700 MTPD
Mill operating costs-$/day: $30,045
Working capital time-weeks: 13 wks
Development time-days:
Shaft sinking & face-m & sqm: 500m 45m²
Drifting & face-m & sqm: 500m 15m²
Raises & face-m & sqm: 500m, 4m²
Inclines & face-m & sqm: -
Ore pockets-mt: 3,200 mt
Stope preparations-stopes & sqm: 1- 40,000 m² panel
Dewatering; head, dys & rate-m, dys & cm/day:
1,500 m³/day, 200 days 500m
Rehabilitation (total tonnage)-mt: 18 mi:1 mt
Contractors-1 or 2: 1
Mine operating costs-$/day: 66,675
Access roads, length & width-km & m: 15km, 15m
Airstrip length & width-m: 1,200m, 18m
Townsite cost-$: $1,396,575
Powerline length & power-km & mW: 50km, 7.5mW
Dike & Dam needs-cm/fill: 20,000 m³
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 66,675
Mining Costs-$/yr: 24,003,000
Mining Costs-$/mt: 31.75
Milling Costs-$/day: 30,045
Milling Costs-$/yr: 10,816,200
Milling Costs-$/mt: 14.31
Infrastructure Costs-$/day: 14,820
Infrastructure Costs-$/yr: 5,335,200
Infrastructure Costs-$/mt: 7.06
Total Operating Costs-$/day: 111,540
Total Operating Costs-$/yr: 40,154,400
Total Operating Costs-$/mt: 53.11
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 6,067,425
Heavy Equipment (fixed life)-$: 4,019,842 *
Mine Rehabilitation-$: 1,438,132 *
Engr. & Const. Mgmt.-$: 6,965,815 *
Other:
Remaining Mine Capital-$: 17,381,965
Total Mine Capital Cost-$: 35,873,179

MILL CAPITAL COSTS:

Mill Working Capital-$: 2,734,095
Light Vehicles (short life)-$: 1,017,369 *
Other:
Remaining Mill Capital-$: 14,890,954 ~
Total Mill Capital Cost-$: 18,642,420

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 8,154,280 *
Other:
Remaining Infrastructure Capital-$: 15,081,835 ~
Total Infrastructure Capital-$: 23,236,115

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 8,801,520 *
Sum of Remaining Mine, Mill &
Infr. Costs (sum of ~)-$: 47,354,755 *
Sum of Total Mine, Mill &
Infr. Costs-$: 77,751,714
Exploration Cost-$: 7,775,170 *

Overall Capital Cost-$: 85,526,885
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:VMSHRP.SEE Date:07/26/93 Time:17:52:55

VMS HAINES AREA, ROOM & PILLAR

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200
2008	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200
2009	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200
2010	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200
2011	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	4,019,842	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/02	4,019,842	MACRS	Mid Year	10.0	0			0 .....
3	04/89	1,438,132	MACRS	Mid Year	23.0	0			0 .....
4	04/89	6,965,815	MACRS	Mid Year	23.0	0			0 .....
5	04/89	6,067,425	WC	Mid Year	23.0	0			0 .....
6	04/89	1,017,369	MACRS	Mid Year	4.0	0			0 .....
7	09/91	1,017,369	MACRS	Mid Year	4.0	0			0 .....
8	09/95	1,017,369	MACRS	Mid Year	4.0	0			0 .....
9	04/07	1,017,369	MACRS	Mid Year	4.0	0			0 .....
10	04/89	2,734,095	WC	Mid Year	23.0	0			0 .....
11	04/89	14,890,954	MACRS	Mid Year	23.0	0			0 .....
12	04/89	8,154,280	MACRS	Mid Year	23.0	0			0 .....
13	04/89	7,775,170	EXPL-X	Mid Year	23.0	0			0 .....
14	04/89	17,381,965	MACRS	Mid Year	23.0	0			0 .....
15	04/99	1,017,369	MACRS	Mid Year	4.0	0			0 .....
16	04/03	1,017,369	MACRS	Mid Year	4.0	0			0 .....
17	04/11	1,017,369	MACRS	Mid Year	4.0	0			0 .....
18	04/89	15,081,835	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	756,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	24,003,000.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	10,816,200.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	5,335,200.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VMS HAINES AREA, ROOM & PILLAR

Cash Flows

NPV =$435,079,430 DCFROR= 74.3% GROR = 20.5% PWROR = 74.3% Pay Back= 1.34 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
ZN REV		60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116
CU REV		44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408
PB REV		8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114
AG REV		7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314
AU REV		14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131
GROSS REVENUE		136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083
Total Revenue		136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083
-SMELTING CHARGES		-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041
-Total Smelting Cost		-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041
Net Smelt Ret.		134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043
-MHT ROYALTY		-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722
-Total Royalties		-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722
Net Revenue		129,569,321	129,569,321	129,569,321	129,569,321	129,569,321	129,569,321	129,569,321
-OPER COSTS		-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400
-Total Oper Costs		-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400
-Dev, IDC	-5,442,619							
-Depreciation	-2,323,100	-4,112,717	-3,643,378	-3,441,893	-3,506,184	-3,452,977	-3,217,199	-3,115,518
-Amortization	-1,399,531	-466,510	-466,510					
-Write Off								
Before Depltn	-9,165,250	79,435,694	79,905,032	80,573,027	80,508,737	80,561,944	80,797,722	80,899,403
100% Limit		79,435,694	79,905,032	80,573,027	80,508,737	80,561,944	80,797,722	80,899,403
Percent Depln		19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398
Prev Exp Expl		5,442,619						
-Depletion		-13,992,779	-19,435,398	-19,435,398	-19,435,398	-19,435,398	-19,435,398	-19,435,398
-Total D,D & A	-9,165,250	-18,572,006	-23,545,287	-22,877,292	-22,941,582	-22,888,375	-22,652,597	-22,550,916
Taxable	-9,165,250	65,442,914	60,469,634	61,137,629	61,073,339	61,126,546	61,362,324	61,464,004
-Tax Due	3,116,185	-22,250,591	-20,559,676	-20,786,794	-23,586,524	-23,607,072	-23,698,130	-23,737,399
Net Income	-6,049,065	43,192,324	39,909,959	40,350,835	37,486,816	37,519,474	37,664,194	37,726,606
+Depreciation	2,323,100	4,112,717	3,643,378	3,441,893	3,506,184	3,452,977	3,217,199	3,115,518
+Depletion		13,992,779	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398
+Amortization	1,399,531	466,510	466,510					
+Write Off								
-Capital Costs	-81,101,632				-1,017,369			
Cash Flow	-83,428,066	61,764,330	63,455,245	63,228,127	59,411,028	60,407,849	60,316,791	60,277,522

Year	1999	2000	2001	2002	2003	2004	2005	2006
ZN REV	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116
CU REV	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408
PB REV	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114
AG REV	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314
AU REV	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131
GROSS REVENUE	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083
Total Revenue	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083
-SMELTING CHARGES	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041
-Total Smelting Cost	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041
Net Smelt Ret.	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043
-MRT ROYALTY	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722
-Total Royalties	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722
Net Revenue	129,569,321	129,569,321	129,569,321	129,569,321	129,569,321	129,569,321	129,569,321	129,569,321
-OPER COSTS	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400
-Total Oper Costs	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400
-Dev, IDC								
-Depreciation	-3,306,275	-3,369,861	-3,179,104	-3,517,503	-4,029,847	-3,843,957	-3,432,668	-3,276,465
-Amortization								
-Write Off								
Before Depltn	80,708,646	80,645,060	80,835,817	80,497,418	79,985,074	80,170,964	80,582,253	80,738,456
100% Limit	80,708,646	80,645,060	80,835,817	80,497,418	79,985,074	80,170,964	80,582,253	80,738,456
Percent Depln	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398
Prev Exp Expl								
-Depletion	-19,435,398	-19,435,398	-19,435,398	-19,435,398	-19,435,398	-19,435,398	-19,435,398	-19,435,398
-Total D,D & A	-22,741,673	-22,805,259	-22,614,502	-22,952,901	-23,465,245	-23,279,355	-22,868,066	-22,711,863
Taxable	61,273,248	61,209,662	61,400,419	61,062,020	60,549,676	60,735,566	61,146,855	61,303,058
-Tax Due	-23,663,728	-23,639,172	-23,712,842	-23,582,152	-23,384,285	-23,456,076	-23,614,915	-23,675,241
Net Income	37,609,519	37,570,491	37,687,577	37,479,868	37,165,391	37,279,490	37,531,940	37,627,817
+Depreciation	3,306,275	3,369,861	3,179,104	3,517,503	4,029,847	3,843,957	3,432,668	3,276,465
+Depletion	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398
+Amortization								
+Write Off								
-Capital Costs	-1,017,369			-4,019,842	-1,017,369			
Cash Flow	59,333,824	60,375,749	60,302,079	56,412,927	59,613,267	60,558,845	60,400,005	60,339,680

Year	2007	2008	2009	2010	2011	Salvage
ZN REV	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	
CU REV	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	
PB REV	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	
AG REV	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	
AU REV	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	
GROSS REVENUE	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	
Total Revenue	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	8,801,520
-SMELTING CHARGES	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	
-Total Smelting Cost	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	
Net Smelt Ret.	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	
-MHT ROYALTY	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	
-Total Royalties	-5,173,722	-5,173,722	-5,173,722	-5,173,722	-5,173,722	
Net Revenue	129,569,321	129,569,321	129,569,321	129,569,321	129,569,321	
-OPER COSTS	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	
-Total Oper Costs	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	
-Dev, IDC						
-Depreciation	-3,393,128	-3,423,783	-3,233,026	-3,169,441	-3,360,197	-7,726,028
-Amortization						
-Write Off						-8,801,520
Before Depltn	80,621,793	80,591,138	80,781,895	80,845,480	80,654,723	-7,726,028
100% Limit	80,621,793	80,591,138	80,781,895	80,845,480	80,654,723	
Percent Depln	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	
Prev Exp Expl						
-Depletion	-19,435,398	-19,435,398	-19,435,398	-19,435,398	-19,435,398	
-Total D,D & A	-22,828,526	-22,859,181	-22,668,424	-22,604,839	-22,795,596	-16,527,548
Taxable	61,186,395	61,155,740	61,346,496	61,410,082	61,219,325	-7,726,028
-Tax Due	-23,630,186	-23,618,347	-23,692,017	-23,716,574	-23,642,903	2,983,792
Net Income	37,556,209	37,537,393	37,654,480	37,693,508	37,576,422	-4,742,236
+Depreciation	3,393,128	3,423,783	3,233,026	3,169,441	3,360,197	7,726,028
+Depletion	19,435,398	19,435,398	19,435,398	19,435,398	19,435,398	
+Amortization						
+Write Off						8,801,520
-Capital Costs	-1,017,369				-1,017,369	
Cash Flow	59,367,366	60,396,574	60,322,904	60,298,347	59,354,648	11,785,312

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VMS HAINES AREA, ROOM & PILLAR

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	4,019,842	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/02	4,019,842	MACRS	Mid Year	10.0	0			0 .....
3	04/89	1,438,132	MACRS	Mid Year	23.0	0			0 .....
4	04/89	6,965,815	MACRS	Mid Year	23.0	0			0 .....
5	04/89	6,067,425	WC	Mid Year	23.0	0			0 .....
6	04/89	1,017,369	MACRS	Mid Year	4.0	0			0 .....
7	09/91	1,017,369	MACRS	Mid Year	4.0	0			0 .....
8	09/95	1,017,369	MACRS	Mid Year	4.0	0			0 .....
9	04/07	1,017,369	MACRS	Mid Year	4.0	0			0 .....
10	04/89	2,734,095	WC	Mid Year	23.0	0			0 .....
11	04/89	14,890,954	MACRS	Mid Year	23.0	0			0 .....
12	04/89	8,154,280	MACRS	Mid Year	23.0	0			0 .....
13	04/89	7,775,170	EXPL-X	Mid Year	23.0	0			0 .....
14	04/89	17,381,965	MACRS	Mid Year	23.0	0			0 .....
15	04/99	1,017,369	MACRS	Mid Year	4.0	0			0 .....
16	04/03	1,017,369	MACRS	Mid Year	4.0	0			0 .....
17	04/11	1,017,369	MACRS	Mid Year	4.0	0			0 .....
18	04/89	15,081,835	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	756,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	24,003,000.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	10,816,200.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	5,335,200.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VMS HAINES AREA, ROOM & PILLAR

Cash Flows

NPV =$450,664,786 DCFROR= 76.6% GROR = 20.7% PWROR = 76.6% Pay Back= 1.30 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116
CU REV		44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408
PB REV		8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114
AG REV		7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314
AU REV		14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131
GROSS REVENUE		136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083
Total Revenue		136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083
-SMELTING CHARGES		-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041
-Total Smelting Cost		-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041
Net Smelt Ret.		134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043
Net Revenue		134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043
-OPER COSTS		-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400
-Total Oper Costs		-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400
-MHT NPI		-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491
-Total Sev. Ad Valor		-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491
-Dev, IDC	-5,442,619							
-Depreciation	-2,323,100	-4,112,717	-3,643,378	-3,441,893	-3,506,184	-3,452,977	-3,217,199	-3,115,518
-Amortization	-1,399,531	-466,510	-466,510					
-Write Off								
Before Depltn	-9,165,250	81,892,925	82,362,264	83,030,259	82,965,968	83,019,175	83,254,953	83,356,634
100% Limit		81,892,925	82,362,264	83,030,259	82,965,968	83,019,175	83,254,953	83,356,634
Percent Depln		20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456
Prev Exp Expl		5,442,619						
-Depletion		-14,768,837	-20,211,456	-20,211,456	-20,211,456	-20,211,456	-20,211,456	-20,211,456
-Total D,D & A	-9,165,250	-19,348,065	-24,321,345	-23,653,350	-23,717,640	-23,664,433	-23,428,655	-23,326,975
Taxable	-9,165,250	67,124,087	62,150,807	62,818,802	62,754,512	62,807,719	63,043,497	63,145,177
-Tax Due	3,116,185	-22,822,190	-21,131,274	-21,358,393	-24,235,793	-24,256,341	-24,347,399	-24,386,668
Net Income	-6,049,065	44,301,898	41,019,533	41,460,410	38,518,720	38,551,378	38,696,098	38,758,510
+Depreciation	2,323,100	4,112,717	3,643,378	3,441,893	3,506,184	3,452,977	3,217,199	3,115,518
+Depletion		14,768,837	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456
+Amortization	1,399,531	466,510	466,510					
+Write Off								
-Capital Costs	-81,101,632				-1,017,369			
Cash Flow	-83,428,066	63,649,962	65,340,878	65,113,759	61,218,991	62,215,811	62,124,754	62,085,485

Year	8	9	10	11	12	13	14	15
ZN REV	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116
CU REV	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408
PB REV	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114
AG REV	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314
AU REV	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131
GROSS REVENUE	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083
Total Revenue	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083
-SMELTING CHARGES	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041
-Total Smelting Cost	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041
Net Smelt Ret.	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043
Net Revenue	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043
-OPER COSTS	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400
-Total Oper Costs	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400
-MHT NPI	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491
-Total Sev. Ad Valor	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491
-Dev, IDC								
-Depreciation	-3,306,275	-3,369,861	-3,179,104	-3,517,503	-4,029,847	-3,843,957	-3,432,668	-3,276,465
-Amortization								
-Write Off								
Before Depltn	83,165,877	83,102,292	83,293,048	82,954,650	82,442,306	82,628,195	83,039,484	83,195,687
100% Limit	83,165,877	83,102,292	83,293,048	82,954,650	82,442,306	82,628,195	83,039,484	83,195,687
Percent Depln	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456
Prev Exp Expl								
-Depletion	-20,211,456	-20,211,456	-20,211,456	-20,211,456	-20,211,456	-20,211,456	-20,211,456	-20,211,456
-Total D,D & A	-23,517,731	-23,581,317	-23,390,560	-23,728,959	-24,241,303	-24,055,413	-23,644,124	-23,487,921
Taxable	62,954,421	62,890,835	63,081,592	62,743,193	62,230,849	62,416,739	62,828,028	62,984,231
-Tax Due	-24,312,997	-24,288,441	-24,362,111	-24,231,421	-24,033,554	-24,105,345	-24,264,184	-24,324,510
Net Income	38,641,423	38,602,395	38,719,481	38,511,772	38,197,295	38,311,394	38,563,844	38,659,721
+Depreciation	3,306,275	3,369,861	3,179,104	3,517,503	4,029,847	3,843,957	3,432,668	3,276,465
+Depletion	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456
+Amortization								
+Write Off								
-Capital Costs	-1,017,369			-4,019,842	-1,017,369			
Cash Flow	61,141,786	62,183,712	62,110,041	58,220,889	61,421,229	62,366,808	62,207,968	62,147,642

Year	16	17	18	19	20	Salvage
ZN REV	60,605,116	60,605,116	60,605,116	60,605,116	60,605,116	
CU REV	44,986,408	44,986,408	44,986,408	44,986,408	44,986,408	
PB REV	8,461,114	8,461,114	8,461,114	8,461,114	8,461,114	
AG REV	7,569,314	7,569,314	7,569,314	7,569,314	7,569,314	
AU REV	14,482,131	14,482,131	14,482,131	14,482,131	14,482,131	
GROSS REVENUE	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	
Total Revenue	136,104,083	136,104,083	136,104,083	136,104,083	136,104,083	8,801,520
-SMELTING CHARGES	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	
-Total Smelting Cost	-1,361,041	-1,361,041	-1,361,041	-1,361,041	-1,361,041	
Net Smelt Ret.	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	
Net Revenue	134,743,043	134,743,043	134,743,043	134,743,043	134,743,043	
-OPER COSTS	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	
-Total Oper Costs	-45,554,400	-45,554,400	-45,554,400	-45,554,400	-45,554,400	
-MHT NPI	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	
-Total Sev. Ad Valor	-2,716,491	-2,716,491	-2,716,491	-2,716,491	-2,716,491	
-Dev, IDC						
-Depreciation	-3,393,128	-3,423,783	-3,233,026	-3,169,441	-3,360,197	-7,726,028
-Amortization						
-Write Off						-8,801,520
Before Depltn	83,079,024	83,048,369	83,239,126	83,302,711	83,111,955	-7,726,028
100% Limit	83,079,024	83,048,369	83,239,126	83,302,711	83,111,955	
Percent Depln	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	
Prev Exp Expl						
-Depletion	-20,211,456	-20,211,456	-20,211,456	-20,211,456	-20,211,456	
-Total D,D & A	-23,604,584	-23,635,239	-23,444,483	-23,380,897	-23,571,654	-16,527,548
Taxable	62,867,568	62,836,913	63,027,669	63,091,255	62,900,498	-7,726,028
-Tax Due	-24,279,455	-24,267,616	-24,341,286	-24,365,843	-24,292,172	2,983,792
Net Income	38,588,113	38,569,297	38,686,383	38,725,412	38,608,326	-4,742,236
+Depreciation	3,393,128	3,423,783	3,233,026	3,169,441	3,360,197	7,726,028
+Depletion	20,211,456	20,211,456	20,211,456	20,211,456	20,211,456	
+Amortization						
+Write Off						8,801,520
-Capital Costs	-1,017,369				-1,017,369	
Cash Flow	61,175,328	62,204,536	62,130,866	62,106,309	61,162,611	11,785,312

2b. DESCRIPTIVE MODEL OF KUROKO MASSIVE SULF...

By Donald A. Singer

APPROXIMATE SYNONYMS Noranda type, volcanogenic massive sulfide, felsic to intermediate volcanic type.

DESCRIPTION Copper- and zinc-bearing massive sulfide deposits in marine volcanic rocks of intermediate to felsic composition.

GENERAL REFERENCES Ishihara (1974), Franklin and others (1981), Hutchinson and others (1982), Ohmoto and Skinner (1983).

GEOLOGICAL ENVIRONMENT

Rock Types Marine rhyolite, dacite, and subordinate basalt and associated sediments, principally organic-rich mudstone or shale. Pyritic, siliceous shale. Some basalt.

Textures Flows, tuffs, pyroclastics, breccias, bedded sediment, and in some cases felsic domes.

Age Range Archean through Cenozoic.

Depositional Environment Hot springs related to marine volcanism, probably with anoxic marine conditions. Lead-rich deposits associated with abundant fine-grained volcanogenic sediments.

Tectonic Setting(s) Island arc. Local extensional tectonic activity, faults, or fractures. Archean greenstone belt.

Associated Deposit Types Epithermal quartz-adularia veins in Japan are regionally associated but younger than kuroko deposits. Volcanogenic Mn, Algoma Fe.

DEPOSIT DESCRIPTION

Mineralogy Upper stratiform massive zone (black ore) -- pyrite + sphalerite + chalcopyrite ± pyrrhotite ± galena ± barite ± tetrahedrite - tennantite ± bornite; lower stratiform massive zone (yellow ore) -- pyrite + chalcopyrite (gold and silver). Gahnite in metamorphosed deposits. Gypsum/anhydrite present in some deposits.

Texture/Structure Massive (>60 percent sulfides); in some cases, an underlying zone of ore stockwork, stringers or disseminated sulfides or sulfide-matrix breccia. Also slumped and redeposited ore with graded bedding.

Alteration Adjacent to and blanketing massive sulfide in some deposits -- zeolites, montmorillonite (and chlorite?); stringer (stockwork) zone -- silica, chlorite, and sericite; below stringer -- chlorite and albite. Cordierite and anthophyllite in footwall of metamorphosed deposits, graphitic schist in hanging wall.

Ore Controls Toward the more felsic top of volcanic or volcanic-sedimentary sequence. Near center of felsic volcanism. May be locally brecciated or have felsic dome nearby. Pyritic siliceous rock (exhalite) may mark horizon at which deposits occur. Proximity to deposits may be indicated by sulfide clasts in volcanic breccias. Some deposits may be gravity-transported and deposited in paleo depressions in the seafloor. In Japan, best deposits have mudstone in handing wall.

Weathering Yellow, red, and brown gossans. Gahnite in stream sediments near some deposits.

Geochemical Signature Gossan may be high in Pb and typically Au is present. Adjacent to deposit-enriched in Mg and Zn, depleted in Na. Within deposits -- Cu, Zn, Pb, Ba, As, Ag, Au, Se, Sn, Bi, Fe.

EXAMPLES

Kidd Creek, CNON	(Walker and others, 1975)
Mt. Lyell, AUTS	(Corbett, 1981)
Brittania, CNBC	(Payne and others, 1980)
Buchans, CNNF	(Swanson and others, 1981)

GRADE AND TONNAGE MODEL OF KUROKO MASSIVE SULFIDE
After Donald A. Singer and Dan L. Mosier

DATA REFERENCE Mosier and others (1983).

COMMENTS Includes all deposits listed by Mosier and others (1983) that are associated with felsic or intermediate volcanic rocks. Tonnage is correlated with copper grade ($r = -0.17$) and with gold grade ($r = -0.19$, $n = 238$). Zinc grade is correlated with lead grade ($r = 0.55$, $n = 184$) and with silver grade ($r = 0.52$, $n = 249$). Lead grade is correlated with silver ($r = 0.55$, $n = 153$) and with gold grade ($r = 0.34$, $n = 124$). Gold and silver grades are correlated ($r = 0.39$, $n = 227$). Upper ten percent of the deposits contain an minimum of 18 million tonnes at 8.7% Zn, 3.5% Cu, 1.9% Pb, 100 grams/tonne Ag, and 2.3 grams/tonne Au. Total contained metal: 1.6 million tonnes Zn, 0.63 million tonnes Cu, 0.34 tonnes Pb, 1.8 billion grams Ag and 41.4 million grams Au. Gross value in 1987 would have been $3.69 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.8 million tonnes per year or 5,000 tonnes/day.

Gross Value of Annual Production $369 million.

Net Present Value of 4% NSR $14.8 million times 6.144 is $90.9 million.

Comments, Assumptions, Specifications: LIB - Liberty Bell
SheepCreek Andesite Mtn., WTF Red Mtn. - Kuroko-type volcanogenic massive sulfide - based on VMSS model

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Volcanogenic Massive Sulfide (Kuroko)
Total Ore Tonnage: 18 mil mtons
Mining Method: Sublevel Stoping
Beneficiation Method: Crush, Grind & Float
Extraction Rate: 85%
Dilution/Waste Rate: 15%
Proposed Mine Life: 20 yrs
Proposed Daily Production: 2,500 MTPD
Maximum Ore Depth: 500 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 100km road, 100 km haul to Railhead
Distance From Power: 100 km
Pre-Production Development:

Production Development:

Equipment: Jumbos, LHDs, Conveyor, Dump Hoist
Concentrate Production: 550 MTPD - 3 Products

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: .2 m/day, 15 m²
Raises & face-m/day & sqm: -
Inclines & face-m/day & sqm: .21 m/day, 15 m²
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .006, 8,000 m²
Ore rate-mtpd: 2,500 MTPD
Hoist depth, rate & time-m, mtph, hr/day: 500 m, 210 MTPH, 16 hrs
Haul distance-m: 650 m
Compressed air-cm/min: 175 m³/min
Ventilation-cm/min: 850 m³/min
Conveyor length & slope-km & %: 1 km, 10%
Water needs-cm/hr & hr/day: 10 m³/hr, 16 hrs/day
Drainage, head-cm/day & m: 1,500 m³/day, 500 m
Concentrate (dry) rate-mtpd: 550 MTPD
Tails (dry) rate-mtpd: 1950 MTPD
Production water needs-cm/day: 2150 m³/day recy.
Portable Power needs-kW: -
Wastewater-L/sec: 3 L/s
Concentrate haul-km: 100 km to railhead
Employee housing-men: 60 men
Other: $18,700/day - rail haulage of conc.
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 2,500, 2,300, 2,100 mt PD
Mill operating costs-$/day: $ 32,753 / day
Working capital time-weeks: 13 weeks
Development time-days: -
Shaft sinking & face-m & sqm: 500 m, 45 m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 750 m, 4 m²
Inclines & face-m & sqm: 1,500 m 15 m²
Ore pockets-mt: 3,750 mT
Stope preparations-stopes & sqm: 2, 8,000 m²
Dewatering; head, dys & rate-m, dys & cm/day:
500 m, 200 days, 1,500 m³/day
Rehabilitation (total tonnage)-mt: 2,500 mt PD
Contractors-1 or 2: 1
Mine operating costs-$/day: $ 79,110 / day
Access roads, length & width-km & m: 100 km, 12 m
Airstrip length & width-m: 1,200 m, 18 m
Townsite cost-$: $1,675,890
Powerline length & power-km & mW: 100 km, 8.2 mW
Dike & Dam needs-cm/fill: 20,000 m²
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 79,110
Mining Costs-$/yr: 28,479,600
Mining Costs-$/mt: 31.64
Milling Costs-$/day: 32,753
Milling Costs-$/yr: 11,791,080
Milling Costs-$/mt: 13.10
Infrastructure Costs-$/day: 37,314
Infrastructure Costs-$/yr: 13,433,040
Infrastructure Costs-$/mt: 14.93
Total Operating Costs-$/day: 149,177
Total Operating Costs-$/yr: 53,703,720
Total Operating Costs-$/mt: 59.67
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 7,199,010
Heavy Equipment (fixed life)-$: 4,708,535 *
Mine Rehabilitation-$: 1,525,254 *
Engr. & Const. Mgmt.-$: 4,899,985 *
Other:
Remaining Mine Capital-$: 21,975,927
Total Mine Capital Cost-$: 40,308,711

MILL CAPITAL COSTS:

Mill Working Capital-$: 2,980,523
Light Vehicles (short life)-$: 1,081,198 *
Other:
Remaining Mill Capital-$: 16,439,761 ~
Total Mill Capital Cost-$: 20,501,482

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 9,032,907 *
Other:
Remaining Infrastructure Capital-$: 49,980,420 ~
Total Infrastructure Capital-$: 59,013,327

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 10,179,533 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 72,229,373 *
Sum of Total Mine, Mill & Infr. Costs-$: 100,537,879
Exploration Cost-$: 10,053,790 *

Overall Capital Cost-$: 110,591,667
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:VMSLIBEL.SEE Date:01/04/80 Time:00:04:22

VMS (KOROKO), LIBERTY BELL AREA, SUBLEVEL STOPING

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

	******** Minimum ROR, Inflation & Exponents *********					****** Tax Rates ******		
	Compound	With	Minimum	Infltion: Constant		State	Federal	Effect.
Year	Exponents	Eval Date	ROR	Rate	: $ ROR	Rate	Rate	Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	7,199,010	WC	Mid Year	20.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,708,535	MACRS	Mid Year	10.0	0			0 .....
3	04/02	4,708,535	MACRS	Mid Year	10.0	0			0 .....
4	04/89	1,525,254	MACRS	Mid Year	20.0	0			0 .....
5	04/89	4,899,985	MACRS	Mid Year	20.0	0			0 .....
6	04/89	21,975,927	MACRS	Mid Year	20.0	0			0 .....
7	04/89	2,980,523	WC	Mid Year	20.0	0			0 .....
8	04/89	1,081,198	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,081,198	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,081,198	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,081,198	MACRS	Mid Year	4.0	0			0 .....
12	04/05	1,081,198	MACRS	Mid Year	4.0	0			0 .....
13	04/09	1,081,198	MACRS	Mid Year	4.0	0			0 .....
14	04/89	16,439,761	MACRS	Mid Year	20.0	0			0 .....
15	04/89	9,032,807	MACRS	Mid Year	20.0	0			0 .....
16	04/89	49,980,420	MACRS	Mid Year	20.0	0			0 .....
17	04/89	10,053,790	EXPL-X	Mid Year	20.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	900,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	28,479,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	11,791,080.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	13,433,040.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VMS (KOROKO), LIBERTY BELL AREA, SUBLEVEL STOPING

Cash Flows

NPV =$471,401,537 DCFROR= 57.0% GROR = 18.9% PWROR = 57.0% Pay Back= 1.74 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948
CU REV		53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248
PB REV		10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755
AG REV		9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088
AU REV		17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632
GROSS REVENUE		162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
Total Revenue		162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
-SMELTING CHARGES		-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
-Total Smelting Cost		-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
Net Smelt Ret.		160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
-MHT ROYALTY		-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335
-Total Royalties		-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335
Net Revenue		154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049
-OPER COSTS		-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720
-Total Oper Costs		-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720
-Dev, IDC	-7,037,653							
-Depreciation	-4,635,684	-8,749,957	-8,085,752	-7,497,619	-6,637,740	-5,970,790	-5,723,305	-5,410,116
-Amortization	-1,809,682	-603,227	-603,227					
-Write Off								
Before Depltn	-13,483,019	85,751,144	86,415,349	87,606,710	88,466,589	89,133,539	89,381,023	89,694,212
100% Limit		85,751,144	86,415,349	87,606,710	88,466,589	89,133,539	89,381,023	89,694,212
Percent Depln		23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207
Prev Exp Expl		7,037,653						
-Depletion		-16,093,554	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207
-Total D,D & A	-13,483,019	-25,446,739	-31,820,187	-30,628,826	-29,768,947	-29,101,997	-28,854,513	-28,541,324
Taxable	-13,483,019	69,657,590	63,284,142	64,475,503	65,335,382	66,002,332	66,249,816	66,563,005
-Tax Due	4,584,226	-23,683,580	-21,516,608	-21,921,671	-25,232,524	-25,490,100	-25,585,679	-25,706,633
Net Income	-8,898,793	45,974,009	41,767,534	42,553,832	40,102,857	40,512,231	40,664,137	40,856,373
+Depreciation	4,635,684	8,749,957	8,085,752	7,497,619	6,637,740	5,970,790	5,723,305	5,410,116
+Depletion		16,093,554	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207
+Amortization	1,809,682	603,227	603,227					
+Write Off								
-Capital Costs	-122839557		-1,081,198				-1,081,198	
Cash Flow	-125292984	71,420,748	72,506,522	73,182,658	69,871,804	69,614,228	68,437,452	69,397,696

Year	8	9	10	11	12	13	14	15
ZN REV	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948
CU REV	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248
PB REV	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755
AG REV	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088
AU REV	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632
GROSS REVENUE	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
Total Revenue	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
-SMELTING CHARGES	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
-Total Smelting Cost	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
Net Smelt Ret.	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
-MHT ROYALTY	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335
-Total Royalties	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335
Net Revenue	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049
-OPER COSTS	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720
-Total Oper Costs	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720
-Dev, IDC								
-Depreciation	-5,144,777	-5,077,202	-5,125,638	-5,509,777	-5,683,735	-5,446,653	-5,513,772	-5,472,862
-Amortization								
-Write Off								
Before Depltn	89,959,552	90,027,126	89,978,691	89,594,552	89,420,594	89,657,676	89,590,557	89,631,467
100% Limit	89,959,552	90,027,126	89,978,691	89,594,552	89,420,594	89,657,676	89,590,557	89,631,467
Percent Depln	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207
Prev Exp Expl								
-Depletion	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207
-Total D,D & A	-28,275,984	-28,208,410	-28,256,845	-28,640,984	-28,814,942	-28,577,860	-28,644,979	-28,604,069
Taxable	66,828,344	66,895,919	66,847,484	66,463,345	66,289,387	66,526,469	66,459,350	66,500,260
-Tax Due	-25,809,107	-25,835,204	-25,816,498	-25,668,144	-25,600,961	-25,692,522	-25,666,601	-25,682,400
Net Income	41,019,238	41,060,715	41,030,986	40,795,201	40,688,425	40,833,946	40,792,749	40,817,859
+Depreciation	5,144,777	5,077,202	5,125,638	5,509,777	5,683,735	5,446,653	5,513,772	5,472,862
+Depletion	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207
+Amortization								
+Write Off								
-Capital Costs			-1,081,198	-4,708,535			-1,081,198	
Cash Flow	69,295,222	69,269,125	68,206,632	64,727,650	69,503,368	69,411,807	68,356,530	69,421,928

Year	16	17	18	19	20	Salvage
ZN REV	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	
CU REV	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	
PB REV	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	
AG REV	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	
AU REV	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	
GROSS REVENUE	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	
Total Revenue	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	10,179,533
-SMELTING CHARGES	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	
-Total Smelting Cost	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	
Net Smelt Ret.	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	
-MHT ROYALTY	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	
-Total Royalties	-6,200,335	-6,200,335	-6,200,335	-6,200,335	-6,200,335	
Net Revenue	154,208,049	154,208,049	154,208,049	154,208,049	154,208,049	
-OPER COSTS	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	
-Total Oper Costs	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	
-Dev, IDC						
-Depreciation	-5,183,349	-5,077,202	-5,279,927	-5,347,502	-2,828,040	-357,014
-Amortization						
-Write Off						-10,179,533
Before Depltn	89,920,979	90,027,126	89,824,402	89,756,827	92,276,289	-357,014
100% Limit	89,920,979	90,027,126	89,824,402	89,756,827	92,276,289	
Percent Depln	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	
Prev Exp Expl						
-Depletion	-23,131,207	-23,131,207	-23,131,207	-23,131,207	-23,131,207	
-Total D,D & A	-28,314,557	-28,208,410	-28,411,134	-28,478,709	-25,959,247	-10,536,547
Taxable	66,789,772	66,895,919	66,693,195	66,625,620	69,145,081	-357,014
-Tax Due	-25,794,210	-25,835,204	-25,756,912	-25,730,814	-26,703,830	137,879
Net Income	40,995,562	41,060,715	40,936,283	40,894,805	42,441,251	-219,135
+Depreciation	5,183,349	5,077,202	5,279,927	5,347,502	2,828,040	357,014
+Depletion	23,131,207	23,131,207	23,131,207	23,131,207	23,131,207	
+Amortization						
+Write Off						10,179,533
-Capital Costs			-1,081,198			
Cash Flow	69,310,119	69,269,125	68,266,219	69,373,514	68,400,498	10,317,412

List of Assumptions File:VMSLIBEL.SEE Date:01/15/94 Time:16:52:18

VMS (KOROKO), LIBERTY BELL AREA, SUBLEVEL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	7,199,010	WC	Mid Year	20.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,708,535	MACRS	Mid Year	10.0	0			0 .....
3	04/02	4,708,535	MACRS	Mid Year	10.0	0			0 .....
4	04/89	1,525,254	MACRS	Mid Year	20.0	0			0 .....
5	04/89	4,899,985	MACRS	Mid Year	20.0	0			0 .....
6	04/89	21,975,927	MACRS	Mid Year	20.0	0			0 .....
7	04/89	2,980,523	WC	Mid Year	20.0	0			0 .....
8	04/89	1,081,198	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,081,198	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,081,198	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,081,198	MACRS	Mid Year	4.0	0			0 .....
12	04/05	1,081,198	MACRS	Mid Year	4.0	0			0 .....
13	04/09	1,081,198	MACRS	Mid Year	4.0	0			0 .....
14	04/89	16,439,761	MACRS	Mid Year	20.0	0			0 .....
15	04/89	9,032,807	MACRS	Mid Year	20.0	0			0 .....
16	04/89	49,980,420	MACRS	Mid Year	20.0	0			0 .....
17	04/89	10,053,790	EXPL-X	Mid Year	20.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	900,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.087	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.019	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	3.20	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.074	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	28,479,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	11,791,080.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	13,433,040.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VMS (KOROKO), LIBERTY BELL AREA, SUBLEVEL STOPING

Cash Flows

NPV =$490,975,455 DCFROR= 58.9% GROR = 19.1% PWROR = 58.9% Pay Back= 1.69 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948
CU REV		53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248
PB REV		10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755
AG REV		9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088
AU REV		17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632
GROSS REVENUE		162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
Total Revenue		162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
-SMELTING CHARGES		-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
-Total Smelting Cost		-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
Net Smelt Ret.		160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
Net Revenue		160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
-OPER COSTS		-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720
-Total Oper Costs		-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720
-MHT NPI		-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749
-Total Sev. Ad Valor		-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749
-Dev, IDC	-7,037,653							
-Depreciation	-4,635,684	-8,749,957	-8,085,752	-7,497,619	-6,637,740	-5,970,790	-5,723,305	-5,410,116
-Amortization	-1,809,682	-603,227	-603,227					
-Write Off								
Before Depltn	-13,483,019	88,863,731	89,527,936	90,719,297	91,579,176	92,246,126	92,493,610	92,806,799
100% Limit		88,863,731	89,527,936	90,719,297	91,579,176	92,246,126	92,493,610	92,806,799
Percent Depln		24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258
Prev Exp Expl		7,037,653						
-Depletion		-17,023,605	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258
-Total D,D & A	-13,483,019	-26,376,789	-32,750,237	-31,558,876	-30,698,997	-30,032,047	-29,784,563	-29,471,374
Taxable	-13,483,019	71,840,126	65,466,678	66,658,039	67,517,918	68,184,868	68,432,353	68,745,542
-Tax Due	4,584,226	-24,425,643	-22,258,671	-22,663,733	-26,075,420	-26,332,996	-26,428,575	-26,549,528
Net Income	-8,898,793	47,414,483	43,208,008	43,994,306	41,442,498	41,851,872	42,003,778	42,196,013
+Depreciation	4,635,684	8,749,957	8,085,752	7,497,619	6,637,740	5,970,790	5,723,305	5,410,116
+Depletion		17,023,605	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258
+Amortization	1,809,682	603,227	603,227					
+Write Off								
-Capital Costs	-122839557		-1,081,198				-1,081,198	
Cash Flow	-125292984	73,791,273	74,877,047	75,553,182	72,141,496	71,883,919	70,707,143	71,667,387

Year	8	9	10	11	12	13	14	15
ZN REV	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948
CU REV	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248
PB REV	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755
AG REV	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088
AU REV	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632
GROSS REVENUE	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
Total Revenue	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671
-SMELTING CHARGES	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
-Total Smelting Cost	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287
Net Smelt Ret.	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
Net Revenue	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384
-OPER COSTS	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720
-Total Oper Costs	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720
-MHT NPI	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749
-Total Sev. Ad Valor	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749
-Dev, IDC								
-Depreciation	-5,144,777	-5,077,202	-5,125,638	-5,509,777	-5,683,735	-5,446,653	-5,513,772	-5,472,862
-Amortization								
-Write Off								
Before Depltn	93,072,138	93,139,713	93,091,278	92,707,139	92,533,181	92,770,263	92,703,144	92,744,054
100% Limit	93,072,138	93,139,713	93,091,278	92,707,139	92,533,181	92,770,263	92,703,144	92,744,054
Percent Depln	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258
Prev Exp Expl								
-Depletion	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258
-Total D,D & A	-29,206,035	-29,138,460	-29,186,895	-29,571,034	-29,744,992	-29,507,910	-29,575,029	-29,534,119
Taxable	69,010,881	69,078,456	69,030,020	68,645,881	68,471,923	68,709,005	68,641,886	68,682,796
-Tax Due	-26,652,002	-26,678,100	-26,659,394	-26,511,039	-26,443,857	-26,535,418	-26,509,497	-26,525,296
Net Income	42,358,879	42,400,356	42,370,626	42,134,842	42,028,066	42,173,587	42,132,390	42,157,500
+Depreciation	5,144,777	5,077,202	5,125,638	5,509,777	5,683,735	5,446,653	5,513,772	5,472,862
+Depletion	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258
+Amortization								
+Write Off								
-Capital Costs			-1,081,198	-4,708,535			-1,081,198	
Cash Flow	71,564,913	71,538,816	70,476,324	66,997,341	71,773,059	71,681,498	70,626,221	71,691,620

Year	16	17	18	19	20	Salvage
ZN REV	72,148,948	72,148,948	72,148,948	72,148,948	72,148,948	
CU REV	53,555,248	53,555,248	53,555,248	53,555,248	53,555,248	
PB REV	10,072,755	10,072,755	10,072,755	10,072,755	10,072,755	
AG REV	9,011,088	9,011,088	9,011,088	9,011,088	9,011,088	
AU REV	17,240,632	17,240,632	17,240,632	17,240,632	17,240,632	
GROSS REVENUE	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	
Total Revenue	162,028,671	162,028,671	162,028,671	162,028,671	162,028,671	10,179,533
-SMELTING CHARGES	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	
-Total Smelting Cost	-1,620,287	-1,620,287	-1,620,287	-1,620,287	-1,620,287	
Net Smelt Ret.	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	
Net Revenue	160,408,384	160,408,384	160,408,384	160,408,384	160,408,384	
-OPER COSTS	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	
-Total Oper Costs	-59,103,720	-59,103,720	-59,103,720	-59,103,720	-59,103,720	
-MHT NPI	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	
-Total Sev. Ad Valor	-3,087,749	-3,087,749	-3,087,749	-3,087,749	-3,087,749	
-Dev, IDC						
-Depreciation	-5,183,349	-5,077,202	-5,279,927	-5,347,502	-2,828,040	-357,014
-Amortization						
-Write Off						-10,179,533
Before Depltn	93,033,566	93,139,713	92,936,989	92,869,414	95,388,875	-357,014
100% Limit	93,033,566	93,139,713	92,936,989	92,869,414	95,388,875	
Percent Depln	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	
Prev Exp Expl						
-Depletion	-24,061,258	-24,061,258	-24,061,258	-24,061,258	-24,061,258	
-Total D,D & A	-29,244,607	-29,138,460	-29,341,184	-29,408,759	-26,889,298	-10,536,547
Taxable	68,972,308	69,078,456	68,875,731	68,808,156	71,327,618	-357,014
-Tax Due	-26,637,106	-26,678,100	-26,599,807	-26,573,710	-27,546,726	137,879
Net Income	42,335,203	42,400,356	42,275,924	42,234,446	43,780,892	-219,135
+Depreciation	5,183,349	5,077,202	5,279,927	5,347,502	2,828,040	357,014
+Depletion	24,061,258	24,061,258	24,061,258	24,061,258	24,061,258	
+Amortization						
+Write Off						10,179,533
-Capital Costs			-1,081,198			
Cash Flow	71,579,810	71,538,816	70,535,910	71,643,206	70,670,190	10,317,412

APPENDIX B-3

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR BEDDED BARITE DEPOSITS

3. DESCRIPTIVE MODEL OF BEDDED BARITE
By Greta J. Orris

APPROXIMATE SYNONYMS Stratiform barite.

DESCRIPTION Stratiform deposits of barite interbedded with dark-colored cherty and calcareous sedimentary rocks.

GEOLOGICAL ENVIRONMENT

Rock Types Generally dark-colored chert, shale, mudstone, limestone or dolostone. Also with quartzite, argillite, and greenstone.

Age Range Proterozoic and Paleozoic.

Depositional Environment Epicratonic marine basins or embayments (often with smaller local restricted basins).

Tectonic Setting(s) Some deposits associated with hinge zones controlled by synsedimentary faults.

Associated Deposit Types Sedimentary exhalative Zn-Pb.

DEPOSIT DESCRIPTION

Mineralogy Barite ± minor witherite ± minor pyrite, galena, or sphalerite. Barite typically contains several percent organic matter plus some H_2 in fluid inclusions.

Texture/Structure Stratiform, commonly lensoid to poddy; ore laminated to massive with associated layers of barite nodules or rosettes; barite may exhibit primary sedimentary features. Small country rock inclusions may show partial replacement by barite.

Alteration Secondary barite veining; weak to moderate sericitization has been reported in or near some deposits in Nevada.

Ore Controls Deposits are localized in second- and third-order basins.

Weathering Indistinct, generally resembling limestone or dolostone; occasionally weathered-out rosettes or nodules.

Geochemical Signature Ba; where peripheral to sediment-hosted Zn-Pb, may have lateral (Cu)-Pb-Zn-Ba zoning or regional manganese haloes. High organic C content.

EXAMPLES

Meggen, GRMY	(Krebs, 1981)
Magnet Cove, USAR	(Scull, 1958)
Northumberland, USNV	(Shawe and others, 1969)

GRADE AND TONNAGE MODEL OF BEDDED BARITE
After Greta J. Orris

COMMENTS Upper ten percent of the deposits contain an minimum of 28 million tonnes at 96% $BaSO_4$. Total contained $BaSO_4$ is 26.9 million tonnes. Gross value in 1987 would have been $1.02 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 2.8 million tonnes per year or 7800 tonnes/day.

Gross Value of Annual Production $102 million.

Net Present Value of 4% NSR $4.1 million times 6.144 is $25.2 million.

Comments, Assumptions, Specifications: BAR Haines A-eq
360 days/yr.

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bedded Barite
Total Ore Tonnage: 28 mil mt
Mining Method: Open Pit
Beneficiation Method: Crush, Grind Screen
Extraction Rate: 90%
Dilution/Waste Rate: 10%
Proposed Mine Life: 10 yrs
Proposed Daily Production: 7,800 MTPD
Maximum Ore Depth: 83m - 250 ft
Stripping Ratio: 2:1
Haulage Distance/Road Requirements: 50 km
haul, 15 km new roads
Distance From Power: 50 km
Pre-Production Development:

Production Development:

Equipment: Rotary Drills, Shovel/Truck
Concentrate Production: 7,000 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: —
Burden/Waste rate-mtpd: 12,000 MTPD
Burden/Waste depth & haul-m: 40 m, 3,000 m
Ore rate-mtpd: 7,800 MTPD
Ore depth & haul-m: 70 m, 3,000 m
Conveyor length & slope-km & %: —
Water needs-cm/day:
Drainage, head & distance-cm/day, m & km:
10,000 m³/day, 110 m, 1.18 km
Concentrate (dry) rate-mtpd: 7,000 MTPD
Tails (dry) rate-mtpd: 1,000 MTPD
Production water needs-cm/day: 1400 m³/day
Portable Power needs-kW: /
Wastewater-L/sec: 20,000 m³ recovered/day; 20 L/sec
Concentrate haul-km: 50 km
Employee housing-men: 90
Other: Wash & Screen - $1,822/day
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 7,800 MTPD
Mill operating costs-$/day: 96,012
Working capital time-weeks: 13 weeks
Development time-days: 730 days
Clearing needs-ha: 200 ha

Stripping needs-mt: 12.8 m:1 mt
Stripping depth & haul-m: 40m 3,000m
Restoration area-ha: 200ha
Contractors-1 or 2: 1
Mine operating costs-$/day: $81,320 /day
Access roads, length & width-km & m: 15km, 15m
Airstrip length & width-m: 1,200 m 18m
Powerline length & power-km & mW: 50km, 5.7mW
Dike & Dam needs-cm/fill: 100,000 m3
Climate/Weather factors: Severe
Other: Wash & Screen -$551,410
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 81,320
Mining Costs-$/yr: 29,275,200
Mining Costs-$/mt: 10.43
Milling Costs-$/day: 96,012
Milling Costs-$/yr: 34,564,320
Milling Costs-$/mt: 12.31
Infrastructure Costs-$/day: 68,230
Infrastructure Costs-$/yr: 24,562,800
Infrastructure Costs-$/mt: 8.75
Total Operating Costs-$/day: 245,562
Total Operating Costs-$/yr: 88,402,320
Total Operating Costs-$/mt: 31.49
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 7,400,120
Heavy Equipment (fixed life)-$: 15,224,956 *
Mine Rehabilitation-$: 1,862,100 *
Engr. & Const. Mgmt.-$: 4,064,972 *
Other:
Remaining Mine Capital-$: 27,819,552 ~
Total Mine Capital-$: 56,371,700

MILL CAPITAL COSTS:

Mill Working Capital-$: 8,737,092
Light Vehicles (short life)-$: 1,608,293 *
Other:
Remaining Mill Capital-$: 28,857,075 ~
Total Mill Capital-$: 39,202,460

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 15,619,882 *

Other:_____
Remaining Infrastructure Capital-$: 16,342,150 ~
Total Infrastructure Capital-$: 31,962,032

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 16,137,212 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 73,018,770 *
Sum of Total Mine, Mill & Infr. Costs-$: 127,536,192
Exploration Cost-$: 12,753,620 *

Overall Capital Cost-$: 140,289,803
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:BARHAINE.SEE Date:07/22/93 Time:08:24:14

BEDDED BARITE HAINES

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

******** Minimum ROR,Inflation & Exponents ********* ****** Tax Rates ******

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	15,224,956	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,862,100	MACRS	Mid Year	13.0	0		0	.....
3	04/89	4,064,972	MACRS	Mid Year	13.0	0		0	.....
4	04/89	27,819,552	MACRS	Mid Year	13.0	0		0	.....
5	04/89	7,400,120	WC	Mid Year	13.0	0		0	.....
6	04/89	1,608,293	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,608,293	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,608,293	MACRS	Mid Year	4.0	0		0	.....
9	04/89	28,857,075	MACRS	Mid Year	13.0	0		0	.....
10	04/89	8,737,092	WC	Mid Year	13.0	0		0	.....
11	04/89	15,619,882	MACRS	Mid Year	13.0	0		0	.....
12	04/89	16,342,150	MACRS	Mid Year	13.0	0		0	.....
13	04/89	12,753,620	EXPL-X	Mid Year	13.0	0		0	.....
14	04/01	1,608,293	MACRS	Mid Year	4.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	2,808,000.00	Constant	0.000
S2	BASO4 GRADE %	N/A:	04/92	End	0.960	Constant	0.000
S3	BASO4 $/TONNE	N/A:	04/92	End	38.000	Constant	0.000
S4	MINING COSTS	Annual:	04/92	End	29,275,200.000	Constant	0.000
S5	MILLING COSTS	Annual:	04/92	End	34,564,320.00	Constant	0.000
S6	INFRA COSTS	Annual:	04/92	End	24,562,800.000	Constant	0.000
S7	TRANS COSTS	Annual:	04/92	End	7,000,000.00	Constant	0.000
S8	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S9	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S10	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S11		N/A:	04/92	End	0.00	Constant	0.000
S12		Annual:	04/92	End	0.00	Constant	0.000
S13		Annual:	04/92	End	0.00	Constant	0.000
S14		Annual:	04/92	End	0.00	Constant	0.000
S15		Annual:	04/92	End	0.00	Constant	0.000
S16		N/A:	04/92	End	0.00	Constant	0.000
S17		N/A:	04/92	End	0.00	Constant	0.000
S18		N/A:	04/92	End	0.00	Constant	0.000
S19		N/A:	04/92	End	0.00	Constant	0.000

****

Project Equations

General Equations

E1 . BASO4 REV	S1*S2*S3*S8*S9

Equations continued

Revenues

E6 . GROSS REVENUE	E1

Operating Costs

E8 . OPER COSTS	S4+S5+S6+S7

Royalties

E9 . MET ROYALTY	S10*(E6-S7)

BEDDED BARITE HAINES

Cash Flows

NPV =$-165,106,163 DCFROR=-36.7% GROR =-22.4% PWROR =-36.7% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
BASO4 REV		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
GROSS REVENUE		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
Total Revenue		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
Net Smelt Ret.		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
-MHT ROYALTY		-3,038,921	-3,038,921	-3,038,921	-3,038,921	-3,038,921	-3,038,921	-3,038,921
-Total Royalties		-3,038,921	-3,038,921	-3,038,921	-3,038,921	-3,038,921	-3,038,921	-3,038,921
Net Revenue		79,934,109	79,934,109	79,934,109	79,934,109	79,934,109	79,934,109	79,934,109
-OPER COSTS		-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320
-Total Oper Costs		-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320
-Dev, IDC	-8,927,534							
-Depreciation	-8,847,511	-16,194,687	-13,896,501	-11,967,346	-9,847,858	-8,193,624	-7,265,550	-6,325,613
-Amortization	-2,295,652	-765,217	-765,217					
-Write Off								
Before Depltn	-20,070,696	-32,428,115	-30,129,929	-27,435,557	-25,316,069	-23,661,834	-22,733,761	-21,793,824
Percent Depln		11,990,116	11,990,116	11,990,116	11,990,116	11,990,116	11,990,116	11,990,116
-Total D,D & A	-20,070,696	-16,959,904	-14,661,718	-11,967,346	-9,847,858	-8,193,624	-7,265,550	-6,325,613
Taxable	-20,070,696	-32,428,115	-30,129,929	-27,435,557	-25,316,069	-23,661,834	-22,733,761	-21,793,824
-Tax Due	6,824,037	11,025,559	10,244,176	9,328,089	9,777,066	9,138,200	8,779,778	8,416,775
Net Income	-13,246,660	-21,402,556	-19,885,753	-18,107,468	-15,539,003	-14,523,634	-13,953,982	-13,377,049
+Depreciation	8,847,511	16,194,687	13,896,501	11,967,346	9,847,858	8,193,624	7,265,550	6,325,613
+Amortization	2,295,652	765,217	765,217					
+Write Off								
-Capital Costs	-131,362,278		-1,608,293				-1,608,293	
Cash Flow	-133,465,775	-4,442,652	-6,832,328	-6,140,121	-5,691,145	-6,330,010	-8,296,725	-7,051,436

Year	1999	2000	2001	Salvage
BASO4 REV	82,973,030	82,973,030	82,973,030	
GROSS REVENUE	82,973,030	82,973,030	82,973,030	
Total Revenue	82,973,030	82,973,030	82,973,030	16,137,212
Net Smelt Ret.	82,973,030	82,973,030	82,973,030	
-MHT ROYALTY	-3,038,921	-3,038,921	-3,038,921	
-Total Royalties	-3,038,921	-3,038,921	-3,038,921	
Net Revenue	79,934,109	79,934,109	79,934,109	
-OPER COSTS	-95,402,320	-95,402,320	-95,402,320	
-Total Oper Costs	-95,402,320	-95,402,320	-95,402,320	
-Dev, IDC				

Year	1999	2000	2001	Salvage
-Depreciation	-6,024,058	-5,923,540	-6,225,095	-15,512,478
-Amortization				
-Write Off				-16,137,212
Before Depltn	-21,492,269	-21,391,751	-21,693,305	-15,512,478
Percent Depln	11,990,116	11,990,116	11,990,116	
-Total D,D & A	-6,024,058	-5,923,540	-6,225,095	-31,649,690
Taxable	-21,492,269	-21,391,751	-21,693,305	-15,512,478
-Tax Due	8,300,314	8,261,494	8,377,955	5,990,919
Net Income	-13,191,955	-13,130,256	-13,315,351	-9,521,559
+Depreciation	6,024,058	5,923,540	6,225,095	15,512,478
+Amortization				
+Write Off				16,137,212
-Capital Costs			-1,608,293	
Cash Flow	-7,167,897	-7,206,717	-8,698,549	22,128,131

List of Assumptions File:BARHAINE.SEE Date:11/05/93 Time:17:37:53

BEDDED BARITE HAINES

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR, Inflation & Exponents					Tax Rates		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	15,224,956	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,862,100	MACRS	Mid Year	13.0	0		0	.....
3	04/89	4,064,972	MACRS	Mid Year	13.0	0		0	.....
4	04/89	27,819,552	MACRS	Mid Year	13.0	0		0	.....
5	04/89	7,400,120	WC	Mid Year	13.0	0		0	.....
6	04/89	1,608,293	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,608,293	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,608,293	MACRS	Mid Year	4.0	0		0	.....
9	04/89	28,857,075	MACRS	Mid Year	13.0	0		0	.....
10	04/89	8,737,092	WC	Mid Year	13.0	0		0	.....
11	04/89	15,619,882	MACRS	Mid Year	13.0	0		0	.....
12	04/89	16,342,150	MACRS	Mid Year	13.0	0		0	.....
13	04/89	12,753,620	EXPL-X	Mid Year	13.0	0		0	.....
14	04/01	1,608,293	MACRS	Mid Year	4.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	2,808,000.00	Constant	0.000
S2	BASO4 GRADE %	N/A:	04/92	End	0.960	Constant	0.000
S3	BASO4 $/TONNE	N/A:	04/92	End	38.000	Constant	0.000
S4	MINING COSTS	Annual:	04/92	End	29,275,200.000	Constant	0.000
S5	MILLING COSTS	Annual:	04/92	End	34,564,320.00	Constant	0.000
S6	INFRA COSTS	Annual:	04/92	End	24,562,800.000	Constant	0.000
S7	TRANS COSTS	Annual:	04/92	End	7,000,000.00	Constant	0.000
S8	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S9	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S10	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S11	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000
S12		Annual:	04/92	End	0.00	Constant	0.000
S13		Annual:	04/92	End	0.00	Constant	0.000
S14		Annual:	04/92	End	0.00	Constant	0.000
S15		Annual:	04/92	End	0.00	Constant	0.000
S16		N/A:	04/92	End	0.00	Constant	0.000
S17		N/A:	04/92	End	0.00	Constant	0.000
S18		N/A:	04/92	End	0.00	Constant	0.000
S19		N/A:	04/92	End	0.00	Constant	0.000

****

Project Equations

General Equations

E1 . BASO4 REV S1*S2*S3*S8*S9

Equations continued

Revenues

E6 . GROSS REVENUE E1

Operating Costs

E8 . OPER COSTS S4+S5+S6+S7

Special Taxes

E2 . MHT NPI S11*(E6-E8)

Royalties

E9 . MHT ROYALTY S10*(E6-S7)

BEDDED BARITE HAINES

Cash Flows

NPV =$-151,846,449 DCFROR=-29.3% GROR =-20.7% PWROR =-29.3% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
BASO4 REV		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
GROSS REVENUE		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
Total Revenue		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
Net Smelt Ret.		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
Net Revenue		82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030	82,973,030
-OPER COSTS		-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320
-Total Oper Costs		-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320	-95,402,320
-MHT NPI		372,879	372,879	372,879	372,879	372,879	372,879	372,879
-Total Sev. Ad Valor		372,879	372,879	372,879	372,879	372,879	372,879	372,879
-Dev, IDC	-8,927,534							
-Depreciation	-8,847,511	-16,194,687	-13,896,501	-11,967,346	-9,847,858	-8,193,624	-7,265,550	-6,325,613
-Amortization	-2,295,652	-765,217	-765,217					
-Write Off								
Before Depltn	-20,070,696	-29,016,315	-26,718,129	-24,023,757	-21,904,269	-20,250,035	-19,321,961	-18,382,024
Percent Depln		12,445,955	12,445,955	12,445,955	12,445,955	12,445,955	12,445,955	12,445,955
-Total D,D & A	-20,070,696	-16,959,904	-14,661,718	-11,967,346	-9,847,858	-8,193,624	-7,265,550	-6,325,613
Taxable	-20,070,696	-29,016,315	-26,718,129	-24,023,757	-21,904,269	-20,250,035	-19,321,961	-18,382,024
-Tax Due	6,824,037	9,865,547	9,084,164	8,168,078	8,459,429	7,820,563	7,462,141	7,099,138
Net Income	-13,246,660	-19,150,768	-17,633,965	-15,855,680	-13,444,840	-12,429,471	-11,859,819	-11,282,886
+Depreciation	8,847,511	16,194,687	13,896,501	11,967,346	9,847,858	8,193,624	7,265,550	6,325,613
+Amortization	2,295,652	765,217	765,217					
+Write Off								
-Capital Costs	-131,362,278		-1,608,293				-1,608,293	
Cash Flow	-133,465,775	-2,190,864	-4,580,540	-3,888,333	-3,596,982	-4,235,848	-6,202,563	-4,957,273

Year	8	9	10	Salvage
BASO4 REV	82,973,030	82,973,030	82,973,030	
GROSS REVENUE	82,973,030	82,973,030	82,973,030	
Total Revenue	82,973,030	82,973,030	82,973,030	16,137,212
Net Smelt Ret.	82,973,030	82,973,030	82,973,030	
Net Revenue	82,973,030	82,973,030	82,973,030	
-OPER COSTS	-95,402,320	-95,402,320	-95,402,320	
-Total Oper Costs	-95,402,320	-95,402,320	-95,402,320	
-MHT NPI	372,879	372,879	372,879	
-Total Sev. Ad Valor	372,879	372,879	372,879	
-Dev, IDC				
-Depreciation	-6,024,058	-5,923,540	-6,225,095	-15,512,478
-Amortization				

Year	8	9	10	Salvage
-Write Off				-16,137,212
Before Depltn	-18,080,469	-17,979,951	-18,281,506	-15,512,478
Percent Depln	12,445,955	12,445,955	12,445,955	
-Total D,D & A	-6,024,058	-5,923,540	-6,225,095	-31,649,690
Taxable	-18,080,469	-17,979,951	-18,281,506	-15,512,478
-Tax Due	6,982,677	6,943,857	7,060,317	5,990,919
Net Income	-11,097,792	-11,036,094	-11,221,188	-9,521,559
+Depreciation	6,024,058	5,923,540	6,225,095	15,512,478
+Amortization				
+Write Off				16,137,212
-Capital Costs			-1,608,293	
Cash Flow	-5,073,734	-5,112,554	-6,604,386	22,128,131

APPENDIX B-4

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR HOT SPRINGS GOLD AND SILVER DEPOSITS

4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag

By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $68.0 million.

Comments, Assumptions, Specifications: RYAN - A
Ryan Lode Bulk mineable Au. Data from June '93 AK mine—
Yr Round operation. 10 yrs

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk Mineable Au - Ryan Lode
Total Ore Tonnage: 7.52 mil mt
Mining Method: Open pit - 3 pits
Beneficiation Method: Crush < Heap leach vs. C.I.P.
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 years
Proposed Daily Production: 860 mTPD High 1,230 mTPD Low
Maximum Ore Depth: 137 m, 100 m, 46 m
Stripping Ratio: 4.6 : 1
Haulage Distance/Road Requirements:
~ 4 km light duty new roads
Distance From Power: 5 km
Pre-Production Development:

Production Development:

Equipment: Shovels Trucks
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .035 ha/day
Burden/Waste rate-mtpd: 9,600 mTPD
Burden/Waste depth & haul-m: 35m, 500m
Ore rate-mtpd: 860 mTPD High, 1,230 mTPD Low
Ore depth & haul-m: 35m, 1,500m
Conveyor length & slope-km & %: —
Water needs-cm/day: 850 m³/day
Drainage, head & distance-cm/day, m & km:
None
Concentrate (dry) rate-mtpd: Dore
Tails (dry) rate-mtpd: 860 mTPD / 2090 mTPD
Production water needs-cm/day: 650 m³/day Avg. 1900 m³/day - max
Portable Power needs-kW: —
Wastewater-L/sec: 10 L/s
Concentrate haul-km: Doré
Employee housing-men: None
Other: C.I.P. Leach: $5,964/day + Closed Circuit Dig. $341/day
Other: Heap-Leach Operation & Close out $1,700/day

B.(For Capital Costs)
Concentrate feeds-mtpd: 860 mTPD
Mill operating costs-$/day: $19,235/day
Working capital time-weeks: 13 weeks
Development time-days:
Clearing needs-ha: 110 ha

Stripping needs-mt: 100 000 MT
Stripping depth & haul-m: 10m, 1,500 m
Restoration area-ha: 450 ha
Contractors-1 or 2: 1
Mine operating costs-$/day: 530.939/max
Access roads, length & width-km & m: 4km, 8m
Airstrip length & width-m: NONE
Powerline length & power-km & mW: 10km 19mw
Dike & Dam needs-cm/fill: 100.000 m³
Climate/Weather factors: Severe
Other: C.I.P. Leach System: $10,289,909, Site: $221,604
Other: Heap Leach Pad System: $3,206,500

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 30.938
Mining Costs-$/yr: 11,137,680
Mining Costs-$/mt: 14.80
Milling Costs-$/day: 19,235
Milling Costs-$/yr: 6.924.600
Milling Costs-$/mt: 9,20
Infrastructure Costs-$/day: 4,278
Infrastructure Costs-$/yr: 1,540,080
Infrastructure Costs-$/mt: 2.05
Total Operating Costs-$/day: 53,451
Total Operating Costs-$/yr: 19,602,360
Total Operating Costs-$/mt: 26.05
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 2,815,358
Heavy Equipment (fixed life)-$: 10,421,198 *
Mine Rehabilitation-$: 4,189,725 *
Engr. & Const. Mgmt.-$: 1,589,796 *
Other:
Remaining Mine Capital-$: 1,617,701
Total Mine Capital-$: 20,633,778

MILL CAPITAL COSTS:

Mill Working Capital-$: 1,750,385
Light Vehicles (short life)-$: 836,871 *
Other:
Remaining Mill Capital-$: 20,631,252
Total Mill Capital-$: 23,218,508

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 6,705,173 *

Other:_____
Remaining Infrastructure Capital-$: 4,151,360
Total Infrastructure Capital-$: 10,856,533

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 4,565,743 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 26,400 313 *
Sum of Total Mine, Mill & Infr. Costs-$: 54,708,819
Exploration Cost-$: 5,470,882 *

Overall Capital Cost-$: 60,179,700
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:RYANA.SEE Date:07/24/93 Time:11:50:05

RYAN LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Minimum ROR, Inflation & Exponents: Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	Tax Rates: State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

Law Offices of

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CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,589,796	MACRS	Mid Year	13.0	0			0 .....
4	04/89	1,617,701	MACRS	Mid Year	13.0	0			0 .....
5	04/89	2,815,358	WC	Mid Year	13.0	0			0 .....
6	04/89	836,871	MACRS	Mid Year	4.0	0			0 .....
7	04/93	836,871	MACRS	Mid Year	4.0	0			0 .....
8	04/97	836,871	MACRS	Mid Year	4.0	0			0 .....
9	04/01	836,871	MACRS	Mid Year	4.0	0			0 .....
10	04/89	20,631,252	MACRS	Mid Year	13.0	0			0 .....
11	04/89	1,750,385	WC	Mid Year	13.0	0			0 .....
12	04/89	6,705,173	MACRS	Mid Year	13.0	0			0 .....
13	04/89	4,151,360	MACRS	Mid Year	13.0	0			0 .....
14	04/89	5,470,882	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	309,600.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	442,800.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.1507	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0385	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,137,680.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	6,924,600.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,540,080.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
11	MILL RECOV RATE HI	N/A:	04/92	End	0.90	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.70	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

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List of Assump

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Royalties	
E6 . MRT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

LIST OF ASSUMP

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RYAN LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Cash Flows

NPV =$-61,328,073 DCFROR=-29.1% GROR =-22.3% PWROR =-29.1% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416
AU LO REV		3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347
GROSS REV		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
Total Revenue		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
-SMELTING CHARGES		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
-Total Smelting Cost		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
Net Smelt Ret.		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
-MHT ROYALTY		-647,572	-647,572	-647,572	-647,572	-647,572	-647,572	-647,572
-Total Royalties		-647,572	-647,572	-647,572	-647,572	-647,572	-647,572	-647,572
Net Revenue		15,610,964	15,610,964	15,610,964	15,610,964	15,610,964	15,610,964	15,610,964
-OPER COSTS		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Total Oper Costs		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Dev, IDC	-3,829,617							
-Depreciation	-4,002,003	-7,315,891	-6,290,955	-5,431,748	-4,451,251	-3,694,022	-3,298,718	-2,883,761
-Amortization	-984,759	-328,253	-328,253					
-Write Off								
Before Depltn	-8,816,379	-11,704,787	-10,679,850	-9,492,390	-8,511,894	-7,754,664	-7,359,360	-6,944,404
Percent Depln		2,341,645	2,341,645	2,341,645	2,341,645	2,341,645	2,341,645	2,341,645
-Total D,D & A	-8,816,379	-7,644,144	-6,619,208	-5,431,748	-4,451,251	-3,694,022	-3,298,718	-2,883,761
Taxable	-8,816,379	-11,704,787	-10,679,850	-9,492,390	-8,511,894	-7,754,664	-7,359,360	-6,944,404
-Tax Due	2,997,569	3,979,627	3,631,149	3,227,413	3,287,293	2,994,851	2,842,185	2,681,929
Net Income	-5,818,810	-7,725,159	-7,048,701	-6,264,978	-5,224,600	-4,759,813	-4,517,175	-4,262,475
+Depreciation	4,002,003	7,315,891	6,290,955	5,431,748	4,451,251	3,694,022	3,298,718	2,883,761
+Amortization	984,759	328,253	328,253					
+Write Off								
-Capital Costs	-56,350,084		-836,871				-836,871	
Cash Flow	-57,182,132	-81,015	-1,266,364	-833,230	-773,349	-1,065,791	-2,055,328	-1,378,714

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Year	1999	2000	2001	Salvage
AU HI REV	12,788,416	12,788,416	12,788,416	
AU LO REV	3,634,347	3,634,347	3,634,347	
GROSS REV	16,422,763	16,422,763	16,422,763	
Total Revenue	16,422,763	16,422,763	16,422,763	4,565,743
-SMELTING CHARGES	-164,228	-164,228	-164,228	
-Total Smelting Cost	-164,228	-164,228	-164,228	
Net Smelt Ret.	16,258,535	16,258,535	16,258,535	
-MHT ROYALTY	-647,572	-647,572	-647,572	
-Total Royalties	-647,572	-647,572	-647,572	
Net Revenue	15,610,964	15,610,964	15,610,964	
-OPER COSTS	-19,671,606	-19,671,606	-19,671,606	
-Total Oper Costs	-19,671,606	-19,671,606	-19,671,606	
-Dev, IDC				
-Depreciation	-2,726,848	-2,674,544	-2,831,457	-7,052,490
-Amortization				
-Write Off				-4,565,743
Before Deplin	-6,787,491	-6,735,186	-6,892,099	-7,052,490
Percent Depln	2,341,645	2,341,645	2,341,645	
-Total D,D & A	-2,726,848	-2,674,544	-2,831,457	-11,618,233
Taxable	-6,787,491	-6,735,186	-6,892,099	-7,052,490
-Tax Due	2,621,329	2,601,129	2,661,729	2,723,672
Net Income	-4,166,162	-4,134,057	-4,230,371	-4,328,819
+Depreciation	2,726,848	2,674,544	2,831,457	7,052,490
+Amortization				
+Write Off				4,565,743
-Capital Costs			-836,871	
Cash Flow	-1,439,314	-1,459,514	-2,235,785	7,289,415

Law Offices of
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RYAN LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Cash Flows

NPV =$-51,538,631 DCFROR=-18.3% GROR =-12.3% PWROR =-18.3% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		14,852,234	14,852,234	14,852,234	14,852,234	14,852,234	14,852,234	14,852,234
AU LO REV		4,220,865	4,220,865	4,220,865	4,220,865	4,220,865	4,220,865	4,220,865
GROSS REV		19,073,098	19,073,098	19,073,098	19,073,098	19,073,098	19,073,098	19,073,098
Total Revenue		19,073,098	19,073,098	19,073,098	19,073,098	19,073,098	19,073,098	19,073,098
-SMELTING CHARGES		-190,731	-190,731	-190,731	-190,731	-190,731	-190,731	-190,731
-Total Smelting Cost		-190,731	-190,731	-190,731	-190,731	-190,731	-190,731	-190,731
Net Smelt Ret.		18,882,367	18,882,367	18,882,367	18,882,367	18,882,367	18,882,367	18,882,367
-MHT ROYALTY		-752,525	-752,525	-752,525	-752,525	-752,525	-752,525	-752,525
-Total Royalties		-752,525	-752,525	-752,525	-752,525	-752,525	-752,525	-752,525
Net Revenue		18,129,843	18,129,843	18,129,843	18,129,843	18,129,843	18,129,843	18,129,843
-OPER COSTS		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Total Oper Costs		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Dev, IDC	-3,829,617							
-Depreciation	-4,002,003	-7,315,891	-6,290,955	-5,431,748	-4,451,251	-3,694,022	-3,298,718	-2,883,761
-Amortization	-984,759	-328,253	-328,253					
-Write Off								
Before Depltn	-8,816,379	-9,185,908	-8,160,971	-6,973,511	-5,993,015	-5,235,785	-4,840,481	-4,425,525
Percent Depln		2,719,476	2,719,476	2,719,476	2,719,476	2,719,476	2,719,476	2,719,476
-Total D,D & A	-8,816,379	-7,644,144	-6,619,208	-5,431,748	-4,451,251	-3,694,022	-3,298,718	-2,883,761
Taxable	-8,816,379	-9,185,908	-8,160,971	-6,973,511	-5,993,015	-5,235,785	-4,840,481	-4,425,525
-Tax Due	2,997,569	3,123,209	2,774,730	2,370,994	2,314,502	2,022,060	1,869,394	1,709,138
Net Income	-5,818,810	-6,062,699	-5,386,241	-4,602,518	-3,678,512	-3,213,725	-2,971,087	-2,716,387
+Depreciation	4,002,003	7,315,891	6,290,955	5,431,748	4,451,251	3,694,022	3,298,718	2,883,761
+Amortization	984,759	328,253	328,253					
+Write Off								
-Capital Costs	-56,350,084		-836,871				-836,871	
Cash Flow	-57,182,132	1,581,445	396,096	829,231	772,739	480,297	-509,240	167,374

Law Offices of

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JAMES B. GOTTSTEIN

Year	1999	2000	2001	Salvage
AU HI REV	14,852,234	14,852,234	14,852,234	
AU LO REV	4,220,865	4,220,865	4,220,865	
GROSS REV	19,073,098	19,073,098	19,073,098	
Total Revenue	19,073,098	19,073,098	19,073,098	4,565,743
-SMELTING CHARGES	-190,731	-190,731	-190,731	
-Total Smelting Cost	-190,731	-190,731	-190,731	
Net Smelt Ret.	18,882,367	18,882,367	18,882,367	
-MET ROYALTY	-752,525	-752,525	-752,525	
-Total Royalties	-752,525	-752,525	-752,525	
Net Revenue	18,129,843	18,129,843	18,129,843	
-OPER COSTS	-19,671,606	-19,671,606	-19,671,606	
-Total Oper Costs	-19,671,606	-19,671,606	-19,671,606	
-Dev, IDC				
-Depreciation	-2,726,848	-2,674,544	-2,831,457	-7,052,490
-Amortization				
-Write Off				-4,565,743
Before Depltn	-4,268,612	-4,216,307	-4,373,220	-7,052,490
Percent Depln	2,719,476	2,719,476	2,719,476	
-Total D,D & A	-2,726,848	-2,674,544	-2,831,457	-11,618,233
Taxable	-4,268,612	-4,216,307	-4,373,220	-7,052,490
-Tax Due	1,648,538	1,628,338	1,688,938	2,723,672
Net Income	-2,620,074	-2,587,969	-2,684,283	-4,328,819
+Depreciation	2,726,848	2,674,544	2,831,457	7,052,490
+Amortization				
+Write Off				4,565,743
-Capital Costs			-836,871	
Cash Flow	106,774	86,574	-689,697	7,289,415

Law Offices of
MAR 0 4 1994
JAMES B. GOTTSTEIN

List of Assumptions File:RYANA.SEE Date:01/04/80 Time:02:21:35

RYAN LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
Date of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,589,796	MACRS	Mid Year	13.0	0			0 .....
4	04/89	1,617,701	MACRS	Mid Year	13.0	0			0 .....
5	04/89	2,815,358	WC	Mid Year	13.0	0			0 .....
6	04/89	836,871	MACRS	Mid Year	4.0	0			0 .....
7	04/93	836,871	MACRS	Mid Year	4.0	0			0 .....
8	04/97	836,871	MACRS	Mid Year	4.0	0			0 .....
9	04/01	836,871	MACRS	Mid Year	4.0	0			0 .....
10	04/89	20,631,252	MACRS	Mid Year	13.0	0			0 .....
11	04/89	1,750,385	WC	Mid Year	13.0	0			0 .....
12	04/89	6,705,173	MACRS	Mid Year	13.0	0			0 .....
13	04/89	4,151,360	MACRS	Mid Year	13.0	0			0 .....
14	04/89	5,470,882	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	309,600.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	442,800.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.1507	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0385	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,137,680.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	6,924,600.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,540,080.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
1	MILL RECOV RATE HI	N/A:	04/92	End	0.90	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.70	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

ASSUMPTIONS RYANA

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
E7 . MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

RYAN LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Cash Flows

NPV =$-58,432,541 DCFROR=-25.4% GROR =-20.1% PWROR =-21.3% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416
AU LO REV		3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347
GROSS REV		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
Total Revenue		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
-SMELTING CHARGES		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
-Total Smelting Cost		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
Net Smelt Ret.		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
Net Revenue		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
-OPER COSTS		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Total Oper Costs		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-MHT NPI		97,465	97,465	97,465	97,465	97,465	97,465	97,465
-Total Sev. Ad Valor		97,465	97,465	97,465	97,465	97,465	97,465	97,465
-Dev, IDC	-3,829,617							
-Depreciation	-4,002,003	-7,315,891	-6,290,955	-5,431,748	-4,451,251	-3,694,022	-3,298,718	-2,883,761
-Amortization	-984,759	-328,253	-328,253					
-Write Off								
Before Depltn	-8,816,379	-10,959,750	-9,934,813	-8,747,354	-7,766,857	-7,009,627	-6,614,323	-6,199,367
Percent Depln		2,438,780	2,438,780	2,438,780	2,438,780	2,438,780	2,438,780	2,438,780
-Total D,D & A	-8,816,379	-7,644,144	-6,619,208	-5,431,748	-4,451,251	-3,694,022	-3,298,718	-2,883,761
Taxable	-8,816,379	-10,959,750	-9,934,813	-8,747,354	-7,766,857	-7,009,627	-6,614,323	-6,199,367
-Tax Due	2,997,569	3,726,315	3,377,837	2,974,100	2,999,560	2,707,118	2,554,452	2,394,196
Net Income	-5,818,810	-7,233,435	-6,556,977	-5,773,253	-4,767,297	-4,302,509	-4,059,872	-3,805,171
+Depreciation	4,002,003	7,315,891	6,290,955	5,431,748	4,451,251	3,694,022	3,298,718	2,883,761
+Amortization	984,759	328,253	328,253					
+Write Off								
-Capital Costs	-56,350,084		-836,871				-836,871	
Cash Flow	-57,182,132	410,709	-774,640	-341,505	-316,045	-608,487	-1,598,025	-921,410

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	8	9	10	Salvage
AU HI REV	12,788,416	12,788,416	12,788,416	
AU LO REV	3,634,347	3,634,347	3,634,347	
GROSS REV	16,422,763	16,422,763	16,422,763	
Total Revenue	16,422,763	16,422,763	16,422,763	4,565,743
-SMELTING CHARGES	-164,228	-164,228	-164,228	
-Total Smelting Cost	-164,228	-164,228	-164,228	
Net Smelt Ret.	16,258,535	16,258,535	16,258,535	
Net Revenue	16,258,535	16,258,535	16,258,535	
-OPER COSTS	-19,671,606	-19,671,606	-19,671,606	
-Total Oper Costs	-19,671,606	-19,671,606	-19,671,606	
-MHT NPI	97,465	97,465	97,465	
-Total Sev. Ad Valor	97,465	97,465	97,465	
-Dev, IDC				
-Depreciation	-2,726,848	-2,674,544	-2,831,457	-7,052,490
-Amortization				
-Write Off				-4,565,743
Before Depltn	-6,042,454	-5,990,149	-6,147,063	-7,052,490
Percent Depln	2,438,780	2,438,780	2,438,780	
-Total D,D & A	-2,726,848	-2,674,544	-2,831,457	-11,618,233
Taxable	-6,042,454	-5,990,149	-6,147,063	-7,052,490
-Tax Due	2,333,596	2,313,396	2,373,996	2,723,672
Net Income	-3,708,858	-3,676,754	-3,773,067	-4,328,819
+Depreciation	2,726,848	2,674,544	2,831,457	7,052,490
+Amortization				
+Write Off				4,565,743
-Capital Costs			-836,871	
Cash Flow	-982,010	-1,002,210	-1,778,481	7,289,415

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag

By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

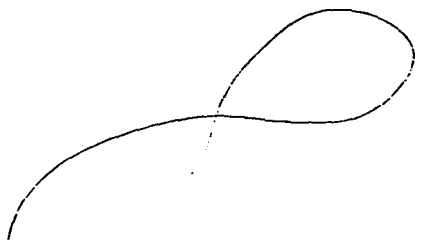
COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $66.0 million.



Comments, Assumptions, Specifications: RYANB-
Ryan Lode Bulk mineable Au Data from June 97 AK Mine-
No Heap leach.

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk Mineable Au- Ryan Lode
Total Ore Tonnage: 7.57 mil mt
Mining Method: Open Pit - 3 pits
Beneficiation Method: Crush Grind. (Jig) C.I.P.
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 yrs
Proposed Daily Production: 2,090 MTPD
Maximum Ore Depth: 137m, 100m, 46m
Stripping Ratio: 4.6:1
Haulage Distance/Road Requirements:
4km light-duty new roads
Distance From Power: 10 km nex
Pre-Production Development:

Production Development:

Equipment: Shovels Trucks
Concentrate Production: Dore

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .030 ha/day
Burden/Waste rate-mtpd: 9,600 MTPD
Burden/Waste depth & haul-m: 35m, 500m
Ore rate-mtpd: 2090
Ore depth & haul-m: 75m, 1,400m
Conveyor length & slope-km & %: -
Water needs-cm/day: 850 m³/day
Drainage, head & distance-cm/day, m & km:
None
Concentrate (dry) rate-mtpd: Dore
Tails (dry) rate-mtpd: 2090 MTPD
Production water needs-cm/day: 650 m³/day m.u. 1900 m³/recycle
Portable Power needs-kW: —
Wastewater-L/sec: 10 L/s
Concentrate haul-km: —
Employee housing-men: None
Other: C.I.P. Leach: $10,572/day Closed-Circuit Jig: $336/day
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 2090 MTPD
Mill operating costs-$/day:
Working capital time-weeks: 13 weeks
Development time-days:
Clearing needs-ha: 50 ha

Stripping needs-mt: 100 000 MT
Stripping depth & haul-m: 12m . 1,500 m
Restoration area-ha: 350 ha
Contractors-1 or 2: 1
Mine operating costs-$/day: $30,632/day
Access roads, length & width-km & m: 4km . 8m
Airstrip length & width-m: None
Powerline length & power-km & mW: 10km . 19 mw
Dike & Dam needs-cm/fill: 100,000 m³
Climate/Weather factors: Severe
Other: C.I.P. System: $17,797,215 Closed-Circuit Dia: $430,183
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 30,632
Mining Costs-$/yr: 11,027,520
Mining Costs-$/mt: 14.66
Milling Costs-$/day: 26,720
Milling Costs-$/yr: 9,619,200
Milling Costs-$/mt: 12,78
Infrastructure Costs-$/day: 4278
Infrastructure Costs-$/yr: 1,540.080
Infrastructure Costs-$/mt: 2.05
Total Operating Costs-$/day: 61,630
Total Operating Costs-$/yr: 22,186,800
Total Operating Costs-$/mt: 29.49
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 2,787,512
Heavy Equipment (fixed life)-$: 10,421,198
Mine Rehabilitation-$: 3,258,675
Engr. & Const. Mgmt.-$: 1,641,983
Other:
Remaining Mine Capital-$: 1,360,988
Total Mine Capital-$: 19,470,356

MILL CAPITAL COSTS:

Mill Working Capital-$: 2,431,520
Light Vehicles (short life)-$: 1015,676
Other:
Remaining Mill Capital-$: 28,454,600
Total Mill Capital-$: 31,901,796

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 8,800,062 *

Other:_____
Remaining Infrastructure Capital-$: 4,233,903
Total Infrastructure Capital-$: 13,033,965

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 5,219,032 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 34,049,491 *
Sum of Total Mine, Mill & Infr. Costs-$: 64,406,117
Exploration Cost-$: 6,440,612 *

Overall Capital Cost-$: 70,846,730
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:RYANB.SEE Date:07/24/93 Time:17:58:52

RYAN LODE BULK MINEABLE AU, CIP

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

******** Minimum ROR, Inflation & Exponents ********* ****** Tax Rates ******

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	3,258,675	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,641,083	MACRS	Mid Year	13.0	0			0 .....
4	04/89	1,360,988	MACRS	Mid Year	13.0	0			0 .....
5	04/89	2,787,512	WC	Mid Year	13.0	0			0 .....
6	04/89	1,015,676	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,015,676	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,015,676	MACRS	Mid Year	4.0	0			0 .....
9	04/01	1,015,676	MACRS	Mid Year	4.0	0			0 .....
10	04/89	28,454,600	MACRS	Mid Year	13.0	0			0 .....
11	04/89	2,431,520	WC	Mid Year	13.0	0			0 .....
12	04/89	8,800,062	MACRS	Mid Year	13.0	0			0 .....
13	04/89	4,233,903	MACRS	Mid Year	13.0	0			0 .....
14	04/89	6,440,612	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	752,400.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.0847	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,027,520.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	9,619,200.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,540,080.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
==========	
E3 . GROSS REV	E1+E2
Operating Costs	
==========	
E5 . OPER COSTS	S6+S7+S8+S9
Royalties	
==========	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
==========	
E4 . SMELTING CHARGES	S13*E3

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

RYAN LODE BULK MINEABLE AU, CIP

Cash Flows

NPV =$-72,057,790 DCFROR=-29.2% GROR =-22.5% PWROR =-29.2% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086
GROSS REV		18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086
Total Revenue		18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086
-SMELTING CHARGES		-184,381	-184,381	-184,381	-184,381	-184,381	-184,381	-184,381
-Total Smelting Cost		-184,381	-184,381	-184,381	-184,381	-184,381	-184,381	-184,381
Net Smelt Ret.		18,253,705	18,253,705	18,253,705	18,253,705	18,253,705	18,253,705	18,253,705
-MHT ROYALTY		-727,378	-727,378	-727,378	-727,378	-727,378	-727,378	-727,378
-Total Royalties		-727,378	-727,378	-727,378	-727,378	-727,378	-727,378	-727,378
Net Revenue		17,526,327	17,526,327	17,526,327	17,526,327	17,526,327	17,526,327	17,526,327
-OPER COSTS		-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046
-Total Oper Costs		-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046
-Dev, IDC	-4,508,428							
-Depreciation	-4,728,574	-8,641,779	-7,434,351	-6,422,447	-5,258,588	-4,361,680	-3,900,624	-3,412,838
-Amortization	-1,159,310	-386,437	-386,437					
-Write Off								
Before Depltn	-10,396,312	-13,757,935	-12,550,507	-11,152,167	-9,988,308	-9,091,399	-8,630,343	-8,142,557
Percent Depln		2,628,949	2,628,949	2,628,949	2,628,949	2,628,949	2,628,949	2,628,949
-Total D,D & A	-10,396,312	-9,028,216	-7,820,788	-6,422,447	-5,258,588	-4,361,680	-3,900,624	-3,412,838
Taxable	-10,396,312	-13,757,935	-12,550,507	-11,152,167	-9,988,308	-9,091,399	-8,630,343	-8,142,557
-Tax Due	3,534,746	4,677,698	4,267,172	3,791,737	3,857,484	3,511,098	3,333,038	3,144,656
Net Income	-6,861,566	-9,080,237	-8,283,335	-7,360,430	-6,130,823	-5,580,301	-5,297,305	-4,997,902
+Depreciation	4,728,574	8,641,779	7,434,351	6,422,447	5,258,588	4,361,680	3,900,624	3,412,838
+Amortization	1,159,310	386,437	386,437					
+Write Off								
-Capital Costs	-66,337,401		-1,015,676				-1,015,676	
Cash Flow	-67,311,083	-52,021	-1,478,223	-937,983	-872,235	-1,218,621	-2,412,357	-1,585,064

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	1999	2000	2001	Salvage
AU HI REV	21,413,658	21,413,658	21,413,658	
GROSS REV	21,413,658	21,413,658	21,413,658	
Total Revenue	21,413,658	21,413,658	21,413,658	5,219,032
-SMELTING CHARGES	-214,137	-214,137	-214,137	
-Total Smelting Cost	-214,137	-214,137	-214,137	
Net Smelt Ret.	21,199,521	21,199,521	21,199,521	
-MHT ROYALTY	-845,211	-845,211	-845,211	
-Total Royalties	-845,211	-845,211	-845,211	
Net Revenue	20,354,310	20,354,310	20,354,310	
-OPER COSTS	-22,256,046	-22,256,046	-22,256,046	
-Total Oper Costs	-22,256,046	-22,256,046	-22,256,046	
-Dev, IDC				
-Depreciation	-3,222,399	-3,158,919	-3,349,358	-8,341,656
-Amortization				
-Write Off				-5,219,032
Before Depltn	-5,124,134	-5,060,655	-5,251,094	-8,341,656
Percent Depln	3,053,147	3,053,147	3,053,147	
-Total D,D & A	-3,222,399	-3,158,919	-3,349,358	-13,560,688
Taxable	-5,124,134	-5,060,655	-5,251,094	-8,341,656
-Tax Due	1,978,941	1,954,425	2,027,972	3,221,547
Net Income	-3,145,194	-3,106,230	-3,223,121	-5,120,108
+Depreciation	3,222,399	3,158,919	3,349,358	8,341,656
+Amortization				
+Write Off				5,219,032
-Capital Costs			-1,015,676	
Cash Flow	77,205	52,689	-889,439	8,440,579

NPV = $-61,067,035

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	1999	2000	2001	Salvage
AU HI REV	18,438,086	18,438,086	18,438,086	
GROSS REV	18,438,086	18,438,086	18,438,086	
Total Revenue	18,438,086	18,438,086	18,438,086	5,219,032
-SMELTING CHARGES	-184,381	-184,381	-184,381	
-Total Smelting Cost	-184,381	-184,381	-184,381	
Net Smelt Ret.	18,253,705	18,253,705	18,253,705	
-MHT ROYALTY	-727,378	-727,378	-727,378	
-Total Royalties	-727,378	-727,378	-727,378	
Net Revenue	17,526,327	17,526,327	17,526,327	
-OPER COSTS	-22,256,046	-22,256,046	-22,256,046	
-Total Oper Costs	-22,256,046	-22,256,046	-22,256,046	
-Dev, IDC				
-Depreciation	-3,222,399	-3,158,919	-3,349,358	-8,341,656
-Amortization				
-Write Off				-5,219,032
Before Depltn	-7,952,118	-7,888,638	-8,079,078	-8,341,656
Percent Depln	2,628,949	2,628,949	2,628,949	
-Total D,D & A	-3,222,399	-3,158,919	-3,349,358	-13,560,688
Taxable	-7,952,118	-7,888,638	-8,079,078	-8,341,656
-Tax Due	3,071,108	3,046,592	3,120,140	3,221,547
Net Income	-4,881,010	-4,842,046	-4,958,938	-5,120,108
+Depreciation	3,222,399	3,158,919	3,349,358	8,341,656
+Amortization				
+Write Off				5,219,032
-Capital Costs			-1,015,676	
Cash Flow	-1,658,611	-1,683,127	-2,625,256	8,440,579

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

RYAN LODE BULK MINEABLE AU, CIP

Cash Flows

NPV =$-61,067,035 DCFROR=-18.8% GROR =-12.8% PWROR =-18.7% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		21,413,658	21,413,658	21,413,658	21,413,658	21,413,658	21,413,658	21,413,658
GROSS REV		21,413,658	21,413,658	21,413,658	21,413,658	21,413,658	21,413,658	21,413,658
Total Revenue		21,413,658	21,413,658	21,413,658	21,413,658	21,413,658	21,413,658	21,413,658
-SMELTING CHARGES		-214,137	-214,137	-214,137	-214,137	-214,137	-214,137	-214,137
-Total Smelting Cost		-214,137	-214,137	-214,137	-214,137	-214,137	-214,137	-214,137
Net Smelt Ret.		21,199,521	21,199,521	21,199,521	21,199,521	21,199,521	21,199,521	21,199,521
-MHT ROYALTY		-845,211	-845,211	-845,211	-845,211	-845,211	-845,211	-845,211
-Total Royalties		-845,211	-845,211	-845,211	-845,211	-845,211	-845,211	-845,211
Net Revenue		20,354,310	20,354,310	20,354,310	20,354,310	20,354,310	20,354,310	20,354,310
-OPER COSTS		-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046
-Total Oper Costs		-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046
-Dev, IDC	-4,508,428							
-Depreciation	-4,728,574	-8,641,779	-7,434,351	-6,422,447	-5,258,588	-4,361,680	-3,900,624	-3,412,838
-Amortization	-1,159,310	-386,437	-386,437					
-Write Off								
Before Depltn	-10,396,312	-10,929,951	-9,722,523	-8,324,183	-7,160,324	-6,263,415	-5,802,359	-5,314,574
Percent Depln		3,053,147	3,053,147	3,053,147	3,053,147	3,053,147	3,053,147	3,053,147
-Total D,D & A	-10,396,312	-9,028,216	-7,820,788	-6,422,447	-5,258,588	-4,361,680	-3,900,624	-3,412,838
Taxable	-10,396,312	-10,929,951	-9,722,523	-8,324,183	-7,160,324	-6,263,415	-5,802,359	-5,314,574
-Tax Due	3,534,746	3,716,184	3,305,658	2,830,222	2,765,317	2,418,931	2,240,871	2,052,488
Net Income	-6,861,566	-7,213,768	-6,416,865	-5,493,961	-4,395,007	-3,844,484	-3,561,488	-3,262,085
+Depreciation	4,728,574	8,641,779	7,434,351	6,422,447	5,258,588	4,361,680	3,900,624	3,412,838
+Amortization	1,159,310	386,437	386,437					
+Write Off								
-Capital Costs	-66,337,401		-1,015,676				-1,015,676	
Cash Flow	-67,311,083	1,814,448	388,246	928,487	863,582	517,195	-676,540	150,753

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

List of Assumptions File:RYANB.SEE Date:01/04/80 Time:02:55:12

RYAN LODE BULK MINEABLE AU, CIP

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Minimum ROR, Inflation & Exponents: Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	Tax Rates: State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	3,258,675	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,641,083	MACRS	Mid Year	13.0	0			0 .....
4	04/89	1,360,988	MACRS	Mid Year	13.0	0			0 .....
5	04/89	2,787,512	WC	Mid Year	13.0	0			0 .....
6	04/89	1,015,676	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,015,676	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,015,676	MACRS	Mid Year	4.0	0			0 .....
9	04/01	1,015,676	MACRS	Mid Year	4.0	0			0 .....
10	04/89	28,454,600	MACRS	Mid Year	13.0	0			0 .....
11	04/89	2,431,520	WC	Mid Year	13.0	0			0 .....
12	04/89	8,800,062	MACRS	Mid Year	13.0	0			0 .....
13	04/89	4,233,903	MACRS	Mid Year	13.0	0			0 .....
14	04/89	6,440,612	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	752,400.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.0847	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,027,520.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	9,619,200.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,540,080.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
1	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
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General Equations

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

LIST OF ASSUMPTIONS RYANB

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
E7 . MMT NPI	S15*(E3-E5)
Royalties	
E6 . MMT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

RYAN LODE BULK MINEABLE AU, CIP

Cash Flows

NPV =$-68,785,739 DCFROR=-25.6% GROR =-20.2% PWROR =-21.5% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086
GROSS REV		18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086
Total Revenue		18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086	18,438,086
-SMELTING CHARGES		-184,381	-184,381	-184,381	-184,381	-184,381	-184,381	-184,381
-Total Smelting Cost		-184,381	-184,381	-184,381	-184,381	-184,381	-184,381	-184,381
Net Smelt Ret.		18,253,705	18,253,705	18,253,705	18,253,705	18,253,705	18,253,705	18,253,705
Net Revenue		18,253,705	18,253,705	18,253,705	18,253,705	18,253,705	18,253,705	18,253,705
-OPER COSTS		-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046
-Total Oper Costs		-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046	-22,256,046
-MHT NPI		114,539	114,539	114,539	114,539	114,539	114,539	114,539
-Total Sev. Ad Valor		114,539	114,539	114,539	114,539	114,539	114,539	114,539
-Dev, IDC	-4,508,428							
-Depreciation	-4,728,574	-8,641,779	-7,434,351	-6,422,447	-5,258,588	-4,361,680	-3,900,624	-3,412,838
-Amortization	-1,159,310	-386,437	-386,437					
-Write Off								
Before Depltn	-10,396,312	-12,916,018	-11,708,590	-10,310,250	-9,146,391	-8,249,482	-7,788,426	-7,300,640
Percent Depln		2,738,056	2,738,056	2,738,056	2,738,056	2,738,056	2,738,056	2,738,056
-Total D,D & A	-10,396,312	-9,028,216	-7,820,788	-6,422,447	-5,258,588	-4,361,680	-3,900,624	-3,412,838
Taxable	-10,396,312	-12,916,018	-11,708,590	-10,310,250	-9,146,391	-8,249,482	-7,788,426	-7,300,640
-Tax Due	3,534,746	4,391,446	3,980,921	3,505,485	3,532,336	3,185,950	3,007,890	2,819,507
Net Income	-6,861,566	-8,524,572	-7,727,669	-6,804,765	-5,614,055	-5,063,532	-4,780,536	-4,481,133
+Depreciation	4,728,574	8,641,779	7,434,351	6,422,447	5,258,588	4,361,680	3,900,624	3,412,838
+Amortization	1,159,310	386,437	386,437					
+Write Off								
-Capital Costs	-66,337,401		-1,015,676				-1,015,676	
Cash Flow	-67,311,083	503,644	-922,558	-382,317	-355,466	-701,852	-1,895,588	-1,068,295

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	8	9	10	Salvage
AU HI REV	18,438,086	18,438,086	18,438,086	
GROSS REV	18,438,086	18,438,086	18,438,086	
Total Revenue	18,438,086	18,438,086	18,438,086	5,219,032
-SMELTING CHARGES	-184,381	-184,381	-184,381	
-Total Smelting Cost	-184,381	-184,381	-184,381	
Net Smelt Ret.	18,253,705	18,253,705	18,253,705	
Net Revenue	18,253,705	18,253,705	18,253,705	
-OPER COSTS	-22,256,046	-22,256,046	-22,256,046	
-Total Oper Costs	-22,256,046	-22,256,046	-22,256,046	
-MHT NPI	114,539	114,539	114,539	
-Total Sev. Ad Valor	114,539	114,539	114,539	
-Dev, IDC				
-Depreciation	-3,222,399	-3,158,919	-3,349,358	-8,341,656
-Amortization				
-Write Off				-5,219,032
Before Depltn	-7,110,201	-7,046,721	-7,237,160	-8,341,656
Percent Depln	2,738,056	2,738,056	2,738,056	
-Total D,D & A	-3,222,399	-3,158,919	-3,349,358	-13,560,688
Taxable	-7,110,201	-7,046,721	-7,237,160	-8,341,656
-Tax Due	2,745,960	2,721,444	2,794,991	3,221,547
Net Income	-4,364,241	-4,325,277	-4,442,169	-5,120,108
+Depreciation	3,222,399	3,158,919	3,349,358	8,341,656
+Amortization				
+Write Off				5,219,032
-Capital Costs			-1,015,676	
Cash Flow	-1,141,843	-1,166,358	-2,108,487	8,440,579

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag

By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

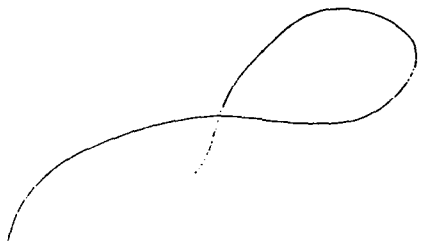
COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $66.0 million.



Comments, Assumptions, Specifications: RYANC -
Ryan Lode Bulk Mineable Au. Data from June '93 AK Miner
No Heap Leach 7 year mine Life

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk Mineable Au - Ryan Lode
Total Ore Tonnage: 7.52 mil mt
Mining Method: Open Pit - 3 pits
Beneficiation Method: Crush & Grind (Ball), C.I.P.
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 7 yrs
Proposed Daily Production: 3,000 MTPD
Maximum Ore Depth: 137 m. 100 m. 46 m
Stripping Ratio: 4.6:1
Haulage Distance/Road Requirements:
4 Km light-duty new roads
Distance From Power: 10 km max
Pre-Production Development:

Production Development:

Equipment: Shovels, Trucks
Concentrate Production: Dore

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .043 ha/day
Burden/Waste rate-mtpd: 13,800 MTPD
Burden/Waste depth & haul-m: 35 m, 500 m
Ore rate-mtpd: 3,000 MTPD
Ore depth & haul-m: 35 m, 1,400 m
Conveyor length & slope-km & %: -
Water needs-cm/day: 1,200 m³/day
Drainage, head & distance-cm/day, m & km:
None
Concentrate (dry) rate-mtpd: Dore
Tails (dry) rate-mtpd: 3,000 MTPD
Production water needs-cm/day: 900 m³/day M.U., 2,700 m³/day recycle
Portable Power needs-kW: -
Wastewater-L/sec: 12 l/s
Concentrate haul-km: -
Employee housing-men: None
Other: Closed-Circuit Jig: $409/day ; C.I.P. Leach: $13,763/day
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 3,000 MTPD
Mill operating costs-$/day:
Working capital time-weeks: 13 weeks
Development time-days: 10 days @ 10,000 MTPD Stripping
Clearing needs-ha: 50 ha

Stripping needs-mt: 100,000 MT
Stripping depth & haul-m: 10m 1,500m
Restoration area-ha: 350 ha
Contractors-1 or 2: 1
Mine operating costs-$/day:
Access roads, length & width-km & m: 4km 8m
Airstrip length & width-m: None
Powerline length & power-km & mW: 10km 24mW
Dike & Dam needs-cm/fill: 120,000 m3
Climate/Weather factors: severe
Other: C-C S.a: $94,255 ; C.I.P. system's $ 22,243,627
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 40523
Mining Costs-$/yr: 14,588,280
Mining Costs-$/mt: 13.51
Milling Costs-$/day: 33,469
Milling Costs-$/yr: 12,048,840
Milling Costs-$/mt: 11.16
Infrastructure Costs-$/day: 5,305
Infrastructure Costs-$/yr: 1.77
Infrastructure Costs-$/mt: 1,909,800
Total Operating Costs-$/day: 79,297
Total Operating Costs-$/yr: 28,546,920
Total Operating Costs-$/mt: 26.43
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 3,687,593
Heavy Equipment (fixed life)-$: 13828917 *
Mine Rehabilitation-$: 3,258,675 *
Engr. & Const. Mgmt.-$: 1,962,969 *
Other:
Remaining Mine Capital-$: 1,676,096
Total Mine Capital-$: 24414250

MILL CAPITAL COSTS:

Mill Working Capital-$: 3,045,679
Light Vehicles (short life)-$: 1,152,231 *
Other:
Remaining Mill Capital-$: 35,644,847
Total Mill Capital-$: 39,842,757

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 10,668,795 *

Other:_____
Remaining Infrastructure Capital-$: 4,803,129
Total Infrastructure Capital-$: 15,471,924

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 6,733,272 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 42,124,072 *
Sum of Total Mine, Mill & Infr. Costs-$: 79,728,931
Exploration Cost-$: 7,972,893 *

Overall Capital Cost-$: 87,701,824
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:RYANC.SEE Date:07/24/93 Time:18:45:29

RYAN LODE BULK MINEABLE AU, CIP

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 7
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

	Minimum ROR, Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd

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CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	13,828,917	MACRS	Mid Year	10.0	0			0 .....
2	04/89	3,258,675	MACRS	Mid Year	10.0	0			0 .....
3	04/89	1,962,969	MACRS	Mid Year	10.0	0			0 .....
4	04/89	1,676,096	MACRS	Mid Year	10.0	0			0 .....
5	04/89	3,687,593	WC	Mid Year	10.0	0			0 .....
6	04/89	1,152,231	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,152,231	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,152,231	MACRS	Mid Year	4.0	0			0 .....
9	.....	0	MACRS	Mid Year	7.0	0			0 .....
10	04/89	35,644,847	MACRS	Mid Year	10.0	0			0 .....
11	04/89	3,045,679	WC	Mid Year	10.0	0			0 .....
12	04/89	10,668,795	MACRS	Mid Year	10.0	0			0 .....
13	04/89	4,803,129	MACRS	Mid Year	10.0	0			0 .....
14	04/89	7,972,893	EXPL-X	Mid Year	10.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	1,080,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.0847	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	14,588,280.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	12,048,840.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,909,800.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . AU HI REV S1*S3*S5*S10*S11
E2 . AU LO REV S2*S4*S5*S10*S12

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RYAN C.

Revenues

E3 . GROSS REV	E1+E2

Equations continued

Operating Costs

E5 . OPER COSTS	S6+S7+S8+S9

Royalties

E6 . MHT ROYALTY	S14*(E3-E4-S9)

Processing Costs

E4 . SMELTING CHARGES	S13*E3

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RYAN LODE BULK MINEABLE AU, CIP

Cash Flows

NPV =$-74,267,684 DCFROR=-24.8% GROR =-19.7% PWROR =-24.2% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
GROSS REV		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
Total Revenue		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
-SMELTING CHARGES		-264,662	-264,662	-264,662	-264,662	-264,662	-264,662	-264,662
-Total Smelting Cost		-264,662	-264,662	-264,662	-264,662	-264,662	-264,662	-264,662
Net Smelt Ret.		26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490
-MHT ROYALTY		-1,045,290	-1,045,290	-1,045,290	-1,045,290	-1,045,290	-1,045,290	-1,045,290
-Total Royalties		-1,045,290	-1,045,290	-1,045,290	-1,045,290	-1,045,290	-1,045,290	-1,045,290
Net Revenue		25,156,201	25,156,201	25,156,201	25,156,201	25,156,201	25,156,201	25,156,201
-OPER COSTS		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Total Oper Costs		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Dev, IDC	-5,581,025							
-Depreciation	-7,472,401	-13,363,904	-10,849,555	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
-Amortization	-1,435,121	-478,374	-478,374					
-Write Off								
Before Depltn	-14,488,546	-17,302,243	-14,787,894	-12,312,444	-10,369,113	-8,900,867	-8,528,368	-8,600,383
Percent Depln		3,773,430	3,773,430	3,773,430	3,773,430	3,773,430	3,773,430	3,773,430
-Total D,D & A	-14,488,546	-13,842,277	-11,327,928	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
Taxable	-14,488,546	-17,302,243	-14,787,894	-12,312,444	-10,369,113	-8,900,867	-8,528,368	-8,600,383
-Tax Due	4,926,106	5,882,762	5,027,884	4,186,231	4,004,552	3,437,515	3,293,656	3,321,468
Net Income	-9,562,441	-11,419,480	-9,760,010	-8,126,213	-6,364,562	-5,463,352	-5,234,713	-5,278,915
+Depreciation	7,472,401	13,363,904	10,849,555	8,852,478	6,909,148	5,440,901	5,068,403	5,140,418
+Amortization	1,435,121	478,374	478,374					
+Write Off								
-Capital Costs	-82,120,799		-1,152,231				-1,152,231	
Cash Flow	-82,775,718	2,422,797	415,687	726,266	544,586	-22,451	-1,318,540	-138,498

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Year	Salvage
AU HI REV	
GROSS REV	
Total Revenue	6,733,272
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-NET ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-12,202,914
-Amortization	
-Write Off	-6,733,272
Before Depltn	-12,202,914
Percent Depln	
-Total D,D & A	-18,936,186
Taxable	-12,202,914
-Tax Due	4,712,765
Net Income	-7,490,149
+Depreciation	12,202,914
+Amortization	
+Write Off	6,733,272
-Capital Costs	
Cash Flow	11,446,037

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RYAN LODE BULK MINEABLE AU, CIP

Cash Flows

NPV =$-61,671,135 DCFROR=-16.8% GROR = -9.5% PWROR =-16.8% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		30,737,308	30,737,308	30,737,308	30,737,308	30,737,308	30,737,308	30,737,308
GROSS REV		30,737,308	30,737,308	30,737,308	30,737,308	30,737,308	30,737,308	30,737,308
Total Revenue		30,737,308	30,737,308	30,737,308	30,737,308	30,737,308	30,737,308	30,737,308
-SMELTING CHARGES		-307,373	-307,373	-307,373	-307,373	-307,373	-307,373	-307,373
-Total Smelting Cost		-307,373	-307,373	-307,373	-307,373	-307,373	-307,373	-307,373
Net Smelt Ret.		30,429,935	30,429,935	30,429,935	30,429,935	30,429,935	30,429,935	30,429,935
-MHT ROYALTY		-1,214,428	-1,214,428	-1,214,428	-1,214,428	-1,214,428	-1,214,428	-1,214,428
-Total Royalties		-1,214,428	-1,214,428	-1,214,428	-1,214,428	-1,214,428	-1,214,428	-1,214,428
Net Revenue		29,215,507	29,215,507	29,215,507	29,215,507	29,215,507	29,215,507	29,215,507
-OPER COSTS		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Total Oper Costs		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Dev, IDC	-5,581,025							
-Depreciation	-7,472,401	-13,363,904	-10,849,555	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
-Amortization	-1,435,121	-478,374	-478,374					
-Write Off								
Before Depltn	-14,488,546	-13,242,936	-10,728,587	-8,253,137	-6,309,807	-4,841,560	-4,469,062	-4,541,076
Percent Depln		4,382,326	4,382,326	4,382,326	4,382,326	4,382,326	4,382,326	4,382,326
-Total D,D & A	-14,488,546	-13,842,277	-11,327,928	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
Taxable	-14,488,546	-13,242,936	-10,728,587	-8,253,137	-6,309,807	-4,841,560	-4,469,062	-4,541,076
-Tax Due	4,926,106	4,502,598	3,647,720	2,806,067	2,436,847	1,869,810	1,725,952	1,753,764
Net Income	-9,562,441	-8,740,338	-7,080,867	-5,447,070	-3,872,959	-2,971,749	-2,743,110	-2,787,312
+Depreciation	7,472,401	13,363,904	10,849,555	8,852,478	6,909,148	5,440,901	5,068,403	5,140,418
+Amortization	1,435,121	478,374	478,374					
+Write Off								
-Capital Costs	-82,120,799		-1,152,231				-1,152,231	
Cash Flow	-82,775,718	5,101,940	3,094,830	3,405,408	3,036,189	2,469,152	1,173,062	2,353,105

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Year	Salvage
AU HI REV	
GROSS REV	
Total Revenue	6,733,272
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-12,202,914
-Amortization	
-Write Off	-6,733,272
Before Depltn	-12,202,914
Percent Depln	
-Total D,D & A	-18,936,186
Taxable	-12,202,914
-Tax Due	4,712,765
Net Income	-7,490,149
+Depreciation	12,202,914
+Amortization	
+Write Off	6,733,272
-Capital Costs	
Cash Flow	11,446,037

RYAN LODE BULK MINERAL NPV = $-11,471,135

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RYAN LODE BULK MINEABLE AU, CIP

Cash Flows

NPV =$-48,523,300 DCFROR= -9.9% GROR = -3.0% PWROR = -9.9% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		35,195,391	35,195,391	35,195,391	35,195,391	35,195,391	35,195,391	35,195,391
GROSS REV		35,195,391	35,195,391	35,195,391	35,195,391	35,195,391	35,195,391	35,195,391
Total Revenue		35,195,391	35,195,391	35,195,391	35,195,391	35,195,391	35,195,391	35,195,391
-SMELTING CHARGES		-351,954	-351,954	-351,954	-351,954	-351,954	-351,954	-351,954
-Total Smelting Cost		-351,954	-351,954	-351,954	-351,954	-351,954	-351,954	-351,954
Net Smelt Ret.		34,843,437	34,843,437	34,843,437	34,843,437	34,843,437	34,843,437	34,843,437
-MHT ROYALTY		-1,390,968	-1,390,968	-1,390,968	-1,390,968	-1,390,968	-1,390,968	-1,390,968
-Total Royalties		-1,390,968	-1,390,968	-1,390,968	-1,390,968	-1,390,968	-1,390,968	-1,390,968
Net Revenue		33,452,469	33,452,469	33,452,469	33,452,469	33,452,469	33,452,469	33,452,469
-OPER COSTS		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Total Oper Costs		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Dev, IDC	-5,581,025							
-Depreciation	-7,472,401	-13,363,904	-10,849,555	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
-Amortization	-1,435,121	-478,374	-478,374					
-Write Off								
Before Depltn	-14,488,546	-9,005,974	-6,491,625	-4,016,175	-2,072,845	-604,598	-232,100	-304,114
Percent Depln		5,017,870	5,017,870	5,017,870	5,017,870	5,017,870	5,017,870	5,017,870
-Total D,D & A	-14,488,546	-13,842,277	-11,327,928	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
Taxable	-14,488,546	-9,005,974	-6,491,625	-4,016,175	-2,072,845	-604,598	-232,100	-304,114
-Tax Due	4,926,106	3,062,031	2,207,152	1,365,499	800,533	233,496	89,637	117,449
Net Income	-9,562,441	-5,943,943	-4,284,472	-2,650,675	-1,272,312	-371,102	-142,463	-186,665
+Depreciation	7,472,401	13,363,904	10,849,555	8,852,478	6,909,148	5,440,901	5,068,403	5,140,418
+Amortization	1,435,121	478,374	478,374					
+Write Off								
-Capital Costs	-82,120,799		-1,152,231				-1,152,231	
Cash Flow	-82,775,718	7,898,335	5,891,225	6,201,803	5,636,836	5,069,799	3,773,709	4,953,752

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	Salvage
AU HI REV	
GROSS REV	
Total Revenue	6,733,272
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-12,202,914
-Amortization	
-Write Off	-6,733,272
Before Depltn	-12,202,914
Percent Depln	
-Total D,D & A	-18,936,186
Taxable	-12,202,914
-Tax Due	4,712,765
Net Income	-7,490,149
+Depreciation	12,202,914
+Amortization	
+Write Off	6,733,272
-Capital Costs	
Cash Flow	11,446,037

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

RYAN LODE BULK MINEABLE AU, CIP

Cash Flows

MPV =$-35,734,078 DCFROR= -3.8% GROR = 1.5% PWROR = -3.8% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		39,105,990	39,105,990	39,105,990	39,105,990	39,105,990	39,105,990	39,105,990
GROSS REV		39,105,990	39,105,990	39,105,990	39,105,990	39,105,990	39,105,990	39,105,990
Total Revenue		39,105,990	39,105,990	39,105,990	39,105,990	39,105,990	39,105,990	39,105,990
-SMELTING CHARGES		-391,060	-391,060	-391,060	-391,060	-391,060	-391,060	-391,060
-Total Smelting Cost		-391,060	-391,060	-391,060	-391,060	-391,060	-391,060	-391,060
Net Smelt Ret.		38,714,930	38,714,930	38,714,930	38,714,930	38,714,930	38,714,930	38,714,930
-MHT ROYALTY		-1,545,827	-1,545,827	-1,545,827	-1,545,827	-1,545,827	-1,545,827	-1,545,827
-Total Royalties		-1,545,827	-1,545,827	-1,545,827	-1,545,827	-1,545,827	-1,545,827	-1,545,827
Net Revenue		37,169,103	37,169,103	37,169,103	37,169,103	37,169,103	37,169,103	37,169,103
-OPER COSTS		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Total Oper Costs		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Dev, IDC	-5,581,025							
-Depreciation	-7,472,401	-13,363,904	-10,849,555	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
-Amortization	-1,435,121	-478,374	-478,374					
-Write Off								
Before Depltn	-14,488,546	-5,289,341	-2,774,992	-299,542	1,643,789	3,112,036	3,484,534	3,412,519
100% Limit					1,643,789	3,112,036	3,484,534	3,412,519
Percent Depln		5,575,365	5,575,365	5,575,365	5,575,365	5,575,365	5,575,365	5,575,365
Prev Exp Expl					1,643,789	3,112,036	825,201	
-Depletion							-2,659,333	-3,412,519
-Total D,D & A	-14,488,546	-13,842,277	-11,327,928	-8,852,478	-6,909,148	-5,440,901	-7,727,736	-8,552,937
Taxable	-14,488,546	-5,289,341	-2,774,992	-299,542	1,643,789	3,112,036	825,201	
-Tax Due	4,926,106	1,798,376	943,497	101,844	-634,831	-1,201,868	-318,693	
Net Income	-9,562,441	-3,490,965	-1,831,494	-197,698	1,008,957	1,910,167	506,508	
+Depreciation	7,472,401	13,363,904	10,849,555	8,852,478	6,909,148	5,440,901	5,068,403	5,140,418
+Depletion							2,659,333	3,412,519
+Amortization	1,435,121	478,374	478,374					
+Write Off								
-Capital Costs	-82,120,799		-1,152,231				-1,152,231	
Cash Flow	-82,775,718	10,351,313	8,344,203	8,654,781	7,918,106	7,351,069	7,082,013	8,552,937

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	Salvage
AU HI REV	
GROSS REV	
Total Revenue	6,733,272
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MMT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-12,202,914
-Amortization	
-Write Off	-6,733,272
Before Depltn	-12,202,914
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-18,936,186
Taxable	-12,202,914
-Tax Due	4,712,765
Net Income	-7,490,149
+Depreciation	12,202,914
+Depletion	
+Amortization	
+Write Off	6,733,272
-Capital Costs	
Cash Flow	11,446,037

Law Offices of

MAR 0 4 1994

JAMES B. GOTT

List of Assumptions File:RYANC.SEE Date:01/04/80 Time:00:10:16

RYAN LODE BULK MINEABLE AU, CIP

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
d of Time Zero 03/92
valuation Date 04/89
Project Length (in Years) 7
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd

Law Offices of
MAR 0 4 1980
JAMES S. GOTTSTEIN

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	13,828,917	MACRS	Mid Year	10.0	0			0 .....
2	04/89	3,258,675	MACRS	Mid Year	10.0	0			0 .....
3	04/89	1,962,969	MACRS	Mid Year	10.0	0			0 .....
4	04/89	1,676,096	MACRS	Mid Year	10.0	0			0 .....
5	04/89	3,687,593	WC	Mid Year	10.0	0			0 .....
6	04/89	1,152,231	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,152,231	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,152,231	MACRS	Mid Year	4.0	0			0 .....
9	.....	0	MACRS	Mid Year	7.0	0			0 .....
10	04/89	35,644,847	MACRS	Mid Year	10.0	0			0 .....
11	04/89	3,045,679	WC	Mid Year	10.0	0			0 .....
12	04/89	10,668,795	MACRS	Mid Year	10.0	0			0 .....
13	04/89	4,803,129	MACRS	Mid Year	10.0	0			0 .....
14	04/89	7,972,893	EXPL-X	Mid Year	10.0	0			0 .....

apital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	1,080,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.0847	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	14,588,280.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	12,048,840.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,909,800.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
4	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . AU HI REV S1*S3*S5*S10*S11
E2 . AU LO REV S2*S4*S5*S10*S12

Law Offices of
MAR 0 4 1994
JAMES B. GOTTSTEIN

Equations continued

Revenues

E3 . GROSS REV	E1+E2

Operating Costs

E5 . OPER COSTS	S6+S7+S8+S9

Special Taxes

E7 . MHT NPI	S15*(E3-E5)

Royalties

. MHT ROYALTY	S14*(E3-E4-S9)

Processing Costs

E4 . SMELTING CHARGES	S13*E3

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

RYAN LODE BULK MINEABLE AU, CIP

Cash Flows

NPV =$-70,823,863 DCFROR=-22.4% GROR =-16.3% PWROR =-22.3% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
GROSS REV		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
Total Revenue		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
-SMELTING CHARGES		-264,662	-264,662	-264,662	-264,662	-264,662	-264,662	-264,662
-Total Smelting Cost		-264,662	-264,662	-264,662	-264,662	-264,662	-264,662	-264,662
Net Smelt Ret.		26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490
Net Revenue		26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490
-OPER COSTS		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-Total Oper Costs		-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166	-28,616,166
-MHT NPI		64,500	64,500	64,500	64,500	64,500	64,500	64,500
-Total Sev. Ad Valor		64,500	64,500	64,500	64,500	64,500	64,500	64,500
-Dev, IDC	-5,581,025							
-Depreciation	-7,472,401	-13,363,904	-10,849,555	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
-Amortization	-1,435,121	-478,374	-478,374					
-Write Off								
Before Depltn	-14,488,546	-16,192,452	-13,678,103	-11,202,654	-9,259,323	-7,791,076	-7,418,578	-7,490,593
Percent Depln		3,930,224	3,930,224	3,930,224	3,930,224	3,930,224	3,930,224	3,930,224
-Total D,D & A	-14,488,546	-13,842,277	-11,327,928	-8,852,478	-6,909,148	-5,440,901	-5,068,403	-5,140,418
Taxable	-14,488,546	-16,192,452	-13,678,103	-11,202,654	-9,259,323	-7,791,076	-7,418,578	-7,490,593
-Tax Due	4,926,106	5,505,434	4,650,555	3,808,902	3,575,951	3,008,914	2,865,055	2,892,867
Net Income	-9,562,441	-10,687,019	-9,027,548	-7,393,751	-5,683,373	-4,782,163	-4,553,523	-4,597,726
+Depreciation	7,472,401	13,363,904	10,849,555	8,852,478	6,909,148	5,440,901	5,068,403	5,140,418
+Amortization	1,435,121	478,374	478,374					
+Write Off								
-Capital Costs	-82,120,799		-1,152,231				-1,152,231	
Cash Flow	-82,775,718	3,155,259	1,148,149	1,458,727	1,225,775	658,738	-637,351	542,692

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	Salvage
AU HI REV	
GROSS REV	
Total Revenue	6,733,272
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-12,202,914
-Amortization	
-Write Off	-6,733,272
Before Depltn	-12,202,914
Percent Depln	
-Total D,D & A	-18,936,186
Taxable	-12,202,914
-Tax Due	4,712,765
Net Income	-7,490,149
+Depreciation	12,202,914
+Amortization	
+Write Off	6,733,272
-Capital Costs	
Cash Flow	11,446,037

NPV = -70,823,863

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag

By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $66.0 million.

Comments, Assumptions, Specifications: HSAULB
East of Liberty Bell / Rex Dome Area, Round Mtn. etal model

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Hot Spring Au-Ag
Total Ore Tonnage: 190 m.t mt
Mining Method: Open Pit
Beneficiation Method: Mobile\Crush S.A.G. Grav-C.I.P.
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 20 yrs
Proposed Daily Production: 25,000 mTPD
Maximum Ore Depth: 270 m
Stripping Ratio: 3:1
Haulage Distance/Road Requirements:
10 km new roads, 40 km road upgrade
Distance From Power: 50km
Pre-Production Development:

Production Development:

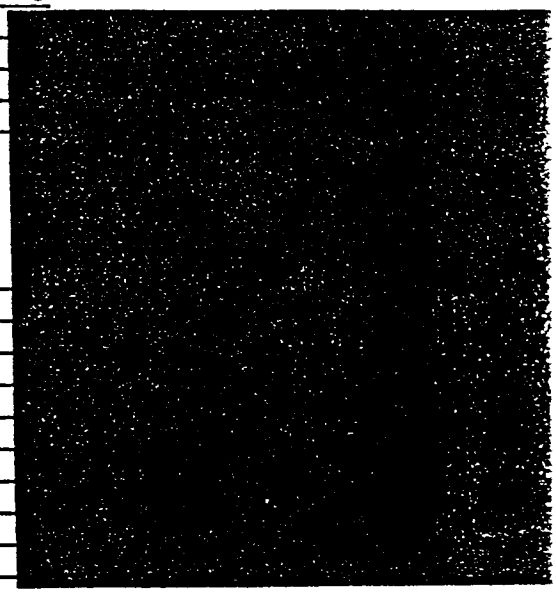
Equipment: Electric Shovels, Trucks
Concentrate Production: Do-é

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .08 ha/day
Burden/Waste rate-mtpd: 75,000 mTPD
Burden/Waste depth & haul-m: 120m, 3000m
Ore rate-mtpd: 25000 mTPD
Ore depth & haul-m: 150m, 1900m
Conveyor length & slope-km & %: 1km 6%
Water needs-cm/day: 7,000 m³/day
Drainage, head & distance-cm/day, m & km:
10,000 m³/day, 120km, 1km
Concentrate (dry) rate-mtpd: Do-é
Tails (dry) rate-mtpd: 25,000 mTPD
Production water needs-cm/day: 19,000 m³/day ∧ U., 56,000 m³/day recycle
Portable Power needs-kW: -
Wastewater-L/sec: 50 L/sec
Concentrate haul-km: Do-é
Employee housing-men: 250 men
Other: $81,623/day C.I.P. Leach
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 25,000 mTPD
Mill operating costs-$/day:
Working capital time-weeks: 13 weeks
Development time-days: 200 days @ 100,000 mTPD
Clearing needs-ha: 500 ha

Stripping needs-mt: 20 ~ 1 mt
Stripping depth & haul-m: 10m, 2,500 m
Restoration area-ha: 1,000 ha
Contractors-1 or 2: 2
Mine operating costs-$/day:
Access roads, length & width-km & m: 50km 10m (upgrade)
Airstrip length & width-m: 1400 ~ 25m (upgrade)
Powerline length & power-km & mW: 50km 85mW
Dike & Dam needs-cm/fill: 2,500,000 m3
Climate/Weather factors: Severe
Other: $ 82,290,703 - C.I.P. Leach system
Other:



OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 228,102
Mining Costs-$/yr: 82,116,720
Mining Costs-$/mt: 9.12
Milling Costs-$/day: 164,611
Milling Costs-$/yr: 59,259,960
Milling Costs-$/mt: 6.58
Infrastructure Costs-$/day: 37,336
Infrastructure Costs-$/yr: 13,440,960
Infrastructure Costs-$/mt: 1.49
Total Operating Costs-$/day: 430,049
Total Operating Costs-$/yr: 154,817,640
Total Operating Costs-$/mt: 17.20
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 20757,282
Heavy Equipment (fixed life)-$: 89,821,445 *
Mine Rehabilitation-$: 9,310,500 *
Engr. & Const. Mgmt.-$: 7,005,469 *
Other:
Remaining Mine Capital-$: 43,872,274
Total Mine Capital-$: 170,766,970

MILL CAPITAL COSTS:

Mill Working Capital-$: 14979,601
Light Vehicles (short life)-$: 2414,934 *
Other:
Remaining Mill Capital-$: 149,051,550
Total Mill Capital-$: 166,446,075

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 32,021,148 *

Other:_____
Remaining Infrastructure Capital-$: 66,782,258 ~
Total Infrastructure Capital-$: 98,803,406

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 35,736,883 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 259,706,082 *
Sum of Total Mine, Mill & Infr. Costs-$: 436,016,461
Exploration Cost-$: 43,601,646 *

Overall Capital Cost-$: 479,618,107
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:HSAULB.SEE Date:01/04/80 Time:00:52:26

HOT SPRINGS AU, LIBERTY BELL, BULK MINEABLE, CIP

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	6.0000	0.0000	6.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	6.0000	0.0000	6.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	6.0000	0.0000	6.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	6.0000	0.0000	6.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	89,821,445	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/02	89,821,445	MACRS	Mid Year	10.0	0			0 .....
3	04/89	9,310,500	MACRS	Mid Year	20.0	0			0 .....
4	04/89	7,005,469	MACRS	Mid Year	20.0	0			0 .....
5	04/92	20,757,282	WC	Mid Year	20.0	0			0 .....
6	04/89	2,414,934	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,414,934	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,414,934	MACRS	Mid Year	4.0	0			0 .....
9	04/89	149,051,550	MACRS	Mid Year	20.0	0			0 .....
10	04/89	14,979,601	WC	Mid Year	20.0	0			0 .....
11	04/89	32,021,148	MACRS	Mid Year	20.0	0			0 .....
12	04/89	43,601,646	EXPL-X	Mid Year	20.0	0			0 .....
13	04/89	66,782,258	MACRS	Mid Year	20.0	0			0 .....
14	04/89	43,872,274	MACRS	Mid Year	20.0	0			0 .....
15	04/01	2,414,934	MACRS	Mid Year	4.0	0			0 .....
16	04/05	2,414,934	MACRS	Mid Year	4.0	0			0 .....
17	04/09	2,414,934	MACRS	Mid Year	4.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	9,125,000.00	Constant	0.000
S2	MO GRADE %	Annual:	04/92	End	0.00	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0480	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	82,116,720.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	59,259,960.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	13,440,960.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

HOT SPRINGS AU, LIBERTY BELL MINE, OPEN PIT

Cash Flows

NPV =$-521,943,801 DCFROR=-22.9% GROR =-13.4% PWROR =-18.6% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
GROSS REVENUE		140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
Total Revenue		140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
-SMELTING CHARGES		-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
-Total Smelting Cost		-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
Net Smelt Ret.		139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
-MHT ROYALTY		-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842
-Total Royalties		-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842
Net Revenue		133,840,197	133,840,197	133,840,197	133,840,197	133,840,197	133,840,197
-OPER COSTS		-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs		-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Dev, IDC	-30,521,152						
-Depreciation	-19,064,695	-35,898,177	-32,418,928	-29,366,673	-25,930,914	-23,120,206	-21,346,067
-Amortization	-7,848,296	-2,616,099	-2,616,099				
-Write Off							
Before Depltn	-57,434,144	-59,991,719	-56,512,471	-50,844,116	-47,408,357	-44,597,649	-42,823,510
Percent Depln		20,076,030	20,076,030	20,076,030	20,076,030	20,076,030	20,076,030
-Total D,D & A	-57,434,144	-38,514,276	-35,035,027	-29,366,673	-25,930,914	-23,120,206	-21,346,067
Taxable	-57,434,144	-59,991,719	-56,512,471	-50,844,116	-47,408,357	-44,597,649	-42,823,510
-Tax Due	19,527,609	20,397,184	19,214,240	17,286,999	18,309,108	17,223,612	16,538,440
Net Income	-37,906,535	-39,594,534	-37,298,231	-33,557,117	-29,099,250	-27,374,037	-26,285,070
+Depreciation	19,064,695	35,898,177	32,418,928	29,366,673	25,930,914	23,120,206	21,346,067
+Amortization	7,848,296	2,616,099	2,616,099				
+Write Off							
-Capital Costs	-428,339,673	-20,757,282	-2,414,934				-2,414,934
Cash Flow	-439,333,216	-21,837,541	-4,678,137	-4,190,444	-3,168,336	-4,253,831	-7,353,938

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

HSAULB

Year	7	8	9	10	11	12	13
AU REV	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
GROSS REVENUE	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
Total Revenue	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
-SMELTING CHARGES	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
-Total Smelting Cost	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
Net Smelt Ret.	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
-MHT ROYALTY	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842
-Total Royalties	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842
Net Revenue	133,840,197	133,840,197	133,840,197	133,840,197	133,840,197	133,840,197	133,840,197
-OPER COSTS	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Dev, IDC							
-Depreciation	-19,516,399	-18,877,877	-18,726,944	-19,179,744	-28,312,822	-35,045,737	-29,320,398
-Amortization							
-Write Off							
Before Depltn	-40,993,842	-40,355,320	-40,204,387	-40,657,187	-49,790,265	-56,523,180	-50,797,841
Percent Depln	20,076,030	20,076,030	20,076,030	20,076,030	20,076,030	20,076,030	20,076,030
-Total D,D & A	-19,516,399	-18,877,877	-18,726,944	-19,179,744	-28,312,822	-35,045,737	-29,320,398
Taxable	-40,993,842	-40,355,320	-40,204,387	-40,657,187	-49,790,265	-56,523,180	-50,797,841
-Tax Due	15,831,822	15,585,225	15,526,934	15,701,806	19,229,000	21,829,252	19,618,126
Net Income	-25,162,020	-24,770,096	-24,677,453	-24,955,381	-30,561,265	-34,693,928	-31,179,715
+Depreciation	19,516,399	18,877,877	18,726,944	19,179,744	28,312,822	35,045,737	29,320,398
+Amortization							
+Write Off							
-Capital Costs				-2,414,934	-89,821,445		
Cash Flow	-5,645,621	-5,892,219	-5,950,509	-8,190,572	-92,069,888	351,809	-1,859,317

Year	14	15	16	17	18	19	20
AU REV	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
GROSS REVENUE	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
Total Revenue	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
-SMELTING CHARGES	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
-Total Smelting Cost	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
Net Smelt Ret.	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
-MHT ROYALTY	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842
-Total Royalties	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842	-5,555,842
Net Revenue	133,840,197	133,840,197	133,840,197	133,840,197	133,840,197	133,840,197	133,840,197
-OPER COSTS	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Dev, IDC							

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

NPV = $-521,943,801

Year	14	15	16	17	18	19	20
-Depreciation	-24,845,507	-22,926,954	-20,818,565	-19,931,814	-20,384,614	-20,535,548	-13,211,043
-Amortization							
-Write Off							
Before Depltn	-46,322,950	-44,404,397	-42,296,008	-41,409,258	-41,862,058	-42,012,991	-34,688,486
Percent Depln	20,076,030	20,076,030	20,076,030	20,076,030	20,076,030	20,076,030	20,076,030
-Total D,D & A	-24,845,507	-22,926,954	-20,818,565	-19,931,814	-20,384,614	-20,535,548	-13,211,043
Taxable	-46,322,950	-44,404,397	-42,296,008	-41,409,258	-41,862,058	-42,012,991	-34,688,486
-Tax Due	17,889,923	17,148,978	16,334,718	15,992,255	16,167,127	16,225,417	13,396,693
Net Income	-28,433,027	-27,255,419	-25,961,290	-25,417,002	-25,694,931	-25,787,574	-21,291,793
+Depreciation	24,845,507	22,926,954	20,818,565	19,931,814	20,384,614	20,535,548	13,211,043
+Amortization							
+Write Off							
-Capital Costs	-2,414,934				-2,414,934		
Cash Flow	-6,002,454	-4,328,465	-5,142,725	-5,485,188	-7,725,251	-5,252,026	-8,080,750

Year	Salvage
AU REV	
GROSS REVENUE	
Total Revenue	35,736,883
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-3,396,069
-Amortization	
-Write Off	-35,736,883
Before Depltn	-3,396,069
Percent Depln	
-Total D,D & A	-39,132,952
Taxable	-3,396,069
-Tax Due	1,311,562
Net Income	-2,084,507
+Depreciation	3,396,069
+Amortization	

NPV = $ -521,943,801

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	Salvage
+Write Off	35,736,883
-Capital Costs	
Cash Flow	37,048,445

NPV = $-521,943,801

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

List of Assumptions File:HSAULB.SEE Date:12/28/93 Time:13:13:00

HOT SPRINGS AU, LIBERTY BELL MINE, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
Date of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000 38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	89,821,445	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/02	89,821,445	MACRS	Mid Year	10.0	0			0 .....
3	04/89	9,310,500	MACRS	Mid Year	20.0	0			0 .....
4	04/89	7,005,469	MACRS	Mid Year	20.0	0			0 .....
5	04/92	20,757,282	WC	Mid Year	20.0	0			0 .....
6	04/89	2,414,934	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,414,934	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,414,934	MACRS	Mid Year	4.0	0			0 .....
9	04/89	149,051,550	MACRS	Mid Year	20.0	0			0 .....
10	04/89	14,979,601	WC	Mid Year	20.0	0			0 .....
11	04/89	32,021,148	MACRS	Mid Year	20.0	0			0 .....
12	04/89	43,601,646	EXPL-X	Mid Year	20.0	0			0 .....
13	04/89	66,782,258	MACRS	Mid Year	20.0	0			0 .....
14	04/89	0	MACRS	Mid Year	7.0	0			0 .....
15	.....	0	MACRS	Mid Year	7.0	0			0 .....
16	.....	0	MACRS	Mid Year	7.0	0			0 .....
17	.....	0	MACRS	Mid Year	7.0	0			0 .....
18	04/89	43,872,274	MACRS	Mid Year	20.0	0			0 .....
19	04/01	2,414,934	MACRS	Mid Year	4.0	0			0 .....
20	04/05	2,414,934	MACRS	Mid Year	4.0	0			0 .....
21	04/09	2,414,934	MACRS	Mid Year	4.0	0			0 .....

pital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	9,125,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

1 HS AHLB

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0480	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	82,116,720.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	59,259,960.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	13,440,960.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

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HOT SPRINGS AU, LIBERTY BELL MINE, OPEN PIT

Cash Flows

NPV =$-489,947,431 DCFROR=-17.5% GROR =-11.1% PWROR =-13.1% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
GROSS REVENUE		140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
Total Revenue		140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
-SMELTING CHARGES		-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
-Total Smelting Cost		-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
Net Smelt Ret.		139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
Net Revenue		139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
-OPER COSTS		-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs		-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-MHT NPI		435,407	435,407	435,407	435,407	435,407	435,407
-Total Sev. Ad Valor		435,407	435,407	435,407	435,407	435,407	435,407
-Dev, IDC	-30,521,152						
-Depreciation	-19,064,695	-35,898,177	-32,418,928	-29,366,673	-25,930,914	-23,120,206	-21,346,067
-Amortization	-7,848,296	-2,616,099	-2,616,099				
-Write Off							
Before Depltn	-57,434,144	-54,000,471	-50,521,222	-44,852,868	-41,417,109	-38,606,401	-36,832,262
Percent Depln		20,909,406	20,909,406	20,909,406	20,909,406	20,909,406	20,909,406
-Total D,D & A	-57,434,144	-38,514,276	-35,035,027	-29,366,673	-25,930,914	-23,120,206	-21,346,067
Taxable	-57,434,144	-54,000,471	-50,521,222	-44,852,868	-41,417,109	-38,606,401	-36,832,262
-Tax Due	19,527,609	18,360,160	17,177,216	15,249,975	15,995,287	14,909,792	14,224,619
Net Income	-37,906,535	-35,640,311	-33,344,007	-29,602,893	-25,421,821	-23,696,609	-22,607,642
+Depreciation	19,064,695	35,898,177	32,418,928	29,366,673	25,930,914	23,120,206	21,346,067
+Amortization	7,848,296	2,616,099	2,616,099				
+Write Off							
-Capital Costs	-428,339,673	-20,757,282	-2,414,934				-2,414,934
Cash Flow	-439,333,216	-17,883,317	-723,913	-236,220	509,092	-576,403	-3,676,509

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Year	7	8	9	10	11	12	13
AU REV	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
GROSS REVENUE	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
Total Revenue	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
-SMELTING CHARGES	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
-Total Smelting Cost	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
Net Smelt Ret.	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
Net Revenue	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
-OPER COSTS	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-MHT NPI	435,407	435,407	435,407	435,407	435,407	435,407	435,407
-Total Sev. Ad Valor	435,407	435,407	435,407	435,407	435,407	435,407	435,407
-Dev, IDC							
-Depreciation	-19,516,399	-18,877,877	-18,726,944	-19,179,744	-28,312,822	-35,045,737	-29,320,398
-Amortization							
-Write Off							
Before Depltn	-35,002,594	-34,364,072	-34,213,139	-34,665,939	-43,799,017	-50,531,932	-44,806,593
Percent Depln	20,909,406	20,909,406	20,909,406	20,909,406	20,909,406	20,909,406	20,909,406
-Total D,D & A	-19,516,399	-18,877,877	-18,726,944	-19,179,744	-28,312,822	-35,045,737	-29,320,398
Taxable	-35,002,594	-34,364,072	-34,213,139	-34,665,939	-43,799,017	-50,531,932	-44,806,593
-Tax Due	13,518,002	13,271,405	13,213,114	13,387,986	16,915,180	19,515,432	17,304,306
Net Income	-21,484,592	-21,092,667	-21,000,024	-21,277,953	-26,883,836	-31,016,500	-27,502,287
+Depreciation	19,516,399	18,877,877	18,726,944	19,179,744	28,312,822	35,045,737	29,320,398
+Amortization							
+Write Off							
-Capital Costs				-2,414,934	-89,821,445		
Cash Flow	-1,968,193	-2,214,790	-2,273,081	-4,513,143	-88,392,460	4,029,237	1,818,111

Year	14	15	16	17	18	19	20
AU REV	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
GROSS REVENUE	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
Total Revenue	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079	140,804,079
-SMELTING CHARGES	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
-Total Smelting Cost	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041	-1,408,041
Net Smelt Ret.	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
Net Revenue	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038	139,396,038
-OPER COSTS	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-MHT NPI	435,407	435,407	435,407	435,407	435,407	435,407	435,407
-Total Sev. Ad Valor	435,407	435,407	435,407	435,407	435,407	435,407	435,407
-Dev, IDC							
-Depreciation	-24,845,507	-22,926,954	-20,818,565	-19,931,814	-20,384,614	-20,535,548	-13,211,043
-Amortization							

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JAMES B. GOTTSTEIN

Year	14	15	16	17	18	19	20
-Write Off							
Before Depltn	-40,331,702	-38,413,149	-36,304,760	-35,418,009	-35,870,809	-36,021,743	-28,697,238
Percent Depln	20,909,406	20,909,406	20,909,406	20,909,406	20,909,406	20,909,406	20,909,406
-Total D,D & A	-24,845,507	-22,926,954	-20,818,565	-19,931,814	-20,384,614	-20,535,548	-13,211,043
Taxable	-40,331,702	-38,413,149	-36,304,760	-35,418,009	-35,870,809	-36,021,743	-28,697,238
-Tax Due	15,576,103	14,835,158	14,020,898	13,678,435	13,853,307	13,911,597	11,082,873
Net Income	-24,755,598	-23,577,991	-22,283,862	-21,739,574	-22,017,503	-22,110,146	-17,614,365
+Depreciation	24,845,507	22,926,954	20,818,565	19,931,814	20,384,614	20,535,548	13,211,043
+Amortization							
+Write Off							
-Capital Costs	-2,414,934				-2,414,934		
Cash Flow	-2,325,026	-651,037	-1,465,297	-1,807,760	-4,047,822	-1,574,598	-4,403,322

Year	Salvage
AU REV	
GROSS REVENUE	
Total Revenue	35,736,883
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-3,396,069
-Amortization	
-Write Off	-35,736,883
Before Depltn	-3,396,069
Percent Depln	
-Total D,D & A	-39,132,952
Taxable	-3,396,069
-Tax Due	1,311,562
Net Income	-2,084,507
+Depreciation	3,396,069
+Amortization	
+Write Off	35,736,883
-Capital Costs	

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JAMES B. GOTTSTEIN

Year	Salvage
Cash Flow	37,048,445

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JAMES B. GOTTSTEIN

4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag
By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $68.0 million.

Comments, Assumptions, Specifications: GERT - Gertrude Creek / Livenwood area Hot Springs Au, based on HSAU model.

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Hot Springs Au
Total Ore Tonnage: 180 mil mt
Mining Method: Open pit
Beneficiation Method: Impact Crush, SAG Grind, C.I.P.
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 20 yrs
Proposed Daily Production: 25,000 mtpd
Maximum Ore Depth: 270m
Stripping Ratio: 3:1
Haulage Distance/Road Requirements:
10 km road upgrade
Distance From Power: 120 km
Pre-Production Development:

Production Development:

Equipment: Electric Shovels Trucks
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .08 ha/day
Burden/Waste rate-mtpd: 75,000 mtpd
Burden/Waste depth & haul-m: 120m, 3000 m
Ore rate-mtpd: 25,000 mtpd
Ore depth & haul-m: 150m 1,900m
Conveyor length & slope-km & %: 1 km 6%
Water needs-cm/day: 7,000 m³/day
Drainage, head & distance-cm/day, m & km:
10,000 m³/day, 120 km, 1 km
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 25,000 mtpd
Production water needs-cm/day: 19,000 m³/day, Mill, 56,000 m³/day-recycle
Portable Power needs-kW: -
Wastewater-L/sec: 50 L/sec
Concentrate haul-km: Doré
Employee housing-men: 250 men
Other: $ 81,627 /day C.I.P. labor
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 25000 mtpd
Mill operating costs-$/day: $164,611 / day
Working capital time-weeks: 12 weeks
Development time-days: 200 days @ 25,000 mtpd
Clearing needs-ha: 500 ha

Stripping needs-mt: 20 mil mt
Stripping depth & haul-m: 10 m 2,500 m
Restoration area-ha: 1,000 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $ 229,102 /day
Access roads, length & width-km & m: 10km 10m
Airstrip length & width-m: 1,400m 25m
Powerline length & power-km & mW: 120 km, 30mW
Dike & Dam needs-cm/fill: 2,500,000 m3
Climate/Weather factors: Severe
Other: $82,290,703 CIP, Loans Sufficient
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 229,102
Mining Costs-$/yr: 82,116,720
Mining Costs-$/mt: 9.13
Milling Costs-$/day: 164,611
Milling Costs-$/yr: 59,259,960
Milling Costs-$/mt: 6.58
Infrastructure Costs-$/day: 37,336
Infrastructure Costs-$/yr: 13,440,960
Infrastructure Costs-$/mt: 1.49
Total Operating Costs-$/day: 430,049
Total Operating Costs-$/yr: 154,817,640
Total Operating Costs-$/mt: 17.20
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 20,757,292
Heavy Equipment (fixed life)-$: 99,821,445 *
Mine Rehabilitation-$: 9,310,520 *
Engr. & Const. Mgmt.-$: 7,005,469 *
Other:
Remaining Mine Capital-$: 43,872,240
Total Mine Capital-$: 170,766,970

MILL CAPITAL COSTS:

Mill Working Capital-$: 14,979,601
Light Vehicles (short life)-$: 2,414,934 *
Other:
Remaining Mill Capital-$: 149,051,550
Total Mill Capital-$: 166,446,085

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 32,021,148 *

Other:_____
Remaining Infrastructure Capital-$: 66,426,328
Total Infrastructure Capital-$: 98,447,476

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 35,736,893 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 259,350,152 *
Sum of Total Mine, Mill & Infr. Costs-$: 435,660,053
Exploration Cost-$: 43,566,000 *

Overall Capital Cost-$: 479,226,584
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:HSAUGERT.SEE Date:01/15/94 Time:14:41:41

HOT SPRINGS AU, GERTRUDE CREEK, LIVENGOOD, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

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16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	89,821,445	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/02	89,821,445	MACRS	Mid Year	10.0	0		0	.....
3	04/89	9,310,500	MACRS	Mid Year	20.0	0		0	.....
4	04/89	7,005,469	MACRS	Mid Year	20.0	0		0	.....
5	04/92	20,757,282	WC	Mid Year	20.0	0		0	.....
6	04/89	2,414,934	MACRS	Mid Year	4.0	0		0	.....
7	04/93	2,414,934	MACRS	Mid Year	4.0	0		0	.....
8	04/97	2,414,934	MACRS	Mid Year	4.0	0		0	.....
9	04/89	149,051,550	MACRS	Mid Year	20.0	0		0	.....
10	04/89	14,979,601	WC	Mid Year	20.0	0		0	.....
11	04/89	32,021,148	MACRS	Mid Year	20.0	0		0	.....
12	04/89	43,601,646	EXPL-X	Mid Year	20.0	0		0	.....
13	04/89	66,426,328	MACRS	Mid Year	20.0	0		0	.....
14	04/89	0	MACRS	Mid Year	7.0	0		0	.....
15	.....	0	MACRS	Mid Year	7.0	0		0	.....
16	.....	0	MACRS	Mid Year	7.0	0		0	.....
17	.....	0	MACRS	Mid Year	7.0	0		0	.....
18	04/89	43,566,000	MACRS	Mid Year	20.0	0		0	.....
19	04/01	2,414,934	MACRS	Mid Year	4.0	0		0	.....
20	04/05	2,414,934	MACRS	Mid Year	4.0	0		0	.....
21	04/09	2,414,934	MACRS	Mid Year	4.0	0		0	.....

apital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	9,125,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0482	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	82,116,720.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	59,259,960.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	13,440,960.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

HOT SPRINGS AU, GERTRUDE CREEK, LIVENGOOD, OPEN PIT

Cash Flows

NPV =$-518,422,006 DCFROR=-22.3% GROR =-13.2% PWROR =-18.4% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
GROSS REVENUE		141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
Total Revenue		141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
-SMELTING CHARGES		-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
-Total Smelting Cost		-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
Net Smelt Ret.		139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
-MHT ROYALTY		-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074
-Total Royalties		-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074
Net Revenue		134,397,781	134,397,781	134,397,781	134,397,781	134,397,781	134,397,781
-OPER COSTS		-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs		-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Dev, IDC	-30,521,152						
-Depreciation	-19,039,863	-35,850,374	-32,374,711	-29,325,771	-25,893,080	-23,085,210	-21,313,695
-Amortization	-7,848,296	-2,616,099	-2,616,099				
-Write Off							
Before Depltn	-57,409,311	-59,386,332	-55,910,669	-50,245,631	-46,812,939	-44,005,069	-42,233,554
Percent Depln		20,159,667	20,159,667	20,159,667	20,159,667	20,159,667	20,159,667
-Total D,D & A	-57,409,311	-38,466,473	-34,990,810	-29,325,771	-25,893,080	-23,085,210	-21,313,695
Taxable	-57,409,311	-59,386,332	-55,910,669	-50,245,631	-46,812,939	-44,005,069	-42,233,554
-Tax Due	19,519,166	20,191,353	19,009,627	17,083,514	18,079,157	16,994,758	16,310,599
Net Income	-37,890,145	-39,194,979	-36,901,041	-33,162,116	-28,733,782	-27,010,311	-25,922,956
+Depreciation	19,039,863	35,850,374	32,374,711	29,325,771	25,893,080	23,085,210	21,313,695
+Amortization	7,848,296	2,616,099	2,616,099				
+Write Off							
-Capital Costs	-427,677,469	-20,757,282	-2,414,934				-2,414,934
Cash Flow	-438,679,455	-21,485,788	-4,325,166	-3,836,345	-2,840,702	-3,925,102	-7,024,194

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

NPV =$-518,422,006

Year	7	8	9	10	11	12	13
AU REV	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
GROSS REVENUE	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
Total Revenue	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
-SMELTING CHARGES	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
-Total Smelting Cost	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
Net Smelt Ret.	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
-MHT ROYALTY	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074
-Total Royalties	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074
Net Revenue	134,397,781	134,397,781	134,397,781	134,397,781	134,397,781	134,397,781	134,397,781
-OPER COSTS	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Dev, IDC							
-Depreciation	-19,486,455	-18,848,333	-18,697,399	-19,150,199	-28,283,277	-35,016,193	-29,290,853
-Amortization							
-Write Off							
Before Depltn	-40,406,314	-39,768,192	-39,617,258	-40,070,058	-49,203,136	-55,936,052	-50,210,713
Percent Depln	20,159,667	20,159,667	20,159,667	20,159,667	20,159,667	20,159,667	20,159,667
-Total D,D & A	-19,486,455	-18,848,333	-18,697,399	-19,150,199	-28,283,277	-35,016,193	-29,290,853
Taxable	-40,406,314	-39,768,192	-39,617,258	-40,070,058	-49,203,136	-55,936,052	-50,210,713
-Tax Due	15,604,919	15,358,476	15,300,185	15,475,057	19,002,251	21,602,503	19,391,377
Net Income	-24,801,396	-24,409,716	-24,317,073	-24,595,002	-30,200,885	-34,333,549	-30,819,335
+Depreciation	19,486,455	18,848,333	18,697,399	19,150,199	28,283,277	35,016,193	29,290,853
+Amortization							
+Write Off							
-Capital Costs				-2,414,934	-89,821,445		
Cash Flow	-5,314,941	-5,561,384	-5,619,674	-7,859,737	-91,739,053	682,644	-1,528,482

Year	14	15	16	17	18	19	20
AU REV	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
GROSS REVENUE	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
Total Revenue	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
-SMELTING CHARGES	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
-Total Smelting Cost	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
Net Smelt Ret.	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
-MHT ROYALTY	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074
-Total Royalties	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074	-5,579,074
Net Revenue	134,397,781	134,397,781	134,397,781	134,397,781	134,397,781	134,397,781	134,397,781
-OPER COSTS	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Dev, IDC							

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	14	15	16	17	18	19	20
-Depreciation	-24,815,962	-22,897,410	-20,789,021	-19,902,270	-20,355,070	-20,506,003	-13,196,271
-Amortization							
-Write Off							
Before Depltn	-45,735,821	-43,817,269	-41,708,880	-40,822,129	-41,274,929	-41,425,863	-34,116,130
Percent Depln	20,159,667	20,159,667	20,159,667	20,159,667	20,159,667	20,159,667	20,159,667
-Total D,D & A	-24,815,962	-22,897,410	-20,789,021	-19,902,270	-20,355,070	-20,506,003	-13,196,271
Taxable	-45,735,821	-43,817,269	-41,708,880	-40,822,129	-41,274,929	-41,425,863	-34,116,130
-Tax Due	17,663,174	16,922,229	16,107,969	15,765,506	15,940,378	15,998,668	13,175,649
Net Income	-28,072,647	-26,895,040	-25,600,910	-25,056,623	-25,334,552	-25,427,194	-20,940,481
+Depreciation	24,815,962	22,897,410	20,789,021	19,902,270	20,355,070	20,506,003	13,196,271
+Amortization							
+Write Off							
-Capital Costs	-2,414,934				-2,414,934		
Cash Flow	-5,671,619	-3,997,630	-4,811,890	-5,154,353	-7,394,416	-4,921,191	-7,744,210

Year	Salvage
AU REV	
GROSS REVENUE	
Total Revenue	35,736,883
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-3,396,069
-Amortization	
-Write Off	-35,736,883
Before Depltn	-3,396,069
Percent Depln	
-Total D,D & A	-39,132,952
Taxable	-3,396,069
-Tax Due	1,311,562
Net Income	-2,084,507
+Depreciation	3,396,069
+Amortization	

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

NPV = $ - 518,422,006

Year	Salvage
+Write Off	35,736,883
-Capital Costs	
Cash Flow	37,048,445

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

List of Assumptions File:HSAUGERT.SEE Date:01/04/80 Time:00:42:20

HOT SPRINGS AU, GERTRUDE CREEK, LIVEBGOOD, OPEN PIT

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	6.0000	0.0000	6.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	6.0000	0.0000	6.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	6.0000	0.0000	6.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	6.0000	0.0000	6.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	6.0000	0.0000	6.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	89,821,445	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/02	89,821,445	MACRS	Mid Year	10.0	0		0	.....
3	04/89	9,310,500	MACRS	Mid Year	20.0	0		0	.....
4	04/89	7,005,469	MACRS	Mid Year	20.0	0		0	.....
5	04/92	20,757,282	WC	Mid Year	20.0	0		0	.....
6	04/89	2,414,934	MACRS	Mid Year	4.0	0		0	.....
7	04/93	2,414,934	MACRS	Mid Year	4.0	0		0	.....
8	04/97	2,414,934	MACRS	Mid Year	4.0	0		0	.....
9	04/89	149,051,550	MACRS	Mid Year	20.0	0		0	.....
10	04/89	14,979,601	WC	Mid Year	20.0	0		0	.....
11	04/89	32,021,148	MACRS	Mid Year	20.0	0		0	.....
12	04/89	43,601,646	EXPL-X	Mid Year	20.0	0		0	.....
13	04/89	66,426,328	MACRS	Mid Year	20.0	0		0	.....
14	04/89	43,566,000	MACRS	Mid Year	20.0	0		0	.....
15	04/01	2,414,934	MACRS	Mid Year	4.0	0		0	.....
16	04/05	2,414,934	MACRS	Mid Year	4.0	0		0	.....
17	04/09	2,414,934	MACRS	Mid Year	4.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	9,125,000.00	Constant	0.000
S2	MO GRADE %	Annual:	04/92	End	0.00	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0482	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	82,116,720.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	59,259,960.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	13,440,960.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

HOT SPRINGS AU, GERTRUDE CREEK, LIVENGOOD, OPEN PIT

Cash Flows

NPV =$-486,395,558 DCFROR=-17.0% GROR =-10.7% PWROR =-12.9% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
GROSS REVENUE		141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
Total Revenue		141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
-SMELTING CHARGES		-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
-Total Smelting Cost		-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
Net Smelt Ret.		139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
Net Revenue		139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
-OPER COSTS		-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs		-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-MHT NPI		417,806	417,806	417,806	417,806	417,806	417,806
-Total Sev. Ad Valor		417,806	417,806	417,806	417,806	417,806	417,806
-Dev, IDC	-30,521,152						
-Depreciation	-19,039,863	-35,850,374	-32,374,711	-29,325,771	-25,893,080	-23,085,210	-21,313,695
-Amortization	-7,848,296	-2,616,099	-2,616,099				
-Write Off							
Before Depltn	-57,409,311	-53,389,451	-49,913,788	-44,248,750	-40,816,059	-38,008,188	-36,236,674
Percent Depln		20,996,528	20,996,528	20,996,528	20,996,528	20,996,528	20,996,528
-Total D,D & A	-57,409,311	-38,466,473	-34,990,810	-29,325,771	-25,893,080	-23,085,210	-21,313,695
Taxable	-57,409,311	-53,389,451	-49,913,788	-44,248,750	-40,816,059	-38,008,188	-36,236,674
-Tax Due	19,519,166	18,152,413	16,970,688	15,044,575	15,763,162	14,678,762	13,994,603
Net Income	-37,890,145	-35,237,038	-32,943,100	-29,204,175	-25,052,897	-23,329,426	-22,242,070
+Depreciation	19,039,863	35,850,374	32,374,711	29,325,771	25,893,080	23,085,210	21,313,695
+Amortization	7,848,296	2,616,099	2,616,099				
+Write Off							
-Capital Costs	-427,677,469	-20,757,282	-2,414,934				-2,414,934
Cash Flow	-438,679,455	-17,527,847	-367,225	121,596	840,183	-244,216	-3,343,309

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	7	8	9	10	11	12	13
AU REV	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
GROSS REVENUE	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
Total Revenue	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
-SMELTING CHARGES	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
-Total Smelting Cost	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
Net Smelt Ret.	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
Net Revenue	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
-OPER COSTS	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-MHT NPI	417,806	417,806	417,806	417,806	417,806	417,806	417,806
-Total Sev. Ad Valor	417,806	417,806	417,806	417,806	417,806	417,806	417,806
-Dev, IDC							
-Depreciation	-19,486,455	-18,848,333	-18,697,399	-19,150,199	-28,283,277	-35,016,193	-29,290,853
-Amortization							
-Write Off							
Before Depltn	-34,409,434	-33,771,311	-33,620,378	-34,073,178	-43,206,256	-49,939,171	-44,213,832
Percent Depln	20,996,528	20,996,528	20,996,528	20,996,528	20,996,528	20,996,528	20,996,528
-Total D,D & A	-19,486,455	-18,848,333	-18,697,399	-19,150,199	-28,283,277	-35,016,193	-29,290,853
Taxable	-34,409,434	-33,771,311	-33,620,378	-34,073,178	-43,206,256	-49,939,171	-44,213,832
-Tax Due	13,288,923	13,042,480	12,984,190	13,159,061	16,686,256	19,286,508	17,075,382
Net Income	-21,120,510	-20,728,831	-20,636,188	-20,914,117	-26,520,000	-30,652,663	-27,138,450
+Depreciation	19,486,455	18,848,333	18,697,399	19,150,199	28,283,277	35,016,193	29,290,853
+Amortization							
+Write Off							
-Capital Costs				-2,414,934	-89,821,445		
Cash Flow	-1,634,055	-1,880,498	-1,938,789	-4,178,851	-88,058,168	4,363,529	2,152,403

Year	14	15	16	17	18	19	20
AU REV	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
GROSS REVENUE	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
Total Revenue	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763	141,390,763
-SMELTING CHARGES	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
-Total Smelting Cost	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908	-1,413,908
Net Smelt Ret.	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
Net Revenue	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855	139,976,855
-OPER COSTS	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-Total Oper Costs	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640	-155,317,640
-MHT NPI	417,806	417,806	417,806	417,806	417,806	417,806	417,806
-Total Sev. Ad Valor	417,806	417,806	417,806	417,806	417,806	417,806	417,806
-Dev, IDC							
-Depreciation	-24,815,962	-22,897,410	-20,789,021	-19,902,270	-20,355,070	-20,506,003	-13,196,271
-Amortization							

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	14	15	16	17	18	19	20
-Write Off							
Before Depltn	-39,738,941	-37,820,388	-35,711,999	-34,825,249	-35,278,049	-35,428,982	-28,119,249
Percent Depln	20,996,528	20,996,528	20,996,528	20,996,528	20,996,528	20,996,528	20,996,528
-Total D,D & A	-24,815,962	-22,897,410	-20,789,021	-19,902,270	-20,355,070	-20,506,003	-13,196,271
Taxable	-39,738,941	-37,820,388	-35,711,999	-34,825,249	-35,278,049	-35,428,982	-28,119,249
-Tax Due	15,347,179	14,606,234	13,791,974	13,449,511	13,624,382	13,682,673	10,859,654
Net Income	-24,391,762	-23,214,154	-21,920,025	-21,375,738	-21,653,666	-21,746,309	-17,259,595
+Depreciation	24,815,962	22,897,410	20,789,021	19,902,270	20,355,070	20,506,003	13,196,271
+Amortization							
+Write Off							
-Capital Costs	-2,414,934				-2,414,934		
Cash Flow	-1,990,734	-316,745	-1,131,005	-1,473,468	-3,713,530	-1,240,306	-4,063,325

Year	Salvage
AU REV	
GROSS REVENUE	
Total Revenue	35,736,883
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-3,396,069
-Amortization	
-Write Off	-35,736,883
Before Depltn	-3,396,069
Percent Depln	
-Total D,D & A	-39,132,952
Taxable	-3,396,069
-Tax Due	1,311,562
Net Income	-2,084,507
+Depreciation	3,396,069
+Amortization	
+Write Off	35,736,883
-Capital Costs	

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	Salvage
Cash Flow	37,048,445

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag
By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

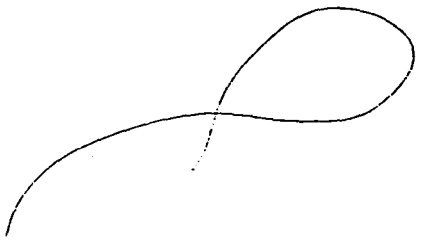
COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $68.0 million.



Comments, Assumptions, Specifications: BIGHURAH
Big Hu-ah - Bulk Mineable Au - Based on RYAN model

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk Mineable Au
Total Ore Tonnage: 7.5 mil mt
Mining Method: Open Pit
Beneficiation Method: Crush & Heap Leach, C.I.P.
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 yrs
Proposed Daily Production: 2090 MTPD
Maximum Ore Depth: 120m
Stripping Ratio: 4.6:1
Haulage Distance/Road Requirements: 10 km service roads
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Shovels, Trucks
Concentrate Production: Do-é

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .035 ha/day
Burden/Waste rate-mtpd: 9,600 MTPD
Burden/Waste depth & haul-m: 35m, 500m
Ore rate-mtpd: 860 MTPD High, 1,230 MTPD Low
Ore depth & haul-m: 35m, 1,500m
Conveyor length & slope-km & %: —
Water needs-cm/day: 850 m³/day
Drainage, head & distance-cm/day, m & km: None
Concentrate (dry) rate-mtpd: Do-é
Tails (dry) rate-mtpd: 860 MTPD / 2090 MTPD
Production water needs-cm/day: 650 m³/day M.U., 1,900 m³/day-recycle
Portable Power needs-kW: 6,000 KW
Wastewater-L/sec: 10 L/S
Concentrate haul-km: Do-é
Employee housing-men: 80 men
Other: C.I.P. Leach: $5,964/day; C.C.D. $341/day
Other: Heap operation: $1,700/day

B.(For Capital Costs)
Concentrate feeds-mtpd: 860 MTPD
Mill operating costs-$/day: $19,235/day
Working capital time-weeks: 13 weeks
Development time-days:
Clearing needs-ha: 110 ha

Stripping needs-mt: 100,000 mT
Stripping depth & haul-m: 10 m, 1,500 m
Restoration area-ha: 450 ha
Contractors-1 or 2: 1
Mine operating costs-$/day: $30,938/day
Access roads, length & width-km & m: 10km, 8m
Airstrip length & width-m: Existing
Powerline length & power-km & mW: portable
Dike & Dam needs-cm/fill: 100,000 m3
Climate/Weather factors: Severe
Other: C.I.P. system: $10,289,809; Sig $221,604
Other: Heaps: $3,206,500

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 30,938
Mining Costs-$/yr: 11,137,680
Mining Costs-$/mt: 14.80
Milling Costs-$/day: 19,235
Milling Costs-$/yr: 6,924,600
Milling Costs-$/mt: 9.20
Infrastructure Costs-$/day: 28,033
Infrastructure Costs-$/yr: 10,091,880
Infrastructure Costs-$/mt: 13.41
Total Operating Costs-$/day: 78,206
Total Operating Costs-$/yr: 28,154,160
Total Operating Costs-$/mt: 37.42
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 2,815,358
Heavy Equipment (fixed life)-$: 10,421,198 *
Mine Rehabilitation-$: 4,189,725 *
Engr. & Const. Mgmt.-$: 1,589,796 *
Other:
Remaining Mine Capital-$: 1,617
Total Mine Capital-$: 20,633,778

MILL CAPITAL COSTS:

Mill Working Capital-$: 1,750,385
Light Vehicles (short life)-$: 836,871 *
Other:
Remaining Mill Capital-$: 20,631,252
Total Mill Capital-$: 23,218,508

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 6,705,173 *

Other:_____
Remaining Infrastructure Capital-$: 9,713,171
Total Infrastructure Capital-$: 16,418,344

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 4,565,743 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 31,962,124 *
Sum of Total Mine, Mill & Infr. Costs-$: 60,270,630
Exploration Cost-$: 6,027,060 *

Overall Capital Cost-$: 66,297,693
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:BIGHURAH.SEE Date:01/04/80 Time:00:19:16

BIG HURRAH, BULK MINEABLE AU, CIP AND HEAP LEACH

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,589,796	MACRS	Mid Year	13.0	0			0 .....
4	04/89	1,617,701	MACRS	Mid Year	13.0	0			0 .....
5	04/89	2,815,358	WC	Mid Year	13.0	0			0 .....
6	04/89	836,871	MACRS	Mid Year	4.0	0			0 .....
7	04/93	836,871	MACRS	Mid Year	4.0	0			0 .....
8	04/97	836,871	MACRS	Mid Year	4.0	0			0 .....
9	04/01	836,871	MACRS	Mid Year	4.0	0			0 .....
10	04/89	20,631,252	MACRS	Mid Year	13.0	0			0 .....
11	04/89	1,750,385	WC	Mid Year	13.0	0			0 .....
12	04/89	6,705,173	MACRS	Mid Year	13.0	0			0 .....
13	04/89	9,713,171	MACRS	Mid Year	13.0	0			0 .....
14	04/89	6,027,060	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	309,600.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	442,800.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.1507	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0385	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,137,680.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	6,924,600.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,540,080.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.90	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.70	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
E7 . MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

BIG HURRAH, BULK MINEABLE AU, CIP AND HEAP LEACH

Cash Flows

NPV =$-65,931,879 DCFROR=-27.9% GROR =-21.7% PWROR =-22.3% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416
AU LO REV		3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347
GROSS REV		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
Total Revenue		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
-SMELTING CHARGES		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
-Total Smelting Cost		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
Net Smelt Ret.		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
-MHT ROYALTY		-647,572	-647,572	-647,572	-647,572	-647,572	-647,572	-647,572
-Total Royalties		-647,572	-647,572	-647,572	-647,572	-647,572	-647,572	-647,572
Net Revenue		15,610,964	15,610,964	15,610,964	15,610,964	15,610,964	15,610,964	15,610,964
-OPER COSTS		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Total Oper Costs		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Dev, IDC	-4,218,942							
-Depreciation	-4,429,834	-8,105,734	-6,959,284	-5,997,257	-4,929,759	-4,098,913	-3,641,318	-3,173,654
-Amortization	-1,084,871	-361,624	-361,624					
-Write Off								
Before Depltn	-9,733,647	-12,528,000	-11,381,550	-10,057,899	-8,990,401	-8,159,555	-7,701,960	-7,234,296
Percent Depln		2,341,645	2,341,645	2,341,645	2,341,645	2,341,645	2,341,645	2,341,645
-Total D,D & A	-9,733,647	-8,467,358	-7,320,907	-5,997,257	-4,929,759	-4,098,913	-3,641,318	-3,173,654
Taxable	-9,733,647	-12,528,000	-11,381,550	-10,057,899	-8,990,401	-8,159,555	-7,701,960	-7,234,296
-Tax Due	3,309,440	4,259,520	3,869,727	3,419,686	3,472,093	3,151,220	2,974,497	2,793,885
Net Income	-6,424,207	-8,268,480	-7,511,823	-6,638,214	-5,518,308	-5,008,335	-4,727,463	-4,440,411
+Depreciation	4,429,834	8,105,734	6,959,284	5,997,257	4,929,759	4,098,913	3,641,318	3,173,654
+Amortization	1,084,871	361,624	361,624					
+Write Off								
-Capital Costs	-62,078,748		-836,871				-836,871	
Cash Flow	-62,988,250	198,878	-1,027,786	-640,957	-588,549	-909,422	-1,923,016	-1,266,757

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	8	9	10	Salvage
AU HI REV	12,788,416	12,788,416	12,788,416	
AU LO REV	3,634,347	3,634,347	3,634,347	
GROSS REV	16,422,763	16,422,763	16,422,763	
Total Revenue	16,422,763	16,422,763	16,422,763	4,565,743
-SMELTING CHARGES	-164,228	-164,228	-164,228	
-Total Smelting Cost	-164,228	-164,228	-164,228	
Net Smelt Ret.	16,258,535	16,258,535	16,258,535	
-MHT ROYALTY	-647,572	-647,572	-647,572	
-Total Royalties	-647,572	-647,572	-647,572	
Net Revenue	15,610,964	15,610,964	15,610,964	
-OPER COSTS	-19,671,606	-19,671,606	-19,671,606	
-Total Oper Costs	-19,671,606	-19,671,606	-19,671,606	
-Dev, IDC				
-Depreciation	-3,016,741	-2,964,436	-3,121,349	-7,777,221
-Amortization				
-Write Off				-4,565,743
Before Depltn	-7,077,383	-7,025,078	-7,181,992	-7,777,221
Percent Depln	2,341,645	2,341,645	2,341,645	
-Total D,D & A	-3,016,741	-2,964,436	-3,121,349	-12,342,964
Taxable	-7,077,383	-7,025,078	-7,181,992	-7,777,221
-Tax Due	2,733,285	2,713,085	2,773,685	3,003,563
Net Income	-4,344,098	-4,311,993	-4,408,307	-4,773,658
+Depreciation	3,016,741	2,964,436	3,121,349	7,777,221
+Amortization				
+Write Off				4,565,743
-Capital Costs			-836,871	
Cash Flow	-1,327,357	-1,347,557	-2,123,828	7,569,306

NPV = $-65,931,879

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

List of Assumptions File:BIGHURAH.SEE Date:01/15/94 Time:15:12:53

BIG HURRAH, BULK MINEABLE AU, CIP AND HEAP LEACH

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
Mid of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Tax Rate	Federal Tax Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,589,796	MACRS	Mid Year	13.0	0			0 .....
4	04/89	1,617,701	MACRS	Mid Year	13.0	0			0 .....
5	04/89	2,815,358	WC	Mid Year	13.0	0			0 .....
6	04/89	836,871	MACRS	Mid Year	4.0	0			0 .....
7	04/93	836,871	MACRS	Mid Year	4.0	0			0 .....
8	04/97	836,871	MACRS	Mid Year	4.0	0			0 .....
9	04/01	836,871	MACRS	Mid Year	4.0	0			0 .....
10	04/89	20,631,252	MACRS	Mid Year	13.0	0			0 .....
11	04/89	1,750,385	WC	Mid Year	13.0	0			0 .....
12	04/89	6,705,173	MACRS	Mid Year	13.0	0			0 .....
13	04/89	9,713,171	MACRS	Mid Year	13.0	0			0 .....
14	04/89	6,027,060	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	309,600.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	442,800.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.1507	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0385	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,137,680.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	6,924,600.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,540,080.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.90	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.70	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations

Law Offices of
MAR 0 4 1994
JAMES B. GOTTSTEIN

- Acting BIGHURAH

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
7 . MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

Law Offices of
MAR 0 4 1994
JAMES B. GOTTSTEIN

ASSUMP RIGHURAH

BIG HURRAH, BULK MINEABLE AU, CIP AND HEAP LEACH

Cash Flows

NPV =$-63,036,347 DCFROR=-24.6% GROR =-19.5% PWROR =-21.4% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416
AU LO REV		3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347
GROSS REV		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
Total Revenue		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
-SMELTING CHARGES		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
-Total Smelting Cost		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
Net Smelt Ret.		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
Net Revenue		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
-OPER COSTS		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Total Oper Costs		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-MHT NPI		97,465	97,465	97,465	97,465	97,465	97,465	97,465
-Total Sev. Ad Valor		97,465	97,465	97,465	97,465	97,465	97,465	97,465
-Dev, IDC	-4,218,942							
-Depreciation	-4,429,834	-8,105,734	-6,959,284	-5,997,257	-4,929,759	-4,098,913	-3,641,318	-3,173,654
-Amortization	-1,084,871	-361,624	-361,624					
-Write Off								
Before Depltn	-9,733,647	-11,782,963	-10,636,513	-9,312,862	-8,245,364	-7,414,518	-6,956,923	-6,489,259
Percent Depln		2,438,780	2,438,780	2,438,780	2,438,780	2,438,780	2,438,780	2,438,780
-Total D,D & A	-9,733,647	-8,467,358	-7,320,907	-5,997,257	-4,929,759	-4,098,913	-3,641,318	-3,173,654
Taxable	-9,733,647	-11,782,963	-10,636,513	-9,312,862	-8,245,364	-7,414,518	-6,956,923	-6,489,259
-Tax Due	3,309,440	4,006,208	3,616,414	3,166,373	3,184,360	2,863,487	2,686,764	2,506,152
Net Income	-6,424,207	-7,776,756	-7,020,098	-6,146,489	-5,061,005	-4,551,031	-4,270,160	-3,983,107
+Depreciation	4,429,834	8,105,734	6,959,284	5,997,257	4,929,759	4,098,913	3,641,318	3,173,654
+Amortization	1,084,871	361,624	361,624					
+Write Off								
-Capital Costs	-62,078,748		-836,871				-836,871	
Cash Flow	-62,988,250	690,602	-536,062	-149,232	-131,246	-452,118	-1,465,713	-809,454

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	8	9	10	Salvage
AU HI REV	12,788,416	12,788,416	12,788,416	
AU LO REV	3,634,347	3,634,347	3,634,347	
GROSS REV	16,422,763	16,422,763	16,422,763	
Total Revenue	16,422,763	16,422,763	16,422,763	4,565,743
-SMELTING CHARGES	-164,228	-164,228	-164,228	
-Total Smelting Cost	-164,228	-164,228	-164,228	
Net Smelt Ret.	16,258,535	16,258,535	16,258,535	
Net Revenue	16,258,535	16,258,535	16,258,535	
-OPER COSTS	-19,671,606	-19,671,606	-19,671,606	
-Total Oper Costs	-19,671,606	-19,671,606	-19,671,606	
-MHT NPI	97,465	97,465	97,465	
-Total Sev. Ad Valor	97,465	97,465	97,465	
-Dev, IDC				
-Depreciation	-3,016,741	-2,964,436	-3,121,349	-7,777,221
-Amortization				
-Write Off				-4,565,743
Before Depltn	-6,332,346	-6,280,042	-6,436,955	-7,777,221
Percent Depln	2,438,780	2,438,780	2,438,780	
-Total D,D & A	-3,016,741	-2,964,436	-3,121,349	-12,342,964
Taxable	-6,332,346	-6,280,042	-6,436,955	-7,777,221
-Tax Due	2,445,552	2,425,352	2,485,952	3,003,563
Net Income	-3,886,794	-3,854,690	-3,951,003	-4,773,658
+Depreciation	3,016,741	2,964,436	3,121,349	7,777,221
+Amortization				
+Write Off				4,565,743
-Capital Costs			-836,871	
Cash Flow	-870,053	-890,253	-1,666,525	7,569,306

AIG HIPRAH NPV = $-63.036,347

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag

By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $68.0 million.

Comments, Assumptions, Specifications: ILL -
Illinois Creek / Kaiyuh Hills Bulk-mineable A, based on RYAN model

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk Mineable A
Total Ore Tonnage: 75 mil mt
Mining Method: Open Pit
Beneficiation Method: Crush & Grind, Leach CIP
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 years
Proposed Daily Production: 860 mTPD High, 1230 mTPD Low
Maximum Ore Depth: 100 ~ 120 m
Stripping Ratio: 4.6 : 1
Haulage Distance/Road Requirements: Dore produced, no haul. 100 km service road from Yukon
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Shovels, Trucks
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .035 ha/day
Burden/Waste rate-mtpd: 9,600 mTPD
Burden/Waste depth & haul-m: 35 m 500 m
Ore rate-mtpd: 860 mTPD High 1230 mTPD Low
Ore depth & haul-m: 35 m 1,500 m
Conveyor length & slope-km & %: -
Water needs-cm/day: 850 m³/day
Drainage, head & distance-cm/day, m & km: None
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 860 mTPD / 2090 mTPD
Production water needs-cm/day: 650 m³/day M.U. 1900 m³/day/cycle
Portable Power needs-kW: 6 000 kW
Wastewater-L/sec: 10 L/s
Concentrate haul-km: Doré - None
Employee housing-men: 80 men
Other: C.I.P. Leach: $5,964/day C.C. $2,771/day
Other: Head Leach costs: $1,700/day

B.(For Capital Costs)
Concentrate feeds-mtpd: 860 mTPD
Mill operating costs-$/day: $19 235 / day
Working capital time-weeks: 12 weeks
Development time-days:
Clearing needs-ha: 110 ha

Stripping needs-mt: 100 000 MT
Stripping depth & haul-m: 10 m . 1,500m
Restoration area-ha: 450 ha
Contractors-1 or 2: 1
Mine operating costs-$/day: $ 30,938 / day
Access roads, length & width-km & m: 100km . 8m
Airstrip length & width-m: 1200 m , 18 m
Powerline length & power-km & mW: N/A
Dike & Dam needs-cm/fill: 100,000 m3
Climate/Weather factors: Severe
Other: C.I.P. System: $ 9,299,900 . J.a $ 321,100
Other: Heap Leach System: $ 3,206,500

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 30,938
Mining Costs-$/yr: 11,137,670
Mining Costs-$/mt: 14.20
Milling Costs-$/day: 19,235
Milling Costs-$/yr: 6,924,600
Milling Costs-$/mt: 9.20
Infrastructure Costs-$/day: 28,033
Infrastructure Costs-$/yr: 10,091,880
Infrastructure Costs-$/mt: 13.41
Total Operating Costs-$/day: 78,206
Total Operating Costs-$/yr: 28,154,160
Total Operating Costs-$/mt: 37.42
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 2815,358
Heavy Equipment (fixed life)-$: 10,421,198 *
Mine Rehabilitation-$: 4,199,725 *
Engr. & Const. Mgmt.-$: 1,589,796 *
Other:
Remaining Mine Capital-$: 1,617,701
Total Mine Capital-$: 20,633,778

MILL CAPITAL COSTS:

Mill Working Capital-$: 1,750,385
Light Vehicles (short life)-$: 836,871 *
Other:
Remaining Mill Capital-$: 20,631,252
Total Mill Capital-$: 23,219,508

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 6,705,173 *

Other:_____
Remaining Infrastructure Capital-$: 32,222,239
Total Infrastructure Capital-$: 32,927,411

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 4,565,743 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 54,471,191 *
Sum of Total Mine, Mill & Infr. Costs-$: 82,779,697
Exploration Cost-$: 8,279,000 *

Overall Capital Cost-$: 91,057,667
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:ILLCRKH.SEE Date:01/04/80 Time:00:58:23

ILLINOIS CREEK BULK MINEABLE AU

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0		0	.....
3	04/89	1,589,796	MACRS	Mid Year	13.0	0		0	.....
4	04/89	1,617,701	MACRS	Mid Year	13.0	0		0	.....
5	04/89	2,815,358	WC	Mid Year	13.0	0		0	.....
6	04/89	836,871	MACRS	Mid Year	4.0	0		0	.....
7	04/93	836,871	MACRS	Mid Year	4.0	0		0	.....
8	04/97	836,871	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	20,631,252	MACRS	Mid Year	13.0	0		0	.....
11	04/89	1,750,385	WC	Mid Year	13.0	0		0	.....
12	04/89	6,705,173	MACRS	Mid Year	13.0	0		0	.....
13	04/89	32,222,238	MACRS	Mid Year	13.0	0		0	.....
14	04/89	8,278,000	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	0.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	750,000.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.0847	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0710	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,137,680.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	6,924,600.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	10,091,880.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	250,000.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.70	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
E7 . MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

ILLINOIS CREEK BULK MINEABLE AU

Cash Flows

NPV =$-137,005,325 DCFROR= 0.0% GROR = 0.0% PWROR = 0.0% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU LO REV		11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139
GROSS REV		11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139
Total Revenue		11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139
-SMELTING CHARGES		-113,521	-113,521	-113,521	-113,521	-113,521	-113,521	-113,521
-Total Smelting Cost		-113,521	-113,521	-113,521	-113,521	-113,521	-113,521	-113,521
Net Smelt Ret.		11,238,617	11,238,617	11,238,617	11,238,617	11,238,617	11,238,617	11,238,617
-MHT ROYALTY		-439,545	-439,545	-439,545	-439,545	-439,545	-439,545	-439,545
-Total Royalties		-439,545	-439,545	-439,545	-439,545	-439,545	-439,545	-439,545
Net Revenue		10,799,072	10,799,072	10,799,072	10,799,072	10,799,072	10,799,072	10,799,072
-OPER COSTS		-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160
-Total Oper Costs		-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160
-Dev, IDC	-5,794,600							
-Depreciation	-6,161,301	-11,302,288	-9,664,060	-8,285,914	-6,866,315	-5,737,537	-5,027,846	-4,346,870
-Amortization	-1,490,040	-496,680	-496,680					
-Write Off								
Before Depltn	-13,445,941	-29,404,056	-27,765,828	-25,891,001	-24,471,402	-23,342,625	-22,632,934	-21,951,957
Percent Depln		1,619,861	1,619,861	1,619,861	1,619,861	1,619,861	1,619,861	1,619,861
-Total D,D & A	-13,445,941	-11,798,968	-10,160,740	-8,285,914	-6,866,315	-5,737,537	-5,027,846	-4,346,870
Taxable	-13,445,941	-29,404,056	-27,765,828	-25,891,001	-24,471,402	-23,342,625	-22,632,934	-21,951,957
-Tax Due	4,571,620	9,997,379	9,440,381	8,802,940	9,450,856	9,014,922	8,740,839	8,477,846
Net Income	-8,874,321	-19,406,677	-18,325,446	-17,088,061	-15,020,547	-14,327,703	-13,892,095	-13,474,112
+Depreciation	6,161,301	11,302,288	9,664,060	8,285,914	6,866,315	5,737,537	5,027,846	4,346,870
+Amortization	1,490,040	496,680	496,680					
+Write Off								
-Capital Costs	-85,263,097		-836,871				-836,871	
Cash Flow	-86,486,077	-7,607,709	-9,001,577	-8,802,147	-8,154,232	-8,590,166	-9,701,120	-9,127,242

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	8	9	10	Salvage
AU LO REV	11,352,139	11,352,139	11,352,139	
GROSS REV	11,352,139	11,352,139	11,352,139	
Total Revenue	11,352,139	11,352,139	11,352,139	4,565,743
-SMELTING CHARGES	-113,521	-113,521	-113,521	
-Total Smelting Cost	-113,521	-113,521	-113,521	
Net Smelt Ret.	11,238,617	11,238,617	11,238,617	
-MHT ROYALTY	-439,545	-439,545	-439,545	
-Total Royalties	-439,545	-439,545	-439,545	
Net Revenue	10,799,072	10,799,072	10,799,072	
-OPER COSTS	-28,404,160	-28,404,160	-28,404,160	
-Total Oper Costs	-28,404,160	-28,404,160	-28,404,160	
-Dev, IDC				
-Depreciation	-4,189,957	-4,137,652	-4,085,348	-10,082,608
-Amortization				
-Write Off				-4,565,743
Before Depltn	-21,795,044	-21,742,740	-21,690,435	-10,082,608
Percent Depln	1,619,861	1,619,861	1,619,861	
-Total D,D & A	-4,189,957	-4,137,652	-4,085,348	-14,648,351
Taxable	-21,795,044	-21,742,740	-21,690,435	-10,082,608
-Tax Due	8,417,246	8,397,046	8,376,846	3,893,903
Net Income	-13,377,798	-13,345,694	-13,313,589	-6,188,705
+Depreciation	4,189,957	4,137,652	4,085,348	10,082,608
+Amortization				
+Write Off				4,565,743
-Capital Costs				
Cash Flow	-9,187,841	-9,208,041	-9,228,241	8,459,646

NPV = $-137,005,325

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

List of Assumptions File:ILLCRKH.SEE Date:01/15/94 Time:17:09:46

ILLINOIS CREEK BULK MINEABLE AU

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Minimum ROR, Inflation & Exponents: Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	Tax Rates: State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0		0	.....
3	04/89	1,589,796	MACRS	Mid Year	13.0	0		0	.....
4	04/89	1,617,701	MACRS	Mid Year	13.0	0		0	.....
5	04/89	2,815,358	WC	Mid Year	13.0	0		0	.....
6	04/89	836,871	MACRS	Mid Year	4.0	0		0	.....
7	04/93	836,871	MACRS	Mid Year	4.0	0		0	.....
8	04/97	836,871	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	20,631,252	MACRS	Mid Year	13.0	0		0	.....
11	04/89	1,750,385	WC	Mid Year	13.0	0		0	.....
12	04/89	6,705,173	MACRS	Mid Year	13.0	0		0	.....
13	04/89	32,222,238	MACRS	Mid Year	13.0	0		0	.....
14	04/89	8,278,000	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	0.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	750,000.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.0847	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0710	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,137,680.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	6,924,600.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	10,091,880.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	250,000.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.70	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT MPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations

LIST OF ASSUMP

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Revenues	
E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
. MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

Law Offices of
MAR 0 4 1994
JAMES B. GOTTSTEIN

ILLINOIS CREEK BULK MINEABLE AU

Cash Flows

NPV =$-133,308,922 DCFROR= 0.0% GROR = 0.0% PWROR = 0.0% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU LO REV		11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139
GROSS REV		11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139
Total Revenue		11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139	11,352,139
-SMELTING CHARGES		-113,521	-113,521	-113,521	-113,521	-113,521	-113,521	-113,521
-Total Smelting Cost		-113,521	-113,521	-113,521	-113,521	-113,521	-113,521	-113,521
Net Smelt Ret.		11,238,617	11,238,617	11,238,617	11,238,617	11,238,617	11,238,617	11,238,617
Net Revenue		11,238,617	11,238,617	11,238,617	11,238,617	11,238,617	11,238,617	11,238,617
-OPER COSTS		-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160
-Total Oper Costs		-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160	-28,404,160
-MHT NPI		511,561	511,561	511,561	511,561	511,561	511,561	511,561
-Total Sev. Ad Valor		511,561	511,561	511,561	511,561	511,561	511,561	511,561
-Dev, IDC	-5,794,600							
-Depreciation	-6,161,301	-11,302,288	-9,664,060	-8,285,914	-6,866,315	-5,737,537	-5,027,846	-4,346,870
-Amortization	-1,490,040	-496,680	-496,680					
-Write Off								
Before Depltn	-13,445,941	-28,452,950	-26,814,722	-24,939,896	-23,520,297	-22,391,519	-21,681,828	-21,000,852
Percent Depln		1,685,793	1,685,793	1,685,793	1,685,793	1,685,793	1,685,793	1,685,793
-Total D,D & A	-13,445,941	-11,798,968	-10,160,740	-8,285,914	-6,866,315	-5,737,537	-5,027,846	-4,346,870
Taxable	-13,445,941	-28,452,950	-26,814,722	-24,939,896	-23,520,297	-22,391,519	-21,681,828	-21,000,852
-Tax Due	4,571,620	9,674,003	9,117,006	8,479,565	9,083,539	8,647,605	8,373,522	8,110,529
Net Income	-8,874,321	-18,778,947	-17,697,717	-16,460,331	-14,436,758	-13,743,915	-13,308,306	-12,890,323
+Depreciation	6,161,301	11,302,288	9,664,060	8,285,914	6,866,315	5,737,537	5,027,846	4,346,870
+Amortization	1,490,040	496,680	496,680					
+Write Off								
-Capital Costs	-85,263,097		-836,871				-836,871	
Cash Flow	-86,486,077	-6,979,979	-8,373,848	-8,174,418	-7,570,444	-8,006,377	-9,117,331	-8,543,453

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	8	9	10	Salvage
AU LO REV	11,352,139	11,352,139	11,352,139	
GROSS REV	11,352,139	11,352,139	11,352,139	
Total Revenue	11,352,139	11,352,139	11,352,139	4,565,743
-SMELTING CHARGES	-113,521	-113,521	-113,521	
-Total Smelting Cost	-113,521	-113,521	-113,521	
Net Smelt Ret.	11,238,617	11,238,617	11,238,617	
Net Revenue	11,238,617	11,238,617	11,238,617	
-OPER COSTS	-28,404,160	-28,404,160	-28,404,160	
-Total Oper Costs	-28,404,160	-28,404,160	-28,404,160	
-MHT NPI	511,561	511,561	511,561	
-Total Sev. Ad Valor	511,561	511,561	511,561	
-Dev, IDC				
-Depreciation	-4,189,957	-4,137,652	-4,085,348	-10,082,608
-Amortization				
-Write Off				-4,565,743
Before Depltn	-20,843,939	-20,791,634	-20,739,330	-10,082,608
Percent Depln	1,685,793	1,685,793	1,685,793	
-Total D,D & A	-4,189,957	-4,137,652	-4,085,348	-14,648,351
Taxable	-20,843,939	-20,791,634	-20,739,330	-10,082,608
-Tax Due	8,049,929	8,029,729	8,009,529	3,893,903
Net Income	-12,794,010	-12,761,905	-12,729,801	-6,188,705
+Depreciation	4,189,957	4,137,652	4,085,348	10,082,608
+Amortization				
+Write Off				4,565,743
-Capital Costs				
Cash Flow	-8,604,053	-8,624,253	-8,644,453	8,459,646

NPV = $-133,308,922

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag

By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

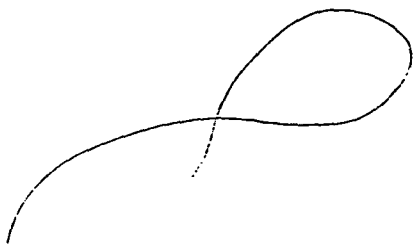
COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $68.0 million.



Comments, Assumptions, Specifications: DEMOGRAN
Demo-et Lode - Bulk mineable Au - based on RYAN model

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk mineable Au
Total Ore Tonnage: 7.5 mil mt
Mining Method: Open Pit
Beneficiation Method: Crush & Grind Hoge Sig, C.I.P
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 yrs
Proposed Daily Production: 860 MTPD High 1230 MTPD Low
Maximum Ore Depth: 120m
Stripping Ratio: 4.6 : 1
Haulage Distance/Road Requirements: 10 km new roads/upgrades
Distance From Power: 10 km
Pre-Production Development:

Production Development:

Equipment: Shovels, Trucks
Concentrate Production: Do-E

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .035 ha/day
Burden/Waste rate-mtpd: 9,600 MTPD
Burden/Waste depth & haul-m: 35m 500m
Ore rate-mtpd: 860 MTPD High, 1230 MTPD Low
Ore depth & haul-m: 35m, 1,500m
Conveyor length & slope-km & %: -
Water needs-cm/day: 850 m³/day
Drainage, head & distance-cm/day, m & km: None
Concentrate (dry) rate-mtpd: Do-E
Tails (dry) rate-mtpd: 860 MTPD / 2090 MTPD
Production water needs-cm/day: 650 m³/day M.U. 1,900 m³/day recycle
Portable Power needs-kW: -
Wastewater-L/sec: 10 L/sec
Concentrate haul-km: Do-E
Employee housing-men: 60 men
Other: C.I.P. Leach: $5,964/day ; GC. Jig : $341/day
Other: Heap operation : $1,700/day

B.(For Capital Costs)
Concentrate feeds-mtpd: 860 MTPD
Mill operating costs-$/day: $19,235/day
Working capital time-weeks: 13 weeks
Development time-days:
Clearing needs-ha: 110 ha

Stripping needs-mt: 100,000 mT
Stripping depth & haul-m: 10m, 1,500m
Restoration area-ha: 450 ha
Contractors-1 or 2: 1
Mine operating costs-$/day: $30,938/day
Access roads, length & width-km & m: 10km, 8m
Airstrip length & width-m: 1,200 m, 18m
Powerline length & power-km & mW: 10km, 19mw
Dike & Dam needs-cm/fill: 100,000 m3
Climate/Weather factors: See-e
Other: C.I.P. System: $10,289,809; C.C.J.: $221,604
Other: Heap System: $3,206,500

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 30,938
Mining Costs-$/yr: 11,137,680
Mining Costs-$/mt: 14.80
Milling Costs-$/day: 19,235
Milling Costs-$/yr: 6,924,600
Milling Costs-$/mt: 9.20
Infrastructure Costs-$/day: 7,000
Infrastructure Costs-$/yr: 2,520,000
Infrastructure Costs-$/mt: 3,35
Total Operating Costs-$/day: 57,173
Total Operating Costs-$/yr: 20,582,280
Total Operating Costs-$/mt: 27.36
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 2,815,358
Heavy Equipment (fixed life)-$: 10,421,198 *
Mine Rehabilitation-$: 4,189,725 *
Engr. & Const. Mgmt.-$: 1,589,796 *
Other:
Remaining Mine Capital-$: 1,617,701
Total Mine Capital-$: 20,633,778

MILL CAPITAL COSTS:

Mill Working Capital-$: 1,750,385
Light Vehicles (short life)-$: 836,871 *
Other:
Remaining Mill Capital-$: 20,631,252
Total Mill Capital-$: 23,218,508

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 6,705,173 *

Other: _____
Remaining Infrastructure Capital-$: 8,296,886
Total Infrastructure Capital-$: 15002,059

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 4,565,743 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of *)-$: 30,545,839 *
Sum of Total Mine, Mill & Infr. Costs-$: 58,854,345
Exploration Cost-$: 5,895,430 *

Overall Capital Cost-$: 64,739,780
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:DEMOCRAU.SEE Date:01/04/80 Time:01:39:00

DEMOCRAT LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0		0	.....
3	04/89	1,589,796	MACRS	Mid Year	13.0	0		0	.....
4	04/89	1,617,701	MACRS	Mid Year	13.0	0		0	.....
5	04/89	2,815,358	WC	Mid Year	13.0	0		0	.....
6	04/89	836,871	MACRS	Mid Year	4.0	0		0	.....
7	04/93	836,871	MACRS	Mid Year	4.0	0		0	.....
8	04/97	836,871	MACRS	Mid Year	4.0	0		0	.....
9	04/01	836,871	MACRS	Mid Year	4.0	0		0	.....
10	04/89	20,631,252	MACRS	Mid Year	13.0	0		0	.....
11	04/89	1,750,385	WC	Mid Year	13.0	0		0	.....
12	04/89	6,705,173	MACRS	Mid Year	13.0	0		0	.....
13	04/89	8,296,886	MACRS	Mid Year	13.0	0		0	.....
14	04/89	5,885,430	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	309,600.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	442,800.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.1507	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0385	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,137,680.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	6,924,600.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,540,080.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.90	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.70	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
E7 . MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

DEMOCRAT LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Cash Flows

NPV =$-64,759,543 DCFROR=-28.2% GROR =-21.9% PWROR =-22.3% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416
AU LO REV		3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347
GROSS REV		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
Total Revenue		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
-SMELTING CHARGES		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
-Total Smelting Cost		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
Net Smelt Ret.		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
-MHT ROYALTY		-647,572	-647,572	-647,572	-647,572	-647,572	-647,572	-647,572
-Total Royalties		-647,572	-647,572	-647,572	-647,572	-647,572	-647,572	-647,572
Net Revenue		15,610,964	15,610,964	15,610,964	15,610,964	15,610,964	15,610,964	15,610,964
-OPER COSTS		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Total Oper Costs		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Dev, IDC	-4,119,801							
-Depreciation	-4,320,889	-7,904,605	-6,789,097	-5,853,253	-4,807,910	-3,995,810	-3,554,077	-3,099,834
-Amortization	-1,059,377	-353,126	-353,126					
-Write Off								
Before Depltn	-9,500,068	-12,318,373	-11,202,866	-9,913,896	-8,868,552	-8,056,452	-7,614,719	-7,160,477
Percent Depln		2,341,645	2,341,645	2,341,645	2,341,645	2,341,645	2,341,645	2,341,645
-Total D,D & A	-9,500,068	-8,257,731	-7,142,223	-5,853,253	-4,807,910	-3,995,810	-3,554,077	-3,099,834
Taxable	-9,500,068	-12,318,373	-11,202,866	-9,913,896	-8,868,552	-8,056,452	-7,614,719	-7,160,477
-Tax Due	3,230,023	4,188,247	3,808,974	3,370,724	3,425,035	3,111,402	2,940,805	2,765,376
Net Income	-6,270,045	-8,130,126	-7,393,891	-6,543,171	-5,443,517	-4,945,050	-4,673,915	-4,395,101
+Depreciation	4,320,889	7,904,605	6,789,097	5,853,253	4,807,910	3,995,810	3,554,077	3,099,834
+Amortization	1,059,377	353,126	353,126					
+Write Off								
-Capital Costs	-60,619,974		-836,871				-836,871	
Cash Flow	-61,509,752	127,605	-1,088,539	-689,918	-635,608	-949,241	-1,956,709	-1,295,266

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	8	9	10	Salvage
AU HI REV	12,788,416	12,788,416	12,788,416	
AU LO REV	3,634,347	3,634,347	3,634,347	
GROSS REV	16,422,763	16,422,763	16,422,763	
Total Revenue	16,422,763	16,422,763	16,422,763	4,565,743
-SMELTING CHARGES	-164,228	-164,228	-164,228	
-Total Smelting Cost	-164,228	-164,228	-164,228	
Net Smelt Ret.	16,258,535	16,258,535	16,258,535	
-MHT ROYALTY	-647,572	-647,572	-647,572	
-Total Royalties	-647,572	-647,572	-647,572	
Net Revenue	15,610,964	15,610,964	15,610,964	
-OPER COSTS	-19,671,606	-19,671,606	-19,671,606	
-Total Oper Costs	-19,671,606	-19,671,606	-19,671,606	
-Dev, IDC				
-Depreciation	-2,942,921	-2,890,617	-3,047,530	-7,592,672
-Amortization				
-Write Off				-4,565,743
Before Depltn	-7,003,563	-6,951,259	-7,108,172	-7,592,672
Percent Depln	2,341,645	2,341,645	2,341,645	
-Total D,D & A	-2,942,921	-2,890,617	-3,047,530	-12,158,415
Taxable	-7,003,563	-6,951,259	-7,108,172	-7,592,672
-Tax Due	2,704,776	2,684,576	2,745,176	2,932,290
Net Income	-4,298,787	-4,266,683	-4,362,996	-4,660,382
+Depreciation	2,942,921	2,890,617	3,047,530	7,592,672
+Amortization				
+Write Off				4,565,743
-Capital Costs			-836,871	
Cash Flow	-1,355,866	-1,376,066	-2,152,337	7,498,033

NPV = $-64,759,543

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

List of Assumptions File:DEMOCRAU.SEE Date:01/15/94 Time:15:25:46

DEMOCRAT LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
nd of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Minimum Rate	Infltion:Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

Law Offices of
MAR 0 4 1994
JAMES B. GOTTSTEIN

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,421,198	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,589,796	MACRS	Mid Year	13.0	0			0 .....
4	04/89	1,617,701	MACRS	Mid Year	13.0	0			0 .....
5	04/89	2,815,358	WC	Mid Year	13.0	0			0 .....
6	04/89	836,871	MACRS	Mid Year	4.0	0			0 .....
7	04/93	836,871	MACRS	Mid Year	4.0	0			0 .....
8	04/97	836,871	MACRS	Mid Year	4.0	0			0 .....
9	04/01	836,871	MACRS	Mid Year	4.0	0			0 .....
10	04/89	20,631,252	MACRS	Mid Year	13.0	0			0 .....
11	04/89	1,750,385	WC	Mid Year	13.0	0			0 .....
12	04/89	6,705,173	MACRS	Mid Year	13.0	0			0 .....
13	04/89	8,296,886	MACRS	Mid Year	13.0	0			0 .....
14	04/89	5,885,430	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	309,600.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	442,800.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.1507	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0385	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	11,137,680.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	6,924,600.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	1,540,080.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	69,246.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.90	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.70	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
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General Equations

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
E7 . MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

DEMOCRAT LODE BULK MINEABLE AU, CIP AND HEAP LEACH

Cash Flows

NPV =$-61,864,011 DCFROR=-24.8% GROR =-19.6% PWROR =-21.4% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416	12,788,416
AU LO REV		3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347	3,634,347
GROSS REV		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
Total Revenue		16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763	16,422,763
-SMELTING CHARGES		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
-Total Smelting Cost		-164,228	-164,228	-164,228	-164,228	-164,228	-164,228	-164,228
Net Smelt Ret.		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
Net Revenue		16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535	16,258,535
-OPER COSTS		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-Total Oper Costs		-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606	-19,671,606
-MHT NPI		97,465	97,465	97,465	97,465	97,465	97,465	97,465
-Total Sev. Ad Valor		97,465	97,465	97,465	97,465	97,465	97,465	97,465
-Dev, IDC	-4,119,801							
-Depreciation	-4,320,889	-7,904,605	-6,789,097	-5,853,253	-4,807,910	-3,995,810	-3,554,077	-3,099,834
-Amortization	-1,059,377	-353,126	-353,126					
-Write Off								
Before Depltn	-9,500,068	-11,573,336	-10,457,829	-9,168,859	-8,123,515	-7,311,415	-6,869,682	-6,415,440
Percent Depln		2,438,780	2,438,780	2,438,780	2,438,780	2,438,780	2,438,780	2,438,780
-Total D,D & A	-9,500,068	-8,257,731	-7,142,223	-5,853,253	-4,807,910	-3,995,810	-3,554,077	-3,099,834
Taxable	-9,500,068	-11,573,336	-10,457,829	-9,168,859	-8,123,515	-7,311,415	-6,869,682	-6,415,440
-Tax Due	3,230,023	3,934,934	3,555,662	3,117,412	3,137,302	2,823,669	2,653,071	2,477,643
Net Income	-6,270,045	-7,638,402	-6,902,167	-6,051,447	-4,986,214	-4,487,747	-4,216,611	-3,937,797
+Depreciation	4,320,889	7,904,605	6,789,097	5,853,253	4,807,910	3,995,810	3,554,077	3,099,834
+Amortization	1,059,377	353,126	353,126					
+Write Off								
-Capital Costs	-60,619,974		-836,871				-836,871	
Cash Flow	-61,509,752	619,329	-596,815	-198,194	-178,304	-491,937	-1,499,405	-837,963

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JAMES B. GOTTSTEIN

Year	8	9	10	Salvage
AU HI REV	12,788,416	12,788,416	12,788,416	
AU LO REV	3,634,347	3,634,347	3,634,347	
GROSS REV	16,422,763	16,422,763	16,422,763	
Total Revenue	16,422,763	16,422,763	16,422,763	4,565,743
-SMELTING CHARGES	-164,228	-164,228	-164,228	
-Total Smelting Cost	-164,228	-164,228	-164,228	
Net Smelt Ret.	16,258,535	16,258,535	16,258,535	
Net Revenue	16,258,535	16,258,535	16,258,535	
-OPER COSTS	-19,671,606	-19,671,606	-19,671,606	
-Total Oper Costs	-19,671,606	-19,671,606	-19,671,606	
-MHT NPI	97,465	97,465	97,465	
-Total Sev. Ad Valor	97,465	97,465	97,465	
-Dev, IDC				
-Depreciation	-2,942,921	-2,890,617	-3,047,530	-7,592,672
-Amortization				
-Write Off				-4,565,743
Before Depltn	-6,258,526	-6,206,222	-6,363,135	-7,592,672
Percent Depln	2,438,780	2,438,780	2,438,780	
-Total D,D & A	-2,942,921	-2,890,617	-3,047,530	-12,158,415
Taxable	-6,258,526	-6,206,222	-6,363,135	-7,592,672
-Tax Due	2,417,043	2,396,843	2,457,443	2,932,290
Net Income	-3,841,484	-3,809,379	-3,905,692	-4,660,382
+Depreciation	2,942,921	2,890,617	3,047,530	7,592,672
+Amortization				
+Write Off				4,565,743
-Capital Costs			-836,871	
Cash Flow	-898,563	-918,763	-1,695,034	7,498,033

DiMarpai NPV = #-61,864,011

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4.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-Ag
By Byron R. Berger

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $66.0 million.

Comments, Assumptions, Specifications: SWM AW -
Skeese / White Mountain - Tabletop Mtn Area - Bulk Mineable Au-
based on RYANC model

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk Mineable / Stockwork Au
Total Ore Tonnage: 7.5 mil mt
Mining Method: Open pit
Beneficiation Method: Crush Grind (Sag) C.I.P
Extraction Rate: _____
Dilution/Waste Rate: _____
Proposed Mine Life: 7 yrs
Proposed Daily Production: 3,000 mTPD
Maximum Ore Depth: 120 m
Stripping Ratio: 4.6:1
Haulage Distance/Road Requirements: 20 km of
Roads road upgrades
Distance From Power: Possible
Pre-Production Development: _____

Production Development: _____

Equipment: Shovels Trucks
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .043 ha/day
Burden/Waste rate-mtpd: 13,800 mTPD
Burden/Waste depth & haul-m: 35m 500m
Ore rate-mtpd: 3,000 mTPD
Ore depth & haul-m: 35m 1400m
Conveyor length & slope-km & %: -
Water needs-cm/day: 1,200 m³/day
Drainage, head & distance-cm/day, m & km:
None
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 3,000 mTPD
Production water needs-cm/day: 900 m³/hr., MU., 2,700 m³/day - recycle
Portable Power needs-kW: 6,000 kw
Wastewater-L/sec: 12 L/s
Concentrate haul-km: -
Employee housing-men: 70 man camp
Other: C.C. Jig: $409/day, C.I.P Leach: $13,763/day
Other: _____

B.(For Capital Costs)
Concentrate feeds-mtpd: 3000 mTPD
Mill operating costs-$/day: $ 33,469/day
Working capital time-weeks: 13 weeks
Development time-days: 10 days @ 10,000 mTPD
Clearing needs-ha: 50 ha

Stripping needs-mt: 100,000 mT
Stripping depth & haul-m: 10 m 1,500 m
Restoration area-ha: 350 ha
Contractors-1 or 2: 1
Mine operating costs-$/day: $ 40,523 /day
Access roads, length & width-km & m: 20km 12m
Airstrip length & width-m: 1200m, 12m
Powerline length & power-km & mW: portable
Dike & Dam needs-cm/fill: 120,000 m3
Climate/Weather factors: severe
Other: cc. dia. $94,255, C.I.P. station $22,243,627
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 40,523
Mining Costs-$/yr: 14,588,220
Mining Costs-$/mt: 13.51
Milling Costs-$/day: 33,469
Milling Costs-$/yr: 12,048,840
Milling Costs-$/mt: 11.16
Infrastructure Costs-$/day: 38,079
Infrastructure Costs-$/yr: 13,708,440
Infrastructure Costs-$/mt: 12.69
Total Operating Costs-$/day: 112,071
Total Operating Costs-$/yr: 40,345,530
Total Operating Costs-$/mt: 37.36
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 3,687,593
Heavy Equipment (fixed life)-$: 13,828,917 *
Mine Rehabilitation-$: 3258 675 *
Engr. & Const. Mgmt.-$: 1,962,969 *
Other:
Remaining Mine Capital-$: 1,676,096
Total Mine Capital-$: 24,414,250

MILL CAPITAL COSTS:

Mill Working Capital-$: 3,045,679
Light Vehicles (short life)-$: 1,152,231 *
Other:
Remaining Mill Capital-$: 35 644 847
Total Mill Capital-$: 39,842,757

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 10,668,795 *

Other:_____
Remaining Infrastructure Capital-$: 12,742,412 ~
Total Infrastructure Capital-$: 23,411,207

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 6,733,272 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 50,063,355 *
Sum of Total Mine, Mill & Infr. Costs-$: 87,668,214
Exploration Cost-$: 8,766,820 *

Overall Capital Cost-$: 96,435,035
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:SWMAU.SEE Date:01/04/80 Time:01:44:08

TABLE MT, STEESE/WHITE MT AREA BULK MINEABLE AU, CIP

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 7
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

******** Minimum ROR,Inflation & Exponents ********* ****** Tax Rates ******

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	13,828,917	MACRS	Mid Year	13.0	0		0	.....
2	04/89	3,258,675	MACRS	Mid Year	13.0	0		0	.....
3	04/89	1,962,969	MACRS	Mid Year	13.0	0		0	.....
4	04/89	1,676,096	MACRS	Mid Year	13.0	0		0	.....
5	04/89	3,687,593	WC	Mid Year	13.0	0		0	.....
6	04/89	1,152,231	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,152,231	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,152,231	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	35,644,847	MACRS	Mid Year	13.0	0		0	.....
11	04/89	3,045,679	WC	Mid Year	13.0	0		0	.....
12	04/89	10,668,795	MACRS	Mid Year	13.0	0		0	.....
13	04/89	12,742,412	MACRS	Mid Year	13.0	0		0	.....
14	04/89	8,766,820	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	1,080,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.0847	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	14,588,280.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	12,048,840.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	13,708,440.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	125,000.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . AU HI REV S1*S3*S5*S10*S11
E2 . AU LO REV S2*S4*S5*S10*S12

Equations continued

Revenues

E3 . GROSS REV E1+E2

Operating Costs

E5 . OPER COSTS S6+S7+S8+S9

Special Taxes

E7 . MHT NPI S15*(E3-E5)

Royalties

E6 . MHT ROYALTY S14*(E3-E4-S9)

Processing Costs

E4 . SMELTING CHARGES S13*E3

TABLE MT, STEESE/WHITE MT AREA BULK MINEABLE AU, CIP

Cash Flows

NPV =$-118,297,681 DCFROR=-50.7% GROR =-32.1% PWROR =-50.7% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
GROSS REV		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
Total Revenue		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
-SMELTING CHARGES		-264,662	-264,662	-264,662	-264,662	-264,662	-264,662	-264,662
-Total Smelting Cost		-264,662	-264,662	-264,662	-264,662	-264,662	-264,662	-264,662
Net Smelt Ret.		26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490
-MHT ROYALTY		-1,043,060	-1,043,060	-1,043,060	-1,043,060	-1,043,060	-1,043,060	-1,043,060
-Total Royalties		-1,043,060	-1,043,060	-1,043,060	-1,043,060	-1,043,060	-1,043,060	-1,043,060
Net Revenue		25,158,431	25,158,431	25,158,431	25,158,431	25,158,431	25,158,431	25,158,431
-OPER COSTS		-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560
-Total Oper Costs		-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560
-Dev, IDC	-6,136,774							
-Depreciation	-6,425,189	-11,762,176	-10,091,100	-8,688,191	-7,152,122	-5,952,083	-5,274,580	-4,590,516
-Amortization	-1,578,028	-526,009	-526,009					
-Write Off								
Before Depltn	-14,139,991	-27,600,314	-25,929,238	-24,000,320	-22,464,251	-21,264,212	-20,586,709	-19,902,645
Percent Depln		3,773,765	3,773,765	3,773,765	3,773,765	3,773,765	3,773,765	3,773,765
-Total D,D & A	-14,139,991	-12,288,185	-10,617,109	-8,688,191	-7,152,122	-5,952,083	-5,274,580	-4,590,516
Taxable	-14,139,991	-27,600,314	-25,929,238	-24,000,320	-22,464,251	-21,264,212	-20,586,709	-19,902,645
-Tax Due	4,807,597	9,384,107	8,815,941	8,160,109	8,675,694	8,212,239	7,950,587	7,686,402
Net Income	-9,332,394	-18,216,207	-17,113,297	-15,840,211	-13,788,557	-13,051,973	-12,636,122	-12,216,244
+Depreciation	6,425,189	11,762,176	10,091,100	8,688,191	7,152,122	5,952,083	5,274,580	4,590,516
+Amortization	1,578,028	526,009	526,009					
+Write Off								
-Capital Costs	-90,298,260		-1,152,231				-1,152,231	
Cash Flow	-91,627,437	-5,928,022	-7,648,419	-7,152,020	-6,636,435	-7,099,890	-8,513,773	-7,625,728

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Sitmap NPV = -118,297,681

Year	Salvage
AU HI REV	
GROSS REV	
Total Revenue	6,733,272
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-23,303,448
-Amortization	
-Write Off	-6,733,272
Before Depltn	-23,303,448
Percent Depln	
-Total D,D & A	-30,036,720
Taxable	-23,303,448
-Tax Due	8,999,792
Net Income	-14,303,656
+Depreciation	23,303,448
+Amortization	
+Write Off	6,733,272
-Capital Costs	
Cash Flow	15,733,064

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List of Assumptions File:SWMAU.SEE Date:01/15/94 Time:17:36:32

TABLE MT, STEESE/WHITE MT AREA BULK MINEABLE AU, CIP

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
Mid of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 7
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

******** Minimum ROR,Inflation & Exponents ********* ****** Tax Rates ******

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion:Constant Rate	: $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	13,828,917	MACRS	Mid Year	13.0	0			0 .....
2	04/89	3,258,675	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,962,969	MACRS	Mid Year	13.0	0			0 .....
4	04/89	1,676,096	MACRS	Mid Year	13.0	0			0 .....
5	04/89	3,687,593	WC	Mid Year	13.0	0			0 .....
6	04/89	1,152,231	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,152,231	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,152,231	MACRS	Mid Year	4.0	0			0 .....
9	.....	0	MACRS	Mid Year	7.0	0			0 .....
10	04/89	35,644,847	MACRS	Mid Year	13.0	0			0 .....
11	04/89	3,045,679	WC	Mid Year	13.0	0			0 .....
12	04/89	10,668,795	MACRS	Mid Year	13.0	0			0 .....
13	04/89	12,742,412	MACRS	Mid Year	13.0	0			0 .....
14	04/89	8,766,820	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	1,080,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.0847	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	14,588,280.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	12,048,840.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	13,708,440.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	125,000.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . AU HI REV S1*S3*S5*S10*S11
E2 . AU LO REV S2*S4*S5*S10*S12

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Equations continued

Revenues

E3 . GROSS REV E1+E2

Operating Costs

E5 . OPER COSTS S6+S7+S8+S9

Special Taxes

E7 . MHT NPI S15*(E3-E5)

Royalties

5 . MHT ROYALTY S14*(E3-E4-S9)

Processing Costs

E4 . SMELTING CHARGES S13*E3

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

TABLE MT, STEESE/WHITE MT AREA BULK MINEABLE AU, CIP

Cash Flows

NPV =$-113,757,209 DCFROR=-46.0% GROR =-30.8% PWROR =-46.0% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
GROSS REV		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
Total Revenue		26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152	26,466,152
-SMELTING CHARGES		-264,662	-264,662	-264,662	-264,662	-264,662	-264,662	-264,662
-Total Smelting Cost		-264,662	-264,662	-264,662	-264,662	-264,662	-264,662	-264,662
Net Smelt Ret.		26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490
Net Revenue		26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490	26,201,490
-OPER COSTS		-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560
-Total Oper Costs		-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560	-40,470,560
-MHT NPI		420,132	420,132	420,132	420,132	420,132	420,132	420,132
-Total Sev. Ad Valor		420,132	420,132	420,132	420,132	420,132	420,132	420,132
-Dev, IDC	-6,136,774							
-Depreciation	-6,425,189	-11,762,176	-10,091,100	-8,688,191	-7,152,122	-5,952,083	-5,274,580	-4,590,516
-Amortization	-1,578,028	-526,009	-526,009					
-Write Off								
Before Depltn	-14,139,991	-26,137,122	-24,466,046	-22,537,129	-21,001,059	-19,801,020	-19,123,517	-18,439,453
Percent Depln		3,930,224	3,930,224	3,930,224	3,930,224	3,930,224	3,930,224	3,930,224
-Total D,D & A	-14,139,991	-12,288,185	-10,617,109	-8,688,191	-7,152,122	-5,952,083	-5,274,580	-4,590,516
Taxable	-14,139,991	-26,137,122	-24,466,046	-22,537,129	-21,001,059	-19,801,020	-19,123,517	-18,439,453
-Tax Due	4,807,597	8,886,622	8,318,456	7,662,624	8,110,609	7,647,154	7,385,502	7,121,317
Net Income	-9,332,394	-17,250,501	-16,147,590	-14,874,505	-12,890,450	-12,153,866	-11,738,015	-11,318,136
+Depreciation	6,425,189	11,762,176	10,091,100	8,688,191	7,152,122	5,952,083	5,274,580	4,590,516
+Amortization	1,578,028	526,009	526,009					
+Write Off								
-Capital Costs	-90,298,260		-1,152,231				-1,152,231	
Cash Flow	-91,627,437	-4,962,316	-6,682,713	-6,186,314	-5,738,328	-6,201,783	-7,615,666	-6,727,620

Law Offices of

MAR 0 4 1994

JAMES B. GOTTSTEIN

Year	Salvage
AU HI REV	
GROSS REV	
Total Revenue	6,733,272
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-23,303,448
-Amortization	
-Write Off	-6,733,272
Before Depltn	-23,303,448
Percent Depln	
-Total D,D & A	-30,036,720
Taxable	-23,303,448
-Tax Due	8,999,792
Net Income	-14,303,656
+Depreciation	23,303,448
+Amortization	
+Write Off	6,733,272
-Capital Costs	
Cash Flow	15,733,064

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JAMES B. GOTTSTEIN

APPENDIX B-5

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR EPITHERMAL GOLD DEPOSITS

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25e)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± huebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Saito and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 million.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

Comments, Assumptions, Specifications: EQA, 10 yr mine life
South Pool Au

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Epithermal Quartz-Sulphide Au
Total Ore Tonnage: 11 mil mtons
Mining Method: C&F
Beneficiation Method: Cyan Gravity Flotation
Extraction Rate: 95%
Dilution/Waste Rate: 5%
Proposed Mine Life: 10 years
Proposed Daily Production: 3,050 mtpd
Maximum Ore Depth: 275 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 2 km haul 3 km new roads
Distance From Power: Possible
Pre-Production Development:

Production Development:

Equipment: Jumbo LHDs
Concentrate Production: 350 mtpd

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: .1 m/day, 15 m²
Raises & face-m/day & sqm: -
Inclines & face-m/day & sqm: .2 m/day, 15 m²
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .05/day, 450 m²
Ore rate-mtpd: 3,050
Hoist depth, rate & time-m, mtph, hr/day: 915 m, 240 mtph, 16 hrs/day
Haul distance-m: 500 m
Compressed air-cm/min: 305 m³/min
Ventilation-cm/min: 11,550 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 12 m³/hr
Drainage, head-cm/day & m: 8,000 m³/day, 915 m
Concentrate (dry) rate-mtpd: 350 mtpd
Tails (dry) rate-mtpd: 2,700 mtpd
Production water needs-cm/day: 2,500 m³/day mill
Portable Power needs-kW: 10,000 kW
Wastewater-L/sec: 20 L/sec
Concentrate haul-km: 80 km
Employee housing-men: 450 men
Other:
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 3050 ~-PD
Mill operating costs-$/day: 535,425 ~~~
Working capital time-weeks: 13 ~~~~
Development time-days: _____
Shaft sinking & face-m & sqm: 9.5m 35m²
Drifting & face-m & sqm: 500m 15m²
Raises & face-m & sqm: 900m 3m²
Inclines & face-m & sqm: ~~~~ ~~~
Ore pockets-mt: 4600 m~
Stope preparations-stopes & sqm: 6 ~~~
Dewatering; head, dys & rate-m, dys & cm/day:
1200 m, 120 days, 8 ~~~~ ~~~
Rehabilitation (total tonnage)-mt: ~~~~
Contractors-1 or 2: 1
Mine operating costs-$/day: $227,926/day
Access roads, length & width-km & m: 30km 15m
Airstrip length & width-m: 1600 m, 1 m
Townsite cost-$: $12,569,175
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 100,000 m²
Climate/Weather factors: Severe
Other: _____
Other: _____

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 227.986
Mining Costs-$/yr: 82,074,960
Mining Costs-$/mt: 74.75
Milling Costs-$/day: 35,425
Milling Costs-$/yr: 12,753,000
Milling Costs-$/mt: 11.61
Infrastructure Costs-$/day: 45,382
Infrastructure Costs-$/yr: 16,337,520
Infrastructure Costs-$/mt: 14.88
Total Operating Costs-$/day: 308,793
Total Operating Costs-$/yr: 111,165,480
Total Operating Costs-$/mt: 101.24
Other: _____
Other: _____

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 20,746,726
Heavy Equipment (fixed life)-$: 5,407,287 *
Mine Rehabilitation-$: 1,631,221 *
Engr. & Const. Mgmt.-$: 6,975,882 *
Other: _____
Remaining Mine Capital-$: 28,679,995
Total Mine Capital Cost-$: 63,440,112

MILL CAPITAL COSTS:

Mill Working Capital-$: 3223675
Light Vehicles (short life)-$: 1,158,897 *
Other:
Remaining Mill Capital-$: 15,308,715 ~
Total Mill Capital Cost-$: 19,690,287

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 10,153,479 *
Other:
Remaining Infrastructure Capital-$: 32,999,338 ~
Total Infrastructure Capital-$: 43,152,817

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 23,970,401 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 76,987,048 *
Sum of Total Mine, Mill & Infr. Costs-$: 126,284,215
Exploration Cost-$: 12,628,422 *

Overall Capital Cost-$: 138,912,638
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

Epithermal Qtz-Alunite Au
Cox & Singer- 90%
Grade
18 gm/mt Au = .579 opmt
130 gm/mt Ag = 4.180 opmt
5.0% Cu = 110 lb/mt

List of Assumptions File:EQASEA.SEE Date:03/27/94 Time:19:42:19

EPITHERMAL QUARTZ ALUNITE AU,SOUTHEAST ALASKA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	5,407,287	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,631,221	MACRS	Mid Year	13.0	0		0	.....
3	04/89	6,975,882	MACRS	Mid Year	13.0	0		0	.....
4	04/89	28,678,995	MACRS	Mid Year	13.0	0		0	.....
5	04/89	20,746,726	WC	Mid Year	13.0	0		0	.....
6	04/89	1,158,897	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,158,897	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,158,897	MACRS	Mid Year	4.0	0		0	.....
9	04/89	15,308,715	MACRS	Mid Year	13.0	0		0	.....
10	04/89	3,223,675	WC	Mid Year	13.0	0		0	.....
11	04/89	43,152,817	MACRS	Mid Year	13.0	0		0	.....
12	04/89	12,628,422	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,098,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.050	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	4.18	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.5790	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	82,074,960.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	12,753,000.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	16,337,520.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,275,300.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

EPITHERMAL QUARTZ ALUNITE AU,SOUTHEAST ALASKA, CUT & FILL

Cash Flows

NPV =$680,422,034 DCFROR=100.8% GROR = 31.9% PWROR =100.8% Pay Back= 0.99 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
CU REV		104,320,222	104,320,222	104,320,222	104,320,222	104,320,222	104,320,222	104,320,222
AG REV		16,049,742	16,049,742	16,049,742	16,049,742	16,049,742	16,049,742	16,049,742
AU REV		183,935,069	183,935,069	183,935,069	183,935,069	183,935,069	183,935,069	183,935,069
GROSS REVENUE		304,305,033	304,305,033	304,305,033	304,305,033	304,305,033	304,305,033	304,305,033
Total Revenue		304,305,033	304,305,033	304,305,033	304,305,033	304,305,033	304,305,033	304,305,033
-SMELTING CHARGES		-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050
-Total Smelting Cost		-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050
Net Smelt Ret.		301,261,982	301,261,982	301,261,982	301,261,982	301,261,982	301,261,982	301,261,982
-MHT ROYALTY		-11,999,467	-11,999,467	-11,999,467	-11,999,467	-11,999,467	-11,999,467	-11,999,467
-Total Royalties		-11,999,467	-11,999,467	-11,999,467	-11,999,467	-11,999,467	-11,999,467	-11,999,467
Net Revenue		289,262,515	289,262,515	289,262,515	289,262,515	289,262,515	289,262,515	289,262,515
-OPER COSTS		-112440780	-112440780	-112440780	-112440780	-112440780	-112440780	-112440780
-Total Oper Costs		-112440780	-112440780	-112440780	-112440780	-112440780	-112440780	-112440780
-Dev, IDC	-8,839,895							
-Depreciation	-8,070,872	-14,799,782	-12,662,183	-10,864,588	-8,992,535	-7,508,779	-6,593,162	-5,706,976
-Amortization	-2,273,116	-757,705	-757,705					
-Write Off								
Before Depltn	-19,183,883	161,264,248	163,401,847	165,957,147	167,829,200	169,312,956	170,228,573	171,114,759
100% Limit		161,264,248	163,401,847	165,957,147	167,829,200	169,312,956	170,228,573	171,114,759
Percent Depln		43,389,377	43,389,377	43,389,377	43,389,377	43,389,377	43,389,377	43,389,377
Prev Exp Expl		8,839,895						
-Depletion		-34,549,482	-43,389,377	-43,389,377	-43,389,377	-43,389,377	-43,389,377	-43,389,377
-Total D,D & A	-19,183,883	-50,106,969	-56,809,265	-54,253,966	-52,381,912	-50,898,156	-49,982,539	-49,096,354
Taxable	-19,183,883	126,714,766	120,012,470	122,567,769	124,439,823	125,923,579	126,839,196	127,725,381
-Tax Due	6,522,520	-43,083,021	-40,804,240	-41,673,042	-48,058,660	-48,631,686	-48,985,298	-49,327,542
Net Income	-12,661,363	83,631,746	79,208,230	80,894,728	76,381,163	77,291,893	77,853,899	78,397,839
+Depreciation	8,070,872	14,799,782	12,662,183	10,864,588	8,992,535	7,508,779	6,593,162	5,706,976
+Depletion		34,549,482	43,389,377	43,389,377	43,389,377	43,389,377	43,389,377	43,389,377
+Amortization	2,273,116	757,705	757,705					
+Write Off								
-Capital Costs	-130072742		-1,158,897				-1,158,897	
Cash Flow	-132390117	133,738,715	134,858,598	135,148,693	128,763,075	128,190,049	126,677,541	127,494,193

Year	8	9	10	Salvage
CU REV	104,320,222	104,320,222	104,320,222	
AG REV	16,049,742	16,049,742	16,049,742	
AU REV	183,935,069	183,935,069	183,935,069	
GROSS REVENUE	304,305,033	304,305,033	304,305,033	
Total Revenue	304,305,033	304,305,033	304,305,033	23,970,401
-SMELTING CHARGES	-3,043,050	-3,043,050	-3,043,050	
-Total Smelting Cost	-3,043,050	-3,043,050	-3,043,050	
Net Smelt Ret.	301,261,982	301,261,982	301,261,982	
-MHT ROYALTY	-11,999,467	-11,999,467	-11,999,467	
-Total Royalties	-11,999,467	-11,999,467	-11,999,467	
Net Revenue	289,262,515	289,262,515	289,262,515	
-OPER COSTS	-112440780	-112440780	-112440780	
-Total Oper Costs	-112440780	-112440780	-112440780	
-Dev, IDC				
-Depreciation	-5,489,683	-5,417,252	-5,344,821	-13,180,975
-Amortization				
-Write Off				-23,970,401
Before Depltn	171,332,052	171,404,483	171,476,914	-13,180,975
100% Limit	171,332,052	171,404,483	171,476,914	
Percent Depln	43,389,377	43,389,377	43,389,377	
Prev Exp Expl				
-Depletion	-43,389,377	-43,389,377	-43,389,377	
-Total D,D & A	-48,879,061	-48,806,629	-48,734,198	-37,151,376
Taxable	127,942,675	128,015,106	128,087,537	-13,180,975
-Tax Due	-49,411,461	-49,439,434	-49,467,407	5,090,493
Net Income	78,531,214	78,575,672	78,620,130	-8,090,483
+Depreciation	5,489,683	5,417,252	5,344,821	13,180,975
+Depletion	43,389,377	43,389,377	43,389,377	
+Amortization				
+Write Off				23,970,401
-Capital Costs				
Cash Flow	127,410,274	127,382,301	127,354,328	29,060,894

List of Assumptions File:EQASEA.SEE Date:03/27/94 Time:19:33:39

EPITHERMAL QUARTZ ALUNITE AU,SOUTHEAST ALASKA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR,Inflation & Exponents					Tax Rates		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	5,407,287	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,631,221	MACRS	Mid Year	13.0	0			0 .....
3	04/89	6,975,882	MACRS	Mid Year	13.0	0			0 .....
4	04/89	28,678,995	MACRS	Mid Year	13.0	0			0 .....
5	04/89	20,746,726	WC	Mid Year	13.0	0			0 .....
6	04/89	1,158,897	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,158,897	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,158,897	MACRS	Mid Year	4.0	0			0 .....
9	04/89	15,308,715	MACRS	Mid Year	13.0	0			0 .....
10	04/89	3,223,675	WC	Mid Year	13.0	0			0 .....
11	04/89	43,152,817	MACRS	Mid Year	13.0	0			0 .....
12	04/89	12,628,422	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,098,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.050	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	4.18	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.5790	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	82,074,960.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	12,753,000.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	16,337,520.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,275,300.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *

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General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

EPITHERMAL QUARTZ ALUNITE AU,SOUTHEAST ALASKA, CUT & FILL

Cash Flows

NPV =$708,751,571 DCFROR=104.4% GROR = 32.3% PWROR =104.4% Pay Back= 0.96 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
CU REV		104,320,222	104,320,222	104,320,222	104,320,222	104,320,222	104,320,222	104,320,222
AG REV		16,049,742	16,049,742	16,049,742	16,049,742	16,049,742	16,049,742	16,049,742
AU REV		183,935,069	183,935,069	183,935,069	183,935,069	183,935,069	183,935,069	183,935,069
GROSS REVENUE		304,305,033	304,305,033	304,305,033	304,305,033	304,305,033	304,305,033	304,305,033
Total Revenue		304,305,033	304,305,033	304,305,033	304,305,033	304,305,033	304,305,033	304,305,033
-SMELTING CHARGES		-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050
-Total Smelting Cost		-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050	-3,043,050
Net Smelt Ret.		301,261,982	301,261,982	301,261,982	301,261,982	301,261,982	301,261,982	301,261,982
Net Revenue		301,261,982	301,261,982	301,261,982	301,261,982	301,261,982	301,261,982	301,261,982
-OPER COSTS		-112440780	-112440780	-112440780	-112440780	-112440780	-112440780	-112440780
-Total Oper Costs		-112440780	-112440780	-112440780	-112440780	-112440780	-112440780	-112440780
-MHT NPI		-5,755,928	-5,755,928	-5,755,928	-5,755,928	-5,755,928	-5,755,928	-5,755,928
-Total Sev. Ad Valor		-5,755,928	-5,755,928	-5,755,928	-5,755,928	-5,755,928	-5,755,928	-5,755,928
-Dev, IDC	-8,839,895							
-Depreciation	-8,070,872	-14,799,782	-12,662,183	-10,864,588	-8,992,535	-7,508,779	-6,593,162	-5,706,976
-Amortization	-2,273,116	-757,705	-757,705					
-Write Off								
Before Depltn	-19,183,883	167,507,788	169,645,387	172,200,686	174,072,740	175,556,496	176,472,113	177,358,298
100% Limit		167,507,788	169,645,387	172,200,686	174,072,740	175,556,496	176,472,113	177,358,298
Percent Depln		45,189,297	45,189,297	45,189,297	45,189,297	45,189,297	45,189,297	45,189,297
Prev Exp Expl		8,839,895						
-Depletion		-36,349,402	-45,189,297	-45,189,297	-45,189,297	-45,189,297	-45,189,297	-45,189,297
-Total D,D & A	-19,183,883	-51,906,889	-58,609,185	-56,053,886	-54,181,832	-52,698,076	-51,782,459	-50,896,274
Taxable	-19,183,883	131,158,386	124,456,089	127,011,389	128,883,443	130,367,199	131,282,816	132,169,001
-Tax Due	6,522,520	-44,593,851	-42,315,070	-43,183,872	-49,774,786	-50,347,812	-50,701,423	-51,043,668
Net Income	-12,661,363	86,564,535	82,141,019	83,827,517	79,108,657	80,019,387	80,581,392	81,125,333
+Depreciation	8,070,872	14,799,782	12,662,183	10,864,588	8,992,535	7,508,779	6,593,162	5,706,976
+Depletion		36,349,402	45,189,297	45,189,297	45,189,297	45,189,297	45,189,297	45,189,297
+Amortization	2,273,116	757,705	757,705					
+Write Off								
-Capital Costs	-130072742		-1,158,897				-1,158,897	
Cash Flow	-132390117	138,471,424	139,591,307	139,881,403	133,290,489	132,717,463	131,204,954	132,021,607

Year	8	9	10	Salvage
CU REV	104,320,222	104,320,222	104,320,222	
AG REV	16,049,742	16,049,742	16,049,742	
AU REV	183,935,069	183,935,069	183,935,069	
GROSS REVENUE	304,305,033	304,305,033	304,305,033	
Total Revenue	304,305,033	304,305,033	304,305,033	23,970,401
-SMELTING CHARGES	-3,043,050	-3,043,050	-3,043,050	
-Total Smelting Cost	-3,043,050	-3,043,050	-3,043,050	
Net Smelt Ret.	301,261,982	301,261,982	301,261,982	
Net Revenue	301,261,982	301,261,982	301,261,982	
-OPER COSTS	-112440780	-112440780	-112440780	
-Total Oper Costs	-112440780	-112440780	-112440780	
-MHT NPI	-5,755,928	-5,755,928	-5,755,928	
-Total Sev. Ad Valor	-5,755,928	-5,755,928	-5,755,928	
-Dev, IDC				
-Depreciation	-5,489,683	-5,417,252	-5,344,821	-13,180,975
-Amortization				
-Write Off				-23,970,401
Before Depltn	177,575,592	177,648,023	177,720,454	-13,180,975
100% Limit	177,575,592	177,648,023	177,720,454	
Percent Depln	45,189,297	45,189,297	45,189,297	
Prev Exp Expl				
-Depletion	-45,189,297	-45,189,297	-45,189,297	
-Total D,D & A	-50,678,981	-50,606,550	-50,534,118	-37,151,376
Taxable	132,386,294	132,458,725	132,531,156	-13,180,975
-Tax Due	-51,127,587	-51,155,560	-51,183,533	5,090,493
Net Income	81,258,707	81,303,166	81,347,624	-8,090,483
+Depreciation	5,489,683	5,417,252	5,344,821	13,180,975
+Depletion	45,189,297	45,189,297	45,189,297	
+Amortization				
+Write Off				23,970,401
-Capital Costs				
Cash Flow	131,937,688	131,909,715	131,881,742	29,060,894

List of Assumptions File:EQASEA.SEE Date:07/25/93 Time:07:23:44

EPITHERMAL QUARTZ ALUNITE AU,SOUTHEAST ALASKA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	5,407,287	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,631,221	MACRS	Mid Year	13.0	0		0	.....
3	04/89	6,975,882	MACRS	Mid Year	13.0	0		0	.....
4	04/89	28,678,995	MACRS	Mid Year	13.0	0		0	.....
5	04/89	20,746,726	WC	Mid Year	13.0	0		0	.....
6	04/89	1,158,897	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,158,897	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,158,897	MACRS	Mid Year	4.0	0		0	.....
9	04/89	15,308,715	MACRS	Mid Year	13.0	0		0	.....
10	04/89	3,223,675	WC	Mid Year	13.0	0		0	.....
11	04/89	43,152,817	MACRS	Mid Year	13.0	0		0	.....
12	04/89	12,628,422	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,098,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.050	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	4.18	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.5790	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	82,074,960.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	12,753,000.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	16,337,520.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,275,300.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
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22c, 36c

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25c)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± huebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Salto and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 milllon.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

Comments, Assumptions, Specifications: POLT Haines A.eq
360 day/yr Keno Hill/Coeur Sage Model
Cut & Fill

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Polymetallic Vein (Base metal)
Total Ore Tonnage: 1.45 mil tons
Mining Method: Cut & Fill
Beneficiation Method: Crush/Grind/Float
Extraction Rate: ≈100%
Dilution/Waste Rate: 30%
Proposed Mine Life: 10 yrs
Proposed Daily Production: 400 mTPD
Maximum Ore Depth: 1,000m
Stripping Ratio: -
Haulage Distance/Road Requirements: 50km, 15 km new roads
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Jacklegs, Rail Equipment, Hoist
Concentrate Production: 200 mTPD - 3 p-ods

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm:
Drifting & face-m/day & sqm:
Raises & face-m/day & sqm: .8 m/day, 2 m²
Inclines & face-m/day & sqm:
Ore pockets/day-mtpd:
Stope preparation/day-stopes & sqm: .02, 180 m²
Ore rate-mtpd: 400 mTPD
Hoist depth, rate & time-m, mtph, hr/day:
1,000 m, 100 mTPH, 10 hrs/day
Haul distance-m: 500 m max
Compressed air-cm/min: 44 cm³/min
Ventilation-cm/min: 1,530 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 10 m³/hr, 15 hrs/day
Drainage, head-cm/day & m: 10,000 m³/day, 1000m
Concentrate (dry) rate-mtpd: 200 mTPD
Tails (dry) rate-mtpd: 200 mTPD
Production water needs-cm/day: 800 m³/day
Portable Power needs-kW: 2,400 Kw
Wastewater-L/sec: 2 L/sec
Concentrate haul-km: 50 km
Employee housing-men: 60 men
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 400, 300, 250 mTPD
Mill operating costs-$/day: $ 13,540 /day
Working capital time-weeks: 13 weeks
Development time-days: -
Shaft sinking & face-m & sqm: 1,000 m, 8 m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 300 m, 2 m²
Inclines & face-m & sqm: -
Ore pockets-mt: 600 mT
Stope preparations-stopes & sqm: 3, 180 m²
Dewatering; head, dys & rate-m, dys & cm/day: 1,000 m, 100 days, 10,000 m³/day
Rehabilitation (total tonnage)-mt: 400 mTPD
Contractors-1 or 2: 2
Mine operating costs-$/day: 61,038
Access roads, length & width-km & m: 15km, 8m
Airstrip length & width-m: 1,200 m, 18 m
Townsite cost-$: 1675,890
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 20,000 m³
Climate/Weather factors: Severe
Other: Rail Equipment - $493,724
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 61,038
Mining Costs-$/yr: 21,973,680
Mining Costs-$/mt: 152.60
Milling Costs-$/day: 13,540
Milling Costs-$/yr: 4,874,400
Milling Costs-$/mt: 33.85
Infrastructure Costs-$/day: 10959
Infrastructure Costs-$/yr: 3,945,240
Infrastructure Costs-$/mt: 27.40
Total Operating Costs-$/day: 85,537
Total Operating Costs-$/yr: 30,793,320
Total Operating Costs-$/mt: 213.84
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 5554458
Heavy Equipment (fixed life)-$: 1,135,220 *
Mine Rehabilitation-$: 824,246 *
Engr. & Const. Mgmt.-$: 5,202,267 *
Other:
Remaining Mine Capital-$: 11,912,610
Total Mine Capital Cost-$: 24,628,601

MILL CAPITAL COSTS:

Mill Working Capital-$: 1,232,140
Light Vehicles (short life)-$: 570,352 *
Other:
Remaining Mill Capital-$: 6,888,989 ~
Total Mill Capital Cost-$: 8,691,481

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 3,112,195 *
Other:
Remaining Infrastructure Capital-$: 8,229,388 ~
Total Infrastructure Capital-$: 11,341,583

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 6,786,598 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 27,030,987 *
Sum of Total Mine, Mill & Infr. Costs-$: 44,661,665
Exploration Cost-$: 4,466,170 *

Overall Capital Cost-$: 49,127,832
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:POLTHAIN.SEE Date:07/26/93 Time:16:03:11

POLYMETALLIC VEIN,(KENO HILL), HAINES AREA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

	Minimum ROR,Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	1,135,020	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	824,246	MACRS	Mid Year	13.0	0		0	.....
3	04/89	5,202,267	MACRS	Mid Year	13.0	0		0	.....
4	04/89	11,912,610	MACRS	Mid Year	13.0	0		0	.....
5	04/89	5,554,458	WC	Mid Year	13.0	0		0	.....
6	04/89	570,352	MACRS	Mid Year	4.0	0		0	.....
7	04/93	570,352	MACRS	Mid Year	4.0	0		0	.....
8	04/97	570,352	MACRS	Mid Year	4.0	0		0	.....
9	04/89	6,888,989	MACRS	Mid Year	13.0	0		0	.....
10	04/89	1,232,140	WC	Mid Year	13.0	0		0	.....
11	04/89	11,341,583	MACRS	Mid Year	13.0	0		0	.....
12	04/89	4,466,170	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	144,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.009	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.33	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	150.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.35	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	21,973,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	4,874,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	3,945,240.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	865,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations

E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs

E7 . SMELTING CHARGES	S18*E6

POLYMETALLIC VEIN,(KENO HILL), HAINES AREA, CUT & FILL

Cash Flows

NPV =$245,857,641 DCFROR=103.1% GROR = 32.1% PWROR =103.1% Pay Back= 0.97 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
ZN REV		8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511
CU REV		1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381
PB REV		23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856
AG REV		56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160
AU REV		10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108
GROSS REVENUE		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
Total Revenue		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
-SMELTING CHARGES		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
-Total Smelting Cost		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
Net Smelt Ret.		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
-MHT ROYALTY		-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059
-Total Royalties		-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059
Net Revenue		96,170,426	96,170,426	96,170,426	96,170,426	96,170,426	96,170,426	96,170,426
-OPER COSTS		-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320
-Total Oper Costs		-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320
-Dev, IDC	-3,126,319							
-Depreciation	-3,012,181	-5,511,593	-4,732,208	-4,078,212	-3,352,080	-2,787,018	-2,476,155	-2,158,276
-Amortization	-803,911	-267,970	-267,970					
-Write Off								
Before Depltn	-6,942,411	58,732,542	59,511,928	60,433,894	61,160,026	61,725,088	62,035,951	62,353,830
100% Limit		58,732,542	59,511,928	60,433,894	61,160,026	61,725,088	62,035,951	62,353,830
Percent Depln		14,425,564	14,425,564	14,425,564	14,425,564	14,425,564	14,425,564	14,425,564
Prev Exp Expl		3,126,319						
-Depletion		-11,299,245	-14,425,564	-14,425,564	-14,425,564	-14,425,564	-14,425,564	-14,425,564
-Total D,D & A	-6,942,411	-17,078,808	-19,425,742	-18,503,776	-17,777,644	-17,212,582	-16,901,719	-16,583,840
Taxable	-6,942,411	47,433,298	45,086,364	46,008,330	46,734,462	47,299,524	47,610,387	47,928,266
-Tax Due	2,360,420	-16,127,321	-15,329,364	-15,642,832	-18,048,849	-18,267,076	-18,387,131	-18,509,896
Net Income	-4,581,991	31,305,976	29,757,000	30,365,498	28,685,613	29,032,448	29,223,255	29,418,370
+Depreciation	3,012,181	5,511,593	4,732,208	4,078,212	3,352,080	2,787,018	2,476,155	2,158,276
+Depletion		11,299,245	14,425,564	14,425,564	14,425,564	14,425,564	14,425,564	14,425,564
+Amortization	803,911	267,970	267,970					
+Write Off								
-Capital Costs	-46,001,516		-570,352				-570,352	
Cash Flow	-46,767,415	48,384,784	48,612,390	48,869,273	46,463,256	46,245,029	45,554,622	46,002,209

Year	1999	2000	2001	Salvage
ZN REV	8,436,511	8,436,511	8,436,511	
CU REV	1,843,381	1,843,381	1,843,381	
PB REV	23,417,856	23,417,856	23,417,856	
AG REV	56,540,160	56,540,160	56,540,160	
AU REV	10,915,108	10,915,108	10,915,108	
GROSS REVENUE	101,153,015	101,153,015	101,153,015	
Total Revenue	101,153,015	101,153,015	101,153,015	6,786,598
-SMELTING CHARGES	-1,011,530	-1,011,530	-1,011,530	
-Total Smelting Cost	-1,011,530	-1,011,530	-1,011,530	
Net Smelt Ret.	100,141,485	100,141,485	100,141,485	
-MHT ROYALTY	-3,971,059	-3,971,059	-3,971,059	
-Total Royalties	-3,971,059	-3,971,059	-3,971,059	
Net Revenue	96,170,426	96,170,426	96,170,426	
-OPER COSTS	-31,658,320	-31,658,320	-31,658,320	
-Total Oper Costs	-31,658,320	-31,658,320	-31,658,320	
-Dev, IDC				
-Depreciation	-2,051,335	-2,015,688	-1,980,041	-4,860,985
-Amortization				
-Write Off				-6,786,598
Before Depltn	62,460,771	62,496,418	62,532,065	-4,860,985
100% Limit	62,460,771	62,496,418	62,532,065	
Percent Depln	14,425,564	14,425,564	14,425,564	
Prev Exp Expl				
-Depletion	-14,425,564	-14,425,564	-14,425,564	
-Total D,D & A	-16,476,899	-16,441,252	-16,405,605	-11,647,583
Taxable	48,035,207	48,070,854	48,106,501	-4,860,985
-Tax Due	-18,551,197	-18,564,964	-18,578,731	1,877,312
Net Income	29,484,010	29,505,890	29,527,770	-2,983,673
+Depreciation	2,051,335	2,015,688	1,980,041	4,860,985
+Depletion	14,425,564	14,425,564	14,425,564	
+Amortization				
+Write Off				6,786,598
-Capital Costs				
Cash Flow	45,960,909	45,947,142	45,933,375	8,663,910

List of Assumptions File:POLTHAIN.SEE Date:01/04/80 Time:01:06:09

POLYMETALLIC VEIN,(KENO HILL), HAINES AREA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	1,135,020	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	824,246	MACRS	Mid Year	13.0	0			0 .....
3	04/89	5,202,267	MACRS	Mid Year	13.0	0			0 .....
4	04/89	11,912,610	MACRS	Mid Year	13.0	0			0 .....
5	04/89	5,554,458	WC	Mid Year	13.0	0			0 .....
6	04/89	570,352	MACRS	Mid Year	4.0	0			0 .....
7	04/93	570,352	MACRS	Mid Year	4.0	0			0 .....
8	04/97	570,352	MACRS	Mid Year	4.0	0			0 .....
9	04/89	6,888,989	MACRS	Mid Year	13.0	0			0 .....
10	04/89	1,232,140	WC	Mid Year	13.0	0			0 .....
11	04/89	11,341,583	MACRS	Mid Year	13.0	0			0 .....
12	04/89	4,466,170	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	144,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.009	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.33	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	150.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.35	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	21,973,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	4,874,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	3,945,240.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	865,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *

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General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

POLYMETALLIC VEIN,(KENO HILL), HAINES AREA, CUT & FILL

Cash Flows

NPV =$254,533,374 DCFROR=106.2% GROR = 32.5% PWROR =106.2% Pay Back= 0.94 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511
CU REV		1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381
PB REV		23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856
AG REV		56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160
AU REV		10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108
GROSS REVENUE		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
Total Revenue		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
-SMELTING CHARGES		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
-Total Smelting Cost		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
Net Smelt Ret.		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
Net Revenue		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
-OPER COSTS		-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320
-Total Oper Costs		-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320
-MHT NPI		-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841
-Total Sev. Ad Valor		-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841
-Dev, IDC	-3,126,319							
-Depreciation	-3,012,181	-5,511,593	-4,732,208	-4,078,212	-3,352,080	-2,787,018	-2,476,155	-2,158,276
-Amortization	-803,911	-267,970	-267,970					
-Write Off								
Before Depltn	-6,942,411	60,618,761	61,398,146	62,320,112	63,046,244	63,611,306	63,922,169	64,240,048
100% Limit		60,618,761	61,398,146	62,320,112	63,046,244	63,611,306	63,922,169	64,240,048
Percent Depln		15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223
Prev Exp Expl		3,126,319						
-Depletion		-11,894,904	-15,021,223	-15,021,223	-15,021,223	-15,021,223	-15,021,223	-15,021,223
-Total D,D & A	-6,942,411	-17,674,467	-20,021,400	-19,099,434	-18,373,302	-17,808,241	-17,497,378	-17,179,499
Taxable	-6,942,411	48,723,857	46,376,924	47,298,890	48,025,022	48,590,084	48,900,946	49,218,825
-Tax Due	2,360,420	-16,566,111	-15,768,154	-16,081,623	-18,547,263	-18,765,490	-18,885,545	-19,008,310
Net Income	-4,581,991	32,157,746	30,608,770	31,217,267	29,477,758	29,824,593	30,015,401	30,210,515
+Depreciation	3,012,181	5,511,593	4,732,208	4,078,212	3,352,080	2,787,018	2,476,155	2,158,276
+Depletion		11,894,904	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223
+Amortization	803,911	267,970	267,970					
+Write Off								
-Capital Costs	-46,001,516		-570,352				-570,352	
Cash Flow	-46,767,415	49,832,213	50,059,818	50,316,702	47,851,061	47,632,834	46,942,427	47,390,014

Year	8	9	10	Salvage
ZN REV	8,436,511	8,436,511	8,436,511	
CU REV	1,843,381	1,843,381	1,843,381	
PB REV	23,417,856	23,417,856	23,417,856	
AG REV	56,540,160	56,540,160	56,540,160	
AU REV	10,915,108	10,915,108	10,915,108	
GROSS REVENUE	101,153,015	101,153,015	101,153,015	
Total Revenue	101,153,015	101,153,015	101,153,015	6,786,598
-SMELTING CHARGES	-1,011,530	-1,011,530	-1,011,530	
-Total Smelting Cost	-1,011,530	-1,011,530	-1,011,530	
Net Smelt Ret.	100,141,485	100,141,485	100,141,485	
Net Revenue	100,141,485	100,141,485	100,141,485	
-OPER COSTS	-31,658,320	-31,658,320	-31,658,320	
-Total Oper Costs	-31,658,320	-31,658,320	-31,658,320	
-MHT NPI	-2,084,841	-2,084,841	-2,084,841	
-Total Sev. Ad Valor	-2,084,841	-2,084,841	-2,084,841	
-Dev, IDC				
-Depreciation	-2,051,335	-2,015,688	-1,980,041	-4,860,985
-Amortization				
-Write Off				-6,786,598
Before Depltn	64,346,989	64,382,636	64,418,283	-4,860,985
100% Limit	64,346,989	64,382,636	64,418,283	
Percent Depln	15,021,223	15,021,223	15,021,223	
Prev Exp Expl				
-Depletion	-15,021,223	-15,021,223	-15,021,223	
-Total D,D & A	-17,072,558	-17,036,911	-17,001,264	-11,647,583
Taxable	49,325,766	49,361,413	49,397,060	-4,860,985
-Tax Due	-19,049,611	-19,063,378	-19,077,145	1,877,312
Net Income	30,276,155	30,298,036	30,319,916	-2,983,673
+Depreciation	2,051,335	2,015,688	1,980,041	4,860,985
+Depletion	15,021,223	15,021,223	15,021,223	
+Amortization				
+Write Off				6,786,598
-Capital Costs				
Cash Flow	47,348,713	47,334,946	47,321,179	8,663,910

22c, 36c

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25c)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± huebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Salto and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 million.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

Comments, Assumptions, Specifications: POLK Haines A-eq 360 days/yr. Keno Hills / Cassiar model

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Polymetallic Vein (Base Metal)
Total Ore Tonnage: 1.45 mil mtons
Mining Method: Square-set Stoping
Beneficiation Method: C-uss / G-ind / Float
Extraction Rate: ≈100 %
Dilution/Waste Rate: ≈0%
Proposed Mine Life: 10 yrs
Proposed Daily Production: 400 MTPD
Maximum Ore Depth: 1,000 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 50 km
15 km new roads
Distance From Power: Portable
Pre-Production Development: Shaft, Millsite

Production Development: Minimal

Equipment: Own Hoist, Jacklegs, Rail Equipment
Concentrate Production: 200 MTPD - 3 loads.

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: -
Raises & face-m/day & sqm: .8 m/day, 7 m² -
Inclines & face-m/day & sqm: -
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .02, 150 m²
Ore rate-mtpd: 400 MTPD
Hoist depth, rate & time-m, mtph, hr/day:
1,000 m, 100 MTPH, 10 hrs/day
Haul distance-m: 500 m max
Compressed air-cm/min: 44 m³/min
Ventilation-cm/min: 1530 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 10 m³/hr, 16 hrs/day
Drainage, head-cm/day & m: 10,000 m³/day, 1,000 m
Concentrate (dry) rate-mtpd: 200 MTPD
Tails (dry) rate-mtpd: 200 MTPD
Production water needs-cm/day: 800 m³/day
Portable Power needs-kW: 2,400 KW
Wastewater-L/sec: 24 l/sec
Concentrate haul-km: 50
Employee housing-men: 80 men
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 400 300 250 MTPD
Mill operating costs-$/day: $13,540 / day
Working capital time-weeks: 13 weeks
Development time-days:
Shaft sinking & face-m & sqm: 1,000 m, 8 m2
Drifting & face-m & sqm: -
Raises & face-m & sqm: 300 m, 2 m2
Inclines & face-m & sqm: -
Ore pockets-mt: 600 MT
Stope preparations-stopes & sqm: 2, 150 m2
Dewatering; head, dys & rate-m, dys & cm/day:
1,000 m, 100 days, 10.000 m3/day
Rehabilitation (total tonnage)-mt: 400 MTPD
Contractors-1 or 2: 2
Mine operating costs-$/day: $62,496 / day
Access roads, length & width-km & m: 15km 8m
Airstrip length & width-m: 1,200 m, 18 m
Townsite cost-$:
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 20,000 m3
Climate/Weather factors: Severe
Other: Rail Equipment - $493,724
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 62,496
Mining Costs-$/yr: 22,498,560
Mining Costs-$/mt: 156.24
Milling Costs-$/day: 13,540
Milling Costs-$/yr: 4,874,400
Milling Costs-$/mt: 33.85
Infrastructure Costs-$/day: 11,761
Infrastructure Costs-$/yr: 4,233,960
Infrastructure Costs-$/mt: 29.40
Total Operating Costs-$/day: 87,797
Total Operating Costs-$/yr: 31,606,920
Total Operating Costs-$/mt: 219.50
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 5,687,136
Heavy Equipment (fixed life)-$: 1,135,020 * Jerklegs, Rail Equipment.
Mine Rehabilitation-$: 824,246 *
Engr. & Const. Mgmt.-$: 5,308,363 *
Other:
Remaining Mine Capital-$: 11,941,719
Total Mine Capital Cost-$: 24,896,484

MILL CAPITAL COSTS:

Mill Working Capital-$: 1,232,140
Light Vehicles (short life)-$: 570.352 *
Other:
Remaining Mill Capital-$: 6,888,989 ~
Total Mill Capital Cost-$: 8,691,481

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 3112,195 *
Other:
Remaining Infrastructure Capital-$: 8,788,018 ~
Total Infrastructure Capital-$: 11,900,213

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 6,919,276 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 27,618,726 *
Sum of Total Mine, Mill & Infr. Costs-$: 45,488,178
Exploration Cost-$: 4,548,820 *

Overall Capital Cost-$: 50,037,000
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:POLKHAIN.SEE Date:07/26/93 Time:16:16:05

POLYMETALLIC VEIN,SQUARE SET STOPING, KENO HILL MODEL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents ********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	1,135,020	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	824,246	MACRS	Mid Year	13.0	0			0 .....
3	04/89	5,308,363	MACRS	Mid Year	13.0	0			0 .....
4	04/89	11,941,719	MACRS	Mid Year	13.0	0			0 .....
5	04/89	5,687,136	WC	Mid Year	13.0	0			0 .....
6	04/89	570,352	MACRS	Mid Year	4.0	0			0 .....
7	04/93	570,352	MACRS	Mid Year	4.0	0			0 .....
8	04/97	570,352	MACRS	Mid Year	4.0	0			0 .....
9	04/89	6,888,989	MACRS	Mid Year	13.0	0			0 .....
10	04/89	1,232,140	WC	Mid Year	13.0	0			0 .....
11	04/89	11,900,213	MACRS	Mid Year	13.0	0			0 .....
12	04/89	4,548,820	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	144,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.009	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.33	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	150.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.35	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	22,498,560.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	4,874,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	4,233,960.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	865,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

POLYMETALLIC VEIN,SQUARE SET STOPING, KENO HILL MODEL

Cash Flows

NPV =$343,560,125 DCFROR=136.1% GROR = 35.8% PWROR =136.1% Pay Back= 0.73 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
ZN REV		10,545,638	10,545,638	10,545,638	10,545,638	10,545,638	10,545,638	10,545,638
CU REV		2,304,226	2,304,226	2,304,226	2,304,226	2,304,226	2,304,226	2,304,226
PB REV		29,272,320	29,272,320	29,272,320	29,272,320	29,272,320	29,272,320	29,272,320
AG REV		70,675,200	70,675,200	70,675,200	70,675,200	70,675,200	70,675,200	70,675,200
AU REV		13,643,885	13,643,885	13,643,885	13,643,885	13,643,885	13,643,885	13,643,885
GROSS REVENUE		126,441,269	126,441,269	126,441,269	126,441,269	126,441,269	126,441,269	126,441,269
Total Revenue		126,441,269	126,441,269	126,441,269	126,441,269	126,441,269	126,441,269	126,441,269
-SMELTING CHARGES		-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413
-Total Smelting Cost		-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413
Net Smelt Ret.		125,176,856	125,176,856	125,176,856	125,176,856	125,176,856	125,176,856	125,176,856
-MHT ROYALTY		-4,972,474	-4,972,474	-4,972,474	-4,972,474	-4,972,474	-4,972,474	-4,972,474
-Total Royalties		-4,972,474	-4,972,474	-4,972,474	-4,972,474	-4,972,474	-4,972,474	-4,972,474
Net Revenue		120,204,382	120,204,382	120,204,382	120,204,382	120,204,382	120,204,382	120,204,382
-OPER COSTS		-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920
-Total Oper Costs		-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920
-Dev, IDC	-3,184,174							
-Depreciation	-3,065,553	-5,610,126	-4,815,581	-4,148,759	-3,411,773	-2,837,528	-2,518,894	-2,194,440
-Amortization	-818,788	-272,929	-272,929					
-Write Off								
Before Depltn	-7,068,515	81,849,407	82,643,951	83,583,703	84,320,689	84,894,934	85,213,568	85,538,022
100% Limit		81,849,407	82,643,951	83,583,703	84,320,689	84,894,934	85,213,568	85,538,022
Percent Depln		18,030,657	18,030,657	18,030,657	18,030,657	18,030,657	18,030,657	18,030,657
Prev Exp Expl		3,184,174						
-Depletion		-14,846,483	-18,030,657	-18,030,657	-18,030,657	-18,030,657	-18,030,657	-18,030,657
-Total D,D & A	-7,068,515	-20,729,538	-23,119,168	-22,179,416	-21,442,431	-20,868,185	-20,549,552	-20,225,097
Taxable	-7,068,515	67,002,924	64,613,294	65,553,046	66,290,031	66,864,277	67,182,910	67,507,365
-Tax Due	2,403,295	-22,780,994	-21,968,520	-22,288,036	-25,601,210	-25,822,984	-25,946,040	-26,071,344
Net Income	-4,665,220	44,221,930	42,644,774	43,265,010	40,688,821	41,041,293	41,236,870	41,436,020
+Depreciation	3,065,553	5,610,126	4,815,581	4,148,759	3,411,773	2,837,528	2,518,894	2,194,440
+Depletion		14,846,483	18,030,657	18,030,657	18,030,657	18,030,657	18,030,657	18,030,657
+Amortization	818,788	272,929	272,929					
+Write Off								
-Capital Costs	-46,852,824		-570,352				-570,352	
Cash Flow	-47,633,703	64,951,468	65,193,590	65,444,426	62,131,252	61,909,478	61,216,070	61,661,118

Year	1999	2000	2001	Salvage
ZN REV	10,545,638	10,545,638	10,545,638	
CU REV	2,304,226	2,304,226	2,304,226	
PB REV	29,272,320	29,272,320	29,272,320	
AG REV	70,675,200	70,675,200	70,675,200	
AU REV	13,643,885	13,643,885	13,643,885	
GROSS REVENUE	126,441,269	126,441,269	126,441,269	
Total Revenue	126,441,269	126,441,269	126,441,269	6,919,276
-SMELTING CHARGES	-1,264,413	-1,264,413	-1,264,413	
-Total Smelting Cost	-1,264,413	-1,264,413	-1,264,413	
Net Smelt Ret.	125,176,856	125,176,856	125,176,856	
-MHT ROYALTY	-4,972,474	-4,972,474	-4,972,474	
-Total Royalties	-4,972,474	-4,972,474	-4,972,474	
Net Revenue	120,204,382	120,204,382	120,204,382	
-OPER COSTS	-32,471,920	-32,471,920	-32,471,920	
-Total Oper Costs	-32,471,920	-32,471,920	-32,471,920	
-Dev, IDC				
-Depreciation	-2,087,499	-2,051,852	-2,016,205	-4,951,395
-Amortization				
-Write Off				-6,919,276
Before Depltn	85,644,963	85,680,610	85,716,257	-4,951,395
100% Limit	85,644,963	85,680,610	85,716,257	
Percent Depln	18,030,657	18,030,657	18,030,657	
Prev Exp Expl				
-Depletion	-18,030,657	-18,030,657	-18,030,657	
-Total D,D & A	-20,118,156	-20,082,509	-20,046,862	-11,870,671
Taxable	67,614,306	67,649,953	67,685,600	-4,951,395
-Tax Due	-26,112,645	-26,126,412	-26,140,179	1,912,229
Net Income	41,501,661	41,523,541	41,545,421	-3,039,166
+Depreciation	2,087,499	2,051,852	2,016,205	4,951,395
+Depletion	18,030,657	18,030,657	18,030,657	
+Amortization				
+Write Off				6,919,276
-Capital Costs				
Cash Flow	61,619,817	61,606,050	61,592,283	8,831,505

List of Assumptions File:POLKHAIN.SEE Date:01/04/80 Time:00:13:18

POLYMETALLIC VEIN,SQUARE SET STOPING, KENO HILL MODEL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	1,135,020	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	824,246	MACRS	Mid Year	13.0	0			0 .....
3	04/89	5,308,363	MACRS	Mid Year	13.0	0			0 .....
4	04/89	11,941,719	MACRS	Mid Year	13.0	0			0 .....
5	04/89	5,687,136	WC	Mid Year	13.0	0			0 .....
6	04/89	570,352	MACRS	Mid Year	4.0	0			0 .....
7	04/93	570,352	MACRS	Mid Year	4.0	0			0 .....
8	04/97	570,352	MACRS	Mid Year	4.0	0			0 .....
9	04/89	6,888,989	MACRS	Mid Year	13.0	0			0 .....
10	04/89	1,232,140	WC	Mid Year	13.0	0			0 .....
11	04/89	11,900,213	MACRS	Mid Year	13.0	0			0 .....
12	04/89	4,548,820	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	144,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.009	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.33	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	150.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.35	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	22,498,560.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	4,874,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	4,233,960.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	865,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

POLYMETALLIC VEIN,SQUARE SET STOPING, KENO HILL MODEL

Cash Flows

NPV =$353,613,416 DCFROR=139.6% GROR = 36.1% PWROR =139.6% Pay Back= 0.71 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		10,545,638	10,545,638	10,545,638	10,545,638	10,545,638	10,545,638	10,545,638
CU REV		2,304,226	2,304,226	2,304,226	2,304,226	2,304,226	2,304,226	2,304,226
PB REV		29,272,320	29,272,320	29,272,320	29,272,320	29,272,320	29,272,320	29,272,320
AG REV		70,675,200	70,675,200	70,675,200	70,675,200	70,675,200	70,675,200	70,675,200
AU REV		13,643,885	13,643,885	13,643,885	13,643,885	13,643,885	13,643,885	13,643,885
GROSS REVENUE		126,441,269	126,441,269	126,44I,269	126,441,269	126,441,269	126,441,269	126,441,269
Total Revenue		126,441,269	126,441,269	126,441,269	126,441,269	126,441,269	126,441,269	126,441,269
-SMELTING CHARGES		-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413
-Total Smelting Cost		-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413	-1,264,413
Net Smelt Ret.		125,176,856	125,176,856	125,176,856	125,176,856	125,176,856	125,176,856	125,176,856
Net Revenue		125,176,856	125,176,856	125,176,856	125,176,856	125,176,856	125,176,856	125,176,856
-OPER COSTS		-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920
-Total Oper Costs		-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920	-32,471,920
-MHT NPI		-2,819,080	-2,819,080	-2,819,080	-2,819,080	-2,819,080	-2,819,080	-2,819,080
-Total Sev. Ad Valor		-2,819,080	-2,819,080	-2,819,080	-2,819,080	-2,819,080	-2,819,080	-2,819,080
-Dev, IDC	-3,184,174							
-Depreciation	-3,065,553	-5,610,126	-4,815,581	-4,148,759	-3,411,773	-2,837,528	-2,518,894	-2,194,440
-Amortization	-818,788	-272,929	-272,929					
-Write Off								
Before Depltn	-7,068,515	84,002,801	84,797,345	85,737,097	86,474,082	87,048,328	87,366,961	87,691,416
100% Limit		84,002,801	84,797,345	85,737,097	86,474,082	87,048,328	87,366,961	87,691,416
Percent Depln		18,776,528	18,776,528	18,776,528	18,776,528	18,776,528	18,776,528	18,776,528
Prev Exp Expl		3,184,174						
-Depletion		-15,592,354	-18,776,528	-18,776,528	-18,776,528	-18,776,528	-18,776,528	-18,776,528
-Total D,D & A	-7,068,515	-21,475,409	-23,865,039	-22,925,287	-22,188,302	-21,614,056	-21,295,423	-20,970,968
Taxable	-7,068,515	68,410,446	66,020,817	66,960,569	67,697,554	68,271,800	68,590,433	68,914,887
-Tax Due	2,403,295	-23,259,552	-22,447,078	-22,766,593	-26,144,795	-26,366,569	-26,489,625	-26,614,930
Net Income	-4,665,220	45,150,895	43,573,739	44,193,975	41,552,759	41,905,231	42,100,808	42,299,958
+Depreciation	3,065,553	5,610,126	4,815,581	4,148,759	3,411,773	2,837,528	2,518,894	2,194,440
+Depletion		15,592,354	18,776,528	18,776,528	18,776,528	18,776,528	18,776,528	18,776,528
+Amortization	818,788	272,929	272,929					
+Write Off								
-Capital Costs	-46,852,824		-570,352				-570,352	
Cash Flow	-47,633,703	66,626,304	66,868,426	67,119,263	63,741,061	63,519,287	62,825,879	63,270,926

Year	8	9	10	Salvage
ZN REV	10,545,638	10,545,638	10,545,638	
CU REV	2,304,226	2,304,226	2,304,226	
PB REV	29,272,320	29,272,320	29,272,320	
AG REV	70,675,200	70,675,200	70,675,200	
AU REV	13,643,885	13,643,885	13,643,885	
GROSS REVENUE	126,441,269	126,441,269	126,441,269	
Total Revenue	126,441,269	126,441,269	126,441,269	6,919,276
-SMELTING CHARGES	-1,264,413	-1,264,413	-1,264,413	
-Total Smelting Cost	-1,264,413	-1,264,413	-1,264,413	
Net Smelt Ret.	125,176,856	125,176,856	125,176,856	
Net Revenue	125,176,856	125,176,856	125,176,856	
-OPER COSTS	-32,471,920	-32,471,920	-32,471,920	
-Total Oper Costs	-32,471,920	-32,471,920	-32,471,920	
-MHT NPI	-2,819,080	-2,819,080	-2,819,080	
-Total Sev. Ad Valor	-2,819,080	-2,819,080	-2,819,080	
-Dev, IDC				
-Depreciation	-2,087,499	-2,051,852	-2,016,205	-4,951,395
-Amortization				
-Write Off				-6,919,276
Before Depltn	87,798,357	87,834,004	87,869,651	-4,951,395
100% Limit	87,798,357	87,834,004	87,869,651	
Percent Depln	18,776,528	18,776,528	18,776,528	
Prev Exp Expl				
-Depletion	-18,776,528	-18,776,528	-18,776,528	
-Total D,D & A	-20,864,027	-20,828,380	-20,792,733	-11,870,671
Taxable	69,021,828	69,057,475	69,093,122	-4,951,395
-Tax Due	-26,656,230	-26,669,997	-26,683,764	1,912,229
Net Income	42,365,598	42,387,478	42,409,359	-3,039,166
+Depreciation	2,087,499	2,051,852	2,016,205	4,951,395
+Depletion	18,776,528	18,776,528	18,776,528	
+Amortization				
+Write Off				6,919,276
-Capital Costs				
Cash Flow	63,229,626	63,215,859	63,202,092	8,831,505

22c, 36c

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25c)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± luebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Saito and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 million.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

POLTGOLD

Comments, Assumptions, Specifications: GZ -
Golden Zone - Au-Ag Vein/Breccia Pipe - Based on POLT Model

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Au-Ag Vein/Breccia Pipe
Total Ore Tonnage: 1.45 mil mt
Mining Method: Cut & Fill Stoping
Beneficiation Method: Crush/Grind/Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 yrs
Proposed Daily Production: 400 mTPD
Maximum Ore Depth: 1,000 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 25 km new service roads
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Jackleags/Stopers, Rail Equip Haul
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: -
Raises & face-m/day & sqm: .8 m/day & 2 m²
Inclines & face-m/day & sqm: -
Ore pockets/day-mtpd:
Stope preparation/day-stopes & sqm: .02, 180 m²
Ore rate-mtpd: 400 mTPD
Hoist depth, rate & time-m, mtph, hr/day: 1,000 m, 100 mTPH, 10 hrs/day
Haul distance-m: 500 m max
Compressed air-cm/min: 44 m³/min
Ventilation-cm/min: 1,530 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 10 m³/hr, 16 hrs/day
Drainage, head-cm/day & m: 10,000 m³/day, 1000 m
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 400 mTPD
Production water needs-cm/day: 800 m³/day
Portable Power needs-kW: 2400 kw
Wastewater-L/sec: 2 L/sec
Concentrate haul-km: Doré
Employee housing-men: 60 men
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 400 mTPD
Mill operating costs-$/day: $13,540 /day
Working capital time-weeks: 13 weeks
Development time-days: -
Shaft sinking & face-m & sqm: 1,000m, 8m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 300m, 2m²
Inclines & face-m & sqm:
Ore pockets-mt: 600 mt
Stope preparations-stopes & sqm: 3, 180m²
Dewatering; head, dys & rate-m, dys & cm/day:
1,000m 100 days 10,000 m³/day
Rehabilitation (total tonnage)-mt: 400 mTPD
Contractors-1 or 2: 2
Mine operating costs-$/day: $61,038 /day
Access roads, length & width-km & m: 25 km, 8m
Airstrip length & width-m: 1,200m, 18m
Townsite cost-$:
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 20,000 m3
Climate/Weather factors: Severe
Other: Rail Equipment - $493,724
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 61,038
Mining Costs-$/yr: 21,973,680
Mining Costs-$/mt: 152.63
Milling Costs-$/day: 13,540
Milling Costs-$/yr: 4,874,400
Milling Costs-$/mt: 33.85
Infrastructure Costs-$/day: 9,237
Infrastructure Costs-$/yr: 3,325,320
Infrastructure Costs-$/mt: 23.09
Total Operating Costs-$/day: 83,815
Total Operating Costs-$/yr: 30,173,400
Total Operating Costs-$/mt: 209.54
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 5,554,458
Heavy Equipment (fixed life)-$: 1,135,020 *
Mine Rehabilitation-$: 824,246 *
Engr. & Const. Mgmt.-$: 5,202,267 *
Other:
Remaining Mine Capital-$: 11,912,610
Total Mine Capital Cost-$: 24,628,601

MILL CAPITAL COSTS:

Mill Working Capital-$: 1,232,140
Light Vehicles (short life)-$: 570,352 *
Other:
Remaining Mill Capital-$: 6,888,989 ~
Total Mill Capital Cost-$: 8,691,481

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 3,112,195 *
Other:
Remaining Infrastructure Capital-$: 11,061,320 ~
Total Infrastructure Capital-$: 14,173,575

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 6,786,598 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 29,862,979 *
Sum of Total Mine, Mill & Infr. Costs-$: 47,493,657
Exploration Cost-$: 4,749,370 *

Overall Capital Cost-$: 52,243,023
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:POLTGOLD.SEE Date:01/04/80 Time:00:03:32

POLYMETALLIC VEIN,(KENO HILL), GOLDEN ZONE AREA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	1,135,020	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	824,246	MACRS	Mid Year	13.0	0			0 .....
3	04/89	5,202,267	MACRS	Mid Year	13.0	0			0 .....
4	04/89	11,912,610	MACRS	Mid Year	13.0	0			0 .....
5	04/89	5,554,458	WC	Mid Year	13.0	0			0 .....
6	04/89	570,352	MACRS	Mid Year	4.0	0			0 .....
7	04/93	570,352	MACRS	Mid Year	4.0	0			0 .....
8	04/97	570,352	MACRS	Mid Year	4.0	0			0 .....
9	04/89	6,888,989	MACRS	Mid Year	13.0	0			0 .....
10	04/89	1,232,140	WC	Mid Year	13.0	0			0 .....
11	04/89	14,173,575	MACRS	Mid Year	13.0	0			0 .....
12	04/89	4,749,370	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
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#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	144,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.009	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.33	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	150.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.35	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	21,973,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	4,874,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	3,325,320.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

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* Project Equations *
****

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General Equations
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E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

POLYMETALLIC VEIN,(KENO HILL), GOLDEN ZONE AREA, CUT & FILL

Cash Flows

NPV =$245,359,598 DCFROR= 97.7% GROR = 31.4% PWROR = 97.7% Pay Back= 1.02 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511
CU REV		1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381
PB REV		23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856
AG REV		56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160
AU REV		10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108
GROSS REVENUE		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
Total Revenue		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
-SMELTING CHARGES		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
-Total Smelting Cost		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
Net Smelt Ret.		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
-MHT ROYALTY		-3,965,659	-3,965,659	-3,965,659	-3,965,659	-3,965,659	-3,965,659	-3,965,659
-Total Royalties		-3,965,659	-3,965,659	-3,965,659	-3,965,659	-3,965,659	-3,965,659	-3,965,659
Net Revenue		96,175,826	96,175,826	96,175,826	96,175,826	96,175,826	96,175,826	96,175,826
-OPER COSTS		-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400
-Total Oper Costs		-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400
-Dev, IDC	-3,324,559							
-Depreciation	-3,230,027	-5,913,769	-5,072,511	-4,366,160	-3,595,729	-2,993,182	-2,650,602	-2,305,885
-Amortization	-854,887	-284,962	-284,962					
-Write Off								
Before Depltn	-7,409,473	58,803,694	59,644,953	60,636,265	61,406,697	62,009,243	62,351,824	62,696,541
100% Limit		58,803,694	59,644,953	60,636,265	61,406,697	62,009,243	62,351,824	62,696,541
Percent Depln		14,426,374	14,426,374	14,426,374	14,426,374	14,426,374	14,426,374	14,426,374
Prev Exp Expl		3,324,559						
-Depletion		-11,101,815	-14,426,374	-14,426,374	-14,426,374	-14,426,374	-14,426,374	-14,426,374
-Total D,D & A	-7,409,473	-17,300,546	-19,783,847	-18,792,534	-18,022,103	-17,419,556	-17,076,976	-16,732,259
Taxable	-7,409,473	47,701,879	45,218,579	46,209,891	46,980,323	47,582,870	47,925,450	48,270,167
-Tax Due	2,519,221	-16,218,639	-15,374,317	-15,711,363	-18,143,801	-18,376,504	-18,508,809	-18,641,938
Net Income	-4,890,252	31,483,240	29,844,262	30,498,528	28,836,522	29,206,365	29,416,641	29,628,228
+Depreciation	3,230,027	5,913,769	5,072,511	4,366,160	3,595,729	2,993,182	2,650,602	2,305,885
+Depletion		11,101,815	14,426,374	14,426,374	14,426,374	14,426,374	14,426,374	14,426,374
+Amortization	854,887	284,962	284,962					
+Write Off								
-Capital Costs	-48,918,468		-570,352				-570,352	
Cash Flow	-49,723,806	48,783,787	49,057,757	49,291,063	46,858,625	46,625,921	45,923,265	46,360,487

Year	8	9	10	Salvage
ZN REV	8,436,511	8,436,511	8,436,511	
CU REV	1,843,381	1,843,381	1,843,381	
PB REV	23,417,856	23,417,856	23,417,856	
AG REV	56,540,160	56,540,160	56,540,160	
AU REV	10,915,108	10,915,108	10,915,108	
GROSS REVENUE	101,153,015	101,153,015	101,153,015	
Total Revenue	101,153,015	101,153,015	101,153,015	6,786,598
-SMELTING CHARGES	-1,011,530	-1,011,530	-1,011,530	
-Total Smelting Cost	-1,011,530	-1,011,530	-1,011,530	
Net Smelt Ret.	100,141,485	100,141,485	100,141,485	
-MHT ROYALTY	-3,965,659	-3,965,659	-3,965,659	
-Total Royalties	-3,965,659	-3,965,659	-3,965,659	
Net Revenue	96,175,826	96,175,826	96,175,826	
-OPER COSTS	-31,173,400	-31,173,400	-31,173,400	
-Total Oper Costs	-31,173,400	-31,173,400	-31,173,400	
-Dev, IDC				
-Depreciation	-2,198,944	-2,163,297	-2,127,650	-5,230,007
-Amortization				
-Write Off				-6,786,598
Before Depltn	62,803,482	62,839,129	62,874,776	-5,230,007
100% Limit	62,803,482	62,839,129	62,874,776	
Percent Depln	14,426,374	14,426,374	14,426,374	
Prev Exp Expl				
-Depletion	-14,426,374	-14,426,374	-14,426,374	
-Total D,D & A	-16,625,318	-16,589,671	-16,554,024	-12,016,605
Taxable	48,377,108	48,412,755	48,448,402	-5,230,007
-Tax Due	-18,683,239	-18,697,006	-18,710,773	2,019,829
Net Income	29,693,869	29,715,749	29,737,629	-3,210,178
+Depreciation	2,198,944	2,163,297	2,127,650	5,230,007
+Depletion	14,426,374	14,426,374	14,426,374	
+Amortization				
+Write Off				6,786,598
-Capital Costs				
Cash Flow	46,319,187	46,305,420	46,291,653	8,806,427

List of Assumptions File:POLTGOLD.SEE Date:01/15/94 Time:15:59:09

POLYMETALLIC VEIN,(KENO HILL), GOLDEN ZONE AREA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	1,135,020	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	824,246	MACRS	Mid Year	13.0	0		0	.....
3	04/89	5,202,267	MACRS	Mid Year	13.0	0		0	.....
4	04/89	11,912,610	MACRS	Mid Year	13.0	0		0	.....
5	04/89	5,554,458	WC	Mid Year	13.0	0		0	.....
6	04/89	570,352	MACRS	Mid Year	4.0	0		0	.....
7	04/93	570,352	MACRS	Mid Year	4.0	0		0	.....
8	04/97	570,352	MACRS	Mid Year	4.0	0		0	.....
9	04/89	6,888,989	MACRS	Mid Year	13.0	0		0	.....
10	04/89	1,232,140	WC	Mid Year	13.0	0		0	.....
11	04/89	14,173,575	MACRS	Mid Year	13.0	0		0	.....
12	04/89	4,749,370	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	144,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.009	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.33	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	150.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.35	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	21,973,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	4,874,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	3,325,320.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *

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General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

POLYMETALLIC VEIN,(KENO HILL), GOLDEN ZONE AREA, CUT & FILL

Cash Flows

NPV =$253,955,977 DCFROR=100.6% GROR = 31.8% PWROR =100.6% Pay Back= 0.99 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511
CU REV		1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381
PB REV		23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856
AG REV		56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160
AU REV		10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108
GROSS REVENUE		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
Total Revenue		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
-SMELTING CHARGES		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
-Total Smelting Cost		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
Net Smelt Ret.		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
Net Revenue		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
-OPER COSTS		-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400
-Total Oper Costs		-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400	-31,173,400
-MHT NPI		-2,099,388	-2,099,388	-2,099,388	-2,099,388	-2,099,388	-2,099,388	-2,099,388
-Total Sev. Ad Valor		-2,099,388	-2,099,388	-2,099,388	-2,099,388	-2,099,388	-2,099,388	-2,099,388
-Dev, IDC	-3,324,559							
-Depreciation	-3,230,027	-5,913,769	-5,072,511	-4,366,160	-3,595,729	-2,993,182	-2,650,602	-2,305,885
-Amortization	-854,887	-284,962	-284,962					
-Write Off								
Before Depltn	-7,409,473	60,669,965	61,511,224	62,502,536	63,272,968	63,875,514	64,218,095	64,562,812
100% Limit		60,669,965	61,511,224	62,502,536	63,272,968	63,875,514	64,218,095	64,562,812
Percent Depln		15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223
Prev Exp Expl		3,324,559						
-Depletion		-11,696,664	-15,021,223	-15,021,223	-15,021,223	-15,021,223	-15,021,223	-15,021,223
-Total D,D & A	-7,409,473	-17,895,395	-20,378,696	-19,387,383	-18,616,951	-18,014,405	-17,671,825	-17,327,108
Taxable	-7,409,473	48,973,301	46,490,001	47,481,313	48,251,745	48,854,292	49,196,872	49,541,589
-Tax Due	2,519,221	-16,650,922	-15,806,600	-16,143,647	-18,634,824	-18,867,527	-18,999,832	-19,132,962
Net Income	-4,890,252	32,322,379	30,683,401	31,337,667	29,616,921	29,986,764	30,197,040	30,408,627
+Depreciation	3,230,027	5,913,769	5,072,511	4,366,160	3,595,729	2,993,182	2,650,602	2,305,885
+Depletion		11,696,664	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223
+Amortization	854,887	284,962	284,962					
+Write Off								
-Capital Costs	-48,918,468		-570,352				-570,352	
Cash Flow	-49,723,806	50,217,774	50,491,744	50,725,050	48,233,873	48,001,169	47,298,513	47,735,735

Year	8	9	10	Salvage
ZN REV	8,436,511	8,436,511	8,436,511	
CU REV	1,843,381	1,843,381	1,843,381	
PB REV	23,417,856	23,417,856	23,417,856	
AG REV	56,540,160	56,540,160	56,540,160	
AU REV	10,915,108	10,915,108	10,915,108	
GROSS REVENUE	101,153,015	101,153,015	101,153,015	
Total Revenue	101,153,015	101,153,015	101,153,015	6,786,598
-SMELTING CHARGES	-1,011,530	-1,011,530	-1,011,530	
-Total Smelting Cost	-1,011,530	-1,011,530	-1,011,530	
Net Smelt Ret.	100,141,485	100,141,485	100,141,485	
Net Revenue	100,141,485	100,141,485	100,141,485	
-OPER COSTS	-31,173,400	-31,173,400	-31,173,400	
-Total Oper Costs	-31,173,400	-31,173,400	-31,173,400	
-MHT NPI	-2,099,388	-2,099,388	-2,099,388	
-Total Sev. Ad Valor	-2,099,388	-2,099,388	-2,099,388	
-Dev, IDC				
-Depreciation	-2,198,944	-2,163,297	-2,127,650	-5,230,007
-Amortization				
-Write Off				-6,786,598
Before Depltn	64,669,753	64,705,400	64,741,047	-5,230,007
100% Limit	64,669,753	64,705,400	64,741,047	
Percent Depln	15,021,223	15,021,223	15,021,223	
Prev Exp Expl				
-Depletion	-15,021,223	-15,021,223	-15,021,223	
-Total D,D & A	-17,220,167	-17,184,520	-17,148,873	-12,016,605
Taxable	49,648,530	49,684,177	49,719,824	-5,230,007
-Tax Due	-19,174,262	-19,188,029	-19,201,796	2,019,829
Net Income	30,474,268	30,496,148	30,518,028	-3,210,178
+Depreciation	2,198,944	2,163,297	2,127,650	5,230,007
+Depletion	15,021,223	15,021,223	15,021,223	
+Amortization				
+Write Off				6,786,598
-Capital Costs				
Cash Flow	47,694,434	47,680,667	47,666,901	8,806,427

22C, 36C

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25a)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± huebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Salto and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 million.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

POLT

Comments, Assumptions, Specifications: SALT - Salt Chuck - Polymetal deposit - based on POLT model

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Polymetallic Vein (Base metal)
Total Ore Tonnage: 1.45 mil mtons
Mining Method: Cut & Fill
Beneficiation Method: Crush / Grind / Float
Extraction Rate: ≈100%
Dilution/Waste Rate: 20%
Proposed Mine Life: 10 yrs
Proposed Daily Production: 400 MTPD
Maximum Ore Depth: 1,000 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 50 km, 15 km new roads
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Jackleg, Rail Equipment, Hoist
Concentrate Production: 200 MTPD - 3 products

INPUT VARIABLES:

A. (For Operating Costs)
Shaft sinking & face-m/day & sqm:
Drifting & face-m/day & sqm:
Raises & face-m/day & sqm: .8 m/day, 7 m²
Inclines & face-m/day & sqm:
Ore pockets/day-mtpd:
Stope preparation/day-stopes & sqm: .02, 180 m²
Ore rate-mtpd: 400 MTPD
Hoist depth, rate & time-m, mtph, hr/day: 1,000 m, 100 MTPH, 10 Hrs/day
Haul distance-m: 500 m max
Compressed air-cm/min: 44 cm³/min
Ventilation-cm/min: 1,530 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 10 m³/hr, 16 hrs/day
Drainage, head-cm/day & m: 10,000 m³/day, 1 000 m
Concentrate (dry) rate-mtpd: 200 MTPD
Tails (dry) rate-mtpd: 200 MTPD
Production water needs-cm/day: 800 m³/day
Portable Power needs-kW: 2,400 Kw
Wastewater-L/sec: 2 L/sec
Concentrate haul-km: 50 km
Employee housing-men: 60 men
Other:
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 400, 300, 250 mTPD
Mill operating costs-$/day: $ 13,540 /day
Working capital time-weeks: 13 weeks
Development time-days: -
Shaft sinking & face-m & sqm: 1,000 m, 8m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 300m, 2m²
Inclines & face-m & sqm: -
Ore pockets-mt: 600 mT
Stope preparations-stopes & sqm: 3, 180m²
Dewatering; head, dys & rate-m, dys & cm/day: 1,000 m, 100 days, 10.000 m³/day
Rehabilitation (total tonnage)-mt: 400 mTPD
Contractors-1 or 2: 2
Mine operating costs-$/day: 61,038
Access roads, length & width-km & m: 15km, 8m
Airstrip length & width-m: 1,200 m, 18m
Townsite cost-$: 1,675,890
Powerline length & power-km & mW: Po-table
Dike & Dam needs-cm/fill: 20,000 m³
Climate/Weather factors: Severe
Other: Rail Equipment - $493,724
Other:

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 61,038
Mining Costs-$/yr: 21,973,680
Mining Costs-$/mt: 152.60
Milling Costs-$/day: 13,540
Milling Costs-$/yr: 4,874,400
Milling Costs-$/mt: 33.85
Infrastructure Costs-$/day: 10,959
Infrastructure Costs-$/yr: 3,945,240
Infrastructure Costs-$/mt: 27.40
Total Operating Costs-$/day: 85,537
Total Operating Costs-$/yr: 30,793,320
Total Operating Costs-$/mt: 213.84
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 5554458
Heavy Equipment (fixed life)-$: 1,135,020 *
Mine Rehabilitation-$: 824,246 *
Engr. & Const. Mgmt.-$: 5,202,267 *
Other:
Remaining Mine Capital-$: 11,912,610
Total Mine Capital Cost-$: 24,628,601

MILL CAPITAL COSTS:

Mill Working Capital-$: 1,232,140
Light Vehicles (short life)-$: 570,352 *
Other:
Remaining Mill Capital-$: 6,888,989 ~
Total Mill Capital Cost-$: 8,691,491

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 3,112,195 *
Other:
Remaining Infrastructure Capital-$: 8,229,388 ~
Total Infrastructure Capital-$: 11,341,583

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 6,786,598 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 27,030,987 *
Sum of Total Mine, Mill & Infr. Costs-$: 44,661,665
Exploration Cost-$: 4,466,170 *

Overall Capital Cost-$: 49,127,832
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:POLTSALT.SEE Date:01/04/80 Time:00:10:19

POLYMETALLIC VEIN,(KENO HILL), SALT CHUCK AREA, CUT & FILL

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

******** Minimum ROR,Inflation & Exponents ********* ****** Tax Rates ******

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	1,135,020	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	824,246	MACRS	Mid Year	13.0	0		0	.....
3	04/89	5,202,267	MACRS	Mid Year	13.0	0		0	.....
4	04/89	11,912,610	MACRS	Mid Year	13.0	0		0	.....
5	04/89	5,554,458	WC	Mid Year	13.0	0		0	.....
6	04/89	570,352	MACRS	Mid Year	4.0	0		0	.....
7	04/93	570,352	MACRS	Mid Year	4.0	0		0	.....
8	04/97	570,352	MACRS	Mid Year	4.0	0		0	.....
9	04/89	6,888,989	MACRS	Mid Year	13.0	0		0	.....
10	04/89	1,232,140	WC	Mid Year	13.0	0		0	.....
11	04/89	11,341,583	MACRS	Mid Year	13.0	0		0	.....
12	04/89	4,466,170	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	144,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.009	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.33	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	150.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.35	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	21,973,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	4,874,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	3,945,240.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	865,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

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General Equations
==========

E1 . ZN REV S1*S2*S7*S16*S17
Equations continued

E2 . CU REV S1*S3*S8*S16*S17
E3 . PB REV S1*S4*S9*S16*S17
E4 . AG REV S1*S5*S10*S16*S17
E5 . AU REV S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS (S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES S18*E6

POLYMETALLIC VEIN,(KENO HILL), SALT CHUCK AREA, CUT & FILL

Cash Flows

NPV =$245,857,641 DCFROR=103.1% GROR = 32.1% PWROR =103.1% Pay Back= 0.97 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511
CU REV		1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381
PB REV		23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856
AG REV		56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160
AU REV		10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108
GROSS REVENUE		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
Total Revenue		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
-SMELTING CHARGES		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
-Total Smelting Cost		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
Net Smelt Ret.		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
-MHT ROYALTY		-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059
-Total Royalties		-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059	-3,971,059
Net Revenue		96,170,426	96,170,426	96,170,426	96,170,426	96,170,426	96,170,426	96,170,426
-OPER COSTS		-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320
-Total Oper Costs		-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320
-Dev, IDC	-3,126,319							
-Depreciation	-3,012,181	-5,511,593	-4,732,208	-4,078,212	-3,352,080	-2,787,018	-2,476,155	-2,158,276
-Amortization	-803,911	-267,970	-267,970					
-Write Off								
Before Depltn	-6,942,411	58,732,542	59,511,928	60,433,894	61,160,026	61,725,088	62,035,951	62,353,830
100% Limit		58,732,542	59,511,928	60,433,894	61,160,026	61,725,088	62,035,951	62,353,830
Percent Depln		14,425,564	14,425,564	14,425,564	14,425,564	14,425,564	14,425,564	14,425,564
Prev Exp Expl		3,126,319						
-Depletion		-11,299,245	-14,425,564	-14,425,564	-14,425,564	-14,425,564	-14,425,564	-14,425,564
-Total D,D & A	-6,942,411	-17,078,808	-19,425,742	-18,503,776	-17,777,644	-17,212,582	-16,901,719	-16,583,840
Taxable	-6,942,411	47,433,298	45,086,364	46,008,330	46,734,462	47,299,524	47,610,387	47,928,266
-Tax Due	2,360,420	-16,127,321	-15,329,364	-15,642,832	-18,048,849	-18,267,076	-18,387,131	-18,509,896
Net Income	-4,581,991	31,305,976	29,757,000	30,365,498	28,685,613	29,032,448	29,223,255	29,418,370
+Depreciation	3,012,181	5,511,593	4,732,208	4,078,212	3,352,080	2,787,018	2,476,155	2,158,276
+Depletion		11,299,245	14,425,564	14,425,564	14,425,564	14,425,564	14,425,564	14,425,564
+Amortization	803,911	267,970	267,970					
+Write Off								
-Capital Costs	-46,001,516		-570,352				-570,352	
Cash Flow	-46,767,415	48,384,784	48,612,390	48,869,273	46,463,256	46,245,029	45,554,622	46,002,209

Year	8	9	10	Salvage
ZN REV	8,436,511	8,436,511	8,436,511	
CU REV	1,843,381	1,843,381	1,843,381	
PB REV	23,417,856	23,417,856	23,417,856	
AG REV	56,540,160	56,540,160	56,540,160	
AU REV	10,915,108	10,915,108	10,915,108	
GROSS REVENUE	101,153,015	101,153,015	101,153,015	
Total Revenue	101,153,015	101,153,015	101,153,015	6,786,598
-SMELTING CHARGES	-1,011,530	-1,011,530	-1,011,530	
-Total Smelting Cost	-1,011,530	-1,011,530	-1,011,530	
Net Smelt Ret.	100,141,485	100,141,485	100,141,485	
-MHT ROYALTY	-3,971,059	-3,971,059	-3,971,059	
-Total Royalties	-3,971,059	-3,971,059	-3,971,059	
Net Revenue	96,170,426	96,170,426	96,170,426	
-OPER COSTS	-31,658,320	-31,658,320	-31,658,320	
-Total Oper Costs	-31,658,320	-31,658,320	-31,658,320	
-Dev, IDC				
-Depreciation	-2,051,335	-2,015,688	-1,980,041	-4,860,985
-Amortization				
-Write Off				-6,786,598
Before Depltn	62,460,771	62,496,418	62,532,065	-4,860,985
100% Limit	62,460,771	62,496,418	62,532,065	
Percent Depln	14,425,564	14,425,564	14,425,564	
Prev Exp Expl				
-Depletion	-14,425,564	-14,425,564	-14,425,564	
-Total D,D & A	-16,476,899	-16,441,252	-16,405,605	-11,647,583
Taxable	48,035,207	48,070,854	48,106,501	-4,860,985
-Tax Due	-18,551,197	-18,564,964	-18,578,731	1,877,312
Net Income	29,484,010	29,505,890	29,527,770	-2,983,673
+Depreciation	2,051,335	2,015,688	1,980,041	4,860,985
+Depletion	14,425,564	14,425,564	14,425,564	
+Amortization				
+Write Off				6,786,598
-Capital Costs				
Cash Flow	45,960,909	45,947,142	45,933,375	8,663,910

List of Assumptions File:POLTSALT.SEE Date:01/15/94 Time:16:16:33

POLYMETALLIC VEIN,(KENO HILL), SALT CHUCK AREA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	1,135,020	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	824,246	MACRS	Mid Year	13.0	0			0 .....
3	04/89	5,202,267	MACRS	Mid Year	13.0	0			0 .....
4	04/89	11,912,610	MACRS	Mid Year	13.0	0			0 .....
5	04/89	5,554,458	WC	Mid Year	13.0	0			0 .....
6	04/89	570,352	MACRS	Mid Year	4.0	0			0 .....
7	04/93	570,352	MACRS	Mid Year	4.0	0			0 .....
8	04/97	570,352	MACRS	Mid Year	4.0	0			0 .....
9	04/89	6,888,989	MACRS	Mid Year	13.0	0			0 .....
10	04/89	1,232,140	WC	Mid Year	13.0	0			0 .....
11	04/89	11,341,583	MACRS	Mid Year	13.0	0			0 .....
12	04/89	4,466,170	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
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#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	144,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.009	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.33	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	150.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.35	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	21,973,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	4,874,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	3,945,240.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	865,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.80	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

****

General Equations
==========

E1 . ZN REV S1*S2*S7*S16*S17
Equations continued

E2 . CU REV S1*S3*S8*S16*S17
E3 . PB REV S1*S4*S9*S16*S17
E4 . AG REV S1*S5*S10*S16*S17
E5 . AU REV S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS (S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES S18*E6

POLYMETALLIC VEIN,(KENO HILL), SALT CHUCK AREA, CUT & FILL

Cash Flows

NPV =$254,533,374 DCFROR=106.2% GROR = 32.5% PWROR =106.2% Pay Back= 0.94 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511	8,436,511
CU REV		1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381	1,843,381
PB REV		23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856	23,417,856
AG REV		56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160	56,540,160
AU REV		10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108	10,915,108
GROSS REVENUE		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
Total Revenue		101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015	101,153,015
-SMELTING CHARGES		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
-Total Smelting Cost		-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530	-1,011,530
Net Smelt Ret.		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
Net Revenue		100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485	100,141,485
-OPER COSTS		-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320
-Total Oper Costs		-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320	-31,658,320
-MHT NPI		-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841
-Total Sev. Ad Valor		-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841	-2,084,841
-Dev, IDC	-3,126,319							
-Depreciation	-3,012,181	-5,511,593	-4,732,208	-4,078,212	-3,352,080	-2,787,018	-2,476,155	-2,158,276
-Amortization	-803,911	-267,970	-267,970					
-Write Off								
Before Depltn	-6,942,411	60,618,761	61,398,146	62,320,112	63,046,244	63,611,306	63,922,169	64,240,048
100% Limit		60,618,761	61,398,146	62,320,112	63,046,244	63,611,306	63,922,169	64,240,048
Percent Depln		15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223
Prev Exp Expl		3,126,319						
-Depletion		-11,894,904	-15,021,223	-15,021,223	-15,021,223	-15,021,223	-15,021,223	-15,021,223
-Total D,D & A	-6,942,411	-17,674,467	-20,021,400	-19,099,434	-18,373,302	-17,808,241	-17,497,378	-17,179,499
Taxable	-6,942,411	48,723,857	46,376,924	47,298,890	48,025,022	48,590,084	48,900,946	49,218,825
-Tax Due	2,360,420	-16,566,111	-15,768,154	-16,081,623	-18,547,263	-18,765,490	-18,885,545	-19,008,310
Net Income	-4,581,991	32,157,746	30,608,770	31,217,267	29,477,758	29,824,593	30,015,401	30,210,515
+Depreciation	3,012,181	5,511,593	4,732,208	4,078,212	3,352,080	2,787,018	2,476,155	2,158,276
+Depletion		11,894,904	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223	15,021,223
+Amortization	803,911	267,970	267,970					
+Write Off								
-Capital Costs	-46,001,516		-570,352				-570,352	
Cash Flow	-46,767,415	49,832,213	50,059,818	50,316,702	47,851,061	47,632,834	46,942,427	47,390,014

Year	8	9	10	Salvage
ZN REV	8,436,511	8,436,511	8,436,511	
CU REV	1,843,381	1,843,381	1,843,381	
PB REV	23,417,856	23,417,856	23,417,856	
AG REV	56,540,160	56,540,160	56,540,160	
AU REV	10,915,108	10,915,108	10,915,108	
GROSS REVENUE	101,153,015	101,153,015	101,153,015	
Total Revenue	101,153,015	101,153,015	101,153,015	6,786,598
-SMELTING CHARGES	-1,011,530	-1,011,530	-1,011,530	
-Total Smelting Cost	-1,011,530	-1,011,530	-1,011,530	
Net Smelt Ret.	100,141,485	100,141,485	100,141,485	
Net Revenue	100,141,485	100,141,485	100,141,485	
-OPER COSTS	-31,658,320	-31,658,320	-31,658,320	
-Total Oper Costs	-31,658,320	-31,658,320	-31,658,320	
-MHT NPI	-2,084,841	-2,084,841	-2,084,841	
-Total Sev. Ad Valor	-2,084,841	-2,084,841	-2,084,841	
-Dev, IDC				
-Depreciation	-2,051,335	-2,015,688	-1,980,041	-4,860,985
-Amortization				
-Write Off				-6,786,598
Before Depltn	64,346,989	64,382,636	64,418,283	-4,860,985
100% Limit	64,346,989	64,382,636	64,418,283	
Percent Depln	15,021,223	15,021,223	15,021,223	
Prev Exp Expl				
-Depletion	-15,021,223	-15,021,223	-15,021,223	
-Total D,D & A	-17,072,558	-17,036,911	-17,001,264	-11,647,583
Taxable	49,325,766	49,361,413	49,397,060	-4,860,985
-Tax Due	-19,049,611	-19,063,378	-19,077,145	1,877,312
Net Income	30,276,155	30,298,036	30,319,916	-2,983,673
+Depreciation	2,051,335	2,015,688	1,980,041	4,860,985
+Depletion	15,021,223	15,021,223	15,021,223	
+Amortization				
+Write Off				6,786,598
-Capital Costs				
Cash Flow	47,348,713	47,334,946	47,321,179	8,663,910

22c, 36c

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25c)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± huebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Salto and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 million.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

Comments, Assumptions, Specifications: LSA Haines Area, High Grade Vein (Not bulk), Merrill-Crowe Leach.

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Low-Sulfide Au-Quartz Vein
Total Ore Tonnage: .91 mil mtons
Mining Method: Cut & Fill Stoping
Beneficiation Method: Crush/Grind/M.C. Cyanide Leach
Extraction Rate: ≈100%
Dilution/Waste Rate: ≈0%
Proposed Mine Life: 10 years
Proposed Daily Production: 250 mtons
Maximum Ore Depth: 1,000 m
Stripping Ratio: -
Haulage Distance/Road Requirements: No haul, 50km from Haines, 15km access road
Distance From Power: Portable
Pre-Production Development: Shaft, millsite

Production Development:

Equipment: Jacklegs, Rail Equipment,
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: -
Raises & face-m/day & sqm: .6 m/day, 2 m²
Inclines & face-m/day & sqm: -
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .02, 180m²
Ore rate-mtpd: 250 mTPD
Hoist depth, rate & time-m, mtph, hr/day: 1,000 m, 100 mTPH, 8 hrs/day
Haul distance-m: 500 m max
Compressed air-cm/min: 30 m³/min
Ventilation-cm/min: 950 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 7 m³/hr, 16 hrs/day
Drainage, head-cm/day & m: 5,000 m³/day, 1000 m
Concentrate (dry) rate-mtpd: -
Tails (dry) rate-mtpd: 250 mTPD
Production water needs-cm/day: 500 m³/day
Portable Power needs-kW: 1,750 kW
Wastewater-L/sec: 1.5 L/sec
Concentrate haul-km: - No
Employee housing-men: 40 men
Other: $ 5,009/day- Cyanide Leach
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 250 mTPD
Mill operating costs-$/day: $10,884/day
Working capital time-weeks: 13 weeks
Development time-days:
Shaft sinking & face-m & sqm: 1,000 m, 8 m2
Drifting & face-m & sqm: -
Raises & face-m & sqm: 300 m, 2 m2
Inclines & face-m & sqm: -
Ore pockets-mt: 375 mt
Stope preparations-stopes & sqm: 2, 180 m2
Dewatering; head, dys & rate-m, dys & cm/day:
1,000 m, 100 day, 5,000 m3/day
Rehabilitation (total tonnage)-mt: 250 mTPD
Contractors-1 or 2: 1
Mine operating costs-$/day: $ 44,695/day
Access roads, length & width-km & m: 15 Km, 6m
Airstrip length & width-m: 1,200 m, 18 m
Townsite cost-$:
Powerline length & power-km & mW: -
Dike & Dam needs-cm/fill: 10,000 m3
Climate/Weather factors: Severe
Other: Rail Equipment - $383,218
Other: Cyanide Leach Equipment - $4,931,533

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 44,695
Mining Costs-$/yr: 16,090,200
Mining Costs-$/mt: 178.78
Milling Costs-$/day: 10,884
Milling Costs-$/yr: 3,918,240
Milling Costs-$/mt: 43.54
Infrastructure Costs-$/day: 7,157
Infrastructure Costs-$/yr: 2,576,520
Infrastructure Costs-$/mt: 28.63
Total Operating Costs-$/day: 62,736
Total Operating Costs-$/yr: 22,584,960
Total Operating Costs-$/mt: 250.94
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 4067,245
Heavy Equipment (fixed life)-$: 794,718 * Trackhoes, Rail Equipt.
Mine Rehabilitation-$: 794,612 *
Engr. & Const. Mgmt.-$: 2258,581 *
Other:
Remaining Mine Capital-$: 11,965,508
Total Mine Capital Cost-$: 19,790,664

MILL CAPITAL COSTS:

Mill Working Capital-$: 990,444
Light Vehicles (short life)-$: 484,067 *
Other:
Remaining Mill Capital-$: 7,227,953 ~
Total Mill Capital Cost-$: 8,702,464

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 2,375,888 *
Other:
Remaining Infrastructure Capital-$: 6,182,590 ~
Total Infrastructure Capital-$: 8,558,478

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 5,057,689 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 25,376,051 *
Sum of Total Mine, Mill & Infr. Costs-$: 37,051,606
Exploration Cost-$: 3,705,170 *

Overall Capital Cost-$: 40,756,766
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:LSAHAIN.SEE Date:07/24/93 Time:21:16:52

LOW SULFIDE AU QUARTZ VEIN, HAINES AREA, CUT AND FILL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents With Eval Date		Minimum ROR	Inflation Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR, Inflation & Exponents					Tax Rates		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	794,718	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	704,612	MACRS	Mid Year	13.0	0		0	.....
3	04/89	2,258,581	MACRS	Mid Year	13.0	0		0	.....
4	04/89	11,965,508	MACRS	Mid Year	13.0	0		0	.....
5	04/89	4,067,245	WC	Mid Year	13.0	0		0	.....
6	04/89	484,067	MACRS	Mid Year	4.0	0		0	.....
7	04/93	484,067	MACRS	Mid Year	4.0	0		0	.....
8	04/97	484,067	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	7,227,953	MACRS	Mid Year	13.0	0		0	.....
11	04/89	990,444	WC	Mid Year	13.0	0		0	.....
12	04/89	2,375,888	MACRS	Mid Year	13.0	0		0	.....
13	04/89	6,182,590	MACRS	Mid Year	13.0	0		0	.....
14	04/89	3,705,170	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	90,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	1.3830	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	16,090,200.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	3,918,240.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	2,576,520.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	39,182.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

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* Project Equations *
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General Equations
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E1 . AU HI REV S1*S3*S5*S10*S11

Equations continued

E2 . AU LO REV S2*S4*S5*S10*S12

Revenues

E3 . GROSS REV E1+E2

Operating Costs

E5 . OPER COSTS S6+S7+S8+S9

Royalties

E6 . MHT ROYALTY S14*(E3-E4-S9)

Processing Costs

E4 . SMELTING CHARGES S13*E3

LOW SULFIDE AU QUARTZ VEIN, HAINES AREA, CUT AND FILL STOPING

Cash Flows

NPV =$41,603,564 DCFROR= 31.2% GROR = 18.3% PWROR = 31.2% Pay Back= 2.97 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433
GROSS REV		40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433
Total Revenue		40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433
-SMELTING CHARGES		-400,134	-400,134	-400,134	-400,134	-400,134	-400,134	-400,134
-Total Smelting Cost		-400,134	-400,134	-400,134	-400,134	-400,134	-400,134	-400,134
Net Smelt Ret.		39,613,299	39,613,299	39,613,299	39,613,299	39,613,299	39,613,299	39,613,299
-MHT ROYALTY		-1,582,965	-1,582,965	-1,582,965	-1,582,965	-1,582,965	-1,582,965	-1,582,965
-Total Royalties		-1,582,965	-1,582,965	-1,582,965	-1,582,965	-1,582,965	-1,582,965	-1,582,965
Net Revenue		38,030,334	38,030,334	38,030,334	38,030,334	38,030,334	38,030,334	38,030,334
-OPER COSTS		-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142
-Total Oper Costs		-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142
-Dev, IDC	-2,593,619							
-Depreciation	-2,544,851	-4,656,297	-3,998,125	-3,445,864	-2,831,950	-2,354,375	-2,092,235	-1,823,879
-Amortization	-666,931	-222,310	-222,310					
-Write Off								
Before Depltn	-5,805,401	10,527,585	11,185,757	11,960,328	12,574,242	13,051,817	13,313,957	13,582,313
100% Limit		10,527,585	11,185,757	11,960,328	12,574,242	13,051,817	13,313,957	13,582,313
Percent Depln		5,704,550	5,704,550	5,704,550	5,704,550	5,704,550	5,704,550	5,704,550
Prev Exp Expl		2,593,619						
-Depletion		-3,110,931	-5,704,550	-5,704,550	-5,704,550	-5,704,550	-5,704,550	-5,704,550
-Total D,D & A	-5,805,401	-7,989,538	-9,924,985	-9,150,414	-8,536,500	-8,058,925	-7,796,785	-7,528,430
Taxable	-5,805,401	7,416,654	5,481,207	6,255,778	6,869,692	7,347,267	7,609,407	7,877,763
-Tax Due	1,973,836	-2,521,662	-1,863,610	-2,126,965	-2,653,075	-2,837,514	-2,938,753	-3,042,392
Net Income	-3,831,565	4,894,992	3,617,597	4,128,813	4,216,617	4,509,752	4,670,654	4,835,371
+Depreciation	2,544,851	4,656,297	3,998,125	3,445,864	2,831,950	2,354,375	2,092,235	1,823,879
+Depletion		3,110,931	5,704,550	5,704,550	5,704,550	5,704,550	5,704,550	5,704,550
+Amortization	666,931	222,310	222,310					
+Write Off								
-Capital Costs	-38,163,157		-484,067				-484,067	
Cash Flow	-38,782,940	12,884,530	13,058,515	13,279,228	12,753,117	12,568,678	11,983,372	12,363,800

Year	1999	2000	2001	Salvage
AU HI REV	40,013,433	40,013,433	40,013,433	
GROSS REV	40,013,433	40,013,433	40,013,433	
Total Revenue	40,013,433	40,013,433	40,013,433	5,057,689
-SMELTING CHARGES	-400,134	-400,134	-400,134	
-Total Smelting Cost	-400,134	-400,134	-400,134	
Net Smelt Ret.	39,613,299	39,613,299	39,613,299	
-MHT ROYALTY	-1,582,965	-1,582,965	-1,582,965	
-Total Royalties	-1,582,965	-1,582,965	-1,582,965	
Net Revenue	38,030,334	38,030,334	38,030,334	
-OPER COSTS	-22,624,142	-22,624,142	-22,624,142	
-Total Oper Costs	-22,624,142	-22,624,142	-22,624,142	
-Dev, IDC				
-Depreciation	-1,733,117	-1,702,863	-1,672,609	-4,105,886
-Amortization				
-Write Off				-5,057,689
Before Depltn	13,673,075	13,703,329	13,733,584	-4,105,886
100% Limit	13,673,075	13,703,329	13,733,584	
Percent Depln	5,704,550	5,704,550	5,704,550	
Prev Exp Expl				
-Depletion	-5,704,550	-5,704,550	-5,704,550	
-Total D,D & A	-7,437,667	-7,407,413	-7,377,159	-9,163,575
Taxable	7,968,525	7,998,779	8,029,033	-4,105,886
-Tax Due	-3,077,444	-3,089,129	-3,100,813	1,585,693
Net Income	4,891,081	4,909,651	4,928,221	-2,520,193
+Depreciation	1,733,117	1,702,863	1,672,609	4,105,886
+Depletion	5,704,550	5,704,550	5,704,550	
+Amortization				
+Write Off				5,057,689
-Capital Costs				
Cash Flow	12,328,748	12,317,064	12,305,379	6,643,382

List of Assumptions File:LSAHAIN.SEE Date:01/04/80 Time:01:01:21

LOW SULFIDE AU QUARTZ VEIN, HAINES AREA, CUT AND FILL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Inflation: Constant $ ROR	State Tax Rate	Federal Tax Rate	Effect. Tax Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	794,718	MACRS	Mid Year	13.0	0		0	.....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	704,612	MACRS	Mid Year	13.0	0		0	.....
3	04/89	2,258,581	MACRS	Mid Year	13.0	0		0	.....
4	04/89	11,965,508	MACRS	Mid Year	13.0	0		0	.....
5	04/89	4,067,245	WC	Mid Year	13.0	0		0	.....
6	04/89	484,067	MACRS	Mid Year	4.0	0		0	.....
7	04/93	484,067	MACRS	Mid Year	4.0	0		0	.....
8	04/97	484,067	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	7,227,953	MACRS	Mid Year	13.0	0		0	.....
11	04/89	990,444	WC	Mid Year	13.0	0		0	.....
12	04/89	2,375,888	MACRS	Mid Year	13.0	0		0	.....
13	04/89	6,182,590	MACRS	Mid Year	13.0	0		0	.....
14	04/89	3,705,170	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	90,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	1.3830	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	16,090,200.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	3,918,240.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	2,576,520.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	39,182.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
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General Equations

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E1 . AU HI REV S1*S3*S5*S10*S11

Equations continued

E2 . AU LO REV S2*S4*S5*S10*S12

Revenues

==========

E3 . GROSS REV E1+E2

Operating Costs

==========

E5 . OPER COSTS S6+S7+S8+S9

Special Taxes

==========

E7 . MHT NPI S15*(E3-E5)

Royalties

==========

E6 . MHT ROYALTY S14*(E3-E4-S9)

Processing Costs

==========

E4 . SMELTING CHARGES S13*E3

LOW SULFIDE AU QUARTZ VEIN, HAINES AREA, CUT AND FILL STOPING

Cash Flows

NPV =$46,264,358 DCFROR= 33.4% GROR = 19.0% PWROR = 33.4% Pay Back= 2.80 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433
GROSS REV		40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433
Total Revenue		40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433	40,013,433
-SMELTING CHARGES		-400,134	-400,134	-400,134	-400,134	-400,134	-400,134	-400,134
-Total Smelting Cost		-400,134	-400,134	-400,134	-400,134	-400,134	-400,134	-400,134
Net Smelt Ret.		39,613,299	39,613,299	39,613,299	39,613,299	39,613,299	39,613,299	39,613,299
Net Revenue		39,613,299	39,613,299	39,613,299	39,613,299	39,613,299	39,613,299	39,613,299
-OPER COSTS		-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142
-Total Oper Costs		-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142	-22,624,142
-MHT NPI		-521,679	-521,679	-521,679	-521,679	-521,679	-521,679	-521,679
-Total Sev. Ad Valor		-521,679	-521,679	-521,679	-521,679	-521,679	-521,679	-521,679
-Dev, IDC	-2,593,619							
-Depreciation	-2,544,851	-4,656,297	-3,998,125	-3,445,864	-2,831,950	-2,354,375	-2,092,235	-1,823,879
-Amortization	-666,931	-222,310	-222,310					
-Write Off								
Before Depltn	-5,805,401	11,588,871	12,247,043	13,021,614	13,635,528	14,113,103	14,375,243	14,643,599
100% Limit		11,588,871	12,247,043	13,021,614	13,635,528	14,113,103	14,375,243	14,643,599
Percent Depln		5,941,995	5,941,995	5,941,995	5,941,995	5,941,995	5,941,995	5,941,995
Prev Exp Expl		2,593,619						
-Depletion		-3,348,376	-5,941,995	-5,941,995	-5,941,995	-5,941,995	-5,941,995	-5,941,995
-Total D,D & A	-5,805,401	-8,226,983	-10,162,430	-9,387,859	-8,773,945	-8,296,370	-8,034,230	-7,765,874
Taxable	-5,805,401	8,240,495	6,305,049	7,079,619	7,693,533	8,171,108	8,433,248	8,701,604
-Tax Due	1,973,836	-2,801,768	-2,143,717	-2,407,071	-2,971,242	-3,155,682	-3,256,920	-3,360,559
Net Income	-3,831,565	5,438,727	4,161,332	4,672,549	4,722,291	5,015,426	5,176,328	5,341,044
+Depreciation	2,544,851	4,656,297	3,998,125	3,445,864	2,831,950	2,354,375	2,092,235	1,823,879
+Depletion		3,348,376	5,941,995	5,941,995	5,941,995	5,941,995	5,941,995	5,941,995
+Amortization	666,931	222,310	222,310					
+Write Off								
-Capital Costs	-38,163,157		-484,067				-484,067	
Cash Flow	-38,782,940	13,665,710	13,839,695	14,060,408	13,496,236	13,311,796	12,726,491	13,106,919

Year	8	9	10	Salvage
AU HI REV	40,013,433	40,013,433	40,013,433	
GROSS REV	40,013,433	40,013,433	40,013,433	
Total Revenue	40,013,433	40,013,433	40,013,433	5,057,689
-SMELTING CHARGES	-400,134	-400,134	-400,134	
-Total Smelting Cost	-400,134	-400,134	-400,134	
Net Smelt Ret.	39,613,299	39,613,299	39,613,299	
Net Revenue	39,613,299	39,613,299	39,613,299	
-OPER COSTS	-22,624,142	-22,624,142	-22,624,142	
-Total Oper Costs	-22,624,142	-22,624,142	-22,624,142	
-MMT MPI	-521,679	-521,679	-521,679	
-Total Sev. Ad Valor	-521,679	-521,679	-521,679	
-Dev, IDC				
-Depreciation	-1,733,117	-1,702,863	-1,672,609	-4,105,886
-Amortization				
-Write Off				-5,057,689
Before Depltn	14,734,361	14,764,615	14,794,870	-4,105,886
100% Limit	14,734,361	14,764,615	14,794,870	
Percent Depln	5,941,995	5,941,995	5,941,995	
Prev Exp Expl				
-Depletion	-5,941,995	-5,941,995	-5,941,995	
-Total D,D & A	-7,675,112	-7,644,858	-7,614,603	-9,163,575
Taxable	8,792,366	8,822,621	8,852,875	-4,105,886
-Tax Due	-3,395,612	-3,407,296	-3,418,980	1,585,693
Net Income	5,396,754	5,415,324	5,433,894	-2,520,193
+Depreciation	1,733,117	1,702,863	1,672,609	4,105,886
+Depletion	5,941,995	5,941,995	5,941,995	
+Amortization				
+Write Off				5,057,689
-Capital Costs				
Cash Flow	13,071,866	13,060,182	13,048,498	6,643,382

22C, 36C

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25a)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± huebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Salto and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 million.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

Comments, Assumptions, Specifications: LSAO Haines Area High Grade Vein, Open-Stope, Mill-Conc Leach

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Low-Sulfide Au-Qtz. Vein
Total Ore Tonnage: .91 mil mtons
Mining Method: Open Stoping
Beneficiation Method: Crush/Grind/Mill/Leach
Extraction Rate: 95%
Dilution/Waste Rate: 5%
Proposed Mine Life: 10 years
Proposed Daily Production: 250 mtpd
Maximum Ore Depth: 1,000 m
Stripping Ratio: -
Haulage Distance/Road Requirements: No haul, 50 km from Haines 15 km access road
Distance From Power: Portable
Pre-Production Development: Shaft, Mill

Production Development:

Equipment: Jumbos, LHDs
Concentrate Production: Doré

INPUT VARIABLES:

A. (For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: -
Raises & face-m/day & sqm: .6m/day 2m²
Inclines & face-m/day & sqm: .3m/day, 12m²
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: 004/day 4,600m²
Ore rate-mtpd: 250 mtpd
Hoist depth, rate & time-m, mtph, hr/day: 1000m, 100 MTPH, 5 hrs/day
Haul distance-m: 500 m max
Compressed air-cm/min: 20 m³/min
Ventilation-cm/min: 850 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 2m³/hr-.16 hr/day
Drainage, head-cm/day & m: 5,000m³/day 1000 m
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 250 mtpd
Production water needs-cm/day: 500 m³/day
Portable Power needs-kW: 1,750 kw
Wastewater-L/sec: 1.5 L/sec
Concentrate haul-km: - None
Employee housing-men: 40 men
Other: $ 5,009/day Cyanide Leach
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 250 MTPD
Mill operating costs-$/day: $10,884 /day
Working capital time-weeks: 13 weeks
Development time-days:
Shaft sinking & face-m & sqm: 1,000m, 12m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 100m, 2m²
Inclines & face-m & sqm: 200m, 12m²
Ore pockets-mt: 375 mt
Stope preparations-stopes & sqm:
Dewatering; head, dys & rate-m, dys & cm/day:
1,000 m, 100 days, 5,000 m³/day
Rehabilitation (total tonnage)-mt: 250 MTPD
Contractors-1 or 2: 1
Mine operating costs-$/day: $23,768/day
Access roads, length & width-km & m: 15km 6m
Airstrip length & width-m: 1,200 m, 18m
Townsite cost-$:
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 10,000 m³
Climate/Weather factors: Severe
Other: Cyanide Leach System - $4,931,533
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 23,768
Mining Costs-$/yr: 8,556,480
Mining Costs-$/mt: 95.07
Milling Costs-$/day: 10,884
Milling Costs-$/yr: 3,918,240
Milling Costs-$/mt: 43.54
Infrastructure Costs-$/day: 7,157
Infrastructure Costs-$/yr: 2,576,520
Infrastructure Costs-$/mt: 28.63
Total Operating Costs-$/day: 41,809
Total Operating Costs-$/yr: 15,051,240
Total Operating Costs-$/mt: 167.24
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 2162,888
Heavy Equipment (fixed life)-$: 573,107 *
Mine Rehabilitation-$: 704,612 *
Engr. & Const. Mgmt.-$: 2536,443 *
Other:
Remaining Mine Capital-$: 15,275,968
Total Mine Capital Cost-$: 21253,018

MILL CAPITAL COSTS:

Mill Working Capital-$: 990,444
Light Vehicles (short life)-$: 484,067 *
Other:
Remaining Mill Capital-$: 7,227,953 ~
Total Mill Capital Cost-$: 8,702,464

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 2,375,888 *
Other:
Remaining Infrastructure Capital-$: 6,182,590 ~
Total Infrastructure Capital-$: 8,558,478

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 3,153,332 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 28,686,511 *
Sum of Total Mine, Mill & Infr. Costs-$: 38,513,960
Exploration Cost-$: 3,851,400 *

Overall Capital Cost-$: 42,365,356
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

Low-Sulfide Qtz-Au Vein (High grade)
Gross
Cox & Singer - 90%
43 gm/mt Au = 1.3830 opmt

List of Assumptions File:LSAOHAIN.SEE Date:07/24/93 Time:21:34:44

LOW SULFIDE AU QUARTZ VEIN, HAINES AREA, OPEN STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	573,107	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	704,612	MACRS	Mid Year	13.0	0			0 .....
3	04/89	2,536,443	MACRS	Mid Year	13.0	0			0 .....
4	04/89	15,275,968	MACRS	Mid Year	13.0	0			0 .....
5	04/89	2,162,888	WC	Mid Year	13.0	0			0 .....
6	04/89	484,067	MACRS	Mid Year	4.0	0			0 .....
7	04/93	484,067	MACRS	Mid Year	4.0	0			0 .....
8	04/97	484,067	MACRS	Mid Year	4.0	0			0 .....
9	.....	0	MACRS	Mid Year	7.0	0			0 .....
10	04/89	7,227,953	MACRS	Mid Year	13.0	0			0 .....
11	04/89	990,444	WC	Mid Year	13.0	0			0 .....
12	04/89	2,375,888	MACRS	Mid Year	13.0	0			0 .....
13	04/89	6,182,590	MACRS	Mid Year	13.0	0			0 .....
14	04/89	3,851,400	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	90,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	1.3830	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	8,556,480.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	3,918,240.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	2,576,520.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	39,182.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MET ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . AU HI REV S1*S3*S5*S10*S11
Equations continued

E2 . AU LO REV S2*S4*S5*S10*S12

Revenues
==========
E3 . GROSS REV E1+E2

Operating Costs
==========
E5 . OPER COSTS S6+S7+S8+S9

Royalties
==========
E6 . MHT ROYALTY S14*(E3-E4-S9)

Processing Costs
==========
E4 . SMELTING CHARGES S13*E3

LOW SULFIDE AU QUARTZ VEIN, HAINES AREA, OPEN STOPING

Cash Flows

NPV =$61,327,381 DCFROR= 39.7% GROR = 20.7% PWROR = 39.7% Pay Back= 2.40 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
GROSS REV		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
Total Revenue		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
-SMELTING CHARGES		-380,128	-380,128	-380,128	-380,128	-380,128	-380,128	-380,128
-Total Smelting Cost		-380,128	-380,128	-380,128	-380,128	-380,128	-380,128	-380,128
Net Smelt Ret.		37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634
-MHT ROYALTY		-1,503,738	-1,503,738	-1,503,738	-1,503,738	-1,503,738	-1,503,738	-1,503,738
-Total Royalties		-1,503,738	-1,503,738	-1,503,738	-1,503,738	-1,503,738	-1,503,738	-1,503,738
Net Revenue		36,128,896	36,128,896	36,128,896	36,128,896	36,128,896	36,128,896	36,128,896
-OPER COSTS		-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422
-Total Oper Costs		-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422
-Dev, IDC	-2,695,980							
-Depreciation	-2,803,829	-5,134,410	-4,402,681	-3,788,182	-3,121,604	-2,599,466	-2,299,620	-1,999,359
-Amortization	-693,252	-231,084	-231,084					
-Write Off								
Before Depltn	-6,193,061	15,672,980	16,404,708	17,250,292	17,916,870	18,439,007	18,738,854	19,039,115
100% Limit		15,672,980	16,404,708	17,250,292	17,916,870	18,439,007	18,738,854	19,039,115
Percent Depln		5,419,334	5,419,334	5,419,334	5,419,334	5,419,334	5,419,334	5,419,334
Prev Exp Expl		2,695,980						
-Depletion		-2,723,354	-5,419,334	-5,419,334	-5,419,334	-5,419,334	-5,419,334	-5,419,334
-Total D,D & A	-6,193,061	-8,088,848	-10,053,100	-9,207,516	-8,540,938	-8,018,801	-7,718,954	-7,418,693
Taxable	-6,193,061	12,949,626	10,985,374	11,830,958	12,497,536	13,019,673	13,319,519	13,619,780
-Tax Due	2,105,641	-4,402,873	-3,735,027	-4,022,526	-4,826,548	-5,028,198	-5,143,998	-5,259,959
Net Income	-4,087,420	8,546,753	7,250,347	7,808,432	7,670,988	7,991,475	8,175,521	8,359,821
+Depreciation	2,803,829	5,134,410	4,402,681	3,788,182	3,121,604	2,599,466	2,299,620	1,999,359
+Depletion		2,723,354	5,419,334	5,419,334	5,419,334	5,419,334	5,419,334	5,419,334
+Amortization	693,252	231,084	231,084					
+Write Off								
-Capital Costs	-39,669,380		-484,067				-484,067	
Cash Flow	-40,259,719	16,635,601	16,819,380	17,015,948	16,211,925	16,010,276	15,410,408	15,778,515

Year	1999	2000	2001	Salvage
AU HI REV	38,012,761	38,012,761	38,012,761	
GROSS REV	38,012,761	38,012,761	38,012,761	
Total Revenue	38,012,761	38,012,761	38,012,761	3,153,332
-SMELTING CHARGES	-380,128	-380,128	-380,128	
-Total Smelting Cost	-380,128	-380,128	-380,128	
Net Smelt Ret.	37,632,634	37,632,634	37,632,634	
-MHT ROYALTY	-1,503,738	-1,503,738	-1,503,738	
-Total Royalties	-1,503,738	-1,503,738	-1,503,738	
Net Revenue	36,128,896	36,128,896	36,128,896	
-OPER COSTS	-15,090,422	-15,090,422	-15,090,422	
-Total Oper Costs	-15,090,422	-15,090,422	-15,090,422	
-Dev, IDC				
-Depreciation	-1,908,596	-1,878,342	-1,848,088	-4,544,585
-Amortization				
-Write Off				-3,153,332
Before Depltn	19,129,877	19,160,132	19,190,386	-4,544,585
100% Limit	19,129,877	19,160,132	19,190,386	
Percent Depln	5,419,334	5,419,334	5,419,334	
Prev Exp Expl				
-Depletion	-5,419,334	-5,419,334	-5,419,334	
-Total D,D & A	-7,327,931	-7,297,677	-7,267,422	-7,697,917
Taxable	13,710,543	13,740,797	13,771,051	-4,544,585
-Tax Due	-5,295,012	-5,306,696	-5,318,380	1,755,119
Net Income	8,415,531	8,434,101	8,452,671	-2,789,466
+Depreciation	1,908,596	1,878,342	1,848,088	4,544,585
+Depletion	5,419,334	5,419,334	5,419,334	
+Amortization				
+Write Off				3,153,332
-Capital Costs				
Cash Flow	15,743,462	15,731,778	15,720,094	4,908,451

List of Assumptions File:LSAOHAIN.SEE Date:01/04/80 Time:02:07:24

LOW SULFIDE AU QUARTZ VEIN, HAINES AREA, OPEN STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	573,107	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	704,612	MACRS	Mid Year	13.0	0		0	.....
3	04/89	2,536,443	MACRS	Mid Year	13.0	0		0	.....
4	04/89	15,275,968	MACRS	Mid Year	13.0	0		0	.....
5	04/89	2,162,888	WC	Mid Year	13.0	0		0	.....
6	04/89	484,067	MACRS	Mid Year	4.0	0		0	.....
7	04/93	484,067	MACRS	Mid Year	4.0	0		0	.....
8	04/97	484,067	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	7,227,953	MACRS	Mid Year	13.0	0		0	.....
11	04/89	990,444	WC	Mid Year	13.0	0		0	.....
12	04/89	2,375,888	MACRS	Mid Year	13.0	0		0	.....
13	04/89	6,182,590	MACRS	Mid Year	13.0	0		0	.....
14	04/89	3,851,400	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
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#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	90,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	1.3830	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	8,556,480.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	3,918,240.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	2,576,520.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	39,182.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
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General Equations

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
E7 . MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

LOW SULFIDE AU QUARTZ VEIN, HAINES AREA, OPEN STOPING

Cash Flows

NPV =$65,008,318 DCFROR= 41.3% GROR = 21.1% PWROR = 41.3% Pay Back= 2.32 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
GROSS REV		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
Total Revenue		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
-SMELTING CHARGES		-380,128	-380,128	-380,128	-380,128	-380,128	-380,128	-380,128
-Total Smelting Cost		-380,128	-380,128	-380,128	-380,128	-380,128	-380,128	-380,128
Net Smelt Ret.		37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634
Net Revenue		37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634
-OPER COSTS		-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422
-Total Oper Costs		-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422	-15,090,422
-MHT NPI		-687,670	-687,670	-687,670	-687,670	-687,670	-687,670	-687,670
-Total Sev. Ad Valor		-687,670	-687,670	-687,670	-687,670	-687,670	-687,670	-687,670
-Dev, IDC	-2,695,980							
-Depreciation	-2,803,829	-5,134,410	-4,402,681	-3,788,182	-3,121,604	-2,599,466	-2,299,620	-1,999,359
-Amortization	-693,252	-231,084	-231,084					
-Write Off								
Before Depltn	-6,193,061	16,489,048	17,220,776	18,066,360	18,732,938	19,255,075	19,554,922	19,855,183
100% Limit		16,489,048	17,220,776	18,066,360	18,732,938	19,255,075	19,554,922	19,855,183
Percent Depln		5,644,895	5,644,895	5,644,895	5,644,895	5,644,895	5,644,895	5,644,895
Prev Exp Expl		2,695,980						
-Depletion		-2,948,915	-5,644,895	-5,644,895	-5,644,895	-5,644,895	-5,644,895	-5,644,895
-Total D,D & A	-6,193,061	-8,314,409	-10,278,661	-9,433,077	-8,766,499	-8,244,361	-7,944,515	-7,644,254
Taxable	-6,193,061	13,540,133	11,575,881	12,421,465	13,088,043	13,610,180	13,910,027	14,210,288
-Tax Due	2,105,641	-4,603,645	-3,935,800	-4,223,298	-5,054,602	-5,256,252	-5,372,052	-5,488,013
Net Income	-4,087,420	8,936,488	7,640,082	8,198,167	8,033,441	8,353,929	8,537,974	8,722,275
+Depreciation	2,803,829	5,134,410	4,402,681	3,788,182	3,121,604	2,599,466	2,299,620	1,999,359
+Depletion		2,948,915	5,644,895	5,644,895	5,644,895	5,644,895	5,644,895	5,644,895
+Amortization	693,252	231,084	231,084					
+Write Off								
-Capital Costs	-39,669,380		-484,067				-484,067	
Cash Flow	-40,259,719	17,250,896	17,434,675	17,631,244	16,799,939	16,598,290	15,998,422	16,366,529

Year	8	9	10	Salvage
AU HI REV	38,012,761	38,012,761	38,012,761	
GROSS REV	38,012,761	38,012,761	38,012,761	
Total Revenue	38,012,761	38,012,761	38,012,761	3,153,332
-SMELTING CHARGES	-380,128	-380,128	-380,128	
-Total Smelting Cost	-380,128	-380,128	-380,128	
Net Smelt Ret.	37,632,634	37,632,634	37,632,634	
Net Revenue	37,632,634	37,632,634	37,632,634	
-OPER COSTS	-15,090,422	-15,090,422	-15,090,422	
-Total Oper Costs	-15,090,422	-15,090,422	-15,090,422	
-MHT NPI	-687,670	-687,670	-687,670	
-Total Sev. Ad Valor	-687,670	-687,670	-687,670	
-Dev, IDC				
-Depreciation	-1,908,596	-1,878,342	-1,848,088	-4,544,585
-Amortization				
-Write Off				-3,153,332
Before Depltn	19,945,945	19,976,199	20,006,454	-4,544,585
100% Limit	19,945,945	19,976,199	20,006,454	
Percent Depln	5,644,895	5,644,895	5,644,895	
Prev Exp Expl				
-Depletion	-5,644,895	-5,644,895	-5,644,895	
-Total D,D & A	-7,553,492	-7,523,237	-7,492,983	-7,697,917
Taxable	14,301,050	14,331,304	14,361,559	-4,544,585
-Tax Due	-5,523,066	-5,534,750	-5,546,434	1,755,119
Net Income	8,777,985	8,796,555	8,815,125	-2,789,466
+Depreciation	1,908,596	1,878,342	1,848,088	4,544,585
+Depletion	5,644,895	5,644,895	5,644,895	
+Amortization				
+Write Off				3,153,332
-Capital Costs				
Cash Flow	16,331,476	16,319,792	16,308,108	4,908,451

22c, 36c

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25c)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± huebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Salto and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 million.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

LSAO

Comments, Assumptions, Specifications: CHANDALAR
Chandalar lodes - Low Sulfide Au-Qtz Vein based on LSAO model

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Low-sulfide Au-Qtz Vein
Total Ore Tonnage: .91 mil mtons
Mining Method: Open Stoping
Beneficiation Method: Crush Grind Mill Leach
Extraction Rate: 95%
Dilution/Waste Rate: 5%
Proposed Mine Life: 10 yrs
Proposed Daily Production: 250 mtpd
Maximum Ore Depth: 1000 m
Stripping Ratio: -
Haulage Distance/Road Requirements: No haul
150 km service road (trail upgrade)
Distance From Power: portable
Pre-Production Development: Shafts etc

Production Development:

Equipment: Jumbo, LHDs
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: -
Raises & face-m/day & sqm: .6m/day, 3 m²
Inclines & face-m/day & sqm: .3m/day, 12 m²
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .004/day / 4,600 m²
Ore rate-mtpd: 250 mtpd
Hoist depth, rate & time-m, mtph, hr/day:
1000 m, 100 M-PH 5 hrs/day
Haul distance-m: 500 m max
Compressed air-cm/min: 20 m³/min
Ventilation-cm/min: 850 m³/MIN
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 2 m³/hr 16 hrs/day
Drainage, head-cm/day & m: 5,052 m³/day, 1020 m
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 250 mtpd
Production water needs-cm/day: 500 m³/day
Portable Power needs-kW: 1,750 kw
Wastewater-L/sec: 1.5 L/sec
Concentrate haul-km: None
Employee housing-men: 80 men
Other: $5,000 /day M.C. leach
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 250 MTPD
Mill operating costs-$/day: $10,084 /day
Working capital time-weeks: 12 weeks
Development time-days:
Shaft sinking & face-m & sqm: 1000m, 12 m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 100m 2m²
Inclines & face-m & sqm: 200m 12 m²
Ore pockets-mt: 375 MT
Stope preparations-stopes & sqm: 2, 4 600 m²
Dewatering; head, dys & rate-m, dys & cm/day: 1,000 m, 100 days, 5,000 m³/day
Rehabilitation (total tonnage)-mt: 250 MTPD
Contractors-1 or 2: 1
Mine operating costs-$/day: $23,765
Access roads, length & width-km & m: 150km, 6m
Airstrip length & width-m: 1,200m, 10m
Townsite cost-$:
Powerline length & power-km & mW: portable
Dike & Dam needs-cm/fill: 10 000 m3
Climate/Weather factors: Severe
Other: M.C. Leach System $4,971,533
Other:

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 23,768
Mining Costs-$/yr: 8,556,480
Mining Costs-$/mt: 95.07
Milling Costs-$/day: 10,994
Milling Costs-$/yr: 3,918,240
Milling Costs-$/mt: 43.54
Infrastructure Costs-$/day: 8,789
Infrastructure Costs-$/yr: 3,164,040
Infrastructure Costs-$/mt: 35.16
Total Operating Costs-$/day: 43,441
Total Operating Costs-$/yr: 15,639,760
Total Operating Costs-$/mt: 173.76
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 2162,888
Heavy Equipment (fixed life)-$: 573,107 *
Mine Rehabilitation-$: 704,612 *
Engr. & Const. Mgmt.-$: 2536,443 *
Other:
Remaining Mine Capital-$: 15,275,968
Total Mine Capital Cost-$: 21,253,018

MILL CAPITAL COSTS:

Mill Working Capital-$: 990,444
Light Vehicles (short life)-$: 484 067 *
Other:
Remaining Mill Capital-$: 7,227,953 ~
Total Mill Capital Cost-$: 8,702,464

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 2,375,888 *
Other:
Remaining Infrastructure Capital-$: 12,413,699 ~
Total Infrastructure Capital-$: 14789.587

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 3153,332 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 34,917,620 *
Sum of Total Mine, Mill & Infr. Costs-$: 44,745,069
Exploration Cost-$: 4,474,500 *

Overall Capital Cost-$: 49,219,576
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:LSAOCHAN.SEE Date:01/04/80 Time:00:15:57

LOW SULFIDE AU QUARTZ VEIN, CHANDALAR AREA, OPEN STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	573,107	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	704,612	MACRS	Mid Year	13.0	0		0	.....
3	04/89	2,536,443	MACRS	Mid Year	13.0	0		0	.....
4	04/89	15,275,968	MACRS	Mid Year	13.0	0		0	.....
5	04/89	2,162,888	WC	Mid Year	13.0	0		0	.....
6	04/89	484,067	MACRS	Mid Year	4.0	0		0	.....
7	04/93	484,067	MACRS	Mid Year	4.0	0		0	.....
8	04/97	484,067	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	7,227,953	MACRS	Mid Year	13.0	0		0	.....
11	04/89	990,444	WC	Mid Year	13.0	0		0	.....
12	04/89	2,375,888	MACRS	Mid Year	13.0	0		0	.....
13	04/89	12,413,699	MACRS	Mid Year	13.0	0		0	.....
14	04/89	4,474,500	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

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* Series Data *
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#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	90,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	1.3830	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	8,556,480.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	3,918,240.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	3,164,040.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	75,000.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

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* Project Equations *
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General Equations

E1 . AU HI REV	S1*S3*S5*S10*S11
Equations continued	
E2 . AU LO REV	S2*S4*S5*S10*S12
Revenues	
E3 . GROSS REV	E1+E2
Operating Costs	
E5 . OPER COSTS	S6+S7+S8+S9
Special Taxes	
E7 . MHT NPI	S15*(E3-E5)
Royalties	
E6 . MHT ROYALTY	S14*(E3-E4-S9)
Processing Costs	
E4 . SMELTING CHARGES	S13*E3

LOW SULFIDE AU QUARTZ VEIN, CHANDALAR AREA, OPEN STOPING

Cash Flows

NPV =$53,618,246 DCFROR= 32.9% GROR = 18.7% PWROR = 32.9% Pay Back= 2.81 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
GROSS REV		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
Total Revenue		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
-SMELTING CHARGES		-380,128	-380,128	-380,128	-380,128	-380,128	-380,128	-380,128
-Total Smelting Cost		-380,128	-380,128	-380,128	-380,128	-380,128	-380,128	-380,128
Net Smelt Ret.		37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634
-MHT ROYALTY		-1,502,305	-1,502,305	-1,502,305	-1,502,305	-1,502,305	-1,502,305	-1,502,305
-Total Royalties		-1,502,305	-1,502,305	-1,502,305	-1,502,305	-1,502,305	-1,502,305	-1,502,305
Net Revenue		36,130,329	36,130,329	36,130,329	36,130,329	36,130,329	36,130,329	36,130,329
-OPER COSTS		-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760
-Total Oper Costs		-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760
-Dev, IDC	-3,132,150							
-Depreciation	-3,283,145	-6,019,301	-5,151,436	-4,421,743	-3,657,694	-3,053,081	-2,683,448	-2,324,136
-Amortization	-805,410	-268,470	-268,470					
-Write Off								
Before Depltn	-7,220,705	14,128,798	14,996,663	15,994,826	16,758,875	17,363,487	17,733,121	18,092,432
100% Limit		14,128,798	14,996,663	15,994,826	16,758,875	17,363,487	17,733,121	18,092,432
Percent Depln		5,419,549	5,419,549	5,419,549	5,419,549	5,419,549	5,419,549	5,419,549
Prev Exp Expl		3,132,150						
-Depletion		-2,287,399	-5,419,549	-5,419,549	-5,419,549	-5,419,549	-5,419,549	-5,419,549
-Total D,D & A	-7,220,705	-8,575,170	-10,839,455	-9,841,292	-9,077,243	-8,472,630	-8,102,997	-7,743,686
Taxable	-7,220,705	11,841,398	9,577,114	10,575,277	11,339,325	11,943,938	12,313,571	12,672,883
-Tax Due	2,455,040	-4,026,075	-3,256,219	-3,595,594	-4,379,248	-4,612,749	-4,755,501	-4,894,267
Net Income	-4,765,665	7,815,323	6,320,895	6,979,683	6,960,078	7,331,189	7,558,070	7,778,615
+Depreciation	3,283,145	6,019,301	5,151,436	4,421,743	3,657,694	3,053,081	2,683,448	2,324,136
+Depletion		2,287,399	5,419,549	5,419,549	5,419,549	5,419,549	5,419,549	5,419,549
+Amortization	805,410	268,470	268,470					
+Write Off								
-Capital Costs	-46,087,419		-484,067				-484,067	
Cash Flow	-46,764,529	16,390,493	16,676,283	16,820,974	16,037,321	15,803,820	15,177,000	15,522,301

Year	8	9	10	Salvage
AU HI REV	38,012,761	38,012,761	38,012,761	
GROSS REV	38,012,761	38,012,761	38,012,761	
Total Revenue	38,012,761	38,012,761	38,012,761	3,153,332
-SMELTING CHARGES	-380,128	-380,128	-380,128	
-Total Smelting Cost	-380,128	-380,128	-380,128	
Net Smelt Ret.	37,632,634	37,632,634	37,632,634	
-MHT ROYALTY	-1,502,305	-1,502,305	-1,502,305	
-Total Royalties	-1,502,305	-1,502,305	-1,502,305	
Net Revenue	36,130,329	36,130,329	36,130,329	
-OPER COSTS	-15,713,760	-15,713,760	-15,713,760	
-Total Oper Costs	-15,713,760	-15,713,760	-15,713,760	
-Dev, IDC				
-Depreciation	-2,233,374	-2,203,120	-2,172,866	-5,356,528
-Amortization				
-Write Off				-3,153,332
Before Depltn	18,183,195	18,213,449	18,243,703	-5,356,528
100% Limit	18,183,195	18,213,449	18,243,703	
Percent Depln	5,419,549	5,419,549	5,419,549	
Prev Exp Expl				
-Depletion	-5,419,549	-5,419,549	-5,419,549	
-Total D,D & A	-7,652,923	-7,622,669	-7,592,415	-8,509,860
Taxable	12,763,645	12,793,900	12,824,154	-5,356,528
-Tax Due	-4,929,320	-4,941,004	-4,952,688	2,068,691
Net Income	7,834,326	7,852,896	7,871,466	-3,287,837
+Depreciation	2,233,374	2,203,120	2,172,866	5,356,528
+Depletion	5,419,549	5,419,549	5,419,549	
+Amortization				
+Write Off				3,153,332
-Capital Costs				
Cash Flow	15,487,249	15,475,565	15,463,880	5,222,023

List of Assumptions File:LSAOCHAN.SEE Date:01/15/94 Time:17:23:42

LOW SULFIDE AU QUARTZ VEIN, CHANDALAR AREA, OPEN STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	573,107	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	704,612	MACRS	Mid Year	13.0	0		0	.....
3	04/89	2,536,443	MACRS	Mid Year	13.0	0		0	.....
4	04/89	15,275,968	MACRS	Mid Year	13.0	0		0	.....
5	04/89	2,162,888	WC	Mid Year	13.0	0		0	.....
6	04/89	484,067	MACRS	Mid Year	4.0	0		0	.....
7	04/93	484,067	MACRS	Mid Year	4.0	0		0	.....
8	04/97	484,067	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	7,227,953	MACRS	Mid Year	13.0	0		0	.....
11	04/89	990,444	WC	Mid Year	13.0	0		0	.....
12	04/89	2,375,888	MACRS	Mid Year	13.0	0		0	.....
13	04/89	12,413,699	MACRS	Mid Year	13.0	0		0	.....
14	04/89	4,474,500	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	90,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	1.3830	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	8,556,480.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	3,918,240.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	3,164,040.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	75,000.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations

```
====================
E1 . AU HI REV          S1*S3*S5*S10*S11
Equations continued

E2 . AU LO REV          S2*S4*S5*S10*S12

Revenues
====================
E3 . GROSS REV          E1+E2

Operating Costs
====================
E5 . OPER COSTS         S6+S7+S8+S9

Special Taxes
====================
E7 . MHT NPI            S15*(E3-E5)

Royalties
====================
E6 . MHT ROYALTY        S14*(E3-E4-S9)

Processing Costs
====================
E4 . SMELTING CHARGES   S13*E3
```

LOW SULFIDE AU QUARTZ VEIN, CHANDALAR AREA, OPEN STOPING

Cash Flows

NPV =$57,365,805 DCFROR= 34.4% GROR = 19.2% PWROR = 34.4% Pay Back= 2.71 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
GROSS REV		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
Total Revenue		38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761	38,012,761
-SMELTING CHARGES		-380,128	-380,128	-380,128	-380,128	-380,128	-380,128	-380,128
-Total Smelting Cost		-380,128	-380,128	-380,128	-380,128	-380,128	-380,128	-380,128
Net Smelt Ret.		37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634
Net Revenue		37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634	37,632,634
-OPER COSTS		-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760
-Total Oper Costs		-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760	-15,713,760
-MHT NPI		-668,970	-668,970	-668,970	-668,970	-668,970	-668,970	-668,970
-Total Sev. Ad Valor		-668,970	-668,970	-668,970	-668,970	-668,970	-668,970	-668,970
-Dev, IDC	-3,132,150							
-Depreciation	-3,283,145	-6,019,301	-5,151,436	-4,421,743	-3,657,694	-3,053,081	-2,683,448	-2,324,136
-Amortization	-805,410	-268,470	-268,470					
-Write Off								
Before Depltn	-7,220,705	14,962,133	15,829,998	16,828,161	17,592,210	18,196,823	18,566,456	18,925,767
100% Limit		14,962,133	15,829,998	16,828,161	17,592,210	18,196,823	18,566,456	18,925,767
Percent Depln		5,644,895	5,644,895	5,644,895	5,644,895	5,644,895	5,644,895	5,644,895
Prev Exp Expl		3,132,150						
-Depletion		-2,512,745	-5,644,895	-5,644,895	-5,644,895	-5,644,895	-5,644,895	-5,644,895
-Total D,D & A	-7,220,705	-8,800,516	-11,064,801	-10,066,638	-9,302,589	-8,697,976	-8,328,343	-7,969,032
Taxable	-7,220,705	12,449,388	10,185,103	11,183,266	11,947,315	12,551,928	12,921,561	13,280,872
-Tax Due	2,455,040	-4,232,792	-3,462,935	-3,802,310	-4,614,053	-4,847,554	-4,990,307	-5,129,073
Net Income	-4,765,665	8,216,596	6,722,168	7,380,956	7,333,262	7,704,373	7,931,254	8,151,799
+Depreciation	3,283,145	6,019,301	5,151,436	4,421,743	3,657,694	3,053,081	2,683,448	2,324,136
+Depletion		2,512,745	5,644,895	5,644,895	5,644,895	5,644,895	5,644,895	5,644,895
+Amortization	805,410	268,470	268,470					
+Write Off								
-Capital Costs	-46,087,419		-484,067				-484,067	
Cash Flow	-46,764,529	17,017,112	17,302,902	17,447,593	16,635,851	16,402,349	15,775,530	16,120,831

Year	8	9	10	Salvage
AU HI REV	38,012,761	38,012,761	38,012,761	
GROSS REV	38,012,761	38,012,761	38,012,761	
Total Revenue	38,012,761	38,012,761	38,012,761	3,153,332
-SMELTING CHARGES	-380,128	-380,128	-380,128	
-Total Smelting Cost	-380,128	-380,128	-380,128	
Net Smelt Ret.	37,632,634	37,632,634	37,632,634	
Net Revenue	37,632,634	37,632,634	37,632,634	
-OPER COSTS	-15,713,760	-15,713,760	-15,713,760	
-Total Oper Costs	-15,713,760	-15,713,760	-15,713,760	
-MHT NPI	-668,970	-668,970	-668,970	
-Total Sev. Ad Valor	-668,970	-668,970	-668,970	
-Dev, IDC				
-Depreciation	-2,233,374	-2,203,120	-2,172,866	-5,356,528
-Amortization				
-Write Off				-3,153,332
Before Depltn	19,016,530	19,046,784	19,077,038	-5,356,528
100% Limit	19,016,530	19,046,784	19,077,038	
Percent Depln	5,644,895	5,644,895	5,644,895	
Prev Exp Expl				
-Depletion	-5,644,895	-5,644,895	-5,644,895	
-Total D,D & A	-7,878,269	-7,848,015	-7,817,761	-8,509,860
Taxable	13,371,635	13,401,889	13,432,143	-5,356,528
-Tax Due	-5,164,125	-5,175,810	-5,187,494	2,068,691
Net Income	8,207,509	8,226,079	8,244,650	-3,287,837
+Depreciation	2,233,374	2,203,120	2,172,866	5,356,528
+Depletion	5,644,895	5,644,895	5,644,895	
+Amortization				
+Write Off				3,153,332
-Capital Costs				
Cash Flow	16,085,778	16,074,094	16,062,410	5,222,023

22c, 36c

5. DESCRIPTIVE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au (25c)

By Byron R. Berger

APPROXIMATE SYNONYMS Acid-sulfate, or enargite gold (Ashley, 1982).

DESCRIPTION Gold, pyrite, and enargite in vuggy veins and breccias in zones of high-alumina alteration related to felsic volcanism.

GENERAL REFERENCES Ashley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Volcanic: dacite, quartz latite, rhyodacite, rhyolite. Hypabyssal intrusions or domes.

Textures Porphyritic.

Age Range Generally Tertiary, but can be any age.

Depositional Environment Within the volcanic edifice, ring fracture zones of calderas, or areas of igneous activity with sedimentary evaporites in basement.

Tectonic Setting(s) Through-going fracture systems: keystone graben structures, ring fracture zones, normal faults, fractures related to doming, joint sets.

Associated Deposit Types Porphyry copper, polymetallic replacement, volcanic hosted Cu-As-Sb. Pyrophyllite, hydrothermal clay, and alunite deposits.

DEPOSIT DESCRIPTION

Mineralogy Native gold + enargite + pyrite + silver-bearing sulfosalts ± chalcopyrite ± bornite ± precious-metal tellurides ± galena ± sphalerite ± huebnerite. May have hypogene oxidation phase with chalcocite + covellite ± luzonite with late-stage native sulfur.

Texture/Structure Veins, breccia pipes, pods, dikes; replacement veins often porous, and vuggy, with comb structure, and crustified banding.

Alteration Highest temperature assemblage: quartz + alunite + pyrophyllite may be early stage with pervasive alteration of host rock and veins of these minerals; this zone may contain corundum, diaspore, andalusite, or zunyite. Zoned around quartz-alunite is quartz + alunite + kaolinite + montmorillonite; pervasive propylitic alteration (chlorite + calcite) depends on extent of early alunitization. Ammonium-bearing clays may be present.

Ore Controls Through-going fractures, centers of intrusive activity. Upper and peripheral parts of porphyry copper systems.

Weathering Abundant yellow limonite, jarosite, goethite, white argillization with kaolinite, fine-grained white alunite veins, hematite.

Geochemical Signature Higher in system: Au + As + Cu; increasing base metals at depth. Also Te and (at El Indio) W.

EXAMPLES

Goldfield, USNV	(Ransome, 1909)
Kasuga mine, JAPN	(Taneda and Mukalyama, 1970)
El Indio, CILE	(Walthier and others, 1982)
Summitville, USCO	(Perkins and Nieman, 1983)
Iwato, JAPN	(Salto and Sato, 1978)

GRADE AND TONNAGE MODEL OF EPITHERMAL QUARTZ-ALUNITE Au

After Dan L. Mosier and W. David Menzie

COMMENTS Upper ten percent of the deposits contain an minimum of 11 million tonnes at 18 grams/tonne Au, 130 grams/tonne Ag and 5% Cu. Total contained metal: 200 million grams Au, 1.4 billion grams Ag, 0.55 million tonnes Cu. Gross metal value in 1987 would have been $4.29 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.1 million tonnes per year or 3,000 tonnes/day.

Gross Value of Annual Production $429 million.

Net Present Value of 4% NSR $17.2 million times 6.144 is $105.7 million.

Comments, Assumptions, Specifications: KEN
Quartz - Au Stockwork Vein, '93 AMI data

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Stockwork Qtz-Au - Kensington
Total Ore Tonnage: 14.0 mil tons
Mining Method: Longhole - Open Stope
Beneficiation Method: Crush, Grind, C.I.P Leach
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 years
Proposed Daily Production: 4,000 MTPD
Maximum Ore Depth: 850 m
Stripping Ratio:
Haulage Distance/Road Requirements:
5km new road/upgrade
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: L.H.D.'s, Trucks, Raise drills/Jumbos
Concentrate Production: D'o-e

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: —
Drifting & face-m/day & sqm: —
Raises & face-m/day & sqm: —
Inclines & face-m/day & sqm: 1.6m/day, 15m²
Ore pockets/day-mtpd: —
Stope preparation/day-stopes & sqm: .007/day, 15,000m²
Ore rate-mtpd: 4,000 MTPD
Hoist depth, rate & time-m, mtph, hr/day: —

Haul distance-m: 2,000 m
Compressed air-cm/min: 140 m³/min
Ventilation-cm/min: 13,600 m³/min
Conveyor length & slope-km & %: —
Water needs-cm/hr & hr/day: 13 m3/hr
Drainage, head-cm/day & m: None - Adit
Concentrate (dry) rate-mtpd: D'o-e
Tails (dry) rate-mtpd: 4,000 MTPD
Production water needs-cm/day: 3,000 m³/day M.U., 12,000 m³/day recycle
Portable Power needs-kW: 4,500 kw
Wastewater-L/sec: 50 L/sec
Concentrate haul-km: D'o-e
Employee housing-men: 250
Other: $17,158.50/day - C.I.P.
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 4,000 MTPD
Mill operating costs-$/day: $40,395/day
Working capital time-weeks: 13 weeks
Development time-days: _____
Shaft sinking & face-m & sqm: _____
Drifting & face-m & sqm: 3,500 m 15 m²
Raises & face-m & sqm: 760 m, 4 m²
Inclines & face-m & sqm: 600m, 15 m²
Ore pockets-mt: 6,000 MT
Stope preparations-stopes & sqm: 2, 15,000
Dewatering; head, dys & rate-m, dys & cm/day:
None
Rehabilitation (total tonnage)-mt: 4000 MTPD
Contractors-1 or 2: 1
Mine operating costs-$/day: $54,396/day
Access roads, length & width-km & m: 5km 6m
Airstrip length & width-m: 1200m, 19m
Townsite cost-$: 6,982,875
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 500,000 m³
Climate/Weather factors: Severe
Other: $26,563,959 - C.I.P. System
Other: _____

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 54,396
Mining Costs-$/yr: 19,582,560
Mining Costs-$/mt: 13.60
Milling Costs-$/day: 40,395
Milling Costs-$/yr: 14,542,200
Milling Costs-$/mt: 10.10
Infrastructure Costs-$/day: 32,806
Infrastructure Costs-$/yr: 11,810,160
Infrastructure Costs-$/mt: 8.20
Total Operating Costs-$/day: 127,597
Total Operating Costs-$/yr: 45,934,920
Total Operating Costs-$/mt: 31.90
Other: _____
Other: _____

Calculated Op. Costs:
=$31.90/mt
⇒ $234.3/oz
@ .148 OPMT & .92 recovery

Echo Bay Estimate:
$29.00/MT
($213/oz @ .148 OPMT & .92 recovery)

Δ = 10% over E.B. Est.

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 4,950,036
Heavy Equipment (fixed life)-$: 13,037,405 *
Mine Rehabilitation-$: 1787901 *
Engr. & Const. Mgmt.-$: 4,846,677 *
Other: _____
Remaining Mine Capital-$: 8,904,354
Total Mine Capital Cost-$: 33,426,373

MILL CAPITAL COSTS:

Mill Working Capital-$: 3,675,945
Light Vehicles (short life)-$: 1,273,923 *
Other:
Remaining Mill Capital-$: 41,689,408 ~
Total Mill Capital Cost-$: 46,639,276

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 11,914,354 *
Other:
Remaining Infrastructure Capital-$: 16,696,231 ~
Total Infrastructure Capital-$: 28,610,585

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 8,625 981 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 67,189,993 *
Sum of Total Mine, Mill & Infr. Costs-$: 108,676,234
Exploration Cost-$: 10,867,620 * = 70,000,000

Overall Capital Cost-$: 119 543,860 189,543,860
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

Echo Bay Capital Estimate
= $205 mil, over $80 mil spent already.

Calculate Capital:
Less Exploration: - 108,676,000
Actual Exploration/ Acquisition, etc + 80,000,000
= $188.7 mil

△ = 8% under E.B. estimate

'92 Grade/Ton, Proven Reserves
= 14 mil mt @ 4.62 g/mT .148 opmT
(Grade is weighted average
of 10.4 mil mt @ 4.9 g/mt Kensington Pipe
+ 3.6 mil mt @ 3.8 g/mt Horizible Vein

List of Assumptions File:KENSINGT.SEE Date:07/24/93 Time:22:00:54

AU QUARTZ VEIN STOCKWORK, KENSINGTON, LONGHOLE OPEN STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	13,037,405	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,787,901	MACRS	Mid Year	13.0	0			0 .....
3	04/89	4,846,677	MACRS	Mid Year	13.0	0			0 .....
4	04/89	8,804,354	MACRS	Mid Year	13.0	0			0 .....
5	04/89	4,950,036	WC	Mid Year	13.0	0			0 .....
6	04/89	1,273,923	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,273,923	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,273,923	MACRS	Mid Year	4.0	0			0 .....
9	.....	0	MACRS	Mid Year	7.0	0			0 .....
10	04/89	41,689,408	MACRS	Mid Year	13.0	0			0 .....
11	04/89	3,675,945	WC	Mid Year	13.0	0			0 .....
12	04/89	11,914,354	MACRS	Mid Year	13.0	0			0 .....
13	04/89	16,696,231	MACRS	Mid Year	13.0	0			0 .....
14	04/89	80,876,620	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
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#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	1,440,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.1480	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	19,582,560.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	14,542,200.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	11,810,160.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	145,422.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

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* Project Equations *
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General Equations
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E1 . AU HI REV S1*S3*S5*S10*S11

Equations continued

E2 . AU LO REV S2*S4*S5*S10*S12

Revenues

E3 . GROSS REV E1+E2

Operating Costs

E5 . OPER COSTS S6+S7+S8+S9

Royalties

E6 . MHT ROYALTY S14*(E3-E4-S9)

Processing Costs

E4 . SMELTING CHARGES S13*E3

AU QUARTZ VEIN STOCKWORK, KENSINGTON, LONGHOLE OPEN STOPING

Cash Flows

NPV =$-22,671,651 DCFROR= 6.8% GROR = 8.4% PWROR = 6.8% Pay Back= 7.53 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
AU HI REV		76,936,320	76,936,320	76,936,320	76,936,320	76,936,320	76,936,320	76,936,320
GROSS REV		76,936,320	76,936,320	76,936,320	76,936,320	76,936,320	76,936,320	76,936,320
Total Revenue		76,936,320	76,936,320	76,936,320	76,936,320	76,936,320	76,936,320	76,936,320
-SMELTING CHARGES		-769,363	-769,363	-769,363	-769,363	-769,363	-769,363	-769,363
-Total Smelting Cost		-769,363	-769,363	-769,363	-769,363	-769,363	-769,363	-769,363
Net Smelt Ret.		76,166,957	76,166,957	76,166,957	76,166,957	76,166,957	76,166,957	76,166,957
-MHT ROYALTY		-3,040,861	-3,040,861	-3,040,861	-3,040,861	-3,040,861	-3,040,861	-3,040,861
-Total Royalties		-3,040,861	-3,040,861	-3,040,861	-3,040,861	-3,040,861	-3,040,861	-3,040,861
Net Revenue		73,126,095	73,126,095	73,126,095	73,126,095	73,126,095	73,126,095	73,126,095
-OPER COSTS		-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342
-Total Oper Costs		-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342
-Dev, IDC	-56,613,634							
-Depreciation	-7,916,660	-14,505,129	-12,426,686	-10,680,253	-8,816,651	-7,350,000	-6,482,590	-5,626,135
-Amortization	-14,557,792	-4,852,597	-4,852,597					
-Write Off								
Before Depltn	-79,088,086	7,688,027	9,766,470	16,365,500	18,229,103	19,695,754	20,563,164	21,419,619
100% Limit		7,688,027	9,766,470	16,365,500	18,229,103	19,695,754	20,563,164	21,419,619
Percent Depln		10,968,914	10,968,914	10,968,914	10,968,914	10,968,914	10,968,914	10,968,914
Prev Exp Expl		7,688,027	9,766,470	10,968,914	10,968,914	10,968,914	6,252,394	
-Depletion							-4,716,520	-10,968,914
-Total D,D & A	-79,088,086	-19,357,726	-17,279,284	-10,680,253	-8,816,651	-7,350,000	-11,199,110	-16,595,049
Taxable	-79,088,086	7,688,027	9,766,470	16,365,500	18,229,103	19,695,754	15,846,643	10,450,704
-Tax Due	26,889,949	-2,613,929	-3,320,600	-5,564,270	-7,040,079	-7,606,500	-6,119,974	-4,036,062
Net Income	-52,198,136	5,074,098	6,445,870	10,801,230	11,189,023	12,089,254	9,726,670	6,414,642
+Depreciation	7,916,660	14,505,129	12,426,686	10,680,253	8,816,651	7,350,000	6,482,590	5,626,135
+Depletion							4,716,520	10,968,914
+Amortization	14,557,792	4,852,597	4,852,597					
+Write Off								
-Capital Costs	-132,939,220		-1,273,923				-1,273,923	
Cash Flow	-162,662,905	24,431,824	22,451,231	21,481,483	20,005,674	19,439,253	19,651,857	23,009,691

Year	1999	2000	2001	Salvage
AU HI REV	76,936,320	76,936,320	76,936,320	
GROSS REV	76,936,320	76,936,320	76,936,320	
Total Revenue	76,936,320	76,936,320	76,936,320	8,625,981
-SMELTING CHARGES	-769,363	-769,363	-769,363	
-Total Smelting Cost	-769,363	-769,363	-769,363	
Net Smelt Ret.	76,166,957	76,166,957	76,166,957	
-MHT ROYALTY	-3,040,861	-3,040,861	-3,040,861	
-Total Royalties	-3,040,861	-3,040,861	-3,040,861	
Net Revenue	73,126,095	73,126,095	73,126,095	
-OPER COSTS	-46,080,342	-46,080,342	-46,080,342	
-Total Oper Costs	-46,080,342	-46,080,342	-46,080,342	
-Dev, IDC				
-Depreciation	-5,387,274	-5,307,654	-5,228,034	-12,871,034
-Amortization				
-Write Off				-8,625,981
Before Depltn	21,658,479	21,738,100	21,817,720	-12,871,034
100% Limit	21,658,479	21,738,100	21,817,720	
Percent Depln	10,968,914	10,968,914	10,968,914	
Prev Exp Expl				
-Depletion	-10,968,914	-10,968,914	-10,968,914	
-Total D,D & A	-16,356,188	-16,276,568	-16,196,948	-21,497,015
Taxable	10,689,565	10,769,185	10,848,805	-12,871,034
-Tax Due	-4,128,310	-4,159,059	-4,189,809	4,970,793
Net Income	6,561,255	6,610,126	6,658,997	-7,900,241
+Depreciation	5,387,274	5,307,654	5,228,034	12,871,034
+Depletion	10,968,914	10,968,914	10,968,914	
+Amortization				
+Write Off				8,625,981
-Capital Costs				
Cash Flow	22,917,443	22,886,694	22,855,945	13,596,774

List of Assumptions File:KENSINGT.SEE Date:01/04/80 Time:00:11:55

AU QUARTZ VEIN STOCKWORK, KENSINGTON, LONGHOLE OPEN STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	13,037,405	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,787,901	MACRS	Mid Year	13.0	0		0	.....
3	04/89	4,846,677	MACRS	Mid Year	13.0	0		0	.....
4	04/89	8,804,354	MACRS	Mid Year	13.0	0		0	.....
5	04/89	4,950,036	WC	Mid Year	13.0	0		0	.....
6	04/89	1,273,923	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,273,923	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,273,923	MACRS	Mid Year	4.0	0		0	.....
9	.....	0	MACRS	Mid Year	7.0	0		0	.....
10	04/89	41,689,408	MACRS	Mid Year	13.0	0		0	.....
11	04/89	3,675,945	WC	Mid Year	13.0	0		0	.....
12	04/89	11,914,354	MACRS	Mid Year	13.0	0		0	.....
13	04/89	16,696,231	MACRS	Mid Year	13.0	0		0	.....
14	04/89	80,876,620	EXPL-X	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD HI MTPY	Annual:	04/92	End	1,440,000.00	Constant	0.000
S2	ANNUAL PROD LO MTPY	Annual:	04/92	End	0.00	Constant	0.000
S3	AU HI GRADE OPT	N/A:	04/92	End	0.1480	Constant	0.000
S4	AU LO GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S5	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	19,582,560.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	14,542,200.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	11,810,160.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	145,422.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S11	MILL RECOV RATE HI	N/A:	04/92	End	0.95	Constant	0.000
S12	MILL RECOV RATE LO	N/A:	04/92	End	0.00	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S15	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations

==========

E1 . AU HI REV S1*S3*S5*S10*S11

Equations continued

E2 . AU LO REV S2*S4*S5*S10*S12

Revenues

==========

E3 . GROSS REV E1+E2

Operating Costs

==========

E5 . OPER COSTS S6+S7+S8+S9

Special Taxes

==========

E7 . MHT PNI S15*(E3-E5)

Royalties

==========

E6 . MHT ROYALTY S14*(E3-E4-S9)

Processing Costs

==========

E4 . SMELTING CHARGES S13*E3

AU QUARTZ VEIN STOCKWORK, KENSINGTON, LONGHOLE OPEN STOPING

Cash Flows

NPV =$-64,474,526 DCFROR= 0.0% GROR = 4.6% PWROR = 0.0% Pay Back=10.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
AU HI REV		65,086,203	65,086,203	65,086,203	65,086,203	65,086,203	65,086,203	65,086,203
GROSS REV		65,086,203	65,086,203	65,086,203	65,086,203	65,086,203	65,086,203	65,086,203
Total Revenue		65,086,203	65,086,203	65,086,203	65,086,203	65,086,203	65,086,203	65,086,203
-SMELTING CHARGES		-650,862	-650,862	-650,862	-650,862	-650,862	-650,862	-650,862
-Total Smelting Cost		-650,862	-650,862	-650,862	-650,862	-650,862	-650,862	-650,862
Net Smelt Ret.		64,435,341	64,435,341	64,435,341	64,435,341	64,435,341	64,435,341	64,435,341
Net Revenue		64,435,341	64,435,341	64,435,341	64,435,341	64,435,341	64,435,341	64,435,341
-OPER COSTS		-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342
-Total Oper Costs		-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342	-46,080,342
-MHT PNI		-570,176	-570,176	-570,176	-570,176	-570,176	-570,176	-570,176
-Total Sev. Ad Valor		-570,176	-570,176	-570,176	-570,176	-570,176	-570,176	-570,176
-Dev, IDC	-56,613,634							
-Depreciation	-7,916,660	-14,505,129	-12,426,686	-10,680,253	-8,816,651	-7,350,000	-6,482,590	-5,626,135
-Amortization	-14,557,792	-4,852,597	-4,852,597					
-Write Off								
Before Depltn	-79,088,086	-1,572,903	505,540	7,104,570	8,968,173	10,434,824	11,302,234	12,158,689
100% Limit			505,540	7,104,570	8,968,173	10,434,824	11,302,234	12,158,689
Percent Depln		9,665,301	9,665,301	9,665,301	9,665,301	9,665,301	9,665,301	9,665,301
Prev Exp Expl			505,540	7,104,570	8,968,173	9,665,301	9,665,301	9,665,301
-Depletion								
-Total D,D & A	-79,088,086	-19,357,726	-17,279,284	-10,680,253	-8,816,651	-7,350,000	-6,482,590	-5,626,135
Taxable	-79,088,086	-1,572,903	505,540	7,104,570	8,968,173	10,434,824	11,302,234	12,158,689
-Tax Due	26,889,949	534,787	-171,884	-2,415,554	-3,463,508	-4,029,929	-4,364,923	-4,695,686
Net Income	-52,198,136	-1,038,116	333,656	4,689,016	5,504,664	6,404,895	6,937,311	7,463,003
+Depreciation	7,916,660	14,505,129	12,426,686	10,680,253	8,816,651	7,350,000	6,482,590	5,626,135
+Depletion								
+Amortization	14,557,792	4,852,597	4,852,597					
+Write Off								
-Capital Costs	-132,939,220		-1,273,923				-1,273,923	
Cash Flow	-162,662,905	18,319,610	16,339,017	15,369,270	14,321,315	13,754,895	12,145,978	13,089,138

Year	8	9	10	Salvage
AU HI REV	65,086,203	65,086,203	65,086,203	
GROSS REV	65,086,203	65,086,203	65,086,203	
Total Revenue	65,086,203	65,086,203	65,086,203	8,625,981
-SMELTING CHARGES	-650,862	-650,862	-650,862	
-Total Smelting Cost	-650,862	-650,862	-650,862	
Net Smelt Ret.	64,435,341	64,435,341	64,435,341	
Net Revenue	64,435,341	64,435,341	64,435,341	
-OPER COSTS	-46,080,342	-46,080,342	-46,080,342	
-Total Oper Costs	-46,080,342	-46,080,342	-46,080,342	
-MHT PNI	-570,176	-570,176	-570,176	
-Total Sev. Ad Valor	-570,176	-570,176	-570,176	
-Dev, IDC				
-Depreciation	-5,387,274	-5,307,654	-5,228,034	-12,871,034
-Amortization				
-Write Off				-8,625,981
Before Depltn	12,397,549	12,477,170	12,556,790	-12,871,034
100% Limit	12,397,549	12,477,170	12,556,790	
Percent Depln	9,665,301	9,665,301	9,665,301	
Prev Exp Expl	9,665,301	1,374,147		
-Depletion		-8,291,154	-9,665,301	
-Total D,D & A	-5,387,274	-13,598,808	-14,893,335	-21,497,015
Taxable	12,397,549	4,186,015	2,891,489	-12,871,034
-Tax Due	-4,787,934	-1,616,639	-1,116,693	4,970,793
Net Income	7,609,616	2,569,376	1,774,796	-7,900,241
+Depreciation	5,387,274	5,307,654	5,228,034	12,871,034
+Depletion		8,291,154	9,665,301	
+Amortization				
+Write Off				8,625,981
-Capital Costs				
Cash Flow	12,996,890	16,168,184	16,668,131	13,596,774

APPENDIX B-6

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR CREEDE EPITHERMAL DEPOSITS

6. DESCRIPTIVE MODEL OF CREEDE EPITHERMAL VEIN

By Dan L. Mosier, Takeo Sato, Norman J. Page, Donald A. Singer, and Byron R. Berger

APPROXIMATE SYNONYMS Epithermal gold (quartz-adularia) alkali-chloride-type, polymetallic veins.

DESCRIPTION Galena, sphalerite, chalcopyrite, sulfosalts, ± tellurides ± gold in quartz-carbonate veins hosted by felsic to intermediate volcanics. Older miogeosynclinal evaporites or rocks with trapped seawater are associated with these deposits.

GENERAL REFERENCES Buchanan (1980), Boyle (1979).

GEOLOGICAL ENVIRONMENT

Rock Types Host rocks are andesite, dacite, quartz latite, rhyodacite, rhyolite, and associated sedimentary rocks. Mineralization related to calc-alkaline or bimodal volcanism.

Textures Porphyritic.

Age Range Mainly Tertiary (most are 29-4 m.y.).

Depositional Environment Bimodal and calc-alkaline volcanism. Deposits related to sources of saline fluids in prevolcanic basement such as evaporites or rocks with entrapped seawater.

Tectonic Setting(s) Through-going fractures systems; major normal faults, fractures related to doming, ring fracture zones, joints associated with calderas. Underlying or nearby older rocks of continental shelf with evaporite basins, or island arcs that are rapidly uplifted.

Associated Deposit Types Placer gold, epithermal quartz alunite Au, polymetallic replacement.

DEPOSIT DESCRIPTION

Mineralogy Galena + sphalerite + chalcopyrite + copper sulfosalts + silver sulfosalts ± gold ± tellurides ± bornite ± arsenopyrite. Gangue minerals are quart + chlorite ± calcite + pyrite + rhodochrosite + barite ± fluorite ± siderite ± ankerite ± sericite ± adularia ± kaolinite. Specularite and alunite may be present.

Texture/Structure Banded veins, open space filling, lamellar quartz, stockworks, colloform textures.

Alteration Top to bottom: quartz ± kaolinite + montmorillonite ± zeolites ± barite ± calcite; quartz + illite; quartz + adularia ± illite; quartz + chlorite; presence of adularia is variable.

Ore Controls Through-going or anastomosing fracture systems. High-grade shoots where vein changes strike or dip and at intersections of veins. Hanging-wall fractures are particularly favorable.

Weathering Bleached country rock, goethite, jarosite, alunite -- supergene processes often important factor in increasing grade of deposit.

Geochemical Signature Higher in system Au + As + Sb + Hg; Au + Ag + Pb + Zn + Cu; Ag + Pb + Zn, Cu + Pb + Zn. Base metals generally higher grade in deposits with silver. W + Bi may be present.

EXAMPLES

Creede, USCO	(Steven and Eaton, 1975; Barton and others, 1977)
Pachuca, MXCO	(Geyne and others, 1963)
Toyoha, JAPN	(Yajima and Ohta, 1979)

GRADE AND TONNAGE MODEL OF CREEDE EPITHERMAL VEINS
After Dan L. Mosier, Takeo Sato, and Donald A. Singer

COMMENTS Gold grade is correlated with zinc grade ($r = -0.52$, $n = 22$). Upper ten percent of deposits contain an minimum of 23 million tonnes of ore at 10 grams per tonne Au, 510 grams/tonne Ag, 9.3% Zn, 5.5% Pb, and 1.1% Cu. Total contained metal; 230 million grams Au, 11.7 billion grams Ag, 2.1 million tonnes Zn, 1.3 million tonnes Pb, and 0.25 million tonnes Cu. Gross metal value in 1987 would have been $9.35 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Fifteen years at 1.5 million tonnes per year or 4,300 tonnes per day.

Gross Value of Annual Production $623 million.

Net Present Value of 4% NSR 24.9 million times 7.606 is $189.4 million.

Comments, Assumptions, Specifications: CRD, 15 y- mine life. South East AK

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Creede Epithermal Vein
Total Ore Tonnage: 23 mil mton
Mining Method: Cut & Fill - Mechanized
Beneficiation Method: Crush Grind Float
Extraction Rate: 95%
Dilution/Waste Rate: 5%
Proposed Mine Life: 15 years
Proposed Daily Production: 4,260
Maximum Ore Depth: 915 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 80 km haul, 30 km new roads
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Jumbo, LHD
Concentrate Production: 1,000 MTPD, 3 products

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: .1 m/day, 15 m²
Raises & face-m/day & sqm: -
Inclines & face-m/day & sqm: .2 m/day, 15 m²
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .05/day, 540 m²
Ore rate-mtpd: 4,260 MTPD
Hoist depth, rate & time-m, mtph, hr/day: 915 m, 350 MTPH, 16 hrs
Haul distance-m: 500 m
Compressed air-cm/min: 425 m³/min
Ventilation-cm/min: 16,140 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 15 m³/hr, 16 hr/day
Drainage, head-cm/day & m: 10,000 m³/day 1,000m
Concentrate (dry) rate-mtpd: 1,000 MTPD
Tails (dry) rate-mtpd: 3,260 MTPD
Production water needs-cm/day: 5,000 m³/day Mill, 15,000 m³ Mine
Portable Power needs-kW: 12,000 kW
Wastewater-L/sec: 20 l/sec
Concentrate haul-km: 80 km
Employee housing-men: 550 men
Other:
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 4260, 3,700 3,500 mtpd
Mill operating costs-$/day: $48,350/day
Working capital time-weeks: 13 weeks
Development time-days:
Shaft sinking & face-m & sqm: 915m, 48 m²
Drifting & face-m & sqm: 500m, 15 m²
Raises & face-m & sqm: 900m, 4m²
Inclines & face-m & sqm: 1,200 m, 15 m²
Ore pockets-mt: 6,400 mt
Stope preparations-stopes & sqm: 6, 540 m²
Dewatering; head, dys & rate-m, dys & cm/day:
1,000 m, 120 days, 10,000 m³/day
Rehabilitation (total tonnage)-mt: 4,260 mtpd
Contractors-1 or 2: 1
Mine operating costs-$/day: 296,010
Access roads, length & width-km & m: 30km, 15m
Airstrip length & width-m: 1,600, 18 m
Townsite cost-$: $15362325
Powerline length & power-km & mW: portable
Dike & Dam needs-cm/fill: 500,000 m³
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 296,010
Mining Costs-$/yr: 106,563,600
Mining Costs-$/mt: 69.49
Milling Costs-$/day: 48,350
Milling Costs-$/yr: 17,406,000
Milling Costs-$/mt: 11.35
Infrastructure Costs-$/day: 61,030
Infrastructure Costs-$/yr: 21,970,800
Infrastructure Costs-$/mt: 14.33
Total Operating Costs-$/day: 405,390
Total Operating Costs-$/yr: 145,940,400
Total Operating Costs-$/mt: 95.16
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 26936,910
Heavy Equipment (fixed life)-$: 7,318,726 *
Mine Rehabilitation-$: 1,826,429 *
Engr. & Const. Mgmt.-$: 6,637,808 *
Other:
Remaining Mine Capital-$: 35,257,020
Total Mine Capital Cost-$: 77,976,893

MILL CAPITAL COSTS:

Mill Working Capital-$: 4,399,850
Light Vehicles (short life)-$: 1,302,231 *
Other:
Remaining Mill Capital-$: 24,456,130 ~
Total Mill Capital Cost-$: 30,158,211

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 12,366,144 *
Other:
Remaining Infrastructure Capital-$: 40,174,679 ~
Total Infrastructure Capital-$: 52,540,823

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 31,336,760 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 99,887,829 *
Sum of Total Mine, Mill & Infr. Costs-$: 160,675,927
Exploration Cost-$: 16,067,600 *

Overall Capital Cost-$: 176,743,520
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

Creede Epithermal / Vein

Gross Cash Singe - 90% grade

1.1% Cu = 24 lb/mT
5.5% Pb = 121 lb/mT
9.3% Zn = 205 lb/mT
510 gm/mT Ag = 16.4 opmT
10 gm/mT Au = .321 opmT

List of Assumptions File:CRDSEA.SEE Date:07/25/93 Time:07:56:21

CREEDE EPITHERMAL VEIN, SOUTHEAST ALASKA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Minimum ROR, Compound Exponents	Minimum ROR, With Eval Date	Inflation & Exponents: Minimum ROR	Inflation: Rate	Constant $ ROR	Tax Rates: State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	7,318,726	MACRS	Mid Year	10.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,826,429	MACRS	Mid Year	18.0	0			0 .....
3	04/89	6,637,808	MACRS	Mid Year	18.0	0			0 .....
4	04/89	35,257,020	MACRS	Mid Year	18.0	0			0 .....
5	04/89	26,936,910	WC	Mid Year	18.0	0			0 .....
6	04/89	1,302,231	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,302,231	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,302,231	MACRS	Mid Year	4.0	0			0 .....
9	04/89	24,456,130	MACRS	Mid Year	18.0	0			0 .....
10	04/89	4,399,850	WC	Mid Year	18.0	0			0 .....
11	04/89	52,540,823	MACRS	Mid Year	18.0	0			0 .....
12	04/89	16,067,600	EXPL-X	Mid Year	18.0	0			0 .....
13	04/89	7,318,726	MACRS	Mid Year	8.0	0			0 .....
14	04/01	1,302,231	MACRS	Mid Year	4.0	0			0 .....
15	04/05	1,302,231	MACRS	Mid Year	4.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,533,600.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.093	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.011	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.055	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	16.40	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.3210	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	106,563,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	17,406,000.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	21,970,800.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	6,400,000.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

CREEDE EPITHERMAL VEIN, SOUTHEAST ALASKA, CUT & FILL

Cash Flows

NPV =$1,425,925,445 DCFROR=122.3% GROR = 27.4% PWROR =122.3% Pay Back= 0.82 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
ZN REV		146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794
CU REV		32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381
PB REV		55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506
AG REV		87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929
AU REV		142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768
GROSS REVENUE		464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378
Total Revenue		464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378
-SMELTING CHARGES		-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494
-Total Smelting Cost		-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494
Net Smelt Ret.		460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884
-MRT ROYALTY		-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035
-Total Royalties		-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035
Net Revenue		442,048,849	442,048,849	442,048,849	442,048,849	442,048,849	442,048,849	442,048,849
-OPER COSTS		-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400
-Total Oper Costs		-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400
-Dev, IDC	-11,247,320							
-Depreciation	-8,678,838	-16,074,639	-14,084,760	-12,404,032	-10,572,575	-9,189,842	-8,495,328	-7,795,626
-Amortization	-2,892,168	-964,056	-964,056					
-Write Off								
Before Depltn	-22,818,326	272,669,754	274,659,633	277,304,417	279,135,874	280,518,607	281,213,121	281,912,823
100% Limit		272,669,754	274,659,633	277,304,417	279,135,874	280,518,607	281,213,121	281,912,823
Percent Depln		66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327
Prev Exp Expl		11,247,320						
-Depletion		-55,060,007	-66,307,327	-66,307,327	-66,307,327	-66,307,327	-66,307,327	-66,307,327
-Total D,D & A	-22,818,326	-72,098,702	-81,356,144	-78,711,359	-76,879,902	-75,497,169	-74,802,655	-74,102,954
Taxable	-22,818,326	217,609,747	208,352,305	210,997,090	212,828,547	214,211,280	214,905,794	215,605,495
-Tax Due	7,758,231	-73,987,314	-70,839,784	-71,739,011	-82,194,385	-82,728,396	-82,996,618	-83,266,842
Net Income	-15,060,095	143,622,433	137,512,522	139,258,079	130,634,162	131,482,884	131,909,176	132,338,653
+Depreciation	8,678,838	16,074,639	14,084,760	12,404,032	10,572,575	9,189,842	8,495,328	7,795,626
+Depletion		55,060,007	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327
+Amortization	2,892,168	964,056	964,056					
+Write Off								
-Capital Costs	-172814933		-1,302,231				-1,302,231	
Cash Flow	-176304022	215,721,135	217,566,434	217,969,438	207,514,064	206,980,053	205,409,600	206,441,607

Year	1999	2000	2001	2002	2003	2004	2005	2006
ZN REV	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794
CU REV	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381
PB REV	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506
AG REV	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929
AU REV	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768
GROSS REVENUE	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378
Total Revenue	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378
-SMELTING CHARGES	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494
-Total Smelting Cost	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494
Net Smelt Ret.	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884
-MHT ROYALTY	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035
-Total Royalties	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035	-18,152,035
Net Revenue	442,048,849	442,048,849	442,048,849	442,048,849	442,048,849	442,048,849	442,048,849	442,048,849
-OPER COSTS	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400
-Total Oper Costs	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400
-Dev, IDC								
-Depreciation	-6,567,694	-5,579,685	-5,293,606	-5,135,175	-4,891,007	-4,809,617	-5,053,786	-5,135,175
-Amortization								
-Write Off								
Before Depltn	283,140,755	284,128,764	284,414,843	284,573,274	284,817,442	284,898,832	284,654,663	284,573,274
100% Limit	283,140,755	284,128,764	284,414,843	284,573,274	284,817,442	284,898,832	284,654,663	284,573,274
Percent Depln	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327
Prev Exp Expl								
-Depletion	-66,307,327	-66,307,327	-66,307,327	-66,307,327	-66,307,327	-66,307,327	-66,307,327	-66,307,327
-Total D,D & A	-72,875,021	-71,887,012	-71,600,933	-71,442,502	-71,198,334	-71,116,945	-71,361,113	-71,442,502
Taxable	216,833,428	217,821,437	218,107,516	218,265,947	218,510,115	218,591,504	218,347,336	218,265,947
-Tax Due	-83,741,070	-84,122,639	-84,233,123	-84,294,309	-84,388,606	-84,420,039	-84,325,741	-84,294,309
Net Income	133,092,358	133,698,798	133,874,393	133,971,638	134,121,509	134,171,465	134,021,595	133,971,638
+Depreciation	6,567,694	5,579,685	5,293,606	5,135,175	4,891,007	4,809,617	5,053,786	5,135,175
+Depletion	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327	66,307,327
+Amortization								
+Write Off								
-Capital Costs			-1,302,231				-1,302,231	
Cash Flow	205,967,379	205,585,810	204,173,095	205,414,140	205,319,843	205,288,410	204,080,477	205,414,140

Year	Salvage
ZN REV	
CU REV	
PB REV	
AG REV	
AU REV	
GROSS REVENUE	
Total Revenue	31,336,760
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MRT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-12,105,433
-Amortization	
-Write Off	-31,336,760
Before Depltn	-12,105,433
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-43,442,193
Taxable	-12,105,433
-Tax Due	4,675,118
Net Income	-7,430,315
+Depreciation	12,105,433
+Depletion	
+Amortization	
+Write Off	31,336,760
-Capital Costs	
Cash Flow	36,011,878

List of Assumptions File:CRDSEA.SEE Date:11/06/93 Time:22:08:47

CREEDE EPITHERMAL VEIN, SOUTHEAST ALASKA, CUT & FILL

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR, Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	7,318,726	MACRS	Mid Year	10.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,826,429	MACRS	Mid Year	18.0	0			0 .....
3	04/89	6,637,808	MACRS	Mid Year	18.0	0			0 .....
4	04/89	35,257,020	MACRS	Mid Year	18.0	0			0 .....
5	04/89	26,936,910	WC	Mid Year	18.0	0			0 .....
6	04/89	1,302,231	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,302,231	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,302,231	MACRS	Mid Year	4.0	0			0 .....
9	04/89	24,456,130	MACRS	Mid Year	18.0	0			0 .....
10	04/89	4,399,850	WC	Mid Year	18.0	0			0 .....
11	04/89	52,540,823	MACRS	Mid Year	18.0	0			0 .....
12	04/89	16,067,600	EXPL-X	Mid Year	18.0	0			0 .....
13	04/89	7,318,726	MACRS	Mid Year	8.0	0			0 .....
14	04/01	1,302,231	MACRS	Mid Year	4.0	0			0 .....
15	04/05	1,302,231	MACRS	Mid Year	4.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,533,600.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.093	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.011	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.055	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	16.40	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.3210	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	106,563,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	17,406,000.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	21,970,800.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	6,400,000.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

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* Project Equations *
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General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

CREEDE EPITHERMAL VEIN, SOUTHEAST ALASKA, CUT & FILL

Cash Flows

NPV =$1,475,594,465 DCFROR=126.1% GROR = 27.7% PWROR =126.1% Pay Back= 0.79 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
ZN REV		146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794
CU REV		32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381
PB REV		55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506
AG REV		87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929
AU REV		142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768
GROSS REVENUE		464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378
Total Revenue		464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378
-SMELTING CHARGES		-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494
-Total Smelting Cost		-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494
Net Smelt Ret.		460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884
Net Revenue		460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884
-OPER COSTS		-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400
-Total Oper Costs		-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400
-MHT NPI		-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269
-Total Sev. Ad Valor		-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269
-Dev, IDC	-11,247,320							
-Depreciation	-8,678,838	-16,074,639	-14,084,760	-12,404,032	-10,572,575	-9,189,842	-8,495,328	-7,795,626
-Amortization	-2,892,168	-964,056	-964,056					
-Write Off								
Before Depltn	-22,818,326	281,446,520	283,436,399	286,081,183	287,912,640	289,295,373	289,989,887	290,689,589
100% Limit		281,446,520	283,436,399	286,081,183	287,912,640	289,295,373	289,989,887	290,689,589
Percent Depln		69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133
Prev Exp Expl		11,247,320						
-Depletion		-57,782,813	-69,030,133	-69,030,133	-69,030,133	-69,030,133	-69,030,133	-69,030,133
-Total D,D & A	-22,818,326	-74,821,508	-84,078,949	-81,434,164	-79,602,707	-78,219,974	-77,525,461	-76,825,759
Taxable	-22,818,326	223,663,707	214,406,266	217,051,051	218,882,508	220,265,241	220,959,754	221,659,456
-Tax Due	7,758,231	-76,045,661	-72,898,130	-73,797,357	-84,532,424	-85,066,436	-85,334,657	-85,604,882
Net Income	-15,060,095	147,618,047	141,508,136	143,253,693	134,350,083	135,198,805	135,625,097	136,054,574
+Depreciation	8,678,838	16,074,639	14,084,760	12,404,032	10,572,575	9,189,842	8,495,328	7,795,626
+Depletion		57,782,813	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133
+Amortization	2,892,168	964,056	964,056					
+Write Off								
-Capital Costs	-172814933		-1,302,231				-1,302,231	
Cash Flow	-176304022	222,439,554	224,284,854	224,687,858	213,952,791	213,418,779	211,848,327	212,880,333

Year	8	9	10	11	12	13	14	15
ZN REV	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794	146,881,794
CU REV	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381	32,055,381
PB REV	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506	55,530,506
AG REV	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929	87,951,929
AU REV	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768	142,429,768
GROSS REVENUE	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378
Total Revenue	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378	464,849,378
-SMELTING CHARGES	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494
-Total Smelting Cost	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494	-4,648,494
Net Smelt Ret.	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884
Net Revenue	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884	460,200,884
-OPER COSTS	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400
-Total Oper Costs	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400	-152340400
-MHT NPI	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269
-Total Sev. Ad Valor	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269	-9,375,269
-Dev, IDC								
-Depreciation	-6,567,694	-5,579,685	-5,293,606	-5,135,175	-4,891,007	-4,809,617	-5,053,786	-5,135,175
-Amortization								
-Write Off								
Before Depltn	291,917,521	292,905,530	293,191,609	293,350,040	293,594,208	293,675,598	293,431,429	293,350,040
100% Limit	291,917,521	292,905,530	293,191,609	293,350,040	293,594,208	293,675,598	293,431,429	293,350,040
Percent Depln	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133
Prev Exp Expl								
-Depletion	-69,030,133	-69,030,133	-69,030,133	-69,030,133	-69,030,133	-69,030,133	-69,030,133	-69,030,133
-Total D,D & A	-75,597,826	-74,609,817	-74,323,738	-74,165,308	-73,921,139	-73,839,750	-74,083,918	-74,165,308
Taxable	222,887,389	223,875,398	224,161,477	224,319,907	224,564,076	224,645,465	224,401,297	224,319,907
-Tax Due	-86,079,109	-86,460,679	-86,571,162	-86,632,348	-86,726,646	-86,758,079	-86,663,781	-86,632,348
Net Income	136,808,279	137,414,719	137,590,314	137,687,559	137,837,430	137,887,386	137,737,516	137,687,559
+Depreciation	6,567,694	5,579,685	5,293,606	5,135,175	4,891,007	4,809,617	5,053,786	5,135,175
+Depletion	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133	69,030,133
+Amortization								
+Write Off								
-Capital Costs			-1,302,231				-1,302,231	
Cash Flow	212,406,106	212,024,536	210,611,822	211,852,867	211,758,569	211,727,136	210,519,203	211,852,867

Year	Salvage
ZN REV	
CU REV	
PB REV	
AG REV	
AU REV	
GROSS REVENUE	
Total Revenue	31,336,760
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-12,105,433
-Amortization	
-Write Off	-31,336,760
Before Depltn	-12,105,433
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-43,442,193
Taxable	-12,105,433
-Tax Due	4,675,118
Net Income	-7,430,315
+Depreciation	12,105,433
+Depletion	
+Amortization	
+Write Off	31,336,760
-Capital Costs	
Cash Flow	36,011,878

APPENDIX B-7

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR TUNGSTEN (W) VEIN DEPOSITS

7. DESCRIPTIVE MODEL OF W VEINS

By Dennis P. Cox and William C. Bagby

APPROXIMATE SYNONYMS Quartz-wolframite veins (Kelly and Rye, 1979).

DESCRIPTION Wolframite, molybdenite, and minor base-metal sulfides in quartz veins.

GEOLOGICAL ENVIRONMENT

Rock Types Monzogranite to granite stocks intruding sandstone, shale, and metamorphic equivalents.

Textures Phanerocrystalline igneous rocks, minor pegmatitic bodies, and porphyroaphanitic dikes.

Age Range Paleozoic to late Tertiary.

Depositional Environment Tensional fractures in epizonal granitic plutons and their wallrocks.

Tectonic Setting(s) Belts of granitic plutons derived from remelting of continental crust. Country rocks are metamorphosed to greenschist facies.

Associated Deposit Types Sn-W veins, pegmatites.

DEPOSIT DESCRIPTION

Mineralogy Wolframite, molybdenite, bismuthinite, pyrite, pyrrhotite, arsenopyrite, bornite, chalcopyrite, scheelite, cassiterite, beryl, fluorite; also at Pasto Bueno, tetrahedrite-tennantite, sphalerite, galena, and minor enargite.

Texture/Structure Massive quartz veins with minor vugs, parallel walls, local breccia.

Alteration Deepest zones, pervasive albitization; higher pervasive to vein-selvage pink K-feidspar replacement with minor disseminated REE minerals; upper zones, vein selvages of dark-gray muscovite or zinnwaldite (greisen). Chloritization. Widespread tourmaline alteration at Isla de Pinos.

Ore Controls Swarms of parallel veins cutting granitic rocks or sedimentary rocks near igneous contacts.

Weathering Wolframite persists in soils and stream sediments. Stolzite and tungstite may be weathering products.

Geochemical Signature W, Mo, Sn, Bi, As, Cu, Pb, Zn, Be, F.

EXAMPLES

Pasto Bueno, PERU	(Landis and Rye, 1974)
Xihuashan, CINA	(Hsu, 1943; Giulliani, 1985; and personal visit)
Isla de Pinos, CUBA	(Page and McAllister, 1944)
Hamme District, USNC	(Foose and others, 1980)
Round Mountain, USNV	(Shawe and others, 1984)
Chicote Grande, BLVA	(Personal visit)

GRADE AND TONNAGE MODEL OF W VEINS
After Gail M. Jones and W. David Menzie

COMMENTS Data are for vein systems rather than for individual veins or mines. Some data are based on past production only. Xihuashan is the sole deposit from the Peoples Republic of China. Upper ten percent of deposits contain an minimum of 7 million tonnes at 1.4% WO_3. Total contained WO_3 is 98,000 tonnes. Gross metal value in 1987 would have been $647 million (note there is insufficient gold grade data to estimate value of contained gold).

CASH FLOW ANALYSIS

Mine Life/Mining Rate Fifteen years at .47 million tonnes per year or 1,300 tonnes per day.

Gross Value of Annual Production $43.1 million.

Net Present Value of 4% NSR $1.7 million times 7.606 is $12.9 million.

Comments, Assumptions, Specifications: WVEN
C25 upper 10% vein systems, Table Mountain Deposit - Adit Entry
3.25:1 Table Reduction

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: W Veins
Total Ore Tonnage: 7 mil mt
Mining Method: Sublevel Stoping
Beneficiation Method: Crush, Grind, Table & Flog
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 15 years
Proposed Daily Production: 1,300 MTPD
Maximum Ore Depth:
Stripping Ratio:
Haulage Distance/Road Requirements: 5 km new roads 150 km haul to railhead
Distance From Power:
Pre-Production Development:

Production Development:

Equipment: Jumbos, L.H.O.S / Trucks
Concentrate Production: 25 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: 1.1 m/day, 12 m²
Raises & face-m/day & sqm: .3 m/day, 4 m²
Inclines & face-m/day & sqm: -
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .010/day, 1000 m²
Ore rate-mtpd: 1,300 MTPD
Hoist depth, rate & time-m, mtph, hr/day:
500 m 100 MTPH 4 hrs/day
Haul distance-m: 2,200 m
Compressed air-cm/min: 45 m³/min.
Ventilation-cm/min: 5,000 m³/min
Conveyor length & slope-km & %: -
Water needs-cm/hr & hr/day: 6 m³/hr, 16 hrs/day
Drainage, head-cm/day & m: NONE
Concentrate (dry) rate-mtpd: 25 MTPD
Tails (dry) rate-mtpd: 1275 MTPD
Production water needs-cm/day: 325 m.u., 2,600 m³/day recycle.
Portable Power needs-kW: 2,800 kW
Wastewater-L/sec: 5 L/sec
Concentrate haul-km: 150 km to railhead
Employee housing-men: 80 men
Other: $1,173/day Table Operation
Other: $1,304/day Rail Haulage

B.(For Capital Costs)

Concentrate feeds-mtpd: 1300 mTPD
Mill operating costs-$/day: $16,159/day
Working capital time-weeks: 13 weeks
Development time-days:
Shaft sinking & face-m & sqm: 500m, 20m
Drifting & face-m & sqm: 4,000 m³, 15m²
Raises & face-m & sqm: 800 m, 4m²
Inclines & face-m & sqm: 6,000 m, 12m²
Ore pockets-mt: 1900 mT
Stope preparations-stopes & sqm: 4, 1000m²
Dewatering; head, dys & rate-m, dys & cm/day: None
Rehabilitation (total tonnage)-mt: 1,300 mTPD
Contractors-1 or 2: 1
Mine operating costs-$/day: $29,728/day
Access roads, length & width-km & m: 5km, 12m
Airstrip length & width-m: 1,200 m, 18m
Townsite cost-$: $2,234,520
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 100,000 m³
Climate/Weather factors: Severe
Other: $715,096 Table Cost
Other:

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 29,728
Mining Costs-$/yr: 10,702,080
Mining Costs-$/mt: 22.87
Milling Costs-$/day: 16,159
Milling Costs-$/yr: 5,817,240
Milling Costs-$/mt: 12.43
Infrastructure Costs-$/day: 16,913
Infrastructure Costs-$/yr: 6,088,680
Infrastructure Costs-$/mt: 13.01
Total Operating Costs-$/day: 62,800
Total Operating Costs-$/yr: 22,608,000
Total Operating Costs-$/mt: 48,31
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 2,705,248
Heavy Equipment (fixed life)-$: 5,250,539 *
Mine Rehabilitation-$: 1,223,621 *
Engr. & Const. Mgmt.-$: 3,883,640 *
Other:
Remaining Mine Capital-$: 20,564,609
Total Mine Capital Cost-$: 33,627,657

MILL CAPITAL COSTS:

Mill Working Capital-$: 1470469
Light Vehicles (short life)-$: 860,579 *
Other:
Remaining Mill Capital-$: 7,379,895 ~
Total Mill Capital Cost-$: 9,710,943

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 6,160,525 *
Other:
Remaining Infrastructure Capital-$: 7,461,498 ~
Total Infrastructure Capital-$: 13,622,023

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 4,175,717 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 35,406,002 *
Sum of Total Mine, Mill & Infr. Costs-$: 56960623
Exploration Cost-$: 5,696,060 *

Overall Capital Cost-$: 62,656,685
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:WVENTM.SEE Date:12/05/93 Time:08:28:03

TUNGSTEN VEINS, TABLE MT, ADIT ENTRY

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	2,705,248	WC	Mid Year	18.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	5,250,539	MACRS	Mid Year	13.0	0		0	.....
3	04/02	5,250,539	MACRS	Mid Year	10.0	0		0	.....
4	04/89	1,223,621	MACRS	Mid Year	18.0	0		0	.....
5	04/89	3,883,640	MACRS	Mid Year	18.0	0		0	.....
6	04/89	20,564,609	MACRS	Mid Year	18.0	0		0	.....
7	04/89	1,470,469	WC	Mid Year	18.0	0		0	.....
8	04/89	860,579	MACRS	Mid Year	4.0	0		0	.....
9	04/93	860,579	MACRS	Mid Year	4.0	0		0	.....
10	04/97	860,579	MACRS	Mid Year	4.0	0		0	.....
11	04/01	860,579	MACRS	Mid Year	4.0	0		0	.....
12	04/05	860,579	MACRS	Mid Year	4.0	0		0	.....
13	04/89	7,379,895	MACRS	Mid Year	18.0	0		0	.....
14	04/89	6,160,525	MACRS	Mid Year	18.0	0		0	.....
15	04/89	7,461,498	MACRS	Mid Year	18.0	0		0	.....
16	04/89	5,696,060	EXPL-X	Mid Year	18.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	474,500.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	WO3 GRADE %	N/A:	04/92	End	0.014	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.000	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.000	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	WO3 $/TONNE	N/A:	04/92	End	6,600.00	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	10,702,080.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	5,817,240.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,088,680.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S15	TRANS COSTS	Annual:	04/92	End	1,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/89	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
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E1 . ZN REV	S1*S2*S7*S16*S17
E2 . WO3 REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

TUNGSTEN VEINS, TABLE MT, ADIT ENTRY

Cash Flows

NPV =$-881,019 DCFROR= 9.7% GROR = 9.9% PWROR = 9.7% Pay Back= 7.64 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
WO3 REV		33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
GROSS REVENUE		33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
Total Revenue		33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
-SMELTING CHARGES		-335,405	-335,405	-335,405	-335,405	-335,405	-335,405
-Total Smelting Cost		-335,405	-335,405	-335,405	-335,405	-335,405	-335,405
Net Smelt Ret.		33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102
-MHT ROYALTY		-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204
-Total Royalties		-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204
Net Revenue		31,916,898	31,916,898	31,916,898	31,916,898	31,916,898	31,916,898
-OPER COSTS		-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000
-Total Oper Costs		-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000
-Dev, IDC	-3,987,242						
-Depreciation	-3,212,021	-5,966,222	-5,361,088	-4,834,068	-4,106,800	-3,547,517	-3,310,325
-Amortization	-1,025,291	-341,764	-341,764				
-Write Off							
Before Depltn	-8,224,553	2,000,912	2,606,047	3,474,829	4,202,097	4,761,381	4,998,573
100% Limit		2,000,912	2,606,047	3,474,829	4,202,097	4,761,381	4,998,573
Percent Depln		4,787,535	4,787,535	4,787,535	4,787,535	4,787,535	4,787,535
Prev Exp Expl		2,000,912	1,986,330				
-Depletion			-619,716	-3,474,829	-4,202,097	-4,761,381	-4,787,535
-Total D,D & A	-8,224,553	-6,307,986	-6,322,568	-8,308,898	-8,308,898	-8,308,898	-8,097,860
Taxable	-8,224,553	2,000,912	1,986,330				211,038
-Tax Due	2,796,348	-680,310	-675,352				-81,503
Net Income	-5,428,205	1,320,602	1,310,978				129,535
+Depreciation	3,212,021	5,966,222	5,361,088	4,834,068	4,106,800	3,547,517	3,310,325
+Depletion			619,716	3,474,829	4,202,097	4,761,381	4,787,535
+Amortization	1,025,291	341,764	341,764				
+Write Off							
-Capital Costs	-58,669,441		-860,579				-860,579
Cash Flow	-59,860,335	7,628,588	6,772,967	8,308,898	8,308,898	8,308,898	7,366,816

Year	7	8	9	10	11	12	13
WO3 REV	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
GROSS REVENUE	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
Total Revenue	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
-SMELTING CHARGES	-335,405	-335,405	-335,405	-335,405	-335,405	-335,405	-335,405
-Total Smelting Cost	-335,405	-335,405	-335,405	-335,405	-335,405	-335,405	-335,405
Net Smelt Ret.	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102
-MHT ROYALTY	-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204
-Total Royalties	-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204	-1,288,204
Net Revenue	31,916,898	31,916,898	31,916,898	31,916,898	31,916,898	31,916,898	31,916,898
-OPER COSTS	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000
-Total Oper Costs	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000
-Dev, IDC							
-Depreciation	-3,012,357	-2,582,557	-2,290,156	-2,339,226	-2,918,066	-3,176,750	-2,797,111
-Amortization							
-Write Off							
Before Depltn	5,296,541	5,726,341	6,018,741	5,969,672	5,390,832	5,132,147	5,511,787
100% Limit	5,296,541	5,726,341	6,018,741	5,969,672	5,390,832	5,132,147	5,511,787
Percent Depln	4,787,535	4,787,535	4,787,535	4,787,535	4,787,535	4,787,535	4,787,535
Prev Exp Expl							
-Depletion	-4,787,535	-4,787,535	-4,787,535	-4,787,535	-4,787,535	-4,787,535	-4,787,535
-Total D,D & A	-7,799,892	-7,370,092	-7,077,691	-7,126,761	-7,705,601	-7,964,285	-7,584,645
Taxable	509,006	938,806	1,231,207	1,182,137	603,297	344,613	724,252
-Tax Due	-196,578	-362,567	-475,492	-456,541	-232,993	-133,089	-279,706
Net Income	312,428	576,239	755,715	725,596	370,304	211,523	444,546
+Depreciation	3,012,357	2,582,557	2,290,156	2,339,226	2,918,066	3,176,750	2,797,111
+Depletion	4,787,535	4,787,535	4,787,535	4,787,535	4,787,535	4,787,535	4,787,535
+Amortization							
+Write Off							
-Capital Costs				-860,579	-5,250,539		
Cash Flow	8,112,320	7,946,331	7,833,406	6,991,777	2,825,365	8,175,808	8,029,192

Year	14	15	Salvage
WO3 REV	33,540,507	33,540,507	
GROSS REVENUE	33,540,507	33,540,507	
Total Revenue	33,540,507	33,540,507	4,175,717
-SMELTING CHARGES	-335,405	-335,405	
-Total Smelting Cost	-335,405	-335,405	
Net Smelt Ret.	33,205,102	33,205,102	
-MHT ROYALTY	-1,288,204	-1,288,204	
-Total Royalties	-1,288,204	-1,288,204	
Net Revenue	31,916,898	31,916,898	
-OPER COSTS	-23,608,000	-23,608,000	
-Total Oper Costs	-23,608,000	-23,608,000	
-Dev, IDC			
-Depreciation	-2,670,420	-2,603,233	-6,749,842
-Amortization			
-Write Off			-4,175,717
Before Depltn	5,638,478	5,705,664	-6,749,842
100% Limit	5,638,478	5,705,664	
Percent Depln	4,787,535	4,787,535	
Prev Exp Expl			
-Depletion	-4,787,535	-4,787,535	
-Total D,D & A	-7,457,954	-7,390,768	-10,925,559
Taxable	850,943	918,130	-6,749,842
-Tax Due	-328,634	-354,582	2,606,789
Net Income	522,309	563,548	-4,143,053
+Depreciation	2,670,420	2,603,233	6,749,842
+Depletion	4,787,535	4,787,535	
+Amortization			
+Write Off			4,175,717
-Capital Costs	-860,579		
Cash Flow	7,119,684	7,954,316	6,782,506

List of Assumptions File:WVENTM.SEE Date:12/05/93 Time:08:39:27

TUNGSTEN VEINS, TABLE MT, ADIT ENTRY

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	2,705,248	WC	Mid Year	18.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	5,250,539	MACRS	Mid Year	13.0	0		0	.....
3	04/02	5,250,539	MACRS	Mid Year	10.0	0		0	.....
4	04/89	1,223,621	MACRS	Mid Year	18.0	0		0	.....
5	04/89	3,883,640	MACRS	Mid Year	18.0	0		0	.....
6	04/89	20,564,609	MACRS	Mid Year	18.0	0		0	.....
7	04/89	1,470,469	WC	Mid Year	18.0	0		0	.....
8	04/89	860,579	MACRS	Mid Year	4.0	0		0	.....
9	04/93	860,579	MACRS	Mid Year	4.0	0		0	.....
10	04/97	860,579	MACRS	Mid Year	4.0	0		0	.....
11	04/01	860,579	MACRS	Mid Year	4.0	0		0	.....
12	04/05	860,579	MACRS	Mid Year	4.0	0		0	.....
13	04/89	7,379,895	MACRS	Mid Year	18.0	0		0	.....
14	04/89	6,160,525	MACRS	Mid Year	18.0	0		0	.....
15	04/89	7,461,498	MACRS	Mid Year	18.0	0		0	.....
16	04/89	5,696,060	EXPL-X	Mid Year	18.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	474,500.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	WO3 GRADE %	N/A:	04/92	End	0.014	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.000	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.000	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	WO3 $/TONNE	N/A:	04/92	End	6,600.00	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	10,702,080.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	5,817,240.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,088,680.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S15	TRANS COSTS	Annual:	04/92	End	1,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/89	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . WO3 REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

TUNGSTEN VEINS, TABLE MT, ADIT ENTRY

Cash Flows

NPV =$5,207,912 DCFROR= 11.5% GROR = 10.6% PWROR = 11.5% Pay Back= 6.90 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
WO3 REV		33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
GROSS REVENUE		33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
Total Revenue		33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
-SMELTING CHARGES		-335,405	-335,405	-335,405	-335,405	-335,405	-335,405
-Total Smelting Cost		-335,405	-335,405	-335,405	-335,405	-335,405	-335,405
Net Smelt Ret.		33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102
Net Revenue		33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102
-OPER COSTS		-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000
-Total Oper Costs		-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000
-MHT NPI		-297,975	-297,975	-297,975	-297,975	-297,975	-297,975
-Total Sev. Ad Valor		-297,975	-297,975	-297,975	-297,975	-297,975	-297,975
-Dev, IDC	-3,987,242						
-Depreciation	-3,212,021	-5,966,222	-5,361,088	-4,834,068	-4,106,800	-3,547,517	-3,310,325
-Amortization	-1,025,291	-341,764	-341,764				
-Write Off							
Before Depltn	-8,224,553	2,991,141	3,596,276	4,465,058	5,192,326	5,751,609	5,988,802
100% Limit		2,991,141	3,596,276	4,465,058	5,192,326	5,751,609	5,988,802
Percent Depln		4,980,765	4,980,765	4,980,765	4,980,765	4,980,765	4,980,765
Prev Exp Expl		2,991,141	996,101				
-Depletion			-2,600,174	-4,465,058	-4,980,765	-4,980,765	-4,980,765
-Total D,D & A	-8,224,553	-6,307,986	-8,303,025	-9,299,127	-9,087,566	-8,528,283	-8,291,090
Taxable	-8,224,553	2,991,141	996,101		211,561	770,844	1,008,036
-Tax Due	2,796,348	-1,016,988	-338,674		-81,705	-297,700	-389,304
Net Income	-5,428,205	1,974,153	657,427		129,856	473,144	618,733
+Depreciation	3,212,021	5,966,222	5,361,088	4,834,068	4,106,800	3,547,517	3,310,325
+Depletion			2,600,174	4,465,058	4,980,765	4,980,765	4,980,765
+Amortization	1,025,291	341,764	341,764				
+Write Off							
-Capital Costs	-58,669,441		-860,579				-860,579
Cash Flow	-59,860,335	8,282,139	8,099,873	9,299,127	9,217,422	9,001,427	8,049,244

Year	7	8	9	10	11	12	13
WO3 REV	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
GROSS REVENUE	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
Total Revenue	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507	33,540,507
-SMELTING CHARGES	-335,405	-335,405	-335,405	-335,405	-335,405	-335,405	-335,405
-Total Smelting Cost	-335,405	-335,405	-335,405	-335,405	-335,405	-335,405	-335,405
Net Smelt Ret.	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102
Net Revenue	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102	33,205,102
-OPER COSTS	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000
-Total Oper Costs	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000	-23,608,000
-MHT NPI	-297,975	-297,975	-297,975	-297,975	-297,975	-297,975	-297,975
-Total Sev. Ad Valor	-297,975	-297,975	-297,975	-297,975	-297,975	-297,975	-297,975
-Dev, IDC							
-Depreciation	-3,012,357	-2,582,557	-2,290,156	-2,339,226	-2,918,066	-3,176,750	-2,797,111
-Amortization							
-Write Off							
Before Depltn	6,286,770	6,716,570	7,008,970	6,959,901	6,381,061	6,122,376	6,502,016
100% Limit	6,286,770	6,716,570	7,008,970	6,959,901	6,381,061	6,122,376	6,502,016
Percent Depln	4,980,765	4,980,765	4,980,765	4,980,765	4,980,765	4,980,765	4,980,765
Prev Exp Expl							
-Depletion	-4,980,765	-4,980,765	-4,980,765	-4,980,765	-4,980,765	-4,980,765	-4,980,765
-Total D,D & A	-7,993,122	-7,563,322	-7,270,922	-7,319,991	-7,898,831	-8,157,516	-7,777,876
Taxable	1,306,004	1,735,804	2,028,205	1,979,136	1,400,295	1,141,611	1,521,251
-Tax Due	-504,379	-670,368	-783,293	-764,342	-540,794	-440,890	-587,507
Net Income	801,626	1,065,437	1,244,912	1,214,793	859,501	700,721	933,744
+Depreciation	3,012,357	2,582,557	2,290,156	2,339,226	2,918,066	3,176,750	2,797,111
+Depletion	4,980,765	4,980,765	4,980,765	4,980,765	4,980,765	4,980,765	4,980,765
+Amortization							
+Write Off							
-Capital Costs				-860,579	-5,250,539		
Cash Flow	8,794,748	8,628,759	8,515,834	7,674,206	3,507,794	8,858,237	8,711,620

Year	14	15	Salvage
WO3 REV	33,540,507	33,540,507	
GROSS REVENUE	33,540,507	33,540,507	
Total Revenue	33,540,507	33,540,507	4,175,717
-SMELTING CHARGES	-335,405	-335,405	
-Total Smelting Cost	-335,405	-335,405	
Net Smelt Ret.	33,205,102	33,205,102	
Net Revenue	33,205,102	33,205,102	
-OPER COSTS	-23,608,000	-23,608,000	
-Total Oper Costs	-23,608,000	-23,608,000	
-MHT NPI	-297,975	-297,975	

Year	14	15	Salvage
-Total Sev. Ad Valor	-297,975	-297,975	
-Dev, IDC			
-Depreciation	-2,670,420	-2,603,233	-6,749,842
-Amortization			
-Write Off			-4,175,717
Before Depltn	6,628,707	6,695,893	-6,749,842
100% Limit	6,628,707	6,695,893	
Percent Depln	4,980,765	4,980,765	
Prev Exp Expl			
-Depletion	-4,980,765	-4,980,765	
-Total D,D & A	-7,651,185	-7,583,999	-10,925,559
Taxable	1,647,942	1,715,128	-6,749,842
-Tax Due	-636,435	-662,382	2,606,789
Net Income	1,011,507	1,052,746	-4,143,053
+Depreciation	2,670,420	2,603,233	6,749,842
+Depletion	4,980,765	4,980,765	
+Amortization			
+Write Off			4,175,717
-Capital Costs	-860,579		
Cash Flow	7,802,113	8,636,744	6,782,506

APPENDIX B-8a

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

PORPHYRY COPPER-MOLYBDENUM (Cu-Mo) DEPOSITS

8a. DESCRIPTIVE MODEL OF PORPHYRY Cu-Mo

By Dennis P. Cox

DESCRIPTION Stockwork veinlets of quartz, chalcopyrite, and molybdenite in or near a porphyritic intrusion. Ratio of Au (in ppm) to Mo (in percent) less than 3.

GENERAL REFERENCE Titley (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Tonalite to monzogranite stocks and breccia pipes intrusive into batholithic, volcanic, or sedimentary rocks.

Textures Intrusions contemporaneous with ore commonly are porphyries with fine- to medium-grained aplitic groundmass. Porphyry texture may be restricted to small dikes in some deposits (Brenda).

Age Range Mainly Mesozoic to Tertiary, but can be any age.

Depositional Environment High-level intrusive porphyry contemporaneous with abundant dikes, faults, and breccia pipes. Cupolas of batholiths.

Tectonic Setting(s) Numerous faults in subduction-related volcanic plutonic arcs. Mainly along continental margins but also in oceanic convergent plate boundaries.

Associated Deposit Types Cu, Zn, or Fe skarns may be rich in gold, gold + base-metal sulfosalts in veins, gold placers. Volcanic-hosted massive replacement and polymetallic replacement.

DEPOSIT DESCRIPTION

Mineralogy Chalcopyrite + pyrite + molybdenite. Peripheral vein or replacement deposits with chalcopyrite + sphalerite + galena ± gold. Outermost zone may have veins of Cu-Ag-Sb-sulfides, barite, and gold.

Texture/Structure Veinlets and disseminations or massive replacement of favorable country rocks.

Alteration Quartz + K-feldspar + biotite (chlorite) ± anhydrite (potassic alteration) grading outward to propylitic. Late white mica + clay (phyllic) alteration may form capping or outer zone or may affect the entire deposit. High-alumina alteration assemblages may be present in upper levels of the system (see table 3).

Ore Controls Ore grade is, in general, positively correlated with spacing of veinlets and mineralized fractures. Country rocks favorable for mineralization are calcareous sediments; diabase, tonalite, or diorite.

Weathering Intense leaching of surface; wide areas of iron oxide stain. Fractures coated with hematitic limonite. Supergene copper as chalcocite may form blanket below leached zone. Residual soils may contain anomalous amounts of rutile.

Geochemical Signature Cu + Mo + Ag ± W ± B ± Sr center; Pb, Zn, Au, As, Sb, Se, Te, Mn, Co, Ba, and Rb in outer zone. Locally Bi and Sn form distal anomalies. High S in all zones. Ratio of Au (ppm): Mo (percent) ≤ 3. Magnetic low.

EXAMPLES

Brenda, CNBC	(Soregaroli and Whitford, 1976)
Sierrita Esperanza, USAZ	(West and Aiken, 1982)

GRADE AND TONNAGE MODEL OF PORPHYRY Cu-Mo

After Donald A. Singer, Dennis P. Cox, and Dan L. Mosier

COMMENTS These deposits are a subset of porphyry Cu-Mo deposits for which a Cu, Mo and Au grade were available. Upper ten percent of deposits contain an minimum of 2.1 billion tonnes at 0.69% Cu, 0.035% Mo, 0.043 grams/tonne Au and 4.2 grams/tonne Ag. Total contained metal is 14.5 million tonnes Cu, 0.74 million tonnes Mo, 90.3 million grams Au, and 8.8 billion grams Ag. Gross value of metal in 1987 would have been $33.9 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 104 million tonnes per year or 300,000 tonnes per day.

Gross Value of Annual Production $1.70 billion.

Net Present Value of 4% NSR $68.0 million times 8.514 is $579.0 billion.

Comments, Assumptions, Specifications: PCM
Porphyry Cu-Mo, Tanacross Cluster (Taurus/Pluff)

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Porphyry Cu-Mo
Total Ore Tonnage: 2.1 bil mt
Mining Method: Open Pit
Beneficiation Method: Mobile Crush S.A.G. Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 30 yrs
Proposed Daily Production: 200,000 MTPD
Maximum Ore Depth: 600 m
Stripping Ratio: 1.5:1
Haulage Distance/Road Requirements: ≈160 km
new road, total haul ≈ 610 km to Valdez
Distance From Power: 530 km
Pre-Production Development:

Production Development:

Equipment: Shovels / Trucks
Concentrate Production: 5,150 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: 3 ha/day
Burden/Waste rate-mtpd: 300,000 MTPD
Burden/Waste depth & haul-m: 170 m, 5,600 m
Ore rate-mtpd: 200,000 MTPD
Ore depth & haul-m: 240 m, 3,650 m
Conveyor length & slope-km & %: 1.5 km 6%
Water needs-cm/day: 35,000 m³/day
Drainage, head & distance-cm/day, m & km:
60,000 m³/day, 250 m, 1.5 km
Concentrate (dry) rate-mtpd: 5,150 MTPD
Tails (dry) rate-mtpd: 195,000 MTPD
Production water needs-cm/day: 150,000 m³/day m.u., 450,000 m³/day-recycle
Portable Power needs-kW: —
Wastewater-L/sec: 800 L/sec
Concentrate haul-km: 610 km
Employee housing-men: 1000 men
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 200,000 MTPD
Mill operating costs-$/day: $811,938/day
Working capital time-weeks: 13 weeks
Development time-days: 220 days @ 500,000 MTPD
Clearing needs-ha: 1,300 ha

Stripping needs-mt: 112 ~ 1 mt
Stripping depth & haul-m: 5m, 4000m
Restoration area-ha: 4200 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $1,007,034/da
Access roads, length & width-km & m: 160km,
Airstrip length & width-m: 1,800m, 25 m
Powerline length & power-km & mW: 530km, 2
Dike & Dam needs-cm/fill: 5,000,000 m3
Climate/Weather factors: Severe
Other:
Other:

[redacted]

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 1007,034
Mining Costs-$/yr: 362,532,240
Mining Costs-$/mt: 5.04
Milling Costs-$/day: 811,938
Milling Costs-$/yr: 292,297,680
Milling Costs-$/mt: 4.06
Infrastructure Costs-$/day: 377,791
Infrastructure Costs-$/yr: 136,004,760
Infrastructure Costs-$/mt: 1.89
Total Operating Costs-$/day: 2,196,763
Total Operating Costs-$/yr: 790,834,680
Total Operating Costs-$/mt: 10.98
Other:
Other:

[redacted]

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 91,640,094
Heavy Equipment (fixed life)-$: 394,554,340 *
Mine Rehabilitation-$: 39104100 *
Engr. & Const. Mgmt.-$: 23,511,526 *
Other:
Remaining Mine Capital-$: 202,266,150 -
Total Mine Capital-$: 751,076,210

MILL CAPITAL COSTS:

Mill Working Capital-$: 73886,358
Light Vehicles (short life)-$: $4,909,807 *
Other:
Remaining Mill Capital-$: 373,789,412 -
Total Mill Capital-$: 452,664,577

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 96,437,187 *

Other: _____
Remaining Infrastructure Capital-$: 324,320 306
Total Infrastructure Capital-$: 420,757,493

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 165,526,452 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 900,374,868 *
Sum of Total Mine, Mill & Infr. Costs-$: 1,624,498,280
Exploration Cost-$: 162,449,830 *

Overall Capital Cost-$: 1,786,948,108
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:PCMTB.SEE Date:12/05/93 Time:07:20:27

PORPHYRY CU-MO, TANACROSS AREA (TAURUS/BLUFF)

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 30
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR, Inflation & Exponents					Tax Rates		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
21	21.0000	21.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
22	22.0000	22.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
23	23.0000	23.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
24	24.0000	24.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
25	25.0000	25.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
26	26.0000	26.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
27	27.0000	27.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
28	28.0000	28.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
29	29.0000	29.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
30	30.0000	30.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	394,554,340	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	39,104,100	MACRS	Mid Year	33.0	0			0 .....
3	04/89	23,511,526	MACRS	Mid Year	33.0	0			0 .....
4	04/89	202,266,150	MACRS	Mid Year	33.0	0			0 .....
5	04/89	91,640,094	WC	Mid Year	33.0	0			0 .....
6	04/89	4,989,807	MACRS	Mid Year	4.0	0			0 .....
7	04/93	4,989,807	MACRS	Mid Year	4.0	0			0 .....
8	04/97	4,989,807	MACRS	Mid Year	4.0	0			0 .....
9	04/89	373,788,412	MACRS	Mid Year	33.0	0			0 .....
10	04/89	73,886,358	WC	Mid Year	33.0	0			0 .....
11	04/89	96,437,187	MACRS	Mid Year	33.0	0			0 .....
12	04/89	162,449,830	EXPL-X	Mid Year	33.0	0			0 .....
13	04/02	324,320,306	MACRS	Mid Year	33.0	0			0 .....
14	.....	0	MACRS	Mid Year	7.0	0			0 .....
15	.....	0	MACRS	Mid Year	7.0	0			0 .....
16	.....	0	MACRS	Mid Year	7.0	0			0 .....
17	.....	0	MACRS	Mid Year	7.0	0			0 .....
18	04/01	4,989,807	MACRS	Mid Year	4.0	0			0 .....
19	04/05	4,989,807	MACRS	Mid Year	4.0	0			0 .....
20	04/09	4,989,807	MACRS	Mid Year	4.0	0			0 .....
21	04/13	4,989,807	MACRS	Mid Year	4.0	0			0 .....
22	04/17	4,989,807	MACRS	Mid Year	4.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	73,000,000.00	Constant	0.000
#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S2	MO GRADE %	N/A:	04/92	End	0.000350	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0069	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.13	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0014	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	362,532,240.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	292,297,600.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	136,004,760.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	16,200,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1	MO REV	S1*S2*S7*S16*S17
E2	CU REV	S1*S3*S8*S16*S17
E3	PB REV	S1*S4*S9*S16*S17
E4	AG REV	S1*S5*S10*S16*S17
E5	AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6	GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8	OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI S20*(E6-E8)

Equations continued

Royalties
==========

E9 . MHT ROYALTY S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES S18*E6

PORPHYRY CU-MO, TANACROSS AREA (TAURUS/BLUFF)

Cash Flows

NPV =$1,897,467,626 DCFROR= 25.4% GROR = 13.2% PWROR = 25.4% Pay Back= 3.82 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325
CU REV		1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877
AG REV		36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395
AU REV		32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285
GROSS REVENUE		1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
Total Revenue		1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
-SMELTING CHARGES		-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
-Total Smelting Cost		-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
Net Smelt Ret.		1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
-MHT ROYALTY		-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641
-Total Royalties		-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641
Net Revenue		1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372
-OPER COSTS		-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Total Oper Costs		-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Dev, IDC	-113,714,881						
-Depreciation	-43,663,942	-80,178,544	-71,870,194	-64,888,030	-57,468,710	-51,622,634	-48,139,311
-Amortization	-29,240,969	-9,746,990	-9,746,990				
-Write Off							
Before Depltn	-186,619,792	350,695,238	359,003,589	375,732,742	383,152,062	388,998,139	392,481,462
100% Limit		350,695,238	359,003,589	375,732,742	383,152,062	388,998,139	392,481,462
Percent Depln		187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306
Prev Exp Expl		113,714,881					
-Depletion		-73,433,425	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306
-Total D,D & A	-186,619,792	-163,358,959	-268,765,490	-252,036,336	-244,617,016	-238,770,940	-235,287,617
Taxable	-186,619,792	277,261,813	171,855,283	188,584,436	196,003,756	201,849,833	205,333,156
-Tax Due	63,450,729	-94,269,017	-58,430,796	-64,118,708	-75,696,651	-77,954,405	-79,299,665
Net Income	-123,169,063	182,992,797	113,424,487	124,465,728	120,307,106	123,895,427	126,033,491
+Depreciation	43,663,942	80,178,544	71,870,194	64,888,030	57,468,710	51,622,634	48,139,311
+Depletion		73,433,425	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306
+Amortization	29,240,969	9,746,990	9,746,990				
+Write Off							
-Capital Costs	-1,348,912,923		-4,989,807				-4,989,807
Cash Flow	-1,399,177,075	346,351,756	377,200,169	376,502,064	364,924,122	362,666,367	356,331,301

Year	7	8	9	10	11	12	13
MO REV	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325
CU REV	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877
AG REV	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395
AU REV	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285
GROSS REVENUE	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
Total Revenue	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
-SMELTING CHARGES	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
-Total Smelting Cost	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
Net Smelt Ret.	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
-MHT ROYALTY	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641
-Total Royalties	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641
Net Revenue	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372
-OPER COSTS	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Total Oper Costs	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Dev, IDC							
-Depreciation	-44,712,095	-43,776,506	-43,464,643	-44,400,232	-50,035,534	-53,604,394	-43,010,063
-Amortization							
-Write Off							
Before Depltn	395,908,678	396,844,267	397,156,130	396,220,541	390,585,238	387,016,379	397,610,709
100% Limit	395,908,678	396,844,267	397,156,130	396,220,541	390,585,238	387,016,379	397,610,709
Percent Depln	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306
Prev Exp Expl							
-Depletion	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306
-Total D,D & A	-231,860,400	-230,924,812	-230,612,949	-231,548,537	-237,183,840	-240,752,700	-230,158,369
Taxable	208,760,372	209,695,961	210,007,824	209,072,235	203,436,933	199,868,073	210,462,404
-Tax Due	-80,623,256	-80,984,580	-81,105,022	-80,743,697	-78,567,343	-77,189,050	-81,280,580
Net Income	128,137,116	128,711,381	128,902,802	128,328,538	124,869,589	122,679,023	129,181,823
+Depreciation	44,712,095	43,776,506	43,464,643	44,400,232	50,035,534	53,604,394	43,010,063
+Depletion	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306
+Amortization							
+Write Off							
-Capital Costs				-4,989,807	-324,320,306		
Cash Flow	359,997,517	359,636,192	359,515,751	354,887,268	37,733,123	363,431,723	359,340,192

Year	14	15	16	17	18	19	20
MO REV	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325
CU REV	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877
AG REV	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395
AU REV	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285
GROSS REVENUE	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
Total Revenue	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
-SMELTING CHARGES	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
-Total Smelting Cost	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
Net Smelt Ret.	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
-MHT ROYALTY	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641
-Total Royalties	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641
Net Revenue	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372
-OPER COSTS	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Total Oper Costs	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Dev, IDC							
-Depreciation	-33,663,184	-33,975,047	-33,039,458	-32,727,595	-33,663,184	-33,975,047	-33,039,458
-Amortization							
-Write Off							
Before Depltn	406,957,589	406,645,726	407,581,314	407,893,177	406,957,589	406,645,726	407,581,314
100% Limit	406,957,589	406,645,726	407,581,314	407,893,177	406,957,589	406,645,726	407,581,314
Percent Depln	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306
Prev Exp Expl							
-Depletion	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306
-Total D,D & A	-220,811,490	-221,123,353	-220,187,764	-219,875,901	-220,811,490	-221,123,353	-220,187,764
Taxable	219,809,283	219,497,420	220,433,009	220,744,872	219,809,283	219,497,420	220,433,009
-Tax Due	-84,890,345	-84,769,904	-85,131,228	-85,251,669	-84,890,345	-84,769,904	-85,131,228
Net Income	134,918,938	134,727,516	135,301,781	135,493,202	134,918,938	134,727,516	135,301,781
+Depreciation	33,663,184	33,975,047	33,039,458	32,727,595	33,663,184	33,975,047	33,039,458
+Depletion	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306
+Amortization							
+Write Off							
-Capital Costs	-4,989,807				-4,989,807		
Cash Flow	350,740,620	355,850,869	355,489,544	355,369,103	350,740,620	355,850,869	355,489,544

Year	21	22	23	24	25	26	27
MO REV	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325
CU REV	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877
AG REV	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395
AU REV	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285
GROSS REVENUE	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
Total Revenue	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
-SMELTING CHARGES	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
-Total Smelting Cost	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
Net Smelt Ret.	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
-MHT ROYALTY	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641
-Total Royalties	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641	-51,310,641
Net Revenue	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372	1,247,655,372
-OPER COSTS	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Total Oper Costs	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Dev, IDC							
-Depreciation	-32,727,595	-33,663,184	-33,975,047	-33,039,458	-32,727,595	-33,663,184	-33,975,047
-Amortization							
-Write Off							
Before Depltn	407,893,177	406,957,589	406,645,726	407,581,314	407,893,177	406,957,589	406,645,726
100% Limit	407,893,177	406,957,589	406,645,726	407,581,314	407,893,177	406,957,589	406,645,726
Percent Depln	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306
Prev Exp Expl							
-Depletion	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306	-187,148,306
-Total D,D & A	-219,875,901	-220,811,490	-221,123,353	-220,187,764	-219,875,901	-220,811,490	-221,123,353
Taxable	220,744,872	219,809,283	219,497,420	220,433,009	220,744,872	219,809,283	219,497,420
-Tax Due	-85,251,669	-84,890,345	-84,769,904	-85,131,228	-85,251,669	-84,890,345	-84,769,904
Net Income	135,493,202	134,918,938	134,727,516	135,301,781	135,493,202	134,918,938	134,727,516
+Depreciation	32,727,595	33,663,184	33,975,047	33,039,458	32,727,595	33,663,184	33,975,047
+Depletion	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306	187,148,306
+Amortization							
+Write Off							
-Capital Costs		-4,989,807				-4,989,807	
Cash Flow	355,369,103	350,740,620	355,850,869	355,489,544	355,369,103	350,740,620	355,850,869

Year	28	29	30	Salvage
MO REV	178,888,325	178,888,325	178,888,325	
CU REV	1,063,470,877	1,063,470,877	1,063,470,877	
AG REV	36,873,395	36,873,395	36,873,395	
AU REV	32,854,285	32,854,285	32,854,285	
GROSS REVENUE	1,312,086,882	1,312,086,882	1,312,086,882	
Total Revenue	1,312,086,882	1,312,086,882	1,312,086,882	165,526,452
-SMELTING CHARGES	-13,120,869	-13,120,869	-13,120,869	
-Total Smelting Cost	-13,120,869	-13,120,869	-13,120,869	
Net Smelt Ret.	1,298,966,013	1,298,966,013	1,298,966,013	
-MHT ROYALTY	-51,310,641	-51,310,641	-51,310,641	
-Total Royalties	-51,310,641	-51,310,641	-51,310,641	
Net Revenue	1,247,655,372	1,247,655,372	1,247,655,372	
-OPER COSTS	-807,034,600	-807,034,600	-807,034,600	
-Total Oper Costs	-807,034,600	-807,034,600	-807,034,600	
-Dev, IDC				
-Depreciation	-33,039,458	-32,727,595	-32,415,732	-187,028,780
-Amortization				
-Write Off				-165,526,452
Before Depltn	407,581,314	407,893,177	408,205,040	-187,028,780
100% Limit	407,581,314	407,893,177	408,205,040	
Percent Depln	187,148,306	187,148,306	187,148,306	
Prev Exp Expl				
-Depletion	-187,148,306	-187,148,306	-187,148,306	
-Total D,D & A	-220,187,764	-219,875,901	-219,564,038	-352,555,232
Taxable	220,433,009	220,744,872	221,056,734	-187,028,780
-Tax Due	-85,131,228	-85,251,669	-85,372,111	72,230,515
Net Income	135,301,781	135,493,202	135,684,624	-114,798,265
+Depreciation	33,039,458	32,727,595	32,415,732	187,028,780
+Depletion	187,148,306	187,148,306	187,148,306	
+Amortization				
+Write Off				165,526,452
-Capital Costs				
Cash Flow	355,489,544	355,369,103	355,248,662	237,756,967

List of Assumptions File:PCMTB.SEE Date:12/05/93 Time:07:37:17

PORPHYRY CU-MO, TANACROSS AREA (TAURUS/BLUFF)

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 30
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
21	21.0000	21.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
22	22.0000	22.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
23	23.0000	23.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
24	24.0000	24.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
25	25.0000	25.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
26	26.0000	26.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
27	27.0000	27.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
28	28.0000	28.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
29	29.0000	29.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
30	30.0000	30.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	394,554,340	MACRS	Mid Year	13.0	0		0	.....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	39,104,100	MACRS	Mid Year	33.0	0		0	.....
3	04/89	23,511,526	MACRS	Mid Year	33.0	0		0	.....
4	04/89	202,266,150	MACRS	Mid Year	33.0	0		0	.....
5	04/89	91,640,094	WC	Mid Year	33.0	0		0	.....
6	04/89	4,989,807	MACRS	Mid Year	4.0	0		0	.....
7	04/93	4,989,807	MACRS	Mid Year	4.0	0		0	.....
8	04/97	4,989,807	MACRS	Mid Year	4.0	0		0	.....
9	04/89	373,788,412	MACRS	Mid Year	33.0	0		0	.....
10	04/89	73,886,358	WC	Mid Year	33.0	0		0	.....
11	04/89	96,437,187	MACRS	Mid Year	33.0	0		0	.....
12	04/89	162,449,830	EXPL-X	Mid Year	33.0	0		0	.....
13	04/02	324,320,306	MACRS	Mid Year	33.0	0		0	.....
14	.....	0	MACRS	Mid Year	7.0	0		0	.....
15	.....	0	MACRS	Mid Year	7.0	0		0	.....
16	.....	0	MACRS	Mid Year	7.0	0		0	.....
17	.....	0	MACRS	Mid Year	7.0	0		0	.....
18	04/01	4,989,807	MACRS	Mid Year	4.0	0		0	.....
19	04/05	4,989,807	MACRS	Mid Year	4.0	0		0	.....
20	04/09	4,989,807	MACRS	Mid Year	4.0	0		0	.....
21	04/13	4,989,807	MACRS	Mid Year	4.0	0		0	.....
22	04/17	4,989,807	MACRS	Mid Year	4.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	73,000,000.00	Constant	0.000
#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S2	MO GRADE %	N/A:	04/92	End	0.000350	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0069	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.13	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0014	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	362,532,240.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	292,297,600.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	136,004,760.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	16,200,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1	MO REV	S1*S2*S7*S16*S17
E2	CU REV	S1*S3*S8*S16*S17
E3	PB REV	S1*S4*S9*S16*S17
E4	AG REV	S1*S5*S10*S16*S17
E5	AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6	GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8	OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI S20*(E6-E8)

Equations continued

Royalties
==========

E9 . MHT ROYALTY S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES S18*E6

PORPHYRY CU-MO, TANACROSS AREA (TAURUS/BLUFF)

Cash Flows

NPV =$2,137,983,625 DCFROR= 27.3% GROR = 13.5% PWROR = 27.3% Pay Back= 3.56 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325
CU REV		1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877
AG REV		36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395
AU REV		32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285
GROSS REVENUE		1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
Total Revenue		1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
-SMELTING CHARGES		-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
-Total Smelting Cost		-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
Net Smelt Ret.		1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
Net Revenue		1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
-OPER COSTS		-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Total Oper Costs		-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-MHT NPI		-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568
-Total Sev. Ad Valor		-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568
-Dev, IDC	-113,714,881						
-Depreciation	-43,663,942	-80,178,544	-71,870,194	-64,888,030	-57,468,710	-51,622,634	-48,139,311
-Amortization	-29,240,969	-9,746,990	-9,746,990				
-Write Off							
Before Depltn	-186,619,792	386,854,310	395,162,661	411,891,814	419,311,134	425,157,211	428,640,534
100% Limit		386,854,310	395,162,661	411,891,814	419,311,134	425,157,211	428,640,534
Percent Depln		194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902
Prev Exp Expl		113,714,881					
-Depletion		-81,130,021	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902
-Total D,D & A	-186,619,792	-171,055,555	-276,462,086	-259,732,932	-252,313,612	-246,467,536	-242,984,213
Taxable	-186,619,792	305,724,289	200,317,759	217,046,912	224,466,232	230,312,309	233,795,632
-Tax Due	63,450,729	-103,946,258	-68,108,038	-73,795,950	-86,688,859	-88,946,614	-90,291,873
Net Income	-123,169,063	201,778,031	132,209,721	143,250,962	137,777,373	141,365,695	143,503,759
+Depreciation	43,663,942	80,178,544	71,870,194	64,888,030	57,468,710	51,622,634	48,139,311
+Depletion		81,130,021	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902
+Amortization	29,240,969	9,746,990	9,746,990				
+Write Off							
-Capital Costs	-1,348,912,923		-4,989,807				-4,989,807
Cash Flow	-1,399,177,075	372,833,586	403,681,999	402,983,894	390,090,985	387,833,231	381,498,164

Year	7	8	9	10	11	12	13
MO REV	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325
CU REV	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877
AG REV	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395
AU REV	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285
GROSS REVENUE	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
Total Revenue	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
-SMELTING CHARGES	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
-Total Smelting Cost	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
Net Smelt Ret.	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
Net Revenue	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
-OPER COSTS	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Total Oper Costs	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-MHT NPI	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568
-Total Sev. Ad Valor	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568
-Dev, IDC							
-Depreciation	-44,712,095	-43,776,506	-43,464,643	-44,400,232	-50,035,534	-53,604,394	-43,010,063
-Amortization							
-Write Off							
Before Depltn	432,067,750	433,003,339	433,315,202	432,379,613	426,744,311	423,175,451	433,769,782
100% Limit	432,067,750	433,003,339	433,315,202	432,379,613	426,744,311	423,175,451	433,769,782
Percent Depln	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902
Prev Exp Expl							
-Depletion	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902
-Total D,D & A	-239,556,996	-238,621,408	-238,309,545	-239,245,134	-244,880,436	-248,449,296	-237,854,965
Taxable	237,222,848	238,158,437	238,470,300	237,534,711	231,899,409	228,330,549	238,924,880
-Tax Due	-91,615,464	-91,976,788	-92,097,230	-91,735,905	-89,559,552	-88,181,258	-92,272,788
Net Income	145,607,384	146,181,648	146,373,070	145,798,806	142,339,857	140,149,291	146,652,091
+Depreciation	44,712,095	43,776,506	43,464,643	44,400,232	50,035,534	53,604,394	43,010,063
+Depletion	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902
+Amortization							
+Write Off							
-Capital Costs				-4,989,807	-324,320,306		
Cash Flow	385,164,381	384,803,056	384,682,615	380,054,132	62,899,987	388,598,587	384,507,056

Year	14	15	16	17	18	19	20
MO REV	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325
CU REV	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877
AG REV	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395
AU REV	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285
GROSS REVENUE	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
Total Revenue	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
-SMELTING CHARGES	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
-Total Smelting Cost	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
Net Smelt Ret.	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
Net Revenue	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
-OPER COSTS	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Total Oper Costs	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-MHT NPI	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568
-Total Sev. Ad Valor	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568
-Dev, IDC							
-Depreciation	-33,663,184	-33,975,047	-33,039,458	-32,727,595	-33,663,184	-33,975,047	-33,039,458
-Amortization							
-Write Off							
Before Depltn	443,116,661	442,804,798	443,740,386	444,052,249	443,116,661	442,804,798	443,740,386
100% Limit	443,116,661	442,804,798	443,740,386	444,052,249	443,116,661	442,804,798	443,740,386
Percent Depln	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902
Prev Exp Expl							
-Depletion	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902
-Total D,D & A	-228,508,086	-228,819,949	-227,884,360	-227,572,497	-228,508,086	-228,819,949	-227,884,360
Taxable	248,271,759	247,959,896	248,895,485	249,207,348	248,271,759	247,959,896	248,895,485
-Tax Due	-95,882,553	-95,762,112	-96,123,436	-96,243,878	-95,882,553	-95,762,112	-96,123,436
Net Income	152,389,205	152,197,784	152,772,048	152,963,470	152,389,205	152,197,784	152,772,048
+Depreciation	33,663,184	33,975,047	33,039,458	32,727,595	33,663,184	33,975,047	33,039,458
+Depletion	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902
+Amortization							
+Write Off							
-Capital Costs	-4,989,807				-4,989,807		
Cash Flow	375,907,484	381,017,733	380,656,408	380,535,967	375,907,484	381,017,733	380,656,408

Year	21	22	23	24	25	26	27
MO REV	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325	178,888,325
CU REV	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877	1,063,470,877
AG REV	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395	36,873,395
AU REV	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285	32,854,285
GROSS REVENUE	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
Total Revenue	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882	1,312,086,882
-SMELTING CHARGES	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
-Total Smelting Cost	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869	-13,120,869
Net Smelt Ret.	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
Net Revenue	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013	1,298,966,013
-OPER COSTS	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-Total Oper Costs	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600	-807,034,600
-MHT NPI	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568
-Total Sev. Ad Valor	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568	-15,151,568
-Dev, IDC							
-Depreciation	-32,727,595	-33,663,184	-33,975,047	-33,039,458	-32,727,595	-33,663,184	-33,975,047
-Amortization							
-Write Off							
Before Depltn	444,052,249	443,116,661	442,804,798	443,740,386	444,052,249	443,116,661	442,804,798
100% Limit	444,052,249	443,116,661	442,804,798	443,740,386	444,052,249	443,116,661	442,804,798
Percent Depln	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902
Prev Exp Expl							
-Depletion	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902	-194,844,902
-Total D,D & A	-227,572,497	-228,508,086	-228,819,949	-227,884,360	-227,572,497	-228,508,086	-228,819,949
Taxable	249,207,348	248,271,759	247,959,896	248,895,485	249,207,348	248,271,759	247,959,896
-Tax Due	-96,243,878	-95,882,553	-95,762,112	-96,123,436	-96,243,878	-95,882,553	-95,762,112
Net Income	152,963,470	152,389,205	152,197,784	152,772,048	152,963,470	152,389,205	152,197,784
+Depreciation	32,727,595	33,663,184	33,975,047	33,039,458	32,727,595	33,663,184	33,975,047
+Depletion	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902	194,844,902
+Amortization							
+Write Off							
-Capital Costs		-4,989,807				-4,989,807	
Cash Flow	380,535,967	375,907,484	381,017,733	380,656,408	380,535,967	375,907,484	381,017,733

Year	28	29	30	Salvage
MO REV	178,888,325	178,888,325	178,888,325	
CU REV	1,063,470,877	1,063,470,877	1,063,470,877	
AG REV	36,873,395	36,873,395	36,873,395	
AU REV	32,854,285	32,854,285	32,854,285	
GROSS REVENUE	1,312,086,882	1,312,086,882	1,312,086,882	
Total Revenue	1,312,086,882	1,312,086,882	1,312,086,882	165,526,452
-SMELTING CHARGES	-13,120,869	-13,120,869	-13,120,869	
-Total Smelting Cost	-13,120,869	-13,120,869	-13,120,869	
Net Smelt Ret.	1,298,966,013	1,298,966,013	1,298,966,013	
Net Revenue	1,298,966,013	1,298,966,013	1,298,966,013	
-OPER COSTS	-807,034,600	-807,034,600	-807,034,600	
-Total Oper Costs	-807,034,600	-807,034,600	-807,034,600	
-MHT NPI	-15,151,568	-15,151,568	-15,151,568	
-Total Sev. Ad Valor	-15,151,568	-15,151,568	-15,151,568	
-Dev, IDC				
-Depreciation	-33,039,458	-32,727,595	-32,415,732	-187,028,780
-Amortization				
-Write Off				-165,526,452
Before Depltn	443,740,386	444,052,249	444,364,112	-187,028,780
100% Limit	443,740,386	444,052,249	444,364,112	
Percent Depln	194,844,902	194,844,902	194,844,902	
Prev Exp Expl				
-Depletion	-194,844,902	-194,844,902	-194,844,902	
-Total D,D & A	-227,884,360	-227,572,497	-227,260,634	-352,555,232
Taxable	248,895,485	249,207,348	249,519,210	-187,028,780
-Tax Due	-96,123,436	-96,243,878	-96,364,319	72,230,515
Net Income	152,772,048	152,963,470	153,154,891	-114,798,265
+Depreciation	33,039,458	32,727,595	32,415,732	187,028,780
+Depletion	194,844,902	194,844,902	194,844,902	
+Amortization				
+Write Off				165,526,452
-Capital Costs				
Cash Flow	380,656,408	380,535,967	380,415,525	237,756,967

APPENDIX B-8b

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR PORPHYRY COPPER-GOLD (Cu-Au) DEPOSITS

8b. DESCRIPTIVE MODEL OF PORPHYRY Cu-Au

By Dennis P. Cox

DESCRIPTION Stockwork veinlets of chalcopyrite, bornite, and magnetite in porphyritic intrusions and coeval volcanic rocks. Ratio of Au (ppm) to Mo (percent) is greater than 30.

GENERAL REFERENCES Sillitoe (1979), Cox and Singer (in press).

GEOLOGICAL ENVIRONMENT

Rock Types Tonalite to monzogranite; dacite, andesite flows and tuffs coeval with intrusive rocks. Also syenite, monzonite, and coeval high-K, low-Ti volcanic rocks (shoshonites).

Textures Intrusive rocks are porphyritic with fine- to medium-grained aplitic groundmass.

Age Range Cretaceous to Quaternary.

Depositional Environment In porphyry intruding coeval volcanic rocks. Both involved and in large-scale breccia. Porphyry bodies may be dikes. Evidence for volcanic center; 1-2 km depth of emplacement.

Tectonic Setting(s) Island-arc volcanic setting, especially waning stage of volcanic cycle. Also continental margin rift-related volcanism.

Associated Deposit Types Porphyry Cu-Mo; gold placers.

DEPOSIT DESCRIPTION

Mineralogy Chalcopyrite ± bornite; traces of native gold, electrum, sylvanite, and hessite. Quartz + K-feldspar + biotite + magnetite ± chlorite ± actinolite ± anhydrite. Pyrite + sericite ± clay minerals ± clacite may occur in late-stage veinlets.

Texture/Structure Veinlets and disseminations.

Alteration Quartz ± magnetite ± biotite (chlorite) ± K-feldspar ± actinolite, ± anhydrite in interior of system. Outer propylitic zone. Late quartz + pyrite + white mica ± clay may overprint early feldspar-stable alteration.

Ore Controls Veinlets and fractures of quartz, sulfides, K-feldspar magnetite, biotite, or chlorite are closely spaced. Ore zone has a bell shape centered on the volcanic-intrusive center. Highest grade ore is commonly at the level at which the stock divides into branches.

Weathering Surface iron staining may be weak or absent if pyrite content is low in protore. Copper silicates and carbonates. Residual soils contain anomalous amounts of rutile.

Geochemical Signature Central Cu, Au, Ag; peripheral Mo. Peripheral Pb, Zn, Mn anomalies may be present if late sericite pyrite alteration is strong. Au (ppm): Mo (percent) 30 in ore zone. Au enriched in residual soil over ore body. System may have magnetic high over intrusion surrounded by magnetic low over pyrite halo.

EXAMPLES

Doe Poores, USAZ	(Langton and Williams, 1982)
Copper Mountain, CNBC	(Fahrni and others, 1976)
Tanama, PTRC	(Cox, 1985)

GRADE AND TONNAGE MODEL OF PORPHYRY Cu-Au

After Donald A. Singer and Dennis P. Cox

COMMENTS Upper ten percent of deposits contain an minimum of 400 million tonnes at 0.72% Cu, 0.0072% Mo, 0.72 grams/tonne Au, and 4.0 grams/tonne Ag. Total contained metal is 2.9 million tonnes Cu, 0.029 million tonnes Mo, 288 million grams Au, and 1.6 billion grams Ag. Gross metal value in 1987 if $10.0 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 20 million tonnes per year or 56,000 tonnes per day.

Gross Value of Annual Production $500 million.

Net Present Value of 4% NSR $20.0 million times 8.514 is $170.3 million.

Comments, Assumptions, Specifications: PEB Pebble Beach
Cu-Au-Mo Porphyry, Lake mining area

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Cu-Au-Mo Porphyry
Total Ore Tonnage: 452 mil metric
Mining Method: Open Pit
Beneficiation Method: (mobile) Crush SAG, Float
Extraction Rate: ≥100%
Dilution/Waste Rate: ~0%
Proposed Mine Life: 20 years
Proposed Daily Production: 63,000 MTPD
Maximum Ore Depth: 250 m
Stripping Ratio: 2:1
Haulage Distance/Road Requirements: 40 miles
New Roads, 15 miles Upgrade, 55 miles Gravel, Paved all area
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Electric Shovels/Trucks
Concentrate Production: 300 MTPD

INPUT VARIABLES

A.(For Operating Costs)
Clearing rate-ha/day: .25 ha/day
Burden/Waste rate-mtpd: 120 000 mtpd
Burden/Waste depth & haul-m: 100 m, 3,500m
Ore rate-mtpd: 63,000 MTPD
Ore depth & haul-m: 110 m, 2,000 m
Conveyor length & slope-km & %: 7 km, 2%
Water needs-cm/day: 12,620 m³/day
Drainage, head & distance-cm/day, m & km:
20,000 m³/day, 250 m, 1.18 km
Concentrate (dry) rate-mtpd: 300 MTPD
Tails (dry) rate-mtpd: 63,000 MTPD
Production water needs-cm/day: 47250 m³/day, Max Out
Portable Power needs-kW: 140,000 kW
Wastewater-L/sec: 200 l/s
Concentrate haul-km: 90km road, 60km short haul
Employee housing-men: 500 men
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 63 000 mtpd
Mill operating costs-$/day: 272.381
Working capital time-weeks: 13
Development time-days. 250 days
Clearing needs-ha: 1,200 ha (5 ha/day)

Stripping needs-mt: 43 mil tons
Stripping depth & haul-m: 22 m , 2,222 m
Restoration area-ha: 3,000 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: 38[illegible]35
Access roads, length & width-km & m: 90km, 2m
Airstrip length & width-m: 1,600 m 18m
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 4 mil m^3
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 389 315
Mining Costs-$/yr: 140,153,400
Mining Costs-$/mt: 6.18
Milling Costs-$/day: 272,381
Milling Costs-$/yr: 98,057,160
Milling Costs-$/mt: 4.32
Infrastructure Costs-$/day: 210,475
Infrastructure Costs-$/yr: 75,771,000
Infrastructure Costs-$/mt: 3.34
Total Operating Costs-$/day: 872,171
Total Operating Costs-$/yr: 313,981,560
Total Operating Costs-$/mt: 13.84
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 35427,665
Heavy Equipment (fixed life)-$: 128,280,930 *
Mine Rehabilitation-$: 27,931,500 *
Engr. & Const. Mgmt.-$: 11,824,156 *
Other:
Remaining Mine Capital-$: 90,430,020 -
Total Mine Capital-$: 293,894,270

MILL CAPITAL COSTS:

Mill Working Capital-$: 24786671
Light Vehicles (short life)-$: 3,334,219 *
Other:
Remaining Mill Capital-$: 134,764,910 -
Total Mill Capital-$: 162,885,900

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 50,710,038 *

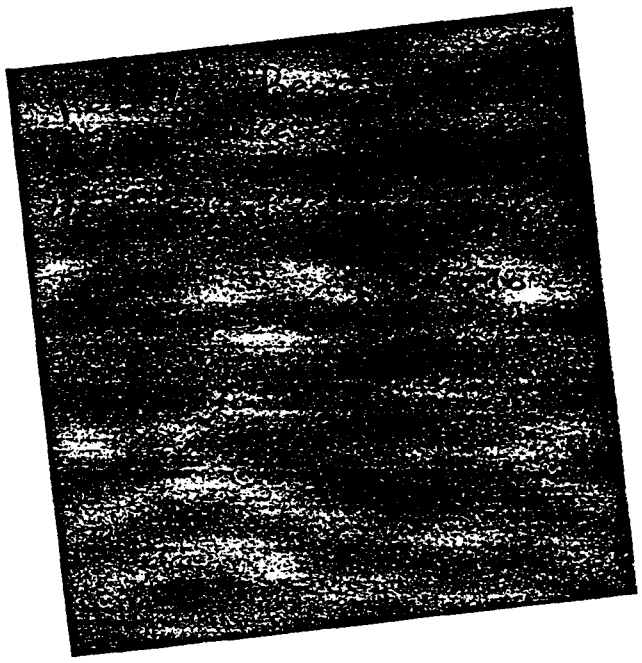
Other: _____
Remaining Infrastructure Capital-$: 160 378, 773
Total Infrastructure Capital-$: 211,088,811

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 60,214 336 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of *)-$: 385,573,702 *
Sum of Total Mine, Mill & Infr. Costs-$: 667,868,891
Exploration Cost-$: 66,786,900 *

Overall Capital Cost-$: 734,655,770
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)



List of Assumptions File:PEBBLE.SEE Date:07/25/93 Time:13:16:26

PEBBLE BEACH CU-AU-MO PORPHYRY, LAKE ILLIAMNA

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

	Minimum ROR, Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Constant Rate	: $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2008	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2009	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2010	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2011	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	128,280,930	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	27,931,500	MACRS	Mid Year	23.0	0			0 .....
3	04/89	11,824,156	MACRS	Mid Year	23.0	0			0 .....
4	04/89	90,430,020	MACRS	Mid Year	23.0	0			0 .....
5	04/89	35,427,665	WC	Mid Year	23.0	0			0 .....
6	04/89	3,334,219	MACRS	Mid Year	4.0	0			0 .....
7	04/93	3,334,219	MACRS	Mid Year	4.0	0			0 .....
8	04/97	3,334,219	MACRS	Mid Year	4.0	0			0 .....
9	04/89	134,764,910	MACRS	Mid Year	23.0	0			0 .....
10	04/89	24,786,671	WC	Mid Year	23.0	0			0 .....
11	04/89	50,710,038	MACRS	Mid Year	23.0	0			0 .....
12	04/89	66,766,900	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	128,280,930	MACRS	Mid Year	10.0	0			0 .....
14	04/01	3,334,219	MACRS	Mid Year	4.0	0			0 .....
15	04/05	3,334,219	MACRS	Mid Year	4.0	0			0 .....
16	04/09	3,334,219	MACRS	Mid Year	4.0	0			0 .....
17	04/89	160,378,773	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	22,680,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.00035	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0132	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

PEBBLE BEACH CU-AU-MO PORPHYRY, LAKE ILLIAMNA

Cash Flows

NPV =$-720,359,961 DCFROR=-11.7% GROR = 0.0% PWROR = -9.6% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997
MO REV		55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907
CU REV		167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423
AU REV		96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552
GROSS REVENUE		319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
Total Revenue		319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
-SMELTING CHARGES		-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
-Total Smelting Cost		-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
Net Smelt Ret.		316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
-MHT ROYALTY		-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829
-Total Royalties		-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829
Net Revenue		303,787,904	303,787,904	303,787,904	303,787,904	303,787,904	303,787,904
-OPER COSTS		-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Total Oper Costs		-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Dev, IDC	-46,736,830						
-Depreciation	-21,912,391	-40,165,107	-37,570,818	-35,407,709	-32,567,503	-30,452,790	-29,641,241
-Amortization	-12,018,042	-4,006,014	-4,006,014				
-Write Off							
Before Depltn	-80,667,263	-59,764,777	-57,170,487	-51,001,365	-48,161,159	-46,046,446	-45,234,897
Percent Depln		45,568,186	45,568,186	45,568,186	45,568,186	45,568,186	45,568,186
-Total D,D & A	-80,667,263	-44,171,121	-41,576,832	-35,407,709	-32,567,503	-30,452,790	-29,641,241
Taxable	-80,667,263	-59,764,777	-57,170,487	-51,001,365	-48,161,159	-46,046,446	-45,234,897
-Tax Due	27,426,870	20,320,024	19,437,966	17,340,464	18,599,840	17,783,137	17,469,717
Net Income	-53,240,394	-39,444,753	-37,732,522	-33,660,901	-29,561,319	-28,263,308	-27,765,180
+Depreciation	21,912,391	40,165,107	37,570,818	35,407,709	32,567,503	30,452,790	29,641,241
+Amortization	12,018,042	4,006,014	4,006,014				
+Write Off							
-Capital Costs	-687,898,952		-3,334,219				-3,334,219
Cash Flow	-707,208,912	4,726,368	510,091	1,746,808	3,006,184	2,189,481	-1,458,158

Year	1998	1999	2000	2001	2002	2003	2004
MO REV	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907
CU REV	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423
AU REV	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552
GROSS REVENUE	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
Total Revenue	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
-SMELTING CHARGES	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
-Total Smelting Cost	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
Net Smelt Ret.	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
-MHT ROYALTY	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829
-Total Royalties	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829
Net Revenue	303,787,904	303,787,904	303,787,904	303,787,904	303,787,904	303,787,904	303,787,904
-OPER COSTS	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Total Oper Costs	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Dev, IDC							
-Depreciation	-28,633,948	-28,008,782	-27,800,393	-28,425,559	-41,462,041	-51,099,349	-42,929,722
-Amortization							
-Write Off							
Before Deplin	-44,227,603	-43,602,437	-43,394,049	-44,019,215	-57,055,696	-66,693,005	-58,523,377
Percent Depln	45,568,186	45,568,186	45,568,186	45,568,186	45,568,186	45,568,186	45,568,186
-Total D,D & A	-28,633,948	-28,008,782	-27,800,393	-28,425,559	-41,462,041	-51,099,349	-42,929,722
Taxable	-44,227,603	-43,602,437	-43,394,049	-44,019,215	-57,055,696	-66,693,005	-58,523,377
-Tax Due	17,080,700	16,839,261	16,758,782	17,000,221	22,034,910	25,756,838	22,601,728
Net Income	-27,146,903	-26,763,176	-26,635,267	-27,018,994	-35,020,786	-40,936,166	-35,921,649
+Depreciation	28,633,948	28,008,782	27,800,393	28,425,559	41,462,041	51,099,349	42,929,722
+Amortization							
+Write Off							
-Capital Costs				-3,334,219	-128,280,930		
Cash Flow	1,487,045	1,245,605	1,165,126	-1,927,654	-121,839,676	10,163,183	7,008,072

Year	2005	2006	2007	2008	2009	2010	2011
MO REV	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907
CU REV	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423
AU REV	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552
GROSS REVENUE	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
Total Revenue	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
-SMELTING CHARGES	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
-Total Smelting Cost	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
Net Smelt Ret.	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
-MHT ROYALTY	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829
-Total Royalties	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829	-12,432,829

Year	2005	2006	2007	2008	2009	2010	2011
Net Revenue	303,787,904	303,787,904	303,787,904	303,787,904	303,787,904	303,787,904	303,787,904
-OPER COSTS	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Total Oper Costs	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Dev, IDC							
-Depreciation	-36,517,272	-33,770,068	-30,780,428	-29,521,161	-30,146,328	-30,354,716	-29,729,550
-Amortization							
-Write Off							
Before Depltn	-52,110,928	-49,363,724	-46,374,083	-45,114,817	-45,739,983	-45,948,372	-45,323,206
Percent Depln	45,568,186	45,568,186	45,568,186	45,568,186	45,568,186	45,568,186	45,568,186
-Total D,D & A	-36,517,272	-33,770,068	-30,780,428	-29,521,161	-30,146,328	-30,354,716	-29,729,550
Taxable	-52,110,928	-49,363,724	-46,374,083	-45,114,817	-45,739,983	-45,948,372	-45,323,206
-Tax Due	20,125,240	19,064,270	17,909,671	17,423,342	17,664,782	17,745,261	17,503,822
Net Income	-31,985,687	-30,299,454	-28,464,412	-27,691,475	-28,075,202	-28,203,111	-27,819,384
+Depreciation	36,517,272	33,770,068	30,780,428	29,521,161	30,146,328	30,354,716	29,729,550
+Amortization							
+Write Off							
-Capital Costs	-3,334,219				-3,334,219		
Cash Flow	1,197,365	3,470,614	2,316,015	1,829,687	-1,263,093	2,151,605	1,910,166

Year	Salvage
MO REV	
CU REV	
AU REV	
GROSS REVENUE	
Total Revenue	60,214,336
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-55,709,698
-Amortization	
-Write Off	-60,214,336
Before Depltn	-55,709,698
Percent Depln	
-Total D,D & A	-115,924,034

Year	Salvage
Taxable	-55,709,698
-Tax Due	21,515,085
Net Income	-34,194,613
+Depreciation	55,709,698
+Amortization	
+Write Off	60,214,336
-Capital Costs	
Cash Flow	81,729,421

List of Assumptions File:PEBBLE.SEE Date:01/04/80 Time:00:36:09

PEBBLE BEACH CU-AU-MO PORPHYRY, LAKE ILLIAMNA

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	128,280,930	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	27,931,500	MACRS	Mid Year	23.0	0			0 .....
3	04/89	11,824,156	MACRS	Mid Year	23.0	0			0 .....
4	04/89	90,430,020	MACRS	Mid Year	23.0	0			0 .....
5	04/89	35,427,665	WC	Mid Year	23.0	0			0 .....
6	04/89	3,334,219	MACRS	Mid Year	4.0	0			0 .....
7	04/93	3,334,219	MACRS	Mid Year	4.0	0			0 .....
8	04/97	3,334,219	MACRS	Mid Year	4.0	0			0 .....
9	04/89	134,764,910	MACRS	Mid Year	23.0	0			0 .....
10	04/89	24,786,671	WC	Mid Year	23.0	0			0 .....
11	04/89	50,710,038	MACRS	Mid Year	23.0	0			0 .....
12	04/89	66,766,900	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	128,280,930	MACRS	Mid Year	10.0	0			0 .....
14	04/01	3,334,219	MACRS	Mid Year	4.0	0			0 .....
15	04/05	3,334,219	MACRS	Mid Year	4.0	0			0 .....
16	04/09	3,334,219	MACRS	Mid Year	4.0	0			0 .....
17	04/89	160,378,773	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	22,680,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.00035	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0035	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0132	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	140,153,400.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	98,057,160.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	75,771,000.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

Year	14	15	16	17	18	19	20
-Total Sev. Ad Valor	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
-Dev, IDC							
-Depreciation	-36,517,272	-33,770,068	-30,780,428	-29,521,161	-30,146,328	-30,354,716	-29,729,550
-Amortization							
-Write Off							
Before Depltn	-39,679,098	-36,931,894	-33,942,254	-32,682,988	-33,308,154	-33,516,542	-32,891,376
Percent Depln	47,433,110	47,433,110	47,433,110	47,433,110	47,433,110	47,433,110	47,433,110
-Total D,D & A	-36,517,272	-33,770,068	-30,780,428	-29,521,161	-30,146,328	-30,354,716	-29,729,550
Taxable	-39,679,098	-36,931,894	-33,942,254	-32,682,988	-33,308,154	-33,516,542	-32,891,376
-Tax Due	15,324,068	14,263,097	13,108,498	12,622,170	12,863,609	12,944,089	12,702,650
Net Income	-24,355,030	-22,668,797	-20,833,755	-20,060,818	-20,444,545	-20,572,454	-20,188,727
+Depreciation	36,517,272	33,770,068	30,780,428	29,521,161	30,146,328	30,354,716	29,729,550
+Amortization							
+Write Off							
-Capital Costs	-3,334,219				-3,334,219		
Cash Flow	8,828,022	11,101,271	9,946,672	9,460,344	6,367,564	9,782,262	9,540,823

Year	Salvage
MO REV	
CU REV	
AU REV	
GROSS REVENUE	
Total Revenue	60,214,336
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-55,709,698
-Amortization	
-Write Off	-60,214,336
Before Depltn	-55,709,698
Percent Depln	
-Total D,D & A	-115,924,034
Taxable	-55,709,698
-Tax Due	21,515,085

Year	7	8	9	10	11	12	13
MO REV	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907
CU REV	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423
AU REV	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552
GROSS REVENUE	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
Total Revenue	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
-SMELTING CHARGES	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
-Total Smelting Cost	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
Net Smelt Ret.	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
Net Revenue	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
-OPER COSTS	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Total Oper Costs	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-MHT NPI	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
-Total Sev. Ad Valor	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
-Dev, IDC							
-Depreciation	-28,633,948	-28,008,782	-27,800,393	-28,425,559	-41,462,041	-51,099,349	-42,929,722
-Amortization							
-Write Off							
Before Depltn	-31,795,774	-31,170,608	-30,962,219	-31,587,385	-44,623,867	-54,261,175	-46,091,548
Percent Depln	47,433,110	47,433,110	47,433,110	47,433,110	47,433,110	47,433,110	47,433,110
-Total D,D & A	-28,633,948	-28,008,782	-27,800,393	-28,425,559	-41,462,041	-51,099,349	-42,929,722
Taxable	-31,795,774	-31,170,608	-30,962,219	-31,587,385	-44,623,867	-54,261,175	-46,091,548
-Tax Due	12,279,528	12,038,089	11,957,609	12,199,048	17,233,737	20,955,666	17,800,556
Net Income	-19,516,246	-19,132,519	-19,004,610	-19,388,337	-27,390,129	-33,305,509	-28,290,992
+Depreciation	28,633,948	28,008,782	27,800,393	28,425,559	41,462,041	51,099,349	42,929,722
+Amortization							
+Write Off							
-Capital Costs				-3,334,219	-128,280,930		
Cash Flow	9,117,702	8,876,262	8,795,783	5,703,003	-114,209,019	17,793,840	14,638,730

Year	14	15	16	17	18	19	20
MO REV	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907
CU REV	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423
AU REV	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552
GROSS REVENUE	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
Total Revenue	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
-SMELTING CHARGES	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
-Total Smelting Cost	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
Net Smelt Ret.	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
Net Revenue	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
-OPER COSTS	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Total Oper Costs	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-MHT NPI	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000

PEBBLE BEACH CU-AU-MO PORPHYRY, LAKE ILLIAMNA

Cash Flows

NPV =$-653,967,551 DCFROR= -8.4% GROR = 0.0% PWROR = -7.2% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		55,577,907	55,577,907	55,577,907	55,577,907	55,577,907	55,577,907
CU REV		167,596,423	167,596,423	167,596,423	167,596,423	167,596,423	167,596,423
AU REV		96,240,552	96,240,552	96,240,552	96,240,552	96,240,552	96,240,552
GROSS REVENUE		319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
Total Revenue		319,414,882	319,414,882	319,414,882	319,414,882	319,414,882	319,414,882
-SMELTING CHARGES		-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
-Total Smelting Cost		-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149	-3,194,149
Net Smelt Ret.		316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
Net Revenue		316,220,733	316,220,733	316,220,733	316,220,733	316,220,733	316,220,733
-OPER COSTS		-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-Total Oper Costs		-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560	-319,381,560
-MHT NPI		-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
-Total Sev. Ad Valor		-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
-Dev, IDC	-46,736,830						
-Depreciation	-21,912,391	-40,165,107	-37,570,818	-35,407,709	-32,567,503	-30,452,790	-29,641,241
-Amortization	-12,018,042	-4,006,014	-4,006,014				
-Write Off							
Before Depltn	-80,667,263	-47,332,948	-44,738,658	-38,569,535	-35,729,329	-33,614,616	-32,803,067
Percent Depln		47,433,110	47,433,110	47,433,110	47,433,110	47,433,110	47,433,110
-Total D,D & A	-80,667,263	-44,171,121	-41,576,832	-35,407,709	-32,567,503	-30,452,790	-29,641,241
Taxable	-80,667,263	-47,332,948	-44,738,658	-38,569,535	-35,729,329	-33,614,616	-32,803,067
-Tax Due	27,426,870	16,093,202	15,211,144	13,113,642	13,798,667	12,981,965	12,668,544
Net Income	-53,240,394	-31,239,745	-29,527,514	-25,455,893	-21,930,662	-20,632,651	-20,134,523
+Depreciation	21,912,391	40,165,107	37,570,818	35,407,709	32,567,503	30,452,790	29,641,241
+Amortization	12,018,042	4,006,014	4,006,014				
+Write Off							
-Capital Costs	-687,898,952		-3,334,219				-3,334,219
Cash Flow	-707,208,912	12,931,376	8,715,098	9,951,816	10,636,841	9,820,138	6,172,499

8b. DESCRIPTIVE MODEL OF PORPHYRY Cu-Au

By Dennis P. Cox

DESCRIPTION Stockwork veinlets of chalcopyrite, bornite, and magnetite in porphyritic intrusions and coeval volcanic rocks. Ratio of Au (ppm) to Mo (percent) is greater than 30.

GENERAL REFERENCES Sillitoe (1979), Cox and Singer (in press).

GEOLOGICAL ENVIRONMENT

Rock Types Tonalite to monzogranite; dacite, andesite flows and tuffs coeval with intrusive rocks. Also syenite, monzonite, and coeval high-K, low-Ti volcanic rocks (shoshonites).

Textures Intrusive rocks are porphyritic with fine- to medium-grained aplitic groundmass.

Age Range Cretaceous to Quaternary.

Depositional Environment In porphyry intruding coeval volcanic rocks. Both involved and in large-scale breccia. Porphyry bodies may be dikes. Evidence for volcanic center; 1-2 km depth of emplacement.

Tectonic Setting(s) Island-arc volcanic setting, especially waning stage of volcanic cycle. Also continental margin rift-related volcanism.

Associated Deposit Types Porphyry Cu-Mo; gold placers.

DEPOSIT DESCRIPTION

Mineralogy Chalcopyrite ± bornite; traces of native gold, electrum, sylvanite, and hessite. Quartz + K-feldspar + biotite + magnetite ± chlorite ± actinolite ± anhydrite. Pyrite + sericite ± clay minerals ± calcite may occur in late-stage veinlets.

Texture/Structure Veinlets and disseminations.

Alteration Quartz ± magnetite ± biotite (chlorite) ± K-feldspar ± actinolite, ± anhydrite in interior of system. Outer propylitic zone. Late quartz + pyrite + white mica ± clay may overprint early feldspar-stable alteration.

Ore Controls Veinlets and fractures of quartz, sulfides, K-feldspar magnetite, biotite, or chlorite are closely spaced. Ore zone has a bell shape centered on the volcanic-intrusive center. Highest grade ore is commonly at the level at which the stock divides into branches.

Weathering Surface iron staining may be weak or absent if pyrite content is low in protore. Copper silicates and carbonates. Residual soils contain anomalous amounts of rutile.

Geochemical Signature Central Cu, Au, Ag; peripheral Mo. Peripheral Pb, Zn, Mn anomalies may be present if late sericite pyrite alteration is strong. Au (ppm): Mo (percent) 30 in ore zone. Au enriched in residual soil over ore body. System may have magnetic high over intrusion surrounded by magnetic low over pyrite halo.

EXAMPLES

Doe Poores, USA2	(Langton and Williams, 1982)
Copper Mountain, CNBC	(Fahrni and others, 1976)
Tanama, PTRC	(Cox, 1985)

GRADE AND TONNAGE MODEL OF PORPHYRY Cu-Au
After Donald A. Singer and Dennis P. Cox

COMMENTS Upper ten percent of deposits contain an minimum of 400 million tonnes at 0.72% Cu, 0.0072% Mo, 0.72 grams/tonne Au, and 4.0 grams/tonne Ag. Total contained metal is 2.9 million tonnes Cu, 0.029 million tonnes Mo, 288 million grams Au, and 1.6 billion grams Ag. Gross metal value in 1987 if $10.0 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 20 million tonnes per year or 56,000 tonnes per day.

Gross Value of Annual Production $500 million.

Net Present Value of 4% NSR $20.0 million times 8.514 is $170.3 million.

Comments, Assumptions, Specifications: PCAH
Porphyry Cu-Au Liverpool Area Upper 10% tonnage

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Porphyry Cu-Au
Total Ore Tonnage: 400 mil mtons
Mining Method: Open Pit
Beneficiation Method: Conv. Crush, S.A.G., Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 20 yrs
Proposed Daily Production: 56,000 MTPD
Maximum Ore Depth: 500 m
Stripping Ratio: 2:1
Haulage Distance/Road Requirements:
20 km new-road/upgrade, 150 km haul to coil
Distance From Power: 130 km
Pre-Production Development:

Production Development:

Equipment: Shovels, Trucks
Concentrate Production: 1,440 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .15 ha/day
Burden/Waste rate-mtpd: 100,000 MTPD
Burden/Waste depth & haul-m: 210 m, 3,500 m
Ore rate-mtpd: 56,000 MTPD
Ore depth & haul-m: 240 m, 2700 m
Conveyor length & slope-km & %: 1.5 km 6%
Water needs-cm/day: 11,000 m³/day
Drainage, head & distance-cm/day, m & km:
50,000 m³/day 400 m, 1.2 km
Concentrate (dry) rate-mtpd: 1440 MTPD
Tails (dry) rate-mtpd: 54,600 MTPD
Production water needs-cm/day: 42,000 m³/day mill, 130,000 m³/day recycle
Portable Power needs-kW: —
Wastewater-L/sec: 200 L/sec
Concentrate haul-km: 150 km
Employee housing-men: 750 men
Other: $48,950/day Rail Haulage
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 56,000 MTPD
Mill operating costs-$/day:
Working capital time-weeks: 13 weeks
Development time-days: 400 days @ 150,000 MTPD
Clearing needs-ha: 600 ha

Stripping needs-mt: 60 mil mt
Stripping depth & haul-m: 30m, 3,100m
Restoration area-ha: 1,800 ha
Contractors-1 or 2: 2
Mine operating costs-$/day:
Access roads, length & width-km & m: 20km, 15m
Airstrip length & width-m: None
Powerline length & power-km & mW: 130km, 80mW
Dike & Dam needs-cm/fill: 350,000 m3
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 359,632
Mining Costs-$/yr: 129,467,520
Mining Costs-$/mt: 6.42
Milling Costs-$/day: 255,573
Milling Costs-$/yr: 92,006,280
Milling Costs-$/mt: 4.56
Infrastructure Costs-$/day: 146,011
Infrastructure Costs-$/yr: 52,563,960
Infrastructure Costs-$/mt: 2.61
Total Operating Costs-$/day: 761,216
Total Operating Costs-$/yr: 274,037,760
Total Operating Costs-$/mt: 13.59
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 3,272,512
Heavy Equipment (fixed life)-$: 137,523,050 *
Mine Rehabilitation-$: 16,758,900 *
Engr. & Const. Mgmt.-$: 8,701,266 *
Other:
Remaining Mine Capital-$: 56,849,172
Total Mine Capital-$: 225,558,900

MILL CAPITAL COSTS:

Mill Working Capital-$: 23,257,143
Light Vehicles (short life)-$: 3,199,941 *
Other:
Remaining Mill Capital-$: 123,648,210
Total Mill Capital-$: 150,105,294

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 47,553,881 *

Other: _____
Remaining Infrastructure Capital-$: 56,298,258 ~
Total Infrastructure Capital-$: 103,852,139

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 55,983,655 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 236,796,640 *
Sum of Total Mine, Mill & Infr. Costs-$: 506,516,333
Exploration Cost-$: 50,651,630 *

Overall Capital Cost-$: 557,167,966
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:PCAHLIV.SKE Date:07/25/93 Time:13:49:01

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Minimum ROR, Compound Exponents	Minimum ROR, With Eval Date	Inflation & Exponents: Minimum ROR	Inflation: Rate	Constant $ ROR	Tax Rates: State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	129,467,520.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	92,006,280.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	52,563,960.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

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* Project Equations *
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General Equations
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E1 . MO REV S1*S2*S7*S16*S17
E2 . CU REV S1*S3*S8*S16*S17
E3 . PB REV S1*S4*S9*S16*S17
E4 . AG REV S1*S5*S10*S16*S17
E5 . AU REV S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS (S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES S18*E6

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA

Cash Flows

NPV =$644,785,776 DCFROR= 25.9% GROR = 14.4% PWROR = 25.9% Pay Back= 3.71 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997
MO REV		10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817
CU REV		306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030
AG REV		10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118
AU REV		150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610
GROSS REVENUE		477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
Total Revenue		477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
-SMELTING CHARGES		-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
-Total Smelting Cost		-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
Net Smelt Ret.		472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
-MET ROYALTY		-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678
-Total Royalties		-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678
Net Revenue		453,712,263	453,712,263	453,712,263	453,712,263	453,712,263	453,712,263
-OPER COSTS		-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Total Oper Costs		-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Dev, IDC	-35,456,141						
-Depreciation	-18,674,924	-34,199,865	-31,395,261	-29,052,903	-26,101,696	-23,881,438	-22,941,202
-Amortization	-9,117,293	-3,039,098	-3,039,098				
-Write Off							
Before Depltn	-63,248,358	137,035,540	139,840,144	145,221,600	148,172,807	150,393,065	151,333,301
100% Limit		137,035,540	139,840,144	145,221,600	148,172,807	150,393,065	151,333,301
Percent Depln		68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839
Prev Exp Expl		35,456,141					
-Depletion		-32,600,698	-68,056,839	-68,056,839	-68,056,839	-68,056,839	-68,056,839
-Total D,D & A	-63,248,358	-69,839,661	-102,491,198	-97,109,743	-94,158,535	-91,938,277	-90,998,042
Taxable	-63,248,358	104,434,842	71,783,305	77,164,760	80,115,968	82,336,226	83,276,461
-Tax Due	21,504,442	-35,507,846	-24,406,324	-26,236,018	-30,940,787	-31,798,250	-32,161,369
Net Income	-41,743,917	68,926,996	47,376,981	50,928,742	49,175,181	50,537,975	51,115,092
+Depreciation	18,674,924	34,199,865	31,395,261	29,052,903	26,101,696	23,881,438	22,941,202
+Depletion		32,600,698	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839
+Amortization	9,117,293	3,039,098	3,039,098				
+Write Off							
-Capital Costs	-521,711,822		-3,199,941				-3,199,941
Cash Flow	-535,663,521	138,766,657	146,668,238	148,038,485	143,333,716	142,476,253	138,913,193

Year	1998	1999	2000	2001	2002	2003	2004
MO REV	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817
CU REV	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030
AG REV	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118
AU REV	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610
GROSS REVENUE	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
Total Revenue	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
-SMELTING CHARGES	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
-Total Smelting Cost	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
Net Smelt Ret.	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
-MHT ROYALTY	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678
-Total Royalties	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678
Net Revenue	453,712,263	453,712,263	453,712,263	453,712,263	453,712,263	453,712,263	453,712,263
-OPER COSTS	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Total Oper Costs	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Dev, IDC							
-Depreciation	-21,837,932	-21,237,943	-21,037,947	-21,637,935	-35,590,237	-45,992,092	-37,257,282
-Amortization							
-Write Off							
Before Depltn	152,436,571	153,036,560	153,236,557	152,636,568	138,684,266	128,282,411	137,017,221
100% Limit	152,436,571	153,036,560	153,236,557	152,636,568	138,684,266	128,282,411	137,017,221
Percent Depln	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839
Prev Exp Expl							
-Depletion	-68,056,839	-68,056,839	-68,056,839	-68,056,839	-68,056,839	-68,056,839	-68,056,839
-Total D,D & A	-89,894,771	-89,294,782	-89,094,786	-89,694,775	-103,647,076	-114,048,931	-105,314,121
Taxable	84,379,732	84,979,721	85,179,717	84,579,728	70,627,427	60,225,572	68,960,382
-Tax Due	-32,587,452	-32,819,168	-32,896,407	-32,664,691	-27,276,312	-23,259,116	-26,632,499
Net Income	51,792,279	52,160,553	52,283,310	51,915,037	43,351,115	36,966,456	42,327,882
+Depreciation	21,837,932	21,237,943	21,037,947	21,637,935	35,590,237	45,992,092	37,257,282
+Depletion	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839
+Amortization							
+Write Off							
-Capital Costs				-3,199,941	-137,523,050		
Cash Flow	141,687,051	141,455,335	141,378,096	138,409,871	9,475,141	151,015,387	147,642,004

Year	2005	2006	2007	2008	2009	2010	2011
MO REV	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817
CU REV	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030
AG REV	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118
AU REV	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610
GROSS REVENUE	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
Total Revenue	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
-SMELTING CHARGES	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
-Total Smelting Cost	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
Net Smelt Ret.	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
-NET ROYALTY	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678
-Total Royalties	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678	-18,679,678
Net Revenue	453,712,263	453,712,263	453,712,263	453,712,263	453,712,263	453,712,263	453,712,263
-OPER COSTS	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Total Oper Costs	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Dev, IDC							
-Depreciation	-30,312,623	-27,344,089	-24,209,275	-22,882,690	-23,482,679	-23,682,675	-23,082,686
-Amortization							
-Write Off							
Before Depltn	143,961,880	146,930,415	150,065,228	151,391,813	150,791,825	150,591,828	151,191,817
100% Limit	143,961,880	146,930,415	150,065,228	151,391,813	150,791,825	150,591,828	151,191,817
Percent Depln	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839
Prev Exp Expl							
-Depletion	-68,056,839	-68,056,839	-68,056,839	-68,056,839	-68,056,839	-68,056,839	-68,056,839
-Total D,D & A	-98,369,463	-95,400,928	-92,266,114	-90,939,529	-91,539,518	-91,739,514	-91,139,525
Taxable	75,905,040	78,873,575	82,008,389	83,334,974	82,734,985	82,534,989	83,134,978
-Tax Due	-29,314,527	-30,460,975	-31,671,640	-32,183,967	-31,952,251	-31,875,013	-32,106,728
Net Income	46,590,514	48,412,600	50,336,749	51,151,007	50,782,734	50,659,976	51,028,249
+Depreciation	30,312,623	27,344,089	24,209,275	22,882,690	23,482,679	23,682,675	23,082,686
+Depletion	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839	68,056,839
+Amortization							
+Write Off							
-Capital Costs	-3,199,941				-3,199,941		
Cash Flow	141,760,036	143,813,528	142,602,863	142,090,536	139,122,311	142,399,490	142,167,775

Year	Salvage
MO REV	
CU REV	
AG REV	
AU REV	
GROSS REVENUE	
Total Revenue	55,983,655
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-38,220,061
-Amortization	
-Write Off	-55,983,655
Before Depltn	-38,220,061
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-94,203,716
Taxable	-38,220,061
-Tax Due	14,760,587
Net Income	-23,459,473
+Depreciation	38,220,061
+Depletion	
+Amortization	
+Write Off	55,983,655
-Capital Costs	
Cash Flow	70,744,242

List of Assumptions File:PCAHLIV.SEE Date:01/04/80 Time:00:24:08

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	137,523,050	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	16,758,900	MACRS	Mid Year	23.0	0			0 .....
3	04/89	8,701,266	MACRS	Mid Year	23.0	0			0 .....
4	04/89	56,849,172	MACRS	Mid Year	23.0	0			0 .....
5	04/89	32,726,512	WC	Mid Year	23.0	0			0 .....
6	04/89	3,199,941	MACRS	Mid Year	4.0	0			0 .....
7	04/93	3,199,941	MACRS	Mid Year	4.0	0			0 .....
8	04/97	3,199,941	MACRS	Mid Year	4.0	0			0 .....
9	04/89	123,648,210	MACRS	Mid Year	23.0	0			0 .....
10	04/89	23,257,143	WC	Mid Year	23.0	0			0 .....
11	04/89	47,553,881	MACRS	Mid Year	23.0	0			0 .....
12	04/89	50,651,630	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	137,523,050	MACRS	Mid Year	10.0	0			0 .....
14	04/01	3,199,941	MACRS	Mid Year	4.0	0			0 .....
15	04/05	3,199,941	MACRS	Mid Year	4.0	0			0 .....
16	04/09	3,199,941	MACRS	Mid Year	4.0	0			0 .....
17	04/89	56,298,258	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	20,160,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000072	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0072	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.13	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0232	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	129,467,520.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	92,006,280.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	52,563,960.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

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* Project Equations *
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General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA

Cash Flows

NPV =$721,756,902 DCFROR= 27.7% GROR = 14.8% PWROR = 27.7% Pay Back= 3.49 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817
CU REV		306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030
AG REV		10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118
AU REV		150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610
GROSS REVENUE		477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
Total Revenue		477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
-SMELTING CHARGES		-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
-Total Smelting Cost		-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
Net Smelt Ret.		472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
Net Revenue		472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
-OPER COSTS		-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Total Oper Costs		-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-MHT NPI		-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774
-Total Sev. Ad Valor		-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774
-Dev, IDC	-35,456,141						
-Depreciation	-18,674,924	-34,199,865	-31,395,261	-29,052,903	-26,101,696	-23,881,438	-22,941,202
-Amortization	-9,117,293	-3,039,098	-3,039,098				
-Write Off							
Before Depltn	-63,248,358	149,783,444	152,588,047	157,969,503	160,920,711	163,140,968	164,081,204
100% Limit		149,783,444	152,588,047	157,969,503	160,920,711	163,140,968	164,081,204
Percent Depln		70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791
Prev Exp Expl		35,456,141					
-Depletion		-35,402,650	-70,858,791	-70,858,791	-70,858,791	-70,858,791	-70,858,791
-Total D,D & A	-63,248,358	-72,641,613	-105,293,150	-99,911,695	-96,960,487	-94,740,229	-93,799,993
Taxable	-63,248,358	114,380,793	81,729,256	87,110,712	90,061,919	92,282,177	93,222,413
-Tax Due	21,504,442	-38,889,470	-27,787,947	-29,617,642	-34,781,913	-35,639,377	-36,002,496
Net Income	-41,743,917	75,491,324	53,941,309	57,493,070	55,280,006	56,642,800	57,219,917
+Depreciation	18,674,924	34,199,865	31,395,261	29,052,903	26,101,696	23,881,438	22,941,202
+Depletion		35,402,650	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791
+Amortization	9,117,293	3,039,098	3,039,098				
+Write Off							
-Capital Costs	-521,711,822		-3,199,941				-3,199,941
Cash Flow	-535,663,521	148,132,936	156,034,518	157,404,764	152,240,493	151,383,029	147,819,969

Year	7	8	9	10	11	12	13
MO REV	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817
CU REV	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030
AG REV	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118
AU REV	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610
GROSS REVENUE	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
Total Revenue	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
-SMELTING CHARGES	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
-Total Smelting Cost	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
Net Smelt Ret.	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
Net Revenue	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
-OPER COSTS	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Total Oper Costs	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-MHT NPI	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774
-Total Sev. Ad Valor	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774
-Dev, IDC							
-Depreciation	-21,837,932	-21,237,943	-21,037,947	-21,637,935	-35,590,237	-45,992,092	-37,257,282
-Amortization							
-Write Off							
Before Depltn	165,184,474	165,784,463	165,984,460	165,384,471	151,432,169	141,030,314	149,765,124
100% Limit	165,184,474	165,784,463	165,984,460	165,384,471	151,432,169	141,030,314	149,765,124
Percent Depln	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791
Prev Exp Expl							
-Depletion	-70,858,791	-70,858,791	-70,858,791	-70,858,791	-70,858,791	-70,858,791	-70,858,791
-Total D,D & A	-92,696,723	-92,096,734	-91,896,738	-92,496,727	-106,449,028	-116,850,883	-108,116,073
Taxable	94,325,683	94,925,672	95,125,669	94,525,680	80,573,378	70,171,523	78,906,333
-Tax Due	-36,428,579	-36,660,295	-36,737,533	-36,505,817	-31,117,439	-27,100,242	-30,473,626
Net Income	57,897,104	58,265,378	58,388,135	58,019,862	49,455,940	43,071,281	48,432,707
+Depreciation	21,837,932	21,237,943	21,037,947	21,637,935	35,590,237	45,992,092	37,257,282
+Depletion	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791
+Amortization							
+Write Off							
-Capital Costs				-3,199,941	-137,523,050		
Cash Flow	150,593,827	150,362,112	150,284,873	147,316,648	18,381,918	159,922,164	156,548,780

Year	14	15	16	17	18	19	20
MO REV	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817	10,162,817
CU REV	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030	306,462,030
AG REV	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118	10,183,118
AU REV	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610	150,355,610
GROSS REVENUE	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
Total Revenue	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577	477,163,577
-SMELTING CHARGES	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
-Total Smelting Cost	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636	-4,771,636
Net Smelt Ret.	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
Net Revenue	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941	472,391,941
-OPER COSTS	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-Total Oper Costs	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760	-279,437,760
-MHT NPI	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774
-Total Sev. Ad Valor	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774	-5,931,774
-Dev, IDC							
-Depreciation	-30,312,623	-27,344,089	-24,209,275	-22,882,690	-23,482,679	-23,682,675	-23,082,686
-Amortization							
-Write Off							
Before Depltn	156,709,783	159,678,318	162,813,131	164,139,717	163,539,728	163,339,731	163,939,720
100% Limit	156,709,783	159,678,318	162,813,131	164,139,717	163,539,728	163,339,731	163,939,720
Percent Depln	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791
Prev Exp Expl							
-Depletion	-70,858,791	-70,858,791	-70,858,791	-70,858,791	-70,858,791	-70,858,791	-70,858,791
-Total D,D & A	-101,171,414	-98,202,880	-95,068,066	-93,741,481	-94,341,470	-94,541,466	-93,941,477
Taxable	85,850,992	88,819,527	91,954,340	93,280,926	92,680,937	92,480,940	93,080,929
-Tax Due	-33,155,653	-34,302,101	-35,512,766	-36,025,093	-35,793,378	-35,716,139	-35,947,855
Net Income	52,695,339	54,517,425	56,441,574	57,255,832	56,887,559	56,764,801	57,133,074
+Depreciation	30,312,623	27,344,089	24,209,275	22,882,690	23,482,679	23,682,675	23,082,686
+Depletion	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791	70,858,791
+Amortization							
+Write Off							
-Capital Costs	-3,199,941				-3,199,941		
Cash Flow	150,666,812	152,720,305	151,509,640	150,997,313	148,029,088	151,306,267	151,074,551

Year	Salvage
MO REV	
CU REV	
AG REV	
AU REV	
GROSS REVENUE	
Total Revenue	55,983,655
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-38,220,061
-Amortization	
-Write Off	-55,983,655
Before Depltn	-38,220,061
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-94,203,716
Taxable	-38,220,061
-Tax Due	14,760,587
Net Income	-23,459,473
+Depreciation	38,220,061
+Depletion	
+Amortization	
+Write Off	55,983,655
-Capital Costs	
Cash Flow	70,744,242

8b. DESCRIPTIVE MODEL OF PORPHYRY Cu-Au

By Dennis P. Cox

DESCRIPTION Stockwork veinlets of chalcopyrite, bornite, and magnetite in porphyritic intrusions and coeval volcanic rocks. Ratio of Au (ppm) to Mo (percent) is greater than 30.

GENERAL REFERENCES Sillitoe (1979), Cox and Singer (in press).

GEOLOGICAL ENVIRONMENT

Rock Types Tonalite to monzogranite; dacite, andesite flows and tuffs coeval with intrusive rocks. Also syenite, monzonite, and coeval high-K, low-Ti volcanic rocks (shoshonites).

Textures Intrusive rocks are porphyritic with fine- to medium-grained aplitic groundmass.

Age Range Cretaceous to Quaternary.

Depositional Environment In porphyry intruding coeval volcanic rocks. Both involved and in large-scale breccia. Porphyry bodies may be dikes. Evidence for volcanic center; 1-2 km depth of emplacement.

Tectonic Setting(s) Island-arc volcanic setting, especially waning stage of volcanic cycle. Also continental margin rift-related volcanism.

Associated Deposit Types Porphyry Cu-Mo; gold placers.

DEPOSIT DESCRIPTION

Mineralogy Chalcopyrite ± bornite; traces of native gold, electrum, sylvanite, and hessite. Quartz + K-feldspar + biotite + magnetite ± chlorite ± actinolite ± anhydrite. Pyrite + sericite ± clay minerals ± calcite may occur in late-stage veinlets.

Texture/Structure Veinlets and disseminations.

Alteration Quartz ± magnetite ± biotite (chlorite) ± K-feldspar ± actinolite, ± anhydrite in interior of system. Outer propylitic zone. Late quartz + pyrite + white mica ± clay may overprint early feldspar-stable alteration.

Ore Controls Veinlets and fractures of quartz, sulfides, K-feldspar magnetite, biotite, or chlorite are closely spaced. Ore zone has a bell shape centered on the volcanic-intrusive center. Highest grade ore is commonly at the level at which the stock divides into branches.

Weathering Surface iron staining may be weak or absent if pyrite content is low in protore. Copper silicates and carbonates. Residual soils contain anomalous amounts of rutile.

Geochemical Signature Central Cu, Au, Ag; peripheral Mo. Peripheral Pb, Zn, Mn anomalies may be present if late sericite pyrite alteration is strong. Au (ppm): Mo (percent) 30 in ore zone. Au enriched in residual soil over ore body. System may have magnetic high over intrusion surrounded by magnetic low over pyrite halo.

EXAMPLES

Dos Pobres, USAZ	(Langton and Williams, 1982)
Copper Mountain, CNBC	(Fahrni and others, 1976)
Tanama, PTRC	(Cox, 1985)

GRADE AND TONNAGE MODEL OF PORPHYRY Cu-Au
After Donald A. Singer and Dennis P. Cox

COMMENTS Upper ten percent of deposits contain an minimum of 400 million tonnes at 0.72% Cu, 0.0072% Mo, 0.72 grams/tonne Au, and 4.0 grams/tonne Ag. Total contained metal is 2.9 million tonnes Cu, 0.029 million tonnes Mo, 288 million grams Au, and 1.6 billion grams Ag. Gross metal value in 1987 if $10.0 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 20 million tonnes per year or 56,000 tonnes per day.

Gross Value of Annual Production $500 million.

Net Present Value of 4% NSR $20.0 million times 8.514 is $170.3 million.

Comments, Assumptions, Specifications: PCAM
Porphyry Cu-Au, Livengood Area 50% acreage

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Porphyry Cu-Au
Total Ore Tonnage: 100 mil mt
Mining Method: Open pit
Beneficiation Method: Mobile crush S.A.G. Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 15 yrs
Proposed Daily Production: 18,500 mTPD
Maximum Ore Depth: 300 m
Stripping Ratio: 2:1
Haulage Distance/Road Requirements: 20km new/upgrade roads, 150 km haul to railhead
Distance From Power: 130 km
Pre-Production Development:

Production Development:

Equipment: Shovels/Trucks
Concentrate Production: 475 mTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .07 ha/day
Burden/Waste rate-mtpd: 33,000 mTPD
Burden/Waste depth & haul-m: 140m, 2,700 m
Ore rate-mtpd: 18,500 mTPD
Ore depth & haul-m: 160 m, 2,000m
Conveyor length & slope-km & %: 1.5km, 0%
Water needs-cm/day: 3,600 m³/day
Drainage, head & distance-cm/day, m & km: 20,000m³/day, 250m, 1.1 km
Concentrate (dry) rate-mtpd: 475 mTPD
Tails (dry) rate-mtpd: 18,000 mTPD
Production water needs-cm/day: 14,000m³/day + 40,000m³/day recycle
Portable Power needs-kW: 32,000 kw
Wastewater-L/sec: 100 l/sec
Concentrate haul-km: 150 km
Employee housing-men: 450 men
Other: $17,340/day Rail Haulage
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 7,000 mTPD
Mill operating costs-$/day:
Working capital time-weeks: 13 weeks
Development time-days: 420 days @ 50,000 mTPD
Clearing needs-ha: 400 ha

Stripping needs-mt: 21 mil mt
Stripping depth & haul-m: 25 m, 2,100 m
Restoration area-ha: 800 ha
Contractors-1 or 2: 2
Mine operating costs-$/day:
Access roads, length & width-km & m: 20 km, 15 m
Airstrip length & width-m: None
Powerline length & power-km & mW: 130 km, 32 mW
Dike & Dam needs-cm/fill: 140,000 m³
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 135,425
Mining Costs-$/yr: 48,753,000
Mining Costs-$/mt: 7.32
Milling Costs-$/day: 99,825
Milling Costs-$/yr: 35,937,000
Milling Costs-$/mt: 5.40
Infrastructure Costs-$/day: 64,693
Infrastructure Costs-$/yr: 23,289,480
Infrastructure Costs-$/mt: 3.50
Total Operating Costs-$/day: 299,943
Total Operating Costs-$/yr: 107,979,480
Total Operating Costs-$/mt: 16.21
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 12,323,675
Heavy Equipment (fixed life)-$: 52,038,243 *
Mine Rehabilitation-$: 7,448,400 *
Engr. & Const. Mgmt.-$: 5,264,047 *
Other:
Remaining Mine Capital-$: 47,156,965
Total Mine Capital-$: 124,231,330

MILL CAPITAL COSTS:

Mill Working Capital-$: 9084,075
Light Vehicles (short life)-$: 2174038 *
Other:
Remaining Mill Capital-$: 48,764,979
Total Mill Capital-$: 60,023,092

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 25,619,794 *

Other:_____
Remaining Infrastructure Capital-$: 38,345,722
Total Infrastructure Capital-$: 63,965,516

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 21,407,750 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 134,267,666 *
Sum of Total Mine, Mill & Infr. Costs-$: 248,219,938
Exploration Cost-$: 24,821,994 *

Overall Capital Cost-$: 273,041,932
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, 50 % TONNAGE

Cash Flows

NPV =$17,618,873 DCFROR= 11.2% GROR = 10.5% PWROR = 11.2% Pay Back= 6.84 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		3,357,359	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359
CU REV		101,241,921	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921
AG REV		3,364,066	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066
AU REV		49,671,050	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050
GROSS REVENUE		157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
Total Revenue		157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
-SMELTING CHARGES		-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
-Total Smelting Cost		-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
Net Smelt Ret.		156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052
-MHT ROYALTY		-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322
-Total Royalties		-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322
Net Revenue		149,887,730	149,887,730	149,887,730	149,887,730	149,887,730	149,887,730
-OPER COSTS		-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-Total Oper Costs		-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-Dev, IDC	-17,375,396						
-Depreciation	-15,336,162	-28,294,379	-24,544,409	-21,392,723	-18,060,153	-15,415,807	-14,140,767
-Amortization	-4,467,959	-1,489,320	-1,489,320				
-Write Off							
Before Depltn	-37,179,517	10,324,551	14,074,521	18,715,527	22,048,097	24,692,443	25,967,483
100% Limit		10,324,551	14,074,521	18,715,527	22,048,097	24,692,443	25,967,483
Percent Depln		22,483,159	22,483,159	22,483,159	22,483,159	22,483,159	22,483,159
Prev Exp Expl		10,324,551	7,050,845				
-Depletion			-7,023,676	-18,715,527	-22,048,097	-22,483,159	-22,483,159
-Total D,D & A	-37,179,517	-29,783,699	-33,057,405	-40,108,250	-40,108,250	-37,898,966	-36,623,926
Taxable	-37,179,517	10,324,551	7,050,845			2,209,283	3,484,324
-Tax Due	12,641,036	-3,510,347	-2,397,287			-853,225	-1,345,646
Net Income	-24,538,481	6,814,204	4,653,557			1,356,058	2,138,678
+Depreciation	15,336,162	28,294,379	24,544,409	21,392,723	18,060,153	15,415,807	14,140,767
+Depletion			7,023,676	18,715,527	22,048,097	22,483,159	22,483,159
+Amortization	4,467,959	1,489,320	1,489,320				
+Write Off							
-Capital Costs	-255,665,536		-2,174,038				-2,174,038
Cash Flow	-260,399,896	36,597,902	35,536,925	40,108,250	40,108,250	39,255,025	36,588,566

Year	7	8	9	10	11	12	13
MO REV	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359
CU REV	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921
AG REV	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066
AU REV	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050
GROSS REVENUE	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
Total Revenue	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
-SMELTING CHARGES	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
-Total Smelting Cost	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
Net Smelt Ret.	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052
-MHT ROYALTY	-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322
-Total Royalties	-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322	-6,170,322
Net Revenue	149,887,730	149,887,730	149,887,730	149,887,730	149,887,730	149,887,730	149,887,730
-OPER COSTS	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-Total Oper Costs	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-Dev, IDC							
-Depreciation	-13,159,866	-11,759,542	-10,741,273	-9,028,472	-13,963,941	-18,434,894	-15,453,175
-Amortization							
-Write Off							
Before Depltn	26,948,384	28,348,707	29,366,977	31,079,778	26,144,309	21,673,356	24,655,075
100% Limit	26,948,384	28,348,707	29,366,977	31,079,778	26,144,309	21,673,356	24,655,075
Percent Depln	22,483,159	22,483,159	22,483,159	22,483,159	22,483,159	22,483,159	22,483,159
Prev Exp Expl							
-Depletion	-22,483,159	-22,483,159	-22,483,159	-22,483,159	-22,483,159	-21,673,356	-22,483,159
-Total D,D & A	-35,643,026	-34,242,702	-33,224,432	-31,511,632	-36,447,100	-40,108,250	-37,936,335
Taxable	4,465,224	5,865,548	6,883,818	8,596,618	3,661,150		2,171,915
-Tax Due	-1,724,470	-2,265,275	-2,658,530	-3,320,014	-1,413,936		-838,794
Net Income	2,740,755	3,600,273	4,225,287	5,276,604	2,247,214		1,333,122
+Depreciation	13,159,866	11,759,542	10,741,273	9,028,472	13,963,941	18,434,894	15,453,175
+Depletion	22,483,159	22,483,159	22,483,159	22,483,159	22,483,159	21,673,356	22,483,159
+Amortization							
+Write Off							
-Capital Costs				-2,174,038	-52,038,243		
Cash Flow	38,383,780	37,842,975	37,449,719	34,614,198	-13,343,929	40,108,250	39,269,456

Year	14	15	Salvage
MO REV	3,357,359	3,357,359	
CU REV	101,241,921	101,241,921	
AG REV	3,364,066	3,364,066	
AU REV	49,671,050	49,671,050	
GROSS REVENUE	157,634,396	157,634,396	
Total Revenue	157,634,396	157,634,396	21,407,750
-SMELTING CHARGES	-1,576,344	-1,576,344	
-Total Smelting Cost	-1,576,344	-1,576,344	
Net Smelt Ret.	156,058,052	156,058,052	
-MHT ROYALTY	-6,170,322	-6,170,322	
-Total Royalties	-6,170,322	-6,170,322	
Net Revenue	149,887,730	149,887,730	
-OPER COSTS	-109,779,480	-109,779,480	
-Total Oper Costs	-109,779,480	-109,779,480	
-Dev, IDC			
-Depreciation	-13,726,426	-12,261,518	-31,832,077
-Amortization			
-Write Off			-21,407,750
Before Depltn	26,381,824	27,846,732	-31,832,077
100% Limit	26,381,824	27,846,732	
Percent Depln	22,483,159	22,483,159	
Prev Exp Expl			
-Depletion	-22,483,159	-22,483,159	
-Total D,D & A	-36,209,586	-34,744,677	-53,239,827
Taxable	3,898,664	5,363,573	-31,832,077
-Tax Due	-1,505,664	-2,071,412	12,293,548
Net Income	2,393,000	3,292,161	-19,538,529
+Depreciation	13,726,426	12,261,518	31,832,077
+Depletion	22,483,159	22,483,159	
+Amortization			
+Write Off			21,407,750
-Capital Costs	-2,174,038		
Cash Flow	36,428,548	38,036,838	33,701,298

List of Assumptions File:PCAMLIV.SEE Date:03/27/94 Time:20:29:55

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, 50 % TONNAGE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents ********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	52,038,243	MACRS	Mid Year	10.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	7,448,400	MACRS	Mid Year	18.0	0			0 .....
3	04/89	5,264,047	MACRS	Mid Year	18.0	0			0 .....
4	04/89	47,156,965	MACRS	Mid Year	18.0	0			0 .....
5	04/89	12,323,675	WC	Mid Year	18.0	0			0 .....
6	04/89	2,174,038	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,174,038	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,174,038	MACRS	Mid Year	4.0	0			0 .....
9	04/89	48,763,979	MACRS	Mid Year	18.0	0			0 .....
10	04/89	9,084,075	WC	Mid Year	18.0	0			0 .....
11	04/89	25,619,794	MACRS	Mid Year	18.0	0			0 .....
12	04/89	24,821,994	EXPL-X	Mid Year	18.0	0			0 .....
13	04/02	52,038,243	MACRS	Mid Year	8.0	0			0 .....
14	04/01	2,174,038	MACRS	Mid Year	4.0	0			0 .....
15	04/05	2,174,038	MACRS	Mid Year	4.0	0			0 .....
16	.....	0	MACRS	Mid Year	7.0	0			0 .....
17	04/89	38,345,722	MACRS	Mid Year	18.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	6,660,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000072	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0072	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.13	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0232	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	48,753,000.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	35,937,000.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S14	INFRA COSTS	Annual:	04/92	End	23,289,480.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,800,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, 50 % TONNAGE

Cash Flows

NPV =$46,171,139 DCFROR= 13.1% GROR = 11.2% PWROR = 13.0% Pay Back= 6.19 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		3,357,359	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359
CU REV		101,241,921	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921
AG REV		3,364,066	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066
AU REV		49,671,050	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050
GROSS REVENUE		157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
Total Revenue		157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
-SMELTING CHARGES		-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
-Total Smelting Cost		-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
Net Smelt Ret.		156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052
Net Revenue		156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052
-OPER COSTS		-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-Total Oper Costs		-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-MHT NPI		-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647
-Total Sev. Ad Valor		-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647
-Dev, IDC	-17,375,396						
-Depreciation	-15,336,162	-28,294,379	-24,544,409	-21,392,723	-18,060,153	-15,415,807	-14,140,767
-Amortization	-4,467,959	-1,489,320	-1,489,320				
-Write Off							
Before Depltn	-37,179,517	15,059,226	18,809,195	23,450,201	26,782,772	29,427,117	30,702,158
100% Limit		15,059,226	18,809,195	23,450,201	26,782,772	29,427,117	30,702,158
Percent Depln		23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708
Prev Exp Expl		15,059,226	2,316,170				
-Depletion			-16,493,025	-23,408,708	-23,408,708	-23,408,708	-23,408,708
-Total D,D & A	-37,179,517	-29,783,699	-42,526,754	-44,801,431	-41,468,860	-38,824,515	-37,549,474
Taxable	-37,179,517	15,059,226	2,316,170	41,493	3,374,064	6,018,410	7,293,450
-Tax Due	12,641,036	-5,120,137	-787,498	-14,108	-1,303,063	-2,324,310	-2,816,730
Net Income	-24,538,481	9,939,089	1,528,672	27,386	2,071,000	3,694,100	4,476,720
+Depreciation	15,336,162	28,294,379	24,544,409	21,392,723	18,060,153	15,415,807	14,140,767
+Depletion			16,493,025	23,408,708	23,408,708	23,408,708	23,408,708
+Amortization	4,467,959	1,489,320	1,489,320				
+Write Off							
-Capital Costs	-255,665,536		-2,174,038				-2,174,038
Cash Flow	-260,399,896	39,722,788	41,881,389	44,828,817	43,539,861	42,518,615	39,852,156

Year	7	8	9	10	11	12	13
MO REV	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359
CU REV	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921
AG REV	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066
AU REV	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050
GROSS REVENUE	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
Total Revenue	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
-SMELTING CHARGES	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
-Total Smelting Cost	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
Net Smelt Ret.	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052
Net Revenue	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052
-OPER COSTS	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-Total Oper Costs	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-MHT NPI	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647
-Total Sev. Ad Valor	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647
-Dev, IDC							
-Depreciation	-13,159,866	-11,759,542	-10,741,273	-9,028,472	-13,963,941	-18,434,894	-15,453,175
-Amortization							
-Write Off							
Before Depltn	31,683,058	33,083,382	34,101,652	35,814,452	30,878,984	26,408,031	29,389,749
100% Limit	31,683,058	33,083,382	34,101,652	35,814,452	30,878,984	26,408,031	29,389,749
Percent Depln	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708
Prev Exp Expl							
-Depletion	-23,408,708	-23,408,708	-23,408,708	-23,408,708	-23,408,708	-23,408,708	-23,408,708
-Total D,D & A	-36,568,574	-35,168,250	-34,149,980	-32,437,180	-37,372,648	-41,843,602	-38,861,883
Taxable	8,274,351	9,674,674	10,692,944	12,405,745	7,470,276	2,999,323	5,981,042
-Tax Due	-3,195,554	-3,736,359	-4,129,615	-4,791,099	-2,885,021	-1,158,338	-2,309,878
Net Income	5,078,796	5,938,315	6,563,329	7,614,646	4,585,255	1,840,984	3,671,163
+Depreciation	13,159,866	11,759,542	10,741,273	9,028,472	13,963,941	18,434,894	15,453,175
+Depletion	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708
+Amortization							
+Write Off							
-Capital Costs				-2,174,038	-52,038,243		
Cash Flow	41,647,370	41,106,565	40,713,309	37,877,788	-10,080,339	43,684,586	42,533,046

Year	14	15	Salvage
MO REV	3,357,359	3,357,359	
CU REV	101,241,921	101,241,921	
AG REV	3,364,066	3,364,066	
AU REV	49,671,050	49,671,050	
GROSS REVENUE	157,634,396	157,634,396	
Total Revenue	157,634,396	157,634,396	21,407,750
-SMELTING CHARGES	-1,576,344	-1,576,344	
-Total Smelting Cost	-1,576,344	-1,576,344	
Net Smelt Ret.	156,058,052	156,058,052	
Net Revenue	156,058,052	156,058,052	
-OPER COSTS	-109,779,480	-109,779,480	
-Total Oper Costs	-109,779,480	-109,779,480	
-MHT NPI	-1,435,647	-1,435,647	
-Total Sev. Ad Valor	-1,435,647	-1,435,647	
-Dev, IDC			
-Depreciation	-13,726,426	-12,261,518	-31,832,077
-Amortization			
-Write Off			-21,407,750
Before Depltn	31,116,498	32,581,407	-31,832,077
100% Limit	31,116,498	32,581,407	
Percent Depln	23,408,708	23,408,708	
Prev Exp Expl			
-Depletion	-23,408,708	-23,408,708	
-Total D,D & A	-37,135,134	-35,670,225	-53,239,827
Taxable	7,707,790	9,172,699	-31,832,077
-Tax Due	-2,976,749	-3,542,496	12,293,548
Net Income	4,731,042	5,630,203	-19,538,529
+Depreciation	13,726,426	12,261,518	31,832,077
+Depletion	23,408,708	23,408,708	
+Amortization			
+Write Off			21,407,750
-Capital Costs	-2,174,038		
Cash Flow	39,692,138	41,300,428	33,701,298

List of Assumptions File:PCAMLIV.SEE Date:07/25/93 Time:14:19:34

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, 50 % TONNAGE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR, Inflation & Exponents					Tax Rates		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	52,038,243	MACRS	Mid Year	10.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	7,448,400	MACRS	Mid Year	18.0	0		0	.....
3	04/89	5,264,047	MACRS	Mid Year	18.0	0		0	.....
4	04/89	47,156,965	MACRS	Mid Year	18.0	0		0	.....
5	04/89	12,323,675	WC	Mid Year	18.0	0		0	.....
6	04/89	2,174,038	MACRS	Mid Year	4.0	0		0	.....
7	04/93	2,174,038	MACRS	Mid Year	4.0	0		0	.....
8	04/97	2,174,038	MACRS	Mid Year	4.0	0		0	.....
9	04/89	48,763,979	MACRS	Mid Year	18.0	0		0	.....
10	04/89	9,084,075	WC	Mid Year	18.0	0		0	.....
11	04/89	25,619,794	MACRS	Mid Year	18.0	0		0	.....
12	04/89	24,821,994	EXPL-X	Mid Year	18.0	0		0	.....
13	04/02	52,038,243	MACRS	Mid Year	8.0	0		0	.....
14	04/01	2,174,038	MACRS	Mid Year	4.0	0		0	.....
15	04/05	2,174,038	MACRS	Mid Year	4.0	0		0	.....
16	.....	0	MACRS	Mid Year	7.0	0		0	.....
17	04/89	38,345,722	MACRS	Mid Year	18.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	6,660,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000072	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0072	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.13	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0232	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	48,753,000.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	35,937,000.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S14	INFRA COSTS	Annual:	04/92	End	23,289,480.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,800,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MRT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MRT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

List of Assumptions File:PCAMLIV.SEE Date:01/04/80 Time:00:17:49

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, 50 % TONNAGE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	52,038,243	MACRS	Mid Year	10.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	7,448,400	MACRS	Mid Year	18.0	0		0	.....
3	04/89	5,264,047	MACRS	Mid Year	18.0	0		0	.....
4	04/89	47,156,965	MACRS	Mid Year	18.0	0		0	.....
5	04/89	12,323,675	WC	Mid Year	18.0	0		0	.....
6	04/89	2,174,038	MACRS	Mid Year	4.0	0		0	.....
7	04/93	2,174,038	MACRS	Mid Year	4.0	0		0	.....
8	04/97	2,174,038	MACRS	Mid Year	4.0	0		0	.....
9	04/89	48,763,979	MACRS	Mid Year	18.0	0		0	.....
10	04/89	9,084,075	WC	Mid Year	18.0	0		0	.....
11	04/89	25,619,794	MACRS	Mid Year	18.0	0		0	.....
12	04/89	24,821,994	EXPL-X	Mid Year	18.0	0		0	.....
13	04/02	52,038,243	MACRS	Mid Year	8.0	0		0	.....
14	04/01	2,174,038	MACRS	Mid Year	4.0	0		0	.....
15	04/05	2,174,038	MACRS	Mid Year	4.0	0		0	.....
16	.....	0	MACRS	Mid Year	7.0	0		0	.....
17	04/89	38,345,722	MACRS	Mid Year	18.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	6,660,000.00	Constant	0.000
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S3	CU GRADE %	N/A:	04/92	End	0.0072	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.13	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0232	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	48,753,000.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	35,937,000.00	Constant	0.000

Year	14	15	Salvage
MO REV	3,357,359	3,357,359	
CU REV	101,241,921	101,241,921	
AG REV	3,364,066	3,364,066	
AU REV	49,671,050	49,671,050	
GROSS REVENUE	157,634,396	157,634,396	
Total Revenue	157,634,396	157,634,396	21,407,750
-SMELTING CHARGES	-1,576,344	-1,576,344	
-Total Smelting Cost	-1,576,344	-1,576,344	
Net Smelt Ret.	156,058,052	156,058,052	
Net Revenue	156,058,052	156,058,052	
-OPER COSTS	-109,779,480	-109,779,480	
-Total Oper Costs	-109,779,480	-109,779,480	
-MNT NPI	-1,435,647	-1,435,647	
-Total Sev. Ad Valor	-1,435,647	-1,435,647	
-Dev, IDC			
-Depreciation	-13,726,426	-12,261,518	-31,832,077
-Amortization			
-Write Off			-21,407,750
Before Depltn	31,116,498	32,581,407	-31,832,077
100% Limit	31,116,498	32,581,407	
Percent Depln	23,408,708	23,408,708	
Prev Exp Expl			
-Depletion	-23,408,708	-23,408,708	
-Total D,D & A	-37,135,134	-35,670,225	-53,239,827
Taxable	7,707,790	9,172,699	-31,832,077
-Tax Due	-2,976,749	-3,542,496	12,293,548
Net Income	4,731,042	5,630,203	-19,538,529
+Depreciation	13,726,426	12,261,518	31,832,077
+Depletion	23,408,708	23,408,708	
+Amortization			
+Write Off			21,407,750
-Capital Costs	-2,174,038		
Cash Flow	39,692,138	41,300,428	33,701,298

Year	7	8	9	10	11	12	13
MO REV	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359	3,357,359
CU REV	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921	101,241,921
AG REV	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066	3,364,066
AU REV	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050	49,671,050
GROSS REVENUE	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
Total Revenue	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396	157,634,396
-SMELTING CHARGES	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
-Total Smelting Cost	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344	-1,576,344
Net Smelt Ret.	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052
Net Revenue	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052	156,058,052
-OPER COSTS	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-Total Oper Costs	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480	-109,779,480
-MHT NPI	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647
-Total Sev. Ad Valor	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647	-1,435,647
-Dev, IDC							
-Depreciation	-13,159,866	-11,759,542	-10,741,273	-9,028,472	-13,963,941	-18,434,894	-15,453,175
-Amortization							
-Write Off							
Before Depltn	31,683,058	33,083,382	34,101,652	35,814,452	30,878,984	26,408,031	29,389,749
100% Limit	31,683,058	33,083,382	34,101,652	35,814,452	30,878,984	26,408,031	29,389,749
Percent Depln	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708
Prev Exp Expl							
-Depletion	-23,408,708	-23,408,708	-23,408,708	-23,408,708	-23,408,708	-23,408,708	-23,408,708
-Total D,D & A	-36,568,574	-35,168,250	-34,149,980	-32,437,180	-37,372,648	-41,843,602	-38,861,883
Taxable	8,274,351	9,674,674	10,692,944	12,405,745	7,470,276	2,999,323	5,981,042
-Tax Due	-3,195,554	-3,736,359	-4,129,615	-4,791,099	-2,885,021	-1,158,338	-2,309,878
Net Income	5,078,796	5,938,315	6,563,329	7,614,646	4,585,255	1,840,984	3,671,163
+Depreciation	13,159,866	11,759,542	10,741,273	9,028,472	13,963,941	18,434,894	15,453,175
+Depletion	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708	23,408,708
+Amortization							
+Write Off							
-Capital Costs				-2,174,038	-52,038,243		
Cash Flow	41,647,370	41,106,565	40,713,309	37,877,788	-10,080,339	43,684,586	42,533,046

Year	2005	2006	Salvage
MO REV	3,357,359	3,357,359	
CU REV	101,241,921	101,241,921	
AG REV	3,364,066	3,364,066	
AU REV	49,671,050	49,671,050	
GROSS REVENUE	157,634,396	157,634,396	
Total Revenue	157,634,396	157,634,396	21,407,750
-SMELTING CHARGES	-1,576,344	-1,576,344	
-Total Smelting Cost	-1,576,344	-1,576,344	
Net Smelt Ret.	156,058,052	156,058,052	
-MHT ROYALTY	-6,170,322	-6,170,322	
-Total Royalties	-6,170,322	-6,170,322	
Net Revenue	149,887,730	149,887,730	
-OPER COSTS	-109,779,480	-109,779,480	
-Total Oper Costs	-109,779,480	-109,779,480	
-Dev, IDC			
-Depreciation	-13,726,426	-12,261,518	-31,832,077
-Amortization			
-Write Off			-21,407,750
Before Depltn	26,381,824	27,846,732	-31,832,077
100% Limit	26,381,824	27,846,732	
Percent Depln	22,483,159	22,483,159	
Prev Exp Expl			
-Depletion	-22,483,159	-22,483,159	
-Total D,D & A	-36,209,586	-34,744,677	-53,239,827
Taxable	3,898,664	5,363,573	-31,832,077
-Tax Due	-1,505,664	-2,071,412	12,293,548
Net Income	2,393,000	3,292,161	-19,538,529
+Depreciation	13,726,426	12,261,518	31,832,077
+Depletion	22,483,159	22,483,159	
+Amortization			
+Write Off			21,407,750
-Capital Costs	-2,174,038		
Cash Flow	36,428,548	38,036,838	33,701,298

8b. DESCRIPTIVE MODEL OF PORPHYRY Cu-Au

By Dennis P. Cox

DESCRIPTION Stockwork veinlets of chalcopyrite, bornite, and magnetite in porphyritic intrusions and coeval volcanic rocks. Ratio of Au (ppm) to Mo (percent) is greater than 30.

GENERAL REFERENCES Sillitoe (1979), Cox and Singer (in press).

GEOLOGICAL ENVIRONMENT

Rock Types Tonalite to monzogranite; dacite, andesite flows and tuffs coeval with intrusive rocks. Also syenite, monzonite, and coeval high-K, low-Ti volcanic rocks (shoshonites).

Textures Intrusive rocks are porphyritic with fine- to medium-grained aplitic groundmass.

Age Range Cretaceous to Quaternary.

Depositional Environment In porphyry intruding coeval volcanic rocks. Both involved and in large-scale breccia. Porphyry bodies may be dikes. Evidence for volcanic center; 1-2 km depth of emplacement.

Tectonic Setting(s) Island-arc volcanic setting, especially waning stage of volcanic cycle. Also continental margin rift-related volcanism.

Associated Deposit Types Porphyry Cu-Mo; gold placers.

DEPOSIT DESCRIPTION

Mineralogy Chalcopyrite ± bornite; traces of native gold, electrum, sylvanite, and hessite. Quartz + K-feldspar + biotite + magnetite ± chlorite ± actinolite ± anhydrite. Pyrite + sericite ± clay minerals ± calcite may occur in late-stage veinlets.

Texture/Structure Veinlets and disseminations.

Alteration Quartz ± magnetite ± biotite (chlorite) ± K-feldspar ± actinolite, ± anhydrite in interior of system. Outer propylitic zone. Late quartz + pyrite + white mica ± clay may overprint early feldspar-stable alteration.

Ore Controls Veinlets and fractures of quartz, sulfides, K-feldspar magnetite, biotite, or chlorite are closely spaced. Ore zone has a bell shape centered on the volcanic-intrusive center. Highest grade ore is commonly at the level at which the stock divides into branches.

Weathering Surface iron staining may be weak or absent if pyrite content is low in protore. Copper silicates and carbonates. Residual soils contain anomalous amounts of rutile.

Geochemical Signature Central Cu, Au, Ag; peripheral Mo. Peripheral Pb, Zn, Mn anomalies may be present if late sericite pyrite alteration is strong. Au (ppm): Mo (percent) 30 in ore zone. Au enriched in residual soil over ore body. System may have magnetic high over intrusion surrounded by magnetic low over pyrite halo.

EXAMPLES

Dos Pobres, USA2	(Langton and Williams, 1982)
Copper Mountain, CNBC	(Fahrni and others, 1976)
Tanama, PTRC	(Cox, 1985)

GRADE AND TONNAGE MODEL OF PORPHYRY Cu-Au
After Donald A. Singer and Dennis P. Cox

COMMENTS Upper ten percent of deposits contain an minimum of 400 million tonnes at 0.72% Cu, 0.0072% Mo, 0.72 grams/tonne Au, and 4.0 grams/tonne Ag. Total contained metal is 2.9 million tonnes Cu, 0.029 million tonnes Mo, 288 million grams Au, and 1.6 billion grams Ag. Gross metal value in 1987 if $10.0 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 20 million tonnes per year or 56,000 tonnes per day.

Gross Value of Annual Production $500 million.

Net Present Value of 4% NSR $20.0 million times 8.514 is $170.3 million.

Comments, Assumptions, Specifications: PCAL
Porphyry Cu-Au, Liversedge Area Lower 10% tonnage

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Porphyry Cu-Au
Total Ore Tonnage: 75 mil mtons
Mining Method: Open Pit
Beneficiation Method: Crush S.A.G. Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 yrs
Proposed Daily Production: 7,000 mTPD
Maximum Ore Depth: 200 m
Stripping Ratio: 2:1
Haulage Distance/Road Requirements: 20 km new/upgrade roads, 150 km haul to railhead
Distance From Power:
Pre-Production Development:

Production Development:

Equipment: F.E.; Diesel Shovels/Trucks
Concentrate Production: 180 mTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .05
Burden/Waste rate-mtpd: 10,300 mTPD
Burden/Waste depth & haul-m: 70m, 2,000m
Ore rate-mtpd: 7,000 mTPD
Ore depth & haul-m: 80 m, 1,400 m
Conveyor length & slope-km & %: 1 km 6%
Water needs-cm/day: 1200 m^3/day
Drainage, head & distance-cm/day, m & km:
8,000 m^3/day, 180 m 1 km
Concentrate (dry) rate-mtpd: 180 mTPD
Tails (dry) rate-mtpd: 6,800 mTPD
Production water needs-cm/day: 5,200 m^3/day M.U. 16,000 m^3/day recycle
Portable Power needs-kW: 15,000 kw
Wastewater-L/sec: 50 L/sec
Concentrate haul-km: 150 km
Employee housing-men: 250 men
Other: $ 7,020/day Rail Haulage
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 7,000 mTPD
Mill operating costs-$/day:
Working capital time-weeks: 13 weeks
Development time-days: 520 days @ 25,000 mTPD
Clearing needs-ha: 250 ha

Stripping needs-mt: 13 mil mt
Stripping depth & haul-m: 20m, 1500 m
Restoration area-ha: 450 ha
Contractors-1 or 2: 2
Mine operating costs-$/day:
Access roads, length & width-km & m: 20km, 12m
Airstrip length & width-m: None
Powerline length & power-km & mW: portable
Dike & Dam needs-cm/fill: 80,000 m3
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 52,569
Mining Costs-$/yr: 18.924 840
Mining Costs-$/mt: 7.51
Milling Costs-$/day: 47,206
Milling Costs-$/yr: 16,994,160
Milling Costs-$/mt: 6.74
Infrastructure Costs-$/day: 31,825
Infrastructure Costs-$/yr: 11,457,000
Infrastructure Costs-$/mt: 4.55
Total Operating Costs-$/day: 131,600
Total Operating Costs-$/yr: 47,376,000
Total Operating Costs-$/mt: 18.80
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 4,783,779
Heavy Equipment (fixed life)-$: 19,113,111 *
Mine Rehabilitation-$: 4,189,725 *
Engr. & Const. Mgmt.-$: 3,190,332 *
Other:
Remaining Mine Capital-$: 27,926,684
Total Mine Capital-$: 59,203,631

MILL CAPITAL COSTS:

Mill Working Capital-$: 4,295,746
Light Vehicles (short life)-$: 1,548,686 *
Other:
Remaining Mill Capital-$: 21,217,599
Total Mill Capital-$: 27,062,031

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 14,771,436 *

Other: _____
Remaining Infrastructure Capital-$: 26,539,958 ~
Total Infrastructure Capital-$: 41,311,394

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 9,079,525 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 75,684,241 *
Sum of Total Mine, Mill & Infr. Costs-$: 127,577,056
Exploration Cost-$: 12,757,706 *

Overall Capital Cost-$: 140,334,762
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:PCALLIV.SEE Date:07/25/93 Time:14:39:31

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, LOWER 10 % TONNAGE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR, Inflation & Exponents					Tax Rates		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	19,113,111	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0			0 .....
3	04/89	3,190,332	MACRS	Mid Year	13.0	0			0 .....
4	04/89	27,926,684	MACRS	Mid Year	13.0	0			0 .....
5	04/89	4,783,779	WC	Mid Year	13.0	0			0 .....
6	04/89	1,548,686	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,548,686	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,548,686	MACRS	Mid Year	4.0	0			0 .....
9	04/89	21,217,599	MACRS	Mid Year	13.0	0			0 .....
10	04/89	4,295,746	WC	Mid Year	13.0	0			0 .....
11	04/89	14,771,436	MACRS	Mid Year	13.0	0			0 .....
12	04/89	12,757,706	EXPL-X	Mid Year	13.0	0			0 .....
13	.....	0	MACRS	Mid Year	7.0	0			0 .....
14	04/01	1,548,686	MACRS	Mid Year	4.0	0			0 .....
15	.....	0	MACRS	Mid Year	7.0	0			0 .....
16	.....	0	MACRS	Mid Year	7.0	0			0 .....
17	04/89	26,539,958	MACRS	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	2,520,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000072	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0072	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.13	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0232	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	18,924,840.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	16,994,160.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	11,457,000.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, LOWER 10 % TONNAGE

Cash Flows

NPV =$-73,537,648 DCFROR= -4.8% GROR = 1.5% PWROR = -4.8% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997
MO REV		1,270,352	1,270,352	1,270,352	1,270,352	1,270,352	1,270,352
CU REV		38,307,754	38,307,754	38,307,754	38,307,754	38,307,754	38,307,754
AG REV		1,272,890	1,272,890	1,272,890	1,272,890	1,272,890	1,272,890
AU REV		18,794,451	18,794,451	18,794,451	18,794,451	18,794,451	18,794,451
GROSS REVENUE		59,645,447	59,645,447	59,645,447	59,645,447	59,645,447	59,645,447
Total Revenue		59,645,447	59,645,447	59,645,447	59,645,447	59,645,447	59,645,447
-SMELTING CHARGES		-596,454	-596,454	-596,454	-596,454	-596,454	-596,454
-Total Smelting Cost		-596,454	-596,454	-596,454	-596,454	-596,454	-596,454
Net Smelt Ret.		59,048,993	59,048,993	59,048,993	59,048,993	59,048,993	59,048,993
-MHT ROYALTY		-2,321,960	-2,321,960	-2,321,960	-2,321,960	-2,321,960	-2,321,960
-Total Royalties		-2,321,960	-2,321,960	-2,321,960	-2,321,960	-2,321,960	-2,321,960
Net Revenue		56,727,033	56,727,033	56,727,033	56,727,033	56,727,033	56,727,033
-OPER COSTS		-48,376,000	-48,376,000	-48,376,000	-48,376,000	-48,376,000	-48,376,000
-Total Oper Costs		-48,376,000	-48,376,000	-48,376,000	-48,376,000	-48,376,000	-48,376,000
-Dev, IDC	-8,930,394						
-Depreciation	-9,383,237	-17,188,877	-14,730,575	-12,665,364	-10,448,805	-8,707,275	-7,687,855
-Amortization	-2,296,387	-765,462	-765,462				
-Write Off							
Before Depltn	-20,610,018	-9,603,307	-7,145,004	-4,314,331	-2,097,772	-356,242	663,177
100% Limit							663,177
Percent Depln		8,509,055	8,509,055	8,509,055	8,509,055	8,509,055	8,509,055
Prev Exp Expl							663,177
-Total D,D & A	-20,610,018	-17,954,340	-15,496,037	-12,665,364	-10,448,805	-8,707,275	-7,687,855
Taxable	-20,610,018	-9,603,307	-7,145,004	-4,314,331	-2,097,772	-356,242	663,177
-Tax Due	7,007,406	3,265,124	2,429,301	1,466,873	810,159	137,581	-256,119
Net Income	-13,602,612	-6,338,182	-4,715,703	-2,847,458	-1,287,612	-218,662	407,058
+Depreciation	9,383,237	17,188,877	14,730,575	12,665,364	10,448,805	8,707,275	7,687,855
+Amortization	2,296,387	765,462	765,462				
+Write Off							
-Capital Costs	-131,404,368		-1,548,686				-1,548,686
Cash Flow	-133,327,356	11,616,157	9,231,648	9,817,905	9,161,192	8,488,614	6,546,228

Year	1998	1999	2000	2001	Salvage
MO REV	1,270,352	1,270,352	1,270,352	1,270,352	
CU REV	38,307,754	38,307,754	38,307,754	38,307,754	
AG REV	1,272,890	1,272,890	1,272,890	1,272,890	
AU REV	18,794,451	18,794,451	18,794,451	18,794,451	
GROSS REVENUE	59,645,447	59,645,447	59,645,447	59,645,447	
Total Revenue	59,645,447	59,645,447	59,645,447	59,645,447	9,079,525
-SMELTING CHARGES	-596,454	-596,454	-596,454	-596,454	
-Total Smelting Cost	-596,454	-596,454	-596,454	-596,454	
Net Smelt Ret.	59,048,993	59,048,993	59,048,993	59,048,993	
-MET ROYALTY	-2,321,960	-2,321,960	-2,321,960	-2,321,960	
-Total Royalties	-2,321,960	-2,321,960	-2,321,960	-2,321,960	
Net Revenue	56,727,033	56,727,033	56,727,033	56,727,033	
-OPER COSTS	-48,376,000	-48,376,000	-48,376,000	-48,376,000	
-Total Oper Costs	-48,376,000	-48,376,000	-48,376,000	-48,376,000	
-Dev, IDC					
-Depreciation	-6,676,357	-6,385,979	-6,289,186	-6,579,565	-16,400,515
-Amortization					
-Write Off					-9,079,525
Before Depltn	1,674,675	1,965,054	2,061,847	1,771,468	-16,400,515
100% Limit	1,674,675	1,965,054	2,061,847	1,771,468	
Percent Depln	8,509,055	8,509,055	8,509,055	8,509,055	
Prev Exp Expl	1,674,675	1,965,054	2,061,847	1,771,468	
-Total D,D & A	-6,676,357	-6,385,979	-6,289,186	-6,579,565	-25,480,040
Taxable	1,674,675	1,965,054	2,061,847	1,771,468	-16,400,515
-Tax Due	-646,760	-758,904	-796,285	-684,141	6,333,879
Net Income	1,027,916	1,206,150	1,265,562	1,087,327	-10,066,636
+Depreciation	6,676,357	6,385,979	6,289,186	6,579,565	16,400,515
+Amortization					
+Write Off					9,079,525
-Capital Costs				-1,548,686	
Cash Flow	7,704,273	7,592,129	7,554,748	6,118,206	15,413,404

List of Assumptions File:PCALLIV.SEE Date:01/04/80 Time:00:06:29

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, LOWER 10 % TONNAGE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	19,113,111	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,189,725	MACRS	Mid Year	13.0	0		0	.....
3	04/89	3,190,332	MACRS	Mid Year	13.0	0		0	.....
4	04/89	27,926,684	MACRS	Mid Year	13.0	0		0	.....
5	04/89	4,783,779	WC	Mid Year	13.0	0		0	.....
6	04/89	1,548,686	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,548,686	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,548,686	MACRS	Mid Year	4.0	0		0	.....
9	04/89	21,217,599	MACRS	Mid Year	13.0	0		0	.....
10	04/89	4,295,746	WC	Mid Year	13.0	0		0	.....
11	04/89	14,771,436	MACRS	Mid Year	13.0	0		0	.....
12	04/89	12,757,706	EXPL-X	Mid Year	13.0	0		0	.....
13	.....	0	MACRS	Mid Year	7.0	0		0	.....
14	04/01	1,548,686	MACRS	Mid Year	4.0	0		0	.....
15	.....	0	MACRS	Mid Year	7.0	0		0	.....
16	.....	0	MACRS	Mid Year	7.0	0		0	.....
17	04/89	26,539,958	MACRS	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	2,520,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000072	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0072	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.13	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0232	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	18,924,840.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	16,994,160.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	11,457,000.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

SHORTY CREEK CU-AU PORPHYRY, LIVENGOOD AREA, LOWER 10 % TONNAGE

Cash Flows

NPV =$-64,073,855 DCFROR= -2.3% GROR = 3.0% PWROR = -2.3% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		1,270,352	1,270,352	1,270,352	1,270,352	1,270,352	1,270,352
CU REV		38,307,754	38,307,754	38,307,754	38,307,754	38,307,754	38,307,754
AG REV		1,272,890	1,272,890	1,272,890	1,272,890	1,272,890	1,272,890
AU REV		18,794,451	18,794,451	18,794,451	18,794,451	18,794,451	18,794,451
GROSS REVENUE		59,645,447	59,645,447	59,645,447	59,645,447	59,645,447	59,645,447
Total Revenue		59,645,447	59,645,447	59,645,447	59,645,447	59,645,447	59,645,447
-SMELTING CHARGES		-596,454	-596,454	-596,454	-596,454	-596,454	-596,454
-Total Smelting Cost		-596,454	-596,454	-596,454	-596,454	-596,454	-596,454
Net Smelt Ret.		59,048,993	59,048,993	59,048,993	59,048,993	59,048,993	59,048,993
Net Revenue		59,048,993	59,048,993	59,048,993	59,048,993	59,048,993	59,048,993
-OPER COSTS		-48,376,000	-48,376,000	-48,376,000	-48,376,000	-48,376,000	-48,376,000
-Total Oper Costs		-48,376,000	-48,376,000	-48,376,000	-48,376,000	-48,376,000	-48,376,000
-MHT NPI		-338,083	-338,083	-338,083	-338,083	-338,083	-338,083
-Total Sev. Ad Valor		-338,083	-338,083	-338,083	-338,083	-338,083	-338,083
-Dev, IDC	-8,930,394						
-Depreciation	-9,383,237	-17,188,877	-14,730,575	-12,665,364	-10,448,805	-8,707,275	-7,687,855
-Amortization	-2,296,387	-765,462	-765,462				
-Write Off							
Before Depltn	-20,610,018	-7,619,430	-5,161,128	-2,330,455	-113,895	1,627,634	2,647,054
100% Limit						1,627,634	2,647,054
Percent Depln		8,857,349	8,857,349	8,857,349	8,857,349	8,857,349	8,857,349
Prev Exp Expl						1,627,634	2,647,054
-Depletion							
-Total D,D & A	-20,610,018	-17,954,340	-15,496,037	-12,665,364	-10,448,805	-8,707,275	-7,687,855
Taxable	-20,610,018	-7,619,430	-5,161,128	-2,330,455	-113,895	1,627,634	2,647,054
-Tax Due	7,007,406	2,590,606	1,754,783	792,355	43,986	-628,592	-1,022,292
Net Income	-13,602,612	-5,028,824	-3,406,344	-1,538,100	-69,909	999,042	1,624,762
+Depreciation	9,383,237	17,188,877	14,730,575	12,665,364	10,448,805	8,707,275	7,687,855
+Depletion							
+Amortization	2,296,387	765,462	765,462				
+Write Off							
-Capital Costs	-131,404,368		-1,548,686				-1,548,686
Cash Flow	-133,327,356	12,925,516	10,541,007	11,127,264	10,378,896	9,706,317	7,763,931

Year	7	8	9	10	Salvage
MO REV	1,270,352	1,270,352	1,270,352	1,270,352	
CU REV	38,307,754	38,307,754	38,307,754	38,307,754	
AG REV	1,272,890	1,272,890	1,272,890	1,272,890	
AU REV	18,794,451	18,794,451	18,794,451	18,794,451	
GROSS REVENUE	59,645,447	59,645,447	59,645,447	59,645,447	
Total Revenue	59,645,447	59,645,447	59,645,447	59,645,447	9,079,525
-SMELTING CHARGES	-596,454	-596,454	-596,454	-596,454	
-Total Smelting Cost	-596,454	-596,454	-596,454	-596,454	
Net Smelt Ret.	59,048,993	59,048,993	59,048,993	59,048,993	
Net Revenue	59,048,993	59,048,993	59,048,993	59,048,993	
-OPER COSTS	-48,376,000	-48,376,000	-48,376,000	-48,376,000	
-Total Oper Costs	-48,376,000	-48,376,000	-48,376,000	-48,376,000	
-MHT NPI	-338,083	-338,083	-338,083	-338,083	
-Total Sev. Ad Valor	-338,083	-338,083	-338,083	-338,083	
-Dev, IDC					
-Depreciation	-6,676,357	-6,385,979	-6,289,186	-6,579,565	-16,400,515
-Amortization					
-Write Off					-9,079,525
Before Depltn	3,658,552	3,948,930	4,045,723	3,755,345	-16,400,515
100% Limit	3,658,552	3,948,930	4,045,723	3,755,345	
Percent Depln	8,857,349	8,857,349	8,857,349	8,857,349	
Prev Exp Expl	3,658,552	997,155			
-Depletion		-2,951,776	-4,045,723	-3,755,345	
-Total D,D & A	-6,676,357	-9,337,754	-10,334,909	-10,334,909	-25,480,040
Taxable	3,658,552	997,155			-16,400,515
-Tax Due	-1,412,933	-385,101			6,333,879
Net Income	2,245,619	612,054			-10,066,636
+Depreciation	6,676,357	6,385,979	6,289,186	6,579,565	16,400,515
+Depletion		2,951,776	4,045,723	3,755,345	
+Amortization					
+Write Off					9,079,525
-Capital Costs				-1,548,686	
Cash Flow	8,921,976	9,949,808	10,334,909	8,786,223	15,413,404

APPENDIX B-9

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR CLIMAX MOLYBDENUM (Mo) DEPOSITS

9. DESCRIPTIVE MODEL OF CLIMAX Mo DEPOSITS

By Stephen D. Ludington

APPROXIMATE SYNONYMS Granite molybdenite (Mutschler and others, 1981).

DESCRIPTION Stockwork of quartz and molybdenite associated with fluorite in granite porphyry.

GENERAL REFERENCES White and others (1981).

GEOLOGICAL ENVIRONMENT

Rock Types Granite-rhyolite with >75 percent SiO_2. Rb, Y, Nb are high, Ba, Sr, Zr low. Stocks with radial dikes; small breccias common.

Textures Porphyry with fine- to medium-grained aplitic groundmass.

Age Range Examples are mainly mid-Tertiary.

Depositional Environment Multistage hypabyssal intrusions.

Tectonic Setting(s) Mainly extensional zones in cratons. May be related to subduction, but found far from continental margins in areas of thick crust, and late in the cycles.

Associated Deposit Types Ag-base-metal veins, fluorspar deposits. On the basis of similar geochemistry of associated rhyolite magmas, rhyolite-hosted Sn deposits may be a surface expression. Porphyry tungsten deposits, as at Mount Pleasant, Canada, may be W-rich Climax systems.

DEPOSIT DESCRIPTION

Mineralogy Molybdenite + quartz ± fluorite ± K-feldspar ± pyrite ± wolframite ± cassiterite ± topaz.

Texture/Structure Predominantly in veinlets and fractures; minor disseminations.

Alteration Intense quartz and quartz + K-feldspar veining in ore zone. Upper phyllic and propylitic zones. Halo of rhodochrosite, rhodonite, spessartine garnet. Minor greisen veins below ore body.

Ore Controls Stockwork ore zone draped over small, <1 km^2 stocks. Multiple phases of intrusion and mineralization are highly favorable.

Weathering Yellow ferrimolybdite stains.

Geochemical Signature Mo, Sn, W and Rb anomalies close above ore zones. Pb, Zn, F, and U anomalies in wall rocks up to a few kilometers distant. Cu anomaly external to Mount Emmons deposit. In panned concentrates, Sn, W, Mo, and F may be important.

EXAMPLES

Roswell Basin, Winfield Middle Mtn.	
Climax, Henderson, and Mt. Emmons, USCO	(White and others, 1981)
Pine Grove, USUT	(Abbott and Williams, 1981)
Mount Hope, USNV	(Westra, 1982b)
Big Ben, USMT	(Witkind, 1973)

GRADE AND TONNAGE MODEL OF CLIMAX Mo DEPOSITS
After Donald A. Singer, Ted G. Theodore, and Dan L. Mosier

COMMENTS Upper ten percent of the deposits contain an minimum of 890 million tonnes at 0.29% Mo. Total contained metal is 2.58 million tonnes. Gross value in 1987 would have been $17.0 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 44.5 million tonnes per year or 124,000 tonnes per day.

Gross Value of Annual Production $850 million.

Net Present Value of 4% NSR $34.0 million times 8.514 is $289.5 million.

Comments, Assumptions, Specifications: CLMOA
Chena Hot Springs Area S.R. = 2:1

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Climax Mo
Total Ore Tonnage: 890 mil mt
Mining Method: Open Pit
Beneficiation Method: (non-) Crush. S.A.G. Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 20 yrs
Proposed Daily Production: 120,000 MTPD
Maximum Ore Depth: 430 m
Stripping Ratio: 2:1
Haulage Distance/Road Requirements:
10 km new roads 100 km haul to rail head
Distance From Power:
Pre-Production Development:

Production Development:

Equipment: Shovels Trucks
Concentrate Production: 600 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .3 ha/day
Burden/Waste rate-mtpd: 240,000 MTPD
Burden/Waste depth & haul-m: 130 m, 5,500 m
Ore rate-mtpd: 120,000 MTPD
Ore depth & haul-m: 250 m, 3,000 m
Conveyor length & slope-km & %: 1.5km, 6%
Water needs-cm/day: 25,000 m³/day
Drainage, head & distance-cm/day, m & km:
50,000 m³/day, 450 m, 1.5 km
Concentrate (dry) rate-mtpd: 600 MTPD
Tails (dry) rate-mtpd: 119,400 MTPD
Production water needs-cm/day: 90,000 m³/day M.U., 210,000 m³/day - recycle
Portable Power needs-kW:
Wastewater-L/sec: 350 l/s
Concentrate haul-km: 100km to Railhead
Employee housing-men: 850 men
Other: $ 21,900 /day Rail haulage
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 120,000 MTPD
Mill operating costs-$/day: $484,973/day
Working capital time-weeks: 13
Development time-days: 100 days stripping 240,000 MTPD
Clearing needs-ha: 800 ha

Other: _____
Remaining Infrastructure Capital-$: 152,876,328
Total Infrastructure Capital-$: 226,901,390

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 113,459,255 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 444,084,945 *
Sum of Total Mine, Mill & Infr. Costs-$: 982,072,113
Exploration Cost-$: 98,207,200 *

Overall Capital Cost-$: 1,080,279,324
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

Stripping needs-mt: 23m:1 mt
Stripping depth & haul-m: 10m, 3,000m
Restoration area-ha: 3,200 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $761,832/day
Access roads, length & width-km & m: 10km 15m
Airstrip length & width-m: 1,600m, 22m
Powerline length & power-km & mW: 100km, 250mw
Dike & Dam needs-cm/fill: 5,000,000 m³
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 761,832
Mining Costs-$/yr: 274,259,520
Mining Costs-$/mt: 6.35
Milling Costs-$/day: 484973
Milling Costs-$/yr: 174,590,280
Milling Costs-$/mt: 4.04
Infrastructure Costs-$/day: 142433
Infrastructure Costs-$/yr: 51,275,880
Infrastructure Costs-$/mt: 1.19
Total Operating Costs-$/day: 1,389,238
Total Operating Costs-$/yr: 500,125,680
Total Operating Costs-$/mt: 11.58
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 69,326,712
Heavy Equipment (fixed life)-$: 301,493,580 *
Mine Rehabilitation-$: 29793600 *
Engr. & Const. Mgmt.-$: 15,040,651 *
Other:
Remaining Mine Capital-$: 55,396,547
Total Mine Capital-$: 471,051,090

MILL CAPITAL COSTS:

Mill Working Capital-$: 44,132,543
Light Vehicles (short life)-$: 4175020 *
Other:
Remaining Mill Capital-$: 235,812,070
Total Mill Capital-$: 284,119,633

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 74,025,062 *

List of Assumptions File:CLMOACNE.SEE Date:07/25/93 Time:15:58:02

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 2:1 STRIPPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

	Minimum ROR, Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2008	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2009	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2010	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2011	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	301,493,580	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	29,793,600	MACRS	Mid Year	23.0	0			0 .....
3	04/89	15,040,651	MACRS	Mid Year	23.0	0			0 .....
4	04/89	55,396,547	MACRS	Mid Year	23.0	0			0 .....
5	04/89	69,326,712	WC	Mid Year	23.0	0			0 .....
6	04/89	4,175,020	MACRS	Mid Year	4.0	0			0 .....
7	04/93	4,175,020	MACRS	Mid Year	4.0	0			0 .....
8	04/97	4,175,020	MACRS	Mid Year	4.0	0			0 .....
9	04/89	235,812,070	MACRS	Mid Year	23.0	0			0 .....
10	04/89	44,132,543	WC	Mid Year	23.0	0			0 .....
11	04/89	74,025,062	MACRS	Mid Year	23.0	0			0 .....
12	04/89	98,207,200	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	301,493,580	MACRS	Mid Year	10.0	0			0 .....
14	04/01	4,175,020	MACRS	Mid Year	4.0	0			0 .....
15	04/05	4,175,020	MACRS	Mid Year	4.0	0			0 .....
16	04/09	4,175,020	MACRS	Mid Year	4.0	0			0 .....
17	04/89	152,876,328	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	43,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.002900	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	274,259,520.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	174,590,280.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	51,275,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 2:1 STRIPPING

Cash Flows

NPV =$1,174,054,871 DCFROR= 25.1% GROR = 14.2% PWROR = 25.1% Pay Back= 3.82 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997
MO REV		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES		-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost		-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.		868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-MHT ROYALTY		-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058
-Total Royalties		-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058
Net Revenue		833,857,383	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383
-OPER COSTS		-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Total Oper Costs		-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Dev, IDC	-68,745,040						
-Depreciation	-37,493,314	-68,857,126	-62,531,041	-57,218,344	-51,458,436	-46,945,967	-44,352,129
-Amortization	-17,677,296	-5,892,432	-5,892,432				
-Write Off							
Before Depltn	-123,915,650	253,582,145	259,908,230	271,113,359	276,873,268	281,385,736	283,979,574
100% Limit		253,582,145	259,908,230	271,113,359	276,873,268	281,385,736	283,979,574
Percent Depln		125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607
Prev Exp Expl		68,745,040					
-Depletion		-56,333,567	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607
-Total D,D & A	-123,915,650	-131,083,126	-193,502,080	-182,296,951	-176,537,043	-172,024,574	-169,430,736
Taxable	-123,915,650	197,248,578	134,829,623	146,034,752	151,794,660	156,307,129	158,900,967
-Tax Due	42,131,321	-67,064,516	-45,842,072	-49,651,816	-58,623,098	-60,365,813	-61,367,553
Net Income	-81,784,329	130,184,061	88,987,551	96,382,936	93,171,562	95,941,316	97,533,413
+Depreciation	37,493,314	68,857,126	62,531,041	57,218,344	51,458,436	46,945,967	44,352,129
+Depletion		56,333,567	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607
+Amortization	17,677,296	5,892,432	5,892,432				
+Write Off							
-Capital Costs	-1,011,534,273		-4,175,020				-4,175,020
Cash Flow	-1,038,147,992	261,267,187	278,314,611	278,679,888	269,708,605	267,965,890	262,789,130

Year	1998	1999	2000	2001	2002	2003	2004
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-MHT ROYALTY	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058
-Total Royalties	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058
Net Revenue	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383
-OPER COSTS	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Total Oper Costs	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Dev, IDC							
-Depreciation	-41,755,899	-40,973,082	-40,712,144	-41,494,960	-71,905,257	-95,241,927	-76,270,005
-Amortization							
-Write Off							
Before Depltn	286,575,804	287,358,621	287,619,559	286,836,743	256,426,446	233,089,776	252,061,698
100% Limit	286,575,804	287,358,621	287,619,559	286,836,743	256,426,446	233,089,776	252,061,698
Percent Depln	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607
Prev Exp Expl							
-Depletion	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607
-Total D,D & A	-166,834,506	-166,051,690	-165,790,751	-166,573,567	-196,983,864	-220,320,534	-201,348,612
Taxable	161,497,197	162,280,013	162,540,952	161,758,136	131,347,839	108,011,169	126,983,091
-Tax Due	-62,370,217	-62,672,541	-62,773,316	-62,470,992	-50,726,535	-41,713,913	-49,040,870
Net Income	99,126,979	99,607,472	99,767,636	99,287,144	80,621,304	66,297,255	77,942,221
+Depreciation	41,755,899	40,973,082	40,712,144	41,494,960	71,905,257	95,241,927	76,270,005
+Depletion	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607
+Amortization							
+Write Off							
-Capital Costs				-4,175,020	-301,493,580		
Cash Flow	265,961,486	265,659,162	265,558,388	261,685,691	-23,888,412	286,617,790	279,290,833

Year	2005	2006	2007	2008	2009	2010	2011
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-MHT ROYALTY	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058
-Total Royalties	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058
Net Revenue	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383
-OPER COSTS	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Total Oper Costs	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Dev, IDC							
-Depreciation	-60,512,591	-53,827,118	-47,487,172	-44,756,398	-45,539,214	-45,800,153	-45,017,337
-Amortization							
-Write Off							
Before Depltn	267,819,112	274,504,585	280,844,531	283,575,305	282,792,489	282,531,550	283,314,366
100% Limit	267,819,112	274,504,585	280,844,531	283,575,305	282,792,489	282,531,550	283,314,366
Percent Depln	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607
Prev Exp Expl							
-Depletion	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607
-Total D,D & A	-185,591,199	-178,905,726	-172,565,780	-169,835,006	-170,617,822	-170,878,761	-170,095,944
Taxable	142,740,504	149,425,978	155,765,923	158,496,698	157,713,881	157,452,943	158,235,759
-Tax Due	-55,126,383	-57,708,313	-60,156,800	-61,211,425	-60,909,101	-60,808,326	-61,110,650
Net Income	87,614,121	91,717,665	95,609,124	97,285,273	96,804,780	96,644,616	97,125,109
+Depreciation	60,512,591	53,827,118	47,487,172	44,756,398	45,539,214	45,800,153	45,017,337
+Depletion	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607
+Amortization							
+Write Off							
-Capital Costs	-4,175,020				-4,175,020		
Cash Flow	269,030,300	270,623,391	268,174,904	267,120,279	263,247,582	267,523,377	267,221,053

Year	Salvage
NO REV	
GROSS REVENUE	
Total Revenue	113,459,255
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-NET ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-70,831,925
-Amortization	
-Write Off	-113,459,255
Before Depltn	-70,831,925
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-184,291,180
Taxable	-70,831,925
-Tax Due	27,355,289
Net Income	-43,476,635
+Depreciation	70,831,925
+Depletion	
+Amortization	
+Write Off	113,459,255
-Capital Costs	
Cash Flow	140,814,544

List of Assumptions File:CLMOACNE.SEE Date:11/05/93 Time:13:35:16

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 2:1 STRIPPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	301,493,580	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	29,793,600	MACRS	Mid Year	23.0	0		0	.....
3	04/89	15,040,651	MACRS	Mid Year	23.0	0		0	.....
4	04/89	55,396,547	MACRS	Mid Year	23.0	0		0	.....
5	04/89	69,326,712	WC	Mid Year	23.0	0		0	.....
6	04/89	4,175,020	MACRS	Mid Year	4.0	0		0	.....
7	04/93	4,175,020	MACRS	Mid Year	4.0	0		0	.....
8	04/97	4,175,020	MACRS	Mid Year	4.0	0		0	.....
9	04/89	235,812,070	MACRS	Mid Year	23.0	0		0	.....
10	04/89	44,132,543	WC	Mid Year	23.0	0		0	.....
11	04/89	74,025,062	MACRS	Mid Year	23.0	0		0	.....
12	04/89	98,207,200	EXPL-X	Mid Year	23.0	0		0	.....
13	04/02	301,493,580	MACRS	Mid Year	10.0	0		0	.....
14	04/01	4,175,020	MACRS	Mid Year	4.0	0		0	.....
15	04/05	4,175,020	MACRS	Mid Year	4.0	0		0	.....
16	04/09	4,175,020	MACRS	Mid Year	4.0	0		0	.....
17	04/89	152,876,328	MACRS	Mid Year	23.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	43,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.002900	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	274,259,520.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	174,590,280.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	51,275,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	0.03*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 2:1 STRIPPING

Cash Flows

NPV =$1,315,294,443 DCFROR= 26.8% GROR = 14.6% PWROR = 26.8% Pay Back= 3.59 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES		-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost		-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.		868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
Net Revenue		868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-OPER COSTS		-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Total Oper Costs		-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-MHT NPI		-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667
-Total Sev. Ad Valor		-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667
-Dev, IDC	-68,745,040						
-Depreciation	-37,493,314	-68,857,126	-62,531,041	-57,218,344	-51,458,436	-46,945,967	-44,352,129
-Amortization	-17,677,296	-5,892,432	-5,892,432				
-Write Off							
Before Depltn	-123,915,650	276,952,535	283,278,621	294,483,750	300,243,658	304,756,127	307,349,965
100% Limit		276,952,535	283,278,621	294,483,750	300,243,658	304,756,127	307,349,965
Percent Depln		130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
Prev Exp Expl		68,745,040					
-Depletion		-61,511,426	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466
-Total D,D & A	-123,915,650	-136,260,984	-198,679,939	-187,474,810	-181,714,902	-177,202,433	-174,608,595
Taxable	-123,915,650	215,441,109	153,022,155	164,227,284	169,987,192	174,499,661	177,093,499
-Tax Due	42,131,321	-73,249,977	-52,027,533	-55,837,276	-65,649,054	-67,391,769	-68,393,509
Net Income	-81,784,329	142,191,132	100,994,622	108,390,007	104,338,138	107,107,892	108,699,989
+Depreciation	37,493,314	68,857,126	62,531,041	57,218,344	51,458,436	46,945,967	44,352,129
+Depletion		61,511,426	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
+Amortization	17,677,296	5,892,432	5,892,432				
+Write Off							
-Capital Costs	-1,011,534,273		-4,175,020				-4,175,020
Cash Flow	-1,038,147,992	278,452,116	295,499,541	295,864,817	286,053,040	284,310,325	279,133,564

Year	7	8	9	10	11	12	13
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
Net Revenue	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-OPER COSTS	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Total Oper Costs	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-MHT NPI	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667
-Total Sev. Ad Valor	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667
-Dev, IDC							
-Depreciation	-41,755,899	-40,973,082	-40,712,144	-41,494,960	-71,905,257	-95,241,927	-76,270,005
-Amortization							
-Write Off							
Before Depltn	309,946,195	310,729,011	310,989,950	310,207,134	279,796,837	256,460,167	275,432,089
100% Limit	309,946,195	310,729,011	310,989,950	310,207,134	279,796,837	256,460,167	275,432,089
Percent Depln	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
Prev Exp Expl							
-Depletion	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466
-Total D,D & A	-172,012,365	-171,229,549	-170,968,610	-171,751,426	-202,161,723	-225,498,393	-206,526,471
Taxable	179,689,729	180,472,545	180,733,484	179,950,668	149,540,371	126,203,701	145,175,623
-Tax Due	-69,396,173	-69,698,497	-69,799,271	-69,496,948	-57,752,491	-48,739,869	-56,066,825
Net Income	110,293,556	110,774,048	110,934,212	110,453,720	91,787,880	77,463,831	89,108,797
+Depreciation	41,755,899	40,973,082	40,712,144	41,494,960	71,905,257	95,241,927	76,270,005
+Depletion	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
+Amortization							
+Write Off							
-Capital Costs				-4,175,020	-301,493,580		
Cash Flow	282,305,920	282,003,597	281,902,822	278,030,126	-7,543,978	302,962,224	295,635,268

Year	14	15	16	17	18	19	20
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
Net Revenue	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-OPER COSTS	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-Total Oper Costs	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680	-505,525,680
-MHT NPI	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667

Year	14	15	16	17	18	19	20
-Total Sev. Ad Valor	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667	-11,148,667
-Dev, IDC							
-Depreciation	-60,512,591	-53,827,118	-47,487,172	-44,756,398	-45,539,214	-45,800,153	-45,017,337
-Amortization							
-Write Off							
Before Depltn	291,189,502	297,874,975	304,214,921	306,945,696	306,162,879	305,901,941	306,684,757
100% Limit	291,189,502	297,874,975	304,214,921	306,945,696	306,162,879	305,901,941	306,684,757
Percent Depln	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
Prev Exp Expl							
-Depletion	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466
-Total D,D & A	-190,769,058	-184,083,584	-177,743,638	-175,012,864	-175,795,680	-176,056,619	-175,273,803
Taxable	160,933,036	167,618,509	173,958,455	176,689,229	175,906,413	175,645,474	176,428,291
-Tax Due	-62,152,339	-64,734,268	-67,182,755	-68,237,380	-67,935,057	-67,834,282	-68,136,606
Net Income	98,780,698	102,884,241	106,775,700	108,451,849	107,971,356	107,811,192	108,291,685
+Depreciation	60,512,591	53,827,118	47,487,172	44,756,398	45,539,214	45,800,153	45,017,337
+Depletion	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
+Amortization							
+Write Off							
-Capital Costs	-4,175,020				-4,175,020		
Cash Flow	285,374,735	286,967,825	284,519,338	283,464,713	279,592,017	283,867,811	283,565,488

Year	Salvage
MO REV	
GROSS REVENUE	
Total Revenue	113,459,255
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-70,831,925
-Amortization	
-Write Off	-113,459,255
Before Depltn	-70,831,925
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	

Year	Salvage
-Total D,D & A	-184,291,180
Taxable	-70,831,925
-Tax Due	27,355,289
Net Income	-43,476,635
+Depreciation	70,831,925
+Depletion	
+Amortization	
+Write Off	113,459,255
-Capital Costs	
Cash Flow	140,814,544

9. DESCRIPTIVE MODEL OF CLIMAX Mo DEPOSITS

By Stephen D. Ludington

APPROXIMATE SYNONYMS Granite molybdenite (Mutschler and others, 1981).

DESCRIPTION Stockwork of quartz and molybdenite associated with fluorite in granite porphyry.

GENERAL REFERENCES White and others (1981).

GEOLOGICAL ENVIRONMENT

Rock Types Granite-rhyolite with >75 percent SiO_2. Rb, Y, Nb are high, Ba, Sr, Zr low. Stocks with radial dikes; small breccias common.

Textures Porphyry with fine- to medium-grained aplitic groundmass.

Age Range Examples are mainly mid-Tertiary.

Depositional Environment Multistage hypabyssal intrusions.

Tectonic Setting(s) Mainly extensional zones in cratons. May be related to subduction, but found far from continental margins in areas of thick crust, and late in the cycles.

Associated Deposit Types Ag-base-metal veins, fluorspar deposits. On the basis of similar geochemistry of associated rhyolite magmas, rhyolite-hosted Sn deposits may be a surface expression. Porphyry tungsten deposits, as at Mount Pleasant, Canada, may be W-rich Climax systems.

DEPOSIT DESCRIPTION

Mineralogy Molybdenite + quartz ± fluorite ± K-feldspar ± pyrite ± wolframite ± cassiterite ± topaz.

Texture/Structure Predominantly in veinlets and fractures; minor disseminations.

Alteration Intense quartz and quartz + K-feldspar veining in ore zone. Upper phyllic and propylitic zones. Halo of rhodochrosite, rhodonite, spessartine garnet. Minor greisen veins below ore body.

Ore Controls Stockwork ore zone draped over small, <1 km^2 stocks. Multiple phases of intrusion and mineralization are highly favorable.

Weathering Yellow ferrimolybdite stains.

Geochemical Signature Mo, Sn, W and Rb anomalies close above ore zones. Pb, Zn, F, and U anomalies in wall rocks up to a few kilometers distant. Cu anomaly external to Mount Emmons deposit. In panned concentrates, Sn, W, Mo, and F may be important.

EXAMPLES

Redwell Basin, Winfield Middle Mtn.	
Climax, Henderson, and Mt. Emmons, USCO	(White and others, 1981)
Pine Grove, USUT	(Abbott and Williams, 1981)
Mount Hope, USNV	(Westra, 1982b)
Big Ben, USMT	(Witkind, 1973)

GRADE AND TONNAGE MODEL OF CLIMAX Mo DEPOSITS
After Donald A. Singer, Ted G. Theodore, and Dan L. Mosier

COMMENTS Upper ten percent of the deposits contain an minimum of 890 million tonnes at 0.29% Mo. Total contained metal is 2.58 million tonnes. Gross value in 1987 would have been $17.0 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 44.5 million tonnes per year or 124,000 tonnes per day.

Gross Value of Annual Production $850 million.

Net Present Value of 4% NSR $34.0 million times 8.514 is $289.5 million.

Comments, Assumptions, Specifications: CLMOB
Chena Hot Springs Road Area S.R.= 1:1

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Climax Mo
Total Ore Tonnage: 890 mil mtons
Mining Method: Open Pit
Beneficiation Method:
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 20 yrs
Proposed Daily Production: 120 mTPD
Maximum Ore Depth: 380m
Stripping Ratio: 1:1
Haulage Distance/Road Requirements:
10km new roads, 100 km haul to rail head
Distance From Power:
Pre-Production Development:

Production Development:

Equipment:
Concentrate Production: 600 mtpd

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .2 ha/day
Burden/Waste rate-mtpd: 120,000 mTPD
Burden/Waste depth & haul-m: 130 m, 4,300 m
Ore rate-mtpd: 120,000 mTPD
Ore depth & haul-m: 210 m, 2,500 m
Conveyor length & slope-km & %: 1.5 km 6%
Water needs-cm/day: 17,000 m³/day
Drainage, head & distance-cm/day, m & km:
50,000 m³/day, 380 m, 1.5 km
Concentrate (dry) rate-mtpd: 600 mTPD
Tails (dry) rate-mtpd: 119,400 mTPD
Production water needs-cm/day: 90,000 m³/day, 210,000 m³/day
Portable Power needs-kW: —
Wastewater-L/sec: 350 l/s
Concentrate haul-km: 100 km to Railhead
Employee housing-men: 800 men
Other: $ 21,900/day Rail Haulage
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 120,000 mTPD
Mill operating costs-$/day: $ 484,973/day
Working capital time-weeks: 13 weeks
Development time-days: 100 days @ 240,000 mTPD
Clearing needs-ha: 800 ha

Stripping needs-mt: 23 mil mt
Stripping depth & haul-m: 10m, 3,000m
Restoration area-ha: 2,400 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $510,210/day
Access roads, length & width-km & m: 10km 15m
Airstrip length & width-m: 1600m, 22m
Powerline length & power-km & mW: 100km, 200mW
Dike & Dam needs-cm/fill: 5,000,000 m3
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 510,210
Mining Costs-$/yr: 183,675,600
Mining Costs-$/mt: 4.25
Milling Costs-$/day: 484,973
Milling Costs-$/yr: 174,590,280
Milling Costs-$/mt: 4.04
Infrastructure Costs-$/day: 135,960
Infrastructure Costs-$/yr: 48,945,600
Infrastructure Costs-$/mt: 1.13
Total Operating Costs-$/day: 1,131,143
Total Operating Costs-$/yr: 407,211,480
Total Operating Costs-$/mt: 9.43
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 46,429,110
Heavy Equipment (fixed life)-$: 194,405,520 *
Mine Rehabilitation-$: 22,345,200 *
Engr. & Const. Mgmt.-$: 12,418,706 *
Other:
Remaining Mine Capital-$: 51,266,344 -
Total Mine Capital-$: 326,864,880

MILL CAPITAL COSTS:

Mill Working Capital-$: 44,132,543
Light Vehicles (short life)-$: 4,175,020 *
Other:
Remaining Mill Capital-$: 235,812,070 -
Total Mill Capital-$: 284,119,633

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 69,940,760 *

Other: _____
Remaining Infrastructure Capital-$: 147,963,020 ~
Total Infrastructure Capital-$: 217,903,780

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 90,561,653 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 435,041,434 *
Sum of Total Mine, Mill & Infr. Costs-$: 828,888,293
Exploration Cost-$: 82,888,830 *

Overall Capital Cost-$: 911,777,120
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:CLMOBCNE.SEE Date:03/27/94 Time:21:12:55

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 1:1 STRIPPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	194,405,520	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	22,345,200	MACRS	Mid Year	23.0	0			0 .....
3	04/89	12,418,706	MACRS	Mid Year	23.0	0			0 .....
4	04/89	51,266,344	MACRS	Mid Year	23.0	0			0 .....
5	04/89	46,429,110	WC	Mid Year	23.0	0			0 .....
6	04/89	4,175,020	MACRS	Mid Year	4.0	0			0 .....
7	04/93	4,175,020	MACRS	Mid Year	4.0	0			0 .....
8	04/97	4,175,020	MACRS	Mid Year	4.0	0			0 .....
9	04/89	235,812,070	MACRS	Mid Year	23.0	0			0 .....
10	04/89	44,132,543	WC	Mid Year	23.0	0			0 .....
11	04/89	69,940,760	MACRS	Mid Year	23.0	0			0 .....
12	04/89	82,888,830	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	194,405,520	MACRS	Mid Year	10.0	0			0 .....
14	04/01	4,175,020	MACRS	Mid Year	4.0	0			0 .....
15	04/05	4,175,020	MACRS	Mid Year	4.0	0			0 .....
16	04/09	4,175,020	MACRS	Mid Year	4.0	0			0 .....
17	04/89	147,963,020	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	43,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.002900	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 1:1 STRIPPING

Cash Flows

NPV =********** DCFROR= 0.0% GROR = 0.0% PWROR = 0.0% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES		-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost		-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.		868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-MHT ROYALTY		-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763
-Total Royalties		-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763
Net Revenue		-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322
-OPER COSTS		-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Total Oper Costs		-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Dev, IDC	-58,022,181						
-Depreciation	-28,709,438	-52,640,739	-48,654,311	-45,321,324	-41,236,554	-38,141,511	-36,747,033
-Amortization	-14,919,989	-4,973,330	-4,973,330				
-Write Off							
-Total D,D & A	-101,651,608	-57,614,069	-53,627,640	-45,321,324	-41,236,554	-38,141,511	-36,747,033
Taxable	-101,651,608	-3,053,754,871	-3,049,768,443	-3,041,462,126	-3,037,377,357	-3,034,282,314	-3,032,887,836
-Tax Due	34,561,547	1,038,276,656	1,036,921,271	1,034,097,123	1,173,035,135	1,171,839,829	1,171,301,282
Net Income	-67,090,061	-2,015,478,215	-2,012,847,172	-2,007,365,003	-1,864,342,222	-1,862,442,484	-1,861,586,554
+Depreciation	28,709,438	52,640,739	48,654,311	45,321,324	41,236,554	38,141,511	36,747,033
+Amortization	14,919,989	4,973,330	4,973,330				
+Write Off							
-Capital Costs	-853,754,942		-4,175,020				-4,175,020
Cash Flow	-877,215,576	-1,957,864,146	-1,963,394,552	-1,962,043,680	-1,823,105,667	-1,824,300,973	-1,829,014,540

Year	7	8	9	10	11	12	13
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-MHT ROYALTY	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763
-Total Royalties	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763
Net Revenue	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322

Year	7	8	9	10	11	12	13
-OPER COSTS	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Total Oper Costs	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Dev, IDC							
-Depreciation	-35,165,646	-34,382,830	-34,121,891	-34,904,707	-54,606,198	-69,375,824	-57,049,890
-Amortization							
-Write Off							
-Total D,D & A	-35,165,646	-34,382,830	-34,121,891	-34,904,707	-54,606,198	-69,375,824	-57,049,890
Taxable	-3,031,306,449	-3,030,523,632	-3,030,262,694	-3,031,045,510	-3,050,747,001	-3,065,516,626	-3,053,190,693
-Tax Due	1,170,690,550	1,170,388,227	1,170,287,452	1,170,589,776	1,178,198,492	1,183,902,521	1,179,142,245
Net Income	-1,860,615,898	-1,860,135,406	-1,859,975,241	-1,860,455,734	-1,872,548,509	-1,881,614,105	-1,874,048,447
+Depreciation	35,165,646	34,382,830	34,121,891	34,904,707	54,606,198	69,375,824	57,049,890
+Amortization							
+Write Off							
-Capital Costs				-4,175,020	-194,405,520		
Cash Flow	-1,825,450,252	-1,825,752,576	-1,825,853,350	-1,829,726,046	-2,012,347,831	-1,812,238,281	-1,816,998,557

Year	14	15	16	17	18	19	20
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-MHT ROYALTY	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763
-Total Royalties	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763	-3,451,905,763
Net Revenue	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322	-2,583,529,322
-OPER COSTS	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Total Oper Costs	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Dev, IDC							
-Depreciation	-47,167,431	-42,949,267	-38,583,168	-36,729,659	-37,512,476	-37,773,414	-36,990,598
-Amortization							
-Write Off							
-Total D,D & A	-47,167,431	-42,949,267	-38,583,168	-36,729,659	-37,512,476	-37,773,414	-36,990,598
Taxable	-3,043,308,234	-3,039,090,069	-3,034,723,971	-3,032,870,462	-3,033,653,278	-3,033,914,217	-3,033,131,401
-Tax Due	1,175,325,640	1,173,696,585	1,172,010,397	1,171,294,572	1,171,596,896	1,171,697,671	1,171,395,347
Net Income	-1,867,982,594	-1,865,393,485	-1,862,713,573	-1,861,575,889	-1,862,056,382	-1,862,216,546	-1,861,736,054
+Depreciation	47,167,431	42,949,267	38,583,168	36,729,659	37,512,476	37,773,414	36,990,598
+Amortization							
+Write Off							
-Capital Costs	-4,175,020				-4,175,020		

Year	14	15	16	17	18	19	20
Cash Flow	-1,824,990,183	-1,822,444,218	-1,824,130,405	-1,824,846,230	-1,828,718,926	-1,824,443,132	-1,824,745,456

Year	Salvage
MO REV	
GROSS REVENUE	
Total Revenue	90,561,653
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-64,843,350
-Amortization	
-Write Off	-90,561,653
-Total D,D & A	-155,405,003
Taxable	-64,843,350
-Tax Due	25,042,502
Net Income	-39,800,848
+Depreciation	64,843,350
+Amortization	
+Write Off	90,561,653
-Capital Costs	
Cash Flow	115,604,155

List of Assumptions File:CLMOBCNE.SEE Date:07/25/93 Time:15:37:34

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 1:1 STRIPPING

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2008	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2009	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2010	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2011	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	194,405,520	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	22,345,200	MACRS	Mid Year	23.0	0		0	.....
3	04/89	12,418,706	MACRS	Mid Year	23.0	0		0	.....
4	04/89	51,266,344	MACRS	Mid Year	23.0	0		0	.....
5	04/89	46,429,110	WC	Mid Year	23.0	0		0	.....
6	04/89	4,175,020	MACRS	Mid Year	4.0	0		0	.....
7	04/93	4,175,020	MACRS	Mid Year	4.0	0		0	.....
8	04/97	4,175,020	MACRS	Mid Year	4.0	0		0	.....
9	04/89	235,812,070	MACRS	Mid Year	23.0	0		0	.....
10	04/89	44,132,543	WC	Mid Year	23.0	0		0	.....
11	04/89	69,940,760	MACRS	Mid Year	23.0	0		0	.....
12	04/89	82,888,830	EXPL-X	Mid Year	23.0	0		0	.....
13	04/02	194,405,520	MACRS	Mid Year	10.0	0		0	.....
14	04/01	4,175,020	MACRS	Mid Year	4.0	0		0	.....
15	04/05	4,175,020	MACRS	Mid Year	4.0	0		0	.....
16	04/09	4,175,020	MACRS	Mid Year	4.0	0		0	.....
17	04/89	147,963,020	MACRS	Mid Year	23.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	43,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.002900	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	183,675,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	174,590,280.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	48,945,600.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MET ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
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General Equations
==========

E1	. MO REV	S1*S2*S7*S16*S17
E2	. CU REV	S1*S3*S8*S16*S17
E3	. PB REV	S1*S4*S9*S16*S17
E4	. AG REV	S1*S5*S10*S16*S17
E5	. AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6	. GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8	. OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9	. MET ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7	. SMELTING CHARGES	S18*E6

Year	1998	1999	2000	2001	2002	2003	2004
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-MHT ROYALTY	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058
-Total Royalties	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058	-34,519,058
Net Revenue	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383	833,857,383
-OPER COSTS	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Total Oper Costs	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Dev, IDC							
-Depreciation	-35,165,646	-34,382,830	-34,121,891	-34,904,707	-54,606,198	-69,375,824	-57,049,890
-Amortization							
-Write Off							
Before Depltn	386,080,257	386,863,073	387,124,012	386,341,196	366,639,705	351,870,080	364,196,013
100% Limit	386,080,257	386,863,073	387,124,012	386,341,196	366,639,705	351,870,080	364,196,013
Percent Depln	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607
Prev Exp Expl							
-Depletion	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607	-125,078,607
-Total D,D & A	-160,244,254	-159,461,437	-159,200,499	-159,983,315	-179,684,806	-194,454,431	-182,128,498
Taxable	261,001,649	261,784,466	262,045,404	261,262,588	241,561,097	226,791,472	239,117,406
-Tax Due	-100,798,837	-101,101,161	-101,201,935	-100,899,612	-93,290,896	-87,586,867	-92,347,142
Net Income	160,202,812	160,683,305	160,843,469	160,362,977	148,270,202	139,204,606	146,770,264
+Depreciation	35,165,646	34,382,830	34,121,891	34,904,707	54,606,198	69,375,824	57,049,890
+Depletion	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607	125,078,607
+Amortization							
+Write Off							
-Capital Costs				-4,175,020	-194,405,520		
Cash Flow	320,447,066	320,144,743	320,043,968	316,171,272	133,549,487	333,659,037	328,898,761

Year	Salvage
MO REV	
GROSS REVENUE	
Total Revenue	90,561,653
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-64,843,350
-Amortization	
-Write Off	-90,561,653
Before Depltn	-64,843,350
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-155,405,003
Taxable	-64,843,350
-Tax Due	25,042,502
Net Income	-39,800,848
+Depreciation	64,843,350
+Depletion	
+Amortization	
+Write Off	90,561,653
-Capital Costs	
Cash Flow	115,604,155

Year	Salvage
MO REV	
GROSS REVENUE	
Total Revenue	90,561,653
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-64,843,350
-Amortization	
-Write Off	-90,561,653
Before Depltn	-64,843,350
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-155,405,003
Taxable	-64,843,350
-Tax Due	25,042,502
Net Income	-39,800,848
+Depreciation	64,843,350
+Depletion	
+Amortization	
+Write Off	90,561,653
-Capital Costs	
Cash Flow	115,604,155

List of Assumptions File:CLMOBCNE.SEE Date:11/05/93 Time:17:27:46

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 1:1 STRIPPING

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	194,405,520	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	22,345,200	MACRS	Mid Year	23.0	0		0	.....
3	04/89	12,418,706	MACRS	Mid Year	23.0	0		0	.....
4	04/89	51,266,344	MACRS	Mid Year	23.0	0		0	.....
5	04/89	46,429,110	WC	Mid Year	23.0	0		0	.....
6	04/89	4,175,020	MACRS	Mid Year	4.0	0		0	.....
7	04/93	4,175,020	MACRS	Mid Year	4.0	0		0	.....
8	04/97	4,175,020	MACRS	Mid Year	4.0	0		0	.....
9	04/89	235,812,070	MACRS	Mid Year	23.0	0		0	.....
10	04/89	44,132,543	WC	Mid Year	23.0	0		0	.....
11	04/89	69,940,760	MACRS	Mid Year	23.0	0		0	.....
12	04/89	82,888,830	EXPL-X	Mid Year	23.0	0		0	.....
13	04/02	194,405,520	MACRS	Mid Year	10.0	0		0	.....
14	04/01	4,175,020	MACRS	Mid Year	4.0	0		0	.....
15	04/05	4,175,020	MACRS	Mid Year	4.0	0		0	.....
16	04/09	4,175,020	MACRS	Mid Year	4.0	0		0	.....
17	04/89	147,963,020	MACRS	Mid Year	23.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	43,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.002900	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	183,675,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	174,590,280.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	48,945,600.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
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General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

CLIMAX TYPE MO PORPHYRY, CHENA HOT SPRINGS AREA 1:1 STRIPPING

Cash Flows

NPV =$1,958,214,169 DCFROR= 38.6% GROR = 16.6% PWROR = 38.6% Pay Back= 2.55 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
MO REV		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue		877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES		-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost		-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.		868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
Net Revenue		868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-OPER COSTS		-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Total Oper Costs		-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-MMT NPI		-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093
-Total Sev. Ad Valor		-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093
-Dev, IDC	-58,022,181						
-Depreciation	-28,709,438	-52,640,739	-48,654,311	-45,321,324	-41,236,554	-38,141,511	-36,747,033
-Amortization	-14,919,989	-4,973,330	-4,973,330				
-Write Off							
Before Depltn	-101,651,608	384,214,799	388,201,227	396,507,544	400,592,313	403,687,356	405,081,834
100% Limit		384,214,799	388,201,227	396,507,544	400,592,313	403,687,356	405,081,834
Percent Depln		130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
Prev Exp Expl		58,022,181					
-Depletion		-72,234,285	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466
-Total D,D & A	-101,651,608	-129,848,354	-183,884,107	-175,577,790	-171,493,021	-168,397,977	-167,003,499
Taxable	-101,651,608	311,980,514	257,944,761	266,251,078	270,335,847	273,430,890	274,825,368
-Tax Due	34,561,547	-106,073,375	-87,701,219	-90,525,366	-104,403,704	-105,599,010	-106,137,557
Net Income	-67,090,061	205,907,139	170,243,542	175,725,711	165,932,143	167,831,880	168,687,811
+Depreciation	28,709,438	52,640,739	48,654,311	45,321,324	41,236,554	38,141,511	36,747,033
+Depletion		72,234,285	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
+Amortization	14,919,989	4,973,330	4,973,330				
+Write Off							
-Capital Costs	-853,754,942		-4,175,020				-4,175,020
Cash Flow	-877,215,576	335,755,493	349,952,629	351,303,501	337,425,163	336,229,858	331,516,290

Year	7	8	9	10	11	12	13
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
Net Revenue	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-OPER COSTS	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Total Oper Costs	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-MHT NPI	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093
-Total Sev. Ad Valor	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093
-Dev, IDC							
-Depreciation	-35,165,646	-34,382,830	-34,121,891	-34,904,707	-54,606,198	-69,375,824	-57,049,890
-Amortization							
-Write Off							
Before Depltn	406,663,221	407,446,038	407,706,976	406,924,160	387,222,669	372,453,044	384,778,977
100% Limit	406,663,221	407,446,038	407,706,976	406,924,160	387,222,669	372,453,044	384,778,977
Percent Depln	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
Prev Exp Expl							
-Depletion	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466
-Total D,D & A	-165,422,112	-164,639,296	-164,378,357	-165,161,174	-184,862,664	-199,632,290	-187,306,356
Taxable	276,406,755	277,189,572	277,450,510	276,667,694	256,966,203	242,196,578	254,522,511
-Tax Due	-106,748,289	-107,050,613	-107,151,387	-106,849,063	-99,240,348	-93,536,318	-98,296,594
Net Income	169,658,466	170,138,959	170,299,123	169,818,631	157,725,856	148,660,260	156,225,917
+Depreciation	35,165,646	34,382,830	34,121,891	34,904,707	54,606,198	69,375,824	57,049,890
+Depletion	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
+Amortization							
+Write Off							
-Capital Costs				-4,175,020	-194,405,520		
Cash Flow	335,080,579	334,778,255	334,677,481	330,804,784	148,183,000	348,292,549	343,532,274

Year	14	15	16	17	18	19	20
MO REV	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
GROSS REVENUE	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
Total Revenue	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920	877,147,920
-SMELTING CHARGES	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
-Total Smelting Cost	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479	-8,771,479
Net Smelt Ret.	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
Net Revenue	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441	868,376,441
-OPER COSTS	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-Total Oper Costs	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480	-412,611,480
-MHT NPI	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093

Year	14	15	16	17	18	19	20
-Total Sev. Ad Valor	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093	-13,936,093
-Dev, IDC							
-Depreciation	-47,167,431	-42,949,267	-38,583,168	-36,729,659	-37,512,476	-37,773,414	-36,990,598
-Amortization							
-Write Off							
Before Depltn	394,661,436	398,879,601	403,245,699	405,099,208	404,316,392	404,055,453	404,838,269
100% Limit	394,661,436	398,879,601	403,245,699	405,099,208	404,316,392	404,055,453	404,838,269
Percent Depln	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
Prev Exp Expl							
-Depletion	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466	-130,256,466
-Total D,D & A	-177,423,898	-173,205,733	-168,839,634	-166,986,126	-167,768,942	-168,029,881	-167,247,064
Taxable	264,404,970	268,623,135	272,989,233	274,842,742	274,059,926	273,798,987	274,581,803
-Tax Due	-102,113,199	-103,742,255	-105,428,442	-106,144,267	-105,841,943	-105,741,169	-106,043,492
Net Income	162,291,771	164,880,880	167,560,791	168,698,475	168,217,982	168,057,818	168,538,311
+Depreciation	47,167,431	42,949,267	38,583,168	36,729,659	37,512,476	37,773,414	36,990,598
+Depletion	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466	130,256,466
+Amortization							
+Write Off							
-Capital Costs	-4,175,020				-4,175,020		
Cash Flow	335,540,648	338,086,613	336,400,426	335,684,601	331,811,904	336,087,699	335,785,375

Year	Salvage
MO REV	
GROSS REVENUE	
Total Revenue	90,561,653
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-64,843,350
-Amortization	
-Write Off	-90,561,653
Before Depltn	-64,843,350
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	

APPENDIX B-10

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR COPPER (Cu) SKARN DEPOSITS

10. DESCRIPTIVE MODEL OF Cu SKARN DEPOSITS

By Dennis P. Cox and Ted G. Theodore

DESCRIPTION Chalcopyrite in calc-silicate contact metasomatic rocks.

GENERAL REFERENCES Einaudi and Burt (1982), Einaudi and others (1981).

GEOLOGICAL ENVIRONMENT

Rock Types Tonalite to monzogranite intruding carbonate rocks or calcareous clastic rocks.

Textures Granitic texture, porphyry, granoblastic to hornfelsic in sedimentary rocks.

Age Range Mainly Mesozoic, but may be any age.

Depositional Environment Miogeosynclinal sequences intruded by felsic plutons.

Tectonic Setting(s) Continental margin late orogenic magmatism.

Associated Deposit Types Porphyry Cu, zinc skarn, polymetallic replacement, Fe skarn.

DEPOSIT DESCRIPTION

Mineralogy Chalcopyrite + pyrite ± hematite ± magnetite ± bornite ± pyrrhotite. Also molybdenite, bismuthinite, sphalerite, galena, cosalite, arsenopyrite, enargite, tennantite, loellingite, cobaltite, and tetrahedrite may be present. Au and Ag may be important products.

Texture/Structure Coarse granoblastic with interstitial sulfides. Bladed pyroxenes are common.

Alteration Diopside + andradite center; wollastonite ± tremolite outer zone; marble peripheral zone. Igneous rocks may be altered to epidote + pyroxene + garnet (endoskarn). Retrograde alteration to actinolite, chlorite, and clays may be present.

Ore Controls Irregular or tabular ore bodies in carbonate rocks and calcareous rocks near igneous contacts or in xenoliths in igneous stocks. Breccia pipe, cutting skarn at Victoria, is host for ore. Associated igneous rocks are commonly barren.

Weathering Cu carbonates, silicates, Fe-rich gossan. Calc-silicate minerals in stream pebbles are a good guide to covered deposits.

Geochemical Signature Rock analyses may show Cu-Au-Ag-rich inner zones grading outward to Au-Ag zones with high Au:Ag ratio and outer Pb-Zn-Ag zone. Co-As-Sb-Bi may form anomalies in some skarn deposits. Magnetic anomalies.

EXAMPLES

Mason Valley, USNV	(Harris and Einaudi, 1982)
Victoria, USNV	(Atkinson and others, 1982)
Copper Canyon, USNV	(Blake and others, 1979)
Carr Fork, USUT	(Atkinson and Einaudi, 1978)

GRADE AND TONNAGE MODEL OF Cu SKARN DEPOSIT
After Gail M. Jones and W. David Menzie

COMMENTS Data used in this model were restricted to copper skarns associated with barren stocks as recommended by Einaudi and others (1981). Some of the data are from districts. Upper ten percent of deposits contain an minimum of 9.2 million tonnes at 4% Cu, 2.8 grams per tonne Au, and 36 grams per tonne Ag. Total contained metal: .37 million tonnes Cu, 25.8 million grams Au, and 331 million grams Ag. Gross value of contained metal in 1987 would have been $1.04 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at .92 million tonnes per year or 2,500 tonnes per day.

Gross Value of Annual Production $104 million.

Net Present Value of 4% NSR $4.2 million times 6.144 is $25.8 million.

Comments, Assumptions, Specifications: COPS
Pete-sburg Area, East Side of Wrangell Mountains

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Cu Skarn
Total Ore Tonnage: 9.2 mil mtons
Mining Method: Sublevel Stope
Beneficiation Method: Crush, Grind, Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 10 years
Proposed Daily Production: 2,600 mTPD
Maximum Ore Depth: 500 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 25 km haul, 5 km new roads
Distance From Power:
Pre-Production Development:

Production Development:

Equipment: Ring Drills/Jumbos, LHDs
Concentrate Production: 250 mTPD

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: -
Raises & face-m/day & sqm: 1.5m/day, 3 m²
Inclines & face-m/day & sqm: -
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .008/day, 8,500 m²
Ore rate-mtpd: 2,600 mTPD
Hoist depth, rate & time-m, mtph, hr/day:
500 m, 220 mTPH, 16 hrs/day
Haul distance-m: 400 m
Compressed air-cm/min: 95 m³/min
Ventilation-cm/min: 9,000 m³/min
Conveyor length & slope-km & %: .5km 10%
Water needs-cm/hr & hr/day: 9 m³/hr, 16 hrs/day
Drainage, head-cm/day & m: 500 m, 3000 m³/day
Concentrate (dry) rate-mtpd: 250 mTPD
Tails (dry) rate-mtpd: 2,350 mTPD
Production water needs-cm/day: 2,500 m³/day m.u., 6,300 m³/day recycle
Portable Power needs-kW: -
Wastewater-L/sec: 25 l/sec
Concentrate haul-km: 25 km
Employee housing-men: 130 men
Other:
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 2,600 mTPD
Mill operating costs-$/day: 30,165
Working capital time-weeks: 13 weeks
Development time-days:
Shaft sinking & face-m & sqm: 500m 30m²
Drifting & face-m & sqm: 500 m 15m²
Raises & face-m & sqm: 620m 3 m²
Inclines & face-m & sqm: 1,200 m 15m²
Ore pockets-mt: 4000 mt
Stope preparations-stopes & sqm: 4 ? m²
Dewatering; head, dys & rate-m, dys & cm/day:
500m 150 days, 3,000m³/day
Rehabilitation (total tonnage)-mt: 2,600 mTPD
Contractors-1 or 2: 2
Mine operating costs-$/day: 82,310
Access roads, length & width-km & m: 5km 10m
Airstrip length & width-m: None
Townsite cost-$: $363,095
Powerline length & power-km & mW: 25km 8.5mW
Dike & Dam needs-cm/fill: 200,300 m³
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 82,310
Mining Costs-$/yr:
Mining Costs-$/mt: 31.66
Milling Costs-$/day: 30,165
Milling Costs-$/yr:
Milling Costs-$/mt: 11.60
Infrastructure Costs-$/day: 17,158
Infrastructure Costs-$/yr:
Infrastructure Costs-$/mt:
Total Operating Costs-$/day:
Total Operating Costs-$/yr:
Total Operating Costs-$/mt:
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 7490,210
Heavy Equipment (fixed life)-$: 4,526,340 *
Mine Rehabilitation-$: 1,545,586 *
Engr. & Const. Mgmt.-$: 4,491,733 *
Other:
Remaining Mine Capital-$: 20,121,390
Total Mine Capital Cost-$: 38,175,259

MILL CAPITAL COSTS:

Mill Working Capital-$: 2,745,015
Light Vehicles (short life)-$: 107,299 *
Other:
Remaining Mill Capital-$: 13,459,207 ~
Total Mill Capital Cost-$: 17,300,521

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 9,243,393 *
Other:
Remaining Infrastructure Capital-$: 11,247,256 ~
Total Infrastructure Capital-$: 20,490,649

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 10,235,225 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 44,828,053 *
Sum of Total Mine, Mill & Infr. Costs-$: 75,966,429
Exploration Cost-$: 7,596,643 *

Overall Capital Cost-$: 83 563 072
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

Cu Skarn
Cox & Singer
90% Grade
4.0% Cu = 88 lb/mt
36 gm/mt Ag = 1.157 opMT
2.8 gm/mt Au = .0980 pMT

List of Assumptions File:COPSSEA.SEE Date:11/06/93 Time:13:41:48

CU SKARN, PETERSURG AREA, SUBLEVEL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	7,490,210	MC	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,526,340	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,545,586	MACRS	Mid Year	13.0	0			0 .....
4	04/89	4,491,733	MACRS	Mid Year	13.0	0			0 .....
5	04/89	20,121,390	MACRS	Mid Year	13.0	0			0 .....
6	.....	0	MACRS	Mid Year	7.0	0			0 .....
7	04/89	2,745,015	MC	Mid Year	13.0	0			0 .....
8	04/89	1,096,099	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,096,099	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,096,099	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,096,099	MACRS	Mid Year	4.0	0			0 .....
12	.....	0	MACRS	Mid Year	7.0	0			0 .....
13	.....	0	MACRS	Mid Year	7.0	0			0 .....
14	04/89	13,459,407	MACRS	Mid Year	13.0	0			0 .....
15	04/89	9,243,393	MACRS	Mid Year	13.0	0			0 .....
16	04/89	11,247,256	MACRS	Mid Year	13.0	0			0 .....
17	04/89	7,596,643	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	936,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.040	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	1.157	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.090	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	29,631,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	10,859,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,176,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	3,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

CU SKARN, PETERSURG AREA, SUBLEVEL STOPING

Cash Flows

NPV =$98,529,799 DCFROR= 34.2% GROR = 19.2% PWROR = 34.2% Pay Back= 2.74 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997	1998
CU REV		63,654,238	63,654,238	63,654,238	63,654,238	63,654,238	63,654,238	63,654,238
AG REV		3,388,394	3,388,394	3,388,394	3,388,394	3,388,394	3,388,394	3,388,394
AU REV		21,807,070	21,807,070	21,807,070	21,807,070	21,807,070	21,807,070	21,807,070
GROSS REVENUE		88,849,702	88,849,702	88,849,702	88,849,702	88,849,702	88,849,702	88,849,702
Total Revenue		88,849,702	88,849,702	88,849,702	88,849,702	88,849,702	88,849,702	88,849,702
-SMELTING CHARGES		-888,497	-888,497	-888,497	-888,497	-888,497	-888,497	-888,497
-Total Smelting Cost		-888,497	-888,497	-888,497	-888,497	-888,497	-888,497	-888,497
Net Smelt Ret.		87,961,205	87,961,205	87,961,205	87,961,205	87,961,205	87,961,205	87,961,205
-MHT ROYALTY		-3,382,448	-3,382,448	-3,382,448	-3,382,448	-3,382,448	-3,382,448	-3,382,448
-Total Royalties		-3,382,448	-3,382,448	-3,382,448	-3,382,448	-3,382,448	-3,382,448	-3,382,448
Net Revenue		84,578,756	84,578,756	84,578,756	84,578,756	84,578,756	84,578,756	84,578,756
-OPER COSTS		-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880
-Total Oper Costs		-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880
-Dev, IDC	-5,317,650							
-Depreciation	-5,245,956	-9,589,987	-8,246,347	-7,119,960	-5,834,872	-4,842,345	-4,323,966	-3,779,944
-Amortization	-1,367,396	-455,799	-455,799					
-Write Off								
Before Depltn	-11,931,002	24,465,091	25,808,731	27,390,916	28,676,004	29,668,531	30,186,910	30,730,933
100% Limit		24,465,091	25,808,731	27,390,916	28,676,004	29,668,531	30,186,910	30,730,933
Percent Depln		12,686,813	12,686,813	12,686,813	12,686,813	12,686,813	12,686,813	12,686,813
Prev Exp Expl		5,317,650						
-Depletion		-7,369,163	-12,686,813	-12,686,813	-12,686,813	-12,686,813	-12,686,813	-12,686,813
-Total D,D & A	-11,931,002	-17,414,949	-21,388,959	-19,806,774	-18,521,686	-17,529,158	-17,010,780	-16,466,757
Taxable	-11,931,002	17,095,928	13,121,917	14,704,103	15,989,191	16,981,718	17,500,097	18,044,119
-Tax Due	4,056,541	-5,812,615	-4,461,452	-4,999,395	-6,175,025	-6,558,340	-6,758,537	-6,968,639
Net Income	-7,874,461	11,283,312	8,660,465	9,704,708	9,814,165	10,423,379	10,741,559	11,075,480
+Depreciation	5,245,956	9,589,987	8,246,347	7,119,960	5,834,872	4,842,345	4,323,966	3,779,944
+Depletion		7,369,163	12,686,813	12,686,813	12,686,813	12,686,813	12,686,813	12,686,813
+Amortization	1,367,396	455,799	455,799					
+Write Off								
-Capital Costs	-78,245,422		-1,096,099				-1,096,099	
Cash Flow	-79,506,531	28,698,261	28,953,326	29,511,482	28,335,851	27,952,537	26,656,240	27,542,238

Year	1999	2000	2001	Salvage
CU REV	63,654,238	63,654,238	63,654,238	
AG REV	3,388,394	3,388,394	3,388,394	
AU REV	21,807,070	21,807,070	21,807,070	
GROSS REVENUE	88,849,702	88,849,702	88,849,702	
Total Revenue	88,849,702	88,849,702	88,849,702	10,235,225
-SMELTING CHARGES	-888,497	-888,497	-888,497	
-Total Smelting Cost	-888,497	-888,497	-888,497	
Net Smelt Ret.	87,961,205	87,961,205	87,961,205	
-MHT ROYALTY	-3,382,448	-3,382,448	-3,382,448	
-Total Royalties	-3,382,448	-3,382,448	-3,382,448	
Net Revenue	84,578,756	84,578,756	84,578,756	
-OPER COSTS	-50,067,880	-50,067,880	-50,067,880	
-Total Oper Costs	-50,067,880	-50,067,880	-50,067,880	
-Dev, IDC				
-Depreciation	-3,574,425	-3,505,919	-3,711,438	-9,244,341
-Amortization				
-Write Off				-10,235,225
Before Depltn	30,936,451	31,004,957	30,799,439	-9,244,341
100% Limit	30,936,451	31,004,957	30,799,439	
Percent Depln	12,686,813	12,686,813	12,686,813	
Prev Exp Expl				
-Depletion	-12,686,813	-12,686,813	-12,686,813	
-Total D,D & A	-16,261,239	-16,192,733	-16,398,251	-19,479,566
Taxable	18,249,638	18,318,144	18,112,625	-9,244,341
-Tax Due	-7,048,010	-7,074,467	-6,995,096	3,570,165
Net Income	11,201,628	11,243,677	11,117,529	-5,674,177
+Depreciation	3,574,425	3,505,919	3,711,438	9,244,341
+Depletion	12,686,813	12,686,813	12,686,813	
+Amortization				
+Write Off				10,235,225
-Capital Costs			-1,096,099	
Cash Flow	27,462,866	27,436,409	26,419,682	13,805,390

List of Assumptions File:COPSSEA.SEE Date:11/06/93 Time:13:41:48

CU SKARN, PETERSURG AREA, SUBLEVEL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	7,490,210	WC	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,526,340	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,545,586	MACRS	Mid Year	13.0	0			0 .....
4	04/89	4,491,733	MACRS	Mid Year	13.0	0			0 .....
5	04/89	20,121,390	MACRS	Mid Year	13.0	0			0 .....
6	.....	0	MACRS	Mid Year	7.0	0			0 .....
7	04/89	2,745,015	WC	Mid Year	13.0	0			0 .....
8	04/89	1,096,099	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,096,099	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,096,099	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,096,099	MACRS	Mid Year	4.0	0			0 .....
12	.....	0	MACRS	Mid Year	7.0	0			0 .....
13	.....	0	MACRS	Mid Year	7.0	0			0 .....
14	04/89	13,459,407	MACRS	Mid Year	13.0	0			0 .....
15	04/89	9,243,393	MACRS	Mid Year	13.0	0			0 .....
16	04/89	11,247,256	MACRS	Mid Year	13.0	0			0 .....
17	04/89	7,596,643	EXPL-X	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	936,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.040	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	1.157	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.090	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	29,631,600.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	10,859,400.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,176,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	3,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

CU SKARN, PETERSURG AREA, SUBLEVEL STOPING

Cash Flows

NPV =$108,299,463 DCFROR= 36.5% GROR = 19.9% PWROR = 36.5% Pay Back= 2.60 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
CU REV		63,654,238	63,654,238	63,654,238	63,654,238	63,654,238	63,654,238	63,654,238
AG REV		3,388,394	3,388,394	3,388,394	3,388,394	3,388,394	3,388,394	3,388,394
AU REV		21,807,070	21,807,070	21,807,070	21,807,070	21,807,070	21,807,070	21,807,070
GROSS REVENUE		88,849,702	88,849,702	88,849,702	88,849,702	88,849,702	88,849,702	88,849,702
Total Revenue		88,849,702	88,849,702	88,849,702	88,849,702	88,849,702	88,849,702	88,849,702
-SMELTING CHARGES		-888,497	-888,497	-888,497	-888,497	-888,497	-888,497	-888,497
-Total Smelting Cost		-888,497	-888,497	-888,497	-888,497	-888,497	-888,497	-888,497
Net Smelt Ret.		87,961,205	87,961,205	87,961,205	87,961,205	87,961,205	87,961,205	87,961,205
Net Revenue		87,961,205	87,961,205	87,961,205	87,961,205	87,961,205	87,961,205	87,961,205
-OPER COSTS		-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880
-Total Oper Costs		-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880	-50,067,880
-MMT NPI		-1,163,455	-1,163,455	-1,163,455	-1,163,455	-1,163,455	-1,163,455	-1,163,455
-Total Sev. Ad Valor		-1,163,455	-1,163,455	-1,163,455	-1,163,455	-1,163,455	-1,163,455	-1,163,455
-Dev, IDC	-5,317,650							
-Depreciation	-5,245,956	-9,589,987	-8,246,347	-7,119,960	-5,834,872	-4,842,345	-4,323,966	-3,779,944
-Amortization	-1,367,396	-455,799	-455,799					
-Write Off								
Before Depltn	-11,931,002	26,684,084	28,027,724	29,609,910	30,894,998	31,887,525	32,405,904	32,949,926
100% Limit		26,684,084	28,027,724	29,609,910	30,894,998	31,887,525	32,405,904	32,949,926
Percent Depln		13,194,181	13,194,181	13,194,181	13,194,181	13,194,181	13,194,181	13,194,181
Prev Exp Expl		5,317,650						
-Depletion		-7,876,531	-13,194,181	-13,194,181	-13,194,181	-13,194,181	-13,194,181	-13,194,181
-Total D,D & A	-11,931,002	-17,922,316	-21,896,326	-20,314,141	-19,029,053	-18,036,526	-17,518,147	-16,974,125
Taxable	-11,931,002	18,807,554	14,833,544	16,415,729	17,700,817	18,693,344	19,211,723	19,755,745
-Tax Due	4,056,541	-6,394,568	-5,043,405	-5,581,348	-6,836,056	-7,219,370	-7,419,567	-7,629,669
Net Income	-7,874,461	12,412,986	9,790,139	10,834,381	10,864,761	11,473,975	11,792,156	12,126,077
+Depreciation	5,245,956	9,589,987	8,246,347	7,119,960	5,834,872	4,842,345	4,323,966	3,779,944
+Depletion		7,876,531	13,194,181	13,194,181	13,194,181	13,194,181	13,194,181	13,194,181
+Amortization	1,367,396	455,799	455,799					
+Write Off								
-Capital Costs	-78,245,422		-1,096,099				-1,096,099	
Cash Flow	-79,506,531	30,335,302	30,590,366	31,148,522	29,893,815	29,510,500	28,214,204	29,100,201

Year	8	9	10	Salvage
CU REV	63,654,238	63,654,238	63,654,238	
AG REV	3,388,394	3,388,394	3,388,394	
AU REV	21,807,070	21,807,070	21,807,070	
GROSS REVENUE	88,849,702	88,849,702	88,849,702	
Total Revenue	88,849,702	88,849,702	88,849,702	10,235,225
-SMELTING CHARGES	-888,497	-888,497	-888,497	
-Total Smelting Cost	-888,497	-888,497	-888,497	
Net Smelt Ret.	87,961,205	87,961,205	87,961,205	
Net Revenue	87,961,205	87,961,205	87,961,205	
-OPER COSTS	-50,067,880	-50,067,880	-50,067,880	
-Total Oper Costs	-50,067,880	-50,067,880	-50,067,880	
-MHT MPI	-1,163,455	-1,163,455	-1,163,455	
-Total Sev. Ad Valor	-1,163,455	-1,163,455	-1,163,455	
-Dev, IDC				
-Depreciation	-3,574,425	-3,505,919	-3,711,438	-9,244,341
-Amortization				
-Write Off				-10,235,225
Before Depltn	33,155,445	33,223,951	33,018,432	-9,244,341
100% Limit	33,155,445	33,223,951	33,018,432	
Percent Depln	13,194,181	13,194,181	13,194,181	
Prev Exp Expl				
-Depletion	-13,194,181	-13,194,181	-13,194,181	
-Total D,D & A	-16,768,606	-16,700,100	-16,905,618	-19,479,566
Taxable	19,961,264	20,029,770	19,824,252	-9,244,341
-Tax Due	-7,709,040	-7,735,497	-7,656,126	3,570,165
Net Income	12,252,224	12,294,273	12,168,126	-5,674,177
+Depreciation	3,574,425	3,505,919	3,711,438	9,244,341
+Depletion	13,194,181	13,194,181	13,194,181	
+Amortization				
+Write Off				10,235,225
-Capital Costs			-1,096,099	
Cash Flow	29,020,830	28,994,373	27,977,645	13,805,390

APPENDIX B-11

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR TUNGSTEN (W) SKARN DEPOSITS

11. DESCRIPTIVE MODEL OF W SKARN DEPOSITS

By Dennis P. Cox

DESCRIPTION Scheelite in calc-silicate contact metasomatic rocks.

GENERAL REFERENCES Einaudi and Burt (1982), Einaudi and others (1981).

GEOLOGICAL ENVIRONMENT

Rock Types Tonalite, granodiorite, quartz monzonite; limestone.

Textures Granitic, granoblastic.

Age Range Mainly Mesozoic, but may be any age.

Depositional Environment Contacts and roof pendants of batholith and thermal aureoles of apical zones of stocks that intrude carbonate rocks.

Tectonic Setting(s) Orogenic belts. Syn-late orogenic.

Associated Deposit Types Sn-W skarns, Zn skarns.

DEPOSIT DESCRIPTION

Mineralogy Scheelite ± molybdenite ± pyrrhotite ± sphalerite ± chalcopyrite ± bornite ± arsenopyrite ± pyrite ± magnetite ± traces of wolframite, fluorite, cassiterite, and native bismuth.

Alteration Diopside-hedenbergite + grossular-andradite. Late stage spessartine + almandine. Outer barren wollastonite zone. Inner zone of massive quartz may be present.

Ore Controls Carbonate rocks in thermal aureoles of intrusions.

Geochemical Signature W, Mo, Zn, Cu, Sn, Bi, Be, As.

EXAMPLES

Pine Creek, USCA	(Newberry, 1982)
MacTung, CNBC	(Dick and Hodgson, 1982)
Strawberry, USCA	(Mokleberg, 1981)

GRADE AND TONNAGE MODEL OF W SKARN DEPOSITS

After W. David Menzie and Gail M. Jones

COMMENTS All mines associated with the contact zone of a particular intrusive with a favorable host rock were combined to form a single deposit. In the absence of detailed geologic information, mines within 10 km of each other were combined. Upper ten percent of deposits contain a minimum of 22 million tonnes at 1.4% WO_3. Total contained metal: 308,000 tonnes.. Gross metal value in 1987 would have been $2.03 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Fifteen years at 1.5 million tonnes per year or 4,000 tonnes/day.

Gross Value of Annual Production $135 million.

Net Present Value of 4% NSR $5.4 million times 7.606 is $41.1 million.

Comments, Assumptions, Specifications: TUN
Pre-Source Area East side of Wrangell Narrows
3.25% Tax rebate

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPU

Deposit type: W skarn
Total Ore Tonnage: 22 mt
Mining Method: Sublevel Stope
Beneficiation Method: Grav + SA/F, Tails Disp
Extraction Rate: 90%
Dilution/Waste Rate: 20%
Proposed Mine Life: 15 years
Proposed Daily Production: 4,070 MTPD
Maximum Ore Depth: 500 m
Stripping Ratio: —
Haulage Distance/Road Requirements: 25 km haul, 5 km new roads
Distance From Power: 25 km
Pre-Production Development:

Production Development:

Equipment: Ring Drill/Jumbos, LHDs
Concentrate Production: 70 MTPD WO_3

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: —
Drifting & face-m/day & sqm: —
Raises & face-m/day & sqm: .2 m/day, 4 m^2
Inclines & face-m/day & sqm: —
Ore pockets/day-mtpd: —
Stope preparation/day-stopes & sqm: .012, 8,000 m^2
Ore rate-mtpd: 4,070 MTPD
Hoist depth, rate & time-m, mtph, hr/day:
500 m, 280 MTPH, 15 hr/day ; 500 m, 100 MTPH, 5 hr/day
Haul distance-m: 500 m
Compressed air-cm/min: 150 m^3/min
Ventilation-cm/min: 14,000 m^3/min
Conveyor length & slope-km & %: .5 km 10%
Water needs-cm/hr & hr/day: 13 m^3/hr, 16 hr/day
Drainage, head-cm/day & m: 500 m, 5,000 m^3/day
Concentrate (dry) rate-mtpd: 70 MTPD WO_3
Tails (dry) rate-mtpd: 4,000 MTPD
Production water needs-cm/day: 1,000 m, 8,000 Recycle
Portable Power needs-kW: —
Wastewater-L/sec: 5 l/sec
Concentrate haul-km: 25 km
Employee housing-men: 150 men
Other: $2,590/day Table operation
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 4070 ~-PC
Mill operating costs-$/day: $28,967/day
Working capital time-weeks: 12 weeks
Development time-days: _____
Shaft sinking & face-m & sqm: 500m-40m² 500m-10m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 50m ~m²
Inclines & face-m & sqm: 400 m ~5m²
Ore pockets-mt: 6,000 mt
Stope preparations-stopes & sqm: 4.8 mio m²
Dewatering; head, dys & rate-m, dys & cm/day:
500m 5 mio m³/day, 200 days
Rehabilitation (total tonnage)-mt: 4070 mt-PC
Contractors-1 or 2: 2
Mine operating costs-$/day: $111,181/day
Access roads, length & width-km & m: 5km 10m
Airstrip length & width-m: None
Townsite cost-$: $4189725
Powerline length & power-km & mW: 25km, 12,000kw
Dike & Dam needs-cm/fill: 100 cm m3
Climate/Weather factors: Severe
Other: $1,804,419 Table cost
Other: _____

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 111,181
Mining Costs-$/yr: 40,025,160
Mining Costs-$/mt: 27.32
Milling Costs-$/day: 28,967
Milling Costs-$/yr: 10,428,120
Milling Costs-$/mt: 7.12
Infrastructure Costs-$/day: 19,363
Infrastructure Costs-$/yr: 6970,680
Infrastructure Costs-$/mt: 4.76
Total Operating Costs-$/day: 159,511
Total Operating Costs-$/yr: 57,423,960
Total Operating Costs-$/mt: 39.19
Other: _____
Other: _____

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 10,117,471
Heavy Equipment (fixed life)-$: 7022,096 *
Mine Rehabilitation-$: 1,798,432 *
Engr. & Const. Mgmt.-$: 5,822,945 *
Other: _____
Remaining Mine Capital-$: 30,215,093
Total Mine Capital Cost-$: 55,076,031

MILL CAPITAL COSTS:

Mill Working Capital-$: 2,635,997
Light Vehicles (short life)-$: 281,659 *
Other:
Remaining Mill Capital-$: 14,509,016 ~
Total Mill Capital Cost-$: 18,426,672

INFRASTRUCTURE CAPITAL COSTS:

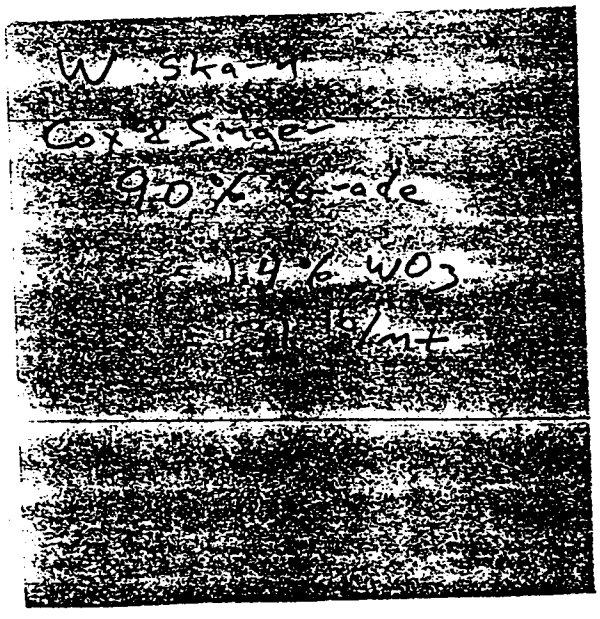
Buildings and Structures-$: 12,037,107 *
Other:
Remaining Infrastructure Capital-$: 11,975,039 ~
Total Infrastructure Capital-$: 24,012,146

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 12,753,468 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 56,799,142 *
Sum of Total Mine, Mill & Infr. Costs-$: 97,514,849
Exploration Cost-$: 9,751,485 *

Overall Capital Cost-$: 107,266,334
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)



List of Assumptions File:TUNSEA.SEE Date:07/25/93 Time:23:21:15

TUNGSTEN SKARN, PETERSBURG AREA, SUBLEVEL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

	Minimum ROR, Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,117,471	WC	Mid Year	18.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	7,022,090	MACRS	Mid Year	10.0	0		0	.....
3	04/89	1,798,432	MACRS	Mid Year	18.0	0		0	.....
4	04/89	5,822,945	MACRS	Mid Year	18.0	0		0	.....
5	04/89	30,315,093	MACRS	Mid Year	18.0	0		0	.....
6	.....	0	MACRS	Mid Year	7.0	0		0	.....
7	04/89	2,635,997	WC	Mid Year	18.0	0		0	.....
8	04/89	1,281,659	MACRS	Mid Year	4.0	0		0	.....
9	04/93	1,281,659	MACRS	Mid Year	4.0	0		0	.....
10	04/97	1,281,659	MACRS	Mid Year	4.0	0		0	.....
11	04/01	1,281,659	MACRS	Mid Year	4.0	0		0	.....
12	04/05	1,281,659	MACRS	Mid Year	4.0	0		0	.....
13	.....	0	MACRS	Mid Year	7.0	0		0	.....
14	04/89	14,509,016	MACRS	Mid Year	18.0	0		0	.....
15	04/89	12,037,107	MACRS	Mid Year	18.0	0		0	.....
16	04/89	11,975,039	MACRS	Mid Year	18.0	0		0	.....
17	04/89	9,751,485	EXPL-X	Mid Year	18.0	0		0	.....
18	04/02	7,022,090	MACRS	Mid Year	8.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	1,465,200.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	WO3 GRADE %	N/A:	04/92	End	0.014	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.000	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.000	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	WO3 $/TONNE	N/A:	04/92	End	6,600.00	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	40,025,160.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	10,428,120.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,970,680.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . WO3 REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

TUNGSTEN SKARN, PETERSBURG AREA, SUBLEVEL STOPING

Cash Flows

NPV =$144,861,048 DCFROR= 31.4% GROR = 16.7% PWROR = 31.4% Pay Back= 3.08 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997
WO3 REV		103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
GROSS REVENUE		103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
Total Revenue		103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
-SMELTING CHARGES		-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691
-Total Smelting Cost		-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691
Net Smelt Ret.		102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436
-MHT ROYALTY		-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337
-Total Royalties		-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337
Net Revenue		98,472,098	98,472,098	98,472,098	98,472,098	98,472,098	98,472,098
-OPER COSTS		-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960
-Total Oper Costs		-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960
-Dev, IDC	-6,826,040						
-Depreciation	-5,270,270	-9,767,930	-8,703,757	-7,789,197	-6,602,613	-5,686,859	-5,313,097
-Amortization	-1,755,267	-585,089	-585,089				
-Write Off							
Before Depltn	-13,851,577	29,695,119	30,759,292	32,258,942	33,445,526	34,361,280	34,735,041
100% Limit		29,695,119	30,759,292	32,258,942	33,445,526	34,361,280	34,735,041
Percent Depln		14,770,815	14,770,815	14,770,815	14,770,815	14,770,815	14,770,815
Prev Exp Expl		6,826,040					
-Depletion		-7,944,775	-14,770,815	-14,770,815	-14,770,815	-14,770,815	-14,770,815
-Total D,D & A	-13,851,577	-18,297,794	-24,059,661	-22,560,012	-21,373,428	-20,457,673	-20,083,912
Taxable	-13,851,577	21,750,344	15,988,477	17,488,127	18,674,711	19,590,465	19,964,226
-Tax Due	4,709,536	-7,395,117	-5,436,082	-5,945,963	-7,212,173	-7,565,838	-7,710,184
Net Income	-9,142,041	14,355,227	10,552,395	11,542,164	11,462,538	12,024,628	12,254,042
+Depreciation	5,270,270	9,767,930	8,703,757	7,789,197	6,602,613	5,686,859	5,313,097
+Depletion		7,944,775	14,770,815	14,770,815	14,770,815	14,770,815	14,770,815
+Amortization	1,755,267	585,089	585,089				
+Write Off							
-Capital Costs	-100,440,295		-1,281,659				-1,281,659
Cash Flow	-102,556,798	32,653,022	33,330,397	34,102,175	32,835,965	32,482,301	31,056,295

Year	1998	1999	2000	2001	2002	2003	2004
WO3 REV	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
GROSS REVENUE	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
Total Revenue	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
-SMELTING CHARGES	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691
-Total Smelting Cost	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691
Net Smelt Ret.	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436
-MHT ROYALTY	-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337
-Total Royalties	-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337	-4,061,337
Net Revenue	98,472,098	98,472,098	98,472,098	98,472,098	98,472,098	98,472,098	98,472,098
-OPER COSTS	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960
-Total Oper Costs	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960
-Dev, IDC							
-Depreciation	-4,898,492	-4,218,440	-3,747,455	-3,573,722	-4,301,488	-4,719,497	-4,255,373
-Amortization							
-Write Off							
Before Depltn	35,149,646	35,829,699	36,300,683	36,474,416	35,746,651	35,328,641	35,792,765
100% Limit	35,149,646	35,829,699	36,300,683	36,474,416	35,746,651	35,328,641	35,792,765
Percent Depln	14,770,815	14,770,815	14,770,815	14,770,815	14,770,815	14,770,815	14,770,815
Prev Exp Expl							
-Depletion	-14,770,815	-14,770,815	-14,770,815	-14,770,815	-14,770,815	-14,770,815	-14,770,815
-Total D,D & A	-19,669,307	-18,989,255	-18,518,270	-18,344,537	-19,072,302	-19,490,312	-19,026,188
Taxable	20,378,832	21,058,884	21,529,868	21,703,601	20,975,836	20,557,826	21,021,951
-Tax Due	-7,870,305	-8,132,941	-8,314,835	-8,381,931	-8,100,868	-7,939,433	-8,118,677
Net Income	12,508,527	12,925,943	13,215,033	13,321,670	12,874,968	12,618,394	12,903,273
+Depreciation	4,898,492	4,218,440	3,747,455	3,573,722	4,301,488	4,719,497	4,255,373
+Depletion	14,770,815	14,770,815	14,770,815	14,770,815	14,770,815	14,770,815	14,770,815
+Amortization							
+Write Off							
-Capital Costs				-1,281,659	-7,022,090		
Cash Flow	32,177,834	31,915,198	31,733,303	30,384,549	24,925,181	32,108,706	31,929,461

Year	2005	2006	Salvage
WO3 REV	103,569,127	103,569,127	
GROSS REVENUE	103,569,127	103,569,127	
Total Revenue	103,569,127	103,569,127	12,753,468
-SMELTING CHARGES	-1,035,691	-1,035,691	
-Total Smelting Cost	-1,035,691	-1,035,691	
Net Smelt Ret.	102,533,436	102,533,436	
-MHT ROYALTY	-4,061,337	-4,061,337	
-Total Royalties	-4,061,337	-4,061,337	
Net Revenue	98,472,098	98,472,098	
-OPER COSTS	-58,423,960	-58,423,960	
-Total Oper Costs	-58,423,960	-58,423,960	
-Dev, IDC			
-Depreciation	-4,207,669	-4,071,761	-9,782,487
-Amortization			
-Write Off			-12,753,468
Before Depltn	35,840,470	35,976,378	-9,782,487
100% Limit	35,840,470	35,976,378	
Percent Depln	14,770,815	14,770,815	
Prev Exp Expl			
-Depletion	-14,770,815	-14,770,815	
-Total D,D & A	-18,978,484	-18,842,576	-22,535,955
Taxable	21,069,655	21,205,563	-9,782,487
-Tax Due	-8,137,101	-8,189,588	3,777,996
Net Income	12,932,554	13,015,974	-6,004,490
+Depreciation	4,207,669	4,071,761	9,782,487
+Depletion	14,770,815	14,770,815	
+Amortization			
+Write Off			12,753,468
-Capital Costs	-1,281,659		
Cash Flow	30,629,379	31,858,550	16,531,464

List of Assumptions File:TUNSEA.SEE Date:11/18/93 Time:09:15:54

TUNGSTEN SKARN, PETERSBURG AREA, SUBLEVEL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	10,117,471	WC	Mid Year	18.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	7,022,090	MACRS	Mid Year	10.0	0		0	.....
3	04/89	1,798,432	MACRS	Mid Year	18.0	0		0	.....
4	04/89	5,822,945	MACRS	Mid Year	18.0	0		0	.....
5	04/89	30,315,093	MACRS	Mid Year	18.0	0		0	.....
6	.....	0	MACRS	Mid Year	7.0	0		0	.....
7	04/89	2,635,997	WC	Mid Year	18.0	0		0	.....
8	04/89	1,281,659	MACRS	Mid Year	4.0	0		0	.....
9	04/93	1,281,659	MACRS	Mid Year	4.0	0		0	.....
10	04/97	1,281,659	MACRS	Mid Year	4.0	0		0	.....
11	04/01	1,281,659	MACRS	Mid Year	4.0	0		0	.....
12	04/05	1,281,659	MACRS	Mid Year	4.0	0		0	.....
13	.....	0	MACRS	Mid Year	7.0	0		0	.....
14	04/89	14,509,016	MACRS	Mid Year	18.0	0		0	.....
15	04/89	12,037,107	MACRS	Mid Year	18.0	0		0	.....
16	04/89	11,975,039	MACRS	Mid Year	18.0	0		0	.....
17	04/89	9,751,485	EXPL-X	Mid Year	18.0	0		0	.....
18	04/02	7,022,090	MACRS	Mid Year	8.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	1,465,200.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S3	WO3 GRADE %	N/A:	04/92	End	0.014	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.000	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.000	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.000	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	WO3 $/TONNE	N/A:	04/92	End	6,600.00	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	40,025,160.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	10,428,120.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,970,680.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	1,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . WO3 REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

TUNGSTEN SKARN, PETERSBURG AREA, SUBLEVEL STOPING

Cash Flows

NPV =$159,529,425 DCFROR= 33.4% GROR = 17.1% PWROR = 33.4% Pay Back= 2.90 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
WO3 REV		103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
GROSS REVENUE		103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
Total Revenue		103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
-SMELTING CHARGES		-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691
-Total Smelting Cost		-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691
Net Smelt Ret.		102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436
Net Revenue		102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436
-OPER COSTS		-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960
-Total Oper Costs		-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960
-MHT NPI		-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355
-Total Sev. Ad Valor		-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355
-Dev, IDC	-6,826,040						
-Depreciation	-5,270,270	-9,767,930	-8,703,757	-7,789,197	-6,602,613	-5,686,859	-5,313,097
-Amortization	-1,755,267	-585,089	-585,089				
-Write Off							
Before Depltn	-13,851,577	32,402,102	33,466,275	34,965,924	36,152,508	37,068,262	37,442,024
100% Limit		32,402,102	33,466,275	34,965,924	36,152,508	37,068,262	37,442,024
Percent Depln		15,380,015	15,380,015	15,380,015	15,380,015	15,380,015	15,380,015
Prev Exp Expl		6,826,040					
-Depletion		-8,553,976	-15,380,015	-15,380,015	-15,380,015	-15,380,015	-15,380,015
-Total D,D & A	-13,851,577	-18,906,995	-24,668,862	-23,169,212	-21,982,628	-21,066,874	-20,693,113
Taxable	-13,851,577	23,848,126	18,086,259	19,585,909	20,772,493	21,688,247	22,062,008
-Tax Due	4,709,536	-8,108,363	-6,149,328	-6,659,209	-8,022,337	-8,376,001	-8,520,348
Net Income	-9,142,041	15,739,763	11,936,931	12,926,700	12,750,156	13,312,246	13,541,661
+Depreciation	5,270,270	9,767,930	8,703,757	7,789,197	6,602,613	5,686,859	5,313,097
+Depletion		8,553,976	15,380,015	15,380,015	15,380,015	15,380,015	15,380,015
+Amortization	1,755,267	585,089	585,089				
+Write Off							
-Capital Costs	-100,440,295		-1,281,659				-1,281,659
Cash Flow	-102,556,798	34,646,758	35,324,134	36,095,912	34,732,784	34,379,120	32,953,114

Year	7	8	9	10	11	12	13
WO3 REV	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
GROSS REVENUE	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
Total Revenue	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127	103,569,127
-SMELTING CHARGES	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691
-Total Smelting Cost	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691	-1,035,691
Net Smelt Ret.	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436
Net Revenue	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436	102,533,436
-OPER COSTS	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960
-Total Oper Costs	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960	-58,423,960
-MHT NPI	-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355
-Total Sev. Ad Valor	-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355	-1,354,355
-Dev, IDC							
-Depreciation	-4,898,492	-4,218,440	-3,747,455	-3,573,722	-4,301,488	-4,719,497	-4,255,373
-Amortization							
-Write Off							
Before Depltn	37,856,629	38,536,681	39,007,666	39,181,398	38,453,633	38,035,624	38,499,748
100% Limit	37,856,629	38,536,681	39,007,666	39,181,398	38,453,633	38,035,624	38,499,748
Percent Depln	15,380,015	15,380,015	15,380,015	15,380,015	15,380,015	15,380,015	15,380,015
Prev Exp Expl							
-Depletion	-15,380,015	-15,380,015	-15,380,015	-15,380,015	-15,380,015	-15,380,015	-15,380,015
-Total D,D & A	-20,278,508	-19,598,455	-19,127,471	-18,953,738	-19,681,503	-20,099,513	-19,635,389
Taxable	22,476,613	23,156,666	23,627,650	23,801,383	23,073,618	22,655,608	23,119,732
-Tax Due	-8,680,468	-8,943,104	-9,124,999	-9,192,094	-8,911,031	-8,749,596	-8,928,841
Net Income	13,796,145	14,213,561	14,502,652	14,609,289	14,162,587	13,906,012	14,190,892
+Depreciation	4,898,492	4,218,440	3,747,455	3,573,722	4,301,488	4,719,497	4,255,373
+Depletion	15,380,015	15,380,015	15,380,015	15,380,015	15,380,015	15,380,015	15,380,015
+Amortization							
+Write Off							
-Capital Costs				-1,281,659	-7,022,090		
Cash Flow	34,074,653	33,812,017	33,630,122	32,281,368	26,822,000	34,005,525	33,826,280

Year	14	15	Salvage
WO3 REV	103,569,127	103,569,127	
GROSS REVENUE	103,569,127	103,569,127	
Total Revenue	103,569,127	103,569,127	12,753,468
-SMELTING CHARGES	-1,035,691	-1,035,691	
-Total Smelting Cost	-1,035,691	-1,035,691	
Net Smelt Ret.	102,533,436	102,533,436	
Net Revenue	102,533,436	102,533,436	
-OPER COSTS	-58,423,960	-58,423,960	
-Total Oper Costs	-58,423,960	-58,423,960	
-MHT NPI	-1,354,355	-1,354,355	

Year	14	15	Salvage
-Total Sev. Ad Valor	-1,354,355	-1,354,355	
-Dev, IDC			
-Depreciation	-4,207,669	-4,071,761	-9,782,487
-Amortization			
-Write Off			-12,753,468
Before Depltn	38,547,452	38,683,360	-9,782,487
100% Limit	38,547,452	38,683,360	
Percent Depln	15,380,015	15,380,015	
Prev Exp Expl			
-Depletion	-15,380,015	-15,380,015	
-Total D,D & A	-19,587,684	-19,451,776	-22,535,955
Taxable	23,167,437	23,303,345	-9,782,487
-Tax Due	-8,947,264	-8,999,752	3,777,996
Net Income	14,220,173	14,303,593	-6,004,490
+Depreciation	4,207,669	4,071,761	9,782,487
+Depletion	15,380,015	15,380,015	
+Amortization			
+Write Off			12,753,468
-Capital Costs	-1,281,659		
Cash Flow	32,526,198	33,755,369	16,531,464

APPENDIX B-12

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR ZINC-LEAD (Zn-Pb) SKARN DEPOSITS

12. DESCRIPTIVE MODEL OF Zn-Pb SKARN DEPOSITS

By Dennis P. Cox

DESCRIPTION Sphalerite and galena in calc-silicate rocks.

GENERAL REFERENCES Einaudi and Burt (1982); Einaudi and others (1981).

GEOLOGICAL ENVIRONMENT

Rock Types Granodiorite to granite, diorite to syenite. Carbonate rocks, calcareous clastic rocks.

Textures Granitic to porphyritic; granoblastic to hornfelsic.

Age Range Mainly Mesozoic, but may be any age.

Depositional Environment Miogeoclinal sequences intruded by generally small bodies of igneous rock.

Tectonic Setting(s) Continental margin, late-orogenic magmatism.

Associated Deposit Types Copper skarn.

DEPOSIT DESCRIPTION

Mineralogy Sphalerite + galena ± pyrrhotite ± pyrite ± magnetite ± chalcopyrite ± bornite ± arsenopyrite ± scheelite ± bismuthinite ± stannite ± fluorite. Gold and silver do not form minerals.

Texture/Structure Granoblastic, sulfides massive to interstitial.

Alteration Mn-hedenbergite ± andradite ± grossular ± spessartine ± bustamite ± rhodonite. Late stage Mn-actinolite ± ilvaite ± chlorite ± dannemorite ± rhodochrosite.

Ore Controls Carbonate rocks especially at shale-limestone contacts. Deposit may be hundreds of meters from intrusive.

Weathering Gossan with strong Mn oxide stains.

Geochemical Signature Zn, Pb, Mn, Cu, Co, Au, Ag, As, W, Sn, F, possibly Be. Magnetic anomalies.

EXAMPLES

Ban Ban, AUOU (Ashley, 1980)
Hanover-Fierro district, USNM (Hernon and Jones, 1968)

GRADE AND TONNAGE MODEL OF Zn-Pb SKARN DEPOSITS

After Dan L. Mosier

COMMENTS Zinc grade is correlated with lead grade ($r = 0.66$, $n = 30$) and with copper ($r = 0.61$, $n = 17$). Upper ten percent of the deposits contain a minimum of 12 million tonnes at 13% Zn, 7.6% Pb, 1.3% Cu, and 290 grams/tonne Ag. Total contained metal 1.56 million tonnes Zn, 0.91 million

tonnes Pb, 0.16 million tonnes Cu and 3.48 billion grams Ag. Gross metal value in 1987 would have been $3.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 1.2 million tonnes per year or 3,300 tonnes per day.

Gross Value of Annual Production $301 million.

Net Present Value of 4% NSR $12.0 million times 6.144 is $73.7 million.

Comments, Assumptions, Specifications: ZNPB
Peterstown Area Coal Co. of Lewisburg, W. Va.

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Zn-Pb Skarn
Total Ore Tonnage: 12 mill metric tons
Mining Method: Sublevel Stope
Beneficiation Method: Crush, Grind, Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 15 years
Proposed Daily Production: 2,200 mtpd
Maximum Ore Depth: 500 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 25 km
haul 5 km per day
Distance From Power: 25 km
Pre-Production Development:

Production Development:

Equipment: Rig, Drills, Jumbos, LHDs
Concentrate Production: 650 mtpd, 3 products

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: -
Raises & face-m/day & sqm: 1 m/day, 2.5 m²
Inclines & face-m/day & sqm: -
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .006/day, 2 [illegible]
Ore rate-mtpd: 2,200 mtpd
Hoist depth, rate & time-m, mtph, hr/day:
500 m, 180 mtph, 16 hrs/day
Haul distance-m: 400 m
Compressed air-cm/min: 80 m³/min
Ventilation-cm/min: 7,500 m³/min
Conveyor length & slope-km & %: .5 km, [illegible]%
Water needs-cm/hr & hr/day: 8 m³/hr
Drainage, head-cm/day & m: 500 m 3 m m³/day
Concentrate (dry) rate-mtpd: 650 mtpd, 3 products
Tails (dry) rate-mtpd: 1550 mtpd
Production water needs-cm/day: 2000 m³/day, mostly recycle
Portable Power needs-kW:
Wastewater-L/sec: 20 L/sec
Concentrate haul-km: 25 km
Employee housing-men: 140 men
Other:
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 2,200 ~ 700, 1575 ~-PC
Mill operating costs-$/day: $31,771/day
Working capital time-weeks: 13 weeks
Development time-days: -
Shaft sinking & face-m & sqm: 500 m ~ 28 m²
Drifting & face-m & sqm: 500 m ~ 15 m²
Raises & face-m & sqm: 620 m ~ 2 ~ m²
Inclines & face-m & sqm: 1000 m ~ 15 m²
Ore pockets-mt: 3,300 mT
Stope preparations-stopes & sqm: 4 5 ~~~ m²
Dewatering; head, dys & rate-m, dys & cm/day:
500 m ~ 150 days ~ 3,000 m³/day
Rehabilitation (total tonnage)-mt: 2 2.00 ~ PC
Contractors-1 or 2: 2
Mine operating costs-$/day: $72,651/day
Access roads, length & width-km & m: 5km ~ 2m
Airstrip length & width-m: None
Townsite cost-$: $3,910,410
Powerline length & power-km & mW: 25km, 8mw
Dike & Dam needs-cm/fill: 200,000 m3
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 72,651
Mining Costs-$/yr: 26,154,360
Mining Costs-$/mt: 33.02
Milling Costs-$/day: 31,771
Milling Costs-$/yr: 11,437,560
Milling Costs-$/mt: 14.44
Infrastructure Costs-$/day: 18,185
Infrastructure Costs-$/yr: 6,546,600
Infrastructure Costs-$/mt: 8.27
Total Operating Costs-$/day: 122,607
Total Operating Costs-$/yr: 44,138,520
Total Operating Costs-$/mt: 55.73
Other:
Other:

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 6,611,241
Heavy Equipment (fixed life)-$: 3,894,448 *
Mine Rehabilitation-$: 1,460,855 *
Engr. & Const. Mgmt.-$: 8,533,235 *
Other:
Remaining Mine Capital-$: 18,552,669
Total Mine Capital Cost-$: 39052,448

MILL CAPITAL COSTS:

Mill Working Capital-$: 2891161
Light Vehicles (short life)-$: 1224022 *
Other:
Remaining Mill Capital-$: 15,486,204 -
Total Mill Capital Cost-$: 19411397

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 8379792 *
Other:
Remaining Infrastructure Capital-$: 11,684,603 -
Total Infrastructure Capital-$: 20.064 395

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 9,502,402 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 45723 476 *
Sum of Total Mine, Mill & Infr. Costs-$: 78 528 230
Exploration Cost-$: 7,852,823 *

Overall Capital Cost-$: 86 381,053
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

Zn-Pb Skarn

Cox & Singer -
90% Grade

13% Zn = 286 lb/mt
7.6% Pb = 167 lb/mt
2909 g/mt Ag = 9.32 opmt
.46 g/mt Au = .0148 opmt
1.3% Cu = 29 lb/mt

List of Assumptions File:ZNPBSEA.SEE Date:07/26/93 Time:08:15:44

ZN-PB SKARN, PETERSBURG AREA, SUBLEVEL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	6,611,241	WC	Mid Year	18.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	3,894,448	MACRS	Mid Year	10.0	0			0 .....
3	04/89	1,460,855	MACRS	Mid Year	18.0	0			0 .....
4	04/89	8,533,235	MACRS	Mid Year	18.0	0			0 .....
5	04/89	18,552,669	MACRS	Mid Year	18.0	0			0 .....
6	.....	0	MACRS	Mid Year	7.0	0			0 .....
7	04/89	2,891,161	WC	Mid Year	18.0	0			0 .....
8	04/89	1,034,022	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,034,022	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,034,022	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,034,022	MACRS	Mid Year	4.0	0			0 .....
12	04/05	1,034,022	MACRS	Mid Year	4.0	0			0 .....
13	.....	0	MACRS	Mid Year	7.0	0			0 .....
14	04/89	15,486,204	MACRS	Mid Year	18.0	0			0 .....
15	04/89	8,379,792	MACRS	Mid Year	18.0	0			0 .....
16	04/89	11,684,603	MACRS	Mid Year	18.0	0			0 .....
17	04/89	7,852,823	EXPL-X	Mid Year	18.0	0			0 .....
18	04/02	3,894,448	MACRS	Mid Year	8.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	792,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.130	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.013	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	9.320	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0148	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	26,154,360.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	11,437,560.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,546,600.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

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* Project Equations *
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General Equations
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E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

ZN-PB SKARN, PETERSBURG AREA, SUBLEVEL STOPING

Cash Flows

NPV =$554,158,244 DCFROR=103.9% GROR = 26.0% PWROR =103.9% Pay Back= 0.96 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
ZN REV		94,871,720	94,871,720	94,871,720	94,871,720	94,871,720	94,871,720
CU REV		17,504,915	17,504,915	17,504,915	17,504,915	17,504,915	17,504,915
PB REV		35,456,098	35,456,098	35,456,098	35,456,098	35,456,098	35,456,098
AG REV		23,095,419	23,095,419	23,095,419	23,095,419	23,095,419	23,095,419
AU REV		3,034,351	3,034,351	3,034,351	3,034,351	3,034,351	3,034,351
GROSS REVENUE		173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503
Total Revenue		173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503
-SMELTING CHARGES		-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625
-Total Smelting Cost		-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625
Net Smelt Ret.		172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877
-MHT ROYALTY		-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915
-Total Royalties		-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915
Net Revenue		165,549,962	165,549,962	165,549,962	165,549,962	165,549,962	165,549,962
-OPER COSTS		-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520
-Total Oper Costs		-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520
-Dev, IDC	-5,496,976						
-Depreciation	-4,208,915	-7,815,025	-6,992,088	-6,280,232	-5,341,489	-4,615,557	-4,310,958
-Amortization	-1,413,508	-471,169	-471,169				
-Write Off							
Before Depltn	-11,119,399	107,725,248	108,548,185	109,731,210	110,669,953	111,395,885	111,700,484
100% Limit		107,725,248	108,548,185	109,731,210	110,669,953	111,395,885	111,700,484
Percent Depln		24,832,494	24,832,494	24,832,494	24,832,494	24,832,494	24,832,494
Prev Exp Expl		5,496,976					
-Depletion		-19,335,518	-24,832,494	-24,832,494	-24,832,494	-24,832,494	-24,832,494
-Total D,D & A	-11,119,399	-27,621,712	-32,295,752	-31,112,726	-30,173,984	-29,448,052	-29,143,453
Taxable	-11,119,399	88,389,730	83,715,690	84,898,716	85,837,459	86,563,391	86,867,990
-Tax Due	3,780,596	-30,052,508	-28,463,335	-28,865,563	-33,150,427	-33,430,781	-33,548,418
Net Income	-7,338,803	58,337,222	55,252,356	56,033,153	52,687,032	53,132,609	53,319,572
+Depreciation	4,208,915	7,815,025	6,992,088	6,280,232	5,341,489	4,615,557	4,310,958
+Depletion		19,335,518	24,832,494	24,832,494	24,832,494	24,832,494	24,832,494
+Amortization	1,413,508	471,169	471,169				
+Write Off							
-Capital Costs	-80,884,077		-1,034,022				-1,034,022
Cash Flow	-82,600,457	85,958,934	86,514,086	87,145,879	82,861,016	82,580,661	81,429,003

Year	7	8	9	10	11	12	13
ZN REV	94,871,720	94,871,720	94,871,720	94,871,720	94,871,720	94,871,720	94,871,720
CU REV	17,504,915	17,504,915	17,504,915	17,504,915	17,504,915	17,504,915	17,504,915
PB REV	35,456,098	35,456,098	35,456,098	35,456,098	35,456,098	35,456,098	35,456,098
AG REV	23,095,419	23,095,419	23,095,419	23,095,419	23,095,419	23,095,419	23,095,419
AU REV	3,034,351	3,034,351	3,034,351	3,034,351	3,034,351	3,034,351	3,034,351
GROSS REVENUE	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503
Total Revenue	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503
-SMELTING CHARGES	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625
-Total Smelting Cost	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625
Net Smelt Ret.	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877
-MHT ROYALTY	-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915
-Total Royalties	-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915	-6,672,915
Net Revenue	165,549,962	165,549,962	165,549,962	165,549,962	165,549,962	165,549,962	165,549,962
-OPER COSTS	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520
-Total Oper Costs	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520
-Dev, IDC							
-Depreciation	-3,960,851	-3,398,320	-3,006,003	-2,918,062	-3,341,881	-3,513,106	-3,235,502
-Amortization							
-Write Off							
Before Depltn	112,050,591	112,613,122	113,005,439	113,093,380	112,669,561	112,498,336	112,775,940
100% Limit	112,050,591	112,613,122	113,005,439	113,093,380	112,669,561	112,498,336	112,775,940
Percent Depln	24,832,494	24,832,494	24,832,494	24,832,494	24,832,494	24,832,494	24,832,494
Prev Exp Expl							
-Depletion	-24,832,494	-24,832,494	-24,832,494	-24,832,494	-24,832,494	-24,832,494	-24,832,494
-Total D,D & A	-28,793,346	-28,230,815	-27,838,498	-27,750,556	-28,174,375	-28,345,601	-28,067,997
Taxable	87,218,097	87,780,628	88,172,945	88,260,886	87,837,067	87,665,842	87,943,446
-Tax Due	-33,683,629	-33,900,878	-34,052,391	-34,086,354	-33,922,675	-33,856,548	-33,963,759
Net Income	53,534,468	53,879,749	54,120,553	54,174,532	53,914,392	53,809,294	53,979,687
+Depreciation	3,960,851	3,398,320	3,006,003	2,918,062	3,341,881	3,513,106	3,235,502
+Depletion	24,832,494	24,832,494	24,832,494	24,832,494	24,832,494	24,832,494	24,832,494
+Amortization							
+Write Off							
-Capital Costs				-1,034,022	-3,894,448		
Cash Flow	82,327,813	82,110,564	81,959,051	80,891,066	78,194,319	82,154,894	82,047,684

Year	14	15	Salvage
ZN REV	94,871,720	94,871,720	
CU REV	17,504,915	17,504,915	
PB REV	35,456,098	35,456,098	
AG REV	23,095,419	23,095,419	
AU REV	3,034,351	3,034,351	
GROSS REVENUE	173,962,503	173,962,503	
Total Revenue	173,962,503	173,962,503	9,502,402
-SMELTING CHARGES	-1,739,625	-1,739,625	
-Total Smelting Cost	-1,739,625	-1,739,625	
Net Smelt Ret.	172,222,877	172,222,877	
-MHT ROYALTY	-6,672,915	-6,672,915	
-Total Royalties	-6,672,915	-6,672,915	
Net Revenue	165,549,962	165,549,962	
-OPER COSTS	-49,538,520	-49,538,520	
-Total Oper Costs	-49,538,520	-49,538,520	
-Dev, IDC			
-Depreciation	-3,269,648	-3,214,475	-7,634,249
-Amortization			
-Write Off			-9,502,402
Before Depltn	112,741,794	112,796,968	-7,634,249
100% Limit	112,741,794	112,796,968	
Percent Depln	24,832,494	24,832,494	
Prev Exp Expl			
-Depletion	-24,832,494	-24,832,494	
-Total D,D & A	-28,102,143	-28,046,969	-17,136,651
Taxable	87,909,300	87,964,473	-7,634,249
-Tax Due	-33,950,572	-33,971,880	2,948,347
Net Income	53,958,728	53,992,594	-4,685,902
+Depreciation	3,269,648	3,214,475	7,634,249
+Depletion	24,832,494	24,832,494	
+Amortization			
+Write Off			9,502,402
-Capital Costs	-1,034,022		
Cash Flow	81,026,849	82,039,563	12,450,749

List of Assumptions File:ZNPBSEA.SEE Date:11/19/93 Time:08:59:46

ZN-PB SKARN, PETERSBURG AREA, SUBLEVEL STOPING

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	6,611,241	WC	Mid Year	18.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	3,894,448	MACRS	Mid Year	10.0	0			0 .....
3	04/89	1,460,855	MACRS	Mid Year	18.0	0			0 .....
4	04/89	8,533,235	MACRS	Mid Year	18.0	0			0 .....
5	04/89	18,552,669	MACRS	Mid Year	18.0	0			0 .....
6	.....	0	MACRS	Mid Year	7.0	0			0 .....
7	04/89	2,891,161	WC	Mid Year	18.0	0			0 .....
8	04/89	1,034,022	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,034,022	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,034,022	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,034,022	MACRS	Mid Year	4.0	0			0 .....
12	04/05	1,034,022	MACRS	Mid Year	4.0	0			0 .....
13	.....	0	MACRS	Mid Year	7.0	0			0 .....
14	04/89	15,486,204	MACRS	Mid Year	18.0	0			0 .....
15	04/89	8,379,792	MACRS	Mid Year	18.0	0			0 .....
16	04/89	11,684,603	MACRS	Mid Year	18.0	0			0 .....
17	04/89	7,852,823	EXPL-X	Mid Year	18.0	0			0 .....
18	04/02	3,894,448	MACRS	Mid Year	8.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	792,000.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.130	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.013	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.076	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	9.320	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0148	Constant	0.000
S7	ZN $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	26,154,360.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	11,437,560.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,546,600.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	5,400,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

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* Project Equations *
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General Equations
==========

E1 . ZN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

ZN-PB SKARN, PETERSBURG AREA, SUBLEVEL STOPING

Cash Flows

NPV =$571,047,903 DCFROR=106.7% GROR = 26.3% PWROR =106.7% Pay Back= 0.94 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
ZN REV		94,871,720	94,871,720	94,871,720	94,871,720	94,871,720	94,871,720
CU REV		17,504,915	17,504,915	17,504,915	17,504,915	17,504,915	17,504,915
PB REV		35,456,098	35,456,098	35,456,098	35,456,098	35,456,098	35,456,098
AG REV		23,095,419	23,095,419	23,095,419	23,095,419	23,095,419	23,095,419
AU REV		3,034,351	3,034,351	3,034,351	3,034,351	3,034,351	3,034,351
GROSS REVENUE		173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503
Total Revenue		173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503
-SMELTING CHARGES		-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625
-Total Smelting Cost		-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625
Net Smelt Ret.		172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877
Net Revenue		172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877
-OPER COSTS		-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520
-Total Oper Costs		-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520
-MHT NPI		-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719
-Total Sev. Ad Valor		-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719
-Dev, IDC	-5,496,976						
-Depreciation	-4,208,915	-7,815,025	-6,992,088	-6,280,232	-5,341,489	-4,615,557	-4,310,958
-Amortization	-1,413,508	-471,169	-471,169				
-Write Off							
Before Depltn	-11,119,399	110,665,444	111,488,380	112,671,406	113,610,149	114,336,081	114,640,680
100% Limit		110,665,444	111,488,380	112,671,406	113,610,149	114,336,081	114,640,680
Percent Depln		25,833,432	25,833,432	25,833,432	25,833,432	25,833,432	25,833,432
Prev Exp Expl		5,496,976					
-Depletion		-20,336,456	-25,833,432	-25,833,432	-25,833,432	-25,833,432	-25,833,432
-Total D,D & A	-11,119,399	-28,622,650	-33,296,689	-32,113,664	-31,174,921	-30,448,989	-30,144,390
Taxable	-11,119,399	90,328,988	85,654,949	86,837,974	87,776,717	88,502,649	88,807,248
-Tax Due	3,780,596	-30,711,856	-29,122,683	-29,524,911	-33,899,368	-34,179,723	-34,297,359
Net Income	-7,338,803	59,617,132	56,532,266	57,313,063	53,877,349	54,322,926	54,509,889
+Depreciation	4,208,915	7,815,025	6,992,088	6,280,232	5,341,489	4,615,557	4,310,958
+Depletion		20,336,456	25,833,432	25,833,432	25,833,432	25,833,432	25,833,432
+Amortization	1,413,508	471,169	471,169				
+Write Off							
-Capital Costs	-80,884,077		-1,034,022				-1,034,022
Cash Flow	-82,600,457	88,239,782	88,794,933	89,426,727	85,052,270	84,771,915	83,620,257

Year	7	8	9	10	11	12	13
ZN REV	94,871,720	94,871,720	94,871,720	94,871,720	94,871,720	94,871,720	94,871,720
CU REV	17,504,915	17,504,915	17,504,915	17,504,915	17,504,915	17,504,915	17,504,915
PB REV	35,456,098	35,456,098	35,456,098	35,456,098	35,456,098	35,456,098	35,456,098
AG REV	23,095,419	23,095,419	23,095,419	23,095,419	23,095,419	23,095,419	23,095,419
AU REV	3,034,351	3,034,351	3,034,351	3,034,351	3,034,351	3,034,351	3,034,351
GROSS REVENUE	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503
Total Revenue	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503	173,962,503
-SMELTING CHARGES	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625
-Total Smelting Cost	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625	-1,739,625
Net Smelt Ret.	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877
Net Revenue	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877	172,222,877
-OPER COSTS	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520
-Total Oper Costs	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520	-49,538,520
-MHT NPI	-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719
-Total Sev. Ad Valor	-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719	-3,732,719
-Dev, IDC							
-Depreciation	-3,960,851	-3,398,320	-3,006,003	-2,918,062	-3,341,881	-3,513,106	-3,235,502
-Amortization							
-Write Off							
Before Depltn	114,990,787	115,553,318	115,945,635	116,033,576	115,609,757	115,438,532	115,716,136
100% Limit	114,990,787	115,553,318	115,945,635	116,033,576	115,609,757	115,438,532	115,716,136
Percent Depln	25,833,432	25,833,432	25,833,432	25,833,432	25,833,432	25,833,432	25,833,432
Prev Exp Expl							
-Depletion	-25,833,432	-25,833,432	-25,833,432	-25,833,432	-25,833,432	-25,833,432	-25,833,432
-Total D,D & A	-29,794,283	-29,231,752	-28,839,435	-28,751,494	-29,175,313	-29,346,538	-29,068,934
Taxable	89,157,355	89,719,886	90,112,203	90,200,144	89,776,325	89,605,100	89,882,704
-Tax Due	-34,432,571	-34,649,820	-34,801,333	-34,835,296	-34,671,617	-34,605,490	-34,712,700
Net Income	54,724,785	55,070,066	55,310,870	55,364,849	55,104,708	54,999,610	55,170,004
+Depreciation	3,960,851	3,398,320	3,006,003	2,918,062	3,341,881	3,513,106	3,235,502
+Depletion	25,833,432	25,833,432	25,833,432	25,833,432	25,833,432	25,833,432	25,833,432
+Amortization							
+Write Off							
-Capital Costs				-1,034,022	-3,894,448		
Cash Flow	84,519,067	84,301,818	84,150,305	83,082,320	80,385,573	84,346,148	84,238,938

Year	14	15	Salvage
ZN REV	94,871,720	94,871,720	
CU REV	17,504,915	17,504,915	
PB REV	35,456,098	35,456,098	
AG REV	23,095,419	23,095,419	
AU REV	3,034,351	3,034,351	
GROSS REVENUE	173,962,503	173,962,503	
Total Revenue	173,962,503	173,962,503	9,502,402
-SMELTING CHARGES	-1,739,625	-1,739,625	
-Total Smelting Cost	-1,739,625	-1,739,625	
Net Smelt Ret.	172,222,877	172,222,877	
Net Revenue	172,222,877	172,222,877	
-OPER COSTS	-49,538,520	-49,538,520	
-Total Oper Costs	-49,538,520	-49,538,520	
-MHT NPI	-3,732,719	-3,732,719	
-Total Sev. Ad Valor	-3,732,719	-3,732,719	
-Dev, IDC			
-Depreciation	-3,269,648	-3,214,475	-7,634,249
-Amortization			
-Write Off			-9,502,402
Before Depltn	115,681,990	115,737,163	-7,634,249
100% Limit	115,681,990	115,737,163	
Percent Depln	25,833,432	25,833,432	
Prev Exp Expl			
-Depletion	-25,833,432	-25,833,432	
-Total D,D & A	-29,103,080	-29,047,906	-17,136,651
Taxable	89,848,558	89,903,732	-7,634,249
-Tax Due	-34,699,513	-34,720,821	2,948,347
Net Income	55,149,045	55,182,910	-4,685,902
+Depreciation	3,269,648	3,214,475	7,634,249
+Depletion	25,833,432	25,833,432	
+Amortization			
+Write Off			9,502,402
-Capital Costs	-1,034,022		
Cash Flow	83,218,103	84,230,817	12,450,749

APPENDIX B-13

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR TIN (Sn) GREISEN DEPOSITS

13. DESCRIPTIVE MODEL OF Sn GREISEN DEPOSITS

By Bruce L. Reed

DESCRIPTION Disseminated cassiterite, and cassiterite-bearing veinlets, stockworks, lenses, pipes, and breccia in greisenized granite.

GENERAL REFERENCES Scherba (1970), Taylor (1979), Reed (1982), Tischendorf (1977).

GEOLOGICAL ENVIRONMENT

Rock Types Specialized biotite and (or) muscovite leucogranite (S-type); distinctive accessory minerals include topaz, fluorite, tourmaline, and beryl. Tin greisens are generally post-magmatic and associated with late fractionated melt.

Textures Common plutonic rock textures, miarolitic cavities may be common; generally nonfoliated; equigranular textures may be more evolved (Hudson and Arth, 1983); aplitic and porphyritic textures common.

Age Range May be any age; tin mineralization temporally related to later stages of granitoid emplacement.

Depositional Environment Mesozonal plutonic to deep volcanic environment.

Tectonic Setting(s) Foldbelts of thick sediments ± volcanic rocks deposited on stable cratonic shield; accreted margins; granitoids generally postdate major folding.

Associated Deposit Types Quartz-cassiterite sulfide lodes, quartz-cassiterite ± molybdenite stockworks, late complex tin-silver-sulfide veins.

DEPOSIT DESCRIPTION

Mineralogy General zonal development of cassiterite + molybdenite, cassiterite + molybdenite + arsenopyrite + beryl, wolframite + beryl + arsenopyrite + bismuthinite, Cu-Pb-Zn sulfide minerals + sulphostannates, quartz veins ± fluorite, calcite, pyrite.

Texture/Structure Exceedingly varied, the most common being disseminated cassiterite in massive greisen, and quartz veinlets and stockworks (in cupolas or in overlying wallrocks); less common are pipes, lenses, and tectonic breccia.

Alteration Incipient greisen (granite): muscovite ± chlorite, tourmaline, and fluorite. Greisenized granite: quartz-muscovite-topaz-fluorite, ± tourmaline (original texture of granites retained). Massive greisen: quartz-muscovite-topaz ± fluorite ± tourmaline (typically no original texture preserved). Tourmaline can be ubiquitous as disseminations, concentrated or diffuse clots, or late fracture fillings. Greisen may form in any wallrock environment, typical assemblages developed in aluminosilicates.

Ore Controls Greisen lodes located in or near cupolas and ridges developed on the roof or along margins of granitoids; faults and fractures may be important ore controls.

Weathering Granite may be "reddened" close to greisen veins. Although massie greisen may not be economic as lodes, rich placer deposits form by weathering and erosion.

Geochemical Signature Greisenite, topaz, and tourmaline in streams that drain exposed tin-rich greisens. Specialized granites may have high contents of SiO (>73 percent) and K_2O (>4 percent), and are depleted in CaO, TiO_2, MgO, and total FeO. They are enriched in Sn, F, Rb, Li, Be, W, Mo, Pb, B, Nb, Cs, U, Th, Hf, Ta, and most REE, and impoverished in Ni, Cu, Cr, Co, V, Sc, Sr, La, and Ba.

EXAMPLES

Lost River, USAK	(Dobson, 1982; Sainsbury, 1964)
Anchor Mine, AUTS	(Groves and Taylor, 1973)
Erzgebirge, CZCL	(Janecka and Stemprok, 1967)

COMMENTS Upper ten percent of the deposits contain a minimum of 65 million tonnes at 0.47% Sn. Total contained metal: 306,000 tonnes. Gross metal value in 1987 would have been $1.7 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 3.25 million tonnes per year or 9,000 tonnes per day.

Gross Value of Annual Production $85 million.

Net Present Value of 4% NSR $3.4 million times 8.514 is $28.9 million.

Comments, Assumptions, Specifications: TIN
Chena Hot Springs Area

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Sn Greisen
Total Ore Tonnage: 65 mil mtons
Mining Method: Open Pit
Beneficiation Method: Cyclone, Grind Jig
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 20 years
Proposed Daily Production: 9,000 MTPD
Maximum Ore Depth: 260 m
Stripping Ratio: 4:1
Haulage Distance/Road Requirements: 10 km new road, 100 km to Rail head
Distance From Power: 100 km
Pre-Production Development:

Production Development:

Equipment: F.E.L./Diesel Shovels, Trucks
Concentrate Production: 50 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .03 ha/day
Burden/Waste rate-mtpd: 36,000 MTPD
Burden/Waste depth & haul-m: 100 m, 2,000 m
Ore rate-mtpd: 9,000 MTPD
Ore depth & haul-m: 120 m, 1,500 m
Conveyor length & slope-km & %: 1.5 km, 6%
Water needs-cm/day: 3,000 m³/day
Drainage, head & distance-cm/day, m & km:
50,000 m³/day, 260 m, 1.5 km
Concentrate (dry) rate-mtpd: 50 MTPD
Tails (dry) rate-mtpd: 8,950 MTPD
Production water needs-cm/day: 2,000 m³/day M.U., 20,000 m³/day recycle
Portable Power needs-kW: —
Wastewater-L/sec: 50 l/s
Concentrate haul-km: 100 km to Railroad
Employee housing-men: 275
Other: Jig Operation: $4,614/day
Other: Rail Haulage: $2,607/day

B.(For Capital Costs)
Concentrate feeds-mtpd: 3000 MTPD
Mill operating costs-$/day: $44,260/day
Working capital time-weeks: 13
Development time-days: 85 days stripping 40,000 MTPD
Clearing needs-ha: 200 ha

Stripping needs-mt: 3.4 m / mtons
Stripping depth & haul-m: 20 m , 1,500 m
Restoration area-ha: 500 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $129,938/day
Access roads, length & width-km & m: 10km, 12m
Airstrip length & width-m: 1,200 m, 18 m
Powerline length & power-km & mW: 100km, 25mW
Dike & Dam needs-cm/fill: 500.000 m³
Climate/Weather factors: Severe
Other: J.g Plant: $2,859,312
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 129,938
Mining Costs-$/yr: 46,777,680
Mining Costs-$/mt: 14.44
Milling Costs-$/day: 44,260
Milling Costs-$/yr: 15,933,600
Milling Costs-$/mt: 4.92
Infrastructure Costs-$/day: 30,188
Infrastructure Costs-$/yr: 10,867,680
Infrastructure Costs-$/mt: 3.35
Total Operating Costs-$/day: 204,386
Total Operating Costs-$/yr: 73,578,960
Total Operating Costs-$/mt: 22.71
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 11,824,358
Heavy Equipment (fixed life)-$: 18,329,514 *
Mine Rehabilitation-$: 4,655,250 *
Engr. & Const. Mgmt.-$: 2,958,173 *
Other:
Remaining Mine Capital-$: 13,060,809
Total Mine Capital-$: 50,828,104

MILL CAPITAL COSTS:

Mill Working Capital-$: 4,027,660
Light Vehicles (short life)-$: 1,690,656 *
Other:
Remaining Mill Capital-$: 29,101,932
Total Mill Capital-$: 34,820,248

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 18,931,744 *

Other: _____
Remaining Infrastructure Capital-$: 29,399,572 ~
Total Infrastructure Capital-$: 48,331,316

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 15,852,018 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 71,562,313 *
Sum of Total Mine, Mill & Infr. Costs-$: 133,979,668
Exploration Cost-$: 13,397,967 *

Overall Capital Cost-$: 147,377,635
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:TINCHENA.SEE Date:07/26/93 Time:08:39:07

TIN GEISEN, CHENA HOT SPRINS AREA, OPEN PIT

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

******** Minimum ROR,Inflation & Exponents ********* ****** Tax Rates ******

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2008	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2009	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2010	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2011	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	18,329,514	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,655,250	MACRS	Mid Year	23.0	0		0	.....
3	04/89	2,958,173	MACRS	Mid Year	23.0	0		0	.....
4	04/89	13,060,809	MACRS	Mid Year	23.0	0		0	.....
5	04/89	11,824,358	WC	Mid Year	23.0	0		0	.....
6	04/89	1,690,656	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,690,656	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,690,656	MACRS	Mid Year	4.0	0		0	.....
9	04/89	29,101,932	MACRS	Mid Year	23.0	0		0	.....
10	04/89	4,027,660	WC	Mid Year	23.0	0		0	.....
11	04/89	34,820,248	MACRS	Mid Year	23.0	0		0	.....
12	04/89	13,397,967	EXPL-X	Mid Year	23.0	0		0	.....
13	04/02	18,329,514	MACRS	Mid Year	10.0	0		0	.....
14	04/01	1,690,656	MACRS	Mid Year	4.0	0		0	.....
15	04/05	1,690,656	MACRS	Mid Year	4.0	0		0	.....
16	04/09	1,690,656	MACRS	Mid Year	4.0	0		0	.....
17	04/89	29,399,572	MACRS	Mid Year	23.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	3,240,000.00	Constant	0.000
S2	SN GRADE %	N/A:	04/92	End	0.004700	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	SN $/TONNE	N/A:	04/92	End	5,896.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	46,777,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	15,933,600.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	10,867,680.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	700,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . SN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

TIN GEISEN, CHENA HOT SPRINS AREA, OPEN PIT

Cash Flows

NPV =$-105,013,917 DCFROR= -1.4% GROR = 0.0% PWROR = -1.3% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997
SM REV		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES		-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost		-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.		84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-MET ROYALTY		-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
-Total Royalties		-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
Net Revenue		81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438
-OPER COSTS		-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-Total Oper Costs		-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-Dev, IDC	-9,378,577						
-Depreciation	-4,517,315	-8,193,351	-7,898,554	-7,665,367	-6,955,981	-6,502,039	-6,613,750
-Amortization	-2,411,634	-803,878	-803,878				
-Write Off							
Before Depltn	-16,307,526	-2,183,751	-1,888,954	-851,889	-142,503	311,439	199,727
100% Limit						311,439	199,727
Percent Depln		12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866
Prev Exp Expl						311,439	199,727
-Total D,D & A	-16,307,526	-8,997,229	-8,702,432	-7,665,367	-6,955,981	-6,502,039	-6,613,750
Taxable	-16,307,526	-2,183,751	-1,888,954	-851,889	-142,503	311,439	199,727
-Tax Due	5,544,559	742,475	642,244	289,642	55,035	-120,278	-77,135
Net Income	-10,762,967	-1,441,276	-1,246,710	-562,247	-87,469	191,162	122,593
+Depreciation	4,517,315	8,193,351	7,898,554	7,665,367	6,955,981	6,502,039	6,613,750
+Amortization	2,411,634	803,878	803,878				
+Write Off							
-Capital Costs	-153,887,562		-1,690,656				-1,690,656
Cash Flow	-157,721,580	7,555,953	5,765,066	7,103,120	6,868,513	6,693,200	5,045,687

Year	1998	1999	2000	2001	2002	2003	2004
SN REV	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-MHT ROYALTY	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
-Total Royalties	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
Net Revenue	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438
-OPER COSTS	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-Total Oper Costs	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-Dev, IDC							
-Depreciation	-6,545,713	-6,228,715	-6,123,049	-6,440,047	-8,378,664	-9,528,027	-8,284,814
-Amortization							
-Write Off							
Before Depltn	267,765	584,763	690,429	373,431	-1,565,186	-2,714,549	-1,471,336
100% Limit	267,765	584,763	690,429	373,431			
Percent Depln	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866
Prev Exp Expl	267,765	584,763	690,429	373,431			
-Total D,D & A	-6,545,713	-6,228,715	-6,123,049	-6,440,047	-8,378,664	-9,528,027	-8,284,814
Taxable	267,765	584,763	690,429	373,431	-1,565,186	-2,714,549	-1,471,336
-Tax Due	-103,411	-225,835	-266,644	-144,219	604,475	1,048,359	568,230
Net Income	164,354	358,928	423,785	229,212	-960,711	-1,666,190	-903,106
+Depreciation	6,545,713	6,228,715	6,123,049	6,440,047	8,378,664	9,528,027	8,284,814
+Amortization							
+Write Off							
-Capital Costs				-1,690,656	-18,329,514		
Cash Flow	6,710,067	6,587,642	6,546,834	4,978,603	-10,911,561	7,861,837	7,381,708

Year	2005	2006	2007	2008	2009	2010	2011
SN REV	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-MHT ROYALTY	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
-Total Royalties	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
Net Revenue	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438
-OPER COSTS	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960

Year	2005	2006	2007	2008	2009	2010	2011
-Total Oper Costs	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-Dev, IDC							
-Depreciation	-7,596,237	-7,279,591	-6,624,744	-6,368,922	-6,685,920	-6,791,586	-6,474,588
-Amortization							
-Write Off							
Before Depltn	-782,759	-466,113	188,734	444,556	127,558	21,892	338,890
100% Limit			188,734	444,556	127,558	21,892	338,890
Percent Depln	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866
Prev Exp Expl			188,734	444,556	127,558	21,892	338,890
-Total D,D & A	-7,596,237	-7,279,591	-6,624,744	-6,368,922	-6,685,920	-6,791,586	-6,474,588
Taxable	-782,759	-466,113	188,734	444,556	127,558	21,892	338,890
-Tax Due	302,302	180,013	-72,889	-171,687	-49,263	-8,455	-130,879
Net Income	-480,458	-286,100	115,845	272,868	78,295	13,437	208,011
+Depreciation	7,596,237	7,279,591	6,624,744	6,368,922	6,685,920	6,791,586	6,474,588
+Amortization							
+Write Off							
-Capital Costs	-1,690,656				-1,690,656		
Cash Flow	5,425,124	6,993,491	6,740,589	6,641,791	5,073,559	6,805,023	6,682,599

Year	Salvage
SN REV	
GROSS REVENUE	
Total Revenue	15,852,018
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MET ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-13,101,973
-Amortization	
-Write Off	-15,852,018
Before Depltn	-13,101,973
100% Limit	
Percent Depln	
Prev Exp Expl	
-Total D,D & A	-28,953,991

Year	Salvage
Taxable	-13,101,973
-Tax Due	5,059,982
Net Income	-8,041,991
+Depreciation	13,101,973
+Amortization	
+Write Off	15,852,018
-Capital Costs	
Cash Flow	20,912,000

List of Assumptions File:TINCHENA.SEE Date:11/18/93 Time:08:48:04

TIN GEISEN, CHENA HOT SPRINS AREA, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	18,329,514	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,655,250	MACRS	Mid Year	23.0	0		0	.....
3	04/89	2,958,173	MACRS	Mid Year	23.0	0		0	.....
4	04/89	13,060,809	MACRS	Mid Year	23.0	0		0	.....
5	04/89	11,824,358	WC	Mid Year	23.0	0		0	.....
6	04/89	1,690,656	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,690,656	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,690,656	MACRS	Mid Year	4.0	0		0	.....
9	04/89	29,101,932	MACRS	Mid Year	23.0	0		0	.....
10	04/89	4,027,660	WC	Mid Year	23.0	0		0	.....
11	04/89	34,820,248	MACRS	Mid Year	23.0	0		0	.....
12	04/89	13,397,967	EXPL-X	Mid Year	23.0	0		0	.....
13	04/02	18,329,514	MACRS	Mid Year	10.0	0		0	.....
14	04/01	1,690,656	MACRS	Mid Year	4.0	0		0	.....
15	04/05	1,690,656	MACRS	Mid Year	4.0	0		0	.....
16	04/09	1,690,656	MACRS	Mid Year	4.0	0		0	.....
17	04/89	29,399,572	MACRS	Mid Year	23.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	3,240,000.00	Constant	0.000
S2	SN GRADE %	N/A:	04/92	End	0.004700	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	SN $/TONNE	N/A:	04/92	End	5,896.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	46,777,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	15,933,600.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	10,867,680.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	700,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
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E1 . SN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

TIN GEISEN, CHENA HOT SPRINS AREA, OPEN PIT

Cash Flows

NPV =$-83,535,378 DCFROR= 1.5% GROR = 0.0% PWROR = 1.6% Pay Back=19.04 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
SN REV		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES		-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost		-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.		84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
Net Revenue		84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-OPER COSTS		-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-Total Oper Costs		-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-MHT NPI		-330,483	-330,483	-330,483	-330,483	-330,483	-330,483
-Total Sev. Ad Valor		-330,483	-330,483	-330,483	-330,483	-330,483	-330,483
-Dev, IDC	-9,378,577						
-Depreciation	-4,517,315	-8,193,351	-7,898,554	-7,665,367	-6,955,981	-6,502,039	-6,613,750
-Amortization	-2,411,634	-803,878	-803,878				
-Write Off							
Before Depltn	-16,307,526	835,450	1,130,247	2,167,312	2,876,698	3,330,641	3,218,929
100% Limit		835,450	1,130,247	2,167,312	2,876,698	3,330,641	3,218,929
Percent Depln		12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318
Prev Exp Expl		835,450	1,130,247	2,167,312	2,876,698	2,368,869	
-Depletion						-961,772	-3,218,929
-Total D,D & A	-16,307,526	-8,997,229	-8,702,432	-7,665,367	-6,955,981	-7,463,811	-9,832,679
Taxable	-16,307,526	835,450	1,130,247	2,167,312	2,876,698	2,368,869	
-Tax Due	5,544,559	-284,053	-384,284	-736,886	-1,110,981	-914,857	
Net Income	-10,762,967	551,397	745,963	1,430,426	1,765,717	1,454,012	
+Depreciation	4,517,315	8,193,351	7,898,554	7,665,367	6,955,981	6,502,039	6,613,750
+Depletion						961,772	3,218,929
+Amortization	2,411,634	803,878	803,878				
+Write Off							
-Capital Costs	-153,887,562		-1,690,656				-1,690,656
Cash Flow	-157,721,580	9,548,626	7,757,739	9,095,793	8,721,699	8,917,822	8,142,023

Year	7	8	9	10	11	12	13
SN REV	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
Net Revenue	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-OPER COSTS	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-Total Oper Costs	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-MHT NPI	-330,483	-330,483	-330,483	-330,483	-330,483	-330,483	-330,483
-Total Sev. Ad Valor	-330,483	-330,483	-330,483	-330,483	-330,483	-330,483	-330,483
-Dev, IDC							
-Depreciation	-6,545,713	-6,228,715	-6,123,049	-6,440,047	-8,378,664	-9,528,027	-8,284,814
-Amortization							
-Write Off							
Before Depltn	3,286,967	3,603,965	3,709,631	3,392,633	1,454,015	304,652	1,547,865
100% Limit	3,286,967	3,603,965	3,709,631	3,392,633	1,454,015	304,652	1,547,865
Percent Depln	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318
Prev Exp Expl							
-Depletion	-3,286,967	-3,603,965	-3,709,631	-3,392,633	-1,454,015	-304,652	-1,547,865
-Total D,D & A	-9,832,679	-9,832,679	-9,832,679	-9,832,679	-9,832,679	-9,832,679	-9,832,679
Taxable							
-Tax Due							
Net Income							
+Depreciation	6,545,713	6,228,715	6,123,049	6,440,047	8,378,664	9,528,027	8,284,814
+Depletion	3,286,967	3,603,965	3,709,631	3,392,633	1,454,015	304,652	1,547,865
+Amortization							
+Write Off							
-Capital Costs				-1,690,656	-18,329,514		
Cash Flow	9,832,679	9,832,679	9,832,679	8,142,023	-8,496,835	9,832,679	9,832,679

Year	14	15	16	17	18	19	20
SN REV	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
Net Revenue	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-OPER COSTS	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-Total Oper Costs	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960	-74,278,960
-MHT NPI	-330,483	-330,483	-330,483	-330,483	-330,483	-330,483	-330,483

Year	14	15	16	17	18	19	20
-Total Sev. Ad Valor	-330,483	-330,483	-330,483	-330,483	-330,483	-330,483	-330,483
-Dev, IDC							
-Depreciation	-7,596,237	-7,279,591	-6,624,744	-6,368,922	-6,685,920	-6,791,586	-6,474,588
-Amortization							
-Write Off							
Before Depltn	2,236,442	2,553,088	3,207,936	3,463,757	3,146,759	3,041,093	3,358,091
100% Limit	2,236,442	2,553,088	3,207,936	3,463,757	3,146,759	3,041,093	3,358,091
Percent Depln	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318
Prev Exp Expl							
-Depletion	-2,236,442	-2,553,088	-3,207,936	-3,463,757	-3,146,759	-3,041,093	-3,358,091
-Total D,D & A	-9,832,679	-9,832,679	-9,832,679	-9,832,679	-9,832,679	-9,832,679	-9,832,679
Taxable							
-Tax Due							
Net Income							
+Depreciation	7,596,237	7,279,591	6,624,744	6,368,922	6,685,920	6,791,586	6,474,588
+Depletion	2,236,442	2,553,088	3,207,936	3,463,757	3,146,759	3,041,093	3,358,091
+Amortization							
+Write Off							
-Capital Costs	-1,690,656				-1,690,656		
Cash Flow	8,142,023	9,832,679	9,832,679	9,832,679	8,142,023	9,832,679	9,832,679

Year	Salvage
SN REV	
GROSS REVENUE	
Total Revenue	15,852,018
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-13,101,973
-Amortization	
-Write Off	-15,852,018
Before Depltn	-13,101,973
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	

Year	Salvage
-Total D,D & A	-28,953,991
Taxable	-13,101,973
-Tax Due	5,059,982
Net Income	-8,041,991
+Depreciation	13,101,973
+Depletion	
+Amortization	
+Write Off	15,852,018
-Capital Costs	
Cash Flow	20,912,000

13. DESCRIPTIVE MODEL OF Sn GREISEN DEPOSITS

By Bruce L. Reed

DESCRIPTION Disseminated cassiterite, and cassiterite-bearing veinlets, stockworks, lenses, pipes, and breccia in greisenized granite.

GENERAL REFERENCES Scherba (1970), Taylor (1979), Reed (1982), Tischendorf (1977).

GEOLOGICAL ENVIRONMENT

Rock Types Specialized biotite and (or) muscovite leucogranite (S-type); distinctive accessory minerals include topaz, fluorite, tourmaline, and beryl. Tin greisens are generally post-magmatic and associated with late fractionated melt.

Textures Common plutonic rock textures, miarolitic cavities may be common; generally nonfoliated; equigranular textures may be more evolved (Hudson and Arth, 1983); aplitic and porphyritic textures common.

Age Range May be any age; tin mineralization temporally related to later stages of granitoid emplacement.

Depositional Environment Mesozonal plutonic to deep volcanic environment.

Tectonic Setting(s) Foldbelts of thick sediments ± volcanic rocks deposited on stable cratonic shield; accreted margins; granitoids generally postdate major folding.

Associated Deposit Types Quartz-cassiterite sulfide lodes, quartz-cassiterite ± molybdenite stockworks, late complex tin-silver-sulfide veins.

DEPOSIT DESCRIPTION

Mineralogy General zonal development of cassiterite + molybdenite, cassiterite + molybdenite + arsenopyrite + beryl, wolframite + beryl + arsenopyrite + bismuthinite, Cu-Pb-Zn sulfide minerals + sulphostannates, quartz veins ± fluorite, calcite, pyrite.

Texture/Structure Exceedingly varied, the most common being disseminated cassiterite in massive greisen, and quartz veinlets and stockworks (in cupolas or in overlying wallrocks); less common are pipes, lenses, and tectonic breccia.

Alteration Incipient greisen (granite): muscovite ± chlorite, tourmaline, and fluorite. Greisenized granite: quartz-muscovite-topaz-fluorite, ± tourmaline (original texture of granites retained). Massive greisen: quartz-muscovite-topaz ± fluorite ± tourmaline (typically no original texture preserved). Tourmaline can be ubiquitous as disseminations, concentrated or diffuse clots, or late fracture fillings. Greisen may form in any wallrock environment, typical assemblages developed in aluminosilicates.

Ore Controls Greisen lodes located in or near cupolas and ridges developed on the roof or along margins of granitoids; faults and fractures may be important ore controls.

Weathering Granite may be "reddened" close to greisen veins. Although massie greisen may not be economic as lodes, rich placer deposits form by weathering and erosion.

Geochemical Signature ...siterite, topaz, and tourmaline in streams that drain exposed tin-rich greisens. Specialized granites may have high contents of SiO (>73 percent) and K_2O (>4 percent), and are depleted in CaO, TiO_2, MgO, and total FeO. They are enriched in Sn, F, Rb, Li, Be, W, Mo, Pb, B, Nb, Cs, U, Th, Hf, Ta, and most REE, and impoverished in Ni, Cu, Cr, Co, V, Sc, Sr, La, and Ba.

EXAMPLES

Lost River, USAK	(Dobson, 1982; Sainsbury, 1964)
Anchor Mine, AUTS	(Groves and Taylor, 1973)
Erzgebirge, CZCL	(Janecka and Stemprok, 1967)

COMMENTS Upper ten percent of the deposits contain a minimum of 65 million tonnes at 0.47% Sn. Total contained metal: 306,000 tonnes. Gross metal value in 1987 would have been $1.7 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 3.25 million tonnes per year or 9,000 tonnes per day.

Gross Value of Annual Production $85 million.

Net Present Value of 4% NSR $3.4 million times 8.514 is $28.9 million.

Comments, Assumptions, Specifications: TINZACK - Zackly - Tin Greisen - Based on TIN model

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Sn Greise
Total Ore Tonnage: 65 mil mtons
Mining Method: Open Pit
Beneficiation Method: Cruss Grind. Jig
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 20 yrs
Proposed Daily Production: 9,000 MTPD
Maximum Ore Depth: 260m
Stripping Ratio: 4:1
Haulage Distance/Road Requirements: 30 km of new roads, 540 km haul to port
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: F.E.L./Diesel Shovels, Trucks
Concentrate Production: 50 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .034a/day
Burden/Waste rate-mtpd: 36,000 MTPD
Burden/Waste depth & haul-m: 100m, 2,000m
Ore rate-mtpd: 9,000 MTPD
Ore depth & haul-m: 120m, 1500m
Conveyor length & slope-km & %: 1.5km 6%
Water needs-cm/day: 3,000 m³/day
Drainage, head & distance-cm/day, m & km: 50,000 m³/day, 260m, 1.5 km
Concentrate (dry) rate-mtpd: 50 MTPD
Tails (dry) rate-mtpd: 8,950 MTPD
Production water needs-cm/day: 2,000 m³/day m.u. 20,000 m³/day - recycle
Portable Power needs-kW: 14,000 kw
Wastewater-L/sec: 50. L/sec
Concentrate haul-km: 540 km
Employee housing-men: 275 men
Other: Jig Operation: $4,614/day
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 3,000 MTPD
Mill operating costs-$/day: $44,260/day
Working capital time-weeks: 13 weeks
Development time-days: 85 days @ 40,000 TPD
Clearing needs-ha: 200 ha

Stripping needs-mt: 3.4 mil tons
Stripping depth & haul-m: 20m, 1,500m
Restoration area-ha: 500ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $129,938 /day
Access roads, length & width-km & m: 30km, 12m
Airstrip length & width-m: 1,200m, 18m
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 500,000 m3
Climate/Weather factors: Severe
Other: Jig Plant $ 2,859,312
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 129,938
Mining Costs-$/yr: 46,777,680
Mining Costs-$/mt: 14.44
Milling Costs-$/day: 44,260
Milling Costs-$/yr: 15,933,600
Milling Costs-$/mt: 4.92
Infrastructure Costs-$/day: 50,283
Infrastructure Costs-$/yr: 18,101,880
Infrastructure Costs-$/mt: 5.59
Total Operating Costs-$/day: 224,881
Total Operating Costs-$/yr: 80,813,160
Total Operating Costs-$/mt: 24.94
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 11,824,358
Heavy Equipment (fixed life)-$: 18,329,514 *
Mine Rehabilitation-$: 4,655,250 *
Engr. & Const. Mgmt.-$: 2,958,173 *
Other:
Remaining Mine Capital-$: 13,060,809
Total Mine Capital-$: 50,828,104

MILL CAPITAL COSTS:

Mill Working Capital-$: 4,027,660
Light Vehicles (short life)-$: 1,690,656 *
Other:
Remaining Mill Capital-$: 29,101,932
Total Mill Capital-$: 34,820,248

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 18,931,744 *

Other: _____
Remaining Infrastructure Capital-$: 31,046,289
Total Infrastructure Capital-$: 49,978,033

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 15,852,018 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 73,209,030 *
Sum of Total Mine, Mill & Infr. Costs-$: 135,626,385
Exploration Cost-$: 13,562,640 *

Overall Capital Cost-$: 149,189,024
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:TINZACK.SEE Date:01/04/80 Time:00:23:55

TIN GEISEN, ZACKLY, CENTRAL ALASKA RANGE AREA, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	18,329,514	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,655,250	MACRS	Mid Year	23.0	0			0 .....
3	04/89	2,958,173	MACRS	Mid Year	23.0	0			0 .....
4	04/89	13,060,809	MACRS	Mid Year	23.0	0			0 .....
5	04/89	11,824,358	WC	Mid Year	23.0	0			0 .....
6	04/89	1,690,656	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,690,656	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,690,656	MACRS	Mid Year	4.0	0			0 .....
9	04/89	29,101,932	MACRS	Mid Year	23.0	0			0 .....
10	04/89	4,027,660	WC	Mid Year	23.0	0			0 .....
11	04/89	18,931,744	MACRS	Mid Year	23.0	0			0 .....
12	04/89	13,562,640	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	18,329,514	MACRS	Mid Year	10.0	0			0 .....
14	04/01	1,690,656	MACRS	Mid Year	4.0	0			0 .....
15	04/05	1,690,656	MACRS	Mid Year	4.0	0			0 .....
16	04/09	1,690,656	MACRS	Mid Year	4.0	0			0 .....
17	04/89	31,046,289	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	3,240,000.00	Constant	0.000
S2	SN GRADE %	N/A:	04/92	End	0.004700	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	SN $/TONNE	N/A:	04/92	End	5,896.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	46,777,680.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	15,933,600.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	18,101,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	700,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . SN REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

TIN GEISEN, ZACKLY, CENTRAL ALASKA RANGE AREA, OPEN PIT

Cash Flows

NPV =$-131,682,275 DCFROR= -7.5% GROR = -1.2% PWROR = -6.8% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
SN REV		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES		-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost		-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.		84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-MHT ROYALTY		-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
-Total Royalties		-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
Net Revenue		81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438
-OPER COSTS		-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Total Oper Costs		-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Dev, IDC	-9,493,848						
-Depreciation	-4,181,910	-7,574,143	-7,279,346	-7,046,159	-6,336,773	-5,882,830	-5,994,542
-Amortization	-2,441,275	-813,758	-813,758				
-Write Off							
Before Depltn	-16,117,033	-8,808,623	-8,513,827	-7,466,881	-6,757,495	-6,303,552	-6,415,264
Percent Depln		12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866
-Total D,D & A	-16,117,033	-8,387,901	-8,093,105	-7,046,159	-6,336,773	-5,882,830	-5,994,542
Taxable	-16,117,033	-8,808,623	-8,513,827	-7,466,881	-6,757,495	-6,303,552	-6,415,264
-Tax Due	5,479,791	2,994,932	2,894,701	2,538,740	2,609,745	2,434,432	2,477,575
Net Income	-10,637,242	-5,813,691	-5,619,126	-4,928,142	-4,147,751	-3,869,120	-3,937,689
+Depreciation	4,181,910	7,574,143	7,279,346	7,046,159	6,336,773	5,882,830	5,994,542
+Amortization	2,441,275	813,758	813,758				
+Write Off							
-Capital Costs	-139,695,177		-1,690,656				-1,690,656
Cash Flow	-143,709,234	2,574,210	783,323	2,118,018	2,189,023	2,013,710	366,197

Year	7	8	9	10	11	12	13
SN REV	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-MHT ROYALTY	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
-Total Royalties	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
Net Revenue	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438
-OPER COSTS	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Total Oper Costs	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Dev, IDC							
-Depreciation	-5,926,505	-5,609,507	-5,503,841	-5,820,839	-7,759,456	-8,908,819	-7,665,606
-Amortization							
-Write Off							
Before Depltn	-6,347,227	-6,030,229	-5,924,563	-6,241,561	-8,180,178	-9,329,541	-8,086,328
Percent Depln	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866
-Total D,D & A	-5,926,505	-5,609,507	-5,503,841	-5,820,839	-7,759,456	-8,908,819	-7,665,606
Taxable	-6,347,227	-6,030,229	-5,924,563	-6,241,561	-8,180,178	-9,329,541	-8,086,328
-Tax Due	2,451,299	2,328,874	2,288,066	2,410,491	3,159,185	3,603,069	3,122,940
Net Income	-3,895,928	-3,701,354	-3,636,497	-3,831,070	-5,020,993	-5,726,472	-4,963,388
+Depreciation	5,926,505	5,609,507	5,503,841	5,820,839	7,759,456	8,908,819	7,665,606
+Amortization							
+Write Off							
-Capital Costs				-1,690,656	-18,329,514		
Cash Flow	2,030,577	1,908,152	1,867,344	299,113	-15,591,051	3,182,347	2,702,218

Year	14	15	16	17	18	19	20
SN REV	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-MHT ROYALTY	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
-Total Royalties	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685	-3,349,685
Net Revenue	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438	81,092,438
-OPER COSTS	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Total Oper Costs	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Dev, IDC							

Year	14	15	16	17	18	19	20
-Depreciation	-6,977,029	-6,660,383	-6,005,535	-5,749,714	-6,066,712	-6,172,378	-5,855,380
-Amortization							
-Write Off							
Before Depltn	-7,397,751	-7,081,105	-6,426,257	-6,170,436	-6,487,434	-6,593,100	-6,276,102
Percent Depln	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866	12,163,866
-Total D,D & A	-6,977,029	-6,660,383	-6,005,535	-5,749,714	-6,066,712	-6,172,378	-5,855,380
Taxable	-7,397,751	-7,081,105	-6,426,257	-6,170,436	-6,487,434	-6,593,100	-6,276,102
-Tax Due	2,857,011	2,734,723	2,481,821	2,383,022	2,505,447	2,546,255	2,423,831
Net Income	-4,540,740	-4,346,382	-3,944,437	-3,787,414	-3,981,987	-4,046,845	-3,852,271
+Depreciation	6,977,029	6,660,383	6,005,535	5,749,714	6,066,712	6,172,378	5,855,380
+Amortization							
+Write Off							
-Capital Costs	-1,690,656				-1,690,656		
Cash Flow	745,633	2,314,001	2,061,099	1,962,300	394,069	2,125,533	2,003,109

Year	Salvage
SN REV	
GROSS REVENUE	
Total Revenue	15,852,018
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-11,579,753
-Amortization	
-Write Off	-15,852,018
Before Depltn	-11,579,753
Percent Depln	
-Total D,D & A	-27,431,771
Taxable	-11,579,753
-Tax Due	4,472,101
Net Income	-7,107,652
+Depreciation	11,579,753
+Amortization	

Year	Salvage
+Write Off	15,852,018
-Capital Costs	
Cash Flow	20,324,119

List of Assumptions File:TINZACK.SEE Date:01/15/94 Time:17:54:48

TIN GEISEN, ZACKLY, CENTRAL ALASKA RANGE AREA, OPEN PIT

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	******** Minimum ROR,Inflation & Exponents *********					****** Tax Rates ******		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	18,329,514	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	4,655,250	MACRS	Mid Year	23.0	0			0 .....
3	04/89	2,958,173	MACRS	Mid Year	23.0	0			0 .....
4	04/89	13,060,809	MACRS	Mid Year	23.0	0			0 .....
5	04/89	11,824,358	WC	Mid Year	23.0	0			0 .....
6	04/89	1,690,656	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,690,656	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,690,656	MACRS	Mid Year	4.0	0			0 .....
9	04/89	29,101,932	MACRS	Mid Year	23.0	0			0 .....
10	04/89	4,027,660	WC	Mid Year	23.0	0			0 .....
11	04/89	18,931,744	MACRS	Mid Year	23.0	0			0 .....
12	04/89	13,562,640	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	18,329,514	MACRS	Mid Year	10.0	0			0 .....
14	04/01	1,690,656	MACRS	Mid Year	4.0	0			0 .....
15	04/05	1,690,656	MACRS	Mid Year	4.0	0			0 .....
16	04/09	1,690,656	MACRS	Mid Year	4.0	0			0 .....
17	04/89	31,046,289	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	3,240,000.00	Constant	0.000
S2	SN GRADE %	N/A:	04/92	End	0.004700	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	SN $/TONNE	N/A:	04/92	End	5,896.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
12	MINING COSTS	Annual:	04/92	End	46,777,680.00	Constant	0.000
13	MILLING COSTS	Annual:	04/92	End	15,933,600.00	Constant	0.000
14	INFRA COSTS	Annual:	04/92	End	18,101,880.00	Constant	0.000
15	TRANS COSTS	Annual:	04/92	End	700,000.00	Constant	0.000
16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

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* Project Equations *
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General Equations
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E1	SN REV	S1*S2*S7*S16*S17
E2	CU REV	S1*S3*S8*S16*S17
E3	PB REV	S1*S4*S9*S16*S17
E4	AG REV	S1*S5*S10*S16*S17
E5	AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6	GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8	OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10	MHT NPI	S20*(E6-E8)

Royalties
==========

E9	MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7	SMELTING CHARGES	S18*E6

TIN GEISEN, ZACKLY, CENTRAL ALASKA RANGE AREA, OPEN PIT

Cash Flows

NPV =$-114,399,144 DCFROR= -4.3% GROR = 0.0% PWROR = -4.0% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
SN REV		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue		85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES		-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost		-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.		84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
Net Revenue		84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-OPER COSTS		-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Total Oper Costs		-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-MHT NPI		-113,457	-113,457	-113,457	-113,457	-113,457	-113,457
-Total Sev. Ad Valor		-113,457	-113,457	-113,457	-113,457	-113,457	-113,457
-Dev, IDC	-9,493,848						
-Depreciation	-4,181,910	-7,574,143	-7,279,346	-7,046,159	-6,336,773	-5,882,830	-5,994,542
-Amortization	-2,441,275	-813,758	-813,758				
-Write Off							
Before Depltn	-16,117,033	-5,572,396	-5,277,599	-4,230,654	-3,521,268	-3,067,325	-3,179,037
Percent Depln		12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318
-Total D,D & A	-16,117,033	-8,387,901	-8,093,105	-7,046,159	-6,336,773	-5,882,830	-5,994,542
Taxable	-16,117,033	-5,572,396	-5,277,599	-4,230,654	-3,521,268	-3,067,325	-3,179,037
-Tax Due	5,479,791	1,894,615	1,794,384	1,438,422	1,359,914	1,184,601	1,227,744
Net Income	-10,637,242	-3,677,781	-3,483,215	-2,792,231	-2,161,354	-1,882,724	-1,951,293
+Depreciation	4,181,910	7,574,143	7,279,346	7,046,159	6,336,773	5,882,830	5,994,542
+Amortization	2,441,275	813,758	813,758				
+Write Off							
-Capital Costs	-139,695,177		-1,690,656				-1,690,656
Cash Flow	-143,709,234	4,710,120	2,919,233	4,253,928	4,175,419	4,000,106	2,352,593

Year	7	8	9	10	11	12	13
SN REV	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
Net Revenue	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-OPER COSTS	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Total Oper Costs	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-MHT NPI	-113,457	-113,457	-113,457	-113,457	-113,457	-113,457	-113,457
-Total Sev. Ad Valor	-113,457	-113,457	-113,457	-113,457	-113,457	-113,457	-113,457
-Dev, IDC							
-Depreciation	-5,926,505	-5,609,507	-5,503,841	-5,820,839	-7,759,456	-8,908,819	-7,665,606
-Amortization							
-Write Off							
Before Depltn	-3,110,999	-2,794,001	-2,688,335	-3,005,333	-4,943,951	-6,093,314	-4,850,100
Percent Depln	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318
-Total D,D & A	-5,926,505	-5,609,507	-5,503,841	-5,820,839	-7,759,456	-8,908,819	-7,665,606
Taxable	-3,110,999	-2,794,001	-2,688,335	-3,005,333	-4,943,951	-6,093,314	-4,850,100
-Tax Due	1,201,468	1,079,043	1,038,235	1,160,660	1,909,354	2,353,238	1,873,109
Net Income	-1,909,531	-1,714,958	-1,650,100	-1,844,674	-3,034,597	-3,740,076	-2,976,992
+Depreciation	5,926,505	5,609,507	5,503,841	5,820,839	7,759,456	8,908,819	7,665,606
+Amortization							
+Write Off							
-Capital Costs				-1,690,656	-18,329,514		
Cash Flow	4,016,973	3,894,549	3,853,741	2,285,509	-13,604,655	5,168,743	4,688,614

Year	14	15	16	17	18	19	20
SN REV	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
GROSS REVENUE	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
Total Revenue	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074	85,295,074
-SMELTING CHARGES	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
-Total Smelting Cost	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951	-852,951
Net Smelt Ret.	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
Net Revenue	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123	84,442,123
-OPER COSTS	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-Total Oper Costs	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160	-81,513,160
-MHT NPI	-113,457	-113,457	-113,457	-113,457	-113,457	-113,457	-113,457
-Total Sev. Ad Valor	-113,457	-113,457	-113,457	-113,457	-113,457	-113,457	-113,457
-Dev, IDC							
-Depreciation	-6,977,029	-6,660,383	-6,005,535	-5,749,714	-6,066,712	-6,172,378	-5,855,380
-Amortization							

Year	14	15	16	17	18	19	20
-Write Off							
Before Depltn	-4,161,524	-3,844,878	-3,190,030	-2,934,209	-3,251,207	-3,356,873	-3,039,875
Percent Depln	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318	12,666,318
-Total D,D & A	-6,977,029	-6,660,383	-6,005,535	-5,749,714	-6,066,712	-6,172,378	-5,855,380
Taxable	-4,161,524	-3,844,878	-3,190,030	-2,934,209	-3,251,207	-3,356,873	-3,039,875
-Tax Due	1,607,180	1,484,892	1,231,990	1,133,191	1,255,616	1,296,424	1,174,000
Net Income	-2,554,343	-2,359,986	-1,958,040	-1,801,017	-1,995,591	-2,060,448	-1,865,875
+Depreciation	6,977,029	6,660,383	6,005,535	5,749,714	6,066,712	6,172,378	5,855,380
+Amortization							
+Write Off							
-Capital Costs	-1,690,656				-1,690,656		
Cash Flow	2,732,030	4,300,397	4,047,495	3,948,697	2,380,465	4,111,930	3,989,505

Year	Salvage
SN REV	
GROSS REVENUE	
Total Revenue	15,852,018
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-11,579,753
-Amortization	
-Write Off	-15,852,018
Before Depltn	-11,579,753
Percent Depln	
-Total D,D & A	-27,431,771
Taxable	-11,579,753
-Tax Due	4,472,101
Net Income	-7,107,652
+Depreciation	11,579,753
+Amortization	
+Write Off	15,852,018
-Capital Costs	

Year	Salvage
Cash Flow	20,324,119

APPENDIX B-14

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

FLOURITE DEPOSITS

(NONE IDENTIFIED BY ADGGS)

APPENDIX B-15

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR NORIL`SK COPPER-NICKEL-PLATINUM GROUP ELEMENT (Cu-Ni-PGE) DEPOSITS

15. DESCRIPTIVE MODEL OF NORIL'SK Cu-Ni-PGE

By Norman J. Page

DESCRIPTION Massive to disseminated sulfides in small shallow mafic to ultramafic intrusives with an external source of sulfur.

GEOLOGICAL ENVIRONMENT

Rock Types Flood basalts, picritic intrusive rocks, picritic gabbro, norite, olivine gabbro, dolerite, intrusive and volcanic breccias. Associated with evaporites or some external source of sulfur.

Textures Ophitic, subophitic, gabbroic, cumulate.

Age Range Paleozoic.

Depositional Environment Magma has intruded through evaporites or pyritic shale, and formed sills in flood basalts during active faulting.

Tectonic Setting(s) Rift environment.

DEPOSIT DESCRIPTION

Mineralogy Pyrrhotite + pentlandite + chalcopyrite + cubanite + millerite + vallerite + pyrite + bornite + gersdorffite + sperrylite + PGE alloys + polarite + PGE tellurides, arsenides, and antimonides.

Texture/Structure Lenses, layers of massive, matrix, and disseminated sulfide.

Alteration None related to ore.

Ore Controls External source of sulfur; sulfides form persistent basal layers to intrusion and dike-like bodies into country rock; and form in fault-bounded depressions.

Geochemical Signature Ni/Cu = 1.5 to 0.5, Co/Ni = 1/16; Pt/(Pd/Ni) = 1/500.

EXAMPLES

Noril'sk, USSR (Krauss and Schmidt, 1979)

COMMENTS The Noril'sk deposits are estimated to contain a total of 1.1 billion tonnes at 0.5% Ni, 0.003% Cu, and .2 grams per tonnes Pt. Total contained metal 5.5 million tonnes Ni, 3.7 million tonnes Cu, and 220 million grams Pt. Gross value in 1987 would have been $40.0 billion. Largest individual deposits are estimated to contain 25 percent of the tonnage and the metal value.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 12.5 million tonnes per year or 35,000 tonnes per day.

Gross Value of Annual Production $500 million.

Net Present Value of 4% NSR $20.0 million times 8.514 is $170.3 million.

Comments, Assumptions, Specifications: NOR
360 day/yr operation

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Mafic-Ultramafic Cu-Ni-PGE (Noril'sk)
Total Ore Tonnage: 250 mil tons
Mining Method: Sublevel Stope/Caving
Beneficiation Method: Mobile Crusher/SAG/Float
Extraction Rate: 85%
Dilution/Waste Rate: 15%
Proposed Mine Life: 20 yrs
Proposed Daily Production: 35,000 MTPD
Maximum Ore Depth: 500 m
Stripping Ratio: -
Haulage Distance/Road Requirements: 50km haul, 15 km new roads
Distance From Power: 50km
Pre-Production Development:

Production Development:

Equipment: Jumbos, LHD's, Conveyor, Ore Hoists
Concentrate Production: 1,500 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: -
Drifting & face-m/day & sqm: -
Raises & face-m/day & sqm: .5m - 8m²
Inclines & face-m/day & sqm: -
Ore pockets/day-mtpd: -
Stope preparation/day-stopes & sqm: .05/day, 18,000m²
Ore rate-mtpd: 35,000 MTPD
Hoist depth, rate & time-m, mtph, hr/day: 500m, 2188 MTPH, 16 hrs / 500m 650 MTPH 5 hrs (SVCE)
Haul distance-m: 500m
Compressed air-cm/min: 1,225 m³/min
Ventilation-cm/min: 60,000 m³/min
Conveyor length & slope-km & %: 1 km, 10%
Water needs-cm/hr & hr/day: 63 m³/hr / 20 hrs/day
Drainage, head-cm/day & m: 10,000 m³/day, 500m
Concentrate (dry) rate-mtpd: 1,500 MTPD, 20-ods
Tails (dry) rate-mtpd: 33,500 MTPD
Production water needs-cm/day: 25,000 m³/day
Portable Power needs-kW: -
Wastewater-L/sec: 25 L/sec
Concentrate haul-km: 50 km
Employee housing-men: 100 men
Other:
Other:

B.(For Capital Costs)

Concentrate feeds-mtpd: 35000 ; 34000 mTPD
Mill operating costs-$/day: $ 197,220 /day
Working capital time-weeks: 13 weeks
Development time-days: _____
Shaft sinking & face-m & sqm: 2@500m, 65m² ; 1950m, 45m²
Drifting & face-m & sqm: -
Raises & face-m & sqm: 600 m - 8 m²
Inclines & face-m & sqm: 3,000 m - 20 m²
Ore pockets-mt: 2 @ 26,000 MTPD
Stope preparations-stopes & sqm: 6 , 18,000 m²
Dewatering; head, dys & rate-m, dys & cm/day:
500 m, 360 days, 10,000 m³/day
Rehabilitation (total tonnage)-mt: 250m:1 mt
Contractors-1 or 2: 2
Mine operating costs-$/day: $ 548,480 /day
Access roads, length & width-km & m: 15km, 15m
Airstrip length & width-m: 1,200m , 18m
Townsite cost-$: 2,793,150
Powerline length & power-km & mW: 50km, 17.4mw
Dike & Dam needs-cm/fill: 100,000 m³
Climate/Weather factors: Seve-e
Other: _____
Other: _____

OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 548,480
Mining Costs-$/yr: 197,452,800
Mining Costs-$/mt: 15.67
Milling Costs-$/day: 197,220
Milling Costs-$/yr: 70,998,120
Milling Costs-$/mt: 5.64
Infrastructure Costs-$/day: 69,280
Infrastructure Costs-$/yr: 24,939,720
Infrastructure Costs-$/mt: 1.98
Total Operating Costs-$/day: 814,970
Total Operating Costs-$/yr: 293,390,640
Total Operating Costs-$/mt: 23.29
Other: _____
Other: _____

D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 49 911.680
Heavy Equipment (fixed life)-$: 50,137,720 *
Mine Rehabilitation-$: 3,742,998 *
Engr. & Const. Mgmt.-$: 27,985,700 *
Other: _____
Remaining Mine Capital-$: 173,371,900
Total Mine Capital Cost-$: 305,150,000

MILL CAPITAL COSTS:

Mill Working Capital-$: 17,947,020
Light Vehicles (short life)-$: 2,715,840 *
Other:
Remaining Mill Capital-$: 87,777,340 ~
Total Mill Capital Cost-$: 108,440,200

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 17,256,960 *
Other:
Remaining Infrastructure Capital-$: 54,012,960 ~
Total Infrastructure Capital-$: 71,269,920

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 64,858,700 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 315,162,200 *
Sum of Total Mine, Mill & Infr. Costs-$: 481,860,120
Exploration Cost-$: 48,186,012 *

Overall Capital Cost-$: 530,046,130
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:NORSEA.SEE Date:07/26/93 Time:09:11:56

MAFIC-ULTRMAFIC CU-NI-PGE, (NORIL'SK), SOUTHEAST, SUBLEVEL STOPE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2008	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2009	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2010	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2011	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	50,137,720	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	3,742,998	MACRS	Mid Year	23.0	0			0 .....
3	04/89	27,985,700	MACRS	Mid Year	23.0	0			0 .....
4	04/89	173,371,900	MACRS	Mid Year	23.0	0			0 .....
5	04/89	49,911,680	WC	Mid Year	23.0	0			0 .....
6	04/89	2,715,840	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,715,840	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,715,840	MACRS	Mid Year	4.0	0			0 .....
9	04/89	87,777,340	MACRS	Mid Year	23.0	0			0 .....
10	04/89	17,947,020	WC	Mid Year	23.0	0			0 .....
11	04/89	17,256,960	MACRS	Mid Year	23.0	0			0 .....
12	04/89	48,186,012	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	50,137,720	MACRS	Mid Year	10.0	0			0 .....
14	04/01	2,715,840	MACRS	Mid Year	4.0	0			0 .....
15	04/05	2,715,840	MACRS	Mid Year	4.0	0			0 .....
16	04/09	2,715,840	MACRS	Mid Year	4.0	0			0 .....
17	04/89	54,012,960	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	12,600,000.00	Constant	0.000
S2	NI GRADE %	N/A:	04/92	End	0.005000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.00003	Constant	0.000
S4	PT GRADE OPT	N/A:	04/92	End	0.0065	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	NI $/TONNE	N/A:	04/92	End	8,055.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PT $/TROY OZ	N/A:	04/92	End	357.75	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	197,452,800.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	70,998,120.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	24,939,720.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	10,800,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

Project Equations

General Equations

E1 . NI REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PT REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs

E7 . SMELTING CHARGES	S18*E6

MAFIC-ULTRMAFIC CU-NI-PGE, (NORIL'SK), SOUTHEAST, SUBLEVEL STOPE

Cash Flows

NPV =$311,814,211 DCFROR= 18.1% GROR = 12.6% PWROR = 18.1% Pay Back= 5.28 MROR = 10.0%

Year	Time 0	1992	1993	1994	1995	1996	1997
NI REV		409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988
CU REV		678,366	678,366	678,366	678,366	678,366	678,366
PT REV		23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528
GROSS REVENUE		434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
Total Revenue		434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
-SMELTING CHARGES		-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
-Total Smelting Cost		-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
Net Smelt Ret.		429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
-MHT ROYALTY		-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989
-Total Royalties		-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989
Net Revenue		413,015,734	413,015,734	413,015,734	413,015,734	413,015,734	413,015,734
-OPER COSTS		-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Total Oper Costs		-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Dev, IDC	-33,730,208						
-Depreciation	-13,111,654	-23,971,105	-23,045,438	-22,288,294	-20,825,048	-19,821,942	-19,769,631
-Amortization	-8,673,482	-2,891,161	-2,891,161				
-Write Off							
Before Deplt'n	-55,515,344	81,962,828	82,888,496	86,536,800	88,000,046	89,003,153	89,055,463
100% Limit		81,962,828	82,888,496	86,536,800	88,000,046	89,003,153	89,055,463
Percent Depln		61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360
Prev Exp Expl		33,730,208					
-Depletion		-28,222,152	-61,952,360	-61,952,360	-61,952,360	-61,952,360	-61,952,360
-Total D,D & A	-55,515,344	-55,084,418	-87,888,958	-84,240,654	-82,777,408	-81,774,302	-81,721,992
Taxable	-55,515,344	53,740,677	20,936,136	24,584,440	26,047,686	27,050,792	27,103,103
-Tax Due	18,875,217	-18,271,830	-7,118,286	-8,358,710	-10,059,616	-10,447,016	-10,467,218
Net Income	-36,640,127	35,468,847	13,817,850	16,225,730	15,988,070	16,603,776	16,635,884
+Depreciation	13,111,654	23,971,105	23,045,438	22,288,294	20,825,048	19,821,942	19,769,631
+Depletion		28,222,152	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360
+Amortization	8,673,482	2,891,161	2,891,161				
+Write Off							
-Capital Costs	-499,315,922		-2,715,840				-2,715,840
Cash Flow	-514,170,913	90,553,264	98,990,968	100,466,385	98,765,478	98,378,078	95,642,036

Year	1998	1999	2000	2001	2002	2003	2004
NI REV	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988
CU REV	678,366	678,366	678,366	678,366	678,366	678,366	678,366
PT REV	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528
GROSS REVENUE	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
Total Revenue	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
-SMELTING CHARGES	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
-Total Smelting Cost	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
Net Smelt Ret.	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
-MHT ROYALTY	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989
-Total Royalties	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989
Net Revenue	413,015,734	413,015,734	413,015,734	413,015,734	413,015,734	413,015,734	413,015,734
-OPER COSTS	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Total Oper Costs	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Dev, IDC							
-Depreciation	-19,464,231	-18,955,011	-18,785,271	-19,294,491	-24,478,003	-27,979,800	-24,698,465
-Amortization							
-Write Off							
Before Depltn	89,360,864	89,870,084	90,039,824	89,530,604	84,347,092	80,845,294	84,126,629
100% Limit	89,360,864	89,870,084	90,039,824	89,530,604	84,347,092	80,845,294	84,126,629
Percent Depln	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360
Prev Exp Expl							
-Depletion	-61,952,360	-61,952,360	-61,952,360	-61,952,360	-61,952,360	-61,952,360	-61,952,360
-Total D,D & A	-81,416,591	-80,907,371	-80,737,631	-81,246,851	-86,430,363	-89,932,160	-86,650,825
Taxable	27,408,503	27,917,723	28,087,463	27,578,243	22,394,731	18,892,934	22,174,269
-Tax Due	-10,585,164	-10,781,825	-10,847,378	-10,650,718	-8,648,845	-7,296,451	-8,563,703
Net Income	16,823,339	17,135,899	17,240,085	16,927,526	13,745,886	11,596,483	13,610,566
+Depreciation	19,464,231	18,955,011	18,785,271	19,294,491	24,478,003	27,979,800	24,698,465
+Depletion	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360
+Amortization							
+Write Off							
-Capital Costs				-2,715,840	-50,137,720		
Cash Flow	98,239,930	98,043,269	97,977,716	95,458,537	50,038,529	101,528,643	100,261,391

Year	2005	2006	2007	2008	2009	2010	2011
NI REV	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988
CU REV	678,366	678,366	678,366	678,366	678,366	678,366	678,366
PT REV	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528
GROSS REVENUE	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
Total Revenue	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
-SMELTING CHARGES	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
-Total Smelting Cost	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
Net Smelt Ret.	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
-MHT ROYALTY	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989
-Total Royalties	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989	-16,758,989
Net Revenue	413,015,734	413,015,734	413,015,734	413,015,734	413,015,734	413,015,734	413,015,734
-OPER COSTS	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Total Oper Costs	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Dev, IDC							
-Depreciation	-22,457,081	-21,471,648	-20,038,289	-19,457,821	-19,967,041	-20,136,781	-19,627,561
-Amortization							
-Write Off							
Before Depltn	86,368,013	87,353,446	88,786,805	89,367,273	88,858,053	88,688,313	89,197,533
100% Limit	86,368,013	87,353,446	88,786,805	89,367,273	88,858,053	88,688,313	89,197,533
Percent Depln	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360
Prev Exp Expl							
-Depletion	-61,952,360	-61,952,360	-61,952,360	-61,952,360	-61,952,360	-61,952,360	-61,952,360
-Total D,D & A	-84,409,441	-83,424,008	-81,990,650	-81,410,181	-81,919,401	-82,089,141	-81,579,921
Taxable	24,415,653	25,401,086	26,834,445	27,414,913	26,905,693	26,735,953	27,245,173
-Tax Due	-9,429,325	-9,809,899	-10,363,463	-10,587,639	-10,390,979	-10,325,425	-10,522,086
Net Income	14,986,328	15,591,187	16,470,982	16,827,274	16,514,714	16,410,528	16,723,087
+Depreciation	22,457,081	21,471,648	20,038,289	19,457,821	19,967,041	20,136,781	19,627,561
+Depletion	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360	61,952,360
+Amortization							
+Write Off							
-Capital Costs	-2,715,840				-2,715,840		
Cash Flow	96,679,929	99,015,195	98,461,632	98,237,455	95,718,276	98,499,669	98,303,008

Year	Salvage
NI REV	
CU REV	
PT REV	
GROSS REVENUE	
Total Revenue	67,858,700
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-Dev, IDC	
-Depreciation	-41,073,734
-Amortization	
-Write Off	-67,858,700
Before Depltn	-41,073,734
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-108,932,434
Taxable	-41,073,734
-Tax Due	15,862,676
Net Income	-25,211,058
+Depreciation	41,073,734
+Depletion	
+Amortization	
+Write Off	67,858,700
-Capital Costs	
Cash Flow	83,721,376

List of Assumptions File:NORSEA.SEE Date:01/04/80 Time:00:09:21

MAFIC-ULTRMAFIC CU-NI-PGE, (NORIL'SK), SOUTHEAST, SUBLEVEL STOPE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	50,137,720	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	3,742,998	MACRS	Mid Year	23.0	0			0 .....
3	04/89	27,985,700	MACRS	Mid Year	23.0	0			0 .....
4	04/89	173,371,900	MACRS	Mid Year	23.0	0			0 .....
5	04/89	49,911,680	WC	Mid Year	23.0	0			0 .....
6	04/89	2,715,840	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,715,840	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,715,840	MACRS	Mid Year	4.0	0			0 .....
9	04/89	87,777,340	MACRS	Mid Year	23.0	0			0 .....
10	04/89	17,947,020	WC	Mid Year	23.0	0			0 .....
11	04/89	17,256,960	MACRS	Mid Year	23.0	0			0 .....
12	04/89	48,186,012	EXPL-X	Mid Year	23.0	0			0 .....
13	04/02	50,137,720	MACRS	Mid Year	10.0	0			0 .....
14	04/01	2,715,840	MACRS	Mid Year	4.0	0			0 .....
15	04/05	2,715,840	MACRS	Mid Year	4.0	0			0 .....
16	04/09	2,715,840	MACRS	Mid Year	4.0	0			0 .....
17	04/89	54,012,960	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	12,600,000.00	Constant	0.000
S2	NI GRADE %	N/A:	04/92	End	0.005000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.00003	Constant	0.000
S4	PT GRADE OPT	N/A:	04/92	End	0.0065	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	NI $/TONNE	N/A:	04/92	End	8,055.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S9	PT $/TROY OZ	N/A:	04/92	End	357.75	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	197,452,800.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	70,998,120.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	24,939,720.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	10,800,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.85	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . NI REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PT REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

MAFIC-ULTRMAFIC CU-NI-PGE, (NORIL'SK), SOUTHEAST, SUBLEVEL STOPE

Cash Flows

NPV =$388,476,406 DCFROR= 19.9% GROR = 13.1% PWROR = 19.9% Pay Back= 4.83 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
NI REV		409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988
CU REV		678,366	678,366	678,366	678,366	678,366	678,366
PT REV		23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528
GROSS REVENUE		434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
Total Revenue		434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
-SMELTING CHARGES		-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
-Total Smelting Cost		-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
Net Smelt Ret.		429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
Net Revenue		429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
-OPER COSTS		-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Total Oper Costs		-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-MHT NPI		-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757
-Total Sev. Ad Valor		-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757
-Dev, IDC	-33,730,208						
-Depreciation	-13,111,654	-23,971,105	-23,045,438	-22,288,294	-20,825,048	-19,821,942	-19,769,631
-Amortization	-8,673,482	-2,891,161	-2,891,161				
-Write Off							
Before Depltn	-55,515,344	94,824,060	95,749,728	99,398,032	100,861,278	101,864,384	101,916,694
100% Limit		94,824,060	95,749,728	99,398,032	100,861,278	101,864,384	101,916,694
Percent Depln		64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208
Prev Exp Expl		33,730,208					
-Depletion		-30,736,000	-64,466,208	-64,466,208	-64,466,208	-64,466,208	-64,466,208
-Total D,D & A	-55,515,344	-57,598,266	-90,402,807	-86,754,503	-85,291,257	-84,288,150	-84,235,840
Taxable	-55,515,344	64,088,060	31,283,519	34,931,823	36,395,069	37,398,176	37,450,486
-Tax Due	18,875,217	-21,789,940	-10,636,397	-11,876,820	-14,055,776	-14,443,175	-14,463,378
Net Income	-36,640,127	42,298,120	20,647,123	23,055,003	22,339,293	22,955,000	22,987,108
+Depreciation	13,111,654	23,971,105	23,045,438	22,288,294	20,825,048	19,821,942	19,769,631
+Depletion		30,736,000	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208
+Amortization	8,673,482	2,891,161	2,891,161				
+Write Off							
-Capital Costs	-499,315,922		-2,715,840				-2,715,840
Cash Flow	-514,170,913	99,896,385	108,334,089	109,809,506	107,630,550	107,243,150	104,507,108

Year	7	8	9	10	11	12	13
NI REV	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988
CU REV	678,366	678,366	678,366	678,366	678,366	678,366	678,366
PT REV	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528
GROSS REVENUE	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
Total Revenue	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
-SMELTING CHARGES	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
-Total Smelting Cost	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
Net Smelt Ret.	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
Net Revenue	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
-OPER COSTS	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Total Oper Costs	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-MMT NPI	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757
-Total Sev. Ad Valor	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757
-Dev, IDC							
-Depreciation	-19,464,231	-18,955,011	-18,785,271	-19,294,491	-24,478,003	-27,979,800	-24,698,465
-Amortization							
-Write Off							
Before Depltn	102,222,095	102,731,315	102,901,055	102,391,835	97,208,323	93,706,526	96,987,861
100% Limit	102,222,095	102,731,315	102,901,055	102,391,835	97,208,323	93,706,526	96,987,861
Percent Depln	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208
Prev Exp Expl							
-Depletion	-64,466,208	-64,466,208	-64,466,208	-64,466,208	-64,466,208	-64,466,208	-64,466,208
-Total D,D & A	-83,930,439	-83,421,219	-83,251,479	-83,760,699	-88,944,211	-92,446,009	-89,164,673
Taxable	37,755,887	38,265,107	38,434,847	37,925,627	32,742,115	29,240,317	32,521,653
-Tax Due	-14,581,323	-14,777,984	-14,843,538	-14,646,877	-12,645,005	-11,292,611	-12,559,862
Net Income	23,174,563	23,487,123	23,591,309	23,278,750	20,097,110	17,947,707	19,961,790
+Depreciation	19,464,231	18,955,011	18,785,271	19,294,491	24,478,003	27,979,800	24,698,465
+Depletion	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208
+Amortization							
+Write Off							
-Capital Costs				-2,715,840	-50,137,720		
Cash Flow	107,105,002	106,908,342	106,842,788	104,323,609	58,903,601	110,393,715	109,126,464

Year	14	15	16	17	18	19	20
NI REV	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988	409,777,988
CU REV	678,366	678,366	678,366	678,366	678,366	678,366	678,366
PT REV	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528	23,659,528
GROSS REVENUE	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
Total Revenue	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882	434,115,882
-SMELTING CHARGES	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
-Total Smelting Cost	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159	-4,341,159
Net Smelt Ret.	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
Net Revenue	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723	429,774,723
-OPER COSTS	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-Total Oper Costs	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640	-304,190,640
-MHT NPI	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757
-Total Sev. Ad Valor	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757	-3,897,757
-Dev, IDC							
-Depreciation	-22,457,081	-21,471,648	-20,038,289	-19,457,821	-19,967,041	-20,136,781	-19,627,561
-Amortization							
-Write Off							
Before Depltn	99,229,245	100,214,678	101,648,036	102,228,505	101,719,285	101,549,545	102,058,765
100% Limit	99,229,245	100,214,678	101,648,036	102,228,505	101,719,285	101,549,545	102,058,765
Percent Depln	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208
Prev Exp Expl							
-Depletion	-64,466,208	-64,466,208	-64,466,208	-64,466,208	-64,466,208	-64,466,208	-64,466,208
-Total D,D & A	-86,923,289	-85,937,856	-84,504,498	-83,924,030	-84,433,250	-84,602,990	-84,093,770
Taxable	34,763,036	35,748,470	37,181,828	37,762,296	37,253,076	37,083,336	37,592,556
-Tax Due	-13,425,485	-13,806,059	-14,359,622	-14,583,799	-14,387,138	-14,321,584	-14,518,245
Net Income	21,337,552	21,942,411	22,822,206	23,178,497	22,865,938	22,761,752	23,074,311
+Depreciation	22,457,081	21,471,648	20,038,289	19,457,821	19,967,041	20,136,781	19,627,561
+Depletion	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208	64,466,208
+Amortization							
+Write Off							
-Capital Costs	-2,715,840				-2,715,840		
Cash Flow	105,545,001	107,880,267	107,326,704	107,102,527	104,583,348	107,364,741	107,168,081

Year	Salvage
NI REV	
CU REV	
PT REV	
GROSS REVENUE	
Total Revenue	67,858,700
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	-41,073,734
-Amortization	
-Write Off	-67,858,700
Before Depltn	-41,073,734
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-108,932,434
Taxable	-41,073,734
-Tax Due	15,862,676
Net Income	-25,211,058
+Depreciation	41,073,734
+Depletion	
+Amortization	
+Write Off	67,858,700
-Capital Costs	
Cash Flow	83,721,376

APPENDIX B-16

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR PODIFORM CHROMITE (Cr) DEPOSITS

16. DESCRIPTIVE MODEL OF PODIFORM CHROMITE
By John P. Albers

APPROXIMATE SYNONYM Alpine type chromite (Thayer, 1964).

DESCRIPTION Podlike masses of chromitite in ultramafic parts of ophiolite complexes.

GENERAL REFERENCES Dickey (1975).

GEOLOGICAL ENVIRONMENT

Rock Types Highly deformed dunite and harzburgite of ophiolite complexes; commonly serpentinized.

Textures Nodular, orbicular, gneissic, cumulate, pull-apart; most relict textures are modified or destroyed by flowage at magmatic temperatures.

Age Range Phanerozoic.

Depositional Environment Lower part of oceanic lithosphere.

Tectonic Setting(s) Magmatic cumulates in elongate magma pockets along spreading plate boundaries. Subsequently exposed in accreted terranes as part of ophiolite assemblage.

Associated Deposit Types Limassol Forest Co-Ni-S-As.

DEPOSIT DESCRIPTION

Mineralogy Chromite ± ferrichromite ± magnetite ± Ru-Os-Ir alloys ± laurite.

Texture/Structure Massive coarse-grained to finely disseminated.

Alteration None related to ore.

Ore Controls Restricted to dunite bodies in tectonized harzburgite or lower portions of ultramafic cumulate.

Weathering Highly resistant to weathering and oxidation.

Geochemical Signature None recognized.

EXAMPLES

High Plateau, Del Norte Cty, USCA	(Wells and others, 1946)
Coto Mine, Luzon, PLPN	(LeBlanc and Violette, 1983)

GRADE AND TONNAGE MODEL OF MINOR PODIFORM CHROMITE
After Donald A. Singer, Norman J. Page and Bruce R. Lipin

DATA REFERENCES Page and others (1979); Page and others (1982, 1984).

COMMENTS Upper ten percent of the deposits contain a minimum of 0.2 million tonnes at 52% Cr_2O_3. Total contained metal is 104,000 tonnes. Gross metal value in 1987 would have been $493 million.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Two years at 250 tonnes per day.

Gross Value of Annual Production $247 million.

Net Present Value of 4% NSR $9.9 million times 1.736 is $17.2 million.

Comments, Assumptions, Specifications: CHRM
C&S upper 10% data, West Twin peaks (Anchorage area)

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Podiform Chromite
Total Ore Tonnage: 200,000 MT
Mining Method: Open Pit
Beneficiation Method: Crush, Wash & Screen, Dia undersize
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 2 yrs
Proposed Daily Production: 270 MTPD
Maximum Ore Depth: 80 m
Stripping Ratio: 10:1
Haulage Distance/Road Requirements:
5km new road, 60km haul to port
Distance From Power: 5 Km
Pre-Production Development:

Production Development:

Equipment: Diesel Shovels/F.E.L. Trucks
Concentrate Production: 200 MTPD of 70% Cr_2O_3

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .014 ha/day
Burden/Waste rate-mtpd: 2700 MTPD
Burden/Waste depth & haul-m: 30m, 750m
Ore rate-mtpd: 270 MTPD
Ore depth & haul-m: 45 m, 1,200 m
Conveyor length & slope-km & %: —
Water needs-cm/day: 200 m³/day
Drainage, head & distance-cm/day, m & km:
None
Concentrate (dry) rate-mtpd: 200 MTPD
Tails (dry) rate-mtpd: 70 MTPD
Production water needs-cm/day: 100 m³/day m.u., 800 m³/day recycle
Portable Power needs-kW: —
Wastewater-L/sec: 2 L/sec
Concentrate haul-km: 60 km
Employee housing-men: None
Other: $698/day Wash & Screen
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 270 mtpd, 80 mtpd
Mill operating costs-$/day:
Working capital time-weeks: 13 weeks
Development time-days: 40 days @ 3,000 MTPD
Clearing needs-ha: 10 ha

Stripping needs-mt: 120,000 MT
Stripping depth & haul-m: 10m, 600m
Restoration area-ha: 20 ha
Contractors-1 or 2: 1
Mine operating costs-$/day:
Access roads, length & width-km & m: 5km 10m
Airstrip length & width-m: None
Powerline length & power-km & mW: 5km, .8mW
Dike & Dam needs-cm/fill: 50,000 MT
Climate/Weather factors: Severe
Other: $168,204 - Wash Recovery Plant
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 27,510
Mining Costs-$/yr: 9,903,600
Mining Costs-$/mt: 101.89
Milling Costs-$/day: 8567
Milling Costs-$/yr: 3,084,120
Milling Costs-$/mt: 31.73
Infrastructure Costs-$/day: 4547
Infrastructure Costs-$/yr: 1,636,920
Infrastructure Costs-$/mt: 16.84
Total Operating Costs-$/day: 40,624
Total Operating Costs-$/yr: 14,624,640
Total Operating Costs-$/mt: 150.46
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 2503,410
Heavy Equipment (fixed life)-$: 4,252,209 *
Mine Rehabilitation-$: 186,210 *
Engr. & Const. Mgmt.-$: 733,900 *
Other:
Remaining Mine Capital-$: 1,054,728
Total Mine Capital-$: 8730457

MILL CAPITAL COSTS:

Mill Working Capital-$: 779,597
Light Vehicles (short life)-$: 497,245 *
Other:
Remaining Mill Capital-$: 2434,719
Total Mill Capital-$: 3,711,561

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 3,540,271 *

Other: _____
Remaining Infrastructure Capital-$: 2,440,882
Total Infrastructure Capital-$: 5,981,153

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 3,283,007 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of *)-$: 5,930,329 *
Sum of Total Mine, Mill & Infr. Costs-$: 18,423,171
Exploration Cost-$: 1,842,317 *

Overall Capital Cost-$: 20,265,488
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:CHRMKE.SEE Date:03/28/94 Time:12:42:05

PODIFORM CHROMITE, KENAI PENINSULA, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 2
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	4,252,209	MACRS	Mid Year	10.0	0		0	.....
2	04/89	186,210	MACRS	Mid Year	2.0	0		0	.....
3	04/89	733,900	MACRS	Mid Year	2.0	0		0	.....
4	04/89	1,054,728	MACRS	Mid Year	2.0	0		0	.....
5	04/89	2,503,410	WC	Mid Year	2.0	0		0	.....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
6	04/89	497,245	MACRS	Mid Year	4.0	0			0 .....
7	04/89	2,434,719	MACRS	Mid Year	2.0	0			0 .....
8	04/89	779,597	WC	Mid Year	2.0	0			0 .....
9	04/89	3,540,271	MACRS	Mid Year	2.0	0			0 .....
10	04/89	2,440,882	MACRS	Mid Year	2.0	0			0 .....
11	04/89	1,842,317	EXPL-X	Mid Year	2.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	98,550.00	Constant	0.000
S2	CR2O3 %	N/A:	04/92	End	0.520	Constant	0.000
S3	CR2O3 $/TONNE	N/A:	04/92	End	1,100.000	Constant	0.000
S4	MINING COSTS	Annual:	04/92	End	9,903,600.000	Constant	0.000
S5	MILLING COSTS	Annual:	04/92	End	3,084,120.00	Constant	0.000
S6	INFRA COSTS	Annual:	04/92	End	1,636,920.000	Constant	0.000
S7	TRANS COSTS	Annual:	04/92	End	600,000.00	Constant	0.000
S8	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S9	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S10	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S11	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000
S12		Annual:	04/92	End	0.00	Constant	0.000
S13		Annual:	04/92	End	0.00	Constant	0.000
S14		Annual:	04/92	End	0.00	Constant	0.000
S15		Annual:	04/92	End	0.00	Constant	0.000
S16		N/A:	04/92	End	0.00	Constant	0.000
S17		N/A:	04/92	End	0.00	Constant	0.000
S18		N/A:	04/92	End	0.00	Constant	0.000
S19		N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========
E1 . CR2O3 REV S1*S2*S3*S8*S9

Revenues
==========
E6 . GROSS REVENUE E1

Operating Costs

E8 . OPER COSTS	S4+S5+S6+S7

Equations continued

Special Taxes

E2 . MHT NPI	S11*(E6-E8)

Royalties

E9 . MHT ROYALTY	S10*(E6-S7)

PODIFORM CHROMITE, KENAI PENINSULA, OPEN PIT

Cash Flows

NPV =$24,111,483 DCFROR=100.3% GROR = 68.9% PWROR =100.3% Pay Back= 0.78 MROR = 10.0%

Year	Time 0	1	2	Salvage
CR2O3 REV		45,660,186	45,660,186	
GROSS REVENUE		45,660,186	45,660,186	
Total Revenue		45,660,186	45,660,186	3,283,007
Net Smelt Ret.		45,660,186	45,660,186	
-MHT ROYALTY		-1,802,407	-1,802,407	
-Total Royalties		-1,802,407	-1,802,407	
Net Revenue		43,857,779	43,857,779	
-OPER COSTS		-15,224,640	-15,224,640	
-Total Oper Costs		-15,224,640	-15,224,640	
-Dev, IDC	-1,289,622			
-Depreciation	-5,744,887	-6,147,219	-705,552	-2,542,506
-Amortization	-331,617	-110,539	-110,539	
-Write Off				-3,283,007
Before Depltn	-7,366,126	22,375,380	27,817,048	-2,542,506
100% Limit		22,375,380	27,817,048	
Percent Depln		6,578,667	6,578,667	
Prev Exp Expl		1,289,622		
-Depletion		-5,289,045	-6,578,667	
-Total D,D & A	-7,366,126	-11,546,803	-7,394,757	-5,825,513
Taxable	-7,366,126	17,086,335	21,238,381	-2,542,506
-Tax Due	2,504,483	-5,809,354	-7,221,050	864,452
Net Income	-4,861,643	11,276,981	14,017,332	-1,678,054
+Depreciation	5,744,887	6,147,219	705,552	2,542,506
+Depletion		5,289,045	6,578,667	
+Amortization	331,617	110,539	110,539	
+Write Off				3,283,007
-Capital Costs	-18,975,866			
Cash Flow	-17,761,005	22,823,785	21,412,089	4,147,459

PODIFORM CHROMITE, KENAI PENINSULA, OPEN PIT

Cash Flows

NPV =$25,289,718 DCFROR=104.5% GROR = 71.3% PWROR =104.5% Pay Back= 0.76 MROR = 10.0%

Year	Time 0	1	2	Salvage
CR203 REV		45,660,186	45,660,186	
GROSS REVENUE		45,660,186	45,660,186	
Total Revenue		45,660,186	45,660,186	3,283,007
Net Smelt Ret.		45,660,186	45,660,186	
Net Revenue		45,660,186	45,660,186	
-OPER COSTS		-15,224,640	-15,224,640	
-Total Oper Costs		-15,224,640	-15,224,640	
-MHT NPI		-913,066	-913,066	
-Total Sev. Ad Valor		-913,066	-913,066	
-Dev, IDC	-1,289,622			
-Depreciation	-5,744,887	-6,147,219	-705,552	-2,542,506
-Amortization	-331,617	-110,539	-110,539	
-Write Off				-3,283,007
Before Depltn	-7,366,126	23,264,721	28,706,389	-2,542,506
100% Limit		23,264,721	28,706,389	
Percent Depln		6,849,028	6,849,028	
Prev Exp Expl		1,289,622		
-Depletion		-5,559,406	-6,849,028	
-Total D,D & A	-7,366,126	-11,817,165	-7,665,118	-5,825,513
Taxable	-7,366,126	17,705,315	21,857,361	-2,542,506
-Tax Due	2,504,483	-6,019,807	-7,431,503	864,452
Net Income	-4,861,643	11,685,508	14,425,858	-1,678,054
+Depreciation	5,744,887	6,147,219	705,552	2,542,506
+Depletion		5,559,406	6,849,028	
+Amortization	331,617	110,539	110,539	
+Write Off				3,283,007
-Capital Costs	-18,975,866			
Cash Flow	-17,761,005	23,502,672	22,090,977	4,147,459

List of Assumptions File:CHRMKE.SEE Date:12/28/93 Time:22:12:24

PODIFORM CHROMITE, KENAI PENINSULA, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 2
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	4,252,209	MACRS	Mid Year	10.0	0		0	.....
2	04/89	186,210	MACRS	Mid Year	2.0	0		0	.....
3	04/89	733,900	MACRS	Mid Year	2.0	0		0	.....
4	04/89	1,054,728	MACRS	Mid Year	2.0	0		0	.....
5	04/89	2,503,410	WC	Mid Year	2.0	0		0	.....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount	Rec'd	Date Rec'd
6	04/89	497,245	MACRS	Mid Year	4.0	0			0	.....
7	.....	0	MACRS	Mid Year	7.0	0			0	.....
8	.....	0	MACRS	Mid Year	7.0	0			0	.....
9	04/89	2,434,719	MACRS	Mid Year	2.0	0			0	.....
10	04/89	779,597	WC	Mid Year	2.0	0			0	.....
11	04/89	3,540,271	MACRS	Mid Year	2.0	0			0	.....
12	04/89	2,440,882	MACRS	Mid Year	2.0	0			0	.....
13	04/89	1,842,317	EXPL-X	Mid Year	2.0	0			0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	98,550.00	Constant	0.000
S2	CR2O3 %	N/A:	04/92	End	0.520	Constant	0.000
S3	CR2O3 $/TONNE	N/A:	04/92	End	1,100.000	Constant	0.000
S4	MINING COSTS	Annual:	04/92	End	9,903,600.000	Constant	0.000
S5	MILLING COSTS	Annual:	04/92	End	3,084,120.00	Constant	0.000
S6	INFRA COSTS	Annual:	04/92	End	1,636,920.000	Constant	0.000
S7	TRANS COSTS	Annual:	04/92	End	600,000.00	Constant	0.000
S8	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S9	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S10	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S11	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000
S12		Annual:	04/92	End	0.00	Constant	0.000
S13		Annual:	04/92	End	0.00	Constant	0.000
S14		Annual:	04/92	End	0.00	Constant	0.000
S15		Annual:	04/92	End	0.00	Constant	0.000
S16		N/A:	04/92	End	0.00	Constant	0.000
S17		N/A:	04/92	End	0.00	Constant	0.000
S18		N/A:	04/92	End	0.00	Constant	0.000
S19		N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========
E1 . CR2O3 REV S1*S2*S3*S8*S9

Revenues
==========

E6 . GROSS REVENUE E1

Equations continued

Operating Costs

E8 . OPER COSTS S4+S5+S6+S7

Special Taxes

E2 . MHT NPI S11*(E6-E8)

Royalties

E9 . MHT ROYALTY S10*(E6-S7)

PODIFORM CHROMITE, KENAI PENINSULA, OPEN PIT

Cash Flows

NPV =$24,111,483 DCFROR=100.3% GROR = 68.9% PWROR =100.3% Pay Back= 0.78 MROR = 10.0%

Year	Time 0	1	2	Salvage
CR2O3 REV		45,660,186	45,660,186	
GROSS REVENUE		45,660,186	45,660,186	
Total Revenue		45,660,186	45,660,186	3,283,007
Net Smelt Ret.		45,660,186	45,660,186	
-MHT ROYALTY		-1,802,407	-1,802,407	
-Total Royalties		-1,802,407	-1,802,407	
Net Revenue		43,857,779	43,857,779	
-OPER COSTS		-15,224,640	-15,224,640	
-Total Oper Costs		-15,224,640	-15,224,640	
-Dev, IDC	-1,289,622			
-Depreciation	-5,744,887	-6,147,219	-705,552	-2,542,506
-Amortization	-331,617	-110,539	-110,539	
-Write Off				-3,283,007
Before Depltn	-7,366,126	22,375,380	27,817,048	-2,542,506
100% Limit		22,375,380	27,817,048	
Percent Depln		6,578,667	6,578,667	
Prev Exp Expl		1,289,622		
-Depletion		-5,289,045	-6,578,667	
-Total D,D & A	-7,366,126	-11,546,803	-7,394,757	-5,825,513
Taxable	-7,366,126	17,086,335	21,238,381	-2,542,506
-Tax Due	2,504,483	-5,809,354	-7,221,050	864,452
Net Income	-4,861,643	11,276,981	14,017,332	-1,678,054
+Depreciation	5,744,887	6,147,219	705,552	2,542,506
+Depletion		5,289,045	6,578,667	
+Amortization	331,617	110,539	110,539	
+Write Off				3,283,007
-Capital Costs	-18,975,866			
Cash Flow	-17,761,005	22,823,785	21,412,089	4,147,459

PODIFORM CHROMITE, KENAI PENINSULA, OPEN PIT

Cash Flows

NPV =$25,289,718 DCFROR=104.5% GROR = 71.3% PWROR =104.5% Pay Back= 0.76 MROR = 10.0%

Year	Time 0	1	2	Salvage
CR2O3 REV		45,660,186	45,660,186	
GROSS REVENUE		45,660,186	45,660,186	
Total Revenue		45,660,186	45,660,186	3,283,007
Net Smelt Ret.		45,660,186	45,660,186	
Net Revenue		45,660,186	45,660,186	
-OPER COSTS		-15,224,640	-15,224,640	
-Total Oper Costs		-15,224,640	-15,224,640	
-MHT NPI		-913,066	-913,066	
-Total Sev. Ad Valor		-913,066	-913,066	
-Dev, IDC	-1,289,622			
-Depreciation	-5,744,887	-6,147,219	-705,552	-2,542,506
-Amortization	-331,617	-110,539	-110,539	
-Write Off				-3,283,007
Before Depltn	-7,366,126	23,264,721	28,706,389	-2,542,506
100% Limit		23,264,721	28,706,389	
Percent Depln		6,849,028	6,849,028	
Prev Exp Expl		1,289,622		
-Depletion		-5,559,406	-6,849,028	
-Total D,D & A	-7,366,126	-11,817,165	-7,665,118	-5,825,513
Taxable	-7,366,126	17,705,315	21,857,361	-2,542,506
-Tax Due	2,504,483	-6,019,807	-7,431,503	864,452
Net Income	-4,861,643	11,685,508	14,425,858	-1,678,054
+Depreciation	5,744,887	6,147,219	705,552	2,542,506
+Depletion		5,559,406	6,849,028	
+Amortization	331,617	110,539	110,539	
+Write Off				3,283,007
-Capital Costs	-18,975,866			
Cash Flow	-17,761,005	23,502,672	22,090,977	4,147,459

APPENDIX B-17

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR ASBESTOS DEPOSITS

(NONE IDENTIFIED BY ADGGS)

APPENDIX B-18

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

SHALE HOSTED AND RED BED COPPER (Cu) DEPOSITS

(NONE IDENTIFIED BY ADGGS)

APPENDIX B-19

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

BANDED IRON (Fe) FORMATION DEPOSITS

(NONE IDENTIFIED BY ADGGS)

APPENDIX B-20

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

IRONSTONE (Fe) DEPOSITS

(NONE IDENTIFIED BY ADGGS)

APPENDIX B-21

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

CARBONATE HOSTED ZINC-LEAD (Zn-Pb) DEPOSITS

(NONE IDENTIFIED BY ADGGS)

APPENDIX B-22

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

CARBONATE HOSTED COPPER (Cu) DEPOSITS

(NONE IDENTIFIED BY ADGGS)

APPENDIX B-23

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR SANDSTONE HOSTED URANIUM (U) DEPOSITS

23. DESCRIPTIVE MODEL OF SANDSTONE U

By Christine E. Turner-Peterson and Carroll A. Hodges

APPROXIMATE SYNONYM Tabular U ore, roll front U.

DESCRIPTION Microcrystalline uranium oxides and silicates deposited during diagenesis in localized reduced environments within fine- to medium-grained sandstone beds; some uranium oxides also deposited during redistribution by ground water at interface between oxidized and reduced ground.

GENERAL REFERENCES Turner-Peterson and Fishman (1986), Granger and Warren (1969).

GEOLOGICAL ENVIRONMENT

Rock Types Host rocks are feldspathic or tuffaceous sandstone. Pyroclastic material is felsic in composition. Mudstone or shale commonly above and/or below sandstones hosting diagenetic ores.

Textures Permeable -- medium to coarse grained; highly permeable at time of mineralization, subsequently restricted by cementation and alteration.

Age Range Most deposits are Devonian and younger. Secondary roll-front deposits mainly Tertiary.

Depositional Environment Continental-basin margins, fluvial channels, braided stream deposits, stable coastal plain. Contemporaneous felsic volcanism or eroding felsic plutons are sources of U. In tabular ore, source rocks for ore-related fluids are commonly in overlying or underlying mud-flat facies sediments.

Tectonic Setting(s) Stable platform or foreland-interior basin, shelf margin; adjacent major uplifts provide favorable topographic conditions.

Associated Deposit Types Sediment-hosted V may be intimately associated with U. Sediment-hosted Cu may be in similar host rocks and may contain U.

DEPOSIT DESCRIPTION

Mineralogy Uraninite, coffinite, pyrite in organic-rich horizons. Chlorite common.

Texture/Structure Stratabound deposits. Tabular U -- intimately admixed with pore-filling humin in tabular lenses suspended within reduced sandstone. Replacement of wood and other carbonaceous material. Roll front U -- in crescentic lens that cuts across bedding, at interface between oxidized and reduced ground.

Alteration Tabular -- Humic acid mineralizing fluids leach iron from detrital magnetite-ilmenite leaving relict TiO_2 minerals in diagenetic ores. Roll front -- Oxidized iron minerals in rock updip, reduced iron minerals in rock downdip from redox interface.

Ore Controls Permeability. Tabular -- Humin or carbonaceous material the main concentrator of U. Roll front -- S species, "sour" gas, FeS_2. Bedding sequences with low dips; felsic plutons or felsic tuffaceous sediments adjacent to or above host rock are favorable source for U. Regional redox interface marks locus of ore deposition.

Weathering Oxidation of primary uraninite or coffinite to a variety of minerals, notably yellow carnotite as bloom in V-rich ores.

Geochemical Signature U, V, Mo, Se, locally Cu, Ag. Anomalous radioactivity from daughter products of U. Low magnetic susceptibility in and near tabular ores.

EXAMPLES

Colorado Plateau	(Fischer, 1974)
Grants, USNM	(Turner-Peterson and Fishman, 1986)
Texas Gulf Coast	(Reynolds and Goldhaber, 1983)
USWY	(Granger and Warren, 1969)

COMMENTS The Grants district of New Mexico contains 60 million tons of ore at 0.2% U, and 0.08% V. Total contained metal is 120,000 tonnes U and 50,000 tonnes V. Gross metal value in 1987 would have been $4.3 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 3 million tonnes per year or 8,500 tonnes per day.

Gross Value of Annual Production $215 million.

Net Present Value of 4% NSR $8.6 million times 8.514 is $73.2 million.

Comments, Assumptions, Specifications: SSU
Walker Dome Area (OTL: Hardy Quad), Assumed: no significant additional handling costs associated with Yellowcake. Grants: N.M. model.

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Sandstone Uranium
Total Ore Tonnage: 60 mil mt
Mining Method: Open-Cast / Strip
Beneficiation Method: Crush, Grind, Leach
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 20 yrs
Proposed Daily Production: 8,300 MTPD
Maximum Ore Depth: 75 m
Stripping Ratio: 6:1
Haulage Distance/Road Requirements:
15 km new road. 15 km haul to rail
Distance From Power: 15 km
Pre-Production Development: Strip 2.0 mil mt

Production Development:

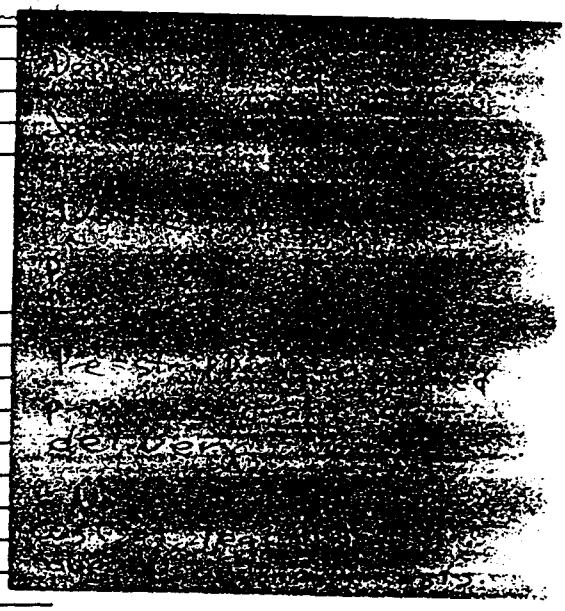
Equipment: Shovels, Trucks, Dragline
Concentrate Production: 25 MTPD

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .03 ha/day
Burden/Waste rate-mtpd: 50,000 MTPD
Burden/Waste depth & haul-m: 35 m
Ore rate-mtpd: 8,300 MTPD
Ore depth & haul-m: 70 m, 2,000 m
Conveyor length & slope-km & %: —
Water needs-cm/day: 4,080 m³/day
Drainage, head & distance-cm/day, m & km:
5,000 m³/day, 100 m, 1.2 km
Concentrate (dry) rate-mtpd: 25 MTPD
Tails (dry) rate-mtpd: 8,275 MTPD
Production water needs-cm/day: 3,300 m³/day M.U., 14,500 m³/day recycle
Portable Power needs-kW: —
Wastewater-L/sec: 10 L/sec
Concentrate haul-km: 15 km to rail / 440 km to coast
Employee housing-men: None
Other: $122,114/day Yellowcake / Reductive Leaching
Other: $931/day Rail Haulage

B.(For Capital Costs)
Concentrate feeds-mtpd: 8,300 MTPD
Mill operating costs-$/day: $158,544/day
Working capital time-weeks: 13
Development time-days: 250 days @ 8,000 MTPD
Clearing needs-ha: 85 ha

Stripping needs-mt: 2.0 ~ 3 mt
Stripping depth & haul-m: 30 m, 2,000 m
Restoration area-ha: 220 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $95,419 /day
Access roads, length & width-km & m: 15 km 15 m
Airstrip length & width-m: 1500 m 22 m
Powerline length & power-km & mW: 15km 30
Dike & Dam needs-cm/fill: 100 000 m3/day
Climate/Weather factors: Severe
Other: $ 37 162.947 Lease
Other:



OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 95,419
Mining Costs-$/yr: 34,350,840
Mining Costs-$/mt: 11.50
Milling Costs-$/day: 158,544
Milling Costs-$/yr: 57,075,840
Milling Costs-$/mt: 19.10
Infrastructure Costs-$/day: 16,532
Infrastructure Costs-$/yr: 5,951,520
Infrastructure Costs-$/mt: 1.99
Total Operating Costs-$/day: 270,495
Total Operating Costs-$/yr: 97 378 200
Total Operating Costs-$/mt: 32.59
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 8,683,129
Heavy Equipment (fixed life)-$: 9,224,470 *
Mine Rehabilitation-$: 2606.940 *
Engr. & Const. Mgmt.-$: 3048.441 *
Other: D-sealine 35,029,122 *
Remaining Mine Capital-$: 10,235,220
Total Mine Capital-$: 68827,322

MILL CAPITAL COSTS:

Mill Working Capital-$: 14427504
Light Vehicles (short life)-$: 1643548 *
Other:
Remaining Mill Capital-$: 65 805 988
Total Mill Capital-$: 81,877.040

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 19325,859 *

Other:_____
Remaining Infrastructure Capital-$: 11,113,451
Total Infrastructure Capital-$: 30,439,310

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 23,110,633 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 87,154,659 *
Sum of Total Mine, Mill & Infr. Costs-$: 181,143,672
Exploration Cost-$: 18,114,370 *

Overall Capital Cost-$: 199,258,039
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:SSUHEA.SEE Date:03/28/94 Time:13:16:19

SANDSTONE URANIUM, HEALY AREA, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	8,683,129	WC	Mid Year	23.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	9,224,470	MACRS	Mid Year	13.0	0			0 .....
3	04/02	9,224,470	MACRS	Mid Year	10.0	0			0 .....
4	04/89	2,606,940	MACRS	Mid Year	23.0	0			0 .....
5	04/89	3,048,441	MACRS	Mid Year	23.0	0			0 .....
6	04/89	35,029,122	MACRS	Mid Year	23.0	0			0 .....
7	04/89	14,427,504	WC	Mid Year	23.0	0			0 .....
8	04/89	1,643,548	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,643,548	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,643,548	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,643,548	MACRS	Mid Year	4.0	0			0 .....
12	04/05	1,643,548	MACRS	Mid Year	4.0	0			0 .....
13	04/09	1,643,548	MACRS	Mid Year	4.0	0			0 .....
14	04/89	65,805,988	MACRS	Mid Year	23.0	0			0 .....
15	04/89	19,325,859	MACRS	Mid Year	23.0	0			0 .....
16	04/89	11,113,451	MACRS	Mid Year	23.0	0			0 .....
17	04/89	18,114,370	MACRS	Mid Year	23.0	0			0 .....
18	04/89	10,235,220	MACRS	Mid Year	23.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	3,029,500.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.002900	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	U3O8 %	N/A:	04/92	End	0.0020	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	1,204.50	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	U3O8 $/TONNE	N/A:	04/92	End	84,480.00	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	34,350,840.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	57,075,840.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	5,951,520.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/89	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . U3O8 REV	S1*S6*S11*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

SANDSTONE URANIUM, HEALY AREA, OPEN PIT

Cash Flows

NPV =$1,723,283,711 DCFROR=119.8% GROR = 23.4% PWROR =119.8% Pay Back= 0.84 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
U3O8 REV		437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
GROSS REVENUE		437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
Total Revenue		437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
-SMELTING CHARGES		-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440
-Total Smelting Cost		-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440
Net Smelt Ret.		433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554
-MHT ROYALTY		-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702
-Total Royalties		-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702
Net Revenue		415,956,852	415,956,852	415,956,852	415,956,852	415,956,852	415,956,852	415,956,852
-OPER COSTS		-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200
-Total Oper Costs		-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200
-Dev, IDC	-12,680,059							
-Depreciation	-4,586,305	-8,324,794	-8,225,979	-8,158,171	-7,602,989	-7,275,449	-7,480,303	-7,495,607
-Amortization	-3,260,587	-1,086,862	-1,086,862					
-Write Off								
Before Depltn	-20,526,950	308,666,996	308,765,810	309,920,481	310,475,663	310,803,202	310,598,349	310,583,045
100% Limit		308,666,996	308,765,810	309,920,481	310,475,663	310,803,202	310,598,349	310,583,045
Percent Depln		62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528
Prev Exp Expl		12,680,059						
-Depletion		-49,713,469	-62,393,528	-62,393,528	-62,393,528	-62,393,528	-62,393,528	-62,393,528
-Total D,D & A	-20,526,950	-59,125,125	-71,706,369	-70,551,698	-69,996,516	-69,668,977	-69,873,831	-69,889,135
Taxable	-20,526,950	258,953,527	246,372,282	247,526,953	248,082,135	248,409,674	248,204,821	248,189,517
-Tax Due	6,979,163	-88,044,199	-83,766,576	-84,159,164	-95,809,321	-95,935,816	-95,856,702	-95,850,791
Net Income	-13,547,787	170,909,328	162,605,706	163,367,789	152,272,815	152,473,858	152,348,119	152,338,725
+Depreciation	4,586,305	8,324,794	8,225,979	8,158,171	7,602,989	7,275,449	7,480,303	7,495,607
+Depletion		49,713,469	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528
+Amortization	3,260,587	1,086,862	1,086,862					
+Write Off								
-Capital Costs	-186577983		-1,643,548				-1,643,548	
Cash Flow	-192278879	230,034,452	232,668,528	233,919,487	222,269,331	222,142,835	220,578,402	222,227,860

Year	8	9	10	11	12	13	14	15
U3O8 REV	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
GROSS REVENUE	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
Total Revenue	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
-SMELTING CHARGES	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440
-Total Smelting Cost	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440
Net Smelt Ret.	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554
-MHT ROYALTY	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702
-Total Royalties	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702
Net Revenue	415,956,852	415,956,852	415,956,852	415,956,852	415,956,852	415,956,852	415,956,852	415,956,852
-OPER COSTS	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200
-Total Oper Costs	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200
-Dev, IDC								
-Depreciation	-7,187,442	-7,084,720	-7,392,885	-8,418,054	-8,847,846	-8,172,645	-7,974,747	-7,864,937
-Amortization								
-Write Off								
Before Depltn	310,891,210	310,993,932	310,685,766	309,660,598	309,230,805	309,906,007	310,103,905	310,213,715
100% Limit	310,891,210	310,993,932	310,685,766	309,660,598	309,230,805	309,906,007	310,103,905	310,213,715
Percent Depln	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528
Prev Exp Expl								
-Depletion	-62,393,528	-62,393,528	-62,393,528	-62,393,528	-62,393,528	-62,393,528	-62,393,528	-62,393,528
-Total D,D & A	-69,580,969	-69,478,248	-69,786,413	-70,811,582	-71,241,374	-70,566,173	-70,368,275	-70,258,465
Taxable	248,497,682	248,600,404	248,292,239	247,267,070	246,837,278	247,512,479	247,710,377	247,820,187
-Tax Due	-95,969,805	-96,009,476	-95,890,463	-95,494,542	-95,328,557	-95,589,319	-95,665,748	-95,708,156
Net Income	152,527,877	152,590,928	152,401,776	151,772,527	151,508,721	151,923,160	152,044,629	152,112,031
+Depreciation	7,187,442	7,084,720	7,392,885	8,418,054	8,847,846	8,172,645	7,974,747	7,864,937
+Depletion	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528
+Amortization								
+Write Off								
-Capital Costs			-1,643,548	-9,224,470			-1,643,548	
Cash Flow	222,108,847	222,069,176	220,544,641	213,359,639	222,750,095	222,489,332	220,769,356	222,370,495

Year	16	17	18	19	20	Salvage
U3O8 REV	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	
GROSS REVENUE	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	
Total Revenue	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	23,110,633
-SMELTING CHARGES	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	
-Total Smelting Cost	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	
Net Smelt Ret.	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	
-MHT ROYALTY	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	
-Total Royalties	-17,310,702	-17,310,702	-17,310,702	-17,310,702	-17,310,702	
Net Revenue	415,956,852	415,956,852	415,956,852	415,956,852	415,956,852	
-OPER COSTS	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	
-Total Oper Costs	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	
-Dev, IDC						
-Depreciation	-7,386,746	-7,208,458	-7,516,623	-7,619,345	-7,311,179	-16,340,027
-Amortization						
-Write Off						-23,110,633
Before Depltn	310,691,905	310,870,194	310,562,029	310,459,307	310,767,472	-16,340,027
100% Limit	310,691,905	310,870,194	310,562,029	310,459,307	310,767,472	
Percent Depln	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	
Prev Exp Expl						
-Depletion	-62,393,528	-62,393,528	-62,393,528	-62,393,528	-62,393,528	
-Total D,D & A	-69,780,274	-69,601,985	-69,910,151	-70,012,872	-69,704,707	-39,450,660
Taxable	248,298,378	248,476,666	248,168,501	248,065,779	248,373,944	-16,340,027
-Tax Due	-95,892,833	-95,961,689	-95,842,675	-95,803,004	-95,922,017	6,310,519
Net Income	152,405,544	152,514,978	152,325,826	152,262,775	152,451,927	-10,029,509
+Depreciation	7,386,746	7,208,458	7,516,623	7,619,345	7,311,179	16,340,027
+Depletion	62,393,528	62,393,528	62,393,528	62,393,528	62,393,528	
+Amortization						
+Write Off						23,110,633
-Capital Costs			-1,643,548			
Cash Flow	222,185,818	222,116,963	220,592,428	222,275,648	222,156,634	29,421,152

List of Assumptions File:SSUHEA.SEE Date:12/28/93 Time:23:15:50

SANDSTONE URANIUM, HEALY AREA, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 20
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Constant Rate	: $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	8,683,129	WC	Mid Year	23.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	9,224,470	MACRS	Mid Year	13.0	0		0	.....
3	04/02	9,224,470	MACRS	Mid Year	10.0	0		0	.....
4	04/89	2,606,940	MACRS	Mid Year	23.0	0		0	.....
5	04/89	3,048,441	MACRS	Mid Year	23.0	0		0	.....
6	04/89	35,029,122	MACRS	Mid Year	23.0	0		0	.....
7	04/89	14,427,504	WC	Mid Year	23.0	0		0	.....
8	04/89	1,643,548	MACRS	Mid Year	4.0	0		0	.....
9	04/93	1,643,548	MACRS	Mid Year	4.0	0		0	.....
10	04/97	1,643,548	MACRS	Mid Year	4.0	0		0	.....
11	04/01	1,643,548	MACRS	Mid Year	4.0	0		0	.....
12	04/05	1,643,548	MACRS	Mid Year	4.0	0		0	.....
13	04/09	1,643,548	MACRS	Mid Year	4.0	0		0	.....
14	04/89	65,805,988	MACRS	Mid Year	23.0	0		0	.....
15	04/89	19,325,859	MACRS	Mid Year	23.0	0		0	.....
16	04/89	11,113,451	MACRS	Mid Year	23.0	0		0	.....
17	04/89	18,114,370	EXPL-X	Mid Year	23.0	0		0	.....
18	04/89	10,235,220	MACRS	Mid Year	23.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTYP	Annual:	04/92	End	3,029,500.00	Constant	0.000
S2		N/A:	04/92	End	0.000	Constant	0.000
S3		N/A:	04/92	End	0.000	Constant	0.000
S4		N/A:	04/92	End	0.000	Constant	0.000
S5		N/A:	04/92	End	1.00	Constant	0.000
S6	U3O8 %	N/A:	04/92	End	0.002	Constant	0.000
S7		N/A:	04/92	End	1,204.50	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S8		N/A:	04/92	End	2,222.44	Constant	0.000
S9		N/A:	04/92	End	770.00	Constant	0.000
S10		N/A:	04/92	End	4.09	Constant	0.000
S11	U3O8 $/TONNE	N/A:	04/92	End	84,480.00	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	34,350,840.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	57,075,840.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	5,951,520.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	NPI ROYALTY RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========
E1 . U3O8 REV S1*S6*S11*S16*S17

Revenues
==========
E6 . GROSS REVENUE E1

Operating Costs
==========
E8 . OPER COSTS (S12+S13+S14+S15)

Special Taxes
==========
E10. MHT NPI S20*(E6-E8)

Royalties
==========
E9 . MHT ROYALTY S19*(E6-E7-S15)

Processing Costs
==========
E7 . SMELTING CHARGES S18*E6

SANDSTONE URANIUM, HEALY AREA, OPEN PIT

Cash Flows

NPV =$1,769,535,215 DCFROR=122.7% GROR = 23.5% PWROR =122.7% Pay Back= 0.82 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
U3O8 REV		437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
GROSS REVENUE		437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
Total Revenue		437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
-SMELTING CHARGES		-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440
-Total Smelting Cost		-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440
Net Smelt Ret.		433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554
Net Revenue		433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554
-OPER COSTS		-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200
-Total Oper Costs		-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200
-MHT NPI		-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974
-Total Sev. Ad Valor		-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974
-Dev, IDC	-12,680,059							
-Depreciation	-4,586,305	-8,324,794	-8,225,979	-8,158,171	-7,602,989	-7,275,449	-7,480,303	-7,495,607
-Amortization	-3,260,587	-1,086,862	-1,086,862					
-Write Off								
Before Depltn	-20,526,950	315,784,724	315,883,538	317,038,209	317,593,391	317,920,930	317,716,077	317,700,773
100% Limit		315,784,724	315,883,538	317,038,209	317,593,391	317,920,930	317,716,077	317,700,773
Percent Depln		64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133
Prev Exp Expl		12,680,059						
-Depletion		-52,310,074	-64,990,133	-64,990,133	-64,990,133	-64,990,133	-64,990,133	-64,990,133
-Total D,D & A	-20,526,950	-61,721,730	-74,302,975	-73,148,304	-72,593,122	-72,265,582	-72,470,436	-72,485,740
Taxable	-20,526,950	263,474,650	250,893,405	252,048,076	252,603,258	252,930,797	252,725,944	252,710,640
-Tax Due	6,979,163	-89,581,381	-85,303,758	-85,696,346	-97,555,378	-97,681,874	-97,602,760	-97,596,849
Net Income	-13,547,787	173,893,269	165,589,647	166,351,730	155,047,880	155,248,923	155,123,184	155,113,791
+Depreciation	4,586,305	8,324,794	8,225,979	8,158,171	7,602,989	7,275,449	7,480,303	7,495,607
+Depletion		52,310,074	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133
+Amortization	3,260,587	1,086,862	1,086,862					
+Write Off								
-Capital Costs	-186597983		-1,643,548				-1,643,548	
Cash Flow	-192278879	235,614,999	238,249,074	239,500,034	227,641,002	227,514,506	225,950,072	227,599,531

Year	8	9	10	11	12	13	14	15
U3O8 REV	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
GROSS REVENUE	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
Total Revenue	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994
-SMELTING CHARGES	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440
-Total Smelting Cost	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440
Net Smelt Ret.	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554
Net Revenue	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554
-OPER COSTS	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200
-Total Oper Costs	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200
-MHT NPI	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974
-Total Sev. Ad Valor	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974
-Dev, IDC								
-Depreciation	-7,187,442	-7,084,720	-7,392,885	-8,418,054	-8,847,846	-8,172,645	-7,974,747	-7,864,937
-Amortization								
-Write Off								
Before Depltn	318,008,938	318,111,660	317,803,495	316,778,326	316,348,534	317,023,735	317,221,633	317,331,443
100% Limit	318,008,938	318,111,660	317,803,495	316,778,326	316,348,534	317,023,735	317,221,633	317,331,443
Percent Depln	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133
Prev Exp Expl								
-Depletion	-64,990,133	-64,990,133	-64,990,133	-64,990,133	-64,990,133	-64,990,133	-64,990,133	-64,990,133
-Total D,D & A	-72,177,575	-72,074,853	-72,383,018	-73,408,187	-73,837,979	-73,162,778	-72,964,880	-72,855,070
Taxable	253,018,805	253,121,527	252,813,362	251,788,193	251,358,401	252,033,602	252,231,500	252,341,310
-Tax Due	-97,715,863	-97,755,534	-97,636,520	-97,240,600	-97,074,614	-97,335,377	-97,411,805	-97,454,214
Net Income	155,302,943	155,365,993	155,176,841	154,547,593	154,283,786	154,698,225	154,819,695	154,887,096
+Depreciation	7,187,442	7,084,720	7,392,885	8,418,054	8,847,846	8,172,645	7,974,747	7,864,937
+Depletion	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133
+Amortization								
+Write Off								
-Capital Costs			-1,643,548	-9,224,470			-1,643,548	
Cash Flow	227,480,517	227,440,846	225,916,312	218,731,310	228,121,766	227,861,003	226,141,027	227,742,166

Year	16	17	18	19	20	Salvage
U3O8 REV	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	
GROSS REVENUE	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	
Total Revenue	437,643,994	437,643,994	437,643,994	437,643,994	437,643,994	23,110,633
-SMELTING CHARGES	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	
-Total Smelting Cost	-4,376,440	-4,376,440	-4,376,440	-4,376,440	-4,376,440	
Net Smelt Ret.	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	
Net Revenue	433,267,554	433,267,554	433,267,554	433,267,554	433,267,554	
-OPER COSTS	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	
-Total Oper Costs	-97,878,200	-97,878,200	-97,878,200	-97,878,200	-97,878,200	
-MHT NPI	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	

Year	16	17	18	19	20	Salvage
-Total Sev. Ad Valor	-10,192,974	-10,192,974	-10,192,974	-10,192,974	-10,192,974	
-Dev, IDC						
-Depreciation	-7,386,746	-7,208,458	-7,516,623	-7,619,345	-7,311,179	-16,340,027
-Amortization						
-Write Off						-23,110,633
Before Depltn	317,809,634	317,987,922	317,679,757	317,577,035	317,885,201	-16,340,027
100% Limit	317,809,634	317,987,922	317,679,757	317,577,035	317,885,201	
Percent Depln	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	
Prev Exp Expl						
-Depletion	-64,990,133	-64,990,133	-64,990,133	-64,990,133	-64,990,133	
-Total D,D & A	-72,376,879	-72,198,591	-72,506,756	-72,609,478	-72,301,312	-39,450,660
Taxable	252,819,501	252,997,789	252,689,624	252,586,902	252,895,068	-16,340,027
-Tax Due	-97,638,891	-97,707,746	-97,588,733	-97,549,062	-97,668,075	6,310,519
Net Income	155,180,610	155,290,043	155,100,891	155,037,841	155,226,992	-10,029,509
+Depreciation	7,386,746	7,208,458	7,516,623	7,619,345	7,311,179	16,340,027
+Depletion	64,990,133	64,990,133	64,990,133	64,990,133	64,990,133	
+Amortization						
+Write Off						23,110,633
-Capital Costs			-1,643,548			
Cash Flow	227,557,489	227,488,634	225,964,099	227,647,318	227,528,305	29,421,152

APPENDIX B-24

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR CARBONATITE RARE EARTH ELEMENT (REE) DEPOSITS

24. DESCRIPTIVE MODEL OF CARBONATITE DEPOSITS
By Donald A. Singer

APPROXIMATE SYNONYM Apatite-magnetite and rare earths in carbonatites.

DESCRIPTION Apatite-magnetite and rare-earth deposits and combinations of these is zoned complexes consistent of central plug of carbonatite or syenite breccia surrounded by ring dikes and cone sheets of alternating rock types.

GENERAL REFERENCES Tuttle and Gittins (1966).

GEOLOGICAL ENVIRONMENT

Rock Types Apatite-magnetite deposits tend to be in sovite (calcitic carbonatite); RE types tend to occur in ankerite carbonatite; most deposits have both. In general pyroxenite, nepheline and feldspathic pyroxenite, carbonatite, fenite, ijolite, dunite, picrite-porphyrites, gneiss and alkalic fenitized gneiss, and locally alkaline volcanics rocks.

Textures Hypidiomorphic-granular, poikiloblastic. Breccias abundant. Carbonatites show intrusive relations. Wallrocks fenitized.

Age Range Almost all known carbonatite complexes are intrusive into Precambrian shields, however, the carbonatites themselves may be much younger.

Depositional Environment Multiple stages of igneous, deuteric and metasomatic crystallization in carbonatite magma.

Tectonic Setting(s) Continental shields. Spatially related to fault lineaments such as East African rift system. Locally related to alkaline volcanism.

Associated Deposit Types None.

DEPOSIT DESCRIPTION

Mineralogy Apatite-magnetite-type: apatite, magnetite, pyrochlore ± columbite ± perovskite ± niocalite. RE-type: barite, strontianite ± siderite ± rhodochrosite ± ankerite ± bastnaesite ± chlorites ± parisite ± monagite ± breunnerite. General: calcite, dolomite, fluorite, pyrrhotite, ilmenite, molybdenite, chalcopyrite, pyrite, sphalerite, pyroxene, biotite, phlogopite, amphibole, spinel, ± galena, ± hematite, ± quartz, ± forsterite, ± serpentine, ± zircon ± sphene, ± anatase, ± rutile, ± brookite, ± fersmite.

Texture/Structure Disseminated and banded.

Alteration Fenitization (widespread alkali metasomatism of quartzo-feldspathic rock; mostly alkalic feldspar with some aegerine and subordinate alkali-hornblende and accessory sphene and apatite) near contact of carbonatite intrusion. Locally, chloritization.

Ore Controls Commonly restricted to carbonatite dikes, sills, breccias, sheets, veins, and large masses, but may occur in other rocks associated with the complex rocks.

Weathering May result in goethite-rich soil enriched in P, Nb, and RE.

Geochemical Signature Radiometric anomalies, magnetic anomalies, high gravity anomalies, Th, U, Ti, Zn, Nb, Y, Ce, Mo, Cu, V, P, Mn, S, La, Sm, Pb, Zr, Ba, Eu. High values of Be, B, Li, Sn, Ta, Hf, and W are rare.

EXAMPLES

Oka, CNOU	(Gold and others, 1966)
Iron Hill, USCO	(Temple and Grogan, 1965)
St. Honore, CNQU	(Dawson, 1974)
Gem Park, USCO	(Parker and Sharp, 1970)
Mountain Pass, USCA	(Olson and others, 1954)

GRADE AND TONNAGE MODEL OF CARBONATITE DEPOSITS
After Donald A. Singer

COMMENTS Locally these carbonatite complexes may contain economically interesting grades of uranium, thorium, titanium, iron, copper, vermiculite, zirconium or phosphorus; frequently, these other commodities are in different zoes than the niobium-rich parts of the complex. Upper ten percent of the deposits contain 220 million tonnes at 1.9% Nb_2O_5 and 0.35% RE_2O_3. The rare earth oxide content of the Mountain Pass deposit was used to calculate a total value of the oxides. Total metal content is estimated at 4.2 million tonnes of Nb_2O_5 and 0.77 million tonnes of RE_2O_3. Total gross metal value is $25.7 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Forty years at 5.5 million tonnes per year or 15,000 tonnes per day.

Gross Value of Annual Production $643 million.

Net Present Value of 4% NSR $25.7 million times 9.779 is $251.3 million.

Comments, Assumptions, Specifications: CARB
C&S upper 10% Dist, Southeast AK (Between Min Amt)

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Carbonatite
Total Ore Tonnage: 220 mil mt
Mining Method: Open Pit
Beneficiation Method: Crush, S.A.G. Float
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 30 yrs
Proposed Daily Production: 20,400 MTPD
Maximum Ore Depth: 250m
Stripping Ratio: 8:1
Haulage Distance/Road Requirements:
5km roads
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Shovels, Trucks
Concentrate Production: 500 MTPD, 2 Products

INPUT VARIABLES:

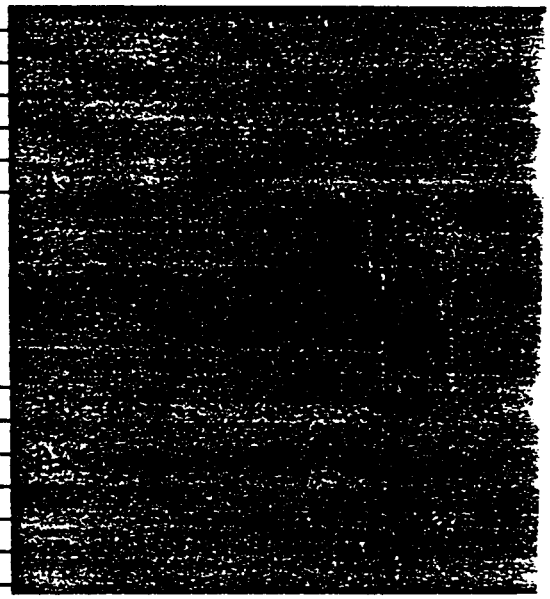
A.(For Operating Costs)
Clearing rate-ha/day: .12 ha/day
Burden/Waste rate-mtpd: 163,000 MTPD
Burden/Waste depth & haul-m: 120m, 3,200m
Ore rate-mtpd: 20,400 MTPD
Ore depth & haul-m: 220m, 3,500m
Conveyor length & slope-km & %: —
Water needs-cm/day: 13,000 m³/day
Drainage, head & distance-cm/day, m & km:
50,000 m³/day, 200m, 1.3 km
Concentrate (dry) rate-mtpd: 500 MTPD
Tails (dry) rate-mtpd: 20,000 MTPD
Production water needs-cm/day: 11,000 m³/day M.U., 35,000 m³/day recycle
Portable Power needs-kW: 60,000 kW
Wastewater-L/sec: 200 L/sec
Concentrate haul-km: None
Employee housing-men: 750 men
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 20,400, 20,000 MTPD
Mill operating costs-$/day: $121,379 /day
Working capital time-weeks: 13 weeks
Development time-days: 250 days @ 180,000 MTPD
Clearing needs-ha: 650 ha

Stripping needs-mt: 45 m.1 mt
Stripping depth & haul-m: 40 m, 3,500 m
Restoration area-ha: 1900 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $388,395/day
Access roads, length & width-km & m: 54m, 15m
Airstrip length & width-m: 1400m, 22 m
Powerline length & power-km & mW: portable
Dike & Dam needs-cm/fill: 1,500,000 m³
Climate/Weather factors: Severe
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 388,395
Mining Costs-$/yr: 139,822,200
Mining Costs-$/mt: 19.04
Milling Costs-$/day: 121,379
Milling Costs-$/yr: 43,696,440
Milling Costs-$/mt: 5.95
Infrastructure Costs-$/day: 139,468
Infrastructure Costs-$/yr: 50,208,480
Infrastructure Costs-$/mt: 6.84
Total Operating Costs-$/day: 649,243
Total Operating Costs-$/yr: 233,727,120
Total Operating Costs-$/mt: 31.83
Other:
Other:



D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 35,343,945
Heavy Equipment (fixed life)-$: 154,198,220
Mine Rehabilitation-$: 17,689,950
Engr. & Const. Mgmt.-$: 9651,730
Other:
Remaining Mine Capital-$: 86,789,675
Total Mine Capital-$: 303673620

MILL CAPITAL COSTS:

Mill Working Capital-$: 11,045,489
Light Vehicles (short life)-$: 2,249,496 *
Other:
Remaining Mill Capital-$: 52833,165
Total Mill Capital-$: 66,129,150

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 33,470,436 *

Other: _____
Remaining Infrastructure Capital-$: 65,267,269 ~
Total Infrastructure Capital-$: 98,737,704

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 46,389,434 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 204,890,108 *
Sum of Total Mine, Mill & Infr. Costs-$: 468,539,474
Exploration Cost-$: 46,853,950 *

Overall Capital Cost-$: 515,394,521
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:CARBOK.SEE Date:03/28/94 Time:13:53:16

CARBONATITE REE, BOKAN MT AREA, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 30
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
21	21.0000	21.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
22	22.0000	22.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
23	23.0000	23.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
24	24.0000	24.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
25	25.0000	25.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
26	26.0000	26.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
27	27.0000	27.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
28	28.0000	28.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
29	29.0000	29.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
30	30.0000	30.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	154,198,320	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/02	154,198,320	MACRS	Mid Year	10.0	0			0 .....
3	04/12	154,198,320	MACRS	Mid Year	10.0	0			0 .....
4	04/89	47,156,965	MACRS	Mid Year	18.0	0			0 .....
5	04/89	35,343,945	WC	Mid Year	33.0	0			0 .....
6	04/89	2,249,496	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,249,496	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,249,496	MACRS	Mid Year	4.0	0			0 .....
9	04/01	2,249,496	MACRS	Mid Year	4.0	0			0 .....
10	04/05	2,249,496	MACRS	Mid Year	4.0	0			0 .....
11	04/09	2,249,496	MACRS	Mid Year	4.0	0			0 .....
12	.....	0	MACRS	Mid Year	7.0	0			0 .....
13	.....	0	MACRS	Mid Year	7.0	0			0 .....
14	04/89	11,045,489	WC	Mid Year	33.0	0			0 .....
15	04/89	52,833,165	MACRS	Mid Year	33.0	0			0 .....
16	04/89	46,853,950	MACRS	Mid Year	33.0	0			0 .....
17	04/02	33,470,436	MACRS	Mid Year	33.0	0			0 .....
18	04/01	65,267,268	MACRS	Mid Year	33.0	0			0 .....
19	04/89	38,345,722	MACRS	Mid Year	18.0	0			0 .....
20	04/89	17,689,590	MACRS	Mid Year	33.0	0			0 .....
21	04/89	9,651,730	MACRS	Mid Year	33.0	0			0 .....
22	04/89	86,789,675	MACRS	Mid Year	33.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	7,446,000.00	Constant	0.000
#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S2	RE2O5 %	N/A:	04/92	End	0.003500	Constant	0.000
S3	NB2O5 %	N/A:	04/92	End	0.0190	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0000	Constant	0.000
S7	RE2O5 $/TONNE	N/A:	04/92	End	2,640.00	Constant	0.000
S8	NB2O5 $/TONNE	N/A:	04/92	End	5,632.00	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	139,822,200.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	43,696,440.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	50,208,480.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	2,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.65	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	4.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

Project Equations

General Equations

E1 . RE2O5 REV	S1*S2*S7*S16*S17
E2 . NB2O5	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues

E6 . GROSS REVENUE	E1+E2

Operating Costs

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes

E10. MHT NPI	S20*(E6-E8)

Equations continued

Royalties

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs

E7 . SMELTING CHARGES	S18*E6

CARBONATITE REE, BOKAN MT AREA, OPEN PIT

Cash Flows

NPV =$1,537,959,466 DCFROR= 47.0% GROR = 15.4% PWROR = 47.0% Pay Back= 2.09 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
RE2O5 REV		44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676
NB2O5 REV		517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019
GROSS REVENUE		562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
Total Revenue		562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
-SMELTING CHARGES		-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
-Total Smelting Cost		-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
Net Smelt Ret.		557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
-MHT ROYALTY		-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096
-Total Royalties		-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096
Net Revenue		534,802,312	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312
-OPER COSTS		-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Total Oper Costs		-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Dev, IDC	-32,797,765						
-Depreciation	-19,914,512	-36,773,582	-32,548,310	-28,952,105	-25,189,954	-22,167,600	-20,240,009
-Amortization	-8,433,711	-2,811,237	-2,811,237				
-Write Off							
Before Depltn	-61,145,988	259,490,373	263,715,645	270,123,087	273,885,238	276,907,592	278,835,183
100% Limit		259,490,373	263,715,645	270,123,087	273,885,238	276,907,592	278,835,183
Percent Depln		80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347
Prev Exp Expl		32,797,765					
-Depletion		-47,422,582	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347
-Total D,D & A	-61,145,988	-87,007,401	-115,579,894	-109,172,452	-105,410,300	-102,387,947	-100,460,356
Taxable	-61,145,988	212,067,791	183,495,298	189,902,740	193,664,892	196,687,245	198,614,836
-Tax Due	20,789,636	-72,103,049	-62,388,401	-64,566,932	-74,793,381	-75,960,614	-76,705,050
Net Income	-40,356,352	139,964,742	121,106,897	125,335,809	118,871,510	120,726,631	121,909,786
+Depreciation	19,914,512	36,773,582	32,548,310	28,952,105	25,189,954	22,167,600	20,240,009
+Depletion		47,422,582	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347
+Amortization	8,433,711	2,811,237	2,811,237				
+Write Off							
-Capital Costs	-469,360,642		-2,249,496				-2,249,496
Cash Flow	-481,368,771	226,972,143	234,437,295	234,508,260	224,281,811	223,114,578	220,120,646

Year	7	8	9	10	11	12	13
RE2O5 REV	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676
NB2O5 REV	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019
GROSS REVENUE	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
Total Revenue	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
-SMELTING CHARGES	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
-Total Smelting Cost	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
Net Smelt Ret.	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
-MHT ROYALTY	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096
-Total Royalties	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096
Net Revenue	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312
-OPER COSTS	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Total Oper Costs	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Dev, IDC							
-Depreciation	-18,366,076	-17,452,532	-16,874,816	-18,162,197	-35,178,501	-47,557,453	-37,847,163
-Amortization							
-Write Off							
Before Depltn	280,709,116	281,622,660	282,200,376	280,912,995	263,896,691	251,517,739	261,228,029
100% Limit	280,709,116	281,622,660	282,200,376	280,912,995	263,896,691	251,517,739	261,228,029
Percent Depln	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347
Prev Exp Expl							
-Depletion	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347
-Total D,D & A	-98,586,422	-97,672,879	-97,095,162	-98,382,544	-115,398,848	-127,777,800	-118,067,510
Taxable	200,488,770	201,402,313	201,980,030	200,692,648	183,676,344	171,297,392	181,007,682
-Tax Due	-77,428,763	-77,781,573	-78,004,687	-77,507,501	-70,935,804	-66,155,053	-69,905,167
Net Income	123,060,007	123,620,740	123,975,342	123,185,147	112,740,540	105,142,339	111,102,515
+Depreciation	18,366,076	17,452,532	16,874,816	18,162,197	35,178,501	47,557,453	37,847,163
+Depletion	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347
+Amortization							
+Write Off							
-Capital Costs				-67,516,764	-187,668,756		
Cash Flow	221,646,429	221,293,619	221,070,504	154,050,927	40,470,632	232,920,139	229,170,025

Year	14	15	16	17	18	19	20
RE205 REV	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676
NB205 REV	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019
GROSS REVENUE	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
Total Revenue	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
-SMELTING CHARGES	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
-Total Smelting Cost	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
Net Smelt Ret.	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
-MHT ROYALTY	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096
-Total Royalties	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096
Net Revenue	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312
-OPER COSTS	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Total Oper Costs	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Dev, IDC							
-Depreciation	-29,809,474	-26,397,339	-23,133,375	-21,729,589	-20,505,730	-19,000,685	-18,578,904
-Amortization							
-Write Off							
Before Depltn	269,265,718	272,677,853	275,941,817	277,345,603	278,569,462	280,074,507	280,496,288
100% Limit	269,265,718	272,677,853	275,941,817	277,345,603	278,569,462	280,074,507	280,496,288
Percent Depln	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347
Prev Exp Expl							
-Depletion	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347
-Total D,D & A	-110,029,821	-106,617,685	-103,353,721	-101,949,935	-100,726,077	-99,221,031	-98,799,251
Taxable	189,045,371	192,457,507	195,721,470	197,125,257	198,349,115	199,854,160	200,275,941
-Tax Due	-73,009,322	-74,327,089	-75,587,632	-76,129,774	-76,602,428	-77,183,677	-77,346,568
Net Income	116,036,049	118,130,418	120,133,839	120,995,483	121,746,687	122,670,484	122,929,373
+Depreciation	29,809,474	26,397,339	23,133,375	21,729,589	20,505,730	19,000,685	18,578,904
+Depletion	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347
+Amortization							
+Write Off							
-Capital Costs	-2,249,496				-2,249,496		
Cash Flow	223,816,374	224,748,103	223,487,560	222,945,418	220,223,268	221,891,515	221,728,624

Year	21	22	23	24	25	26	27
RE2O5 REV	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676
NB2O5 REV	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019
GROSS REVENUE	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
Total Revenue	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
-SMELTING CHARGES	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
-Total Smelting Cost	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
Net Smelt Ret.	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
-MHT ROYALTY	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096
-Total Royalties	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096	-22,200,096
Net Revenue	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312	534,802,312
-OPER COSTS	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Total Oper Costs	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Dev, IDC							
-Depreciation	-28,805,372	-35,947,874	-30,256,141	-25,815,229	-22,262,500	-19,420,316	-18,157,124
-Amortization							
-Write Off							
Before Depltn	270,269,820	263,127,318	268,819,051	273,259,963	276,812,692	279,654,876	280,918,068
100% Limit	270,269,820	263,127,318	268,819,051	273,259,963	276,812,692	279,654,876	280,918,068
Percent Depln	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347
Prev Exp Expl							
-Depletion	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347	-80,220,347
-Total D,D & A	-109,025,719	-116,168,220	-110,476,487	-106,035,576	-102,482,847	-99,640,663	-98,377,470
Taxable	190,049,473	182,906,971	188,598,705	193,039,616	196,592,345	199,434,529	200,697,721
-Tax Due	-73,397,106	-70,638,672	-72,836,820	-74,551,900	-75,923,964	-77,021,615	-77,509,460
Net Income	116,652,367	112,268,299	115,761,885	118,487,716	120,668,382	122,412,914	123,188,261
+Depreciation	28,805,372	35,947,874	30,256,141	25,815,229	22,262,500	19,420,316	18,157,124
+Depletion	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347	80,220,347
+Amortization							
+Write Off							
-Capital Costs	-154,198,320						
Cash Flow	71,479,765	228,436,520	226,238,372	224,523,292	223,151,228	222,053,577	221,565,732

Year	28	29	30	Salvage
RE2O5 REV	44,720,676	44,720,676	44,720,676	
NB2O5 REV	517,908,019	517,908,019	517,908,019	
GROSS REVENUE	562,628,695	562,628,695	562,628,695	
Total Revenue	562,628,695	562,628,695	562,628,695	46,389,434
-SMELTING CHARGES	-5,626,287	-5,626,287	-5,626,287	
-Total Smelting Cost	-5,626,287	-5,626,287	-5,626,287	
Net Smelt Ret.	557,002,408	557,002,408	557,002,408	
-MHT ROYALTY	-22,200,096	-22,200,096	-22,200,096	
-Total Royalties	-22,200,096	-22,200,096	-22,200,096	
Net Revenue	534,802,312	534,802,312	534,802,312	
-OPER COSTS	-235,727,120	-235,727,120	-235,727,120	
-Total Oper Costs	-235,727,120	-235,727,120	-235,727,120	
-Dev, IDC				
-Depreciation	-18,157,124	-18,157,124	-18,157,124	-55,781,016
-Amortization				
-Write Off				-46,389,434
Before Depltn	280,918,068	280,918,068	280,918,068	-55,781,016
100% Limit	280,918,068	280,918,068	280,918,068	
Percent Depln	80,220,347	80,220,347	80,220,347	
Prev Exp Expl				
-Depletion	-80,220,347	-80,220,347	-80,220,347	
-Total D,D & A	-98,377,470	-98,377,470	-98,377,470	-102,170,450
Taxable	200,697,721	200,697,721	200,697,721	-55,781,016
-Tax Due	-77,509,460	-77,509,460	-77,509,460	21,542,628
Net Income	123,188,261	123,188,261	123,188,261	-34,238,388
+Depreciation	18,157,124	18,157,124	18,157,124	55,781,016
+Depletion	80,220,347	80,220,347	80,220,347	
+Amortization				
+Write Off				46,389,434
-Capital Costs				
Cash Flow	221,565,732	221,565,732	221,565,732	67,932,062

List of Assumptions File:CARBOK.SEE Date:12/29/93 Time:10:55:08

CARBONATITE REE, BOKAN MT AREA, OPEN PIT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 30
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
17	17.0000	17.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
18	18.0000	18.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
19	19.0000	19.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
20	20.0000	20.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
21	21.0000	21.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
22	22.0000	22.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
23	23.0000	23.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
24	24.0000	24.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
25	25.0000	25.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
26	26.0000	26.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
27	27.0000	27.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
28	28.0000	28.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
29	29.0000	29.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
30	30.0000	30.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	154,198,320	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/02	154,198,320	MACRS	Mid Year	10.0	0		0	.....
3	04/12	154,198,320	MACRS	Mid Year	10.0	0		0	.....
4	04/89	47,156,965	MACRS	Mid Year	18.0	0		0	.....
5	04/89	35,343,945	WC	Mid Year	33.0	0		0	.....
6	04/89	2,249,496	MACRS	Mid Year	4.0	0		0	.....
7	04/93	2,249,496	MACRS	Mid Year	4.0	0		0	.....
8	04/97	2,249,496	MACRS	Mid Year	4.0	0		0	.....
9	04/09	2,249,496	MACRS	Mid Year	4.0	0		0	.....
10	04/89	11,045,489	WC	Mid Year	33.0	0		0	.....
11	04/89	52,833,165	MACRS	Mid Year	33.0	0		0	.....
12	04/89	46,853,950	EXPL-X	Mid Year	33.0	0		0	.....
13	04/02	33,470,436	MACRS	Mid Year	33.0	0		0	.....
14	04/01	65,267,268	MACRS	Mid Year	33.0	0		0	.....
15	.....	0	MACRS	Mid Year	7.0	0		0	.....
16	.....	0	MACRS	Mid Year	7.0	0		0	.....
17	04/89	38,345,722	MACRS	Mid Year	18.0	0		0	.....
18	04/89	17,689,950	MACRS	Mid Year	33.0	0		0	.....
19	04/89	9,651,730	MACRS	Mid Year	33.0	0		0	.....
20	04/89	86,789,675	MACRS	Mid Year	33.0	0		0	.....
21	04/01	2,249,496	MACRS	Mid Year	4.0	0		0	.....
22	04/05	2,249,496	MACRS	Mid Year	4.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

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* Series Data *
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#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	7,446,000.00	Constant	0.000
#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S2	RE2O5 %	N/A:	04/92	End	0.003500	Constant	0.000
S3	NB2O5 %	N/A:	04/92	End	0.0190	Constant	0.000
S4		N/A:	04/92	End	0.00	Constant	0.000
S5		N/A:	04/92	End	0.13	Constant	0.000
S6		N/A:	04/92	End	0.0232	Constant	0.000
S7	RE2O5 $/TONNE	N/A:	04/92	End	2,640.00	Constant	0.000
S8	NB2O5 $/TONNE	N/A:	04/92	End	5,632.00	Constant	0.000
S9		N/A:	04/92	End	770.00	Constant	0.000
S10		N/A:	04/92	End	4.09	Constant	0.000
S11		N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	139,822,200.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	43,696,440.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	50,208,480.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	2,000,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.65	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

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* Project Equations *
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General Equations
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E1 . RE2O5 REV S1*S2*S7*S16*S17
E2 . NB2O5 REV S1*S3*S8*S16*S17

Revenues
==========

E6 . GROSS REVENUE E1+E2

Operating Costs
==========

E8 . OPER COSTS (S12+S13+S14+S15)

Special Taxes
==========

E3 . MHT NPI S20*(E6-E8)

Equations continued

Royalties

E9 . MHT ROYALTY S19*(E6-E7-S15)

Processing Costs

E7 . SMELTING CHARGES S18*E6

CARBONATITE REE, BOKAN MT AREA, OPEN PIT

Cash Flows

NPV =$1,622,833,397 DCFROR= 49.0% GROR = 15.5% PWROR = 49.0% Pay Back= 2.01 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
RE2O5 REV		44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676
NB2O5 REV		517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019
GROSS REVENUE		562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
Total Revenue		562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
-SMELTING CHARGES		-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
-Total Smelting Cost		-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
Net Smelt Ret.		557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
Net Revenue		557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
-OPER COSTS		-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Total Oper Costs		-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-MHT NPI		-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047
-Total Sev. Ad Valor		-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047
-Dev, IDC	-32,797,765						
-Depreciation	-19,914,512	-36,773,582	-32,548,310	-28,952,105	-25,189,954	-22,167,600	-20,240,009
-Amortization	-8,433,711	-2,811,237	-2,811,237				
-Write Off							
Before Depltn	-61,145,988	271,883,422	276,108,694	282,516,136	286,278,287	289,300,641	291,228,232
100% Limit		271,883,422	276,108,694	282,516,136	286,278,287	289,300,641	291,228,232
Percent Depln		83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361
Prev Exp Expl		32,797,765					
-Depletion		-50,752,596	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361
-Total D,D & A	-61,145,988	-90,337,416	-118,909,908	-112,502,466	-108,740,315	-105,717,961	-103,790,371
Taxable	-61,145,988	221,130,825	192,558,333	198,965,775	202,727,926	205,750,280	207,677,870
-Tax Due	20,789,636	-75,184,481	-65,469,833	-67,648,363	-78,293,525	-79,460,758	-80,205,194
Net Income	-40,356,352	145,946,345	127,088,500	131,317,411	124,434,401	126,289,522	127,472,677
+Depreciation	19,914,512	36,773,582	32,548,310	28,952,105	25,189,954	22,167,600	20,240,009
+Depletion		50,752,596	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361
+Amortization	8,433,711	2,811,237	2,811,237				
+Write Off							
-Capital Costs	-469,360,642		-2,249,496				-2,249,496
Cash Flow	-481,368,771	236,283,760	243,748,912	243,819,878	233,174,716	232,007,483	229,013,551

Year	7	8	9	10	11	12	13
RE205 REV	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676
NB205 REV	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019
GROSS REVENUE	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
Total Revenue	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
-SMELTING CHARGES	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
-Total Smelting Cost	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
Net Smelt Ret.	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
Net Revenue	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
-OPER COSTS	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Total Oper Costs	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-MHT NPI	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047
-Total Sev. Ad Valor	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047
-Dev, IDC							
-Depreciation	-18,366,076	-17,452,532	-16,874,816	-18,162,197	-35,178,501	-47,557,453	-37,847,163
-Amortization							
-Write Off							
Before Depltn	293,102,165	294,015,709	294,593,425	293,306,044	276,289,740	263,910,788	273,621,078
100% Limit	293,102,165	294,015,709	294,593,425	293,306,044	276,289,740	263,910,788	273,621,078
Percent Depln	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361
Prev Exp Expl							
-Depletion	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361
-Total D,D & A	-101,916,437	-101,002,893	-100,425,177	-101,712,559	-118,728,862	-131,107,815	-121,397,524
Taxable	209,551,804	210,465,348	211,043,064	209,755,682	192,739,379	180,360,426	190,070,717
-Tax Due	-80,928,907	-81,281,717	-81,504,831	-81,007,645	-74,435,948	-69,655,197	-73,405,311
Net Income	128,622,897	129,183,631	129,538,233	128,748,038	118,303,431	110,705,230	116,665,406
+Depreciation	18,366,076	17,452,532	16,874,816	18,162,197	35,178,501	47,557,453	37,847,163
+Depletion	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361
+Amortization							
+Write Off							
-Capital Costs				-67,516,764	-187,668,756		
Cash Flow	230,539,334	230,186,524	229,963,410	162,943,832	49,363,537	241,813,044	238,062,930

Year	14	15	16	17	18	19	20
RE2O5 REV	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676
NB2O5 REV	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019
GROSS REVENUE	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
Total Revenue	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
-SMELTING CHARGES	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
-Total Smelting Cost	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
Net Smelt Ret.	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
Net Revenue	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
-OPER COSTS	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Total Oper Costs	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-MHT NPI	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047
-Total Sev. Ad Valor	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047
-Dev, IDC							
-Depreciation	-29,809,474	-26,397,339	-23,133,375	-21,729,589	-20,505,730	-19,000,685	-18,578,904
-Amortization							
-Write Off							
Before Depltn	281,658,767	285,070,902	288,334,866	289,738,652	290,962,511	292,467,556	292,889,337
100% Limit	281,658,767	285,070,902	288,334,866	289,738,652	290,962,511	292,467,556	292,889,337
Percent Depln	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361
Prev Exp Expl							
-Depletion	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361
-Total D,D & A	-113,359,836	-109,947,700	-106,683,736	-105,279,950	-104,056,091	-102,551,046	-102,129,265
Taxable	198,108,405	201,520,541	204,784,505	206,188,291	207,412,150	208,917,195	209,338,976
-Tax Due	-76,509,466	-77,827,233	-79,087,776	-79,629,918	-80,102,572	-80,683,821	-80,846,712
Net Income	121,598,939	123,693,308	125,696,729	126,558,373	127,309,577	128,233,374	128,492,263
+Depreciation	29,809,474	26,397,339	23,133,375	21,729,589	20,505,730	19,000,685	18,578,904
+Depletion	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361
+Amortization							
+Write Off							
-Capital Costs	-2,249,496				-2,249,496		
Cash Flow	232,709,279	233,641,008	232,380,465	231,838,323	229,116,173	230,784,420	230,621,529

Year	21	22	23	24	25	26	27
RE205 REV	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676	44,720,676
NB205 REV	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019	517,908,019
GROSS REVENUE	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
Total Revenue	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695	562,628,695
-SMELTING CHARGES	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
-Total Smelting Cost	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287	-5,626,287
Net Smelt Ret.	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
Net Revenue	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408	557,002,408
-OPER COSTS	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-Total Oper Costs	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120	-235,727,120
-MHT NPI	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047
-Total Sev. Ad Valor	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047	-9,807,047
-Dev, IDC							
-Depreciation	-28,805,372	-35,947,874	-30,256,141	-25,815,229	-22,262,500	-19,420,316	-18,157,124
-Amortization							
-Write Off							
Before Depltn	282,662,869	275,520,367	281,212,100	285,653,012	289,205,741	292,047,925	293,311,117
100% Limit	282,662,869	275,520,367	281,212,100	285,653,012	289,205,741	292,047,925	293,311,117
Percent Depln	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361
Prev Exp Expl							
-Depletion	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361	-83,550,361
-Total D,D & A	-112,355,733	-119,498,235	-113,806,502	-109,365,590	-105,812,861	-102,970,678	-101,707,485
Taxable	199,112,508	191,970,006	197,661,739	202,102,651	205,655,380	208,497,563	209,760,756
-Tax Due	-76,897,250	-74,138,816	-76,336,964	-78,052,044	-79,424,108	-80,521,759	-81,009,604
Net Income	122,215,257	117,831,190	121,324,775	124,050,607	126,231,272	127,975,804	128,751,152
+Depreciation	28,805,372	35,947,874	30,256,141	25,815,229	22,262,500	19,420,316	18,157,124
+Depletion	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361	83,550,361
+Amortization							
+Write Off							
-Capital Costs	-154,198,320						
Cash Flow	80,372,671	237,329,425	235,131,277	233,416,197	232,044,133	230,946,482	230,458,637

Year	28	29	30	Salvage
RE205 REV	44,720,676	44,720,676	44,720,676	
NB205 REV	517,908,019	517,908,019	517,908,019	
GROSS REVENUE	562,628,695	562,628,695	562,628,695	
Total Revenue	562,628,695	562,628,695	562,628,695	46,389,434
-SMELTING CHARGES	-5,626,287	-5,626,287	-5,626,287	
-Total Smelting Cost	-5,626,287	-5,626,287	-5,626,287	
Net Smelt Ret.	557,002,408	557,002,408	557,002,408	
Net Revenue	557,002,408	557,002,408	557,002,408	
-OPER COSTS	-235,727,120	-235,727,120	-235,727,120	
-Total Oper Costs	-235,727,120	-235,727,120	-235,727,120	
-MHT NPI	-9,807,047	-9,807,047	-9,807,047	
-Total Sev. Ad Valor	-9,807,047	-9,807,047	-9,807,047	
-Dev, IDC				
-Depreciation	-18,157,124	-18,157,124	-18,157,124	-55,781,016
-Amortization				
-Write Off				-46,389,434
Before Depltn	293,311,117	293,311,117	293,311,117	-55,781,016
100% Limit	293,311,117	293,311,117	293,311,117	
Percent Depln	83,550,361	83,550,361	83,550,361	
Prev Exp Expl				
-Depletion	-83,550,361	-83,550,361	-83,550,361	
-Total D,D & A	-101,707,485	-101,707,485	-101,707,485	-102,170,450
Taxable	209,760,756	209,760,756	209,760,756	-55,781,016
-Tax Due	-81,009,604	-81,009,604	-81,009,604	21,542,628
Net Income	128,751,152	128,751,152	128,751,152	-34,238,388
+Depreciation	18,157,124	18,157,124	18,157,124	55,781,016
+Depletion	83,550,361	83,550,361	83,550,361	
+Amortization				
+Write Off				46,389,434
-Capital Costs				
Cash Flow	230,458,637	230,458,637	230,458,637	67,932,062

APPENDIX B-25

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR PLACER GOLD AND PLATINUM (Au-Pt) DEPOSITS

25. DESCRIPTIVE MODEL OF PLACER Au-PGE

By Warren E. Yeend

DESCRIPTION Elemental gold and platinum-group alloys in grains and (rarely) nuggets in gravel, sand, silt, and clay, and their consolidated equivalents, in alluvial, beach, eolian, and (rarely) glacial deposits.

GENERAL REFERENCES Boyle (1979), Wells (1973), Lindgren (1911).

GEOLOGICAL ENVIRONMENT

Rock Types Alluvial gravel and conglomerate with white quartz clasts. Sand and sandstone of secondary importance.

Textures Coarse clastic.

Age Range Cenozoic. Older deposits may have been formed but their preservation is unlikely.

Depositional Environment High-energy alluvial where gradients flatten and river velocities lessen, as at the inside of meanders, below rapids and falls, beneath boulders, and in vegetation mats. Winnowing action of surf caused Au concentrations in raised, present, and submerged beaches.

Tectonic Setting(s) Tertiary conglomerates along major fault zones, shield areas where erosion has proceeded for a long time producing multicycle sediments; high-level terrace gravels.

Associated Deposit Types Black sands (magnetite, ilmenite, chromite); yellow sands (zircon, monazite). Au placers commonly derive from various Au vein-type deposits as well as porphyry copper, Cu skarn, and polymetallic replacement deposits.

DEPOSIT DESCRIPTION

Mineralogy Au, platinum-iron alloys, osmium-iridium alloys; gold commonly with attached quartz, magnetite, or ilmenite.

Texture/Structure Flattened, rounded edges, flaky, flour gold extremely fine grained flakes; very rarely equidimensional nuggets.

Ore Controls Highest Au values at base of gravel deposits in various gold "traps" such as natural riffles in floor of river or stream, fractured bedrock, slate, schist, phyllite, dikes, bedding planes, all structures trending transverse to direction of water flow. Au concentrations also occur within gravel deposits above clay layers that constrain the downward migration of Au particles.

Geochemical Signature Anomalous high amounts of Ag, As, Hg, Sb, Cu, Fe, S, an heavy minerals magnetite, chromite, ilmenite, hematite, pyrite, zircon, garnet, rutile. Au nuggets have decreasing Ag content with distance from source.

EXAMPLES

Sierra Nevada, USCA	(Lindgren, 1911; Yeend, 1974)
Victoria, AUVT	(Knight, 1975)

GRADE AND TONNAGE MODEL OF PLACER Au-PGE
After Greta J. Orris and James D. Bliss

DATA REFERENCE Orris and Bliss (1985).

COMMENTS Placers used for this model are predominantly Quaternary in age and alluvial in nature. Many of the placer deposits contain a mix of depositional environments and energy level -- deposits along minor tributaries have been worked with deposits downstream on a higher order stream, bench (or terrace) gravels have been mined with more recent deposits on valley floor. Some of the placers included in this model were formed by complex glacial-fluvial processes. Deposits not included in this model are those primarily cataloged as desert placers, pre-Tertiary or Tertiary age placers, beach placers, eolian placers, residual placers, eluvial placers, and gravel-plain deposits. These types, however, may be minor components of those deposits selected to be included. In most cases, the grade and tonnage figures are for districts or for placer operations within one mile (1.6 km) of one another. For some placers, early production figures were mission due to poor records of early gold rush work. In most cases, reserve figures (if a reserve is known) are not available. Some tonnage figures were estimated from approximate size of workings. Some grades were based on very limited information and in some cases extrapolated from information on manpower figures type of equipment used, and estimates of the total contained gold produced.

Cutoff grades are dependent on the mining methods used to exploit placers. Methods of placer mining included in this model are as diverse as the depositional environment. These methods include panning, sluicing, hydraulic mining, and dredging. Draglines were used to mine some placers. Cut-off grades are also dependent on the value of gold during the period, or periods, of operation.

Some placer deposits were excluded due to grade or tonnage figures not compatible with the majority of placers found in the model. Placers exploited through drift mining exhibit grades that are too large and tonnages that are too small to be included in this model. Similarly, the large regional placers formed at the junction of mountainous areas and an adjacent plain or valley were excluded because they can be mined with large-volume dredges which are economic at grades not viable under other conditions. Both grades and tonnages f these placers are incompatible with this model.

Placer sizes were initially recorded in terms of cubic meters and the grades recorded as grams per cubic meter. In order to conform to other deposit models herein, deposit volume and grades have been converted to metric tons and grams per metric ton using 2.0 metric tons per cubic meter -- the average density of wet sand and gravel. Gold grade is correlated with tonnage ($r = -0.35$) and the silver grade ($r = 0.66$, $n = 16$).

The upper ten percent of the deposits contain a minimum of 50 million tonnes, 25 million cubic meters at 0.48 grams per tonne or 0.015 ounces per tonne Au. Total contained metal is 375,000 ounces. The gross metal value in 1987 would have been $173 million. This is a very conservative model and does not include the major large placer gold districts of the world. For instance, the Fairbanks district produced 7.5 million ounces of placer gold from 170 million cubic meters at an minimum grade of 1.37 grams per cubic meter or 0.044 ounces per cubic meter. The gross value of this production in 1987 would have been $3.5 billion. The Klondike district, Yukon Territory, Canada produced approximately 1.5 times as much gold as Fairbanks while the Las Medulas district of Spain produced 4.0 times as much gold as the Klondike.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Ten years at 2.5 million cubic meters per year (15,600 cubic meters per day for 160 days per year).

Gross Value of Annual Production $17.3 million.

Net Present Value of 10% NSR $1.7 million times 6.144 is $10.4 million.

Comments, Assumptions, Specifications: PLACALPG
Placer Au - Pge, Surface, Generic Model
160 days/yr operation

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Placer Au, (alluvial)
Total Ore Tonnage: 50 mil mt - 32.7 mil yd^3
Mining Method: Open Pit
Beneficiation Method: Gravity - Recovery Jigs
Extraction Rate: 61,000 MTPD - 40,000 yd^3/day
Dilution/Waste Rate: —
Proposed Mine Life: 10 yrs
Proposed Daily Production: 61,000 MTPD - 40,000 yd^3/day
Maximum Ore Depth: 10 m
Stripping Ratio: 3:1
Haulage Distance/Road Requirements: 10 Km access road
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: F.E.L.S / Shovels, Trucks
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: 1.115 ha/day
Burden/Waste rate-mtpd: 180,000 MTPD
Burden/Waste depth & haul-m: 4m, 400m
Ore rate-mtpd: 61,000 MTPD
Ore depth & haul-m: 10m, 1,000m
Conveyor length & slope-km & %: —
Water needs-cm/day: 8,000 m³/day
Drainage, head & distance-cm/day, m & km: None
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 61,000 MTPD
Production water needs-cm/day: 300,000 recycle, 10,000 m³/day m.u.
Portable Power needs-kW: 200 kW
Wastewater-L/sec: None
Concentrate haul-km: Doré
Employee housing-men: 130
Other:
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 61,000 MTPD
Mill operating costs-$/day:
Working capital time-weeks: 13 weeks
Development time-days:
Clearing needs-ha: 100 ha

Stripping needs-mt: 1.8 mil mt
Stripping depth & haul-m: 4 m, 400 m
Restoration area-ha: 1,800 ha total, 180 ha/season
Contractors-1 or 2: 2
Mine operating costs-$/day:
Access roads, length & width-km & m: 10 km, 9 m
Airstrip length & width-m: 1,200 m, 18 m
Powerline length & power-km & mW: portable
Dike & Dam needs-cm/fill: 100,000 m^3
Climate/Weather factors: mild (summer operation)
Other:
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 151,641
Mining Costs-$/yr: 24,262,560
Mining Costs-$/mt: 2.49/mT — 3.79/$yd^3$
Milling Costs-$/day: 22.098
Milling Costs-$/yr: 3,535,680
Milling Costs-$/mt: .36/mT - .55/$m^3$
Infrastructure Costs-$/day: 10,973
Infrastructure Costs-$/yr: 1,755,680
Infrastructure Costs-$/mt: .18/mT - .27/$yd^3$
Total Operating Costs-$/day: 184,712
Total Operating Costs-$/yr: 29,553,920
Total Operating Costs-$/mt: 3.03/mT - 4.62/$m^3$
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 13,799,331
Heavy Equipment (fixed life)-$: 20,490,877 *
Mine Rehabilitation-$: 1,675,890 *
Engr. & Const. Mgmt.-$: 1,644,877 *
Other:
Remaining Mine Capital-$: 6,513,477 -
Total Mine Capital-$: 44,124,452

MILL CAPITAL COSTS:

Mill Working Capital-$: 2,010,918
Light Vehicles (short life)-$: 1753,978 *
Other:
Remaining Mill Capital-$: 10,707,707 -
Total Mill Capital-$: 14,472,603

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 3,355,948 *

Other: _____

Remaining Infrastructure Capital-$: 9,116,211 ~

Total Infrastructure Capital-$: 12,472,159

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 15,810,249 *

Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 26,337,395 *

Sum of Total Mine, Mill & Infr. Costs-$: 71,069,214

Exploration Cost-$: 7,106,921 *

Overall Capital Cost-$: 78,176,135
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:PLACAUPG.SEE Date:03/28/94 Time:05:19:07

PLACER GOLD/PLATINUM GROUP ELEMENTS, SURFACE MINE

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

******** Minimum ROR,Inflation & Exponents ********* ****** Tax Rates ******

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion:Constant Rate	: $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	20,490,877	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,675,890	MACRS	Mid Year	13.0	0			0 .....
3	04/89	1,644,877	MACRS	Mid Year	13.0	0			0 .....
4	04/89	6,513,477	MACRS	Mid Year	13.0	0			0 .....
5	04/89	13,799,331	WC	Mid Year	13.0	0			0 .....
6	04/89	1,753,978	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,753,978	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,753,878	MACRS	Mid Year	4.0	0			0 .....
9	04/89	3,355,948	MACRS	Mid Year	13.0	0			0 .....
10	04/89	2,010,918	WC	Mid Year	13.0	0			0 .....
11	04/89	9,116,211	MACRS	Mid Year	13.0	0			0 .....
12	04/89	7,106,921	EXPL-X	Mid Year	13.0	0			0 .....
13	04/89	10,707,707	MACRS	Mid Year	13.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	10,000,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0154	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	24,262,560.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	3,535,680.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	1,755,680.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	100,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****

Project Equations

General Equations

E1 . MO REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes

E10. MHT NPI	S20*(E6-E8)

Royalties

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs

E7 . SMELTING CHARGES	S18*E6

PLACER GOLD/PLATINUM GROUP ELEMENTS, SURFACE MINE

Cash Flows

NPV =$23,984,263 DCFROR= 16.6% GROR = 13.1% PWROR = 16.6% Pay Back= 4.88 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		49,506,457	49,506,457	49,506,457	49,506,457	49,506,457	49,506,457
GROSS REVENUE		49,506,457	49,506,457	49,506,457	49,506,457	49,506,457	49,506,457
Total Revenue		49,506,457	49,506,457	49,506,457	49,506,457	49,506,457	49,506,457
-SMELTING CHARGES		-495,065	-495,065	-495,065	-495,065	-495,065	-495,065
-Total Smelting Cost		-495,065	-495,065	-495,065	-495,065	-495,065	-495,065
Net Smelt Ret.		49,011,392	49,011,392	49,011,392	49,011,392	49,011,392	49,011,392
-MHT ROYALTY		-1,956,456	-1,956,456	-1,956,456	-1,956,456	-1,956,456	-1,956,456
-Total Royalties		-1,956,456	-1,956,456	-1,956,456	-1,956,456	-1,956,456	-1,956,456
Net Revenue		47,054,937	47,054,937	47,054,937	47,054,937	47,054,937	47,054,937
-OPER COSTS		-29,653,920	-29,653,920	-29,653,920	-29,653,920	-29,653,920	-29,653,920
-Total Oper Costs		-29,653,920	-29,653,920	-29,653,920	-29,653,920	-29,653,920	-29,653,920
-Dev, IDC	-4,974,845						
-Depreciation	-4,554,263	-8,256,083	-7,196,731	-6,317,222	-5,041,768	-4,114,325	-3,843,928
-Amortization	-1,279,246	-426,415	-426,415				
-Write Off							
Before Depltn	-10,808,353	8,718,518	9,777,870	11,083,795	12,359,249	13,286,692	13,557,089
100% Limit		8,718,518	9,777,870	11,083,795	12,359,249	13,286,692	13,557,089
Percent Depln		7,058,241	7,058,241	7,058,241	7,058,241	7,058,241	7,058,241
Prev Exp Expl		4,974,845					
-Depletion		-2,083,396	-7,058,241	-7,058,241	-7,058,241	-7,058,241	-7,058,241
-Total D,D & A	-10,808,353	-10,765,894	-14,681,387	-13,375,462	-12,100,009	-11,172,566	-10,902,169
Taxable	-10,808,353	6,635,123	2,719,630	4,025,555	5,301,008	6,228,451	6,498,848
-Tax Due	3,674,840	-2,255,942	-924,674	-1,368,689	-2,047,249	-2,405,428	-2,509,855
Net Income	-7,133,513	4,379,181	1,794,956	2,656,866	3,253,759	3,823,023	3,988,993
+Depreciation	4,554,263	8,256,083	7,196,731	6,317,222	5,041,768	4,114,325	3,843,928
+Depletion		2,083,396	7,058,241	7,058,241	7,058,241	7,058,241	7,058,241
+Amortization	1,279,246	426,415	426,415				
+Write Off							
-Capital Costs	-73,201,290		-1,753,978				-1,753,878
Cash Flow	-74,501,295	15,145,075	14,722,365	16,032,328	15,353,767	14,995,589	13,137,284

Year	7	8	9	10	Salvage
AU REV	49,506,457	49,506,457	49,506,457	49,506,457	
GROSS REVENUE	49,506,457	49,506,457	49,506,457	49,506,457	
Total Revenue	49,506,457	49,506,457	49,506,457	49,506,457	15,810,249
-SMELTING CHARGES	-495,065	-495,065	-495,065	-495,065	
-Total Smelting Cost	-495,065	-495,065	-495,065	-495,065	
Net Smelt Ret.	49,011,392	49,011,392	49,011,392	49,011,392	
-MHT ROYALTY	-1,956,456	-1,956,456	-1,956,456	-1,956,456	
-Total Royalties	-1,956,456	-1,956,456	-1,956,456	-1,956,456	
Net Revenue	47,054,937	47,054,937	47,054,937	47,054,937	
-OPER COSTS	-29,653,920	-29,653,920	-29,653,920	-29,653,920	
-Total Oper Costs	-29,653,920	-29,653,920	-29,653,920	-29,653,920	
-Dev, IDC					
-Depreciation	-3,446,488	-3,117,636	-3,008,018	-2,898,401	-6,971,959
-Amortization					
-Write Off					-15,810,249
Before Depltn	13,954,529	14,283,381	14,392,999	14,502,616	-6,971,959
100% Limit	13,954,529	14,283,381	14,392,999	14,502,616	
Percent Depln	7,058,241	7,058,241	7,058,241	7,058,241	
Prev Exp Expl					
-Depletion	-7,058,241	-7,058,241	-7,058,241	-7,058,241	
-Total D,D & A	-10,504,728	-10,175,876	-10,066,259	-9,956,641	-22,782,208
Taxable	6,896,288	7,225,141	7,334,758	7,444,375	-6,971,959
-Tax Due	-2,663,347	-2,790,349	-2,832,684	-2,875,018	2,692,570
Net Income	4,232,942	4,434,791	4,502,074	4,569,358	-4,279,388
+Depreciation	3,446,488	3,117,636	3,008,018	2,898,401	6,971,959
+Depletion	7,058,241	7,058,241	7,058,241	7,058,241	
+Amortization					
+Write Off					15,810,249
-Capital Costs					
Cash Flow	14,737,670	14,610,667	14,568,333	14,525,999	18,502,819

List of Assumptions File:PLACAUPG.SEE Date:01/07/94 Time:12:57:01

PLACER GOLD/PLATINUM GROUP ELEMENTS, SURFACE MINE

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 10
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Minimum ROR, Inflation & Exponents: Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant $ ROR	Tax Rates: State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	20,490,877	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,675,890	MACRS	Mid Year	13.0	0		0	.....
3	04/89	1,644,877	MACRS	Mid Year	13.0	0		0	.....
4	04/89	6,513,477	MACRS	Mid Year	13.0	0		0	.....
5	04/89	13,799,331	WC	Mid Year	13.0	0		0	.....
6	04/89	1,753,978	MACRS	Mid Year	4.0	0		0	.....
7	04/93	1,753,978	MACRS	Mid Year	4.0	0		0	.....
8	04/97	1,753,878	MACRS	Mid Year	4.0	0		0	.....
9	04/89	3,355,948	MACRS	Mid Year	13.0	0		0	.....
10	04/89	2,010,918	WC	Mid Year	13.0	0		0	.....
11	04/89	9,116,211	MACRS	Mid Year	13.0	0		0	.....
12	04/89	7,106,921	EXPL-X	Mid Year	13.0	0		0	.....
13	04/89	10,707,707	MACRS	Mid Year	13.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	10,000,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0154	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	24,262,560.00	Constant	0.000
S13	MILLING COSTS	Annual:	04/92	End	3,535,680.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	1,755,680.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	100,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

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Project Equations

General Equations

E1 . MO REV	S1*S2*S7*S16*S17

Equations continued

E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes

E10. MHT NPI	S20*(E6-E8)

Royalties

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs

E7 . SMELTING CHARGES	S18*E6

PLACER GOLD/PLATINUM GROUP ELEMENTS, SURFACE MINE

Cash Flows

NPV =$29,935,915 DCFROR= 18.2% GROR = 13.8% PWROR = 18.2% Pay Back= 4.58 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		49,506,457	49,506,457	49,506,457	49,506,457	49,506,457	49,506,457
GROSS REVENUE		49,506,457	49,506,457	49,506,457	49,506,457	49,506,457	49,506,457
Total Revenue		49,506,457	49,506,457	49,506,457	49,506,457	49,506,457	49,506,457
-SMELTING CHARGES		-495,065	-495,065	-495,065	-495,065	-495,065	-495,065
-Total Smelting Cost		-495,065	-495,065	-495,065	-495,065	-495,065	-495,065
Net Smelt Ret.		49,011,392	49,011,392	49,011,392	49,011,392	49,011,392	49,011,392
Net Revenue		49,011,392	49,011,392	49,011,392	49,011,392	49,011,392	49,011,392
-OPER COSTS		-29,653,920	-29,653,920	-29,653,920	-29,653,920	-29,653,920	-29,653,920
-Total Oper Costs		-29,653,920	-29,653,920	-29,653,920	-29,653,920	-29,653,920	-29,653,920
-MHT NPI		-595,576	-595,576	-595,576	-595,576	-595,576	-595,576
-Total Sev. Ad Valor		-595,576	-595,576	-595,576	-595,576	-595,576	-595,576
-Dev, IDC	-4,974,845						
-Depreciation	-4,554,263	-8,256,083	-7,196,731	-6,317,222	-5,041,768	-4,114,325	-3,843,928
-Amortization	-1,279,246	-426,415	-426,415				
-Write Off							
Before Depltn	-10,808,353	10,079,398	11,138,750	12,444,675	13,720,128	14,647,571	14,917,968
100% Limit		10,079,398	11,138,750	12,444,675	13,720,128	14,647,571	14,917,968
Percent Depln		7,351,709	7,351,709	7,351,709	7,351,709	7,351,709	7,351,709
Prev Exp Expl		4,974,845					
-Depletion		-2,376,864	-7,351,709	-7,351,709	-7,351,709	-7,351,709	-7,351,709
-Total D,D & A	-10,808,353	-11,059,363	-14,974,855	-13,668,930	-12,393,477	-11,466,034	-11,195,637
Taxable	-10,808,353	7,702,534	3,787,041	5,092,966	6,368,419	7,295,862	7,566,259
-Tax Due	3,674,840	-2,618,861	-1,287,594	-1,731,608	-2,459,484	-2,817,662	-2,922,089
Net Income	-7,133,513	5,083,672	2,499,447	3,361,357	3,908,936	4,478,200	4,644,170
+Depreciation	4,554,263	8,256,083	7,196,731	6,317,222	5,041,768	4,114,325	3,843,928
+Depletion		2,376,864	7,351,709	7,351,709	7,351,709	7,351,709	7,351,709
+Amortization	1,279,246	426,415	426,415				
+Write Off							
-Capital Costs	-73,201,290		-1,753,978				-1,753,878
Cash Flow	-74,501,295	16,143,035	15,720,324	17,030,288	16,302,413	15,944,234	14,085,929

Year	7	8	9	10	Salvage
AU REV	49,506,457	49,506,457	49,506,457	49,506,457	
GROSS REVENUE	49,506,457	49,506,457	49,506,457	49,506,457	
Total Revenue	49,506,457	49,506,457	49,506,457	49,506,457	15,810,249
-SMELTING CHARGES	-495,065	-495,065	-495,065	-495,065	
-Total Smelting Cost	-495,065	-495,065	-495,065	-495,065	
Net Smelt Ret.	49,011,392	49,011,392	49,011,392	49,011,392	
Net Revenue	49,011,392	49,011,392	49,011,392	49,011,392	
-OPER COSTS	-29,653,920	-29,653,920	-29,653,920	-29,653,920	
-Total Oper Costs	-29,653,920	-29,653,920	-29,653,920	-29,653,920	
-MHT NPI	-595,576	-595,576	-595,576	-595,576	
-Total Sev. Ad Valor	-595,576	-595,576	-595,576	-595,576	
-Dev, IDC					
-Depreciation	-3,446,488	-3,117,636	-3,008,018	-2,898,401	-6,971,959
-Amortization					
-Write Off					-15,810,249
Before Depltn	15,315,409	15,644,261	15,753,878	15,863,495	-6,971,959
100% Limit	15,315,409	15,644,261	15,753,878	15,863,495	
Percent Depln	7,351,709	7,351,709	7,351,709	7,351,709	
Prev Exp Expl					
-Depletion	-7,351,709	-7,351,709	-7,351,709	-7,351,709	
-Total D,D & A	-10,798,197	-10,469,344	-10,359,727	-10,250,110	-22,782,208
Taxable	7,963,700	8,292,552	8,402,169	8,511,787	-6,971,959
-Tax Due	-3,075,581	-3,202,584	-3,244,918	-3,287,252	2,692,570
Net Income	4,888,119	5,089,968	5,157,251	5,224,535	-4,279,388
+Depreciation	3,446,488	3,117,636	3,008,018	2,898,401	6,971,959
+Depletion	7,351,709	7,351,709	7,351,709	7,351,709	
+Amortization					
+Write Off					15,810,249
-Capital Costs					
Cash Flow	15,686,315	15,559,313	15,516,979	15,474,644	18,502,819

APPENDIX B-26

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR ALLUVIAL PLACER TIN (Sn) DEPOSITS

(NONE IDENTIFIED BY ADGGS)

APPENDIX B-27

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

BULK MINEABLE GOLD (Au) DEPOSITS

(COMBINED WITH HOT SPRINGS GOLD DEPOSITS see B-4)

APPENDIX B-28

MINERAL DEPOSIT MODELS,

ASSOCIATED TONNAGE ANG GRADE MODELS,.

MINE AND COST MODELS, AND CASH FLOW MODELS FOR

PLACER PLATINUM GROUP ELEMENT (PGE) DEPOSITS

(COMBINED WITH PLACER GOLD DEPOSITS see B-25)

SURFACE COAL MINE, HEALY NSR 12.5%(COAL PRICE $ 38.00 /TONNE FOB)

Cash Flows

NPV =$9,153,033 DCFROR= 11.6% GROR = 10.5% PWROR = 11.6% Pay Back= 6.73 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
GROSS REV		57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
Total Revenue		57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
Net Smelt Ret.		57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
-MET ROYALTY		-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000
-Total Royalties		-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000
Net Revenue		51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000
-OPER COSTS		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC	-9,839,236							
-Depreciation	-4,952,060	-9,006,094	-7,414,599	-6,204,751	-5,452,063	-4,741,717	-4,137,151	-3,943,706
-Amortization	-70,280	-843,363	-843,363	-843,363	-843,363	-773,083		
-Write Off								
Before Depltn	-14,861,576	4,714,583	6,306,078	7,515,926	8,268,614	9,049,241	10,426,889	10,620,334
100% Limit		4,714,583	6,306,078	7,515,926	8,268,614	9,049,241	10,426,889	10,620,334
Percent Depln		4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000
Prev Exp Expl		4,080,000	1,454,403					
-Depletion			-2,625,597	-4,080,000	-4,080,000	-4,080,000	-4,080,000	-4,080,000
-Total D,D & A	-14,861,576	-9,849,457	-10,883,559	-11,128,114	-10,375,426	-9,594,799	-8,217,151	-8,023,706
Taxable	-14,861,576	4,714,583	3,680,481	3,435,926	4,188,614	4,969,241	6,346,889	6,540,334
-Tax Due	5,739,541	-1,820,772	-1,421,402	-1,326,955	-1,617,643	-1,919,121	-2,451,169	-2,525,877
Net Income	-9,122,035	2,893,811	2,259,079	2,108,971	2,570,971	3,050,120	3,895,721	4,014,457
+Depreciation	4,952,060	9,006,094	7,414,599	6,204,751	5,452,063	4,741,717	4,137,151	3,943,706
+Depletion			2,625,597	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000
+Amortization	70,280	843,363	843,363	843,363	843,363	773,083		
+Write Off								
-Capital Costs	-80,481,702				-1,000,193			
Cash Flow	-84,581,397	12,743,268	13,142,638	13,237,085	11,946,204	12,644,919	12,112,871	12,038,163

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	8	9	10	11	12	13	14	15
GROSS REV	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
Total Revenue	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
Net Smelt Ret.	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
-MHT ROYALTY	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000
-Total Royalties	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000
Net Revenue	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC								
-Depreciation	-4,109,711	-4,172,223	-6,245,572	-7,771,383	-6,748,307	-5,842,330	-4,880,002	-4,197,657
-Amortization								
-Write Off								
Before Depltn	10,454,329	10,391,817	8,318,468	6,792,657	7,815,733	8,721,710	9,684,038	10,366,383
100% Limit	10,454,329	10,391,817	8,318,468	6,792,657	7,815,733	8,721,710	9,684,038	10,366,383
Percent Depln	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000
Prev Exp Expl								
-Depletion	-4,080,000	-4,080,000	-4,080,000	-4,080,000	-4,080,000	-4,080,000	-4,080,000	-4,080,000
-Total D,D & A	-8,189,711	-8,252,223	-10,325,572	-11,851,383	-10,828,307	-9,922,330	-8,960,002	-8,277,657
Taxable	6,374,329	6,311,817	4,238,468	2,712,657	3,735,733	4,641,710	5,604,038	6,286,383
-Tax Due	-2,461,766	-2,437,624	-1,636,896	-1,047,628	-1,442,740	-1,792,628	-2,164,279	-2,427,801
Net Income	3,912,563	3,874,193	2,601,572	1,665,029	2,292,993	2,849,082	3,439,759	3,858,582
+Depreciation	4,109,711	4,172,223	6,245,572	7,771,383	6,748,307	5,842,330	4,880,002	4,197,657
+Depletion	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000
+Amortization								
+Write Off								
-Capital Costs	-1,000,193		-33,628,107		-1,000,193			
Cash Flow	11,102,081	12,126,416	-20,700,963	13,516,412	12,121,107	12,771,412	12,399,761	12,136,239

Year	16	17	18	19	20	Salvage
GROSS REV	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	
Total Revenue	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	5,924,555
Net Smelt Ret.	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	
-MHT ROYALTY	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	
-Total Royalties	-6,000,000	-6,000,000	-6,000,000	-6,000,000	-6,000,000	
Net Revenue	51,000,000	51,000,000	51,000,000	51,000,000	51,000,000	
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Dev, IDC						
-Depreciation	-4,109,711	-4,172,223	-3,984,687	-3,922,175	-1,961,088	
-Amortization						
-Write Off						-5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	16	17	18	19	20	Salvage
Before Depltn	10,454,329	10,391,817	10,579,353	10,641,865	12,602,952	
100% Limit	10,454,329	10,391,817	10,579,353	10,641,865	12,602,952	
Percent Depln	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	
Prev Exp Expl						
-Depletion	-4,080,000	-4,080,000	-4,080,000	-4,080,000	-4,080,000	
-Total D,D & A	-8,189,711	-8,252,223	-8,064,687	-8,002,175	-6,041,088	-5,924,555
Taxable	6,374,329	6,311,817	6,499,353	6,561,865	8,522,952	
-Tax Due	-2,461,766	-2,437,624	-2,510,050	-2,534,192	-3,291,564	
Net Income	3,912,563	3,874,193	3,989,303	4,027,673	5,231,388	
+Depreciation	4,109,711	4,172,223	3,984,687	3,922,175	1,961,088	
+Depletion	4,080,000	4,080,000	4,080,000	4,080,000	4,080,000	
+Amortization						
+Write Off						5,924,555
-Capital Costs	-1,000,193					
Cash Flow	11,102,081	12,126,416	12,053,990	12,029,848	11,272,476	5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

SURFACE COAL MINE, HEALY NSR 12.5%(COAL PRICE $ 36.00 /TONNE FOB)

Cash Flows

NPV =$-5,876,559 DCFROR= 8.9% GROR = 9.6% PWROR = 8.9% Pay Back= 7.99 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
GROSS REV		54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
Total Revenue		54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
Net Smelt Ret.		54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
-MET ROYALTY		-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000
-Total Royalties		-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000
Net Revenue		48,375,000	48,375,000	48,375,000	48,375,000	48,375,000	48,375,000	48,375,000
-OPER COSTS		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC	-9,839,236							
-Depreciation	-4,952,060	-9,006,094	-7,414,599	-6,204,751	-5,452,063	-4,741,717	-4,137,151	-3,943,706
-Amortization	-70,280	-843,363	-843,363	-843,363	-843,363	-773,083		
-Write Off								
Before Depltn	-14,861,576	2,089,583	3,681,078	4,890,926	5,643,614	6,424,241	7,801,889	7,995,334
100% Limit		2,089,583	3,681,078	4,890,926	5,643,614	6,424,241	7,801,889	7,995,334
Percent Depln		3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000
Prev Exp Expl		2,089,583	3,444,820					
-Depletion			-236,258	-3,870,000	-3,870,000	-3,870,000	-3,870,000	-3,870,000
-Total D,D & A	-14,861,576	-9,849,457	-8,494,220	-10,918,114	-10,165,426	-9,384,799	-8,007,151	-7,813,706
Taxable	-14,861,576	2,089,583	3,444,820	1,020,926	1,773,614	2,554,241	3,931,889	4,125,334
-Tax Due	5,739,541	-806,997	-1,330,389	-394,282	-684,970	-986,448	-1,518,496	-1,593,204
Net Income	-9,122,035	1,282,586	2,114,431	626,644	1,088,644	1,567,793	2,413,394	2,532,130
+Depreciation	4,952,060	9,006,094	7,414,599	6,204,751	5,452,063	4,741,717	4,137,151	3,943,706
+Depletion			236,258	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000
+Amortization	70,280	843,363	843,363	843,363	843,363	773,083		
+Write Off								
-Capital Costs	-80,481,702				-1,000,193			
Cash Flow	-84,581,397	11,132,043	10,608,651	11,544,758	10,253,877	10,952,592	10,420,544	10,345,836

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	8	9	10	11	12	13	14	15
GROSS REV	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
Total Revenue	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
Net Smelt Ret.	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
-MNT ROYALTY	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000
-Total Royalties	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000
Net Revenue	48,375,000	48,375,000	48,375,000	48,375,000	48,375,000	48,375,000	48,375,000	48,375,000
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC								
-Depreciation	-4,109,711	-4,172,223	-6,245,572	-7,771,383	-6,748,307	-5,842,330	-4,880,002	-4,197,657
-Amortization								
-Write Off								
Before Depltn	7,829,329	7,766,817	5,693,468	4,167,657	5,190,733	6,096,710	7,059,038	7,741,383
100% Limit	7,829,329	7,766,817	5,693,468	4,167,657	5,190,733	6,096,710	7,059,038	7,741,383
Percent Depln	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000
Prev Exp Expl								
-Depletion	-3,870,000	-3,870,000	-3,870,000	-3,870,000	-3,870,000	-3,870,000	-3,870,000	-3,870,000
-Total D,D & A	-7,979,711	-8,042,223	-10,115,572	-11,641,383	-10,618,307	-9,712,330	-8,750,002	-8,067,657
Taxable	3,959,329	3,896,817	1,823,468	297,657	1,320,733	2,226,710	3,189,038	3,871,383
-Tax Due	-1,529,093	-1,504,951	-704,223	-114,955	-510,067	-859,955	-1,231,606	-1,495,128
Net Income	2,430,236	2,391,866	1,119,245	182,702	810,666	1,366,755	1,957,432	2,376,255
+Depreciation	4,109,711	4,172,223	6,245,572	7,771,383	6,748,307	5,842,330	4,880,002	4,197,657
+Depletion	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000
+Amortization								
+Write Off								
-Capital Costs	-1,000,193		-33,628,107		-1,000,193			
Cash Flow	9,409,754	10,434,089	-22,393,290	11,824,085	10,428,780	11,079,085	10,707,434	10,443,912

Year	16	17	18	19	20	Salvage
GROSS REV	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	
Total Revenue	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	5,924,555
Net Smelt Ret.	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	
-MNT ROYALTY	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	
-Total Royalties	-5,625,000	-5,625,000	-5,625,000	-5,625,000	-5,625,000	
Net Revenue	48,375,000	48,375,000	48,375,000	48,375,000	48,375,000	
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Dev, IDC						
-Depreciation	-4,109,711	-4,172,223	-3,984,687	-3,922,175	-1,961,088	
-Amortization						
-Write Off						-5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

APR 01 '94 11:55AM P.11

Year	16	17	18	19	20	Salvage
Before Depltn	7,829,329	7,766,817	7,954,353	8,016,865	9,977,952	
100% Limit	7,829,329	7,766,817	7,954,353	8,016,865	9,977,952	
Percent Depln	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	
Prev Exp Expl						
-Depletion	-3,870,000	-3,870,000	-3,870,000	-3,870,000	-3,870,000	
-Total D,D & A	-7,979,711	-8,042,223	-7,854,687	-7,792,175	-5,831,088	-5,924,555
Taxable	3,959,329	3,896,817	4,084,353	4,146,865	6,107,952	
-Tax Due	-1,529,093	-1,504,951	-1,577,377	-1,601,519	-2,358,891	
Net Income	2,430,236	2,391,866	2,506,976	2,545,346	3,749,061	
+Depreciation	4,109,711	4,172,223	3,984,687	3,922,175	1,961,088	
+Depletion	3,870,000	3,870,000	3,870,000	3,870,000	3,870,000	
+Amortization						
+Write Off						5,924,555
-Capital Costs	-1,000,193					
Cash Flow	9,409,754	10,434,089	10,361,663	10,337,521	9,580,149	5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

SURFACE COAL MINE, HEALY NSR 12.5%(COAL PRICE $34.06 /TONNE FOB)

Cash Flows

NPV =$-22,039,642 DCFROR= 5.8% GROR = 8.5% PWROR = 6.0% Pay Back=13.41 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
GROSS REV		51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
Total Revenue		51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
Net Smelt Ret.		51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
-MET ROYALTY		-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250
-Total Royalties		-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250
Net Revenue		45,828,750	45,828,750	45,828,750	45,828,750	45,828,750	45,828,750	45,828,750
-OPER COSTS		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC	-9,839,236							
-Depreciation	-4,952,060	-9,006,094	-7,414,599	-6,204,751	-5,452,063	-4,741,717	-4,137,151	-3,943,706
-Amortization	-70,280	-843,363	-843,363	-843,363	-843,363	-773,083		
-Write Off								
Before Depltn	-14,861,576	-456,667	1,134,828	2,344,676	3,097,364	3,877,991	5,255,639	5,449,084
100% Limit			1,134,828	2,344,676	3,097,364	3,877,991	5,255,639	5,449,084
Percent Depln		3,666,300	3,666,300	3,666,300	3,666,300	3,666,300	3,666,300	3,666,300
Prev Exp Expl			1,134,828	2,344,676	2,054,899			
-Depletion					-1,042,465	-3,666,300	-3,666,300	-3,666,300
-Total D,D & A	-14,861,576	-9,849,457	-8,257,962	-7,048,114	-7,337,891	-9,181,099	-7,803,451	-7,610,006
Taxable	-14,861,576	-456,667	1,134,828	2,344,676	2,054,899	211,691	1,589,339	1,782,784
-Tax Due	5,739,541	176,365	-438,271	-905,514	-793,602	-81,755	-613,803	-688,511
Net Income	-9,122,035	-280,302	696,558	1,439,162	1,261,297	129,936	975,537	1,094,273
+Depreciation	4,952,060	9,006,094	7,414,599	6,204,751	5,452,063	4,741,717	4,137,151	3,943,706
+Depletion					1,042,465	3,666,300	3,666,300	3,666,300
+Amortization	70,280	843,363	843,363	843,363	843,363	773,083		
+Write Off								
-Capital Costs	-80,481,702				-1,000,193			
Cash Flow	-84,581,397	9,569,155	8,954,519	8,487,276	7,598,995	9,311,035	8,778,987	8,704,279

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	8	9	10	11	12	13	14	15
GROSS REV	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
Total Revenue	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
Net Smelt Ret.	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
-MET ROYALTY	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250
-Total Royalties	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250
Net Revenue	45,828,750	45,828,750	45,828,750	45,828,750	45,828,750	45,828,750	45,828,750	45,828,750
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC								
-Depreciation	-4,109,711	-4,172,223	-6,245,572	-7,771,383	-6,748,307	-5,842,330	-4,880,002	-4,197,657
-Amortization								
-Write Off								
Before Depltn	5,283,079	5,220,567	3,147,218	1,621,407	2,644,483	3,550,460	4,512,788	5,195,133
100% Limit	5,283,079	5,220,567	3,147,218	1,621,407	2,644,483	3,550,460	4,512,788	5,195,133
Percent Depln	3,666,300	3,666,300	3,666,300	3,666,300	3,666,300	3,666,300	3,666,300	3,666,300
Prev Exp Expl								
-Depletion	-3,666,300	-3,666,300	-3,147,218	-1,621,407	-2,644,483	-3,550,460	-3,666,300	-3,666,300
-Total D,D & A	-7,776,011	-7,838,523	-9,392,790	-9,392,790	-9,392,790	-9,392,790	-8,546,302	-7,863,957
Taxable	1,616,779	1,554,267					846,488	1,528,833
-Tax Due	-624,400	-600,258					-326,914	-590,435
Net Income	992,379	954,009					519,574	938,398
+Depreciation	4,109,711	4,172,223	6,245,572	7,771,383	6,748,307	5,842,330	4,880,002	4,197,657
+Depletion	3,666,300	3,666,300	3,147,218	1,621,407	2,644,483	3,550,460	3,666,300	3,666,300
+Amortization								
+Write Off								
-Capital Costs	-1,000,193		-33,628,107		-1,000,193			
Cash Flow	7,768,197	8,792,532	-24,235,317	9,392,790	8,392,597	9,392,790	9,065,876	8,802,355

Year	16	17	18	19	20	Salvage
GROSS REV	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	
Total Revenue	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	5,924,555
Net Smelt Ret.	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	
-MET ROYALTY	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	
-Total Royalties	-5,261,250	-5,261,250	-5,261,250	-5,261,250	-5,261,250	
Net Revenue	45,828,750	45,828,750	45,828,750	45,828,750	45,828,750	
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Dev, IDC						
-Depreciation	-4,109,711	-4,172,223	-3,984,687	-3,922,175	-1,961,088	
-Amortization						
-Write Off						-5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	16	17	18	19	20	Salvage
Before Deplin	5,283,079	5,220,567	5,408,103	5,470,615	7,431,702	
100% Limit	5,283,079	5,220,567	5,408,103	5,470,615	7,431,702	
Percent Depln	3,666,300	3,666,300	3,666,300	3,666,300	3,666,300	
Prev Exp Expl						
-Depletion	-3,666,300	-3,666,300	-3,666,300	-3,666,300	-3,666,300	
-Total D,D & A	-7,776,011	-7,838,523	-7,650,987	-7,588,475	-5,627,388	-5,924,555
Taxable	1,616,779	1,554,267	1,741,803	1,804,315	3,765,402	
-Tax Due	-624,400	-600,258	-672,684	-696,826	-1,454,198	
Net Income	992,379	954,009	1,069,119	1,107,488	2,311,204	
+Depreciation	4,109,711	4,172,223	3,984,687	3,922,175	1,961,088	
+Depletion	3,666,300	3,666,300	3,666,300	3,666,300	3,666,300	
+Amortization						
+Write Off						5,924,555
-Capital Costs	-1,000,193					
Cash Flow	7,768,197	8,792,532	8,720,106	8,695,964	7,938,592	5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

APR 01 '94 11:58AM

SURFACE COAL MINE, HEALY NSR 5%(COAL PRICE $ 40.00 /TONNE FOB)

Cash Flows

NPV =$44,538,424 DCFROR= 17.6% GROR = 12.2% PWROR = 17.6% Pay Back= 5.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
GROSS REV		60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000
Total Revenue		60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000
Net Smelt Ret.		60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000
-MET ROYALTY		-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000
-Total Royalties		-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000
Net Revenue		57,450,000	57,450,000	57,450,000	57,450,000	57,450,000	57,450,000	57,450,000
-OPER COSTS		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC	-9,839,236							
-Depreciation	-4,952,060	-9,006,094	-7,414,599	-6,204,751	-5,452,063	-4,741,717	-4,137,151	-3,943,706
-Amortization	-70,280	-843,363	-843,363	-843,363	-843,363	-773,083		
-Write Off								
Before Depltn	-14,861,576	11,164,583	12,756,078	13,965,926	14,718,614	15,499,241	16,876,889	17,070,334
100% Limit		11,164,583	12,756,078	13,965,926	14,718,614	15,499,241	16,876,889	17,070,334
Percent Depln		4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000
Prev Exp Expl		4,596,000	938,403					
-Depletion			-3,667,597	-4,596,000	-4,596,000	-4,596,000	-4,596,000	-4,596,000
-Total D,D & A	-14,861,576	-9,849,457	-11,915,559	-11,644,114	-10,891,426	-10,110,799	-8,733,151	-8,539,706
Taxable	-14,861,576	11,164,583	9,098,481	9,369,926	10,122,614	10,903,241	12,280,889	12,474,334
-Tax Due	5,739,541	-4,311,762	-3,513,833	-3,618,665	-3,909,354	-4,210,832	-4,742,879	-4,817,588
Net Income	-9,122,035	6,852,821	5,584,648	5,751,261	6,213,260	6,692,409	7,538,010	7,656,746
+Depreciation	4,952,060	9,006,094	7,414,599	6,204,751	5,452,063	4,741,717	4,137,151	3,943,706
+Depletion			3,667,597	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000
+Amortization	70,280	843,363	843,363	843,363	843,363	773,083		
+Write Off								
-Capital Costs	-80,481,702				-1,000,193			
Cash Flow	-84,581,397	16,702,278	17,500,207	17,395,375	16,104,493	16,803,208	16,271,161	16,196,452

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	8	9	10	11	12	13	14	15
GROSS REV	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000
Total Revenue	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000
Net Smelt Ret.	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000
-MHT ROYALTY	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000
-Total Royalties	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000
Net Revenue	57,450,000	57,450,000	57,450,000	57,450,000	57,450,000	57,450,000	57,450,000	57,450,000
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC								
-Depreciation	-4,109,711	-4,172,223	-6,245,572	-7,771,383	-6,748,307	-5,842,330	-4,880,002	-4,197,657
-Amortization								
-Write Off								
Before Depltn	16,904,329	16,841,817	14,768,468	13,242,657	14,265,733	15,171,710	16,134,038	16,816,383
100% Limit	16,904,329	16,841,817	14,768,468	13,242,657	14,265,733	15,171,710	16,134,038	16,816,383
Percent Depln	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000
Prev Exp Expl								
-Depletion	-4,596,000	-4,596,000	-4,596,000	-4,596,000	-4,596,000	-4,596,000	-4,596,000	-4,596,000
-Total D,D & A	-8,705,711	-8,768,223	-10,841,572	-12,367,383	-11,344,307	-10,438,330	-9,476,002	-8,793,657
Taxable	12,308,329	12,245,817	10,172,468	8,646,657	9,669,733	10,575,710	11,538,038	12,220,383
-Tax Due	-4,753,476	-4,729,334	-3,928,607	-3,339,339	-3,734,451	-4,084,339	-4,455,990	-4,719,512
Net Income	7,554,852	7,516,482	6,243,861	5,307,318	5,935,282	6,491,371	7,082,048	7,500,871
+Depreciation	4,109,711	4,172,223	6,245,572	7,771,383	6,748,307	5,842,330	4,880,002	4,197,657
+Depletion	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000
+Amortization								
+Write Off								
-Capital Costs	-1,000,193		-33,628,107		-1,000,193			
Cash Flow	15,260,371	16,284,706	-16,542,674	17,674,701	16,279,396	16,929,701	16,558,050	16,294,528

Year	16	17	18	19	20	Salvage
GROSS REV	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	
Total Revenue	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	5,924,555
Net Smelt Ret.	60,000,000	60,000,000	60,000,000	60,000,000	60,000,000	
-MHT ROYALTY	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	
-Total Royalties	-2,550,000	-2,550,000	-2,550,000	-2,550,000	-2,550,000	
Net Revenue	57,450,000	57,450,000	57,450,000	57,450,000	57,450,000	
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Dev, IDC						
-Depreciation	-4,109,711	-4,172,223	-3,984,687	-3,922,175	-1,961,088	
-Amortization						
-Write Off						-5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

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Year	16	17	18	19	20	Salvage
Before Depltn	16,904,329	16,841,817	17,029,353	17,091,865	19,052,952	
100% Limit	16,904,329	16,841,817	17,029,353	17,091,865	19,052,952	
Percent Depln	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	
Prev Exp Expl						
-Depletion	-4,596,000	-4,596,000	-4,596,000	-4,596,000	-4,596,000	
-Total D,D & A	-8,705,711	-8,768,223	-8,580,687	-8,518,175	-6,557,088	-5,924,555
Taxable	12,308,329	12,245,817	12,433,353	12,495,865	14,456,952	
-Tax Due	-4,753,476	-4,729,334	-4,801,761	-4,825,903	-5,583,275	
Net Income	7,554,852	7,516,482	7,631,592	7,669,962	8,873,677	
+Depreciation	4,109,711	4,172,223	3,984,687	3,922,175	1,961,088	
+Depletion	4,596,000	4,596,000	4,596,000	4,596,000	4,596,000	
+Amortization						
+Write Off						5,924,555
-Capital Costs	-1,000,193					
Cash Flow	15,260,371	16,284,706	16,212,279	16,188,137	15,430,765	5,924,555

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Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

SURFACE COAL MINE, HEALY NSR 5%(COAL PRICE $ 38.00 /TONNE FOB)

Cash Flows

NPV =$28,903,018 DCFROR= 15.0% GROR = 11.5% PWROR = 15.0% Pay Back= 5.64 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
GROSS REV		57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
Total Revenue		57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
Net Smelt Ret.		57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
-MMT ROYALTY		-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000
-Total Royalties		-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000
Net Revenue		54,600,000	54,600,000	54,600,000	54,600,000	54,600,000	54,600,000	54,600,000
-OPER COSTS		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC	-9,839,236							
-Depreciation	-4,952,060	-9,006,094	-7,414,599	-6,204,751	-5,452,063	-4,741,717	-4,137,151	-3,943,706
-Amortization	-70,280	-843,363	-843,363	-843,363	-843,363	-773,083		
-Write Off								
Before Depltn	-14,861,576	8,314,583	9,906,078	11,115,926	11,868,614	12,649,241	14,026,889	14,220,334
100% Limit		8,314,583	9,906,078	11,115,926	11,868,614	12,649,241	14,026,889	14,220,334
Percent Depln		4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000
Prev Exp Expl		4,368,000	1,166,403					
-Depletion			-3,201,597	-4,368,000	-4,368,000	-4,368,000	-4,368,000	-4,368,000
-Total D,D & A	-14,861,576	-9,849,457	-11,459,559	-11,416,114	-10,663,426	-9,882,799	-8,505,151	-8,311,706
Taxable	-14,861,576	8,314,583	6,704,481	6,747,926	7,500,614	8,281,241	9,658,889	9,852,334
-Tax Due	5,739,541	-3,211,092	-2,589,271	-2,606,049	-2,896,737	-3,198,215	-3,730,263	-3,804,971
Net Income	-9,122,035	5,103,491	4,115,211	4,141,877	4,603,877	5,083,026	5,928,626	6,047,362
+Depreciation	4,952,060	9,006,094	7,414,599	6,204,751	5,452,063	4,741,717	4,137,151	3,943,706
+Depletion			3,201,597	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000
+Amortization	70,280	843,363	843,363	843,363	843,363	773,083		
+Write Off								
-Capital Costs	-80,481,702				-1,000,193			
Cash Flow	-84,581,397	14,952,948	15,574,769	15,557,991	14,267,110	14,965,825	14,433,777	14,359,069

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	8	9	10	11	12	13	14	15
GROSS REV	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
Total Revenue	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
Net Smelt Ret.	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000
-MHT ROYALTY	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000
-Total Royalties	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000
Net Revenue	54,600,000	54,600,000	54,600,000	54,600,000	54,600,000	54,600,000	54,600,000	54,600,000
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC								
-Depreciation	-4,109,711	-4,172,223	-6,245,572	-7,771,383	-6,748,307	-5,842,330	-4,880,002	-4,197,657
-Amortization								
-Write Off								
Before Depltn	14,054,329	13,991,817	11,918,468	10,392,657	11,415,733	12,321,710	13,284,038	13,966,383
100% Limit	14,054,329	13,991,817	11,918,468	10,392,657	11,415,733	12,321,710	13,284,038	13,966,383
Percent Depln	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000
Prev Exp Expl								
-Depletion	-4,368,000	-4,368,000	-4,368,000	-4,368,000	-4,368,000	-4,368,000	-4,368,000	-4,368,000
-Total D,D & A	-8,477,711	-8,540,223	-10,613,572	-12,139,383	-11,116,307	-10,210,330	-9,248,002	-8,565,657
Taxable	9,686,329	9,623,817	7,550,468	6,024,657	7,047,733	7,953,710	8,916,038	9,598,383
-Tax Due	-3,740,860	-3,716,718	-2,915,991	-2,326,723	-2,721,834	-3,071,723	-3,443,374	-3,706,896
Net Income	5,945,468	5,907,099	4,634,477	3,697,935	4,325,898	4,881,987	5,472,664	5,891,488
+Depreciation	4,109,711	4,172,223	6,245,572	7,771,383	6,748,307	5,842,330	4,880,002	4,197,657
+Depletion	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000
+Amortization								
+Write Off								
-Capital Costs	-1,000,193		-33,628,107		-1,000,193			
Cash Flow	13,422,987	14,447,322	-18,380,058	15,837,317	14,442,013	15,092,317	14,720,666	14,457,144

Year	16	17	18	19	20	Salvage
GROSS REV	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	
Total Revenue	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	5,924,555
Net Smelt Ret.	57,000,000	57,000,000	57,000,000	57,000,000	57,000,000	
-MHT ROYALTY	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	
-Total Royalties	-2,400,000	-2,400,000	-2,400,000	-2,400,000	-2,400,000	
Net Revenue	54,600,000	54,600,000	54,600,000	54,600,000	54,600,000	
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Dev, IDC						
-Depreciation	-4,109,711	-4,172,223	-3,984,687	-3,922,175	-1,961,088	
-Amortization						
-Write Off						-5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	16	17	18	19	20	Salvage
Before Depltn	14,054,329	13,991,817	14,179,353	14,241,865	16,202,952	
100% Limit	14,054,329	13,991,817	14,179,353	14,241,865	16,202,952	
Percent Depln	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	
Prev Exp Expl						
-Depletion	-4,368,000	-4,368,000	-4,368,000	-4,368,000	-4,368,000	
-Total D,D & A	-8,477,711	-8,540,223	-8,352,687	-8,290,175	-6,329,088	-5,924,555
Taxable	9,686,329	9,623,817	9,811,353	9,873,865	11,834,952	
-Tax Due	-3,740,860	-3,716,718	-3,789,144	-3,813,287	-4,570,659	
Net Income	5,945,468	5,907,099	6,022,208	6,060,578	7,264,294	
+Depreciation	4,109,711	4,172,223	3,984,687	3,922,175	1,961,088	
+Depletion	4,368,000	4,368,000	4,368,000	4,368,000	4,368,000	
+Amortization						
+Write Off						5,924,555
-Capital Costs	-1,000,193					
Cash Flow	13,422,987	14,447,322	14,374,896	14,350,753	13,593,381	5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

SURFACE COAL MINE, HRALY NSR 5%(COAL PRICE $ 36.00 /TONNE FOB)

Cash Flows

NPV =$13,267,613 DCFROR= 12.4% GROR = 10.7% PWROR = 12.3% Pay Back= 6.47 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
GROSS REV		54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
Total Revenue		54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
Net Smelt Ret.		54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
-NET ROYALTY		-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000
-Total Royalties		-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000
Net Revenue		51,750,000	51,750,000	51,750,000	51,750,000	51,750,000	51,750,000	51,750,000
-OPER COSTS		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC	-9,839,236							
-Depreciation	-4,952,060	-9,006,094	-7,414,599	-6,204,751	-5,452,063	-4,741,717	-4,137,151	-3,943,706
-Amortization	-70,280	-843,363	-843,363	-843,363	-843,363	-773,083		
-Write Off								
Before Depltn	-14,861,576	5,464,583	7,056,078	8,265,926	9,018,614	9,799,241	11,176,889	11,370,334
100% Limit		5,464,583	7,056,078	8,265,926	9,018,614	9,799,241	11,176,889	11,370,334
Percent Depln		4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000
Prev Exp Expl		4,140,000	1,394,403					
-Depletion			-2,745,597	-4,140,000	-4,140,000	-4,140,000	-4,140,000	-4,140,000
-Total D,D & A	-14,861,576	-9,849,457	-11,003,559	-11,188,114	-10,435,426	-9,654,799	-8,277,151	-8,083,706
Taxable	-14,861,576	5,464,583	4,310,481	4,125,926	4,878,614	5,659,241	7,036,889	7,230,334
-Tax Due	5,739,541	-2,110,422	-1,664,708	-1,593,433	-1,884,121	-2,185,599	-2,717,647	-2,792,355
Net Income	-9,122,035	3,354,161	2,645,773	2,532,493	2,994,493	3,473,642	4,319,243	4,437,979
+Depreciation	4,952,060	9,006,094	7,414,599	6,204,751	5,452,063	4,741,717	4,137,151	3,943,706
+Depletion			2,745,597	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000
+Amortization	70,280	843,363	843,363	843,363	843,363	773,083		
+Write Off								
-Capital Costs	-80,481,702				-1,000,193			
Cash Flow	-84,581,397	13,203,618	13,649,332	13,720,607	12,429,726	13,128,441	12,596,393	12,521,685

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

Year	8	9	10	11	12	13	14	15
GROSS REV	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
Total Revenue	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
Net Smelt Ret.	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000
-MHT ROYALTY	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000
-Total Royalties	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000
Net Revenue	51,750,000	51,750,000	51,750,000	51,750,000	51,750,000	51,750,000	51,750,000	51,750,000
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC								
-Depreciation	-4,109,711	-4,172,223	-6,245,572	-7,771,383	-6,748,307	-5,842,330	-4,880,002	-4,197,657
-Amortization								
-Write Off								
Before Depltn	11,204,329	11,141,817	9,068,468	7,542,657	8,565,733	9,471,710	10,434,038	11,116,383
100% Limit	11,204,329	11,141,817	9,068,468	7,542,657	8,565,733	9,471,710	10,434,038	11,116,383
Percent Depln	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000
Prev Exp Expl								
-Depletion	-4,140,000	-4,140,000	-4,140,000	-4,140,000	-4,140,000	-4,140,000	-4,140,000	-4,140,000
-Total D,D & A	-8,249,711	-8,312,223	-10,385,572	-11,911,383	-10,888,307	-9,982,330	-9,020,002	-8,337,657
Taxable	7,064,329	7,001,817	4,928,468	3,402,657	4,425,733	5,331,710	6,294,038	6,976,383
-Tax Due	-2,728,244	-2,704,102	-1,903,374	-1,314,106	-1,709,218	-2,059,106	-2,430,757	-2,694,279
Net Income	4,336,085	4,297,715	3,025,094	2,088,551	2,716,515	3,272,604	3,863,281	4,282,104
+Depreciation	4,109,711	4,172,223	6,245,572	7,771,383	6,748,307	5,842,330	4,880,002	4,197,657
+Depletion	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000
+Amortization								
+Write Off								
-Capital Costs	-1,000,193		-33,628,107		-1,000,193			
Cash Flow	11,585,603	12,609,938	-20,217,441	13,999,934	12,604,629	13,254,934	12,883,283	12,619,761

Year	16	17	18	19	20	Salvage
GROSS REV	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	
Total Revenue	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	5,924,555
Net Smelt Ret.	54,000,000	54,000,000	54,000,000	54,000,000	54,000,000	
-MHT ROYALTY	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	
-Total Royalties	-2,250,000	-2,250,000	-2,250,000	-2,250,000	-2,250,000	
Net Revenue	51,750,000	51,750,000	51,750,000	51,750,000	51,750,000	
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Dev, IDC						
-Depreciation	-4,109,711	-4,172,223	-3,984,687	-3,922,175	-1,961,088	
-Amortization						-5,924,555
-Write Off						

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

APR 01 '94 12:01PM

Year	16	17	18	19	20	Salvage
Before Depltn	11,204,329	11,141,817	11,329,353	11,391,865	13,352,952	
100% Limit	11,204,329	11,141,817	11,329,353	11,391,865	13,352,952	
Percent Depln	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	
Prev Exp Expl						
-Depletion	-4,140,000	-4,140,000	-4,140,000	-4,140,000	-4,140,000	
-Total D,D & A	-8,249,711	-8,312,223	-8,124,687	-8,062,175	-6,101,088	-5,924,555
Taxable	7,064,329	7,001,817	7,189,353	7,251,865	9,212,952	
-Tax Due	-2,728,244	-2,704,102	-2,776,528	-2,800,670	-3,558,042	
Net Income	4,336,085	4,297,715	4,412,825	4,451,195	5,654,910	
+Depreciation	4,109,711	4,172,223	3,984,687	3,922,175	1,961,088	
+Depletion	4,140,000	4,140,000	4,140,000	4,140,000	4,140,000	
+Amortization						
+Write Off						5,924,555
-Capital Costs	-1,000,193					
Cash Flow	11,585,603	12,609,938	12,537,512	12,513,370	11,755,998	5,924,555

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

APR 01 '94 12:02PM

SURFACE COAL MINE, HEALY NSR 5%(COAL PRICE $34.06 /TONNE FOB)

Cash Flows

NPV =$-2,287,725 DCFROR= 9.6% GROR = 9.9% PWROR = 9.6% Pay Back= 7.64 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
GROSS REV		51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
Total Revenue		51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
Net Smelt Ret.		51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
-MHT ROYALTY		-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500
-Total Royalties		-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500
Net Revenue		48,985,500	48,985,500	48,985,500	48,985,500	48,985,500	48,985,500	48,985,500
-OPER COSTS		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs		-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC	-9,839,236							
-Depreciation	-4,952,060	-9,006,094	-7,414,599	-6,204,751	-5,452,063	-4,741,717	-4,137,151	-3,943,706
-Amortization	-70,280	-843,363	-843,363	-843,363	-843,363	-773,083		
-Write Off								
Before Depltn	-14,861,576	2,700,083	4,291,578	5,501,426	6,254,114	7,034,741	8,412,389	8,605,834
100% Limit		2,700,083	4,291,578	5,501,426	6,254,114	7,034,741	8,412,389	8,605,834
Percent Depln		3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840
Prev Exp Expl		2,700,083	2,834,320					
-Depletion			-1,084,520	-3,918,840	-3,918,840	-3,918,840	-3,918,840	-3,918,840
-Total D,D & A	-14,861,576	-9,849,457	-9,342,482	-10,966,954	-10,214,266	-9,433,639	-8,055,991	-7,862,546
Taxable	-14,861,576	2,700,083	3,207,058	1,582,586	2,335,274	3,115,901	4,493,549	4,686,994
-Tax Due	5,739,541	-1,042,772	-1,238,566	-611,195	-901,883	-1,203,361	-1,735,409	-1,810,117
Net Income	-9,122,035	1,657,311	1,968,492	971,391	1,433,391	1,912,540	2,758,141	2,876,877
+Depreciation	4,952,060	9,006,094	7,414,599	6,204,751	5,452,063	4,741,717	4,137,151	3,943,706
+Depletion			1,084,520	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840
+Amortization	70,280	843,363	843,363	843,363	843,363	773,083		
+Write Off								
-Capital Costs	-80,481,702				-1,000,193			
Cash Flow	-84,581,397	11,506,768	11,310,974	11,938,345	10,647,464	11,346,179	10,814,131	10,739,423

Law Offices of

APR 1 1994

JAMES B. GOTTSTEIN

APR 01 '94 12:02PM

Year	8	9	10	11	12	13	14	15
GROSS REV	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
Total Revenue	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
Net Smelt Ret.	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000
-MHT ROYALTY	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500
-Total Royalties	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500
Net Revenue	48,985,500	48,985,500	48,985,500	48,985,500	48,985,500	48,985,500	48,985,500	48,985,500
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960
-Dev, IDC								
-Depreciation	-4,109,711	-4,172,223	-6,245,572	-7,771,383	-6,748,307	-5,842,330	-4,880,002	-4,197,657
-Amortization								
-Write Off								
Before Depltn	8,439,829	8,377,317	6,303,968	4,778,157	5,801,233	6,707,210	7,669,538	8,351,883
100% Limit	8,439,829	8,377,317	6,303,968	4,778,157	5,801,233	6,707,210	7,669,538	8,351,883
Percent Depln	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840
Prev Exp Expl								
-Depletion	-3,918,840	-3,918,840	-3,918,840	-3,918,840	-3,918,840	-3,918,840	-3,918,840	-3,918,840
-Total D,D & A	-8,028,551	-8,091,063	-10,164,412	-11,690,223	-10,667,147	-9,761,170	-8,798,842	-8,116,497
Taxable	4,520,989	4,458,477	2,385,128	859,317	1,882,393	2,788,370	3,750,698	4,433,043
-Tax Due	-1,746,006	-1,721,864	-921,136	-331,868	-726,980	-1,076,869	-1,448,520	-1,712,041
Net Income	2,774,983	2,736,613	1,463,991	527,449	1,155,413	1,711,502	2,302,178	2,721,002
+Depreciation	4,109,711	4,172,223	6,245,572	7,771,383	6,748,307	5,842,330	4,880,002	4,197,657
+Depletion	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840
+Amortization								
+Write Off								
-Capital Costs	-1,000,193		-33,628,107		-1,000,193			
Cash Flow	9,803,341	10,827,676	-21,999,703	12,217,672	10,822,367	11,472,671	11,101,020	10,837,499

Year	16	17	18	19	20	Salvage
GROSS REV	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	
Total Revenue	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	5,924,555
Net Smelt Ret.	51,090,000	51,090,000	51,090,000	51,090,000	51,090,000	
-MHT ROYALTY	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	
-Total Royalties	-2,104,500	-2,104,500	-2,104,500	-2,104,500	-2,104,500	
Net Revenue	48,985,500	48,985,500	48,985,500	48,985,500	48,985,500	
-OPER COSTS	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Total Oper Costs	-36,435,960	-36,435,960	-36,435,960	-36,435,960	-36,435,960	
-Dev, IDC						
-Depreciation	-4,109,711	-4,172,223	-3,984,687	-3,922,175	-1,961,088	
-Amortization						
-Write Off						-5,924,555

Law Offices of
APR 1 1994
JAMES B. GOTTSTEIN

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Year	16	17	18	19	20	Salvage
Before Depltn	8,439,829	8,377,317	8,564,853	8,627,365	10,588,452	
100% Limit	8,439,829	8,377,317	8,564,853	8,627,365	10,588,452	
Percent Depln	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	
Prev Exp Expl						
-Depletion	-3,918,840	-3,918,840	-3,918,840	-3,918,840	-3,918,840	
-Total D,D & A	-8,028,551	-8,091,063	-7,903,527	-7,841,015	-5,879,928	-5,924,555
Taxable	4,520,989	4,458,477	4,646,013	4,708,525	6,669,612	
-Tax Due	-1,746,006	-1,721,864	-1,794,290	-1,818,432	-2,575,804	
Net Income	2,774,983	2,736,613	2,851,723	2,890,093	4,093,808	
+Depreciation	4,109,711	4,172,223	3,984,687	3,922,175	1,961,088	
+Depletion	3,918,840	3,918,840	3,918,840	3,918,840	3,918,840	
+Amortization						
+Write Off						5,924,555
-Capital Costs	-1,000,193					
Cash Flow	9,803,341	10,827,676	10,755,250	10,731,108	9,973,736	5,924,555

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APR 1 1994

JAMES B. GOTTSTEIN

APPENDIX B-29

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR ALMADEN MERCURY (Hg) DEPOSITS

29. DESCRIPTIVE MODEL OF ALMADEN Hg

By James J. Rytuba

APPROXIMATE SYNONYM Almaden type.

DESCRIPTION Stratabound disseminated cinnabar and native mercury in volcaniclastic sedimentary rocks.

GENERAL REFERENCES Saupe (1973).

GEOLOGICAL ENVIRONMENT

Rock Types Unmetamorphosed shale, graywacke, calcareous graywacke, andesitic lava and tuff, andesite dikes. Volcanic vent breccia.

Age Range Almaden is Silurian, but deposits may be any age.

Depositional Environment Permeable sedimentary rocks, andesite dikes possibly near volcanic center.

Tectonic Setting(s) Volcanic centers along major deep-seated fault zone. Absence of regional metamorphism or plutonism following mineralization.

Associated Deposit Types Stibnite veins.

DEPOSIT DESCRIPTION

Mineralogy Cinnaban ± native mercury + pyrite + calcite + quartz.

Texture/Structure Disseminated.

Ore Controls Mineralized zone follows major fault, highest grade ore in calcareous graywacke.

Geochemical Signature Hg, As, Sb.

EXAMPLES

Almaden, SPAN	(Saupe, 1973)
Santa Barbara, PERU	(Berry and Singewald, 1922)
Nueva Esperanza, CUBA	(Lozano and others, 1977)

COMMENTS Almaden, Spain contained at least 16 million tonnes of ore at 3% Hg. Total metal content of 467,000 tonnes (14 million flasks). Gross metal value in 1987 would have been $2.8 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Fifteen years at 1.1 million tonnes per year or 3,000 tonnes per day.

Gross Value of Annual Production $187 million.

Net Present Value of 4% NSR $7.5 million times 7.606 is $57.0 million.

Comments, Assumptions, Specifications: HGAL
Almaden Spain model Data. Red Devil Area, Cut & Fill

UNDERGROUND MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

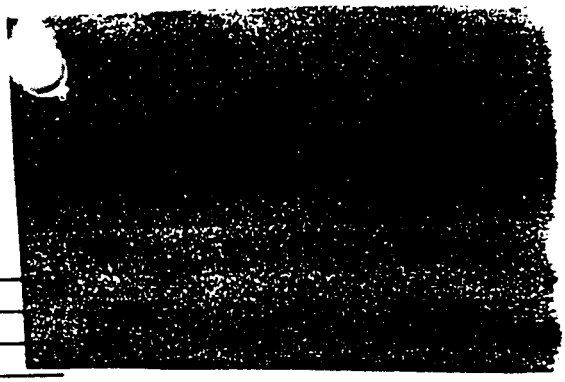
Deposit type: Almaden Hg
Total Ore Tonnage: 16 mil mt
Mining Method: Cut & Fill Stoping
Beneficiation Method: Crush Grind Float, Condense
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 15 yrs
Proposed Daily Production: 2960 mTPD
Maximum Ore Depth: 750 m
Stripping Ratio:
Haulage Distance/Road Requirements:
Roads Negligible, 2400 km of river barge
Distance From Power: Portable
Pre-Production Development:

Production Development:

Equipment: Narrow Vein LHD's Jumbos Trucks
Concentrate Production: 84 mtpd / 2,450 flasks/year Hg

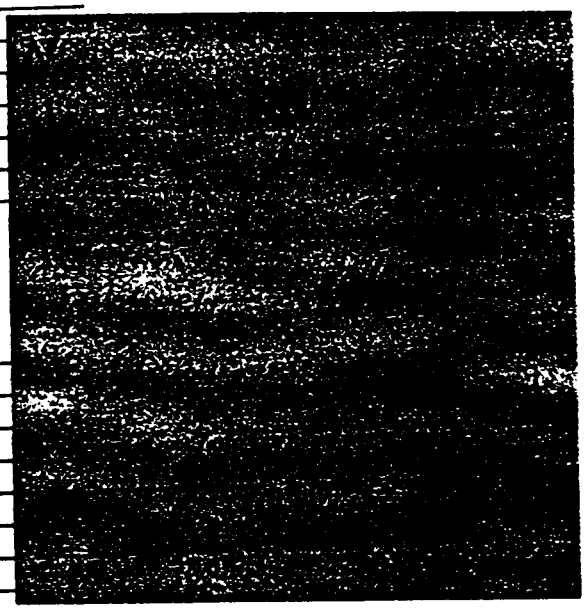
INPUT VARIABLES:

A.(For Operating Costs)
Shaft sinking & face-m/day & sqm: —
Drifting & face-m/day & sqm: .2 m, 10 m²
Raises & face-m/day & sqm: .3 m, 2 m²
Inclines & face-m/day & sqm: .1 m, 10 m²
Ore pockets/day-mtpd: —
Stope preparation/day-stopes & sqm: .55 100 m²
Ore rate-mtpd: 2960 mTPD
Hoist depth, rate & time-m, mtph, hr/day:
750 m 250 mtph, 16 h-s/day
Haul distance-m: 650 m
Compressed air-cm/min: 600 m³/min
Ventilation-cm/min: 11,250 m³/min
Conveyor length & slope-km & %: —
Water needs-cm/hr & hr/day: 10 m³/hr, 16 h-s/day
Drainage, head-cm/day & m: 25,000 m³/day, 750 m
Concentrate (dry) rate-mtpd: 112 mtpd conc, 84 mtpd Hg
Tails (dry) rate-mtpd: 2,850 mtpd
Production water needs-cm/day: 1,650 m³/hr, 24 hr, 5000 m³/day recycle
Portable Power needs-kW: 9,500 kW
Wastewater-L/sec: 15 L/sec
Concentrate haul-km: 400 km river barge
Employee housing-men: 500 men
Other: $6381/day - Hg Vapor Condensing
Other: $2,100/day - Average Daily River-Barge Haulage.



B.(For Capital Costs)

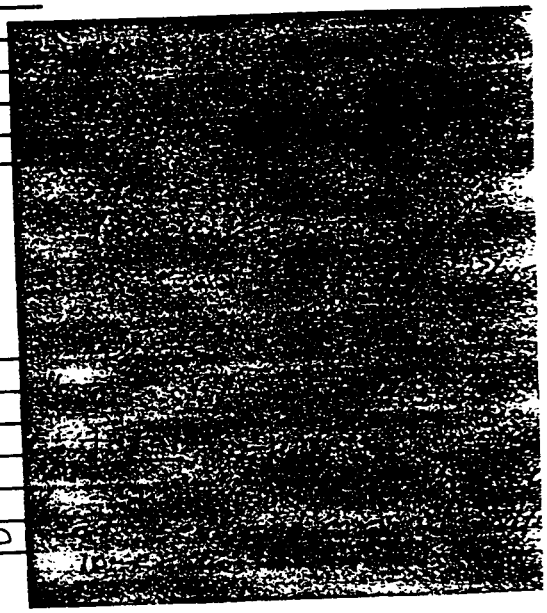
Concentrate feeds-mtpd: 2960 mTPD
Mill operating costs-$/day:
Working capital time-weeks: 39 weeks
Development time-days:
Shaft sinking & face-m & sqm: 750 m, 40 m²
Drifting & face-m & sqm: 800 m, 10 m²
Raises & face-m & sqm: 1700 m, 4m²
Inclines & face-m & sqm: 1200 m 10 m²
Ore pockets-mt: 4500 mT
Stope preparations-stopes & sqm: 20, 100 m²
Dewatering; head, dys & rate-m, dys & cm/day:
25,000 m³/day, 100 days, 750 m
Rehabilitation (total tonnage)-mt: 2,960 mTPD
Contractors-1 or 2: 1
Mine operating costs-$/day: $283,444/day
Access roads, length & width-km & m: —
Airstrip length & width-m: 1200 m 10 m²
Townsite cost-$:
Powerline length & power-km & mW: Portable
Dike & Dam needs-cm/fill: 500,000 m³
Climate/Weather factors: Severe
Other: $597,834 - Ho Condenser System
Other:



OUPUT DATA:

C.(For Operating Costs)

Mining Costs-$/day: 283,444
Mining Costs-$/yr: 102,039,840
Mining Costs-$/mt: 95.76
Milling Costs-$/day: 31,425
Milling Costs-$/yr: 11,313,000
Milling Costs-$/mt: 10.62
Infrastructure Costs-$/day: 46,539
Infrastructure Costs-$/yr: 16,754,040
Infrastructure Costs-$/mt: 15.72
Total Operating Costs-$/day: 361,408
Total Operating Costs-$/yr: 130,106,880
Total Operating Costs-$/mt: 122.10
Other:
Other:



D.(For Capital Costs

MINE CAPITAL COSTS:

Mine Working Capital-$: 77,380,212
Heavy Equipment (fixed life)-$: 7,150,190
Mine Rehabilitation-$: 1,614,793
Engr. & Const. Mgmt.-$: 6,600,222
Other:
Remaining Mine Capital-$: 30,909,113
Total Mine Capital Cost-$: 123,654,530

MILL CAPITAL COSTS:

Mill Working Capital-$: 8579,025 *
Light Vehicles (short life)-$: 1,146,846 *
Other: _____
Remaining Mill Capital-$: 14,703,892 -
Total Mill Capital Cost-$: 24,429,763

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 9,975,999 *
Other: _____
Remaining Infrastructure Capital-$: 24,432,870 -
Total Infrastructure Capital-$: 34,408,869

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 85,959,237 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 70,045,875 *
Sum of Total Mine, Mill & Infr. Costs-$: 182,493,162
Exploration Cost-$: 18,249,316 *

Overall Capital Cost-$: 200,742,478
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purpose of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:HGALRD.SEE Date:03/28/94 Time:15:26:19

MERCURY, ALMADEN TYPE, RED DEVIL MINE

Project Definition

Type of Analysis	Mining
Project Start Date	04/89
End of Time Zero	03/92
Evaluation Date	04/89
Project Length (in Years)	15
First Year (For Reporting)	1
Values in	Actual $'s
Discount Method	Discrete
Tax Scenario	Expense tax due against other income.
Analysis From Standpoint of	Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	25,793,404	WC	Mid Year	15.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	7,150,190	MACRS	Mid Year	15.0	0			0 .....
3	04/89	1,614,793	MACRS	Mid Year	15.0	0			0 .....
4	04/89	6,600,222	MACRS	Mid Year	15.0	0			0 .....
5	04/89	30,909,113	MACRS	Mid Year	15.0	0			0 .....
6	04/89	14,703,892	MACRS	Mid Year	15.0	0			0 .....
7	04/89	2,859,675	WC	Mid Year	15.0	0			0 .....
8	04/89	1,146,846	MACRS	Mid Year	4.0	0			0 .....
9	04/93	1,146,846	MACRS	Mid Year	4.0	0			0 .....
10	04/97	1,146,846	MACRS	Mid Year	4.0	0			0 .....
11	04/01	1,146,846	MACRS	Mid Year	4.0	0			0 .....
12	04/89	9,975,999	MACRS	Mid Year	15.0	0			0 .....
13	04/89	24,432,870	MACRS	Mid Year	15.0	0			0 .....
14	04/89	18,249,316	EXPL-X	Mid Year	15.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	1,080,400.00	Constant	0.000
S2	ZN GRADE %	N/A:	04/92	End	0.02	Constant	0.000
S3	HG GRADE %	N/A:	04/92	End	0.030	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	HG $/TONNE	N/A:	04/92	End	5,066.00	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	102,039,840.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	11,313,000.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	16,754,040.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S12	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	Annual:	04/92	End	0.00	Constant	0.000
S15		Annual:	04/92	End	0.00	Constant	0.000
S16		N/A:	04/92	End	0.85	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S17		N/A:	04/92	End	0.90	Constant	0.000
S18		N/A:	04/92	End	0.01	Constant	0.000
S19		N/A:	04/92	End	0.00	Constant	0.000
S20		N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========
E1 . HG REV S1*S3*S5*S10*S11

Revenues
==========
E2 . GROSS REV E1

Operating Costs
==========
E4 . OPER COSTS S6+S7+S8+S9

Special Taxes
==========
E6 . MHT NPI S12*(E2-E4)

Royalties
==========
E5 . MHT ROYALTY S14*(E2-E3-S9)

Processing Costs
==========
E3 . SMELTING CHARGES S13*E2

MERCURY, ALMADEN TYPE, RED DEVIL MINE

Cash Flows

NPV =$-98,111,374 DCFROR= -4.1% GROR = 1.0% PWROR = -4.1% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
HG REV		140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
GROSS REV		140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
Total Revenue		140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
-SMELTING CHARGES		-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903
-Total Smelting Cost		-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903
Net Smelt Ret.		138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406
-MHT ROYALTY		-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456
-Total Royalties		-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456
Net Revenue		133,446,950	133,446,950	133,446,950	133,446,950	133,446,950	133,446,950	133,446,950
-OPER COSTS		-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880
-Total Oper Costs		-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880
-Dev, IDC	-12,774,521							
-Depreciation	-5,056,065	-9,491,840	-8,657,340	-7,913,459	-6,892,744	-6,088,785	-5,990,901	-6,062,579
-Amortization	-3,284,877	-1,094,959	-1,094,959					
-Write Off								
Before Depltn	-21,115,464	-7,746,729	-6,912,230	-5,073,389	-4,052,674	-3,248,715	-3,150,831	-3,222,509
100% Limit		20,017,042	20,017,042	20,017,042	20,017,042	20,017,042	20,017,042	20,017,042
Percent Depln								
Prev Exp Expl								
-Total D,D & A	-21,115,464	-10,586,799	-9,752,299	-7,913,459	-6,892,744	-6,088,785	-5,990,901	-6,062,579
Taxable	-21,115,464	-7,746,729	-6,912,230	-5,073,389	-4,052,674	-3,248,715	-3,150,831	-3,222,509
-Tax Due	7,179,258	2,633,888	2,350,158	1,724,952	1,565,143	1,254,654	1,216,851	1,244,533
Net Income	-13,936,206	-5,112,841	-4,562,071	-3,348,437	-2,487,531	-1,994,061	-1,933,980	-1,977,976
+Depreciation	5,056,065	9,491,840	8,657,340	7,913,459	6,892,744	6,088,785	5,990,901	6,062,579
+Amortization	3,284,877	1,094,959	1,094,959					
+Write Off							-1,146,846	
-Capital Costs	-130,661,799		-1,146,846					
Cash Flow	-136,257,062	5,473,958	4,043,382	4,565,022	4,405,212	4,094,724	2,910,075	4,084,603

Year	8	9	10	11	12	13	14	15
HG REV	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
GROSS REV	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
Total Revenue	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
-SMELTING CHARGES	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903
-Total Smelting Cost	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903
Net Smelt Ret.	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406
-MHT ROYALTY	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456
-Total Royalties	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456	-5,539,456
Net Revenue	133,446,950	133,446,950	133,446,950	133,446,950	133,446,950	133,446,950	133,446,950	133,446,950
-OPER COSTS	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880
-Total Oper Costs	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880
-Dev, IDC								
-Depreciation	-5,847,545	-5,775,867	-5,990,901	-6,062,579	-5,847,545	-5,775,867	-5,704,190	-2,816,256
-Amortization								
-Write Off								23,814
Before Depltn	-3,007,475	-2,935,798	-3,150,831	-3,222,509	-3,007,475	-2,935,798	-2,864,120	23,814
100% Limit								20,017,042
Percent Depln	20,017,042	20,017,042	20,017,042	20,017,042	20,017,042	20,017,042	20,017,042	23,814
Prev Exp Expl								
-Total D,D & A	-5,847,545	-5,775,867	-5,990,901	-6,062,579	-5,847,545	-5,775,867	-5,704,190	-2,816,256
Taxable	-3,007,475	-2,935,798	-3,150,831	-3,222,509	-3,007,475	-2,935,798	-2,864,120	23,814
-Tax Due	1,161,487	1,133,805	1,216,851	1,244,533	1,161,487	1,133,805	1,106,123	-9,197
Net Income	-1,845,988	-1,801,993	-1,933,980	-1,977,976	-1,845,988	-1,801,993	-1,757,997	14,617
+Depreciation	5,847,545	5,775,867	5,990,901	6,062,579	5,847,545	5,775,867	5,704,190	2,816,256
+Amortization								
+Write Off								
-Capital Costs			-1,146,846					
Cash Flow	4,001,557	3,973,875	2,910,075	4,084,603	4,001,557	3,973,875	3,946,193	2,830,873

Year	Salvage
HG REV	
GROSS REV	
Total Revenue	28,653,079
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
-MHT ROYALTY	
-Total Royalties	
Net Revenue	
-OPER COSTS	

Year	Salvage
-Total Oper Costs	
-Dev, IDC	
-Depreciation	
-Amortization	
-Write Off	-28,653,079
Before Depltn	
100% Limit	
Percent Depln	
Prev Exp Expl	
-Total D,D & A	-28,653,079
Taxable	
-Tax Due	
Net Income	
+Depreciation	
+Amortization	
+Write Off	28,653,079
-Capital Costs	
Cash Flow	28,653,079

List of Assumptions File:HGALRD.SEE Date:12/28/93 Time:21:16:37

MERCURY, ALMADEN TYPE, RED DEVIL MINE

****
* Project Definition *
****

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 15
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

****
* MROR, Inflation, Exponents & Tax Rates *
****

Year	Minimum ROR, Inflation & Exponents: Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	Tax Rates: State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	7,150,190	MACRS	Mid Year	15.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	1,614,793	MACRS	Mid Year	15.0	0			0 .....
3	04/89	6,600,222	MACRS	Mid Year	15.0	0			0 .....
4	04/89	30,909,113	MACRS	Mid Year	15.0	0			0 .....
5	04/89	25,793,404	WC	Mid Year	15.0	0			0 .....
6	04/89	1,146,846	MACRS	Mid Year	4.0	0			0 .....
7	04/93	1,146,846	MACRS	Mid Year	4.0	0			0 .....
8	04/97	1,146,846	MACRS	Mid Year	4.0	0			0 .....
9	04/01	1,146,846	MACRS	Mid Year	4.0	0			0 .....
10	04/89	14,703,892	MACRS	Mid Year	15.0	0			0 .....
11	04/89	2,859,675	WC	Mid Year	15.0	0			0 .....
12	04/89	9,975,999	MACRS	Mid Year	15.0	0			0 .....
13	04/89	24,432,870	MACRS	Mid Year	15.0	0			0 .....
14	04/89	18,249,316	EXPL-X	Mid Year	15.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD	Annual:	04/92	End	1,080,400.00	Constant	0.000
S2		Annual:	04/92	End	0.00	Constant	0.000
S3	HG %	N/A:	04/92	End	0.0300	Constant	0.000
S4		N/A:	04/92	End	0.0000	Constant	0.000
S5	HG $/TONNE	N/A:	04/92	End	5,066.00	Constant	0.000
S6	MINING COSTS	Annual:	04/92	End	102,039,840.00	Constant	0.000
S7	MILLING COSTS	Annual:	04/92	End	11,313,000.00	Constant	0.000
S8	INFRA COSTS	Annual:	04/92	End	16,754,040.00	Constant	0.000
S9	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S10	MINE RECOVERY RATE	N/A:	04/92	End	0.90	Constant	0.000
S11	MILL RECOVERY RATE	N/A:	04/92	End	0.95	Constant	0.000
S12	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000
S13	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S14	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000

Project Equations

General Equations

E1 . HG REV	S1*S3*S5*S10*S11

Equations continued

Revenues

E3 . GROSS REV	E1

Operating Costs

E5 . OPER COSTS	S6+S7+S8+S9

Special Taxes

E2 . MHT NPI	S12*(E3-E5)

Royalties

E6 . MHT ROYALTY	S14*(E3-E4-S9)

Processing Costs

E4 . SMELTING CHARGES	S13*E3

MERCURY, ALMADEN TYPE, RED DEVIL MINE

Cash Flows

NPV =$-71,278,971 DCFROR= 0.5% GROR = 4.7% PWROR = 0.5% Pay Back=14.82 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6	7
HG REV		140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
GROSS REV		140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
Total Revenue		140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
-SMELTING CHARGES		-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903
-Total Smelting Cost		-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903
Net Smelt Ret.		138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406
Net Revenue		138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406
-OPER COSTS		-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880
-Total Oper Costs		-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880
-MHT NPI		-293,503	-293,503	-293,503	-293,503	-293,503	-293,503	-293,503
-Total Sev. Ad Valor		-293,503	-293,503	-293,503	-293,503	-293,503	-293,503	-293,503
-Dev, IDC	-12,774,521							
-Depreciation	-5,056,065	-9,491,840	-8,657,340	-7,913,459	-6,892,744	-6,088,785	-5,990,901	-6,062,579
-Amortization	-3,284,877	-1,094,959	-1,094,959					
-Write Off								
Before Depltn	-21,115,464	-2,500,776	-1,666,276	172,564	1,193,280	1,997,239	2,095,122	2,023,444
100% Limit				172,564	1,193,280	1,997,239	2,095,122	2,023,444
Percent Depln		20,847,961	20,847,961	20,847,961	20,847,961	20,847,961	20,847,961	20,847,961
Prev Exp Expl				172,564	1,193,280	1,997,239	2,095,122	2,023,444
-Depletion								
-Total D,D & A	-21,115,464	-10,586,799	-9,752,299	-7,913,459	-6,892,744	-6,088,785	-5,990,901	-6,062,579
Taxable	-21,115,464	-2,500,776	-1,666,276	172,564	1,193,280	1,997,239	2,095,122	2,023,444
-Tax Due	7,179,258	850,264	566,534	-58,672	-460,845	-771,334	-809,136	-781,454
Net Income	-13,936,206	-1,650,512	-1,099,742	113,893	732,435	1,225,905	1,285,986	1,241,990
+Depreciation	5,056,065	9,491,840	8,657,340	7,913,459	6,892,744	6,088,785	5,990,901	6,062,579
+Depletion								
+Amortization	3,284,877	1,094,959	1,094,959					
+Write Off								
-Capital Costs	-130,661,799		-1,146,846				-1,146,846	
Cash Flow	-136,257,062	8,936,287	7,505,711	8,027,351	7,625,179	7,314,690	6,130,041	7,304,569

Year	8	9	10	11	12	13	14	15
HG REV	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
GROSS REV	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
Total Revenue	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309	140,390,309
-SMELTING CHARGES	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903
-Total Smelting Cost	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903	-1,403,903
Net Smelt Ret.	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406
Net Revenue	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406	138,986,406
-OPER COSTS	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880
-Total Oper Costs	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880	-130,606,880
-MHT NPI	-293,503	-293,503	-293,503	-293,503	-293,503	-293,503	-293,503	-293,503
-Total Sev. Ad Valor	-293,503	-293,503	-293,503	-293,503	-293,503	-293,503	-293,503	-293,503
-Dev, IDC								
-Depreciation	-5,847,545	-5,775,867	-5,990,901	-6,062,579	-5,847,545	-5,775,867	-5,704,190	-2,816,256
-Amortization								
-Write Off								
Before Depltn	2,238,478	2,310,156	2,095,122	2,023,444	2,238,478	2,310,156	2,381,834	5,269,767
100% Limit	2,238,478	2,310,156	2,095,122	2,023,444	2,238,478	2,310,156	2,381,834	5,269,767
Percent Depln	20,847,961	20,847,961	20,847,961	20,847,961	20,847,961	20,847,961	20,847,961	20,847,961
Prev Exp Expl	2,238,478	2,310,156	744,238					
-Depletion			-1,350,884	-2,023,444	-2,238,478	-2,310,156	-2,381,834	-5,269,767
-Total D,D & A	-5,847,545	-5,775,867	-7,341,785	-8,086,023	-8,086,023	-8,086,023	-8,086,023	-8,086,023
Taxable	2,238,478	2,310,156	744,238					
-Tax Due	-864,500	-892,182	-287,425					
Net Income	1,373,978	1,417,974	456,814					
+Depreciation	5,847,545	5,775,867	5,990,901	6,062,579	5,847,545	5,775,867	5,704,190	2,816,256
+Depletion			1,350,884	2,023,444	2,238,478	2,310,156	2,381,834	5,269,767
+Amortization								
+Write Off								
-Capital Costs			-1,146,846					
Cash Flow	7,221,523	7,193,841	6,651,752	8,086,023	8,086,023	8,086,023	8,086,023	8,086,023

Year	Salvage
HG REV	
GROSS REV	
Total Revenue	28,653,079
-SMELTING CHARGES	
-Total Smelting Cost	
Net Smelt Ret.	
Net Revenue	
-OPER COSTS	
-Total Oper Costs	
-MHT NPI	

Year	Salvage
-Total Sev. Ad Valor	
-Dev, IDC	
-Depreciation	
-Amortization	
-Write Off	-28,653,079
Before Depltn	
100% Limit	
Percent Depln	
Prev Exp Expl	
-Depletion	
-Total D,D & A	-28,653,079
Taxable	
-Tax Due	
Net Income	
+Depreciation	
+Depletion	
+Amortization	
+Write Off	28,653,079
-Capital Costs	
Cash Flow	28,653,079

APPENDIX B-30

MINERAL DEPOSIT MODELS, ASSOCIATED TONNAGE ANG GRADE MODELS, MINE AND COST MODELS, AND CASH FLOW MODELS FOR INTRUSIVE RELATED GOLD (Au) DEPOSITS

A.(21). DESCRIPTIVE MODEL OF HOT SPRING Au-A.

By Byron R. Berger

30. per P. METZ

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and So and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

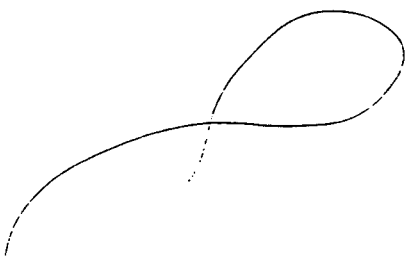
COMMENTS The above deposits wi.. be used for the tonnage grade model fc his type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $68.0 million.



Comments, Assumptions, Specifications: FTK, Data for Ft. Knox current 10/1/93. Pebble Reject System considered, 60% -eject assumed

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk Mineable Au (Ft. Knox data)
Total Ore Tonnage: 250 m.t mt
Mining Method: Open Pit
Beneficiation Method: Crush, Sag, Reichert Cones, C.I.L.
Extraction Rate: —
Dilution/Waste Rate: 20
Proposed Mine Life: 16 yrs
Proposed Daily Production: 45,000
Maximum Ore Depth: 250 m
Stripping Ratio: 1:1
Haulage Distance/Road Requirements: 10 km new road minimal haulage required
Distance From Power: 50 km
Pre-Production Development:

Production Development:

Equipment: Shovel/Truck
Concentrate Production: Doré Bars

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .15 ha/day
Burden/Waste rate-mtpd: 45,000 mTPD
Burden/Waste depth & haul-m: 100 m - 2,500 m
Ore rate-mtpd: 45,000 mTPD
Ore depth & haul-m: 120 m - 1,500 m
Conveyor length & slope-km & %: .7 km, 10%
Water needs-cm/day: 6,300 m³/day
Drainage, head & distance-cm/day, m & km: 10,000 m³/day 120 m, 1 km
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 45,000 mTPD
Production water needs-cm/day: 20,800 m³/day make up
Portable Power needs-kW: —
Wastewater-L/sec: 7 l/s
Concentrate haul-km: Doré
Employee housing-men: None
Other: $60,812 /day C.I.P. op. cost.
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 18,000 mTPD
Mill operating costs-$/day: 135,670
Working capital time-weeks: 13 weeks
Development time-days:
Clearing needs-ha: 1,500 ha

Stripping needs-mt: None
Stripping depth & haul-m: —
Restoration area-ha: 2,000 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $176,609/day
Access roads, length & width-km & m: 10km, 9m
Airstrip length & width-m: None
Powerline length & power-km & mW: 50km, 35mW
Dike & Dam needs-cm/fill: 3.0 m.1 m³
Climate/Weather factors: Seus-e
Other: $50,394,853 - C.I.L. SYSTEM
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 176,609
Mining Costs-$/yr: 63,579,240
Mining Costs-$/mt: 3.92
Milling Costs-$/day: 135,670
Milling Costs-$/yr: 48,841,200
Milling Costs-$/mt: 3.02
Infrastructure Costs-$/day: 18,408
Infrastructure Costs-$/yr: 6,626,880
Infrastructure Costs-$/mt: .41
Total Operating Costs-$/day: 330,687
Total Operating Costs-$/yr: 119,047,320
Total Operating Costs-$/mt: 7.35
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

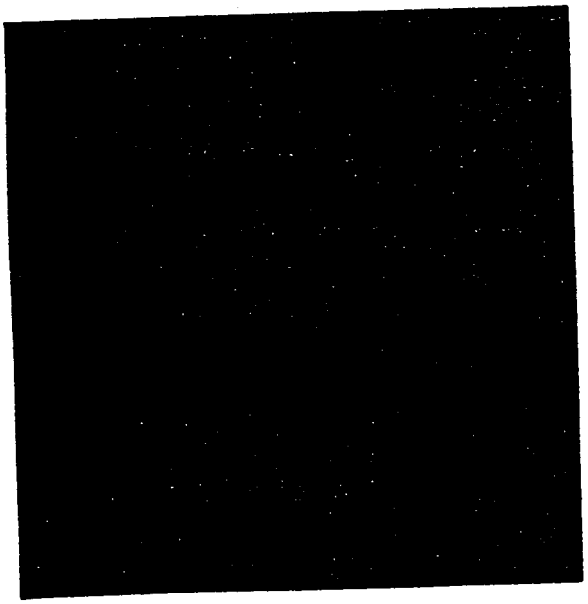
Mine Working Capital-$: 16,071,419
Heavy Equipment (fixed life)-$: 73,644,956 *
Mine Rehabilitation-$: 18,621,000 *
Engr. & Const. Mgmt.-$: 5,689,628 *
Other:
Remaining Mine Capital-$: 13,753,947
Total Mine Capital-$: 127,780,950

MILL CAPITAL COSTS:

Mill Working Capital-$: 12,345,970
Light Vehicles (short life)-$: 2,153,349 *
Other:
Remaining Mill Capital-$: 118,971,030
Total Mill Capital-$: 133,470,349

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 27,540,898 *



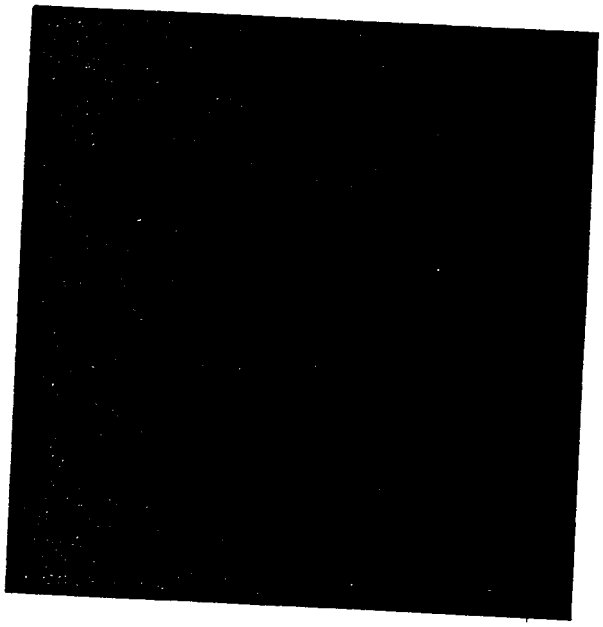
Other: _____
Remaining Infrastructure Capital-$: 53,996,505
Total Infrastructure Capital-$: 81,537,403

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 28,417,389 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 186,721,482 *
Sum of Total Mine, Mill & Infr. Costs-$: 342,788,702
Exploration Cost-$: 34,278,870 *

Overall Capital Cost-$: 377,067,572
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)



List of Assumptions File:FTKFBKS.SEE Date:07/25/93 Time:19:46:36

FORT KNOX, FAIRBANKS, FBKS GOLD DATA, OPEN PIT, PEBBLE REJECT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 16
First Year (For Reporting) 1992
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

	Minimum ROR,Inflation & Exponents					Tax Rates		
	Compound	With	Minimum	Infltion:Constant		State	Federal	Effect.
Year	Exponents	Eval Date	ROR	Rate	: $ ROR	Rate	Rate	Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1992	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1993	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1994	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1995	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1996	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1997	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1998	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
1999	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2000	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2001	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2002	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2003	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2004	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2005	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
2006	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

2007 16.0000 16.0000 10.0000 0.0000 10.0000 7.0000 34.0000 38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	73,644,956	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	18,621,000	MACRS	Mid Year	19.0	0			0 .....
3	04/89	5,689,628	MACRS	Mid Year	19.0	0			0 .....
4	04/89	13,753,947	MACRS	Mid Year	19.0	0			0 .....
5	04/89	16,071,419	WC	Mid Year	19.0	0			0 .....
6	04/89	2,153,349	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,153,349	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,153,359	MACRS	Mid Year	4.0	0			0 .....
9	04/89	118,971,030	MACRS	Mid Year	19.0	0			0 .....
10	04/89	12,345,970	WC	Mid Year	19.0	0			0 .....
11	04/89	27,540,898	MACRS	Mid Year	19.0	0			0 .....
12	04/89	34,278,870	EXPL-X	Mid Year	19.0	0			0 .....
13	04/02	73,644,956	MACRS	Mid Year	6.0	0			0 .....
14	04/01	3,199,941	MACRS	Mid Year	4.0	0			0 .....
15	04/05	3,199,941	MACRS	Mid Year	4.0	0			0 .....
16	.....	0	MACRS	Mid Year	7.0	0			0 .....
17	04/89	53,996,505	MACRS	Mid Year	19.0	0			0 .....

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
****

price $ sold

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	16,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0287	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	63,579,240.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	48,841,200.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,626,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	488,412.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.92	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000

Project Equations

General Equations

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs

E8 . OPER COSTS	(S12+S13+S14+S15)

Royalties

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs

E7 . SMELTING CHARGES	S18*E6

FORT KNOX, FAIRBANKS, FBKS GOLD DATA, OPEN PIT, PEBBLE REJECT

Cash Flows

NPV =$-225,239,085 DCFROR= -3.2% GROR = 0.0% PWROR = -2.8% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-MHT ROYALTY		-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348
-Total Royalties		-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348
Net Revenue		137,584,769	137,584,769	137,584,769	137,584,769	137,584,769	137,584,769
-OPER COSTS		-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Total Oper Costs		-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Dev, IDC	-23,995,209						
-Depreciation	-18,759,808	-35,057,175	-31,078,428	-27,610,833	-23,915,637	-20,877,877	-18,851,830
-Amortization	-6,170,197	-2,056,732	-2,056,732				
-Write Off							
Before Depltn	-48,925,214	-19,064,870	-15,086,123	-9,561,796	-5,866,600	-2,828,840	-802,793
100% Limit							
Percent Depln		20,637,715	20,637,715	20,637,715	20,637,715	20,637,715	20,637,715
Prev Exp Expl							
-Total D,D & A	-48,925,214	-37,113,907	-33,135,160	-27,610,833	-23,915,637	-20,877,877	-18,851,830
Taxable	-48,925,214	-19,064,870	-15,086,123	-9,561,796	-5,866,600	-2,828,840	-802,793
-Tax Due	16,634,573	6,482,056	5,129,282	3,251,011	2,265,681	1,092,498	310,039
Net Income	-32,290,641	-12,582,814	-9,956,841	-6,310,785	-3,600,919	-1,736,342	-492,754
+Depreciation	18,759,808	35,057,175	31,078,428	27,610,833	23,915,637	20,877,877	18,851,830
+Amortization	6,170,197	2,056,732	2,056,732				
+Write Off							
-Capital Costs	-353,072,363		-2,153,349				-2,153,359
Cash Flow	-360,432,999	24,531,093	21,024,970	21,300,048	20,314,718	19,141,535	16,205,717

Year	7	8	9	10	11	12	13
AU REV	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-MHT ROYALTY	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348
-Total Royalties	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348
Net Revenue	137,584,769	137,584,769	137,584,769	137,584,769	137,584,769	137,584,769	137,584,769
-OPER COSTS	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Total Oper Costs	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Dev, IDC							
-Depreciation	-16,852,453	-15,163,812	-13,879,591	-13,516,370	-26,055,937	-33,638,721	-24,700,488
-Amortization							
-Write Off							
Before Depltn	1,196,584	2,885,225	4,169,446	4,532,667	-8,006,900	-15,589,684	-6,651,451
100% Limit	1,196,584	2,885,225	4,169,446	4,532,667			
Percent Depln	20,637,715	20,637,715	20,637,715	20,637,715	20,637,715	20,637,715	20,637,715
Prev Exp Expl	1,196,584	2,885,225	4,169,446	4,532,667			
-Total D,D & A	-16,852,453	-15,163,812	-13,879,591	-13,516,370	-26,055,937	-33,638,721	-24,700,488
Taxable	1,196,584	2,885,225	4,169,446	4,532,667	-8,006,900	-15,589,684	-6,651,451
-Tax Due	-462,121	-1,114,274	-1,610,240	-1,750,516	3,092,265	6,020,736	2,568,790
Net Income	734,463	1,770,951	2,559,206	2,782,151	-4,914,635	-9,568,948	-4,082,661
+Depreciation	16,852,453	15,163,812	13,879,591	13,516,370	26,055,937	33,638,721	24,700,488
+Amortization							
+Write Off							
-Capital Costs				-3,199,941	-73,644,956		
Cash Flow	17,586,916	16,934,763	16,438,797	13,098,580	-52,503,654	24,069,773	20,617,828

Year	14	15	16	Salvage
AU REV	144,744,563	144,744,563	144,744,563	
GROSS REVENUE	144,744,563	144,744,563	144,744,563	
Total Revenue	144,744,563	144,744,563	144,744,563	28,417,389
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	
-MHT ROYALTY	-5,712,348	-5,712,348	-5,712,348	
-Total Royalties	-5,712,348	-5,712,348	-5,712,348	
Net Revenue	137,584,769	137,584,769	137,584,769	
-OPER COSTS	-119,535,732	-119,535,732	-119,535,732	

Year	14	15	16	Salvage
-Total Oper Costs	-119,535,732	-119,535,732	-119,535,732	
-Dev, IDC				
-Depreciation	-18,835,233	-17,216,836	-16,616,847	-26,094,982
-Amortization				
-Write Off				-28,417,389
Before Depltn	-786,196	832,201	1,432,190	-26,094,982
100% Limit		832,201	1,432,190	
Percent Depln	20,637,715	20,637,715	20,637,715	
Prev Exp Expl		832,201	1,432,190	
-Total D,D & A	-18,835,233	-17,216,836	-16,616,847	-54,512,371
Taxable	-786,196	832,201	1,432,190	-26,094,982
-Tax Due	303,629	-321,396	-553,112	10,077,882
Net Income	-482,567	510,805	879,078	-16,017,100
+Depreciation	18,835,233	17,216,836	16,616,847	26,094,982
+Amortization				
+Write Off				28,417,389
-Capital Costs	-3,199,941			
Cash Flow	15,152,725	17,727,641	17,495,925	38,495,271

List of Assumptions File:FTKFBKS.SEE Date:03/28/94 Time:05:33:52

FORT KNOX, FAIRBANKS, FBKS GOLD DATA, OPEN PIT, PEBBLE REJECT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 16
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

	Minimum ROR, Inflation & Exponents					Tax Rates		
Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion: Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	73,644,956	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	18,621,000	MACRS	Mid Year	19.0	0		0	.....
3	04/89	5,689,628	MACRS	Mid Year	19.0	0		0	.....
4	04/89	13,753,947	MACRS	Mid Year	19.0	0		0	.....
5	04/89	16,071,419	WC	Mid Year	19.0	0		0	.....
6	04/89	2,153,349	MACRS	Mid Year	4.0	0		0	.....
7	04/93	2,153,349	MACRS	Mid Year	4.0	0		0	.....
8	04/97	2,153,359	MACRS	Mid Year	4.0	0		0	.....
9	04/89	118,971,030	MACRS	Mid Year	19.0	0		0	.....
10	04/89	12,345,970	WC	Mid Year	19.0	0		0	.....
11	04/89	27,540,898	MACRS	Mid Year	19.0	0		0	.....
12	04/89	34,278,870	EXPL-X	Mid Year	19.0	0		0	.....
13	04/02	73,644,956	MACRS	Mid Year	6.0	0		0	.....
14	04/01	3,199,941	MACRS	Mid Year	4.0	0		0	.....
15	04/05	3,199,941	MACRS	Mid Year	4.0	0		0	.....
16	.....	0	MACRS	Mid Year	7.0	0		0	.....
17	04/89	53,996,505	MACRS	Mid Year	19.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	16,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0287	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	63,579,240.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	48,841,200.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,626,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	488,412.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.92	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI	N/A:	04/92	End	0.03	Constant	0.000

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* Project Equations *
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General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

FORT KNOX, FAIRBANKS, FBKS GOLD DATA, OPEN PIT, PEBBLE REJECT

Cash Flows

NPV =$-197,075,379 DCFROR= -1.0% GROR = 0.0% PWROR = -0.8% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
Net Revenue		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-OPER COSTS		-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Total Oper Costs		-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-MHT NPI		-756,265	-756,265	-756,265	-756,265	-756,265	-756,265
-Total Sev. Ad Valor		-756,265	-756,265	-756,265	-756,265	-756,265	-756,265
-Dev, IDC	-23,995,209						
-Depreciation	-18,759,808	-35,057,175	-31,078,428	-27,610,833	-23,915,637	-20,877,877	-18,851,830
-Amortization	-6,170,197	-2,056,732	-2,056,732				
-Write Off							
Before Depltn	-48,925,214	-14,108,787	-10,130,040	-4,605,713	-910,516	2,127,243	4,153,290
100% Limit						2,127,243	4,153,290
Percent Depln		21,494,568	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568
Prev Exp Expl						2,127,243	4,153,290
-Depletion							
-Total D,D & A	-48,925,214	-37,113,907	-33,135,160	-27,610,833	-23,915,637	-20,877,877	-18,851,830
Taxable	-48,925,214	-14,108,787	-10,130,040	-4,605,713	-910,516	2,127,243	4,153,290
-Tax Due	16,634,573	4,796,988	3,444,214	1,565,942	351,641	-821,541	-1,604,001
Net Income	-32,290,641	-9,311,800	-6,685,826	-3,039,770	-558,875	1,305,702	2,549,289
+Depreciation	18,759,808	35,057,175	31,078,428	27,610,833	23,915,637	20,877,877	18,851,830
+Depletion							
+Amortization	6,170,197	2,056,732	2,056,732				
+Write Off							
-Capital Costs	-353,072,363		-2,153,349				-2,153,359
Cash Flow	-360,432,999	27,802,108	24,295,985	24,571,063	23,356,762	22,183,579	19,247,761

Year	7	8	9	10	11	12	13
AU REV	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
Net Revenue	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-OPER COSTS	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Total Oper Costs	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-MHT NPI	-756,265	-756,265	-756,265	-756,265	-756,265	-756,265	-756,265
-Total Sev. Ad Valor	-756,265	-756,265	-756,265	-756,265	-756,265	-756,265	-756,265
-Dev, IDC							
-Depreciation	-16,852,453	-15,163,812	-13,879,591	-13,516,370	-26,055,937	-33,638,721	-24,700,488
-Amortization							
-Write Off							
Before Depltn	6,152,667	7,841,309	9,125,529	9,488,750	-3,050,817	-10,633,601	-1,695,368
100% Limit	6,152,667	7,841,309	9,125,529	9,488,750			
Percent Depln	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568
Prev Exp Expl	6,152,667	7,841,309	3,720,701				
-Depletion			-5,404,829	-9,488,750			
-Total D,D & A	-16,852,453	-15,163,812	-19,284,420	-23,005,120	-26,055,937	-33,638,721	-24,700,488
Taxable	6,152,667	7,841,309	3,720,701		-3,050,817	-10,633,601	-1,695,368
-Tax Due	-2,376,160	-3,028,313	-1,436,935		1,178,225	4,106,697	654,751
Net Income	3,776,507	4,812,995	2,283,766		-1,872,591	-6,526,904	-1,040,617
+Depreciation	16,852,453	15,163,812	13,879,591	13,516,370	26,055,937	33,638,721	24,700,488
+Depletion			5,404,829	9,488,750			
+Amortization							
+Write Off							
-Capital Costs				-3,199,941	-73,644,956		
Cash Flow	20,628,960	19,976,807	21,568,186	19,805,179	-49,461,610	27,111,817	23,659,871

Year	14	15	16	Salvage
AU REV	144,744,563	144,744,563	144,744,563	
GROSS REVENUE	144,744,563	144,744,563	144,744,563	
Total Revenue	144,744,563	144,744,563	144,744,563	28,417,389
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	
Net Revenue	143,297,117	143,297,117	143,297,117	
-OPER COSTS	-119,535,732	-119,535,732	-119,535,732	
-Total Oper Costs	-119,535,732	-119,535,732	-119,535,732	
-MHT NPI	-756,265	-756,265	-756,265	

Year	14	15	16	Salvage
-Total Sev. Ad Valor	-756,265	-756,265	-756,265	
-Dev, IDC				
-Depreciation	-18,835,233	-17,216,836	-16,616,847	-26,094,982
-Amortization				
-Write Off				-28,417,389
Before Depltn	4,169,887	5,788,284	6,388,273	-26,094,982
100% Limit	4,169,887	5,788,284	6,388,273	
Percent Depln	21,494,568	21,494,568	21,494,568	
Prev Exp Expl				
-Depletion	-4,169,887	-5,788,284	-6,388,273	
-Total D,D & A	-23,005,120	-23,005,120	-23,005,120	-54,512,371
Taxable				-26,094,982
-Tax Due				10,077,882
Net Income				-16,017,100
+Depreciation	18,835,233	17,216,836	16,616,847	26,094,982
+Depletion	4,169,887	5,788,284	6,388,273	
+Amortization				
+Write Off				28,417,389
-Capital Costs	-3,199,941			
Cash Flow	19,805,179	23,005,120	23,005,120	38,495,271

A.(27). DESCRIPTIVE MODEL OF HOT SPRING Au-As

By Byron R. Berger

30. per P. METZ

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

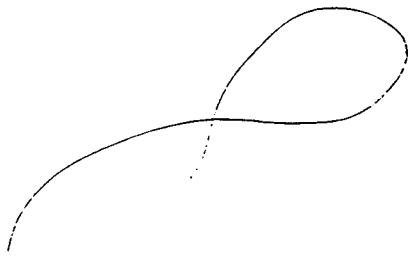
COMMENTS The above deposits will be used for the tonnage grade model for this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $68.0 million.



Comments, Assumptions, Specifications: SB - STONEBOY
Noranda / Stone Boy - Intrusive hosted Bulk mineable Au - based on FTK model.

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk mineable Au - Intrusive Hosted
Total Ore Tonnage: 250 mil mt
Mining Method: Open Pit
Beneficiation Method: Crush, SAG, gravity, C.I.L.
Extraction Rate: -
Dilution/Waste Rate: -
Proposed Mine Life: 16 yrs
Proposed Daily Production: 45,000 MTPD
Maximum Ore Depth: 250 m
Stripping Ratio: 1:1
Haulage Distance/Road Requirements: 150 km of 8 m service road - Do-é - no haulage
Distance From Power: 250 km
Pre-Production Development:

Production Development:

Equipment: Shovel / Truck
Concentrate Production: Do-é

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .15 ha/day
Burden/Waste rate-mtpd: 45,000 MTPD
Burden/Waste depth & haul-m: 100m - 2,500 m
Ore rate-mtpd: 45,000 MTPD
Ore depth & haul-m: 120 m, 1,500 m
Conveyor length & slope-km & %: .7 km, 10%
Water needs-cm/day: 6,300 m³/day
Drainage, head & distance-cm/day, m & km: 10,000 m³/day, 120 m, 1 km
Concentrate (dry) rate-mtpd: Do-é
Tails (dry) rate-mtpd: 45,000 MTPD
Production water needs-cm/day: 20,800 m³/day Mill,
Portable Power needs-kW:
Wastewater-L/sec: .7 L/S
Concentrate haul-km: Do-é
Employee housing-men: 185 men
Other: $ 60,812 /day - C.I.P operation
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 18,000 MTPD
Mill operating costs-$/day: $135,670 /day
Working capital time-weeks: 13 weeks
Development time-days:
Clearing needs-ha: 1,500 ha

Stripping needs-mt: - negligible
Stripping depth & haul-m: -
Restoration area-ha: 2,000 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $ 176,609/day
Access roads, length & width-km & m: 150 km, 8 m
Airstrip length & width-m: 1,600 m, 25 m
Powerline length & power-km & mW: 250 km, 35 mW
Dike & Dam needs-cm/fill: 3.0 m:1 m3
Climate/Weather factors: Severe
Other: $ 50,394,853 - C.I.L. system
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 176,609
Mining Costs-$/yr: 63,579,240
Mining Costs-$/mt: 3.92
Milling Costs-$/day: 135,670
Milling Costs-$/yr: 48,841,200
Milling Costs-$/mt: 3.02
Infrastructure Costs-$/day: 25,882
Infrastructure Costs-$/yr: 9,317,520
Infrastructure Costs-$/mt: .56
Total Operating Costs-$/day: 338,161
Total Operating Costs-$/yr: 121,737,960
Total Operating Costs-$/mt: 7.51
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 16,071,419
Heavy Equipment (fixed life)-$: 73,644,956 *
Mine Rehabilitation-$: 18,621,000 *
Engr. & Const. Mgmt.-$: 5,689,628 *
Other:
Remaining Mine Capital-$: 13,753,947 -
Total Mine Capital-$: 127,780,950

MILL CAPITAL COSTS:

Mill Working Capital-$: 12,345,970
Light Vehicles (short life)-$: 2,153,349 *
Other:
Remaining Mill Capital-$: 118,971,030 -
Total Mill Capital-$: 133,470,349

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 27,540,898 *

Other: _____
Remaining Infrastructure Capital-$: 118,804,842
Total Infrastructure Capital-$: 146,345,740

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 28,417,389 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 251,529,819 *
Sum of Total Mine, Mill & Infr. Costs-$: 407,597,039
Exploration Cost-$: 40,759,700 *

Overall Capital Cost-$: 448,356,743
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:STONEBOY.SEE Date:01/15/94 Time:15:43:33

STONE BOY CREEK, FBKS GOLD DATA, OPEN PIT, PEBBLE REJECT

Project Definition

Type of Analysis ..... Mining
Project Start Date 04/89
End of Time Zero 03/92
Evaluation Date 04/89
Project Length (in Years) 16
First Year (For Reporting) 1
Values in ..... Actual $'s
Discount Method ..... Discrete

Tax Scenario ..... Expense tax due against other income.
Analysis From Standpoint of ..... Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16 16.0000 16.0000 10.0000 0.0000 10.0000 7.0000 34.0000 38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	73,644,956	MACRS	Mid Year	13.0	0		0	.....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	18,621,000	MACRS	Mid Year	19.0	0		0	.....
3	04/89	5,689,628	MACRS	Mid Year	19.0	0		0	.....
4	04/89	13,753,947	MACRS	Mid Year	19.0	0		0	.....
5	04/89	16,071,419	WC	Mid Year	19.0	0		0	.....
6	04/89	2,153,349	MACRS	Mid Year	4.0	0		0	.....
7	04/93	2,153,349	MACRS	Mid Year	4.0	0		0	.....
8	04/97	2,153,359	MACRS	Mid Year	4.0	0		0	.....
9	04/89	118,971,030	MACRS	Mid Year	19.0	0		0	.....
10	04/89	12,345,970	WC	Mid Year	19.0	0		0	.....
11	04/89	27,540,898	MACRS	Mid Year	19.0	0		0	.....
12	04/89	34,278,870	EXPL-X	Mid Year	19.0	0		0	.....
13	04/02	73,644,956	MACRS	Mid Year	6.0	0		0	.....
14	04/01	3,199,941	MACRS	Mid Year	4.0	0		0	.....
15	04/05	3,199,941	MACRS	Mid Year	4.0	0		0	.....
16	.....	0	MACRS	Mid Year	7.0	0		0	.....
17	04/89	118,804,842	MACRS	Mid Year	19.0	0		0	.....

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	16,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0287	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	63,579,240.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	48,841,200.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,626,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	488,412.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.92	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

STONE BOY CREEK, FBKS GOLD DATA, OPEN PIT, PEBBLE REJECT

Cash Flows

NPV =$-276,901,938 DCFROR= -4.0% GROR = 0.0% PWROR = -3.6% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-MHT ROYALTY		-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348
-Total Royalties		-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348
Net Revenue		137,584,769	137,584,769	137,584,769	137,584,769	137,584,769	137,584,769
-OPER COSTS		-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Total Oper Costs		-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Dev, IDC	-23,995,209						
-Depreciation	-22,170,773	-41,520,057	-36,861,006	-32,784,718	-28,544,903	-25,019,852	-22,557,808
-Amortization	-6,170,197	-2,056,732	-2,056,732				
-Write Off							
Before Depltn	-52,336,179	-25,527,752	-20,868,701	-14,735,681	-10,495,866	-6,970,815	-4,508,771
100% Limit							
Percent Depln		20,637,715	20,637,715	20,637,715	20,637,715	20,637,715	20,637,715
Prev Exp Expl							
-Total D,D & A	-52,336,179	-43,576,789	-38,917,738	-32,784,718	-28,544,903	-25,019,852	-22,557,808
Taxable	-52,336,179	-25,527,752	-20,868,701	-14,735,681	-10,495,866	-6,970,815	-4,508,771
-Tax Due	17,794,301	8,679,436	7,095,358	5,010,132	4,053,503	2,692,129	1,741,287
Net Income	-34,541,878	-16,848,316	-13,773,343	-9,725,550	-6,442,362	-4,278,686	-2,767,483
+Depreciation	22,170,773	41,520,057	36,861,006	32,784,718	28,544,903	25,019,852	22,557,808
+Amortization	6,170,197	2,056,732	2,056,732				
+Write Off							
-Capital Costs	-417,880,700		-2,153,349				-2,153,359
Cash Flow	-424,081,608	26,728,473	22,991,046	23,059,169	22,102,540	20,741,166	17,636,965

Year	7	8	9	10	11	12	13
AU REV	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-MHT ROYALTY	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348
-Total Royalties	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348	-5,712,348
Net Revenue	137,584,769	137,584,769	137,584,769	137,584,769	137,584,769	137,584,769	137,584,769
-OPER COSTS	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Total Oper Costs	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Dev, IDC							
-Depreciation	-20,168,328	-18,130,647	-16,534,128	-15,891,482	-28,431,049	-36,013,833	-27,075,600
-Amortization							
-Write Off							
Before Depltn	-2,119,291	-81,610	1,514,909	2,157,555	-10,382,012	-17,964,796	-9,026,563
100% Limit			1,514,909	2,157,555			
Percent Depln	20,637,715	20,637,715	20,637,715	20,637,715	20,637,715	20,637,715	20,637,715
Prev Exp Expl			1,514,909	2,157,555			
-Total D,D & A	-20,168,328	-18,130,647	-16,534,128	-15,891,482	-28,431,049	-36,013,833	-27,075,600
Taxable	-2,119,291	-81,610	1,514,909	2,157,555	-10,382,012	-17,964,796	-9,026,563
-Tax Due	818,470	31,518	-585,058	-833,248	4,009,533	6,938,004	3,486,059
Net Income	-1,300,821	-50,092	929,851	1,324,307	-6,372,479	-11,026,792	-5,540,504
+Depreciation	20,168,328	18,130,647	16,534,128	15,891,482	28,431,049	36,013,833	27,075,600
+Amortization							
+Write Off							
-Capital Costs				-3,199,941	-73,644,956		
Cash Flow	18,867,507	18,080,555	17,463,979	14,015,848	-51,586,386	24,987,041	21,535,096

Year	14	15	16	Salvage
AU REV	144,744,563	144,744,563	144,744,563	
GROSS REVENUE	144,744,563	144,744,563	144,744,563	
Total Revenue	144,744,563	144,744,563	144,744,563	28,417,389
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	
-MHT ROYALTY	-5,712,348	-5,712,348	-5,712,348	
-Total Royalties	-5,712,348	-5,712,348	-5,712,348	
Net Revenue	137,584,769	137,584,769	137,584,769	
-OPER COSTS	-119,535,732	-119,535,732	-119,535,732	

Year	14	15	16	Salvage
-Total Oper Costs	-119,535,732	-119,535,732	-119,535,732	
-Dev, IDC				
-Depreciation	-21,210,345	-19,591,948	-18,991,959	-32,032,762
-Amortization				-28,417,389
-Write Off				
Before Depltn	-3,161,308	-1,542,911	-942,922	-32,032,762
100% Limit				
Percent Depln	20,637,715	20,637,715	20,637,715	
Prev Exp Expl				
-Total D,D & A	-21,210,345	-19,591,948	-18,991,959	-60,450,151
Taxable	-3,161,308	-1,542,911	-942,922	-32,032,762
-Tax Due	1,220,897	595,872	364,156	12,371,053
Net Income	-1,940,411	-947,039	-578,765	-19,661,709
+Depreciation	21,210,345	19,591,948	18,991,959	32,032,762
+Amortization				28,417,389
+Write Off				
-Capital Costs	-3,199,941			
Cash Flow	16,069,993	18,644,909	18,413,193	40,788,442

List of Assumptions File:STONEBOY.SEE Date:01/04/80 Time:00:38:13

STONE BOY CREEK, FBKS GOLD DATA, OPEN PIT, PEBBLE REJECT

Project Definition

Type of Analysis	Mining
Project Start Date	04/89
End of Time Zero	03/92
Evaluation Date	04/89
Project Length (in Years)	16
First Year (For Reporting)	1
Values in	Actual $'s
Discount Method	Discrete
Tax Scenario	Expense tax due against other income.
Analysis From Standpoint of	Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion Rate	Constant : $ ROR	State Rate	Federal Rate	Effect. Rate
	Minimum ROR, Inflation & Exponents					Tax Rates		
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16 16.0000 16.0000 10.0000 0.0000 10.0000 7.0000 34.0000 38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	73,644,956	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	18,621,000	MACRS	Mid Year	19.0	0			0 .....
3	04/89	5,689,628	MACRS	Mid Year	19.0	0			0 .....
4	04/89	13,753,947	MACRS	Mid Year	19.0	0			0 .....
5	04/89	16,071,419	WC	Mid Year	19.0	0			0 .....
6	04/89	2,153,349	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,153,349	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,153,359	MACRS	Mid Year	4.0	0			0 .....
9	04/89	118,971,030	MACRS	Mid Year	19.0	0			0 .....
10	04/89	12,345,970	WC	Mid Year	19.0	0			0 .....
11	04/89	27,540,898	MACRS	Mid Year	19.0	0			0 .....
12	04/89	34,278,870	EXPL-X	Mid Year	19.0	0			0 .....
13	04/02	73,644,956	MACRS	Mid Year	6.0	0			0 .....
14	04/01	3,199,941	MACRS	Mid Year	4.0	0			0 .....
15	04/05	3,199,941	MACRS	Mid Year	4.0	0			0 .....
16	.....	0	MACRS	Mid Year	7.0	0			0 .....
17	04/89	118,804,842	MACRS	Mid Year	19.0	0			

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	16,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0287	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	63,579,240.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	48,841,200.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	6,626,880.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	488,412.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.92	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

STONE BOY CREEK, FBKS GOLD DATA, OPEN PIT, PEBBLE REJECT

Cash Flows

NPV =$-251,921,869 DCFROR= -2.4% GROR = 0.0% PWROR = -2.1% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
Net Revenue		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-OPER COSTS		-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Total Oper Costs		-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-MHT NPI		-756,265	-756,265	-756,265	-756,265	-756,265	-756,265
-Total Sev. Ad Valor		-756,265	-756,265	-756,265	-756,265	-756,265	-756,265
-Dev, IDC	-23,995,209						
-Depreciation	-22,170,773	-41,520,057	-36,861,006	-32,784,718	-28,544,903	-25,019,852	-22,557,808
-Amortization	-6,170,197	-2,056,732	-2,056,732				
-Write Off							447,313
Before Depltn	-52,336,179	-20,571,668	-15,912,618	-9,779,598	-5,539,782	-2,014,732	447,313
100% Limit		21,494,568	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568
Percent Depln							447,313
Prev Exp Expl							
-Depletion							
-Total D,D & A	-52,336,179	-43,576,789	-38,917,738	-32,784,718	-28,544,903	-25,019,852	-22,557,808
Taxable	-52,336,179	-20,571,668	-15,912,618	-9,779,598	-5,539,782	-2,014,732	447,313
-Tax Due	17,794,301	6,994,367	5,410,290	3,325,063	2,139,464	778,090	-172,752
Net Income	-34,541,878	-13,577,301	-10,502,328	-6,454,535	-3,400,318	-1,236,643	274,560
+Depreciation	22,170,773	41,520,057	36,861,006	32,784,718	28,544,903	25,019,852	22,557,808
+Depletion							
+Amortization	6,170,197	2,056,732	2,056,732				
+Write Off			-2,153,349				-2,153,359
-Capital Costs	-417,880,700						
Cash Flow	-424,081,608	29,999,488	26,262,061	26,330,184	25,144,584	23,783,210	20,679,009

Year	7	8	9	10	11	12	13
AU REV	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
Net Revenue	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-OPER COSTS	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-Total Oper Costs	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732	-119,535,732
-MHT NPI	-756,265	-756,265	-756,265	-756,265	-756,265	-756,265	-756,265
-Total Sev. Ad Valor	-756,265	-756,265	-756,265	-756,265	-756,265	-756,265	-756,265
-Dev, IDC							
-Depreciation	-20,168,328	-18,130,647	-16,534,128	-15,891,482	-28,431,049	-36,013,833	-27,075,600
-Amortization							
-Write Off							
Before Depltn	2,836,792	4,874,474	6,470,993	7,113,639	-5,425,928	-13,008,712	-4,070,480
100% Limit	2,836,792	4,874,474	6,470,993	7,113,639			
Percent Depln	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568
Prev Exp Expl	2,836,792	4,874,474	6,470,993	7,113,639			
-Depletion							
-Total D,D & A	-20,168,328	-18,130,647	-16,534,128	-15,891,482	-28,431,049	-36,013,833	-27,075,600
Taxable	2,836,792	4,874,474	6,470,993	7,113,639	-5,425,928	-13,008,712	-4,070,480
-Tax Due	-1,095,569	-1,882,522	-2,499,097	-2,747,287	2,095,494	5,023,965	1,572,019
Net Income	1,741,223	2,991,952	3,971,895	4,366,351	-3,330,435	-7,984,748	-2,498,461
+Depreciation	20,168,328	18,130,647	16,534,128	15,891,482	28,431,049	36,013,833	27,075,600
+Depletion							
+Amortization							
+Write Off							
-Capital Costs				-3,199,941	-73,644,956		
Cash Flow	21,909,551	21,122,599	20,506,023	17,057,892	-48,544,342	28,029,085	24,577,140

Year	14	15	16	Salvage
AU REV	144,744,563	144,744,563	144,744,563	
GROSS REVENUE	144,744,563	144,744,563	144,744,563	28,417,389
Total Revenue	144,744,563	144,744,563	144,744,563	
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	
Net Revenue	143,297,117	143,297,117	143,297,117	
-OPER COSTS	-119,535,732	-119,535,732	-119,535,732	
-Total Oper Costs	-119,535,732	-119,535,732	-119,535,732	
-MHT NPI	-756,265	-756,265	-756,265	

Ye	14	15	16	Salvage
-Total Sev. Ad Valor	-756,265	-756,265	-756,265	
-Dev, IDC				
-Depreciation	-21,210,345	-19,591,948	-18,991,959	-32,032,762
-Amortization				
-Write Off				-28,417,389
Before Depltn	1,794,775	3,413,173	4,013,162	-32,032,762
100% Limit	1,794,775	3,413,173	4,013,162	
Percent Depln	21,494,568	21,494,568	21,494,568	
Prev Exp Expl	1,794,775	457,224		
-Depletion		-2,955,948	-4,013,162	
-Total D,D & A	-21,210,345	-22,547,896	-23,005,120	-60,450,151
Taxable	1,794,775	457,224		-32,032,762
-Tax Due	-693,142	-176,580		12,371,053
Net Income	1,101,633	280,644		-19,661,709
+Depreciation	21,210,345	19,591,948	18,991,959	32,032,762
+Depletion		2,955,948	4,013,162	
+Amortization				
+Write Off				28,417,389
-Capital Costs	-3,199,941			
Cash Flow	19,112,037	22,828,540	23,005,120	40,788,442

A.26). DESCRIPTIVE MODEL OF HOT SPRING Au-
By Byron R. Berger

30. per P. METZ

DESCRIPTION Fine-grained silica and quartz in silicified breccia with gold, pyrite, and Sb and As sulfides.

GENERAL REFERENCES Berger (1985).

GEOLOGICAL ENVIRONMENT

Rock Types Rhyolite.

Textures Porphyritic, brecciated.

Age Range Mainly Tertiary and Quaternary.

Depositional Environment Subaerial rhyolitic volcanic centers, rhyolite domes, and shallow parts of related geothermal systems.

Tectonic Setting(s) Through-going fracture systems related to volcanism above subduction zones, rifted continental margins. Leaky transform faults.

Associated Deposit Types Epithermal quartz veins, hot-spring Hg, placer Au.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + stibnite + realgar; or arsenopyrite ± sphalerite ± chalcopyrite ± fluorite; or native gold + Ag-selenide or tellurides + pyrite.

Texture/Structure Crustified banded veins, stockworks, breccias (cemented with silica or uncemented). Sulfides may be very fine grained and disseminated in silicified rock.

Alteration Top of bottom of system: chalcedonic sinter, massive silicification, stockworks and veins of quartz + adularia and breccia cemented with quartz + chlorite. Veins generally chalcedonic, some opal. Some deposits have alunite and pyrophyllite. Ammonium feldspar (buddingtonite) may be present.

Ore Controls Through-going fracture systems, brecciated cores of intrusive domes; cemented breccias important carrier of ore.

Weathering Bleached country rock, yellow limonites with jarosite and fine-grained alunite, hematite, goethite.

Geochemical Signature Au + As + Sb + Hg + Tl higher in system, increasing Ag with depth, decreasing As + Sb + Tl + Hg with depth. Locally, NH_4, W.

EXAMPLES

McLaughlin, USCA	(Averitt, 1945 and Becker, 1888)
Round Mountain, USNV	(Tingley and Berger, 1985)
Delamar, USID	(Lindgren, 1900)

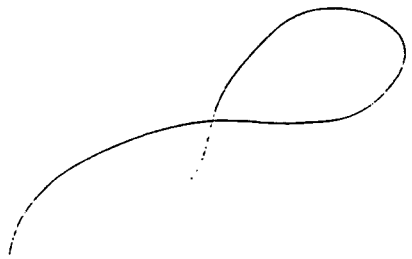
COMMENTS The above deposits [illegible] be used for the tonnage grade model f[illegible] this type of mineralization. A model tonnage is estimated at 180 million tonnes with a grade of 1.5 grams per tonne Au equivalent. Total contained metal is 8.7 million ounces Au. Total gross value in 1987 would have been $4.01 billion.

CASH FLOW ANALYSIS

Mine Life/Mining Rate Twenty years at 9.0 million tonnes per year or 25,000 tonnes per day.

Gross Value of Annual Production $200 million.

Net Present Value of 4% NSR $8.0 million times 8.514 is $68.0 million.



VACRRMAU.

Comments, Assumptions, Specifications: VC -
Valdez Creek / Rainbow Mountain Bulk-Mineable Au - based on FTK Model

SURFACE MINE MODEL STATISTICS, INPUT AND OUTPUT DATA:

Deposit type: Bulk - mineable Au
Total Ore Tonnage: 250 mil mt
Mining Method: Open Pit
Beneficiation Method: Crush, S.A.G. Grav., C.I.L.
Extraction Rate:
Dilution/Waste Rate:
Proposed Mine Life: 16 yrs
Proposed Daily Production: 45,000 mTPD
Maximum Ore Depth: 250 m
Stripping Ratio: 1:1
Haulage Distance/Road Requirements: 10 km
no - roads
Distance From Power: 100 km
Pre-Production Development:

Production Development:

Equipment: Shovel, Truck
Concentrate Production: Doré

INPUT VARIABLES:

A.(For Operating Costs)
Clearing rate-ha/day: .15 ha/day
Burden/Waste rate-mtpd: 45,000 mTPD
Burden/Waste depth & haul-m: 100 m 2,500 m
Ore rate-mtpd: 45,000 mTPD
Ore depth & haul-m: 120 m, 1,500 m
Conveyor length & slope-km & %: .7 km, 10%
Water needs-cm/day: 6,300 m³/day
Drainage, head & distance-cm/day, m & km:
10,000 m³/day, 120 m, 1 km
Concentrate (dry) rate-mtpd: Doré
Tails (dry) rate-mtpd: 45,000 mTPD
Production water needs-cm/day: 20,000 m³/day M.U
Portable Power needs-kW:
Wastewater-L/sec: .7 L/sec
Concentrate haul-km: Doré
Employee housing-men: 185 men
Other: $ 60,812 / day C.I.P. operation
Other:

B.(For Capital Costs)
Concentrate feeds-mtpd: 18,000 mTPD
Mill operating costs-$/day: $ 135,670/day
Working capital time-weeks: 13 weeks
Development time-days:
Clearing needs-ha: 1,500 ha

Stripping needs-mt: Negligible
Stripping depth & haul-m: -
Restoration area-ha: 2,000 ha
Contractors-1 or 2: 2
Mine operating costs-$/day: $176,609/day
Access roads, length & width-km & m: 10km, 10m
Airstrip length & width-m: 1,500m, 25m
Powerline length & power-km & mW: 100km, 35mW
Dike & Dam needs-cm/fill: 3.0 : 1 m3
Climate/Weather factors: Severe
Other: $50,394,853 - C.I.C System
Other:

OUPUT DATA:

C.(For Operating Costs)
Mining Costs-$/day: 176,609
Mining Costs-$/yr: 63,579,240
Mining Costs-$/mt: 3.92
Milling Costs-$/day: 135,670
Milling Costs-$/yr: 48,841,200
Milling Costs-$/mt: 3.02
Infrastructure Costs-$/day: 25,882
Infrastructure Costs-$/yr: 9,317,520
Infrastructure Costs-$/mt: .58
Total Operating Costs-$/day: 338,161
Total Operating Costs-$/yr: 121,737,960
Total Operating Costs-$/mt: 7.51
Other:
Other:

D.(For Capital Costs)

MINE CAPITAL COSTS:

Mine Working Capital-$: 16,071,419
Heavy Equipment (fixed life)-$: 72,644.956 *
Mine Rehabilitation-$: 18,621,000 *
Engr. & Const. Mgmt.-$: 5689.628 *
Other:
Remaining Mine Capital-$: 13,753,947
Total Mine Capital-$: 127,780,950

MILL CAPITAL COSTS:

Mill Working Capital-$: 12,345,970
Light Vehicles (short life)-$: 2,153,349 *
Other:
Remaining Mill Capital-$: 118,971,030
Total Mill Capital-$: 133,470,349

INFRASTRUCTURE CAPITAL COSTS:

Buildings and Structures-$: 27,540,898 *

Other: _____
Remaining Infrastructure Capital-$: 69,200,226
Total Infrastructure Capital-$: 96,741,124

CONDENSED CAPITAL COSTS:

Sum of Working Capital-$: 28,417,389 *
Sum of Remaining Mine, Mill & Infr. Costs (sum of ~)-$: 201,925,203 *
Sum of Total Mine, Mill & Infr. Costs-$: 357,992,423
Exploration Cost-$: 35,799,240 *

Overall Capital Cost-$: 393,791,665
(sum of all * items)

(Note: Items marked * may be treated as distinct time, lifespan or depreciation capital costs for the purposes of economic evaluation. If items not marked * are used in economic evaluation, care should be taken to avoid "double counting".)

List of Assumptions File:VACRRMAU.SEE Date:01/15/94 Time:16:33:37

VALDEZ CREEK BULK MINEABLE AU FTK MODEL, OPEN PIT, PEBBLE REJECT

Project Definition

Type of Analysis	Mining
Project Start Date	04/89
End of Time Zero	03/92
Evaluation Date	04/89
Project Length (in Years)	16
First Year (For Reporting)	1
Values in	Actual $'s
Discount Method	Discrete
Tax Scenario	Expense tax due against other income.
Analysis From Standpoint of	Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Inflation Rate	Constant $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16 16.0000 16.0000 10.0000 0.0000 10.0000 7.0000 34.0000 38.6200

****
* Capital Cost Entries *
****

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	73,644,956	MACRS	Mid Year	13.0	0			0 .....
CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	18,621,000	MACRS	Mid Year	19.0	0			0 .....
3	04/89	5,689,628	MACRS	Mid Year	19.0	0			0 .....
4	04/89	13,753,947	MACRS	Mid Year	19.0	0			0 .....
5	04/89	16,071,419	WC	Mid Year	4.0	0			0 .....
6	04/89	2,153,349	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,153,349	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,153,359	MACRS	Mid Year	19.0	0			0 .....
9	04/89	118,971,030	MACRS	Mid Year	19.0	0			0 .....
10	04/89	12,345,970	WC	Mid Year	19.0	0			0 .....
11	04/89	27,540,898	MACRS	Mid Year	19.0	0			0 .....
12	04/89	35,799,240	EXPL-X	Mid Year	6.0	0			0 .....
13	04/02	73,644,956	MACRS	Mid Year	4.0	0			0 .....
14	04/01	3,199,941	MACRS	Mid Year	4.0	0			0 .....
15	04/05	3,199,941	MACRS	Mid Year	7.0	0			0 .....
16	.....	0	MACRS	Mid Year	19.0	0			
17	04/89	69,200,226	MACRS	Mid Year					

Capital Cost Escalation Rates All Set to Zero.

****
* Series Data *
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#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	16,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0287	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	63,579,240.00	Constant	0.000

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	48,841,200.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	9,317,520.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.92	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.04	Constant	0.000
S20	NPI RATE	N/A:	04/92	End	0.00	Constant	0.000

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VALDEZ CREEK BULK MINEABLE AU FTK MODEL, OPEN PIT, PEBBLE REJECT

Cash Flows

NPV =$-251,655,391 DCFROR= -4.5% GROR = 3.3% PWROR = -3.9% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-MHT ROYALTY		-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885
-Total Royalties		-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885
Net Revenue		137,585,233	137,585,233	137,585,233	137,585,233	137,585,233	137,585,233
-OPER COSTS		-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960
-Total Oper Costs		-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960
-Dev, IDC	-25,059,468						
-Depreciation	-19,560,004	-36,573,336	-32,434,993	-28,824,601	-25,001,640	-21,849,565	-19,721,235
-Amortization	-6,443,863	-2,147,954	-2,147,954				
-Write Off							
Before Depltn	-51,063,335	-23,374,018	-19,235,675	-13,477,329	-9,654,367	-6,502,292	-4,373,962
100% Limit		20,637,785	20,637,785	20,637,785	20,637,785	20,637,785	20,637,785
Percent Depln							
Prev Exp Expl							
-Total D,D & A	-51,063,335	-38,721,290	-34,582,947	-28,824,601	-25,001,640	-21,849,565	-19,721,235
Taxable	-51,063,335	-23,374,018	-19,235,675	-13,477,329	-9,654,367	-6,502,292	-4,373,962
-Tax Due	17,361,534	7,947,166	6,540,129	4,582,292	3,728,517	2,511,185	1,689,224
Net Income	-33,701,801	-15,426,852	-12,695,545	-8,895,037	-5,925,851	-3,991,107	-2,684,738
+Depreciation	19,560,004	36,573,336	32,434,993	28,824,601	25,001,640	21,849,565	19,721,235
+Amortization	6,443,863	2,147,954	2,147,954				
+Write Off							
-Capital Costs	-368,732,195		-2,153,349				-2,153,359
Cash Flow	-376,430,129	23,294,439	19,734,053	19,929,564	19,075,789	17,858,458	14,883,138

Year	7	8	9	10	11	12	13
AU REV	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-MHT ROYALTY	-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885
-Total Royalties	-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885	-5,711,885
Net Revenue	137,585,233	137,585,233	137,585,233	137,585,233	137,585,233	137,585,233	137,585,233
-OPER COSTS	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960
-Total Oper Costs	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960
-Dev, IDC							
-Depreciation	-17,630,341	-15,859,817	-14,502,332	-14,073,560	-26,613,127	-34,195,911	-25,257,678
-Amortization							
-Write Off							
Before Depltn	-2,283,069	-512,544	844,940	1,273,713	-11,265,854	-18,848,638	-9,910,405
100% Limit			844,940	1,273,713			
Percent Depln	20,637,785	20,637,785	20,637,785	20,637,785	20,637,785	20,637,785	20,637,785
Prev Exp Expl			844,940	1,273,713			
-Total D,D & A	-17,630,341	-15,859,817	-14,502,332	-14,073,560	-26,613,127	-34,195,911	-25,257,678
Taxable	-2,283,069	-512,544	844,940	1,273,713	-11,265,854	-18,848,638	-9,910,405
-Tax Due	881,721	197,945	-326,316	-491,908	4,350,873	7,279,344	3,827,399
Net Income	-1,401,348	-314,600	518,624	781,805	-6,914,981	-11,569,294	-6,083,007
+Depreciation	17,630,341	15,859,817	14,502,332	14,073,560	26,613,127	34,195,911	25,257,678
+Amortization							
+Write Off							
-Capital Costs				-3,199,941	-73,644,956		
Cash Flow	16,228,994	15,545,217	15,020,957	11,655,424	-53,946,811	22,626,617	19,174,671

Year	14	15	16	Salvage
AU REV	144,744,563	144,744,563	144,744,563	
GROSS REVENUE	144,744,563	144,744,563	144,744,563	28,417,389
Total Revenue	144,744,563	144,744,563	144,744,563	
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	
-MHT ROYALTY	-5,711,885	-5,711,885	-5,711,885	
-Total Royalties	-5,711,885	-5,711,885	-5,711,885	
Net Revenue	137,585,233	137,585,233	137,585,233	
-OPER COSTS	-122,237,960	-122,237,960	-122,237,960	

Year	14	15	16	Salvage
-Total Oper Costs	-122,237,960	-122,237,960	-122,237,960	
-Dev, IDC				-27,487,956
-Depreciation	-19,392,423	-17,774,026	-17,174,037	
-Amortization				-28,417,389
-Write Off				
Before Depltn	-4,045,151	-2,426,753	-1,826,764	-27,487,956
100% Limit	20,637,785	20,637,785	20,637,785	
Percent Depln				
Prev Exp Expl				-55,905,345
-Total D,D & A	-19,392,423	-17,774,026	-17,174,037	
Taxable	-4,045,151	-2,426,753	-1,826,764	-27,487,956
-Tax Due	1,562,237	937,212	705,496	10,615,849
Net Income	-2,482,913	-1,489,541	-1,121,268	-16,872,108
+Depreciation	19,392,423	17,774,026	17,174,037	27,487,956
+Amortization				28,417,389
+Write Off				
-Capital Costs	-3,199,941			
Cash Flow	13,709,569	16,284,485	16,052,769	39,033,238

List of Assumptions File:VACRRMAU.SEE Date:01/04/80 Time:00:44:24

VALDEZ CREEK BULK MINEABLE AU FTK MODEL, OPEN PIT, PEBBLE REJECT

Project Definition

Type of Analysis	Mining
Project Start Date	04/89
End of Time Zero	03/92
Evaluation Date	04/89
Project Length (in Years)	16
First Year (For Reporting)	1
Values in	Actual $'s
Discount Method	Discrete
Tax Scenario	Expense tax due against other income.
Analysis From Standpoint of	Corporation

MROR, Inflation, Exponents & Tax Rates

Year	Compound Exponents	With Eval Date	Minimum ROR	Infltion:Constant Rate	: $ ROR	State Rate	Federal Rate	Effect. Rate
0	0.0000	0.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
1	1.0000	1.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
2	2.0000	2.0000	10.0000	0.0000	10.0000	0.0000	34.0000	34.0000
3	3.0000	3.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
4	4.0000	4.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
5	5.0000	5.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
6	6.0000	6.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
7	7.0000	7.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
8	8.0000	8.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
9	9.0000	9.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
10	10.0000	10.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
11	11.0000	11.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
12	12.0000	12.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
13	13.0000	13.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
14	14.0000	14.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200
15	15.0000	15.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

16	16.0000	16.0000	10.0000	0.0000	10.0000	7.0000	34.0000	38.6200

Capital Cost Entries

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
1	04/89	73,644,956	MACRS	Mid Year	13.0	0			0 .....

CC #	Purch Date	Cost	Type	First Year Convention	Life	Lag Mon	Cost Description	Salvage Amount Rec'd	Date Rec'd
2	04/89	18,621,000	MACRS	Mid Year	19.0	0			0 .....
3	04/89	5,689,628	MACRS	Mid Year	19.0	0			0 .....
4	04/89	13,753,947	MACRS	Mid Year	19.0	0			0 .....
5	04/89	16,071,419	WC	Mid Year	19.0	0			0 .....
6	04/89	2,153,349	MACRS	Mid Year	4.0	0			0 .....
7	04/93	2,153,349	MACRS	Mid Year	4.0	0			0 .....
8	04/97	2,153,359	MACRS	Mid Year	4.0	0			0 .....
9	04/89	118,971,030	MACRS	Mid Year	19.0	0			0 .....
10	04/89	12,345,970	WC	Mid Year	19.0	0			0 .....
11	04/89	27,540,898	MACRS	Mid Year	19.0	0			0 .....
12	04/89	35,799,240	EXPL-X	Mid Year	19.0	0			0 .....
13	04/02	73,644,956	MACRS	Mid Year	6.0	0			0 .....
14	04/01	3,199,941	MACRS	Mid Year	4.0	0			0 .....
15	04/05	3,199,941	MACRS	Mid Year	4.0	0			0 .....
16	.....	0	MACRS	Mid Year	7.0	0			0 .....
17	04/89	69,200,226	MACRS	Mid Year	19.0	0			

Capital Cost Escalation Rates All Set to Zero.

Series Data

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S1	ANNUAL PROD MTPY	Annual:	04/92	End	16,200,000.00	Constant	0.000
S2	MO GRADE %	N/A:	04/92	End	0.000000	Constant	0.000
S3	CU GRADE %	N/A:	04/92	End	0.0000	Constant	0.000
S4	PB GRADE %	N/A:	04/92	End	0.00	Constant	0.000
S5	AG GRADE OPT	N/A:	04/92	End	0.00	Constant	0.000
S6	AU GRADE OPT	N/A:	04/92	End	0.0287	Constant	0.000
S7	MO $/TONNE	N/A:	04/92	End	7,370.00	Constant	0.000
S8	CU $/TONNE	N/A:	04/92	End	2,222.44	Constant	0.000
S9	PB $/TONNE	N/A:	04/92	End	770.00	Constant	0.000
S10	AG $/TROY OZ	N/A:	04/92	End	4.09	Constant	0.000
S11	AU $/TROY OZ	N/A:	04/92	End	338.39	Constant	0.000
S12	MINING COSTS	Annual:	04/92	End	63,579,240.00	Constant	

#	Series Description	Freq.	Starting	Thru	Initial Value	Command	Rate/Amount
S13	MILLING COSTS	Annual:	04/92	End	48,841,200.00	Constant	0.000
S14	INFRA COSTS	Annual:	04/92	End	9,317,520.00	Constant	0.000
S15	TRANS COSTS	Annual:	04/92	End	500,000.00	Constant	0.000
S16	MINE RECOVERY RATE	N/A:	04/92	End	1.00	Constant	0.000
S17	MILL RECOVERY RATE	N/A:	04/92	End	0.92	Constant	0.000
S18	SMELTER RATE	N/A:	04/92	End	0.01	Constant	0.000
S19	MHT ROYALTY RATE	N/A:	04/92	End	0.00	Constant	0.000
S20	MHT NPI RATE	N/A:	04/92	End	0.03	Constant	

****
* Project Equations *
****

General Equations
==========

E1 . MO REV	S1*S2*S7*S16*S17
E2 . CU REV	S1*S3*S8*S16*S17
E3 . PB REV	S1*S4*S9*S16*S17
E4 . AG REV	S1*S5*S10*S16*S17
E5 . AU REV	S1*S6*S11*S16*S17

Revenues
==========

E6 . GROSS REVENUE	E1+E2+E3+E4+E5

Operating Costs
==========

E8 . OPER COSTS	(S12+S13+S14+S15)

Special Taxes
==========

E10. MHT NPI	S20*(E6-E8)

Royalties
==========

E9 . MHT ROYALTY	S19*(E6-E7-S15)

Processing Costs
==========

E7 . SMELTING CHARGES	S18*E6

VALDEZ CREEK BULK MINEABLE AU FTK MODEL, OPEN PIT, PEBBLE REJECT

Cash Flows

NPV =$-226,731,191 DCFROR= -2.6% GROR = 0.0% PWROR = -2.2% Pay Back= 0.00 MROR = 10.0%

Year	Time 0	1	2	3	4	5	6
AU REV		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue		144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost		-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
Net Revenue		143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-OPER COSTS		-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960
-Total Oper Costs		-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960
-MHT NPI		-675,198	-675,198	-675,198	-675,198	-675,198	-675,198
-Total Sev. Ad Valor		-675,198	-675,198	-675,198	-675,198	-675,198	-675,198
-Dev, IDC	-25,059,468						
-Depreciation	-19,560,004	-36,573,336	-32,434,993	-28,824,601	-25,001,640	-21,849,565	-19,721,235
-Amortization	-6,443,863	-2,147,954	-2,147,954				
-Write Off							662,725
Before Depltn	-51,063,335	-18,337,331	-14,198,988	-8,440,642	-4,617,681	-1,465,606	662,725
100% Limit		21,494,568	21,494,568	21,494,568	21,494,568	21,494,568	21,494,568
Percent Depln							662,725
Prev Exp Expl							-19,721,235
-Depletion	-51,063,335	-38,721,290	-34,582,947	-28,824,601	-25,001,640	-21,849,565	
-Total D,D & A		-18,337,331	-14,198,988	-8,440,642	-4,617,681	-1,465,606	662,725
Taxable	-51,063,335	6,234,693	4,827,656	2,869,818	1,783,348	566,017	-255,944
-Tax Due	17,361,534						406,780
Net Income	-33,701,801	-12,102,638	-9,371,332	-5,570,824	-2,834,332	-899,589	19,721,235
+Depreciation	19,560,004	36,573,336	32,434,993	28,824,601	25,001,640	21,849,565	
+Depletion							-2,153,359
+Amortization	6,443,863	2,147,954	2,147,954				
+Write Off			-2,153,349				17,974,656
-Capital Costs	-368,732,195			23,253,778	22,167,307	20,949,976	
Cash Flow	-376,430,129	26,618,652	23,058,266				

Year	7	8	9	10	11	12
AU REV	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
GROSS REVENUE	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
Total Revenue	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563	144,744,563
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446	-1,447,446
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
Net Revenue	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117	143,297,117
-OPER COSTS	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960
-Total Oper Costs	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960	-122,237,960
-MHT NPI	-675,198	-675,198	-675,198	-675,198	-675,198	-675,198
-Total Sev. Rd Valor	-675,198	-675,198	-675,198	-675,198	-675,198	-675,198
-Dev, IDC	-17,630,341	-15,859,817	-14,502,332	-14,073,560	-26,613,127	-34,195,911
-Depreciation						
-Amortization						
-Write Off						
Before Deplt'n	2,753,618	4,524,142	5,881,627	6,310,400	-6,229,167	-13,811,951
100% Limit	2,753,618	4,524,142	5,881,627	6,310,400	21,494,568	21,494,568
Percent Depln	21,494,568	21,494,568	21,494,568	21,494,568		
Prev Exp Expl	4,524,142	4,524,142	5,881,627	6,310,400		
-Depletion						
-Total D,D & A						
Taxable	-17,630,341	-15,859,817	-14,502,332	-14,073,560	-26,613,127	-34,195,911
-Tax Due						
Net Income	2,753,618	4,524,142	5,881,627	6,310,400	-6,229,167	-13,811,951
+Depreciation	-1,063,447	-1,747,224	-2,271,484	-2,437,076	2,405,704	5,334,176
+Depletion						
+Amortization						
+Write Off						
-Capital Costs						
Cash Flow	1,690,171	2,776,919	3,610,142	3,873,323	-3,823,463	-8,477,776
	17,630,341	15,859,817	14,502,332	14,073,560	26,613,127	34,195,911
	19,320,512	18,636,735	18,112,475	17,946,883	22,789,664	25,718,135

Year	13	14	15	16
AU REV	144,744,563	144,744,563	144,744,563	
GROSS REVENUE	144,744,563	144,744,563	144,744,563	
Total Revenue	144,744,563	144,744,563	144,744,563	
-SMELTING CHARGES	-1,447,446	-1,447,446	-1,447,446	
-Total Smelting Cost	-1,447,446	-1,447,446	-1,447,446	
Net Smelt Ret.	143,297,117	143,297,117	143,297,117	
Net Revenue	143,297,117	143,297,117	143,297,117	
-OPER COSTS	-122,237,960	-122,237,960	-122,237,960	
-Total Oper Costs	-122,237,960	-122,237,960	-122,237,960	
-MHT NPI	-675,198	-675,198	-675,198	
Net Revenue	-4,873,719	-25,257,678	-2,991,489	22,266,189
-OPER COSTS	1,882,230	25,257,678		
-Total Oper Costs	-2,991,489			
-MHT NPI	25,257,678			
Net Income	-4,873,719	-25,257,678	-2,991,489	22,266,189
+Depreciation				
+Depletion				
+Amortization				
+Write Off				
-Capital Costs				Salvage
Cash Flow	-4,873,719	-25,257,678	-2,991,489	28,417,389

Year	14	15	16	Salvage
-Total Sev. Ad Valor	-675,198	-675,198	-675,198	
-Dev, IDC	-19,392,423	-17,774,026	-17,174,037	-27,487,956
-Depreciation				-28,417,389
-Amortization				
-Write Off				-27,487,956
Before Depltn	991,536	2,609,934	3,209,923	
100% Limit	991,536	2,609,934	3,209,923	
Percent Depln	21,494,568	21,494,568	21,494,568	
Prev Exp Expl	991,536	2,609,934	1,325,487	
-Depletion			-1,884,435	
-Total D,D & A	-19,392,423	-17,774,026	-19,058,472	-55,905,345
Taxable	991,536	2,609,934	1,325,487	-27,487,956
-Tax Due	-382,931	-1,007,956	-511,903	10,615,849
Net Income	608,605	1,601,977	813,584	-16,872,108
+Depreciation	19,392,423	17,774,026	17,174,037	27,487,956
+Depletion			1,884,435	
+Amortization				
+Write Off				28,417,389
-Capital Costs	-3,199,941			
Cash Flow	16,801,087	19,376,003	19,872,056	39,033,238

APPENDIX C

SUMMARY OF NET PRESENT VALUES OF ROYALTY INCOMES FOR EACH MINERAL DEPOSIT MODEL

TABLE 2. NET PRESENT VALUE OF 4 % NSR AND 3 % NPI OF VARIOUS MINERAL DEPOSIT TYPES INCLUDED IN THIS INVESTIGATION.

	MINERAL DEPOSIT TYPE	MINE LIFE	ANNUAL NSR	ANNUAL NPI	10 % PW FACTOR	PW 4% NSR	PW 3% NPI
1	SEDIMENTARY EXHALATIVE	20	$47,646,779	$26,601,044	8.514	$405,664,676	$226,481,289
	SEDEXSEO.SEE	10	$16,155,303	$9,065,142	6.144	$99,258,182	$55,696,232
	SEDEXLIK.SEE						
2a	CYPRUS MASSIVE SULFIDE	15	$4,477,397	$2,132,660	7.606	$34,055,082	$16,221,012
	CYPKI.SEE						
2b	KUROKO MASSIVE SULFIDE	20	$6,200,335	$3,316,125	8.514	$52,789,652	$28,233,488
	VMSHAINE.SEE	10	$12,400,671	$7,264,126	6.144	$76,189,723	$44,630,790
	VMSH2.SEE	20	$5,173,722	$2,716,491	8.514	$44,049,069	$23,128,204
	VMSHRP.SEE	20	$6,200,335	$3,087,749	8.514	$52,789,652	$26,289,095
	VMSLIBEL.SEE						
3	BEDDED BARITE	10	$3,038,921	($372,879)	6.144	$18,671,131	($2,290,969)
	BARHAINE.SEE						
4	HOT SPRINGS AU-AG	10	$752,525	($97,465)	6.144	$4,623,514	($598,825)
	RYANA.SEE	10	$845,211	($114,539)	6.144	$5,192,976	($703,728)
	RYANB.SEE	7	$1,390,968	($64,500)	4.868	$6,771,232	($313,986)
	RYANC.SEE	20	$5,555,842	($435,407)	8.514	$47,302,439	($3,707,055)
	HSAULB.SEE	20	$5,579,074	($417,806)	8.514	$47,500,236	($3,557,200)
	HSAUGERT.SEE	10	$647,572	($97,464)	6.144	$3,978,682	($598,819)
	BIGHURAH.SEE	10	$439,545	($511,561)	6.144	$2,700,564	($3,143,031)
	ILLCRKH.SEE	10	$647,572	($97,465)	6.144	$3,978,682	($598,825)
	DEMOCRAU.SEE	7	$1,043,060	($420,132)	4.868	$5,077,616	($2,045,203)
	SWMAU.SEE						
5	EPITHERMAL QTZ-ALU AU	10	$11,999,467	$5,755,928	6.144	$73,724,725	$35,364,422
	EQASEA.SEE						

	POLTHAIN.SEE CUT& FILL	10	$3,971,059	$2,084,841	6.144	$24,398,186	$12,809,263
	POLKHAIN.SEE SQ SET	10	$4,972,474	$2,819,080	6.144	$30,550,880	$17,320,428
	POLTGOLD.SEE	10	$3,965,659	$2,099,388	6.144	$24,365,009	$12,898,640
	POLTSALT.SEE	10	$3,971,059	$2,084,841	6.144	$24,398,186	$12,809,263
	LSAHAIN.SEE CUT & FILL	10	$1,582,965	$521,679	6.144	$9,725,737	$3,205,196
	LSAOHAIN.SEE OPEN STOPE	10	$1,503,738	$687,670	6.144	$9,238,966	$4,225,044
	LSAOCHAND.SEE	10	$1,502,305	$668,970	6.144	$9,230,162	$4,110,152
	KENSINGT.SEE LONGHOLE	10	$3,040,861	($570,176)	6.144	$18,683,050	($3,503,161)
	GRAUVN7.SEE	7	$1,109,804	($253,243)	4.868	$5,402,526	($1,232,787)
	GRANAUVN.SEE	10	$1,109,804	($253,243)	6.144	$6,818,636	($1,555,925)
6	CREEDE EPITHERMAL CRDSEA.SEE CUT & FILL	15	$18,152,035	$9,375,269	7.606	$138,064,378	$71,308,296
7	W VEINS WVENTM.SEE	15	$1,288,204	$297,975	7.606	$9,798,080	$2,266,398
8a	PORPHYRY CU-MO PCMTB.SEE	30	$51,310,641	$15,151,568	9.427	$483,705,413	$142,833,832
8b	PORPHYRY CU-AU				8.514	$105,853,106	$8,514
	PEBBLE.SEE	20	$12,432,829	$1,000	8.514	$159,038,778	$50,503,124
	PCAHLIV.SEE	20	$18,679,678	$5,931,774	7.606	$46,931,469	$10,919,531
	PCAMLIV.SEE	15	$6,170,322	$1,435,647	6.144	$14,266,122	($2,077,182)
	PCALLIV.SEE	10	$2,321,960	($338,083)			
9	CLIMAX MOLYBDENUM				8.514	$293,895,260	$94,919,751
	CLMOCNE.SEE	20	$34,519,058	$11,148,667	8.514	$293,895,260	$118,651,896
	CLMOBCNE.SEE	20	$34,519,058	$13,936,093			
10	CU SKARNS COPSSEA.SEE	10	$3,382,448	$1,163,455	6.144	$20,781,761	$7,148,268
11	W SKARNS TUNSEA.SEE	15	$4,061,337	$1,354,355	7.606	$30,890,529	$10,301,224

					7.606	$50,754,191	$28,391,061	
12	ZN-PB SKARNS ZNPBSEA.SEE	15	$6,672,915	$3,732,719				
					8.514	$28,519,218	($2,813,732)	
		20	$3,349,685	($330,483)	8.514	$28,519,218	($965,939)	
13	SN GREISENS TINCHENA.SEE TINZACK.SEE	20	$3,349,685	($113,453)				
14	REPLACEMENT FLUORITE NOT APPLICABLE				8.514	$142,686,032	$33,185,503	
15	NORIL`SK CU-NI-PGE NORSEA.SEE	20	$16,758,989	$3,897,757				
16	PODIFORM CHROMITE CHRMKE.SEE	2	$1,802,407	$913,066	1.736	$3,128,979	$1,585,083	
17	ASBESTOS NOT APPLICABLE							
18	SHALE/RED BED CU NOT APPLICABLE							
19	BANDED IRON FORM NOT APPLICABLE							
20	IRONSTONE NOT APPLICABLE							
21	CARBONATE ZN-PB NOT APPLICABLE							
22	CARBONATE NOT APPLICABLE							
23	SANDSTONE URANIUM SSUHEA.SEE	20	$17,310,702	$10,192,974	8.514	$147,383,317	$86,782,981	

					9.427	$209,280,305	$92,451,032	
24	CARBONATITE REE	30	$22,200,096	$9,807,047				
	CARBOK.SEE				6.144	$12,020,466	$3,659,219	
				$595,576	5.335	$541,193	($158,487)	
25	PLACER AU	10	$1,956,456	($29,707)	6.814	$691,226	($202,423)	
	PLACAUPG.SEE	8	$101,442	($29,707)				
	PLACAU8.SEE	12	$101,442					
	PLACAU.SEE							
26	ALLUVIAL PLACER SN							
27	BULK MINEABLE AU							
	SEE TYPE 4							
28	PLACER PGE				7.606	$42,133,102	($2,232,384)	
						$0		
29	ALMADEN HG	15	$5,539,456	($293,503)		$0		
	HGALRD.SEE				7.824	$44,693,411	($5,917,017)	
				($756,265)	7.824	$44,693,411	($5,917,017)	
30	INTRUSIVE RELATED AU	16	$5,712,348	($756,265)	7.824	$44,689,788	($5,282,749)	
	FTKFBKS.SEE	16	$5,712,348	($675,198)				
	STONEBOY	16	$5,711,885					
	VACRRMAU.SEE							
					8.514	$17,917,713		
31	COAL	20	$2,104,500		8.514	$54,276,750		
	SCMA.SEE 5%NSR ($34.06/ton)	20	$6,375,000					
	SCMA.SEE12%NSR($40.00/ton)							

APPENDIX E

EXPECTED NET PRESENT VALUE OF ROYALTY INCOME FROM COAL RESOURCES ON ORIGINAL ALASKA MENTAL HEALTH TRUST LAND BY PARCEL

MENTAL HEALTH TRUST LANDS					
	COAL VALUATION SUMMARY				
	12-Feb-94				
NENANA COAL FIELD					
				NPV AT 10% OF	EXPECTED
TWN	RNG	SEC	PROBABILITY	NSR AT 12.5%	VALUE
T9S	R5W		NO COAL		
T9S	R6W		NO COAL		
T10S	R6W		NO COAL		
T11S	R7W	1-33	0.10	$54,276,750	$5,427,675
T11S	R7W	24-34	1.00	$54,276,750	$54,276,750
T12S	R6W	1-36	0.10	$54,276,750	$5,427,675
T12S	R7W	1-36	0.10	$54,276,750	$5,427,675
				SUB-TOTAL	$70,559,775
MATANUSKA COAL FIELD					
				NPV AT 10% OF	EXPECTED
TWN	RNG	SEC	PROBABILITY	NSR AT 12.5%	VALUE
T19N	R1E		NO COAL		
T18N	R1E		NO COAL		
T19N	R2E	29-33	NO COAL;		
T18N	R2E	3-7	NO COAL		
T19N	R2E	28	1	$3,392,296	$3,392,296
T19N	R3E	4-6,7-9	0.1	$54,276,750	$5,427,675
T19N	R3E	1-3,10-15	0.1	$54,276,750	$5,427,675
T19N	R3E	16-18	0.1	$54,276,750	$5,427,675
T19N	R3E	19-20	0.1	$54,276,750	$5,427,675
T20N	R5E	ALL	0.01	$54,276,750	$542,767
T20N	R6E	ALL	0.01	$54,276,750	$542,767
				SUB-TOTAL	$26,188,530

BELUGA COAL FIELD									
					NPV AT 10% OF		EXPECTED		
TWN	RNG	SEC	PROBABILITY		NSR AT 12.5%		VALUE		
T14N	R12W	ALL	0.01		$54,276,750		$542,767		
T14N	R13W	ALL	0.01		$54,276,750		$542,767		
T13N	R10W	ALL	0.01		$54,276,750		$542,767		
T13N	R11W	ALL	0.01		$54,276,750		$542,767		
T13N	R12W	ALL	0.01		$54,276,750		$542,767		
T13N	R13W	ALL	0.01		$54,276,750		$542,767		
T12N	R11W	ALL	0.01		$54,276,750		$542,767		
T12N	R12W	ALL	0.01		$54,276,750		$542,767		
T12N	R13W	ALL	0.01		$54,276,750		$542,767		
					SUB-TOTAL		$4,884,903		
					TOTAL		$101,633,208		

APPENDIX F

EXPECTED NET PRESENT VALUE OF ROYALTY INCOME FROM METALLIC MINERAL RESOURCES ON POOL OF POTENTIAL REPLACEMENT LANDS UNDER CHAPTER 66

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
CLEARY SUMMIT	F003N003E18	640	FBKS D1&2, LIV A1&2	CLEARSUM	$15,778,979	$4,662,496	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
CLEARY SUMMIT	F003N003E19	640	FBKS D1&2, LIV A1&2	CLEARSUM	$15,778,979	$4,662,496	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
CLEARY SUMMIT	F003N003E20	640	FBKS D1&2, LIV A1&2	CLEARSUM	$15,778,979	$4,662,496	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
CLEARY SUMMIT	F003N003E34	640	FBKS D1&2, LIV A1&2	CLEARSUM	$15,778,979	$4,662,496	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
CLEARY SUMMIT	F003N003E35	640	FBKS D1&2, LIV A1&2	CLEARSUM	$15,778,979	$4,662,496	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
GOLDEN ZONE	F019S011W26	480	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F019S011W27	480	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F019S011W34	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F020S011W3	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F020S011W4	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F020S011W5	80	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F020S011W8	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F020S011W9	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F020S011W10	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN ZONE	F020S011W17	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W18	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W19	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W20	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W21	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W22	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W27	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W28	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W29	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W30	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W31	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W32	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W33	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
TATALINA	S032N035W34	640	MCGRATH D6	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
SHORTY CREEK	F007N004W6	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N004W7	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N004W18	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N005W1	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N005W2	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N005W3	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N005W10	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N005W11	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N005W12	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N005W13	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
SHORTY CREEK	F007N005W14	640	LIVENGOOD B3&4	PCAHLIV	$159,038,778	$50,503,124	30								
GERTRUDE CK., ETC.	F008N004W19	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N004W20	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N004W27	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N004W28	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N004W29	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N004W30	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N004W33	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N004W34	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W1	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W2	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W3	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W10	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W11	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W12	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W13	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W14	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W15	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W16	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W21	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W22	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W23	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W24	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W25	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W26	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W27	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W28	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W33	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F008N005W34	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F009N004W31	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F009N004W32	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
GERTRUDE CK., ETC.	F009N004W33	640	LIVEN. B3&4, C3&4	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4	NPV OF NSR	NPV OF NPI
CLEARY SUMMIT	F003N003E18					$487,869	$170,777
CLEARY SUMMIT	F003N003E19					$487,869	$170,777
CLEARY SUMMIT	F003N003E20					$487,869	$170,777
CLEARY SUMMIT	F003N003E34					$487,869	$170,777
CLEARY SUMMIT	F003N003E35					$487,869	$170,777
GOLDEN ZONE	F019S011W26					$356,626	$187,497
GOLDEN ZONE	F019S011W27					$356,626	$187,497
GOLDEN ZONE	F019S011W34					$475,501	$249,996
GOLDEN ZONE	F020S011W3					$475,501	$249,996
GOLDEN ZONE	F020S011W4					$475,501	$249,996
GOLDEN ZONE	F020S011W5					$59,438	$31,249
GOLDEN ZONE	F020S011W8					$475,501	$249,996
GOLDEN ZONE	F020S011W9					$475,501	$249,996
GOLDEN ZONE	F020S011W10					$475,501	$249,996
GOLDEN ZONE	F020S011W17					$475,501	$249,996
TATALINA	S032N035W18					$555,262	$2,342
TATALINA	S032N035W19					$555,262	$2,342
TATALINA	S032N035W20					$555,262	$2,342
TATALINA	S032N035W21					$555,262	$2,342
TATALINA	S032N035W22					$555,262	$2,342
TATALINA	S032N035W27					$555,262	$2,342
TATALINA	S032N035W28					$555,262	$2,342
TATALINA	S032N035W29					$555,262	$2,342
TATALINA	S032N035W30					$555,262	$2,342
TATALINA	S032N035W31					$555,262	$2,342
TATALINA	S032N035W32					$555,262	$2,342
TATALINA	S032N035W33					$555,262	$2,342
TATALINA	S032N035W34					$555,262	$2,342
SHORTY CREEK	F007N004W6					$3,053,545	$969,660
SHORTY CREEK	F007N004W7					$3,053,545	$969,660
SHORTY CREEK	F007N004W18					$3,053,545	$969,660
SHORTY CREEK	F007N005W1					$3,053,545	$969,660
SHORTY CREEK	F007N005W2					$3,053,545	$969,660
SHORTY CREEK	F007N005W3					$3,053,545	$969,660
SHORTY CREEK	F007N005W10					$3,053,545	$969,660
SHORTY CREEK	F007N005W11					$3,053,545	$969,660
SHORTY CREEK	F007N005W12					$3,053,545	$969,660
SHORTY CREEK	F007N005W13					$3,053,545	$969,660
SHORTY CREEK	F007N005W14					$3,053,545	$969,660
GERTRUDE CK., ETC.	F008N004W19					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N004W20					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N004W27					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N004W28					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N004W29					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N004W30					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N004W33					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N004W34					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W1					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W2					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W3					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W10					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W11					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W12					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W13					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W14					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W15					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W16					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W21					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W22					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W23					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W24					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W25					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W26					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W27					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W28					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W33					$2,331,415	$681,339
GERTRUDE CK., ETC.	F008N005W34					$2,331,415	$681,339
GERTRUDE CK., ETC.	F009N004W31					$2,331,415	$681,339
GERTRUDE CK., ETC.	F009N004W32					$2,331,415	$681,339
GERTRUDE CK., ETC.	F009N004W33					$2,331,415	$681,339

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
OPHIR DISTRICT	K022S014W3	640	OPHIR C1	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
OPHIR DISTRICT	K022S014W10	640	OPHIR C1	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
OPHIR DISTRICT	K022S014W15	640	OPHIR C1	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
OPHIR DISTRICT	K022S014W22	640	OPHIR C1	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
OPHIR DISTRICT	K022S014W23	640	OPHIR C1	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
OPHIR DISTRICT	K022S014W26	640	OPHIR C1	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
OPHIR DISTRICT	K022S014W27	640	OPHIR C1	HSAULB	$47,302,439	$0	30	EQASEA	$73,724,725	##########	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001S003W1	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001S003W2	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N002W19	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N002W20	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N002W28	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N002W29	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N002W30	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N002W32	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W13	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W14	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W22	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W23	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W24	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W25	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W26	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W27	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W35	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
ESTER DOME	F001N003W36	640	FAIRBANKS D1&2	RYANC	$8,546,107	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1
LIK/RED DOG	K031N019W1	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W2	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W3	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W10	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W11	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W12	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W13	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W14	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W23	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W24	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W25	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W35	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N019W36	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N020W4	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K031N020W9	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N019W26	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N019W34	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N019W35	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N019W36	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N020W11	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N020W13	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N020W14	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N020W15	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N020W16	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
LIK/RED DOG	K032N020W23	640	DE LONG MT A2&3	SEDEXLIK	$99,258,182	$55,696,232	30								
PEBBLE BEACH	S003S034W18	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S034W19	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S034W28	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S034W29	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S034W30	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S034W31	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S034W32	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S034W33	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W8	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W9	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W10	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W13	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W14	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W15	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W16	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W17	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W18	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W19	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W20	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W21	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W22	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
OPHIR DISTRICT	K022S014W3						$2,331,415	$881,339
OPHIR DISTRICT	K022S014W10						$2,331,415	$881,339
OPHIR DISTRICT	K022S014W15						$2,331,415	$881,339
OPHIR DISTRICT	K022S014W22						$2,331,415	$881,339
OPHIR DISTRICT	K022S014W23						$2,331,415	$881,339
OPHIR DISTRICT	K022S014W26						$2,331,415	$881,339
OPHIR DISTRICT	K022S014W27						$2,331,415	$881,339
ESTER DOME	F001S003W1						$348,997	$81,257
ESTER DOME	F001S003W2						$348,997	$81,257
ESTER DOME	F001N002W19						$348,997	$81,257
ESTER DOME	F001N002W20						$348,997	$81,257
ESTER DOME	F001N002W28						$348,997	$81,257
ESTER DOME	F001N002W29						$348,997	$81,257
ESTER DOME	F001N002W30						$348,997	$81,257
ESTER DOME	F001N002W32						$348,997	$81,257
ESTER DOME	F001N003W13						$348,997	$81,257
ESTER DOME	F001N003W14						$348,997	$81,257
ESTER DOME	F001N003W22						$348,997	$81,257
ESTER DOME	F001N003W23						$348,997	$81,257
ESTER DOME	F001N003W24						$348,997	$81,257
ESTER DOME	F001N003W25						$348,997	$81,257
ESTER DOME	F001N003W26						$348,997	$81,257
ESTER DOME	F001N003W27						$348,997	$81,257
ESTER DOME	F001N003W35						$348,997	$81,257
ESTER DOME	F001N003W36						$348,997	$81,257
LIK/RED DOG	K031N019W1						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W2						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W3						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W10						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W11						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W12						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W13						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W14						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W23						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W24						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W25						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W35						$1,905,757	$1,069,368
LIK/RED DOG	K031N019W36						$1,905,757	$1,069,368
LIK/RED DOG	K031N020W4						$1,905,757	$1,069,368
LIK/RED DOG	K031N020W9						$1,905,757	$1,069,368
LIK/RED DOG	K032N019W26						$1,905,757	$1,069,368
LIK/RED DOG	K032N019W34						$1,905,757	$1,069,368
LIK/RED DOG	K032N019W35						$1,905,757	$1,069,368
LIK/RED DOG	K032N019W36						$1,905,757	$1,069,368
LIK/RED DOG	K032N020W11						$1,905,757	$1,069,368
LIK/RED DOG	K032N020W13						$1,905,757	$1,069,368
LIK/RED DOG	K032N020W14						$1,905,757	$1,069,368
LIK/RED DOG	K032N020W15						$1,905,757	$1,069,368
LIK/RED DOG	K032N020W16						$1,905,757	$1,069,368
LIK/RED DOG	K032N020W23						$1,905,757	$1,069,368
PEBBLE BEACH	S003S034W18						$2,032,390	$163
PEBBLE BEACH	S003S034W19						$2,032,390	$163
PEBBLE BEACH	S003S034W28						$2,032,390	$163
PEBBLE BEACH	S003S034W29						$2,032,390	$163
PEBBLE BEACH	S003S034W30						$2,032,390	$163
PEBBLE BEACH	S003S034W31						$2,032,390	$163
PEBBLE BEACH	S003S034W32						$2,032,390	$163
PEBBLE BEACH	S003S034W33						$2,032,390	$163
PEBBLE BEACH	S003S035W8						$2,032,390	$163
PEBBLE BEACH	S003S035W9						$2,032,390	$163
PEBBLE BEACH	S003S035W10						$2,032,390	$163
PEBBLE BEACH	S003S035W13						$2,032,390	$163
PEBBLE BEACH	S003S035W14						$2,032,390	$163
PEBBLE BEACH	S003S035W15						$2,032,390	$163
PEBBLE BEACH	S003S035W16						$2,032,390	$163
PEBBLE BEACH	S003S035W17						$2,032,390	$163
PEBBLE BEACH	S003S035W18						$2,032,390	$163
PEBBLE BEACH	S003S035W19						$2,032,390	$163
PEBBLE BEACH	S003S035W20						$2,032,390	$163
PEBBLE BEACH	S003S035W21						$2,032,390	$163
PEBBLE BEACH	S003S035W22						$2,032,390	$163

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
PEBBLE BEACH	S003S035W23	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W24	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W25	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W26	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W27	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W28	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W29	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W30	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W31	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W32	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W33	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W34	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W35	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S003S035W36	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S034W5	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S034W6	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S034W7	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S034W8	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S034W18	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W1	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W2	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W3	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W4	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W5	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W6	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W7	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W8	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W9	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W10	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W11	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W12	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W13	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W14	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W15	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W16	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W18	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W21	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W22	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W23	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S035W24	640	ILIAMNA D6&7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S036W18	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S036W19	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S036W24	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S036W25	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S004S036W30	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W3	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W4	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W9	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W10	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W15	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W22	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W27	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W33	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W34	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S006S036W3	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W4	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W10	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W15	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W22	640	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
PEBBLE BEACH	S005S036W27	320	ILIAMNA D6&7, C7	PEBBLE	$105,853,106	$8,514	30								
STONE BOY	F001N009E24	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E25	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E26	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E27	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E28	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E30	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E31	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E32	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E33	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E34	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N009E35	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
PEBBLE BEACH	S003S035W23						$2,032,390	$163
PEBBLE BEACH	S003S035W24						$2,032,390	$163
PEBBLE BEACH	S003S035W25						$2,032,390	$163
PEBBLE BEACH	S003S035W26						$2,032,390	$163
PEBBLE BEACH	S003S035W27						$2,032,390	$163
PEBBLE BEACH	S003S035W28						$2,032,390	$163
PEBBLE BEACH	S003S035W29						$2,032,390	$163
PEBBLE BEACH	S003S035W30						$2,032,390	$163
PEBBLE BEACH	S003S035W31						$2,032,390	$163
PEBBLE BEACH	S003S035W32						$2,032,390	$163
PEBBLE BEACH	S003S035W33						$2,032,390	$163
PEBBLE BEACH	S003S035W34						$2,032,390	$163
PEBBLE BEACH	S003S035W35						$2,032,390	$163
PEBBLE BEACH	S003S035W36						$2,032,390	$163
PEBBLE BEACH	S004S034W6						$2,032,390	$163
PEBBLE BEACH	S004S034W6						$2,032,390	$163
PEBBLE BEACH	S004S034W7						$2,032,390	$163
PEBBLE BEACH	S004S034W8						$2,032,390	$163
PEBBLE BEACH	S004S034W18						$2,032,390	$163
PEBBLE BEACH	S004S035W1						$2,032,390	$163
PEBBLE BEACH	S004S035W2						$2,032,390	$163
PEBBLE BEACH	S004S035W3						$2,032,390	$163
PEBBLE BEACH	S004S035W4						$2,032,390	$163
PEBBLE BEACH	S004S035W5						$2,032,390	$163
PEBBLE BEACH	S004S035W6						$2,032,390	$163
PEBBLE BEACH	S004S035W7						$2,032,390	$163
PEBBLE BEACH	S004S035W8						$2,032,390	$163
PEBBLE BEACH	S004S035W9						$2,032,390	$163
PEBBLE BEACH	S004S035W10						$2,032,390	$163
PEBBLE BEACH	S004S035W11						$2,032,390	$163
PEBBLE BEACH	S004S035W12						$2,032,390	$163
PEBBLE BEACH	S004S035W13						$2,032,390	$163
PEBBLE BEACH	S004S035W14						$2,032,390	$163
PEBBLE BEACH	S004S035W15						$2,032,390	$163
PEBBLE BEACH	S004S035W16						$2,032,390	$163
PEBBLE BEACH	S004S035W18						$2,032,390	$163
PEBBLE BEACH	S004S035W21						$2,032,390	$163
PEBBLE BEACH	S004S035W22						$2,032,390	$163
PEBBLE BEACH	S004S035W23						$2,032,390	$163
PEBBLE BEACH	S004S035W24						$2,032,390	$163
PEBBLE BEACH	S004S036W18						$2,032,390	$163
PEBBLE BEACH	S004S036W19						$2,032,390	$163
PEBBLE BEACH	S004S036W24						$2,032,390	$163
PEBBLE BEACH	S004S036W25						$2,032,390	$163
PEBBLE BEACH	S004S036W36						$2,032,390	$163
PEBBLE BEACH	S005S036W3						$2,032,390	$163
PEBBLE BEACH	S005S036W4						$2,032,390	$163
PEBBLE BEACH	S005S036W9						$2,032,390	$163
PEBBLE BEACH	S005S036W10						$2,032,390	$163
PEBBLE BEACH	S005S036W15						$2,032,390	$163
PEBBLE BEACH	S005S036W22						$2,032,390	$163
PEBBLE BEACH	S005S036W27						$2,032,390	$163
PEBBLE BEACH	S005S036W33						$2,032,390	$163
PEBBLE BEACH	S005S036W34						$2,032,390	$163
PEBBLE BEACH	S006S036W3						$2,032,390	$163
PEBBLE BEACH	S005S036W4						$2,032,390	$163
PEBBLE BEACH	S005S036W10						$2,032,390	$163
PEBBLE BEACH	S005S036W15						$2,032,390	$163
PEBBLE BEACH	S005S036W22						$2,032,390	$163
PEBBLE BEACH	S005S036W27						$1,016,190	$82
STONE BOY	F001N009E24						$865,807	$2,342
STONE BOY	F001N009E25						$865,807	$2,342
STONE BOY	F001N009E26						$865,807	$2,342
STONE BOY	F001N009E27						$865,807	$2,342
STONE BOY	F001N009E28						$865,807	$2,342
STONE BOY	F001N009E30						$865,807	$2,342
STONE BOY	F001N009E31						$865,807	$2,342
STONE BOY	F001N009E32						$865,807	$2,342
STONE BOY	F001N009E33						$865,807	$2,342
STONE BOY	F001N009E34						$865,807	$2,342
STONE BOY	F001N009E35						$865,807	$2,342

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
STONE BOY	F001N009E36	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E14	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E21	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E22	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E23	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E24	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E25	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E26	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E27	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E28	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E34	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E35	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N010E36	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E13	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E14	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E15	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E16	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E17	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E18	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E21	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E22	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E23	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E24	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E25	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N011E26	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E7	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E8	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E9	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E10	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E11	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E12	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E13	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E14	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E15	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E16	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E17	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E18	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E19	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E20	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E21	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
STONE BOY	F001N012E30	640	BIG DELTA D3&4	STONEBOY	$44,693,411	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158004E13	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158004E24	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158004E25	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158004E26	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158004E35	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158004E36	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E3	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E4	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E8	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E9	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E10	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E15	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E16	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E17	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E18	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E19	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E20	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E21	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E22	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E29	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E30	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E31	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158005E32	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158006E11	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158006E12	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158006E13	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158006E14	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158006E22	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158006E23	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K0158006E24	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
STONE BOY	F001N009E36						$865,907	$2,342
STONE BOY	F001N010E14						$865,907	$2,342
STONE BOY	F001N010E21						$865,907	$2,342
STONE BOY	F001N010E22						$865,907	$2,342
STONE BOY	F001N010E23						$865,907	$2,342
STONE BOY	F001N010E24						$865,907	$2,342
STONE BOY	F001N010E25						$865,907	$2,342
STONE BOY	F001N010E26						$865,907	$2,342
STONE BOY	F001N010E27						$865,907	$2,342
STONE BOY	F001N010E28						$865,907	$2,342
STONE BOY	F001N010E34						$865,907	$2,342
STONE BOY	F001N010E35						$865,907	$2,342
STONE BOY	F001N010E36						$865,907	$2,342
STONE BOY	F001N011E13						$865,907	$2,342
STONE BOY	F001N011E14						$865,907	$2,342
STONE BOY	F001N011E15						$865,907	$2,342
STONE BOY	F001N011E16						$865,907	$2,342
STONE BOY	F001N011E17						$865,907	$2,342
STONE BOY	F001N011E18						$865,907	$2,342
STONE BOY	F001N011E21						$865,907	$2,342
STONE BOY	F001N011E22						$865,907	$2,342
STONE BOY	F001N011E23						$865,907	$2,342
STONE BOY	F001N011E24						$865,907	$2,342
STONE BOY	F001N011E25						$865,907	$2,342
STONE BOY	F001N011E26						$865,907	$2,342
STONE BOY	F001N012E7						$865,907	$2,342
STONE BOY	F001N012E8						$865,907	$2,342
STONE BOY	F001N012E9						$865,907	$2,342
STONE BOY	F001N012E10						$865,907	$2,342
STONE BOY	F001N012E11						$865,907	$2,342
STONE BOY	F001N012E12						$865,907	$2,342
STONE BOY	F001N012E13						$865,907	$2,342
STONE BOY	F001N012E14						$865,907	$2,342
STONE BOY	F001N012E15						$865,907	$2,342
STONE BOY	F001N012E16						$865,907	$2,342
STONE BOY	F001N012E17						$865,907	$2,342
STONE BOY	F001N012E18						$865,907	$2,342
STONE BOY	F001N012E19						$865,907	$2,342
STONE BOY	F001N012E20						$865,907	$2,342
STONE BOY	F001N012E21						$865,907	$2,342
STONE BOY	F001N012E30						$865,907	$2,342
KAIYUH HILLS	K015S004E13						$59,544	$2,342
KAIYUH HILLS	K015S004E24						$59,544	$2,342
KAIYUH HILLS	K015S004E25						$59,544	$2,342
KAIYUH HILLS	K015S004E26						$59,544	$2,342
KAIYUH HILLS	K015S004E35						$59,544	$2,342
KAIYUH HILLS	K015S004E36						$59,544	$2,342
KAIYUH HILLS	K015S005E3						$59,544	$2,342
KAIYUH HILLS	K015S005E4						$59,544	$2,342
KAIYUH HILLS	K015S005E8						$59,544	$2,342
KAIYUH HILLS	K015S005E9						$59,544	$2,342
KAIYUH HILLS	K015S005E10						$59,544	$2,342
KAIYUH HILLS	K015S005E15						$59,544	$2,342
KAIYUH HILLS	K015S005E16						$59,544	$2,342
KAIYUH HILLS	K015S005E17						$59,544	$2,342
KAIYUH HILLS	K015S005E18						$59,544	$2,342
KAIYUH HILLS	K015S005E19						$59,544	$2,342
KAIYUH HILLS	K015S005E20						$59,544	$2,342
KAIYUH HILLS	K015S005E21						$59,544	$2,342
KAIYUH HILLS	K015S005E22						$59,544	$2,342
KAIYUH HILLS	K015S005E29						$59,544	$2,342
KAIYUH HILLS	K015S005E30						$59,544	$2,342
KAIYUH HILLS	K015S005E31						$59,544	$2,342
KAIYUH HILLS	K015S005E32						$59,544	$2,342
KAIYUH HILLS	K015S006E11						$59,544	$2,342
KAIYUH HILLS	K015S006E12						$59,544	$2,342
KAIYUH HILLS	K015S006E13						$59,544	$2,342
KAIYUH HILLS	K015S006E14						$59,544	$2,342
KAIYUH HILLS	K015S006E22						$59,544	$2,342
KAIYUH HILLS	K015S006E23						$59,544	$2,342
KAIYUH HILLS	K015S006E24						$59,544	$2,342

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
KAIYUH HILLS	K015S006E25	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S006E26	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S006E27	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S006E34	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S006E35	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S006E36	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E7	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E8	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E9	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E16	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E17	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E18	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E19	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E20	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E21	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E28	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E29	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E30	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E31	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E32	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K015S007E33	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S004E1	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S004E2	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S004E11	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S004E12	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S004E13	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S004E14	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E2	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E3	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E4	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E5	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E6	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E7	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E8	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E9	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E10	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E11	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E14	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E15	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E16	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E17	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E18	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E19	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E20	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E21	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
KAIYUH HILLS	K016S005E22	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S004E24	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S004E35	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S004E36	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S005E31	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S005E32	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S005E33	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S005E34	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S005E35	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S005E36	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K016S006E31	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S004E1	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S004E2	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S004E11	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S004E12	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S004E13	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S004E14	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E1	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E2	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E3	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E4	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E5	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E6	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E7	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E8	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E9	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
KAIYUH HILLS	K015S006E25						$59,544	$2,342
KAIYUH HILLS	K015S006E26						$59,544	$2,342
KAIYUH HILLS	K015S006E27						$59,544	$2,342
KAIYUH HILLS	K015S006E34						$59,544	$2,342
KAIYUH HILLS	K015S006E35						$59,544	$2,342
KAIYUH HILLS	K015S006E36						$59,544	$2,342
KAIYUH HILLS	K015S007E7						$59,544	$2,342
KAIYUH HILLS	K015S007E8						$59,544	$2,342
KAIYUH HILLS	K015S007E9						$59,544	$2,342
KAIYUH HILLS	K015S007E16						$59,544	$2,342
KAIYUH HILLS	K015S007E17						$59,544	$2,342
KAIYUH HILLS	K015S007E18						$59,544	$2,342
KAIYUH HILLS	K015S007E19						$59,544	$2,342
KAIYUH HILLS	K015S007E20						$59,544	$2,342
KAIYUH HILLS	K015S007E21						$59,544	$2,342
KAIYUH HILLS	K015S007E28						$59,544	$2,342
KAIYUH HILLS	K015S007E29						$59,544	$2,342
KAIYUH HILLS	K015S007E30						$59,544	$2,342
KAIYUH HILLS	K015S007E31						$59,544	$2,342
KAIYUH HILLS	K015S007E32						$59,544	$2,342
KAIYUH HILLS	K015S007E33						$59,544	$2,342
KAIYUH HILLS	K016S004E1						$59,544	$2,342
KAIYUH HILLS	K016S004E2						$59,544	$2,342
KAIYUH HILLS	K016S004E11						$59,544	$2,342
KAIYUH HILLS	K016S004E12						$59,544	$2,342
KAIYUH HILLS	K016S004E13						$59,544	$2,342
KAIYUH HILLS	K016S004E14						$59,544	$2,342
KAIYUH HILLS	K016S005E2						$59,544	$2,342
KAIYUH HILLS	K016S005E3						$59,544	$2,342
KAIYUH HILLS	K016S005E4						$59,544	$2,342
KAIYUH HILLS	K016S005E5						$59,544	$2,342
KAIYUH HILLS	K016S005E6						$59,544	$2,342
KAIYUH HILLS	K016S005E7						$59,544	$2,342
KAIYUH HILLS	K016S005E8						$59,544	$2,342
KAIYUH HILLS	K016S005E9						$59,544	$2,342
KAIYUH HILLS	K016S005E10						$59,544	$2,342
KAIYUH HILLS	K016S005E11						$59,544	$2,342
KAIYUH HILLS	K016S005E14						$59,544	$2,342
KAIYUH HILLS	K016S005E15						$59,544	$2,342
KAIYUH HILLS	K016S005E16						$59,544	$2,342
KAIYUH HILLS	K016S005E17						$59,544	$2,342
KAIYUH HILLS	K016S005E18						$59,544	$2,342
KAIYUH HILLS	K016S005E19						$59,544	$2,342
KAIYUH HILLS	K016S005E20						$59,544	$2,342
KAIYUH HILLS	K016S005E21						$59,544	$2,342
KAIYUH HILLS	K016S005E22						$59,544	$2,342
ILLINOIS CREEK	K016S004E34						$59,544	$2,342
ILLINOIS CREEK	K016S004E35						$59,544	$2,342
ILLINOIS CREEK	K016S004E36						$59,544	$2,342
ILLINOIS CREEK	K016S005E31						$59,544	$2,342
ILLINOIS CREEK	K016S005F32						$59,544	$2,342
ILLINOIS CREEK	K016S005E33						$59,544	$2,342
ILLINOIS CREEK	K016S005E34						$59,544	$2,342
ILLINOIS CREEK	K016S005E35						$59,544	$2,342
ILLINOIS CREEK	K016S005E36						$59,544	$2,342
ILLINOIS CREEK	K016S006E31						$59,544	$2,342
ILLINOIS CREEK	K017S004E1						$59,544	$2,342
ILLINOIS CREEK	K017S004E2						$59,544	$2,342
ILLINOIS CREEK	K017S004E11						$59,544	$2,342
ILLINOIS CREEK	K017S004E12						$59,544	$2,342
ILLINOIS CREEK	K017S004E13						$59,544	$2,342
ILLINOIS CREEK	K017S004E14						$59,544	$2,342
ILLINOIS CREEK	K017S005E1						$59,544	$2,342
ILLINOIS CREEK	K017S005E2						$59,544	$2,342
ILLINOIS CREEK	K017S005E3						$59,544	$2,342
ILLINOIS CREEK	K017S005E4						$59,544	$2,342
ILLINOIS CREEK	K017S005E5						$59,544	$2,342
ILLINOIS CREEK	K017S005E6						$59,544	$2,342
ILLINOIS CREEK	K017S005E7						$59,544	$2,342
ILLINOIS CREEK	K017S005E8						$59,544	$2,342
ILLINOIS CREEK	K017S005E9						$59,544	$2,342

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
ILLINOIS CREEK	K017S005E10	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E11	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E12	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E13	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E14	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E15	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E16	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E17	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
ILLINOIS CREEK	K017S005E18	640	NULATO A4&5	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S001E1	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S001E12	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S001E13	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E1	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E2	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E3	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E4	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E5	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E6	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E7	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E8	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E9	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E10	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E11	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E12	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E13	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E14	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E15	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E16	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E17	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S002E18	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E4	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E5	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E6	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E7	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E8	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E9	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E16	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E17	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
VALDEZ CREEK	F020S003E18	640	HEALY A1	VACRRMAU	$44,589,788	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
YAKIMA	C042S067E1	640	JUNEAU A2&B2	POLTSALT	$24,398,186	$12,909,263	30								
YAKIMA	C042S067E2	640	JUNEAU A2&B2	POLTSALT	$24,398,186	$12,909,263	30								
YAKIMA	C042S067E3	640	JUNEAU A2&B2	POLTSALT	$24,398,186	$12,909,262	30								
YAKIMA	C042S067E10	640	JUNEAU A2&B2	POLTSALT	$24,398,186	$12,909,263	30								
YAKIMA	C042S067E11	640	JUNEAU A2&B2	POLTSALT	$24,398,186	$12,909,263	30								
GOLDSTREAM	C076S091E5	40	KETCHIKAN B5	POLTSALT	$24,398,186	$12,909,263	30								
GOLDSTREAM	C076S091E6	480	KETCHIKAN B5	POLTSALT	$24,398,186	$12,909,263	30								
GOLDSTREAM	C076S091E7	320	KETCHIKAN B5	POLTSALT	$24,398,186	$12,909,263	30								
GOLDSTREAM	C076S091E8	240	KETCHIKAN B5	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S053E24	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S053E25	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S053E26	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S053E33	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S053E34	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S053E35	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S054E17	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S054E19	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C028S054E20	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
GLACIER CREEK	C029S053E1	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,262	30								
GLACIER CREEK	C029S054E6	640	SKAGWAY B4	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S083E12	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S083E13	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S084E7	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S084E8	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S084E9	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S084E16	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S084E17	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S084E18	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S084E21	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
SALT CHUCK	C072S084E36	640	CRAIG C2	POLTSALT	$24,398,186	$12,909,263	30								
DAWSON	C073S084E31	640	CRAIG B3	POLTSALT	$24,398,186	$12,909,263	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4	NPV OF NSR	NPV OF NPI
ILLINOIS CREEK	K017S005E10					$59,544	$2,342
ILLINOIS CREEK	K017S005E11					$59,544	$2,342
ILLINOIS CREEK	K017S005E12					$59,544	$2,342
ILLINOIS CREEK	K017S005E13					$59,544	$2,342
ILLINOIS CREEK	K017S005E14					$59,544	$2,342
ILLINOIS CREEK	K017S005E15					$59,544	$2,342
ILLINOIS CREEK	K017S005E16					$59,544	$2,342
ILLINOIS CREEK	K017S005E17					$59,544	$2,342
ILLINOIS CREEK	K017S005E18					$59,544	$2,342
VALDEZ CREEK	F020S001E1					$863,817	$2,342
VALDEZ CREEK	F020S001E12					$863,817	$2,342
VALDEZ CREEK	F020S001E13					$863,817	$2,342
VALDEZ CREEK	F020S002E1					$863,817	$2,342
VALDEZ CREEK	F020S002E2					$863,817	$2,342
VALDEZ CREEK	F020S002E3					$863,817	$2,342
VALDEZ CREEK	F020S002E4					$863,817	$2,342
VALDEZ CREEK	F020S002E5					$863,817	$2,342
VALDEZ CREEK	F020S002E6					$863,817	$2,342
VALDEZ CREEK	F020S002E7					$863,817	$2,342
VALDEZ CREEK	F020S002E8					$863,817	$2,342
VALDEZ CREEK	F020S002E9					$863,817	$2,342
VALDEZ CREEK	F020S002E10					$863,817	$2,342
VALDEZ CREEK	F020S002E11					$863,817	$2,342
VALDEZ CREEK	F020S002E12					$863,817	$2,342
VALDEZ CREEK	F020S002E13					$863,817	$2,342
VALDEZ CREEK	F020S002E14					$863,817	$2,342
VALDEZ CREEK	F020S002E15					$863,817	$2,342
VALDEZ CREEK	F020S002E16					$863,817	$2,342
VALDEZ CREEK	F020S002E17					$863,817	$2,342
VALDEZ CREEK	F020S002E18					$863,817	$2,342
VALDEZ CREEK	F020S003E					$863,817	$2,342
VALDEZ CREEK	F020S003E4					$863,817	$2,342
VALDEZ CREEK	F020S003E5					$863,817	$2,342
VALDEZ CREEK	F020S003E6					$863,817	$2,342
VALDEZ CREEK	F020S003E7					$863,817	$2,342
VALDEZ CREEK	F020S003E8					$863,817	$2,342
VALDEZ CREEK	F020S003E9					$863,817	$2,342
VALDEZ CREEK	F020S003E16					$863,817	$2,342
VALDEZ CREEK	F020S003E17					$863,817	$2,342
VALDEZ CREEK	F020S003E18					$863,817	$2,342
YAKIMA	C042S067E1					$468,445	$245,938
YAKIMA	C042S067E2					$468,445	$245,938
YAKIMA	C042S067E3					$468,445	$245,938
YAKIMA	C042S067E10					$468,445	$245,938
YAKIMA	C042S067E11					$468,445	$245,938
GOLDSTREAM	C076S091E5					$29,278	$15,371
GOLDSTREAM	C076S091E6					$351,334	$184,453
GOLDSTREAM	C076S091E7					$234,223	$122,969
GOLDSTREAM	C076S091E8					$175,667	$92,227
GLACIER CREEK	C028S053E24					$468,445	$245,938
GLACIER CREEK	C028S053E25					$468,445	$245,938
GLACIER CREEK	C028S053E26					$468,445	$245,938
GLACIER CREEK	C028S053E33					$468,445	$245,938
GLACIER CREEK	C028S053E34					$468,445	$245,938
GLACIER CREEK	C028S053E35					$468,445	$245,938
GLACIER CREEK	C028S054E17					$468,445	$245,938
GLACIER CREEK	C028S054E19					$468,445	$245,938
GLACIER CREEK	C028S054E20					$468,445	$245,938
GLACIER CREEK	C029S053E1					$468,445	$245,938
GLACIER CREEK	C029S054E6					$468,445	$245,938
SALT CHUCK	C072S083E12					$468,445	$245,938
SALT CHUCK	C072S083E13					$468,445	$245,938
SALT CHUCK	C072S084E7					$468,445	$245,938
SALT CHUCK	C072S084E8					$468,445	$245,938
SALT CHUCK	C072S084E9					$468,445	$245,938
SALT CHUCK	C072S084E16					$468,445	$245,938
SALT CHUCK	C072S084E17					$468,445	$245,938
SALT CHUCK	C072S084E18					$468,445	$245,938
SALT CHUCK	C072S084E21					$468,445	$245,938
SALT CHUCK	C072S084E36					$468,445	$245,938
DAWSON	C073S084E31					$468,445	$245,938

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
DAWSON	C074S083E1	640	CRAIG B3	POLTSALT	$24,398,186	$12,909,263	30								
DAWSON	C074S084E6	640	CRAIG B3	POLTSALT	$24,398,186	$12,909,263	30								
DAWSON	C074S084E7	640	CRAIG B3	POLTSALT	$24,398,186	$12,909,263	30								
DAWSON	C074S084E18	640	CRAIG B3	POLTSALT	$24,398,186	$12,909,263	30								
DEMOCRAT	F007S007E3	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E4	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E5	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E8	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E9	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E10	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E13	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E14	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E15	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E23	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S007E24	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S008E19	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S008E29	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S008E30	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S008E32	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DEMOCRAT	F007S008E33	640	BIG DELTA B5	DEMOCRAU	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
LIBERTY BELL	F009S006W36	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S005W5	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S005W6	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S005W8	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W4	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W7	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W8	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W9	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W15	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W16	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W17	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W18	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W22	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W23	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W26	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S006W27	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W7	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W8	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W9	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W10	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W11	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W12	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W13	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W14	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W15	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W16	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W17	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W18	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W20	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W21	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W22	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W23	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W24	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W27	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W28	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W29	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
LIBERTY BELL	F010S007W30	640	FAIRBANKS A4&5	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
SHEEP CREEK	F011S001W2	640	HEALY D2	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
SHEEP CREEK	F011S001W3	640	HEALY D2	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
SHEEP CREEK	F011S001W11	640	HEALY D2	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
SHEEP CREEK	F011S001W12	640	HEALY D2	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
SHEEP CREEK	F011S001W13	640	HEALY D2	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F012S001W31	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F012S001W32	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F012S002W31	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F012S002W35	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F012S002W36	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S001W5	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S001W6	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S002W1	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S002W2	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
DAWSON	C074S083E1						$468,445	$245,938
DAWSON	C074S084E6						$468,445	$245,938
DAWSON	C074S084E7						$468,445	$245,938
DAWSON	C074S084E18						$468,445	$245,938
DEMOCRAT	F007S007E3						$84,084	$2,342
DEMOCRAT	F007S007E4						$84,084	$2,342
DEMOCRAT	F007S007E5						$84,084	$2,342
DEMOCRAT	F007S007E8						$84,084	$2,342
DEMOCRAT	F007S007E9						$84,084	$2,342
DEMOCRAT	F007S007E10						$84,084	$2,342
DEMOCRAT	F007S007E13						$84,084	$2,342
DEMOCRAT	F007S007E14						$84,084	$2,342
DEMOCRAT	F007S007E15						$84,084	$2,342
DEMOCRAT	F007S007E23						$84,084	$2,342
DEMOCRAT	F007S007E24						$84,084	$2,342
DEMOCRAT	F007S008E19						$84,084	$2,342
DEMOCRAT	F007S008E29						$84,084	$2,342
DEMOCRAT	F007S008E30						$84,084	$2,342
DEMOCRAT	F007S008E32						$84,084	$2,342
DEMOCRAT	F007S008E33						$84,084	$2,342
LIBERTY BELL	F009S006W36						$1,929,461	$507,093
LIBERTY BELL	F010S005W5						$1,929,461	$507,093
LIBERTY BELL	F010S005W8						$1,929,461	$507,093
LIBERTY BELL	F010S005W8						$1,929,461	$507,093
LIBERTY BELL	F010S006W4						$1,929,461	$507,093
LIBERTY BELL	F010S006W7						$1,929,461	$507,093
LIBERTY BELL	F010S006W8						$1,929,461	$507,093
LIBERTY BELL	F010S008W9						$1,929,461	$507,093
LIBERTY BELL	F010S006W15						$1,929,461	$507,093
LIBERTY BELL	F010S006W16						$1,929,461	$507,093
LIBERTY BELL	F010S006W17						$1,929,461	$507,093
LIBERTY BELL	F010S006W18						$1,929,461	$507,093
LIBERTY BELL	F010S006W22						$1,929,461	$507,093
LIBERTY BELL	F010S006W23						$1,929,461	$507,093
LIBERTY BELL	F010S006W26						$1,929,461	$507,093
LIBERTY BELL	F010S006W27						$1,929,461	$507,093
LIBERTY BELL	F010S007W7						$1,929,461	$507,093
LIBERTY BELL	F010S007W8						$1,929,461	$507,093
LIBERTY BELL	F010S007W9						$1,929,461	$507,093
LIBERTY BELL	F010S007W10						$1,929,461	$507,093
LIBERTY BELL	F010S007W11						$1,929,461	$507,093
LIBERTY BELL	F010S007W12						$1,929,461	$507,093
LIBERTY BELL	F010S007W13						$1,929,461	$507,093
LIBERTY BELL	F010S007W14						$1,929,461	$507,093
LIBERTY BELL	F010S007W15						$1,929,461	$507,093
LIBERTY BELL	F010S007W16						$1,929,461	$507,093
LIBERTY BELL	F010S007W17						$1,929,461	$507,093
LIBERTY BELL	F010S007W18						$1,929,461	$507,093
LIBERTY BELL	F010S007W20						$1,929,461	$507,093
LIBERTY BELL	F010S007W21						$1,929,461	$507,093
LIBERTY BELL	F010S007W22						$1,929,461	$507,093
LIBERTY BELL	F010S007W23						$1,929,461	$507,093
LIBERTY BELL	F010S007W24						$1,929,461	$507,093
LIBERTY BELL	F010S007W27						$1,929,461	$507,093
LIBERTY BELL	F010S007W28						$1,929,461	$507,093
LIBERTY BELL	F010S007W29						$1,929,461	$507,093
LIBERTY BELL	F010S007W30						$1,929,461	$507,093
SHEEP CREEK	F011S001W2						$1,929,461	$507,093
SHEEP CREEK	F011S001W3						$1,929,461	$507,093
SHEEP CREEK	F011S001W11						$1,929,461	$507,093
SHEEP CREEK	F011S001W12						$1,929,461	$507,093
SHEEP CREEK	F011S001W13						$1,929,461	$507,093
ANDERSON MT	F012S001W31						$1,929,461	$507,093
ANDERSON MT	F012S001W32						$1,929,461	$507,093
ANDERSON MT	F012S002W31						$1,929,461	$507,093
ANDERSON MT	F012S002W35						$1,929,461	$507,093
ANDERSON MT	F012S002W36						$1,929,461	$507,093
ANDERSON MT	F013S001W5						$1,929,461	$507,093
ANDERSON MT	F013S001W8						$1,929,461	$507,093
ANDERSON MT	F013S002W1						$1,929,461	$507,093
ANDERSON MT	F013S002W2						$1,929,461	$507,093

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
ANDERSON MT	F013S002W3	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S002W4	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S002W7	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S002W8	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S002W9	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S002W17	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ANDERSON MT	F013S002W18	640	HEALY D2&3	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F010S002E36	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F010S003E30	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F010S003E31	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E13	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E14	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E15	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E16	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E20	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E21	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E22	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E23	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E24	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E26	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E27	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E28	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E29	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E30	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
WTF-RED MT	F011S002E31	640	FBKS A1, HEALY D1	VMSLIBEL	$52,789,652	$26,289,095	30	HSAULB	$47,302,439	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
ZACKLY	F019S005E35	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F019S005E36	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F019S006E31	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F019S006E34	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F019S006E35	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F019S006E36	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S005E1	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S005E2	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S006E2	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S006E3	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S006E6	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S006E8	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S006E9	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S006E10	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
ZACKLY	F020S006E11	640	MT HAYES A5&6	TINZACK	$28,519,218	$0	30								
BIG HURRAH	K010S028W2	640	SOLOMON C5	BIGHURAH	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
BIG HURRAH	K010S028W3	640	SOLOMON C5	BIGHURAH	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
NORANDA/SECRET	K010S028W32	640	SOLOMON C5	BIGHURAH	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
NORANDA/SECRET	K010S028W33	640	SOLOMON C5	BIGHURAH	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
NORANDA/SECRET	K010S028W34	640	SOLOMON C5	BIGHURAH	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
NORANDA/SECRET	K010S028W35	640	SOLOMON C5	BIGHURAH	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
NORANDA/SECRET	K010S028W36	640	SOLOMON C5	BIGHURAH	$3,978,682	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
IRON CREEK	S026N002E1	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N002E12	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N002E13	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N002E14	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N002E24	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E1	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E2	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E3	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E4	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E5	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E6	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E7	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E8	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E9	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E10	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E11	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E12	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E13	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E14	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S026N003E18	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S027N002E35	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S027N002E36	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S027N003E29	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S027N003E30	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
ANDERSON MT	F013S002W3						$1,929,461	$507,093
ANDERSON MT	F013S002W4						$1,929,461	$507,093
ANDERSON MT	F013S002W7						$1,929,461	$507,093
ANDERSON MT	F013S002W8						$1,929,461	$507,093
ANDERSON MT	F013S002W9						$1,929,461	$507,093
ANDERSON MT	F013S002W17						$1,929,461	$507,093
ANDERSON MT	F013S002W18						$1,929,461	$507,093
WTF-RED MT	F010S002E36						$1,929,461	$507,093
WTF-RED MT	F010S003E30						$1,929,461	$507,093
WTF-RED MT	F010S003E31						$1,929,461	$507,093
WTF-RED MT	F011S002E13						$1,929,461	$507,093
WTF-RED MT	F011S002E14						$1,929,461	$507,093
WTF-RED MT	F011S002E15						$1,929,461	$507,093
WTF-RED MT	F011S002E16						$1,929,461	$507,093
WTF-RED MT	F011S002E20						$1,929,461	$507,093
WTF-RED MT	F011S002E21						$1,929,461	$507,093
WTF-RED MT	F011S002E22						$1,929,461	$507,093
WTF-RED MT	F011S002E23						$1,929,461	$507,093
WTF-RED MT	F011S002E24						$1,929,461	$507,093
WTF-RED MT	F011S002E26						$1,929,461	$507,093
WTF-RED MT	F011S002E27						$1,929,461	$507,093
WTF-RED MT	F011S002E28						$1,929,461	$507,093
WTF-RED MT	F011S002E29						$1,929,461	$507,093
WTF-RED MT	F011S002E30						$1,929,461	$507,093
WTF-RED MT	F011S002E31						$1,929,461	$507,093
ZACKLY	F019S005E35						$547,569	$0
ZACKLY	F019S005E36						$547,569	$0
ZACKLY	F019S006E31						$547,569	$0
ZACKLY	F019S006E34						$547,569	$0
ZACKLY	F019S006E35						$547,569	$0
ZACKLY	F019S006E36						$547,569	$0
ZACKLY	F020S005E1						$547,569	$0
ZACKLY	F020S005E2						$547,569	$0
ZACKLY	F020S006E2						$547,569	$0
ZACKLY	F020S006E3						$547,569	$0
ZACKLY	F020S006E6						$547,569	$0
ZACKLY	F020S006E8						$547,569	$0
ZACKLY	F020S006E9						$547,569	$0
ZACKLY	F020S006E10						$547,569	$0
ZACKLY	F020S006E11						$547,569	$0
BIG HURRAH	K010S028W2						$84,084	$2,342
BIG HURRAH	K010S028W3						$84,084	$2,342
NORANDA/SECRET	K010S028W32						$84,084	$2,342
NORANDA/SECRET	K010S028W33						$84,084	$2,342
NORANDA/SECRET	K010S028W34						$84,084	$2,342
NORANDA/SECRET	K010S028W35						$84,084	$2,342
NORANDA/SECRET	K010S028W36						$84,084	$2,342
IRON CREEK	S026N002E1						$3,053,545	$969,660
IRON CREEK	S026N002E12						$3,053,545	$969,660
IRON CREEK	S026N002E13						$3,053,545	$969,660
IRON CREEK	S026N002E14						$3,053,545	$969,660
IRON CREEK	S026N002E24						$3,053,545	$969,660
IRON CREEK	S026N003E1						$3,053,545	$969,660
IRON CREEK	S026N003E2						$3,053,545	$969,660
IRON CREEK	S026N003E3						$3,053,545	$969,660
IRON CREEK	S026N003E4						$3,053,545	$969,660
IRON CREEK	S026N003E5						$3,053,545	$969,660
IRON CREEK	S026N003E6						$3,053,545	$969,660
IRON CREEK	S026N003E7						$3,053,545	$969,660
IRON CREEK	S026N003E8						$3,053,545	$969,660
IRON CREEK	S026N003E9						$3,053,545	$969,660
IRON CREEK	S026N003E10						$3,053,545	$969,660
IRON CREEK	S026N003E11						$3,053,545	$969,660
IRON CREEK	S026N003E12						$3,053,545	$969,660
IRON CREEK	S026N003E13						$3,053,545	$969,660
IRON CREEK	S026N003E14						$3,053,545	$969,660
IRON CREEK	S026N003E18						$3,053,545	$969,660
IRON CREEK	S027N002E35						$3,053,545	$969,660
IRON CREEK	S027N002E36						$3,053,545	$969,660
IRON CREEK	S027N003E29						$3,053,545	$969,660
IRON CREEK	S027N003E30						$3,053,545	$969,660

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
IRON CREEK	S027N003E31	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S027N003E32	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S027N003E33	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
IRON CREEK	S027N003E34	640	TALK. MTNS B4&5	PCAHLIV	$159,038,778	$50,503,124	30								
FLAT DIST	S028N047W23	640	IDITAROD B4&C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
FLAT DIST	S028N047W24	640	IDITAROD B4&C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
FLAT DIST	S028N047W25	640	IDITAROD B4&C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
FLAT DIST	S028N047W26	640	IDITAROD B4&C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
FLAT DIST	S028N047W35	640	IDITAROD B4&C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
FLAT DIST	S028N047W36	640	IDITAROD B4&C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
GOLDEN HORN, ETC	S027N047W1	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W2	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W3	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W4	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W5	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W6	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W8	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W9	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W10	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W11	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W12	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W14	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W16	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W20	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W21	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W26	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W27	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W28	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W29	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W31	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W32	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W33	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W34	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
GOLDEN HORN, ETC	S027N047W35	640	IDITAROD B4&5	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	WVENTM	$9,798,080	$2,266,398	1
INNOKO-TOLSTOI	K024S010E13	640	OPHIR B2	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	HGALRD	$42,133,102	$0	30
INNOKO-TOLSTOI	K024S010E14	640	OPHIR B2	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	HGALRD	$42,133,102	$0	30
INNOKO-TOLSTOI	K024S011E7	640	OPHIR B2	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	HGALRD	$42,133,102	$0	30
INNOKO-TOLSTOI	K024S011E8	640	OPHIR B2	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	HGALRD	$42,133,102	$0	30
INNOKO-TOLSTOI	K024S011E9	640	OPHIR B2	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	HGALRD	$42,133,102	$0	30
INNOKO-TOLSTOI	K024S011E16	640	OPHIR B2	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	HGALRD	$42,133,102	$0	30
INNOKO-TOLSTOI	K024S011E17	640	OPHIR B2	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	HGALRD	$42,133,102	$0	30
INNOKO-TOLSTOI	K024S011E18	640	OPHIR B2	ILLCRKH	$2,700,564	$0	30	LSAOCHAND	$9,230,162	$4,110,152	30	HGALRD	$42,133,102	$0	30
MEDFRA-NIXON FK	K026S021E12	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S021E13	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S021E14	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S021E23	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S021E24	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S021E25	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S021E26	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S022E7	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S022E18	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
MEDFRA-NIXON FK	K026S022E19	640	MEDFRA A4&B4	COPSSEA	$20,781,761	$7,148,268	30	PLACAUPG	$12,020,466	$3,659,219	1				
RED DEVIL	S019N044W6	640	SLEETMUTE C4&D4	HGALRD	$42,133,102	$0	30								
RED DEVIL	S019N044W7	640	SLEETMUTE C4&D4	HGALRD	$42,133,102	$0	30								
RED DEVIL	S019N045W1	640	SLEETMUTE C4&D4	HGALRD	$42,133,102	$0	30								
RED DEVIL	S019N045W2	640	SLEETMUTE C4&D4	HGALRD	$42,133,102	$0	30								
RED DEVIL	S019N045W3	640	SLEETMUTE C4&D4	HGALRD	$42,133,102	$0	30								
RED DEVIL	S019N045W27	640	SLEETMUTE C4&D4	HGALRD	$42,133,102	$0	30								
BT/JERRI CK	K020N013E15	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E16	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E17	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E18	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E19	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E20	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E21	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E22	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E23	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E24	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E25	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E26	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E27	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4	NPV OF NSR	NPV OF NPI
IRON CREEK	S027N003E31					$3,053,545	$969,660
IRON CREEK	S027N003E32					$3,053,545	$969,660
IRON CREEK	S027N003E33					$3,053,545	$969,660
IRON CREEK	S027N003E34					$3,053,545	$969,660
FLAT DIST	S028N047W23					$59,544	$2,342
FLAT DIST	S028N047W24					$59,544	$2,342
FLAT DIST	S028N047W25					$59,544	$2,342
FLAT DIST	S028N047W26					$59,544	$2,342
FLAT DIST	S028N047W35					$59,544	$2,342
FLAT DIST	S028N047W36					$59,544	$2,342
GOLDEN HORN, ETC	S027N047W1	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W2	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W3	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W4	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W5	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W6	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W8	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W9	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W10	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W11	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W12	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W14	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W16	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W20	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W21	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W26	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W27	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W28	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W29	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W31	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W32	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W33	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W34	PLACAUPG	##########	##########	1	$243,034	$82,707
GOLDEN HORN, ETC	S027N047W35	PLACAUPG	##########	##########	1	$243,034	$82,707
INNOKO-TOLSTOI	K024S010E13	PLACAUPG	##########	##########	1	$1,045,719	$81,257
INNOKO-TOLSTOI	K024S010E14	PLACAUPG	##########	##########	1	$1,045,719	$81,257
INNOKO-TOLSTOI	K024S011E7	PLACAUPG	##########	##########	1	$1,045,719	$81,257
INNOKO-TOLSTOI	K024S011E8	PLACAUPG	##########	##########	1	$1,045,719	$81,257
INNOKO-TOLSTOI	K024S011E9	PLACAUPG	##########	##########	1	$1,045,719	$81,257
INNOKO-TOLSTOI	K024S011E16	PLACAUPG	##########	##########	1	$1,045,719	$81,257
INNOKO-TOLSTOI	K024S011E17	PLACAUPG	##########	##########	1	$1,045,719	$81,257
INNOKO-TOLSTOI	K024S011E18	PLACAUPG	##########	##########	1	$1,045,719	$81,257
MEDFRA-NIXON FK	K026S021E12					$406,703	$139,589
MEDFRA-NIXON FK	K026S021E13					$406,703	$139,589
MEDFRA-NIXON FK	K026S021E14					$406,703	$139,589
MEDFRA-NIXON FK	K026S021E23					$406,703	$139,589
MEDFRA-NIXON FK	K026S021E24					$406,703	$139,589
MEDFRA-NIXON FK	K026S021E25					$406,703	$139,589
MEDFRA-NIXON FK	K026S021E26					$406,703	$139,589
MEDFRA-NIXON FK	K026S022E7					$406,703	$139,589
MEDFRA-NIXON FK	K026S022E18					$406,703	$139,589
MEDFRA-NIXON FK	K026S022E19					$406,703	$139,589
RED DEVIL	S019N044W6					$808,956	$0
RED DEVIL	S019N044W7					$808,956	$0
RED DEVIL	S019N045W1					$808,956	$0
RED DEVIL	S019N045W2					$808,956	$0
RED DEVIL	S019N045W3					$808,956	$0
RED DEVIL	S019N045W27					$808,956	$0
ST/JERRI CK	K020N013E15					$1,112,614	$579,790
ST/JERRI CK	K020N013E16					$1,112,614	$579,790
ST/JERRI CK	K020N013E17					$1,112,614	$579,790
ST/JERRI CK	K020N013E18					$1,112,614	$579,790
ST/JERRI CK	K020N013E19					$1,112,614	$579,790
ST/JERRI CK	K020N013E20					$1,112,614	$579,790
ST/JERRI CK	K020N013E21					$1,112,614	$579,790
ST/JERRI CK	K020N013E22					$1,112,614	$579,790
ST/JERRI CK	K020N013E23					$1,112,614	$579,790
ST/JERRI CK	K020N013E24					$1,112,614	$579,790
ST/JERRI CK	K020N013E25					$1,112,614	$579,790
ST/JERRI CK	K020N013E26					$1,112,614	$579,790
ST/JERRI CK	K020N013E27					$1,112,614	$579,790

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
BT/JERRI CK	K020N013E28	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E29	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N013E30	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E19	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E20	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E21	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E22	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E23	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E24	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E25	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E26	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E27	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E28	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E29	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E30	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E35	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K020N014E36	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K021N011E33	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K021N011E34	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
BT/JERRI CK	K021N011E35	640	AMB A1, SRV PS A6	VMSBRCU	$57,948,651	$30,197,404	30								
INDEPENDENCE CK	S032N038W3	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S032N039W3	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S032N039W4	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W1	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W2	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W3	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W4	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W8	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W9	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W10	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W11	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W12	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W14	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W15	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W16	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W17	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W19	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W20	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W21	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W22	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W29	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W30	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N038W31	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
INDEPENDENCE CK	S033N039W36	640	IDITAROD D1&2	VMSLIBEL	$52,789,652	$26,289,095	30								
HOT SPRINGS DOME	F003N016W1	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W2	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W3	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W4	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W5	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W6	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W7	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W8	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W9	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W10	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W11	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W12	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W16	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W17	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W18	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N016W19	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W1	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W2	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W3	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W4	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W5	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W6	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W7	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W8	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W9	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W10	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W11	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
BT/JERRI CK	K020N013E28						$1,112,614	$579,790
BT/JERRI CK	K020N013E29						$1,112,614	$579,790
BT/JERRI CK	K020N013E30						$1,112,614	$579,790
BT/JERRI CK	K020N014E19						$1,112,614	$579,790
BT/JERRI CK	K020N014E20						$1,112,614	$579,790
BT/JERRI CK	K020N014E21						$1,112,614	$579,790
BT/JERRI CK	K020N014E22						$1,112,614	$579,790
BT/JERRI CK	K020N014E23						$1,112,614	$579,790
BT/JERRI CK	K020N014E24						$1,112,614	$579,790
BT/JERRI CK	K020N014E25						$1,112,614	$579,790
BT/JERRI CK	K020N014E26						$1,112,614	$579,790
BT/JERRI CK	K020N014E27						$1,112,614	$579,790
BT/JERRI CK	K020N014E28						$1,112,614	$579,790
BT/JERRI CK	K020N014E29						$1,112,614	$579,790
BT/JERRI CK	K020N014E30						$1,112,614	$579,790
BT/JERRI CK	K020N014E35						$1,112,614	$579,790
BT/JERRI CK	K020N014E36						$1,112,614	$579,790
BT/JERRI CK	K021N011E33						$1,112,614	$579,790
BT/JERRI CK	K021N011E34						$1,112,614	$579,790
BT/JERRI CK	K021N011E35						$1,112,614	$579,790
INDEPENDENCE CK	S032N038W3						$1,013,561	$504,751
INDEPENDENCE CK	S032N039W3						$1,013,561	$504,751
INDEPENDENCE CK	S032N039W4						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W1						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W2						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W3						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W4						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W8						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W9						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W10						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W11						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W12						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W14						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W15						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W16						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W17						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W19						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W20						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W21						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W22						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W29						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W30						$1,013,561	$504,751
INDEPENDENCE CK	S033N038W31						$1,013,561	$504,751
INDEPENDENCE CK	S033N039W36						$1,013,561	$504,751
HOT SPRINGS DOME	F003N016W1						$732,481	$81,257
HOT SPRINGS DOME	F003N016W2						$732,481	$81,257
HOT SPRINGS DOME	F003N016W3						$732,481	$81,257
HOT SPRINGS DOME	F003N016W4						$732,481	$81,257
HOT SPRINGS DOME	F003N016W5						$732,481	$81,257
HOT SPRINGS DOME	F003N016W6						$732,481	$81,257
HOT SPRINGS DOME	F003N016W7						$732,481	$81,257
HOT SPRINGS DOME	F003N016W8						$732,481	$81,257
HOT SPRINGS DOME	F003N016W9						$732,481	$81,257
HOT SPRINGS DOME	F003N016W10						$732,481	$81,257
HOT SPRINGS DOME	F003N016W11						$732,481	$81,257
HOT SPRINGS DOME	F003N016W12						$732,481	$81,257
HOT SPRINGS DOME	F003N016W16						$732,481	$81,257
HOT SPRINGS DOME	F003N016W17						$732,481	$81,257
HOT SPRINGS DOME	F003N016W18						$732,481	$81,257
HOT SPRINGS DOME	F003N016W19						$732,481	$81,257
HOT SPRINGS DOME	F003N017W1						$732,481	$81,257
HOT SPRINGS DOME	F003N017W2						$732,481	$81,257
HOT SPRINGS DOME	F003N017W3						$732,481	$81,257
HOT SPRINGS DOME	F003N017W4						$732,481	$81,257
HOT SPRINGS DOME	F003N017W5						$732,481	$81,257
HOT SPRINGS DOME	F003N017W6						$732,481	$81,257
HOT SPRINGS DOME	F003N017W7						$732,481	$81,257
HOT SPRINGS DOME	F003N017W8						$732,481	$81,257
HOT SPRINGS DOME	F003N017W9						$732,481	$81,257
HOT SPRINGS DOME	F003N017W10						$732,481	$81,257
HOT SPRINGS DOME	F003N017W11						$732,481	$81,257

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
HOT SPRINGS DOME	F003N017W12	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W13	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W14	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W15	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W20	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W22	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W23	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W24	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W25	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W26	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
HOT SPRINGS DOME	F003N017W27	640	TANANA A2&3	LSAOCHAND	$9,230,162	$4,110,152	30	TINZACK	$28,519,218	$0	30	PLACAUPG	$12,020,466	$3,659,219	1
SLATE CREEK	F020S015E9	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E10	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E12	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E13	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E14	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E15	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E16	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E22	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E23	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E24	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E25	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E27	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S015E36	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S016E7	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S016E17	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S016E18	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S016E19	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S016E20	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S016E29	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLATE CREEK	F020S016E30	640	MT HAYES A2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N009W5	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N009W6	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N009W7	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N009W18	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N009W19	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N009W30	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N010W23	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N010W24	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N010W25	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N010W32	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N011W29	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N012W10	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N012W11	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N012W12	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N012W13	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N012W14	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F031N012W15	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F032N010W14	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F032N010W15	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F032N010W22	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/NOLAN	F032N010W23	640	WISE B,C1, CHAN B,C6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
PURCELL MTN	K011N005E1	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E2	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E3	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E4	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E9	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E10	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E11	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E12	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E13	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E14	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E15	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E16	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E21	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E22	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E23	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E24	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E25	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E26	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E27	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4	NPV OF NSR	NPV OF NPI
HOT SPRINGS DOME	F003N017W12					$732,481	$81,257
HOT SPRINGS DOME	F003N017W13					$732,481	$81,257
HOT SPRINGS DOME	F003N017W14					$732,481	$81,257
HOT SPRINGS DOME	F003N017W15					$732,481	$81,257
HOT SPRINGS DOME	F003N017W20					$732,481	$81,257
HOT SPRINGS DOME	F003N017W22					$732,481	$81,257
HOT SPRINGS DOME	F003N017W23					$732,481	$81,257
HOT SPRINGS DOME	F003N017W24					$732,481	$81,257
HOT SPRINGS DOME	F003N017W25					$732,481	$81,257
HOT SPRINGS DOME	F003N017W26					$732,481	$81,257
HOT SPRINGS DOME	F003N017W27					$732,481	$81,257
SLATE CREEK	F020S015E9					$184,912	$81,257
SLATE CREEK	F020S015E10					$184,912	$81,257
SLATE CREEK	F020S015E12					$184,912	$81,257
SLATE CREEK	F020S015E13					$184,912	$81,257
SLATE CREEK	F020S015E14					$184,912	$81,257
SLATE CREEK	F020S015E15					$184,912	$81,257
SLATE CREEK	F020S015E16					$184,912	$81,257
SLATE CREEK	F020S015E22					$184,912	$81,257
SLATE CREEK	F020S015E23					$184,912	$81,257
SLATE CREEK	F020S015E24					$184,912	$81,257
SLATE CREEK	F020S015E25					$184,912	$81,257
SLATE CREEK	F020S015E27					$184,912	$81,257
SLATE CREEK	F020S015E36					$184,912	$81,257
SLATE CREEK	F020S016E7					$184,912	$81,257
SLATE CREEK	F020S016E17					$184,912	$81,257
SLATE CREEK	F020S016E18					$184,912	$81,257
SLATE CREEK	F020S016E19					$184,912	$81,257
SLATE CREEK	F020S016E20					$184,912	$81,257
SLATE CREEK	F020S016E29					$184,912	$81,257
SLATE CREEK	F020S016E30					$184,912	$81,257
KOYUKUK/NOLAN	F031N009W5					$184,912	$81,257
KOYUKUK/NOLAN	F031N009W6					$184,912	$81,257
KOYUKUK/NOLAN	F031N009W7					$184,912	$81,257
KOYUKUK/NOLAN	F031N009W18					$184,912	$81,257
KOYUKUK/NOLAN	F031N009W19					$184,912	$81,257
KOYUKUK/NOLAN	F031N009W30					$184,912	$81,257
KOYUKUK/NOLAN	F031N010W23					$184,912	$81,257
KOYUKUK/NOLAN	F031N010W24					$184,912	$81,257
KOYUKUK/NOLAN	F031N010W25					$184,912	$81,257
KOYUKUK/NOLAN	F031N010W32					$184,912	$81,257
KOYUKUK/NOLAN	F031N011W29					$184,912	$81,257
KOYUKUK/NOLAN	F031N012W10					$184,912	$81,257
KOYUKUK/NOLAN	F031N012W11					$184,912	$81,257
KOYUKUK/NOLAN	F031N012W12					$184,912	$81,257
KOYUKUK/NOLAN	F031N012W13					$184,912	$81,257
KOYUKUK/NOLAN	F031N012W14					$184,912	$81,257
KOYUKUK/NOLAN	F031N012W15					$184,912	$81,257
KOYUKUK/NOLAN	F032N010W14					$184,912	$81,257
KOYUKUK/NOLAN	F032N010W15					$184,912	$81,257
KOYUKUK/NOLAN	F032N010W22					$184,912	$81,257
KOYUKUK/NOLAN	F032N010W23					$184,912	$81,257
PURCELL MTN	K011N005E1					$185,913	$74,303
PURCELL MTN	K011N005E2					$185,913	$74,303
PURCELL MTN	K011N005E3					$185,913	$74,303
PURCELL MTN	K011N005E4					$185,913	$74,303
PURCELL MTN	K011N005E9					$185,913	$74,303
PURCELL MTN	K011N005E10					$185,913	$74,303
PURCELL MTN	K011N005E11					$185,913	$74,303
PURCELL MTN	K011N005E12					$185,913	$74,303
PURCELL MTN	K011N005E13					$185,913	$74,303
PURCELL MTN	K011N005E14					$185,913	$74,303
PURCELL MTN	K011N005E15					$185,913	$74,303
PURCELL MTN	K011N005E16					$185,913	$74,303
PURCELL MTN	K011N005E21					$185,913	$74,303
PURCELL MTN	K011N005E22					$185,913	$74,303
PURCELL MTN	K011N005E23					$185,913	$74,303
PURCELL MTN	K011N005E24					$185,913	$74,303
PURCELL MTN	K011N005E25					$185,913	$74,303
PURCELL MTN	K011N005E26					$185,913	$74,303
PURCELL MTN	K011N005E27					$185,913	$74,303

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
PURCELL MTN	K011N005E28	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E35	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N005E36	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E5	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E6	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E7	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E8	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E17	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E18	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E19	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E20	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E21	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E22	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E25	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E26	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E27	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E28	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E29	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N006E30	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N007E25	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N007E26	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N007E35	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N007E36	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E17	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E18	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E19	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E20	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E21	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E25	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E26	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E27	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E28	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E29	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E30	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E31	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E32	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E33	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E34	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E35	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N009E36	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E21	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E22	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E23	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E24	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E25	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E26	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E27	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E28	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E29	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E30	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E31	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E32	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E33	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E34	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E35	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K011N010E36	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N005E25	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N005E26	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N005E27	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N005E34	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N005E35	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N005E36	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N006E29	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N006E30	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N006E31	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
PURCELL MTN	K012N006E32	640	SHUNGNAK B2,3&4	CLMOPURCEL	$290,489,660	$116,097,696	1								
TAURUS	C021N021E1	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C021N021E2	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C021N021E3	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C021N021E4	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E22	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
PURCELL MTN	K011N005E28						$185,913	$74,303
PURCELL MTN	K011N005E35						$185,913	$74,303
PURCELL MTN	K011N005E36						$185,913	$74,303
PURCELL MTN	K011N006E5						$185,913	$74,303
PURCELL MTN	K011N006E6						$185,913	$74,303
PURCELL MTN	K011N006E7						$185,913	$74,303
PURCELL MTN	K011N006E8						$185,913	$74,303
PURCELL MTN	K011N006E17						$185,913	$74,303
PURCELL MTN	K011N006E18						$185,913	$74,303
PURCELL MTN	K011N006E19						$185,913	$74,303
PURCELL MTN	K011N006E20						$185,913	$74,303
PURCELL MTN	K011N006E21						$185,913	$74,303
PURCELL MTN	K011N006E22						$185,913	$74,303
PURCELL MTN	K011N006E25						$185,913	$74,303
PURCELL MTN	K011N006E26						$185,913	$74,303
PURCELL MTN	K011N006E27						$185,913	$74,303
PURCELL MTN	K011N006E28						$185,913	$74,303
PURCELL MTN	K011N006E29						$185,913	$74,303
PURCELL MTN	K011N006E30						$185,913	$74,303
PURCELL MTN	K011N007E25						$185,913	$74,303
PURCELL MTN	K011N007E26						$185,913	$74,303
PURCELL MTN	K011N007E35						$185,913	$74,303
PURCELL MTN	K011N007E36						$185,913	$74,303
PURCELL MTN	K011N009E17						$185,913	$74,303
PURCELL MTN	K011N009E18						$185,913	$74,303
PURCELL MTN	K011N009E19						$185,913	$74,303
PURCELL MTN	K011N009E20						$185,913	$74,303
PURCELL MTN	K011N009E21						$185,913	$74,303
PURCELL MTN	K011N009E25						$185,913	$74,303
PURCELL MTN	K011N009E26						$185,913	$74,303
PURCELL MTN	K011N009E27						$185,913	$74,303
PURCELL MTN	K011N009E28						$185,913	$74,303
PURCELL MTN	K011N009E29						$185,913	$74,303
PURCELL MTN	K011N009E30						$185,913	$74,303
PURCELL MTN	K011N009E31						$185,913	$74,303
PURCELL MTN	K011N009E32						$185,913	$74,303
PURCELL MTN	K011N009E33						$185,913	$74,303
PURCELL MTN	K011N009E34						$185,913	$74,303
PURCELL MTN	K011N009E35						$185,913	$74,303
PURCELL MTN	K011N009E36						$185,913	$74,303
PURCELL MTN	K011N010E21						$185,913	$74,303
PURCELL MTN	K011N010E22						$185,913	$74,303
PURCELL MTN	K011N010E23						$185,913	$74,303
PURCELL MTN	K011N010E24						$185,913	$74,303
PURCELL MTN	K011N010E25						$185,913	$74,303
PURCELL MTN	K011N010E26						$185,913	$74,303
PURCELL MTN	K011N010E27						$185,913	$74,303
PURCELL MTN	K011N010E28						$185,913	$74,303
PURCELL MTN	K011N010E29						$185,913	$74,303
PURCELL MTN	K011N010E30						$185,913	$74,303
PURCELL MTN	K011N010E31						$185,913	$74,303
PURCELL MTN	K011N010E32						$185,913	$74,303
PURCELL MTN	K011N010E33						$185,913	$74,303
PURCELL MTN	K011N010E34						$185,913	$74,303
PURCELL MTN	K011N010E35						$185,913	$74,303
PURCELL MTN	K011N010E36						$185,913	$74,303
PURCELL MTN	K012N005E25						$185,913	$74,303
PURCELL MTN	K012N005E26						$185,913	$74,303
PURCELL MTN	K012N005E27						$185,913	$74,303
PURCELL MTN	K012N005E34						$185,913	$74,303
PURCELL MTN	K012N005E35						$185,913	$74,303
PURCELL MTN	K012N005E36						$185,913	$74,303
PURCELL MTN	K012N006E29						$185,913	$74,303
PURCELL MTN	K012N006E30						$185,913	$74,303
PURCELL MTN	K012N006E31						$185,913	$74,303
PURCELL MTN	K012N006E32						$185,913	$74,303
TAURUS	C021N021E1						$9,287,144	$2,742,410
TAURUS	C021N021E2						$9,287,144	$2,742,410
TAURUS	C021N021E3						$9,287,144	$2,742,410
TAURUS	C021N021E4						$9,287,144	$2,742,410
TAURUS	C022N021E22						$9,287,144	$2,742,410

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
TAURUS	C022N021E23	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E24	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E25	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E26	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E27	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E28	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E33	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E34	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E35	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N021E36	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N022E29	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N022E30	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N022E31	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
TAURUS	C022N022E32	640	TANACROSS C1	PCMTB	$483,705,413	$142,833,832	30								
BLUFF	C021N020E2	640	TANACROSS C1&2	PCMTB	$483,705,413	$142,833,832	30								
BLUFF	C021N020E3	640	TANACROSS C1&2	PCMTB	$483,705,413	$142,833,832	30								
ASARCO	C012N007E19	640	GULKANA D1	PCMTB	$483,705,413	$142,833,832	30								
ASARCO	C012N007E20	640	GULKANA D1	PCMTB	$483,705,413	$142,833,832	30								
ASARCO	C012N007E21	640	GULKANA D1	PCMTB	$483,705,413	$142,833,832	30								
BIG CK/LADUE	C019N022E1	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E2	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E3	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E10	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E11	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E12	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E13	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E14	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E15	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E16	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E17	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E18	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E22	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E27	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E28	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E33	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C019N022E34	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E1	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E2	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E11	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E12	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E13	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E14	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E15	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E16	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E22	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E23	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C020N021E27	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C021N021E25	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C021N021E26	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C021N021E35	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
BIG CK/LADUE	C021N021E36	640	TANACROSS B1&B2	VMSUBEL	$52,789,652	$26,289,095	30								
DENALI	F021S002E1	640	HEALY A1	COPSSEA	$20,781,761	$7,148,288	30								
DENALI	F021S002E10	640	HEALY A1	COPSSEA	$20,781,761	$7,148,288	30								
DENALI	F021S002E11	640	HEALY A1	COPSSEA	$20,781,761	$7,148,288	30								
DENALI	F021S002E12	640	HEALY A1	COPSSEA	$20,781,761	$7,148,288	30								
DENALI	F021S003E4	640	HEALY A1	COPSSEA	$20,781,761	$7,148,288	30								
DENALI	F021S003E5	640	HEALY A1	COPSSEA	$20,781,761	$7,148,288	30								
DENALI	F021S003E6	640	HEALY A1	COPSSEA	$20,781,761	$7,148,288	30								
KATHLEEN-MARG.	F019S006E10	640	MT HAYES B6	VMSUBEL	$52,789,652	$26,289,095	30								
KATHLEEN-MARG.	F019S006E11	640	MT HAYES B6	VMSUBEL	$52,789,652	$26,289,095	30								
RAINY CREEK	F018S009E34	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F018S009E35	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F018S009E36	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F018S010E31	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F019S009E1	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F019S009E2	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F019S009E12	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F019S010E6	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F019S010E7	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINY CREEK	F019S010E8	640	MT HAYES B4&5	POLTGOLD	$24,365,009	$12,898,640	1								
RAINBOW MTN	F019S011E11	640	MT HAYES A4&B4	VMSUBEL	$52,789,652	$26,289,095	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
TAURUS	C022N021E23						$9,287,144	$2,742,410
TAURUS	C022N021E24						$9,287,144	$2,742,410
TAURUS	C022N021E25						$9,287,144	$2,742,410
TAURUS	C022N021E26						$9,287,144	$2,742,410
TAURUS	C022N021E27						$9,287,144	$2,742,410
TAURUS	C022N021E28						$9,287,144	$2,742,410
TAURUS	C022N021E33						$9,287,144	$2,742,410
TAURUS	C022N021E34						$9,287,144	$2,742,410
TAURUS	C022N021E35						$9,287,144	$2,742,410
TAURUS	C022N021E36						$9,287,144	$2,742,410
TAURUS	C022N022E29						$9,287,144	$2,742,410
TAURUS	C022N022E30						$9,287,144	$2,742,410
TAURUS	C022N022E31						$9,287,144	$2,742,410
TAURUS	C022N022E32						$9,287,144	$2,742,410
BLUFF	C021N020E2						$9,287,144	$2,742,410
BLUFF	C021N020E3						$9,287,144	$2,742,410
ASARCO	C012N007E19						$9,287,144	$2,742,410
ASARCO	C012N007E20						$9,287,144	$2,742,410
ASARCO	C012N007E21						$9,287,144	$2,742,410
BIG CK/LADUE	C019N022E1						$1,013,561	$504,751
BIG CK/LADUE	C019N022E2						$1,013,561	$504,751
BIG CK/LADUE	C019N022E3						$1,013,561	$504,751
BIG CK/LADUE	C019N022E10						$1,013,561	$504,751
BIG CK/LADUE	C019N022E11						$1,013,561	$504,751
BIG CK/LADUE	C019N022E12						$1,013,561	$504,751
BIG CK/LADUE	C019N022E13						$1,013,561	$504,751
BIG CK/LADUE	C019N022E14						$1,013,561	$504,751
BIG CK/LADUE	C019N022E15						$1,013,561	$504,751
BIG CK/LADUE	C019N022E16						$1,013,561	$504,751
BIG CK/LADUE	C019N022E17						$1,013,561	$504,751
BIG CK/LADUE	C019N022E18						$1,013,561	$504,751
BIG CK/LADUE	C019N022E22						$1,013,561	$504,751
BIG CK/LADUE	C019N022E27						$1,013,561	$504,751
BIG CK/LADUE	C019N022E28						$1,013,561	$504,751
BIG CK/LADUE	C019N022E33						$1,013,561	$504,751
BIG CK/LADUE	C019N022E34						$1,013,561	$504,751
BIG CK/LADUE	C020N021E1						$1,013,561	$504,751
BIG CK/LADUE	C020N021E2						$1,013,561	$504,751
BIG CK/LADUE	C020N021E11						$1,013,561	$504,751
BIG CK/LADUE	C020N021E12						$1,013,561	$504,751
BIG CK/LADUE	C020N021E13						$1,013,561	$504,751
BIG CK/LADUE	C020N021E14						$1,013,561	$504,751
BIG CK/LADUE	C020N021E15						$1,013,561	$504,751
BIG CK/LADUE	C020N021E16						$1,013,561	$504,751
BIG CK/LADUE	C020N021E22						$1,013,561	$504,751
BIG CK/LADUE	C020N021E23						$1,013,561	$504,751
BIG CK/LADUE	C020N021E27						$1,013,561	$504,751
BIG CK/LADUE	C021N021E25						$1,013,561	$504,751
BIG CK/LADUE	C021N021E26						$1,013,561	$504,751
BIG CK/LADUE	C021N021E35						$1,013,561	$504,751
BIG CK/LADUE	C021N021E36						$1,013,561	$504,751
DENALI	F021S002E1						$399,010	$137,247
DENALI	F021S002E10						$399,010	$137,247
DENALI	F021S002E11						$399,010	$137,247
DENALI	F021S002E12						$399,010	$137,247
DENALI	F021S003E4						$399,010	$137,247
DENALI	F021S003E5						$399,010	$137,247
DENALI	F021S003E6						$399,010	$137,247
KATHLEEN-MARG.	F019S006E10						$1,013,561	$504,751
KATHLEEN-MARG.	F019S006E11						$1,013,561	$504,751
RAINY CREEK	F018S009E34						$15,594	$8,255
RAINY CREEK	F018S009E35						$15,594	$8,255
RAINY CREEK	F018S009E36						$15,594	$8,255
RAINY CREEK	F018S010E31						$15,594	$8,255
RAINY CREEK	F019S009E1						$15,594	$8,255
RAINY CREEK	F019S009E2						$15,594	$8,255
RAINY CREEK	F019S009E12						$15,594	$8,255
RAINY CREEK	F019S010E6						$15,594	$8,255
RAINY CREEK	F019S010E7						$15,594	$8,255
RAINY CREEK	F019S010E8						$15,594	$8,255
RAINBOW MTN	F019S011E11						$1,013,561	$504,751

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
RAINBOW MTN	F019S011E12	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E13	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E14	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E23	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E24	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E25	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E26	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E27	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E33	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E34	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E35	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F019S011E36	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E1	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E2	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E3	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E4	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E5	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E11	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E12	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E13	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E14	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E23	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
RAINBOW MTN	F020S011E24	640	MT HAYES A4&B4	VMSLIBEL	$52,789,652	$26,289,095	30								
BERNARD/DUST MT	C003S002E3	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S002E10	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S002E11	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S002E13	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S002E14	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S002E23	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S002E24	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S002E25	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S002E26	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S003E17	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S003E18	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S003E19	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S003E20	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
BERNARD/DUST MT	C003S003E30	640	VALDEZ C3	CHRMKE	$3,128,979	$1,585,083	1								
ROOSEVELT CREEK	F027N024W8	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
ROOSEVELT CREEK	F027N024W11	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
ROOSEVELT CREEK	F027N024W14	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
ROOSEVELT CREEK	F027N024W15	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
ROOSEVELT CREEK	F027N024W16	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
ROOSEVELT CREEK	F027N024W17	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
ROOSEVELT CREEK	F027N024W21	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
ROOSEVELT CREEK	F027N024W22	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
ROOSEVELT CREEK	F027N024W23	640	WISEMAN A6	VMSLIBEL	$52,789,652	$26,289,095	30								
EAR MTN	K006N036W9	640	TELLER D3	TINZACK	$28,519,218	$0	30	ZNPBSEA	$50,754,191	##########	1				
EAR MTN	K006N036W10	640	TELLER D3	TINZACK	$28,519,218	$0	30	ZNPBSEA	$50,754,191	##########	1				
EAR MTN	K006N036W11	640	TELLER D3	TINZACK	$28,519,218	$0	30	ZNPBSEA	$50,754,191	##########	1				
EAR MTN	K006N036W14	640	TELLER D3	TINZACK	$28,519,218	$0	30	ZNPBSEA	$50,754,191	##########	1				
EAR MTN	K006N036W15	640	TELLER D3	TINZACK	$28,519,218	$0	30	ZNPBSEA	$50,754,191	##########	1				
EAR MTN	K006N036W16	640	TELLER D3	TINZACK	$28,519,218	$0	30	ZNPBSEA	$50,754,191	##########	1				
KOUGAROK MTN	K003N032W1	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W2	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W3	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W4	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W10	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W11	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W12	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W16	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W17	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W20	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K003N032W21	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K004N031W30	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K004N031W31	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K004N032W25	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K004N032W26	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K004N032W33	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K004N032W34	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K004N032W35	640	TELLER C1	TINZACK	$28,519,218	$0	30								
KOUGAROK MTN	K004N032W36	640	TELLER C1	TINZACK	$28,519,218	$0	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
RAINBOW MTN	F019S011E12						$1,013,561	$504,751
RAINBOW MTN	F019S011E13						$1,013,561	$504,751
RAINBOW MTN	F019S011E14						$1,013,561	$504,751
RAINBOW MTN	F019S011E23						$1,013,561	$504,751
RAINBOW MTN	F019S011E24						$1,013,561	$504,751
RAINBOW MTN	F019S011E25						$1,013,561	$504,751
RAINBOW MTN	F019S011E26						$1,013,561	$504,751
RAINBOW MTN	F019S011E27						$1,013,561	$504,751
RAINBOW MTN	F019S011E33						$1,013,561	$504,751
RAINBOW MTN	F019S011E34						$1,013,561	$504,751
RAINBOW MTN	F019S011E35						$1,013,561	$504,751
RAINBOW MTN	F019S011E36						$1,013,561	$504,751
RAINBOW MTN	F020S011E1						$1,013,561	$504,751
RAINBOW MTN	F020S011E2						$1,013,561	$504,751
RAINBOW MTN	F020S011E3						$1,013,561	$504,751
RAINBOW MTN	F020S011E4						$1,013,561	$504,751
RAINBOW MTN	F020S011E5						$1,013,561	$504,751
RAINBOW MTN	F020S011E11						$1,013,561	$504,751
RAINBOW MTN	F020S011E12						$1,013,561	$504,751
RAINBOW MTN	F020S011E13						$1,013,561	$504,751
RAINBOW MTN	F020S011E14						$1,013,561	$504,751
RAINBOW MTN	F020S011E23						$1,013,561	$504,751
RAINBOW MTN	F020S011E24						$1,013,561	$504,751
BERNARD/DUST MT	C003S002E3						$2,003	$1,014
BERNARD/DUST MT	C003S002E10						$2,003	$1,014
BERNARD/DUST MT	C003S002E11						$2,003	$1,014
BERNARD/DUST MT	C003S002E13						$2,003	$1,014
BERNARD/DUST MT	C003S002E14						$2,003	$1,014
BERNARD/DUST MT	C003S002E23						$2,003	$1,014
BERNARD/DUST MT	C003S002E24						$2,003	$1,014
BERNARD/DUST MT	C003S002E25						$2,003	$1,014
BERNARD/DUST MT	C003S002E26						$2,003	$1,014
BERNARD/DUST MT	C003S003E17						$2,003	$1,014
BERNARD/DUST MT	C003S003E18						$2,003	$1,014
BERNARD/DUST MT	C003S003E19						$2,003	$1,014
BERNARD/DUST MT	C003S003E20						$2,003	$1,014
BERNARD/DUST MT	C003S003E30						$2,003	$1,014
ROOSEVELT CREEK	F027N024W8						$1,013,561	$504,751
ROOSEVELT CREEK	F027N024W11						$1,013,561	$504,751
ROOSEVELT CREEK	F027N024W14						$1,013,561	$504,751
ROOSEVELT CREEK	F027N024W15						$1,013,561	$504,751
ROOSEVELT CREEK	F027N024W16						$1,013,561	$504,751
ROOSEVELT CREEK	F027N024W17						$1,013,561	$504,751
ROOSEVELT CREEK	F027N024W21						$1,013,561	$504,751
ROOSEVELT CREEK	F027N024W22						$1,013,561	$504,751
ROOSEVELT CREEK	F027N024W23						$1,013,561	$504,751
EAR MTN	K006N036W9						$580,052	$18,170
EAR MTN	K006N036W10						$580,052	$18,170
EAR MTN	K006N036W11						$580,052	$18,170
EAR MTN	K006N036W14						$580,052	$18,170
EAR MTN	K006N036W15						$580,052	$18,170
EAR MTN	K006N036W16						$580,052	$18,170
KOUGAROK MTN	K003N032W1						$547,569	$0
KOUGAROK MTN	K003N032W2						$547,569	$0
KOUGAROK MTN	K003N032W3						$547,569	$0
KOUGAROK MTN	K003N032W4						$547,569	$0
KOUGAROK MTN	K003N032W10						$547,569	$0
KOUGAROK MTN	K003N032W11						$547,569	$0
KOUGAROK MTN	K003N032W12						$547,569	$0
KOUGAROK MTN	K003N032W16						$547,569	$0
KOUGAROK MTN	K003N032W17						$547,569	$0
KOUGAROK MTN	K003N032W20						$547,569	$0
KOUGAROK MTN	K003N032W21						$547,569	$0
KOUGAROK MTN	K004N031W30						$547,569	$0
KOUGAROK MTN	K004N031W31						$547,569	$0
KOUGAROK MTN	K004N032W25						$547,569	$0
KOUGAROK MTN	K004N032W26						$547,569	$0
KOUGAROK MTN	K004N032W33						$547,569	$0
KOUGAROK MTN	K004N032W34						$547,569	$0
KOUGAROK MTN	K004N032W35						$547,569	$0
KOUGAROK MTN	K004N032W36						$547,569	$0

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
WINDY CK/OMILAK	K003S019W31	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
WINDY CK/OMILAK	K004S019W6	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
WINDY CK/OMILAK	K005S019W7	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
WINDY CK/OMILAK	K005S019W8	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
WINDY CK/OMILAK	K005S019W16	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
WINDY CK/OMILAK	K005S019W17	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
WINDY CK/OMILAK	K005S019W18	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
WINDY CK/OMILAK	K005S019W20	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
WINDY CK/OMILAK	K005S019W21	640	BENDELEBEN A2	SEDEXLIK	$99,258,182	$55,696,232	30								
INDEPENDENCE	K003N018W5	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N018W6	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N018W7	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N018W8	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N018W17	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N018W18	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N018W19	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N018W30	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N019W1	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K003N019W2	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K004N018W10	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K004N018W15	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K004N018W22	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K004N018W28	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K005N018W3	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K005N018W4	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K005N018W9	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K005N018W10	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K005N018W15	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K005N018W22	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K005N018W27	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
INDEPENDENCE	K005N018W34	640	BENDELEBEN C1,2; D1	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
DANIELS CREEK	K010S025W29	640	SOLOMON C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DANIELS CREEK	K010S025W30	640	SOLOMON C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
DANIELS CREEK	K010S025W31	640	SOLOMON C4	ILLCRKH	$2,700,564	$0	30	PLACAUPG	$12,020,466	$3,659,219	1				
HANNUM CREEK	K006N022W3	640	BENDELEBEN D3	SEDEXLIK	$99,258,182	$55,696,232	30								
HANNUM CREEK	K006N022W8	640	BENDELEBEN D3	SEDEXLIK	$99,258,182	$55,696,232	30								
HANNUM CREEK	K006N022W9	640	BENDELEBEN D3	SEDEXLIK	$99,258,182	$55,696,232	30								
HANNUM CREEK	K006N022W10	640	BENDELEBEN D3	SEDEXLIK	$99,258,182	$55,696,232	30								
HANNUM CREEK	K006N022W15	640	BENDELEBEN D3	SEDEXLIK	$99,258,182	$55,696,232	30								
HANNUM CREEK	K006N022W16	640	BENDELEBEN D3	SEDEXLIK	$99,258,182	$55,696,232	30								
HANNUM CREEK	K006N022W17	640	BENDELEBEN D3	SEDEXLIK	$99,258,182	$55,696,232	30								
CINNABAR CREEK	S008N054W19	640	TAYLOR MTNS D8	SEDEXLIK	$99,258,182	$55,696,232	30								
CINNABAR CREEK	S008N055W11	640	TAYLOR MTNS D8	SEDEXLIK	$99,258,182	$55,696,232	30								
CINNABAR CREEK	S008N055W12	640	TAYLOR MTNS D8	SEDEXLIK	$99,258,182	$55,696,232	30								
CINNABAR CREEK	S008N055W13	640	TAYLOR MTNS D8	SEDEXLIK	$99,258,182	$55,696,232	30								
CINNABAR CREEK	S008N055W14	640	TAYLOR MTNS D8	SEDEXLIK	$99,258,182	$55,696,232	30								
CINNABAR CREEK	S008N055W23	640	TAYLOR MTNS D8	SEDEXLIK	$99,258,182	$55,696,232	30								
CINNABAR CREEK	S008N055W24	640	TAYLOR MTNS D8	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W4	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W5	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W7	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W8	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W9	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W15	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W16	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W17	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W18	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W19	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W20	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W22	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W23	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W27	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W28	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W29	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
FORTY-SEVEN CK	S011N050W34	640	SLEET A6, TAY MT D6	SEDEXLIK	$99,258,182	$55,696,232	30								
TAYLOR MTN	S009N045W2	640	TAYLOR MTN D4	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
TAYLOR MTN	S009N045W3	640	TAYLOR MTN D4	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
TAYLOR MTN	S010N045W11	640	TAYLOR MTN D4	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
TAYLOR MTN	S010N045W14	640	TAYLOR MTN D4	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
TAYLOR MTN	S010N045W23	640	TAYLOR MTN D4	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
TAYLOR MTN	S010N045W26	640	TAYLOR MTN D4	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4	NPV OF NSR	NPV OF NPI
WINDY CK/OMILAK	K003S019W31					$1,905,757	$1,069,368
WINDY CK/OMILAK	K004S019W6					$1,905,757	$1,069,368
WINDY CK/OMILAK	K005S019W7					$1,905,757	$1,069,368
WINDY CK/OMILAK	K005S019W8					$1,905,757	$1,069,368
WINDY CK/OMILAK	K005S019W18					$1,905,757	$1,069,368
WINDY CK/OMILAK	K005S019W17					$1,905,757	$1,069,368
WINDY CK/OMILAK	K005S019W18					$1,905,757	$1,069,368
WINDY CK/OMILAK	K005S019W20					$1,905,757	$1,069,368
WINDY CK/OMILAK	K005S019W21					$1,905,757	$1,069,368
INDEPENDENCE	K003N018W5					$184,912	$81,257
INDEPENDENCE	K003N018W6					$184,912	$81,257
INDEPENDENCE	K003N018W7					$184,912	$81,257
INDEPENDENCE	K003N018W8					$184,912	$81,257
INDEPENDENCE	K003N018W17					$184,912	$81,257
INDEPENDENCE	K003N018W18					$184,912	$81,257
INDEPENDENCE	K003N018W19					$184,912	$81,257
INDEPENDENCE	K003N018W30					$184,912	$81,257
INDEPENDENCE	K003N019W1					$184,912	$81,257
INDEPENDENCE	K003N019W2					$184,912	$81,257
INDEPENDENCE	K004N018W10					$184,912	$81,257
INDEPENDENCE	K004N018W15					$184,912	$81,257
INDEPENDENCE	K004N018W22					$184,912	$81,257
INDEPENDENCE	K004N018W28					$184,912	$81,257
INDEPENDENCE	K005N018W3					$184,912	$81,257
INDEPENDENCE	K005N018W4					$184,912	$81,257
INDEPENDENCE	K005N018W9					$184,912	$81,257
INDEPENDENCE	K005N018W10					$184,912	$81,257
INDEPENDENCE	K005N018W15					$184,912	$81,257
INDEPENDENCE	K005N018W22					$184,912	$81,257
INDEPENDENCE	K005N018W27					$184,912	$81,257
INDEPENDENCE	K005N018W34					$184,912	$81,257
DANIELS CREEK	K010S025W29					$59,544	$2,342
DANIELS CREEK	K010S025W30					$59,544	$2,342
DANIELS CREEK	K010S025W31					$59,544	$2,342
HANNUM CREEK	K006N022W3					$1,905,757	$1,069,368
HANNUM CREEK	K006N022W8					$1,905,757	$1,069,368
HANNUM CREEK	K006N022W9					$1,905,757	$1,069,368
HANNUM CREEK	K006N022W10					$1,905,757	$1,069,368
HANNUM CREEK	K006N022W15					$1,905,757	$1,069,368
HANNUM CREEK	K006N022W16					$1,905,757	$1,069,368
HANNUM CREEK	K006N022W17					$1,905,757	$1,069,368
CINNABAR CREEK	S008N054W19					$1,905,757	$1,069,368
CINNABAR CREEK	S008N055W11					$1,905,757	$1,069,368
CINNABAR CREEK	S008N055W12					$1,905,757	$1,069,368
CINNABAR CREEK	S008N055W13					$1,905,757	$1,069,368
CINNABAR CREEK	S008N055W14					$1,905,757	$1,069,368
CINNABAR CREEK	S008N055W23					$1,905,757	$1,069,368
CINNABAR CREEK	S008N055W24					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W4					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W5					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W7					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W8					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W9					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W15					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W16					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W17					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W18					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W19					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W20					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W22					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W23					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W27					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W28					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W29					$1,905,757	$1,069,368
FORTY-SEVEN CK	S011N050W34					$1,905,757	$1,069,368
TAYLOR MTN	S009N045W2					$184,912	$81,257
TAYLOR MTN	S009N045W3					$184,912	$81,257
TAYLOR MTN	S010N045W11					$184,912	$81,257
TAYLOR MTN	S010N045W14					$184,912	$81,257
TAYLOR MTN	S010N045W23					$184,912	$81,257
TAYLOR MTN	S010N045W26					$184,912	$81,257

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
TAYLOR MTN	S010N045W34	640	TAYLOR MTN D4	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
TAYLOR MTN	S010N045W35	640	TAYLOR MTN D4	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E12	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E13	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E23	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E24	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E25	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E26	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E27	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E34	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E35	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K016S016E36	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K017S016E1	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CREEK	K017S016E2	640	RUBY A6	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W1	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W2	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W3	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W4	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W5	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W8	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W9	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W10	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W11	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W12	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W13	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W14	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W15	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W16	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W17	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W20	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W21	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W22	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W23	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K001N013W24	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W20	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W26	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W27	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W28	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W29	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W32	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W33	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W34	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
QUARTZ CREEK	K002N013W35	640	CANDLE B5&C5	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N030W6	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N030W7	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N030W18	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W1	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W2	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W3	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W4	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W6	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W7	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W8	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W9	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W10	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W11	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W14	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W15	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W16	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W17	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W18	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W20	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W21	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W22	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W23	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W28	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W29	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W30	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S007N031W31	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W10	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W11	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
TAYLOR MTN	S010N045W34						$184,912	$81,257
TAYLOR MTN	S010N045W35						$184,912	$81,257
BEAVER CREEK	K016S016E12						$184,912	$81,257
BEAVER CREEK	K016S016E13						$184,912	$81,257
BEAVER CREEK	K016S016E23						$184,912	$81,257
BEAVER CREEK	K016S016E24						$184,912	$81,257
BEAVER CREEK	K016S016E25						$184,912	$81,257
BEAVER CREEK	K016S016E26						$184,912	$81,257
BEAVER CREEK	K016S016E27						$184,912	$81,257
BEAVER CREEK	K016S016E34						$184,912	$81,257
BEAVER CREEK	K016S016E35						$184,912	$81,257
BEAVER CREEK	K016S016E36						$184,912	$81,257
BEAVER CREEK	K017S016E1						$184,912	$81,257
BEAVER CREEK	K017S016E2						$184,912	$81,257
QUARTZ CREEK	K001N013W1						$184,912	$81,257
QUARTZ CREEK	K001N013W2						$184,912	$81,257
QUARTZ CREEK	K001N013W3						$184,912	$81,257
QUARTZ CREEK	K001N013W4						$184,912	$81,257
QUARTZ CREEK	K001N013W5						$184,912	$81,257
QUARTZ CREEK	K001N013W8						$184,912	$81,257
QUARTZ CREEK	K001N013W9						$184,912	$81,257
QUARTZ CREEK	K001N013W10						$184,912	$81,257
QUARTZ CREEK	K001N013W11						$184,912	$81,257
QUARTZ CREEK	K001N013W12						$184,912	$81,257
QUARTZ CREEK	K001N013W13						$184,912	$81,257
QUARTZ CREEK	K001N013W14						$184,912	$81,257
QUARTZ CREEK	K001N013W15						$184,912	$81,257
QUARTZ CREEK	K001N013W16						$184,912	$81,257
QUARTZ CREEK	K001N013W17						$184,912	$81,257
QUARTZ CREEK	K001N013W20						$184,912	$81,257
QUARTZ CREEK	K001N013W21						$184,912	$81,257
QUARTZ CREEK	K001N013W22						$184,912	$81,257
QUARTZ CREEK	K001N013W23						$184,912	$81,257
QUARTZ CREEK	K001N013W24						$184,912	$81,257
QUARTZ CREEK	K002N013W20						$184,912	$81,257
QUARTZ CREEK	K002N013W26						$184,912	$81,257
QUARTZ CREEK	K002N013W27						$184,912	$81,257
QUARTZ CREEK	K002N013W28						$184,912	$81,257
QUARTZ CREEK	K002N013W29						$184,912	$81,257
QUARTZ CREEK	K002N013W32						$184,912	$81,257
QUARTZ CREEK	K002N013W33						$184,912	$81,257
QUARTZ CREEK	K002N013W34						$184,912	$81,257
QUARTZ CREEK	K002N013W35						$184,912	$81,257
GLACIER FK/BONAN.	S007N030W6						$13,600	$4,972
GLACIER FK/BONAN.	S007N030W7						$13,600	$4,972
GLACIER FK/BONAN.	S007N030W18						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W1						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W2						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W3						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W4						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W6						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W7						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W8						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W9						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W10						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W11						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W14						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W15						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W16						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W17						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W18						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W20						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W21						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W22						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W23						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W28						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W29						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W30						$13,600	$4,972
GLACIER FK/BONAN.	S007N031W31						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W10						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W11						$13,600	$4,972

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
GLACIER FK/BONAN.	S008N030W14	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W15	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W16	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W18	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W19	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W20	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W21	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W22	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W23	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W28	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W29	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W30	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N030W31	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N031W23	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N031W24	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N031W25	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N031W26	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N031W27	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N031W34	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GLACIER FK/BONAN.	S008N031W35	640	LAKE CLARK D3?	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W2	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W4	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W5	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W8	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W9	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W10	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W11	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W15	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W16	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOWSER CREEK	S024N024W17	640	MCGRATH A2	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
MISS MOLLY	S019N015W7	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
MISS MOLLY	S019N015W18	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
MISS MOLLY	S019N016W11	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
MISS MOLLY	S019N016W12	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
MISS MOLLY	S019N016W13	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
MISS MOLLY	S019N016W14	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
MISS MOLLY	S019N016W23	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
MISS MOLLY	S019N016W24	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
MISS MOLLY	S019N016W35	640	TYONEK C&D6	PCMTB	$483,705,413	$142,833,832	1								
PLACER RIVER	K001N012W25	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W1	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W2	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W3	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W4	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W5	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W8	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W9	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W10	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W11	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W12	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W13	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W14	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W15	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W16	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W17	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W20	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W21	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W22	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W23	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
PLACER RIVER	K001N013W24	640	CANDLE B5&C5	CLMOCNE	$293,895,260	$94,919,751	1								
KOYUKUK/HUGHES	K007N025E13	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E14	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E15	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E16	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E17	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E18	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E19	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E20	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E21	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E22	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E23	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
GLACIER FK/BONAN.	S008N030W14						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W15						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W16						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W18						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W19						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W20						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W21						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W22						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W23						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W28						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W29						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W30						$13,600	$4,972
GLACIER FK/BONAN.	S008N030W31						$13,600	$4,972
GLACIER FK/BONAN.	S008N031W23						$13,600	$4,972
GLACIER FK/BONAN.	S008N031W24						$13,600	$4,972
GLACIER FK/BONAN.	S008N031W25						$13,600	$4,972
GLACIER FK/BONAN.	S008N031W26						$13,600	$4,972
GLACIER FK/BONAN.	S008N031W27						$13,600	$4,972
GLACIER FK/BONAN.	S008N031W34						$13,600	$4,972
GLACIER FK/BONAN.	S008N031W35						$13,600	$4,972
BOWSER CREEK	S024N024W2						$23,287	$10,597
BOWSER CREEK	S024N024W4						$23,287	$10,597
BOWSER CREEK	S024N024W5						$23,287	$10,597
BOWSER CREEK	S024N024W8						$23,287	$10,597
BOWSER CREEK	S024N024W9						$23,287	$10,597
BOWSER CREEK	S024N024W10						$23,287	$10,597
BOWSER CREEK	S024N024W11						$23,287	$10,597
BOWSER CREEK	S024N024W15						$23,287	$10,597
BOWSER CREEK	S024N024W16						$23,287	$10,597
BOWSER CREEK	S024N024W17						$23,287	$10,597
MISS MOLLY	S019N015W7						$309,571	$91,414
MISS MOLLY	S019N015W18						$309,571	$91,414
MISS MOLLY	S019N016W11						$309,571	$91,414
MISS MOLLY	S019N016W12						$309,571	$91,414
MISS MOLLY	S019N016W13						$309,571	$91,414
MISS MOLLY	S019N016W14						$309,571	$91,414
MISS MOLLY	S019N016W23						$309,571	$91,414
MISS MOLLY	S019N016W24						$309,571	$91,414
MISS MOLLY	S019N016W35						$309,571	$91,414
PLACER RIVER	K001N012W25						$188,093	$60,749
PLACER RIVER	K001N013W1						$188,093	$60,749
PLACER RIVER	K001N013W2						$188,093	$60,749
PLACER RIVER	K001N013W3						$188,093	$60,749
PLACER RIVER	K001N013W4						$188,093	$60,749
PLACER RIVER	K001N013W5						$188,093	$60,749
PLACER RIVER	K001N013W8						$188,093	$60,749
PLACER RIVER	K001N013W9						$188,093	$60,749
PLACER RIVER	K001N013W10						$188,093	$60,749
PLACER RIVER	K001N013W11						$188,093	$60,749
PLACER RIVER	K001N013W12						$188,093	$60,749
PLACER RIVER	K001N013W13						$188,093	$60,749
PLACER RIVER	K001N013W14						$188,093	$60,749
PLACER RIVER	K001N013W15						$188,093	$60,749
PLACER RIVER	K001N013W16						$188,093	$60,749
PLACER RIVER	K001N013W17						$188,093	$60,749
PLACER RIVER	K001N013W20						$188,093	$60,749
PLACER RIVER	K001N013W21						$188,093	$60,749
PLACER RIVER	K001N013W22						$188,093	$60,749
PLACER RIVER	K001N013W23						$188,093	$60,749
PLACER RIVER	K001N013W24						$188,093	$60,749
KOYUKUK/HUGHES	K007N025E13						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E14						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E15						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E16						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E17						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E18						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E19						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E20						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E21						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E22						$184,912	$61,257
KOYUKUK/HUGHES	K007N025E23						$184,912	$61,257

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
KOYUKUK/HUGHES	K007N025E24	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E29	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E30	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N025E31	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N026E7	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N026E8	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K007N026E18	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E19	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E20	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E21	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E22	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E27	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E28	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E29	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E30	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E34	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
KOYUKUK/HUGHES	K008N024E35	640	HUGHES A1,2;MEL D2	LSAOCHAND	$9,230,162	$4,110,152	30	PLACAUPG	$12,020,466	$3,659,219	1				
SLEITAT MTN	S001S045W30	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S001S045W31	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S001S045W32	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S001S046W25	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S001S046W36	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S002S045W5	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S002S045W6	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S002S045W8	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S002S046W1	640	TAYLOR MTN A3	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
SLEITAT MTN	S001S046W26	640	TAYLOR MTN A4	TINZACK	$28,519,218	$0	30	WVENTM	$9,798,080	$2,266,398	1				
GEROE CREEK	F033N005W4	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F033N005W5	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F033N005W6	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F033N005W7	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F033N005W8	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F033N005W18	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F033N005W19	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F033N005W20	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F033N005W21	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F034N004W6	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F034N004W7	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F034N005W1	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F034N005W2	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F034N005W29	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F034N005W32	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F034N005W33	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
GEROE CREEK	F034N005W34	640	CHANDALAR C4&D4	PCMTB	$483,705,413	$142,833,832	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
JIMMY LAKE	S019N022W14	640	LIME HILLS C1	POLTGOLD	$24,365,009	$12,898,640	1								
JIMMY LAKE	S019N022W22	640	LIME HILLS C1	POLTGOLD	$24,365,009	$12,898,640	1								
JIMMY LAKE	S019N022W23	640	LIME HILLS C1	POLTGOLD	$24,365,009	$12,898,640	1								
JIMMY LAKE	S019N022W24	640	LIME HILLS C1	POLTGOLD	$24,365,009	$12,898,640	1								
JIMMY LAKE	S019N022W25	640	LIME HILLS C1	POLTGOLD	$24,365,009	$12,898,640	1								
JIMMY LAKE	S019N022W26	640	LIME HILLS C1	POLTGOLD	$24,365,009	$12,898,640	1								
JIMMY LAKE	S019N022W35	640	LIME HILLS C1	POLTGOLD	$24,365,009	$12,898,640	1								
JIMMY LAKE	S013N022W36	640	LIME HILLS C1	POLTGOLD	$24,365,009	$12,898,340	1								
GLOBE CREEK	F005N003W3	640	LIVENGOOD B3	LIME											
GLOBE CREEK	F006N003W34	640	LIVENGOOD B3	LIME											
GLOBE CREEK	F006N003W35	640	LIVENGOOD B3	LIME											
CANDLE CREEK	S032N035W18	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W19	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W20	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W21	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W22	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W27	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W28	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W29	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W30	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W31	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W32	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W33	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
CANDLE CREEK	S032N035W34	640	MCGRATH D6	CLEARSUM	$15,778,979	$4,662,496	1								
HUNTER CREEK	F008N011W19	640	LIVENGOOD B6&C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
HUNTER CREEK	F008N011W20	640	LIVENGOOD B6&C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
HUNTER CREEK	F008N011W29	640	LIVENGOOD B6&C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
KOYUKUK/HUGHES	K007N025E24						$184,912	$81,257
KOYUKUK/HUGHES	K007N025E29						$184,912	$81,257
KOYUKUK/HUGHES	K007N025E30						$184,912	$81,257
KOYUKUK/HUGHES	K007N025E31						$184,912	$81,257
KOYUKUK/HUGHES	K007N026E7						$184,912	$81,257
KOYUKUK/HUGHES	K007N026E8						$184,912	$81,257
KOYUKUK/HUGHES	K007N026E18						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E19						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E20						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E21						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E22						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E27						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E28						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E29						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E30						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E34						$184,912	$81,257
KOYUKUK/HUGHES	K008N024E35						$184,912	$81,257
SLEITAT MTN	S001S045W30						$553,840	$1,450
SLEITAT MTN	S001S045W31						$553,840	$1,450
SLEITAT MTN	S001S045W32						$553,840	$1,450
SLEITAT MTN	S001S046W25						$553,840	$1,450
SLEITAT MTN	S001S046W36						$553,840	$1,450
SLEITAT MTN	S002S045W5						$553,840	$1,450
SLEITAT MTN	S002S045W6						$553,840	$1,450
SLEITAT MTN	S002S045W8						$553,840	$1,450
SLEITAT MTN	S002S046W1						$553,840	$1,450
SLEITAT MTN	S001S046W26						$553,840	$1,450
GEROE CREEK	F033N005W4						$323,172	$96,386
GEROE CREEK	F033N005W5						$323,172	$96,386
GEROE CREEK	F033N005W6						$323,172	$96,386
GEROE CREEK	F033N005W7						$323,172	$96,386
GEROE CREEK	F033N005W8						$323,172	$96,386
GEROE CREEK	F033N005W18						$323,172	$96,386
GEROE CREEK	F033N005W19						$323,172	$96,386
GEROE CREEK	F033N005W20						$323,172	$96,386
GEROE CREEK	F033N005W21						$323,172	$96,386
GEROE CREEK	F034N004W8						$323,172	$96,386
GEROE CREEK	F034N004W7						$323,172	$96,386
GEROE CREEK	F034N005W1						$323,172	$96,386
GEROE CREEK	F034N005W2						$323,172	$96,386
GEROE CREEK	F034N005W29						$323,172	$96,386
GEROE CREEK	F034N005W32						$323,172	$96,386
GEROE CREEK	F034N005W33						$323,172	$96,386
GEROE CREEK	F034N005W34						$323,172	$96,386
JIMMY LAKE	S019N022W14						$15,594	$8,255
JIMMY LAKE	S019N022W22						$15,594	$8,255
JIMMY LAKE	S019N022W23						$15,594	$8,255
JIMMY LAKE	S019N022W24						$15,594	$8,255
JIMMY LAKE	S019N022W25						$15,594	$8,255
JIMMY LAKE	S019N022W26						$15,594	$8,255
JIMMY LAKE	S019N022W35						$15,594	$8,255
JIMMY LAKE	S019N022W36						$15,594	$8,255
GLOBE CREEK	F005N003W3						$0	$0
GLOBE CREEK	F006N003W34						$0	$0
GLOBE CREEK	F006N003W35						$0	$0
CANDLE CREEK	S032N035W18						$10,099	$2,984
CANDLE CREEK	S032N035W19						$10,099	$2,984
CANDLE CREEK	S032N035W20						$10,099	$2,984
CANDLE CREEK	S032N035W21						$10,099	$2,984
CANDLE CREEK	S032N035W22						$10,099	$2,984
CANDLE CREEK	S032N035W27						$10,099	$2,984
CANDLE CREEK	S032N035W28						$10,099	$2,984
CANDLE CREEK	S032N035W29						$10,099	$2,984
CANDLE CREEK	S032N035W30						$10,099	$2,984
CANDLE CREEK	S032N035W31						$10,099	$2,984
CANDLE CREEK	S032N035W32						$10,099	$2,984
CANDLE CREEK	S032N035W33						$10,099	$2,984
CANDLE CREEK	S032N035W34						$10,099	$2,984
HUNTER CREEK	F008N011W19						$13,600	$4,972
HUNTER CREEK	F008N011W20						$13,600	$4,972
HUNTER CREEK	F008N011W29						$13,600	$4,972

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
HUNTER CREEK	F008N011W30	640	LIVENGOOD B6&C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
HUNTER CREEK	F008N011W31	640	LIVENGOOD B6&C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
HUNTER CREEK	F008N011W32	640	LIVENGOOD B6&C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W3	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W4	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W5	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W6	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W7	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W8	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W9	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W10	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W15	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W16	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W17	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WOLVERINE MTN	F006N011W18	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W3	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W10	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W15	640	LIVENGOOD C6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
JOSIE CREEK	K008S034W26	640	NOME D2	LSAOCHAND	$9,230,162	$4,110,152	7	PLACAUPG	$12,020,466	$3,659,219	1				
NIKABUNA LAKES	S002S036W3	640	LAKE CLARK A7	POLTGOLD	$24,365,009	$12,898,640	1								
NIKABUNA LAKES	S002S036W9	640	LAKE CLARK A7	POLTGOLD	$24,365,009	$12,898,640	1								
PAINT RIVER	S010S031W32	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S010S031W33	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S010S031W34	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S010S031W35	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W8	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W9	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W10	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W11	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W14	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W15	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W16	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W17	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W20	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W21	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W22	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W23	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W26	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W27	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W28	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
PAINT RIVER	S011S031W29	640	ILIAMNA A4&5, B4&5	COPSSEA	$20,781,761	$7,148,268	1								
TOK/ROBERTSON	C016N009E2	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E3	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E4	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E7	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E8	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E17	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E18	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E19	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E20	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E29	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C016N009E30	640	TANACROSS A6&B6	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E1	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E2	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E3	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E4	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E5	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E6	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E7	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E8	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E9	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E10	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E11	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E12	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E13	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E14	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E15	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E16	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N006E17	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E1	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E2	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
HUNTER CREEK	F008N011W30						$13,600	$4,972
HUNTER CREEK	F008N011W31						$13,600	$4,972
HUNTER CREEK	F008N011W32						$13,600	$4,972
WOLVERINE MTN	F006N011W3						$13,600	$4,972
WOLVERINE MTN	F006N011W4						$13,600	$4,972
WOLVERINE MTN	F006N011W5						$13,600	$4,972
WOLVERINE MTN	F006N011W6						$13,600	$4,972
WOLVERINE MTN	F006N011W7						$13,600	$4,972
WOLVERINE MTN	F006N011W8						$13,600	$4,972
WOLVERINE MTN	F006N011W9						$13,600	$4,972
WOLVERINE MTN	F006N011W10						$13,600	$4,972
WOLVERINE MTN	F006N011W15						$13,600	$4,972
WOLVERINE MTN	F006N011W16						$13,600	$4,972
WOLVERINE MTN	F006N011W17						$13,600	$4,972
WOLVERINE MTN	F006N011W18						$13,600	$4,972
ELEPHANT MTN	F005N012W3						$13,600	$4,972
ELEPHANT MTN	F005N012W10						$13,600	$4,972
ELEPHANT MTN	F005N012W15						$13,600	$4,972
JOSIE CREEK	K008S034W26						$49,044	$20,755
NIKABUNA LAKES	S002S038W3						$15,594	$8,255
NIKABUNA LAKES	S002S038W9						$15,594	$8,255
PAINT RIVER	S010S031W32						$13,300	$4,575
PAINT RIVER	S010S031W33						$13,300	$4,575
PAINT RIVER	S010S031W34						$13,300	$4,575
PAINT RIVER	S010S031W35						$13,300	$4,575
PAINT RIVER	S011S031W8						$13,300	$4,575
PAINT RIVER	S011S031W9						$13,300	$4,575
PAINT RIVER	S011S031W10						$13,300	$4,575
PAINT RIVER	S011S031W11						$13,300	$4,575
PAINT RIVER	S011S031W14						$13,300	$4,575
PAINT RIVER	S011S031W15						$13,300	$4,575
PAINT RIVER	S011S031W16						$13,300	$4,575
PAINT RIVER	S011S031W17						$13,300	$4,575
PAINT RIVER	S011S031W20						$13,300	$4,575
PAINT RIVER	S011S031W21						$13,300	$4,575
PAINT RIVER	S011S031W22						$13,300	$4,575
PAINT RIVER	S011S031W23						$13,300	$4,575
PAINT RIVER	S011S031W26						$13,300	$4,575
PAINT RIVER	S011S031W27						$13,300	$4,575
PAINT RIVER	S011S031W28						$13,300	$4,575
PAINT RIVER	S011S031W29						$13,300	$4,575
TOK/ROBERTSON	C016N008E2						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E3						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E4						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E7						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E8						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E17						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E18						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E19						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E20						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E29						$2,403,498	$757,671
TOK/ROBERTSON	C016N008E30						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E1						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E2						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E3						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E4						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E5						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E6						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E7						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E8						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E9						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E10						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E11						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E12						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E13						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E14						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E15						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E16						$2,403,498	$757,671
TOK/ROBERTSON	C017N006E17						$2,403,498	$757,671
TOK/ROBERTSON	C017N007E1						$2,403,498	$757,671
TOK/ROBERTSON	C017N007E2						$2,403,498	$757,671

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
TOK/ROBERTSON	C017N007E3	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E4	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E5	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E6	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E7	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E8	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E9	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E10	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E11	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E12	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E13	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E14	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E15	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E16	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E17	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E18	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E24	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N007E25	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E1	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E2	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E3	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E4	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E5	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E6	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E7	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E8	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E9	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E10	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E11	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E12	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E13	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E14	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E17	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E18	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E19	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E20	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E21	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E22	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E23	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E24	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E25	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E26	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E28	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E30	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E32	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E33	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E34	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N008E36	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C017N009E19	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E8	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E9	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E10	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E11	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E13	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E14	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E15	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E16	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E17	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E18	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E21	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E22	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E23	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E24	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E25	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E26	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E27	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N005E36	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N006E18	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N006E19	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N006E20	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N006E30	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
TOK/ROBERTSON	C017N007E3						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E4						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E5						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E6						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E7						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E8						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E9						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E10						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E11						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E12						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E13						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E14						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E15						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E16						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E17						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E18						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E24						$2,403,498	$757,871
TOK/ROBERTSON	C017N007E26						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E1						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E2						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E3						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E4						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E5						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E6						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E7						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E8						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E9						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E10						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E11						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E12						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E13						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E14						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E17						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E18						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E19						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E20						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E21						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E22						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E23						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E24						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E25						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E26						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E28						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E30						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E32						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E33						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E34						$2,403,498	$757,871
TOK/ROBERTSON	C017N008E36						$2,403,498	$757,871
TOK/ROBERTSON	C017N009E18						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E8						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E9						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E10						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E11						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E13						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E14						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E15						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E16						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E17						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E18						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E21						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E22						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E23						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E24						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E25						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E26						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E27						$2,403,498	$757,871
TOK/ROBERTSON	C018N005E36						$2,403,498	$757,871
TOK/ROBERTSON	C018N006E18						$2,403,498	$757,871
TOK/ROBERTSON	C018N006E19						$2,403,498	$757,871
TOK/ROBERTSON	C018N006E20						$2,403,498	$757,871
TOK/ROBERTSON	C018N006E30						$2,403,498	$757,871

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
TOK/ROBERTSON	C018N006E31	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N006E32	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N006E33	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N007E32	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N007E33	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N007E34	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E14	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E15	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E22	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E23	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E26	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E27	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E28	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E29	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E32	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E33	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E34	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E35	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
TOK/ROBERTSON	C018N008E36	640	TANXA&B6, MTHAY B1&2	PCMTB	$483,705,413	$142,833,832	7	VMSLIBEL	$52,789,652	##########	7				
SHAWNEE PEAK	F005S014E25	640	BIG DELTA B2	VMSLIBEL	$52,789,652	$26,289,095	1								
SHAWNEE PEAK	F005S014E26	640	BIG DELTA B2	VMSLIBEL	$52,789,652	$26,289,095	1								
SHAWNEE PEAK	F005S014E35	640	BIG DELTA B2	VMSLIBEL	$52,789,652	$26,289,095	1								
SHAWNEE PEAK	F008S016E4	640	BIG DELTA B2	VMSLIBEL	$52,789,652	$26,289,095	1								
SHAWNEE PEAK	F008S016E5	640	BIG DELTA B2	VMSLIBEL	$52,789,652	$26,289,095	1								
IMELYAK RIVER	K028N004E16	640	AMBLER RIVER D4	VMSLIBEL	$52,789,652	$26,289,095	1								
IMELYAK RIVER	K028N004E21	640	AMBLER RIVER D4	VMSLIBEL	$52,789,652	$26,289,095	1								
IMELYAK RIVER	K028N004E22	640	AMBLER RIVER D4	VMSLIBEL	$52,789,652	$26,289,095	1								
TAMARAK/OPHIR CK	K012S016E27	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S016E28	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S016E29	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S016E32	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S016E33	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S017E24	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S017E25	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S018E34	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S018E35	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K012S018E36	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E21	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E22	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E23	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E26	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E27	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E28	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E31	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E32	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E33	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E34	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E35	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E36	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S018E	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E29	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E30	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E31	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E32	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K013S017E33	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E1	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E2	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E3	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E4	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E5	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E6	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E7	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E8	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E10	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E11	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E13	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E14	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E22	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E23	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E24	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E25	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,998,640	1	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
TOK/ROBERTSON	C018N006E31						$2,403,498	$757,671
TOK/ROBERTSON	C018N006E32						$2,403,498	$757,671
TOK/ROBERTSON	C018N006E33						$2,403,498	$757,671
TOK/ROBERTSON	C018N007E32						$2,403,498	$757,671
TOK/ROBERTSON	C018N007E33						$2,403,498	$757,671
TOK/ROBERTSON	C018N007E34						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E14						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E15						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E22						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E23						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E26						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E27						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E28						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E29						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E32						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E33						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E34						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E35						$2,403,498	$757,671
TOK/ROBERTSON	C018N008E36						$2,403,498	$757,671
SHAWNEE PEAK	F005S014E25						$33,785	$16,825
SHAWNEE PEAK	F005S014E26						$33,785	$16,825
SHAWNEE PEAK	F005S014E35						$33,785	$16,825
SHAWNEE PEAK	F006S016E4						$33,785	$16,825
SHAWNEE PEAK	F006S016E5						$33,785	$16,825
IMELYAK RIVER	K028N004E16						$33,785	$16,825
IMELYAK RIVER	K028N004E21						$33,785	$16,825
IMELYAK RIVER	K028N004E22						$33,785	$16,825
TAMARAK/OPHIR CK	K012S016E27						$23,287	$10,597
TAMARAK/OPHIR CK	K012S016E28						$23,287	$10,597
TAMARAK/OPHIR CK	K012S016E29						$23,287	$10,597
TAMARAK/OPHIR CK	K012S016E32						$23,287	$10,597
TAMARAK/OPHIR CK	K012S016E33						$23,287	$10,597
TAMARAK/OPHIR CK	K012S017E24						$23,287	$10,597
TAMARAK/OPHIR CK	K012S017E25						$23,287	$10,597
TAMARAK/OPHIR CK	K012S016E34						$23,287	$10,597
TAMARAK/OPHIR CK	K012S016E35						$23,287	$10,597
TAMARAK/OPHIR CK	K012S016E36						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E21						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E22						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E23						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E26						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E27						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E28						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E31						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E32						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E33						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E34						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E35						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E36						$23,287	$10,597
TAMARAK/OPHIR CK	K013S018E						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E29						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E30						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E31						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E32						$23,287	$10,597
TAMARAK/OPHIR CK	K013S017E33						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E1						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E2						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E3						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E4						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E5						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E6						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E7						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E8						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E10						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E11						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E13						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E14						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E22						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E23						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E24						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E25						$23,287	$10,597

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
TAMARAK/OPHIR CK	K014S017E34	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E35	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S017E36	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K014S018E30	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K015S017E2	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K015S017E3	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K015S017E36	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K015S018E31	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K016S017E1	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K016S017E12	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K016S017E13	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TAMARAK/OPHIR CK	K016S018E6	640	RUBY A5,B5&6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
TELEGRAM CK	K007S029W19	640	SOLOMON D6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
TELEGRAM CK	K007S029W20	640	SOLOMON D6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
TELEGRAM CK	K007S029W21	640	SOLOMON D6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
TELEGRAM CK	K007S029W28	640	SOLOMON D6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
TELEGRAM CK	K007S029W29	640	SOLOMON D6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BEAVER CK	K019N017E1	640	SURVEY PASS A4&5	VMSLIBEL	$52,789,652	$26,289,095	1								
BEAVER CK	K019N017E12	640	SURVEY PASS A4&5	VMSLIBEL	$52,789,652	$26,289,095	1								
BEAVER CK	K019N018E6	640	SURVEY PASS A4&5	VMSLIBEL	$52,789,652	$26,289,095	1								
BEAVER CK	K020N018E31	640	SURVEY PASS A4&5	VMSLIBEL	$52,789,652	$26,289,095	1								
TALK. MTNS	S023N001W13	640	TALKEETNA MTN A5	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S023N001E15	640	TALKEETNA MTN A5	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S023N001E16	640	TALKEETNA MTN A5	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S023N001E17	640	TALKEETNA MTN A5	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S023N001E18	640	TALKEETNA MTN A5	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S023N001E20	640	TALKEETNA MTN A5	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S023N001E21	640	TALKEETNA MTN A5	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S023N001E22	640	TALKEETNA MTN A5	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S028N005E15	640	TALKEET MT B3, C3&4	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S028N005E16	640	TALKEET MT B3, C3&4	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S028N005E17	640	TALKEET MT B3, C3&4	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S028N005E20	640	TALKEET MT B3, C3&4	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S028N005E21	640	TALKEET MT B3, C3&4	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S028N005E22	640	TALKEET MT B3, C3&4	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S028N005E27	640	TALKEET MT B3, C3&4	PCMTB	$483,705,413	$142,833,832	1								
TALK. MTNS	S028N005E4	640	TALKEET MT B3, C3&4	PCMTB	$483,705,413	$142,833,832	1								
KAHILTNA RIVER	S022N008W17	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S022N008W18	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N008W31	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W2	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W3	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W14	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W23	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W24	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W25	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W26	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W27	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W34	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W35	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S023N009W36	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N008W7	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N008W8	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W11	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W12	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W13	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W14	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W22	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W23	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W26	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W27	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W34	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S024N009W35	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N008W5	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N008W8	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N008W16	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N008W20	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N008W21	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N008W28	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N008W32	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N008W33	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
TAMARAK/OPHIR CK	K014S017E34						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E35						$23,287	$10,597
TAMARAK/OPHIR CK	K014S017E36						$23,287	$10,597
TAMARAK/OPHIR CK	K014S018E30						$23,287	$10,597
TAMARAK/OPHIR CK	K015S017E2						$23,287	$10,597
TAMARAK/OPHIR CK	K015S017E3						$23,287	$10,597
TAMARAK/OPHIR CK	K015S017E36						$23,287	$10,597
TAMARAK/OPHIR CK	K015S018E31						$23,287	$10,597
TAMARAK/OPHIR CK	K016S017E1						$23,287	$10,597
TAMARAK/OPHIR CK	K016S017E12						$23,287	$10,597
TAMARAK/OPHIR CK	K016S017E13						$23,287	$10,597
TAMARAK/OPHIR CK	K016S018E6						$23,287	$10,597
TELEGRAM CK	K007S029W19						$13,600	$4,972
TELEGRAM CK	K007S029W20						$13,600	$4,972
TELEGRAM CK	K007S029W21						$13,600	$4,972
TELEGRAM CK	K007S029W28						$13,600	$4,972
TELEGRAM CK	K007S029W29						$13,600	$4,972
BEAVER CK	K019N017E1						$33,785	$16,825
BEAVER CK	K019N017E12						$33,785	$16,825
BEAVER CK	K019N018E6						$33,785	$16,825
BEAVER CK	K020N018E31						$33,785	$16,825
TALK. MTNS	S023N001W13						$309,571	$91,414
TALK. MTNS	S023N001E15						$309,571	$91,414
TALK. MTNS	S023N001E16						$309,571	$91,414
TALK. MTNS	S023N001E17						$309,571	$91,414
TALK. MTNS	S023N001E18						$309,571	$91,414
TALK. MTNS	S023N001E20						$309,571	$91,414
TALK. MTNS	S023N001E21						$309,571	$91,414
TALK. MTNS	S023N001E22						$309,571	$91,414
TALK. MTNS	S028N005E15						$309,571	$91,414
TALK. MTNS	S028N005E16						$309,571	$91,414
TALK. MTNS	S028N005E17						$309,571	$91,414
TALK. MTNS	S028N005E20						$309,571	$91,414
TALK. MTNS	S028N005E21						$309,571	$91,414
TALK. MTNS	S028N005E22						$309,571	$91,414
TALK. MTNS	S028N005E27						$309,571	$91,414
TALK. MTNS	S028N006E4						$309,571	$91,414
KAHILTNA RIVER	S022N008W17						$15,594	$8,255
KAHILTNA RIVER	S022N008W18						$15,594	$8,255
KAHILTNA RIVER	S023N008W31						$15,594	$8,255
KAHILTNA RIVER	S023N009W2						$15,594	$8,255
KAHILTNA RIVER	S023N009W3						$15,594	$8,255
KAHILTNA RIVER	S023N009W14						$15,594	$8,255
KAHILTNA RIVER	S023N009W23						$15,594	$8,255
KAHILTNA RIVER	S023N009W24						$15,594	$8,255
KAHILTNA RIVER	S023N009W25						$15,594	$8,255
KAHILTNA RIVER	S023N009W26						$15,594	$8,255
KAHILTNA RIVER	S023N009W27						$15,594	$8,255
KAHILTNA RIVER	S023N009W34						$15,594	$8,255
KAHILTNA RIVER	S023N009W35						$15,594	$8,255
KAHILTNA RIVER	S023N009W36						$15,594	$8,255
KAHILTNA RIVER	S024N008W7						$15,594	$8,255
KAHILTNA RIVER	S024N008W8						$15,594	$8,255
KAHILTNA RIVER	S024N009W11						$15,594	$8,255
KAHILTNA RIVER	S024N009W12						$15,594	$8,255
KAHILTNA RIVER	S024N009W13						$15,594	$8,255
KAHILTNA RIVER	S024N009W14						$15,594	$8,255
KAHILTNA RIVER	S024N009W22						$15,594	$8,255
KAHILTNA RIVER	S024N009W23						$15,594	$8,255
KAHILTNA RIVER	S024N009W26						$15,594	$8,255
KAHILTNA RIVER	S024N009W27						$15,594	$8,255
KAHILTNA RIVER	S024N009W34						$15,594	$8,255
KAHILTNA RIVER	S024N009W35						$15,594	$8,255
KAHILTNA RIVER	S028N008W5						$15,594	$8,255
KAHILTNA RIVER	S028N008W8						$15,594	$8,255
KAHILTNA RIVER	S028N008W16						$15,594	$8,255
KAHILTNA RIVER	S028N008W20						$15,594	$8,255
KAHILTNA RIVER	S028N008W21						$15,594	$8,255
KAHILTNA RIVER	S028N008W28						$15,594	$8,255
KAHILTNA RIVER	S028N008W32						$15,594	$8,255
KAHILTNA RIVER	S028N008W33						$15,594	$8,255

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
KAHILTNA RIVER	S028N009W1	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N009W4	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N009W9	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N009W10	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N009W13	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N009W14	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N009W15	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N009W16	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S028N009W21	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S029N008W28	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S029N008W29	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S029N008W30	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S029N008W31	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S029N008W32	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S029N008W33	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S029N009W25	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
KAHILTNA RIVER	S029N009W36	640	TALKEETNA A2,B2,C2	POLTGOLD	$24,365,009	$12,898,640	1								
BOULDER CK	F003N018W4	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F003N018W5	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F003N019W1	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W20	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W22	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W27	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W28	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W29	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W30	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W31	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W32	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W33	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W34	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W35	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W25	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BOULDER CK	F004N018W36	640	TANANA A3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W3	640	TANANA B1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W4	640	TANANA B1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W8	640	TANANA B1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W9	640	TANANA B1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W10	640	TANANA B1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W15	640	TANANA B1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W16	640	TANANA B1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
ELEPHANT MTN	F005N012W17	640	TANANA B1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
LITTLE TOK	C014N011E6	640	TANACROSS A5	VMSLIBEL	$52,789,852	$26,289,095	1								
LITTLE TOK	C014N011E7	640	TANACROSS A5	VMSLIBEL	$52,789,852	$26,289,095	1								
LITTLE TOK	C014N011E8	640	TANACROSS A5	VMSLIBEL	$52,789,852	$26,289,095	1								
LITTLE TOK	C015N011E23	640	TANACROSS A5	VMSLIBEL	$52,789,852	$26,289,095	1								
LITTLE TOK	C015N011E24	640	TANACROSS A5	VMSLIBEL	$52,789,852	$26,289,095	1								
DENNISON	C021N020E3	640	TANACROSS C2	LSAOCHAND	$9,230,162	$4,110,152	1								
KING SALMON	S002N049W4	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N049W5	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N049W6	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N049W7	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N049W8	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N049W9	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S003N049W31	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S003N049W32	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S003N049W33	640	TAYLOR MTNS B5	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N051W13	640	TAYLOR MTNS B6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N051W14	640	TAYLOR MTNS B6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N051W23	640	TAYLOR MTNS B6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S002N051W24	640	TAYLOR MTNS B6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S004N051W27	640	TAYLOR MTNS B6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
KING SALMON	S004N051W28	640	TAYLOR MTNS B6	POLTGOLD	$24,365,009	$12,898,640	1	PLACAUPG	$12,020,466	$3,659,219	1				
CONTINENTAL DIV	K004N034W5	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								
CONTINENTAL DIV	K004N034W6	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								
CONTINENTAL DIV	K004N034W17	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								
CONTINENTAL DIV	K004N034W18	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								
CONTINENTAL DIV	K004N035W12	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								
CONTINENTAL DIV	K004N035W13	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								
CONTINENTAL DIV	K005N034W33	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								
CONTINENTAL DIV	K005N034W34	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								
CONTINENTAL DIV	K005N034W35	640	TELLER C2&D2	LSAOCHAND	$9,230,162	$4,110,152	1								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
KAHILTNA RIVER	S028N009W1						$15,594	$8,255
KAHILTNA RIVER	S028N009W4						$15,594	$8,255
KAHILTNA RIVER	S028N009W9						$15,594	$8,255
KAHILTNA RIVER	S028N009W10						$15,594	$8,255
KAHILTNA RIVER	S028N009W13						$15,594	$8,255
KAHILTNA RIVER	S028N009W14						$15,594	$8,255
KAHILTNA RIVER	S028N009W15						$15,594	$8,255
KAHILTNA RIVER	S028N009W16						$15,594	$8,255
KAHILTNA RIVER	S028N009W21						$15,594	$8,255
KAHILTNA RIVER	S029N008W28						$15,594	$8,255
KAHILTNA RIVER	S029N008W29						$15,594	$8,255
KAHILTNA RIVER	S029N008W30						$15,594	$8,255
KAHILTNA RIVER	S029N008W31						$15,594	$8,255
KAHILTNA RIVER	S029N008W32						$15,594	$8,255
KAHILTNA RIVER	S029N008W33						$15,594	$8,255
KAHILTNA RIVER	S029N009W25						$15,594	$8,255
KAHILTNA RIVER	S029N009W36						$15,594	$8,255
BOULDER CK	F003N018W4						$13,600	$4,972
BOULDER CK	F003N018W5						$13,600	$4,972
BOULDER CK	F003N019W1						$13,600	$4,972
BOULDER CK	F004N018W20						$13,600	$4,972
BOULDER CK	F004N018W22						$13,600	$4,972
BOULDER CK	F004N018W27						$13,600	$4,972
BOULDER CK	F004N018W28						$13,600	$4,972
BOULDER CK	F004N018W29						$13,600	$4,972
BOULDER CK	F004N018W30						$13,600	$4,972
BOULDER CK	F004N018W31						$13,600	$4,972
BOULDER CK	F004N018W32						$13,600	$4,972
BOULDER CK	F004N018W33						$13,600	$4,972
BOULDER CK	F004N018W34						$13,600	$4,972
BOULDER CK	F004N018W35						$13,600	$4,972
BOULDER CK	F004N018W25						$13,600	$4,972
BOULDER CK	F004N018W36						$13,600	$4,972
ELEPHANT MTN	F005N012W3						$13,600	$4,972
ELEPHANT MTN	F005N012W4						$13,600	$4,972
ELEPHANT MTN	F005N012W8						$13,600	$4,972
ELEPHANT MTN	F005N012W9						$13,600	$4,972
ELEPHANT MTN	F005N012W10						$13,600	$4,972
ELEPHANT MTN	F005N012W15						$13,600	$4,972
ELEPHANT MTN	F005N012W16						$13,600	$4,972
ELEPHANT MTN	F005N012W17						$13,600	$4,972
LITTLE TOK	C014N011E6						$33,785	$16,825
LITTLE TOK	C014N011E7						$33,785	$16,825
LITTLE TOK	C014N011E8						$33,785	$16,825
LITTLE TOK	C015N011E23						$33,785	$16,825
LITTLE TOK	C015N011E24						$33,785	$16,825
DENNISON	C021N020E3						$5,907	$2,630
KING SALMON	S002N049W4						$23,287	$10,597
KING SALMON	S002N049W5						$23,287	$10,597
KING SALMON	S002N049W6						$23,287	$10,597
KING SALMON	S002N049W7						$23,287	$10,597
KING SALMON	S002N049W8						$23,287	$10,597
KING SALMON	S002N049W9						$23,287	$10,597
KING SALMON	S003N049W31						$23,287	$10,597
KING SALMON	S003N049W32						$23,287	$10,597
KING SALMON	S003N049W33						$23,287	$10,597
KING SALMON	S002N051W13						$23,287	$10,597
KING SALMON	S002N051W14						$23,287	$10,597
KING SALMON	S002N051W23						$23,287	$10,597
KING SALMON	S002N051W24						$23,287	$10,597
KING SALMON	S004N051W27						$23,287	$10,597
KING SALMON	S004N051W28						$23,287	$10,597
CONTINENTAL DIV	K004N034W5						$5,907	$2,630
CONTINENTAL DIV	K004N034W6						$5,907	$2,630
CONTINENTAL DIV	K004N034W17						$5,907	$2,630
CONTINENTAL DIV	K004N034W18						$5,907	$2,630
CONTINENTAL DIV	K004N035W12						$5,907	$2,630
CONTINENTAL DIV	K004N035W13						$5,907	$2,630
CONTINENTAL DIV	K005N034W33						$5,907	$2,630
CONTINENTAL DIV	K005N034W34						$5,907	$2,630
CONTINENTAL DIV	K005N034W35						$5,907	$2,630

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
BELUGA	S013N008W5	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S013N008W6	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N008W6	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W1	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W2	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W3	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W4	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W5	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W6	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W7	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W8	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W9	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W10	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W11	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W12	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W13	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W14	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W15	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W16	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W17	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W18	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W20	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W21	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W22	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W23	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W24	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W25	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W26	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W27	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W28	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W32	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W33	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N009W34	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W1	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W2	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W3	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W10	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W11	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W12	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W13	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W14	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W24	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W25	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S014N010W36	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N008W6	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N008W19	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N008W30	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N008W31	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W2	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W3	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W5	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W6	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W8	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W9	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W10	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W13	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W15	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W16	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W17	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W18	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W19	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W21	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W24	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W25	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W27	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W28	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W31	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W32	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W33	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W34	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N009W36	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
BELUGA	S013N009W5						$7,098	$3,867
BELUGA	S013N009W6						$7,098	$3,867
BELUGA	S014N008W6						$7,098	$3,867
BELUGA	S014N009W1						$7,098	$3,867
BELUGA	S014N009W2						$7,098	$3,867
BELUGA	S014N009W3						$7,098	$3,867
BELUGA	S014N009W4						$7,098	$3,867
BELUGA	S014N009W5						$7,098	$3,867
BELUGA	S014N009W6						$7,098	$3,867
BELUGA	S014N009W7						$7,098	$3,867
BELUGA	S014N009W8						$7,098	$3,867
BELUGA	S014N009W9						$7,098	$3,867
BELUGA	S014N009W10						$7,098	$3,867
BELUGA	S014N009W11						$7,098	$3,867
BELUGA	S014N009W12						$7,098	$3,867
BELUGA	S014N009W13						$7,098	$3,867
BELUGA	S014N009W14						$7,098	$3,867
BELUGA	S014N009W15						$7,098	$3,867
BELUGA	S014N009W16						$7,098	$3,867
BELUGA	S014N009W17						$7,098	$3,867
BELUGA	S014N009W18						$7,098	$3,867
BELUGA	S014N009W20						$7,098	$3,867
BELUGA	S014N009W21						$7,098	$3,867
BELUGA	S014N009W22						$7,098	$3,867
BELUGA	S014N009W23						$7,098	$3,867
BELUGA	S014N009W24						$7,098	$3,867
BELUGA	S014N009W25						$7,098	$3,867
BELUGA	S014N009W26						$7,098	$3,867
BELUGA	S014N009W27						$7,098	$3,867
BELUGA	S014N009W28						$7,098	$3,867
BELUGA	S014N009W32						$7,098	$3,867
BELUGA	S014N009W33						$7,098	$3,867
BELUGA	S014N009W34						$7,098	$3,867
BELUGA	S014N010W1						$7,098	$3,867
BELUGA	S014N010W2						$7,098	$3,867
BELUGA	S014N010W3						$7,098	$3,867
BELUGA	S014N010W10						$7,098	$3,867
BELUGA	S014N010W11						$7,098	$3,867
BELUGA	S014N010W12						$7,098	$3,867
BELUGA	S014N010W13						$7,098	$3,867
BELUGA	S014N010W14						$7,098	$3,867
BELUGA	S014N010W24						$7,098	$3,867
BELUGA	S014N010W25						$7,098	$3,867
BELUGA	S014N010W36						$7,098	$3,867
BELUGA	S015N008W6						$7,098	$3,867
BELUGA	S015N008W19						$7,098	$3,867
BELUGA	S015N008W30						$7,098	$3,867
BELUGA	S015N008W31						$7,098	$3,867
BELUGA	S015N009W2						$7,098	$3,867
BELUGA	S015N009W3						$7,098	$3,867
BELUGA	S015N009W5						$7,098	$3,867
BELUGA	S015N009W6						$7,098	$3,867
BELUGA	S015N009W8						$7,098	$3,867
BELUGA	S015N009W9						$7,098	$3,867
BELUGA	S015N009W10						$7,098	$3,867
BELUGA	S015N009W13						$7,098	$3,867
BELUGA	S015N009W15						$7,098	$3,867
BELUGA	S015N009W16						$7,098	$3,867
BELUGA	S015N009W17						$7,098	$3,867
BELUGA	S015N009W18						$7,098	$3,867
BELUGA	S015N009W19						$7,098	$3,867
BELUGA	S015N009W21						$7,098	$3,867
BELUGA	S015N009W24						$7,098	$3,867
BELUGA	S015N009W25						$7,098	$3,867
BELUGA	S015N009W27						$7,098	$3,867
BELUGA	S015N009W28						$7,098	$3,867
BELUGA	S015N009W31						$7,098	$3,867
BELUGA	S015N009W32						$7,098	$3,867
BELUGA	S015N009W33						$7,098	$3,867
BELUGA	S015N009W34						$7,098	$3,867
BELUGA	S015N009W36						$7,098	$3,867

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
BELUGA	S015N010W1	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W2	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W3	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W4	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W10	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W11	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W12	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W13	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W14	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W15	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W22	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W23	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W24	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W25	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W26	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W35	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S015N010W36	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N008W18	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N008W19	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N008W30	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N008W31	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W7	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W19	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W20	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W21	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W22	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W23	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W24	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W25	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W26	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W27	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W28	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W29	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W30	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W31	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W34	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W35	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N009W36	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W11	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W12	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W14	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W15	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W21	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W22	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W23	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W25	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W26	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W27	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W28	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W33	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
BELUGA	S016N010W36	640	TYONEK B3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W2	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W3	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W11	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W13	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W14	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W23	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W24	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W26	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W27	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S022N008W17	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S022N008W18	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S021N008W34	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S022N008W26	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S022N008W33	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
KAHILTNA	S022N008W34	640	TYONEK D2&3	SCMA	$11,090,013	$6,041,713	1								
PORTAGE CK	S022N018W19	640	TYONEK D7&8	HSAULB	$47,302,439	$0	1	PLACAUPG	$12,020,466	$3,659,219	1				
PORTAGE CK	S022N018W20	640	TYONEK D7&8	HSAULB	$47,302,439	$0	1	PLACAUPG	$12,020,466	$3,659,219	1				
PORTAGE CK	S022N018W29	640	TYONEK D7&8	HSAULB	$47,302,439	$0	1	PLACAUPG	$12,020,466	$3,659,219	1				
PORTAGE CK	S022N018W30	640	TYONEK D7&8	HSAULB	$47,302,439	$0	1	PLACAUPG	$12,020,466	$3,659,219	1				
BULLION MTN	S020N001W25	640	ANCHORAGE D7	LSAOCHAND	$9,230,162	$4,110,152	7								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
BELUGA	S015N010W1						$7,098	$3,867
BELUGA	S015N010W2						$7,098	$3,867
BELUGA	S015N010W3						$7,098	$3,867
BELUGA	S015N010W4						$7,098	$3,867
BELUGA	S015N010W10						$7,098	$3,867
BELUGA	S015N010W11						$7,098	$3,867
BELUGA	S015N010W12						$7,098	$3,867
BELUGA	S015N010W13						$7,098	$3,867
BELUGA	S015N010W14						$7,098	$3,867
BELUGA	S015N010W15						$7,098	$3,867
BELUGA	S015N010W22						$7,098	$3,867
BELUGA	S015N010W23						$7,098	$3,867
BELUGA	S015N010W24						$7,098	$3,867
BELUGA	S015N010W25						$7,098	$3,867
BELUGA	S015N010W26						$7,098	$3,867
BELUGA	S015N010W35						$7,098	$3,867
BELUGA	S015N010W36						$7,098	$3,867
BELUGA	S016N008W18						$7,098	$3,867
BELUGA	S016N008W19						$7,098	$3,867
BELUGA	S016N008W30						$7,098	$3,867
BELUGA	S016N008W31						$7,098	$3,867
BELUGA	S016N009W7						$7,098	$3,867
BELUGA	S016N009W19						$7,098	$3,867
BELUGA	S016N009W20						$7,098	$3,867
BELUGA	S016N009W21						$7,098	$3,867
BELUGA	S016N009W22						$7,098	$3,867
BELUGA	S016N009W23						$7,098	$3,867
BELUGA	S016N009W24						$7,098	$3,867
BELUGA	S016N009W25						$7,098	$3,867
BELUGA	S016N009W26						$7,098	$3,867
BELUGA	S016N009W27						$7,098	$3,867
BELUGA	S016N009W28						$7,098	$3,867
BELUGA	S016N009W29						$7,098	$3,867
BELUGA	S016N009W30						$7,098	$3,867
BELUGA	S016N009W31						$7,098	$3,867
BELUGA	S016N009W34						$7,098	$3,867
BELUGA	S016N009W35						$7,098	$3,867
BELUGA	S016N009W36						$7,098	$3,867
BELUGA	S016N010W11						$7,098	$3,867
BELUGA	S016N010W12						$7,098	$3,867
BELUGA	S016N010W14						$7,098	$3,867
BELUGA	S016N010W15						$7,098	$3,867
BELUGA	S016N010W21						$7,098	$3,867
BELUGA	S016N010W22						$7,098	$3,867
BELUGA	S016N010W23						$7,098	$3,867
BELUGA	S016N010W25						$7,098	$3,867
BELUGA	S016N010W26						$7,098	$3,867
BELUGA	S016N010W27						$7,098	$3,867
BELUGA	S016N010W28						$7,098	$3,867
BELUGA	S016N010W33						$7,098	$3,867
BELUGA	S016N010W36						$7,098	$3,867
KAHILTNA	S021N008W2						$7,098	$3,867
KAHILTNA	S021N008W3						$7,098	$3,867
KAHILTNA	S021N008W11						$7,098	$3,867
KAHILTNA	S021N008W13						$7,098	$3,867
KAHILTNA	S021N008W14						$7,098	$3,867
KAHILTNA	S021N008W23						$7,098	$3,867
KAHILTNA	S021N008W24						$7,098	$3,867
KAHILTNA	S021N008W26						$7,098	$3,867
KAHILTNA	S021N008W27						$7,098	$3,867
KAHILTNA	S022N008W17						$7,098	$3,867
KAHILTNA	S022N008W18						$7,098	$3,867
KAHILTNA	S021N008W34						$7,098	$3,867
KAHILTNA	S022N008W28						$7,098	$3,867
KAHILTNA	S022N008W33						$7,098	$3,867
KAHILTNA	S022N008W34						$7,098	$3,867
PORTAGE CK	S022N018W19						$37,867	$2,342
PORTAGE CK	S022N018W20						$37,867	$2,342
PORTAGE CK	S022N018W29						$37,867	$2,342
PORTAGE CK	S022N018W30						$37,867	$2,342
BULLION MTN	S020N001W25						$41,351	$18,413

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
BULLION MTN	S020N001W36	640	ANCHORAGE D7	LSAOCHAND	$9,230,162	$4,110,152	7								
BULLION MTN	S020N001E29	640	ANCHORAGE D7	LSAOCHAND	$9,230,162	$4,110,152	7								
BULLION MTN	S020N001E30	640	ANCHORAGE D7	LSAOCHAND	$9,230,162	$4,110,152	7								
BULLION MTN	S020N001E31	640	ANCHORAGE D7	LSAOCHAND	$9,230,162	$4,110,152	7								
BULLION MTN	S020N001E32	640	ANCHORAGE D7	LSAOCHAND	$9,230,162	$4,110,152	7								
LAST CHANCE	K001S017W4	640	BENDELEBEN B1	LSAOCHAND	$9,230,162	$4,110,152	1								
LAST CHANCE	K001S017W9	640	BENDELEBEN B1	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W8	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W9	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W12	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W13	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W16	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W17	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W21	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W22	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W23	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W24	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W26	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W27	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W28	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W29	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W30	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W31	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W32	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W34	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W35	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N029W36	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N030W25	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K001N030W36	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K002N030W27	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K002N030W28	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K003N028W15	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
KOUGAROK RIVER	K003N028W16	640	BENDELEBEN B6, C5&6	LSAOCHAND	$9,230,162	$4,110,152	1								
YAKATAGA	C020S017E35	640	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C020S017E36	640	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C020S018E31	590	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C020S018E32	520	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C020S018E33	370	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C020S018E34	480	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C020S018E35	480	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S011E15	300	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S011E16	70	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E15	4.99	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E25	500	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E26	500	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E27	525	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E28	615	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E29	640	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E30	638	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E31	80	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S013E32	30	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S014E22	300	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S014E23	440	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S014E24	240	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S014E27	20	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S014E28	220	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S014E29	210	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S014E30	440	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S015E12	40	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S015E13	260	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S015E14	300	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S015E15	300	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S015E16	520	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S015E17	630	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S015E18	634	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S015E19	80	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S016E13	520	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S016E14	510	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S016E15	440	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S016E16	400	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S016E17	210	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
BULLION MTN	S020N001W36						$41,351	$18,413
BULLION MTN	S020N001E29						$41,351	$18,413
BULLION MTN	S020N001E30						$41,351	$18,413
BULLION MTN	S020N001E31						$41,351	$18,413
BULLION MTN	S020N001E32						$41,351	$18,413
LAST CHANCE	K001S017W4						$5,907	$2,630
LAST CHANCE	K001S017W9						$5,907	$2,630
KOUGAROK RIVER	K001N029W8						$5,907	$2,630
KOUGAROK RIVER	K001N029W9						$5,907	$2,630
KOUGAROK RIVER	K001N029W12						$5,907	$2,630
KOUGAROK RIVER	K001N029W13						$5,907	$2,630
KOUGAROK RIVER	K001N029W16						$5,907	$2,630
KOUGAROK RIVER	K001N029W17						$5,907	$2,630
KOUGAROK RIVER	K001N029W21						$5,907	$2,630
KOUGAROK RIVER	K001N029W22						$5,907	$2,630
KOUGAROK RIVER	K001N029W23						$5,907	$2,630
KOUGAROK RIVER	K001N029W24						$5,907	$2,630
KOUGAROK RIVER	K001N029W26						$5,907	$2,630
KOUGAROK RIVER	K001N029W27						$5,907	$2,630
KOUGAROK RIVER	K001N029W28						$5,907	$2,630
KOUGAROK RIVER	K001N029W29						$5,907	$2,630
KOUGAROK RIVER	K001N029W30						$5,907	$2,630
KOUGAROK RIVER	K001N029W31						$5,907	$2,630
KOUGAROK RIVER	K001N029W32						$5,907	$2,630
KOUGAROK RIVER	K001N029W34						$5,907	$2,630
KOUGAROK RIVER	K001N029W35						$5,907	$2,630
KOUGAROK RIVER	K001N029W36						$5,907	$2,630
KOUGAROK RIVER	K001N030W25						$5,907	$2,630
KOUGAROK RIVER	K001N030W36						$5,907	$2,630
KOUGAROK RIVER	K002N030W27						$5,907	$2,630
KOUGAROK RIVER	K002N030W28						$5,907	$2,630
KOUGAROK RIVER	K003N028W15						$5,907	$2,630
KOUGAROK RIVER	K003N028W16						$5,907	$2,630
YAKATAGA	C020S017E35							
YAKATAGA	C020S017E36							
YAKATAGA	C020S018E31							
YAKATAGA	C020S018E32							
YAKATAGA	C020S018E33							
YAKATAGA	C020S018E34							
YAKATAGA	C020S018E35							
YAKATAGA	C021S011E15							
YAKATAGA	C021S011E16							
YAKATAGA	C021S013E15							
YAKATAGA	C021S013E25							
YAKATAGA	C021S013E26							
YAKATAGA	C021S013E27							
YAKATAGA	C021S013E28							
YAKATAGA	C021S013E29							
YAKATAGA	C021S013E30							
YAKATAGA	C021S013E31							
YAKATAGA	C021S013E32							
YAKATAGA	C021S014E22							
YAKATAGA	C021S014E23							
YAKATAGA	C021S014E24							
YAKATAGA	C021S014E27							
YAKATAGA	C021S014E28							
YAKATAGA	C021S014E29							
YAKATAGA	C021S014E30							
YAKATAGA	C021S015E12							
YAKATAGA	C021S015E13							
YAKATAGA	C021S015E14							
YAKATAGA	C021S015E15							
YAKATAGA	C021S015E16							
YAKATAGA	C021S015E17							
YAKATAGA	C021S015E18							
YAKATAGA	C021S015E19							
YAKATAGA	C021S016E13							
YAKATAGA	C021S016E14							
YAKATAGA	C021S016E15							
YAKATAGA	C021S016E16							
YAKATAGA	C021S016E17							

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
YAKATAGA	C021S016E18	175	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E11	320	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E12	530	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E13	490	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E14	220	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E15	5	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E16	640	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E17	640	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E18	307.02	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E19	0.27	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E20	80	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E21	162.89	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E23	266.61	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E24	560	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E25	124.27	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S017E26	0.64	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E02	480	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E03	530	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E04	260	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E05	430	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E07	640	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E08	530	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E09	530	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E10	530	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E11	510	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E12	250	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E13	530	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E14	360	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E15	180	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E16	280	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E17	360	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E18	640	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E19	240	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E25	160	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E26	320	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E27	320	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E28	320	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E29	500	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E30	360.21	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E35	80	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S018E36	240	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E07	125	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E08	280	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E09	160	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E10	80	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E14	340	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E15	340	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E16	240	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E17	200	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E18	160	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E19	40	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E20	320	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E21	320	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E22	320	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E23	200	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E27	350	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E28	640	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E29	570	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E30	220	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E31	228	BERING GLACIER	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E32	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E33	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E34	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E35	480	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C021S019E36	400	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S019E1	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S019E2	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S019E3	480	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S019E5	40	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S019E11	40	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S019E12	160	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
YAKATAGA	C021S016E18							
YAKATAGA	C021S017E11							
YAKATAGA	C021S017E12							
YAKATAGA	C021S017E13							
YAKATAGA	C021S017E14							
YAKATAGA	C021S017E15							
YAKATAGA	C021S017E16							
YAKATAGA	C021S017E17							
YAKATAGA	C021S017E18							
YAKATAGA	C021S017E19							
YAKATAGA	C021S017E20							
YAKATAGA	C021S017E21							
YAKATAGA	C021S017E23							
YAKATAGA	C021S017E24							
YAKATAGA	C021S017E25							
YAKATAGA	C021S017E26							
YAKATAGA	C021S018E02							
YAKATAGA	C021S018E03							
YAKATAGA	C021S018E04							
YAKATAGA	C021S018E05							
YAKATAGA	C021S018E07							
YAKATAGA	C021S018E08							
YAKATAGA	C021S018E09							
YAKATAGA	C021S018E10							
YAKATAGA	C021S018E11							
YAKATAGA	C021S018E12							
YAKATAGA	C021S018E13							
YAKATAGA	C021S018E14							
YAKATAGA	C021S018E15							
YAKATAGA	C021S018E16							
YAKATAGA	C021S018E17							
YAKATAGA	C021S018E18							
YAKATAGA	C021S018E19							
YAKATAGA	C021S018E25							
YAKATAGA	C021S018E26							
YAKATAGA	C021S018E27							
YAKATAGA	C021S018E28							
YAKATAGA	C021S018E29							
YAKATAGA	C021S018E30							
YAKATAGA	C021S018E35							
YAKATAGA	C021S018E36							
YAKATAGA	C021S019E07							
YAKATAGA	C021S019E08							
YAKATAGA	C021S019E09							
YAKATAGA	C021S019E10							
YAKATAGA	C021S019E14							
YAKATAGA	C021S019E15							
YAKATAGA	C021S019E16							
YAKATAGA	C021S019E17							
YAKATAGA	C021S019E18							
YAKATAGA	C021S019E19							
YAKATAGA	C021S019E20							
YAKATAGA	C021S019E21							
YAKATAGA	C021S019E22							
YAKATAGA	C021S019E23							
YAKATAGA	C021S019E27							
YAKATAGA	C021S019E28							
YAKATAGA	C021S019E29							
YAKATAGA	C021S019E30							
YAKATAGA	C021S019E31							
YAKATAGA	C021S019E32						$230,793	$70,257
YAKATAGA	C021S019E33						$230,793	$70,257
YAKATAGA	C021S019E34						$230,793	$70,257
YAKATAGA	C021S019E35							
YAKATAGA	C021S019E36							
YAKATAGA	C022S019E1						$230,793	$70,257
YAKATAGA	C022S019E2						$230,793	$70,257
YAKATAGA	C022S019E3						$173,095	$52,693
YAKATAGA	C022S019E5						$14,425	$4,391
YAKATAGA	C022S019E11						$14,425	$4,391
YAKATAGA	C022S019E12						$57,698	$17,564

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
YAKATAGA	C022S020E5	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S020E6	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S020E7	320	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S020E8	320	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S020E9	480	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S020E10	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S020E11	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S020E12	640	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S020E13	320	BERING GLACIER A3&4	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S023E19	360	ICY BAY	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S023E20	440	ICY BAY	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S023E29	20	ICY BAY	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S023E30	560	ICY BAY	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C022S023E31	60	ICY BAY	PLACAUPG	$12,020,466	$3,659,219	30								
YAKATAGA	C027S034E29	767	YAKUTAT C-5	PLACAUPG	$12,020,466	$3,659,219	30								
VAN CURLER'S BAR	F002N011E1	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F002N011E2	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F002N011E3	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F002N011E10	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F002N012E6	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F003N011E25	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F003N011E34	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F003N011E35	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F003N011E36	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F003N012E30	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
VAN CURLER'S BAR	F003N012E31	640	CIRCLE A3&4	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
FAR MOUNTAIN	F002N010E3	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F002N010E4	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F002N010E5	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F002N010E8	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F002N010E9	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F003N010E21	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F003N010E22	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F003N010E27	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F003N010E28	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F003N010E31	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
FAR MOUNTAIN	F003N010E34	640	CIRCLE A4	TUNSEA	$30,890,529	$10,301,224	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1
DEADWOOD CRK	F007N013E1	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E13	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E22	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E23	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E24	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E25	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E26	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E27	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E35	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N013E36	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E3	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E4	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E5	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E6	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E8	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E9	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E10	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E13	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E14	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E15	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E16	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E17	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E18	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E19	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E20	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E21	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E22	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E24	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N014E31	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N015E7	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N015E8	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N015E9	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N015E16	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F007N015E17	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
YAKATAGA	C022S020E5						$230,793	$70,257
YAKATAGA	C022S020E6						$230,793	$70,257
YAKATAGA	C022S020E7						$115,396	$35,129
YAKATAGA	C022S020E8						$115,396	$35,129
YAKATAGA	C022S020E9						$173,095	$52,693
YAKATAGA	C022S020E10						$230,793	$70,257
YAKATAGA	C022S020E11						$230,793	$70,257
YAKATAGA	C022S020E12						$230,793	$70,257
YAKATAGA	C022S020E13						$115,396	$35,129
YAKATAGA	C022S023E19							
YAKATAGA	C022S023E20							
YAKATAGA	C022S023E29							
YAKATAGA	C022S023E30							
YAKATAGA	C022S023E31							
YAKATAGA	C027S034E29							
VAN CURLER'S BAR	F002N011E1						$13,600	$4,972
VAN CURLER'S BAR	F002N011E2						$13,600	$4,972
VAN CURLER'S BAR	F002N011E3						$13,600	$4,972
VAN CURLER'S BAR	F002N011E10						$13,600	$4,972
VAN CURLER'S BAR	F002N012E6						$13,600	$4,972
VAN CURLER'S BAR	F003N011E25						$13,600	$4,972
VAN CURLER'S BAR	F003N011E34						$13,600	$4,972
VAN CURLER'S BAR	F003N011E35						$13,600	$4,972
VAN CURLER'S BAR	F003N011E36						$13,600	$4,972
VAN CURLER'S BAR	F003N012E30						$13,600	$4,972
VAN CURLER'S BAR	F003N012E31						$13,600	$4,972
FAR MOUNTAIN	F002N010E3						$33,370	$11,565
FAR MOUNTAIN	F002N010E4						$33,370	$11,565
FAR MOUNTAIN	F002N010E5						$33,370	$11,565
FAR MOUNTAIN	F002N010E8						$33,370	$11,565
FAR MOUNTAIN	F002N010E9						$33,370	$11,565
FAR MOUNTAIN	F003N010E21						$33,370	$11,565
FAR MOUNTAIN	F003N010E22						$33,370	$11,565
FAR MOUNTAIN	F003N010E27						$33,370	$11,565
FAR MOUNTAIN	F003N010E28						$33,370	$11,565
FAR MOUNTAIN	F003N010E31						$33,370	$11,565
FAR MOUNTAIN	F003N010E34						$33,370	$11,565
DEADWOOD CRK	F007N013E1						$13,600	$4,972
DEADWOOD CRK	F007N013E13						$13,600	$4,972
DEADWOOD CRK	F007N013E22						$13,600	$4,972
DEADWOOD CRK	F007N013E23						$13,600	$4,972
DEADWOOD CRK	F007N013E24						$13,600	$4,972
DEADWOOD CRK	F007N013E25						$13,600	$4,972
DEADWOOD CRK	F007N013E26						$13,600	$4,972
DEADWOOD CRK	F007N013E27						$13,600	$4,972
DEADWOOD CRK	F007N013E35						$13,600	$4,972
DEADWOOD CRK	F007N013E36						$13,600	$4,972
DEADWOOD CRK	F007N014E3						$13,600	$4,972
DEADWOOD CRK	F007N014E4						$13,600	$4,972
DEADWOOD CRK	F007N014E5						$13,600	$4,972
DEADWOOD CRK	F007N014E6						$13,600	$4,972
DEADWOOD CRK	F007N014E9						$13,600	$4,972
DEADWOOD CRK	F007N014E9						$13,600	$4,972
DEADWOOD CRK	F007N014E10						$13,600	$4,972
DEADWOOD CRK	F007N014E13						$13,600	$4,972
DEADWOOD CRK	F007N014E14						$13,600	$4,972
DEADWOOD CRK	F007N014E15						$13,600	$4,972
DEADWOOD CRK	F007N014E16						$13,600	$4,972
DEADWOOD CRK	F007N014E17						$13,600	$4,972
DEADWOOD CRK	F007N014E18						$13,600	$4,972
DEADWOOD CRK	F007N014E19						$13,600	$4,972
DEADWOOD CRK	F007N014E20						$13,600	$4,972
DEADWOOD CRK	F007N014E21						$13,600	$4,972
DEADWOOD CRK	F007N014E22						$13,600	$4,972
DEADWOOD CRK	F007N014E24						$13,600	$4,972
DEADWOOD CRK	F007N014E31						$13,600	$4,972
DEADWOOD CRK	F007N015E7						$13,600	$4,972
DEADWOOD CRK	F007N015E8						$13,600	$4,972
DEADWOOD CRK	F007N015E9						$13,600	$4,972
DEADWOOD CRK	F007N015E16						$13,600	$4,972
DEADWOOD CRK	F007N015E17						$13,600	$4,972

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
DEADWOOD CRK	F007N015E18	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F008N013E36	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F008N014E29	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F008N014E31	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F008N014E32	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
DEADWOOD CRK	F008N014E33	640	CIRCLE B2&3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E13	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E22	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E23	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E24	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E25	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E26	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E27	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E34	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N011E35	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E1	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E2	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E3	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E4	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E8	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E9	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E10	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E11	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E12	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E13	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E14	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E15	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E16	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E17	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E18	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E19	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E20	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E21	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E22	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E23	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E24	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N012E30	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F007N013E7	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F008N014E27	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MASTODON DOME	F008N014E34	640	CIRCLE B3	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
SOURDOUGH CRK	F006N008E2	640	CIRCLE B5&6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
SOURDOUGH CRK	F006N008E3	640	CIRCLE B5&6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
SOURDOUGH CRK	F006N008E10	640	CIRCLE B5&6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
SOURDOUGH CRK	F006N008E11	640	CIRCLE B5&6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
SOURDOUGH CRK	F006N008E14	640	CIRCLE B5&6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
SOURDOUGH CRK	F006N008E15	640	CIRCLE B5&6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
SOURDOUGH CRK	F007N008E34	640	CIRCLE B5&6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
SOURDOUGH CRK	F007N008E35	640	CIRCLE B5&6	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
BONANZA CRK	F006N011E1	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E4	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E5	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E6	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E7	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E8	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E9	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E10	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E11	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E12	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E13	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E14	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E15	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E16	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E17	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N011E18	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E1	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E2	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E3	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E4	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E5	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E6	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E7	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
DEADWOOD CRK	F007N015E18						$13,600	$4,972
DEADWOOD CRK	F008N013E36						$13,600	$4,972
DEADWOOD CRK	F008N014E29						$13,600	$4,972
DEADWOOD CRK	F008N014E31						$13,600	$4,972
DEADWOOD CRK	F008N014E32						$13,600	$4,972
DEADWOOD CRK	F008N014E33						$13,600	$4,972
MASTODON DOME	F007N011E13						$13,600	$4,972
MASTODON DOME	F007N011E22						$13,600	$4,972
MASTODON DOME	F007N011E23						$13,600	$4,972
MASTODON DOME	F007N011E24						$13,600	$4,972
MASTODON DOME	F007N011E25						$13,600	$4,972
MASTODON DOME	F007N011E26						$13,600	$4,972
MASTODON DOME	F007N011E27						$13,600	$4,972
MASTODON DOME	F007N011E34						$13,600	$4,972
MASTODON DOME	F007N011E35						$13,600	$4,972
MASTODON DOME	F007N012E1						$13,600	$4,972
MASTODON DOME	F007N012E2						$13,600	$4,972
MASTODON DOME	F007N012E3						$13,600	$4,972
MASTODON DOME	F007N012E4						$13,600	$4,972
MASTODON DOME	F007N012E8						$13,600	$4,972
MASTODON DOME	F007N012E9						$13,600	$4,972
MASTODON DOME	F007N012E10						$13,600	$4,972
MASTODON DOME	F007N012E11						$13,600	$4,972
MASTODON DOME	F007N012E12						$13,600	$4,972
MASTODON DOME	F007N012E13						$13,600	$4,972
MASTODON DOME	F007N012E14						$13,600	$4,972
MASTODON DOME	F007N012E15						$13,600	$4,972
MASTODON DOME	F007N012E16						$13,600	$4,972
MASTODON DOME	F007N012E17						$13,600	$4,972
MASTODON DOME	F007N012E18						$13,600	$4,972
MASTODON DOME	F007N012E19						$13,600	$4,972
MASTODON DOME	F007N012E20						$13,600	$4,972
MASTODON DOME	F007N012E21						$13,600	$4,972
MASTODON DOME	F007N012E22						$13,600	$4,972
MASTODON DOME	F007N012E23						$13,600	$4,972
MASTODON DOME	F007N012E24						$13,600	$4,972
MASTODON DOME	F007N012E30						$13,600	$4,972
MASTODON DOME	F007N013E7						$13,600	$4,972
MASTODON DOME	F008N014E27						$13,600	$4,972
MASTODON DOME	F008N014E34						$13,600	$4,972
SOURDOUGH CRK	F006N006E2						$13,600	$4,972
SOURDOUGH CRK	F006N006E3						$13,600	$4,972
SOURDOUGH CRK	F006N006E10						$13,600	$4,972
SOURDOUGH CRK	F006N006E11						$13,600	$4,972
SOURDOUGH CRK	F006N006E14						$13,600	$4,972
SOURDOUGH CRK	F006N006E15						$13,600	$4,972
SOURDOUGH CRK	F007N006E34						$13,600	$4,972
SOURDOUGH CRK	F007N006E35						$13,600	$4,972
BONANZA CRK	F006N011E1						$316,557	$94,492
BONANZA CRK	F006N011E4						$316,557	$94,492
BONANZA CRK	F006N011E5						$316,557	$94,492
BONANZA CRK	F006N011E6						$316,557	$94,492
BONANZA CRK	F006N011E7						$316,557	$94,492
BONANZA CRK	F006N011E8						$316,557	$94,492
BONANZA CRK	F006N011E9						$316,557	$94,492
BONANZA CRK	F006N011E10						$316,557	$94,492
BONANZA CRK	F006N011E11						$316,557	$94,492
BONANZA CRK	F006N011E12						$316,557	$94,492
BONANZA CRK	F006N011E13						$316,557	$94,492
BONANZA CRK	F006N011E14						$316,557	$94,492
BONANZA CRK	F006N011E15						$316,557	$94,492
BONANZA CRK	F006N011E16						$316,557	$94,492
BONANZA CRK	F006N011E17						$316,557	$94,492
BONANZA CRK	F006N011E18						$316,557	$94,492
BONANZA CRK	F006N012E1						$316,557	$94,492
BONANZA CRK	F006N012E2						$316,557	$94,492
BONANZA CRK	F006N012E3						$316,557	$94,492
BONANZA CRK	F006N012E4						$316,557	$94,492
BONANZA CRK	F006N012E5						$316,557	$94,492
BONANZA CRK	F006N012E6						$316,557	$94,492
BONANZA CRK	F006N012E7						$316,557	$94,492

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
BONANZA CRK	F006N012E8	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E11	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E12	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E13	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E14	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E17	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N012E18	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N013E3	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N013E4	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N013E7	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N013E8	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N013E17	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F006N013E18	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F007N013E29	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F007N013E30	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F007N013E31	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
BONANZA CRK	F007N013E32	640	CIRCLE C3&4	LSAOCHAND	$9,230,162	$4,110,152	1	CLEARSUM	$15,778,979	$4,662,496	30	PLACAUPG	$12,020,466	$3,659,219	1
NIBLACK	C078S088E27	640	CRAIG A1	VMSH2	$52,789,652	$28,233,488	30								
NIBLACK	C078S088E34	640	CRAIG A1	VMSH2	$52,789,652	$28,233,488	30								
NIBLACK	C078S088E35	640	CRAIG A1	VMSH2	$52,789,652	$28,233,488	30								
WALKER FORK	C027N019E18	640	EAGLE A2	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
WALKER FORK	C027N019E19	640	EAGLE A2	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
GOODNEWS	S012S075W17	640	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W18	160	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W20	480	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W24	640	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W25	160	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W26	640	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W28	640	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W29	80	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W33	240	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W34	640	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
GOODNEWS	S012S075W35	160	GOODNEWS BAY A8	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
RED MTN	S015S075W4	160	HAGEMEISTER ISL. D6	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
RED MTN	S015S075W9	160	HAGEMEISTER ISL. D6	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
RED MTN	S015S075W15	640	HAGEMEISTER ISL. D6	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
RED MTN	S015S075W22	480	HAGEMEISTER ISL. D6	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
RED MTN	S015S075W27	320	HAGEMEISTER ISL. D6	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
RED MTN	S015S075W34	160	HAGEMEISTER ISL. D6	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
RED MTN	S016S075W3	40	HAGEMEISTER ISL. D6	CHRMKE	$3,128,979	$1,585,083	30	PLACAUPG	$12,020,466	$3,659,219	30				
BUTTE CREEK	F020S002W19	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S002W20	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S002W29	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S002W30	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S002W31	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S002W32	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S003W14	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S003W23	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S003W24	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S003W25	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S003W26	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S003W35	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F020S003W33	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F021S002W5	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
BUTTE CREEK	F021S002W6	640	HEALY A2&3	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F020S012W21	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F020S012W22	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F020S012W27	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F020S012W28	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F020S012W33	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F020S012W34	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F020S012W35	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F021S012W2	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F021S012W3	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F021S012W4	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
OHIO CREEK	F021S012W10	640	HEALY A6	POLTGOLD	$24,365,009	$12,898,640	1								
NAT. PET. RES.	U007S027W5	640	HOWARD PASS D4	SEDEXLIK	$99,258,182	$55,696,232	1								
NAT. PET. RES.	U007S027W8	640	HOWARD PASS D4	SEDEXLIK	$99,258,182	$55,696,232	1								
NAT. PET. RES.	U008S028W30	640	HOWARD PASS D5	SEDEXLIK	$99,258,182	$55,696,232	1								
NAT. PET. RES.	U008S029W25	640	HOWARD PASS D5	SEDEXLIK	$99,258,182	$55,696,232	1								
NAT. PET. RES.	U008S028W7	640	HOWARD PASS D5	SEDEXLIK	$99,258,182	$55,696,232	1								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4	NPV OF NSR	NPV OF NPI
BONANZA CRK	F006N012E8					$316,557	$94,492
BONANZA CRK	F006N012E11					$316,557	$94,492
BONANZA CRK	F006N012E12					$316,557	$94,492
BONANZA CRK	F006N012E13					$316,557	$94,492
BONANZA CRK	F006N012E14					$316,557	$94,492
BONANZA CRK	F006N012E17					$316,557	$94,492
BONANZA CRK	F006N012E18					$316,557	$94,492
BONANZA CRK	F006N013E3					$316,557	$94,492
BONANZA CRK	F006N013E4					$316,557	$94,492
BONANZA CRK	F006N013E7					$316,557	$94,492
BONANZA CRK	F006N013E8					$316,557	$94,492
BONANZA CRK	F006N013E17					$316,557	$94,492
BONANZA CRK	F006N013E18					$316,557	$94,492
BONANZA CRK	F007N013E29					$316,557	$94,492
BONANZA CRK	F007N013E30					$316,557	$94,492
BONANZA CRK	F007N013E31					$316,557	$94,492
BONANZA CRK	F007N013E32					$316,557	$94,492
NIBLACK	C078S088E27					$1,013,561	$542,083
NIBLACK	C078S088E34					$1,013,561	$542,083
NIBLACK	C078S088E35					$1,013,561	$542,083
WALKER FORK	C027N019E18					$13,600	$4,972
WALKER FORK	C027N019E19					$13,600	$4,972
GOODNEWS	S012S075W17					$290,869	$100,691
GOODNEWS	S012S075W18					$72,717	$25,173
GOODNEWS	S012S075W20					$218,152	$75,518
GOODNEWS	S012S075W24					$290,869	$100,691
GOODNEWS	S012S075W25					$72,717	$25,173
GOODNEWS	S012S075W26					$290,869	$100,691
GOODNEWS	S012S075W28					$290,869	$100,691
GOODNEWS	S012S075W29					$36,359	$12,586
GOODNEWS	S012S075W33					$109,076	$37,759
GOODNEWS	S012S075W34					$290,869	$100,691
GOODNEWS	S012S075W35					$72,717	$25,173
RED MTN	S015S075W4					$72,717	$25,173
RED MTN	S015S075W9					$72,717	$25,173
RED MTN	S015S075W15					$290,869	$100,691
RED MTN	S015S075W22					$218,152	$75,518
RED MTN	S015S075W27					$145,435	$50,346
RED MTN	S015S075W34					$72,717	$25,173
RED MTN	S016S075W3					$18,179	$6,293
BUTTE CREEK	F020S002W19					$15,594	$8,255
BUTTE CREEK	F020S002W20					$15,594	$8,255
BUTTE CREEK	F020S002W29					$15,594	$8,255
BUTTE CREEK	F020S002W30					$15,594	$8,255
BUTTE CREEK	F020S002W31					$15,594	$8,255
BUTTE CREEK	F020S002W32					$15,594	$8,255
BUTTE CREEK	F020S003W14					$15,594	$8,255
BUTTE CREEK	F020S003W23					$15,594	$8,255
BUTTE CREEK	F020S003W24					$15,594	$8,255
BUTTE CREEK	F020S003W25					$15,594	$8,255
BUTTE CREEK	F020S003W26					$15,594	$8,255
BUTTE CREEK	F020S003W35					$15,594	$8,255
BUTTE CREEK	F020S003W36					$15,594	$8,255
BUTTE CREEK	F021S002W5					$15,594	$8,255
BUTTE CREEK	F021S002W6					$15,594	$8,255
OHIO CREEK	F020S012W21					$15,594	$8,255
OHIO CREEK	F020S012W22					$15,594	$8,255
OHIO CREEK	F020S012W27					$15,594	$8,255
OHIO CREEK	F020S012W28					$15,594	$8,255
OHIO CREEK	F020S012W33					$15,594	$8,255
OHIO CREEK	F020S012W34					$15,594	$8,255
OHIO CREEK	F020S012W35					$15,594	$8,255
OHIO CREEK	F021S012W2					$15,594	$8,255
OHIO CREEK	F021S012W3					$15,594	$8,255
OHIO CREEK	F021S012W4					$15,594	$8,255
OHIO CREEK	F021S012W10					$15,594	$8,255
NAT. PET. RES.	U007S027W5					$63,525	$35,646
NAT. PET. RES.	U007S027W8					$63,525	$35,646
NAT. PET. RES.	U006S028W30					$63,525	$35,646
NAT. PET. RES.	U006S029W25					$63,525	$35,646
NAT. PET. RES.	U008S028W7					$63,525	$35,646

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
NAT. PET. RES.	U008S029W23	640	HOWARD PASS C5	SEDEXLIK	$99,258,182	$55,696,232	1								
NAT. PET. RES.	U008S029W24	640	HOWARD PASS C5	SEDEXLIK	$99,258,182	$55,696,232	1								
NAT. PET. RES.	U008S029W25	640	HOWARD PASS C5	SEDEXLIK	$99,258,182	$55,696,232	1								
NAT. PET. RES.	U008S029W26	640	HOWARD PASS C5	SEDEXLIK	$99,258,182	$55,696,232	1								
CLOUDY MTN	K026S016E6	640	MEDFRA A6	STONEBOY	$44,693,411	$0	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	30
SUSULATNA MTN.	K023S016E13	640	MEDFRA B6&C6	STONEBOY	$44,693,411	$0	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	30
SUSULATNA MTN.	K023S016E14	640	MEDFRA B6&C6	STONEBOY	$44,693,411	$0	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	30
SUSULATNA MTN.	K023S016E23	640	MEDFRA B6&C6	STONEBOY	$44,693,411	$0	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	30
SUSULATNA MTN.	K023S016E30	640	MEDFRA B6&C6	STONEBOY	$44,693,411	$0	1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	30
SOREPAW	U008S031W13	640	MISHEGUK MT C1&D1	CHRMKE	$3,128,979	$1,585,083	1								
SOREPAW	U008S031W14	640	MISHEGUK MT C1&D1	CHRMKE	$3,128,979	$1,585,083	1								
SOREPAW	U008S031W15	640	MISHEGUK MT C1&D1	CHRMKE	$3,128,979	$1,585,083	1								
SOREPAW	U008S031W16	640	MISHEGUK MT C1&D1	CHRMKE	$3,128,979	$1,585,083	1								
RUMBLE/TOK	C016N006E1	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N006E2	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N006E3	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N006E11	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N006E12	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N006E13	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E5	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E6	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E7	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E8	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E15	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E16	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E17	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E18	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E19	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E20	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E21	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E22	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E23	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E25	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E26	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E27	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E35	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C016N007E36	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N006E23	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N006E24	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N006E25	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N006E35	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N006E36	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E19	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E20	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E21	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E22	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E23	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E26	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E27	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E28	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E29	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E30	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E31	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E32	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E33	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
RUMBLE/TOK	C017N007E34	640	MT HAYES A1	VMSLIBEL	$52,789,652	$26,289,095	1								
GUNN CRK	F020S012E17	640	MT HAYES A3	VMSLIBEL	$52,789,652	$26,289,095	1								
GUNN CRK	F020S012E20	640	MT HAYES A3	VMSLIBEL	$52,789,652	$26,289,095	1								
GUNN CRK	F020S012E28	640	MT HAYES A3	VMSLIBEL	$52,789,652	$26,289,095	1								
GUNN CRK	F020S012E29	640	MT HAYES A3	VMSLIBEL	$52,789,652	$26,289,095	1								
GUNN CRK	F020S012E33	640	MT HAYES A3	VMSLIBEL	$52,789,652	$26,289,095	1								
GUNN CRK	F021S012E4	640	MT HAYES A3	VMSLIBEL	$52,789,652	$26,289,095	1								
HOODOOS	F019S012E20	640	MT HAYES A3&4	LIME											
HOODOOS	F019S012E26	640	MT HAYES A3&4	LIME											
HOODOOS	F019S012E27	640	MT HAYES A3&4	LIME											
HOODOOS	F019S012E28	640	MT HAYES A3&4	LIME											
HOODOOS	F019S012E29	640	MT HAYES A3&4	LIME											
HOODOOS	F019S012E32	640	MT HAYES A3&4	LIME											
HOODOOS	F019S012E33	640	MT HAYES A3&4	LIME											
MENTASTA	C014N009E33	640	NABESNA D6	VMSLIBEL	$52,789,652	$26,289,095	1								
MENTASTA	C014N009E36	640	NABESNA D6	VMSLIBEL	$52,789,652	$26,289,095	1								

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
NAT. PET. RES.	U008S029W23						$63,525	$35,646
NAT. PET. RES.	U008S029W24						$63,525	$35,646
NAT. PET. RES.	U008S029W25						$63,525	$35,646
NAT. PET. RES.	U008S029W26						$63,525	$35,646
CLOUDY MTN	K026S016E6						$265,304	$72,888
SUSULATNA MTN.	K023S016E13						$265,304	$72,888
SUSULATNA MTN.	K023S016E14						$265,304	$72,888
SUSULATNA MTN.	K023S016E23						$265,304	$72,888
SUSULATNA MTN.	K023S016E30						$265,304	$72,888
SOREPAW	U008S031W13						$2,003	$1,014
SOREPAW	U008S031W14						$2,003	$1,014
SOREPAW	U008S031W15						$2,003	$1,014
SOREPAW	U008S031W16						$2,003	$1,014
RUMBLE/TOK	C016N006E1						$33,785	$16,825
RUMBLE/TOK	C016N006E2						$33,785	$16,825
RUMBLE/TOK	C016N006E3						$33,785	$16,825
RUMBLE/TOK	C016N006E11						$33,785	$16,825
RUMBLE/TOK	C016N006E12						$33,785	$16,825
RUMBLE/TOK	C016N006E13						$33,785	$16,825
RUMBLE/TOK	C016N007E5						$33,785	$16,825
RUMBLE/TOK	C016N007E6						$33,785	$16,825
RUMBLE/TOK	C016N007E7						$33,785	$16,825
RUMBLE/TOK	C016N007E8						$33,785	$16,825
RUMBLE/TOK	C016N007E15						$33,785	$16,825
RUMBLE/TOK	C016N007E16						$33,785	$16,825
RUMBLE/TOK	C016N007E17						$33,785	$16,825
RUMBLE/TOK	C016N007E18						$33,785	$16,825
RUMBLE/TOK	C016N007E19						$33,785	$16,825
RUMBLE/TOK	C016N007E20						$33,785	$16,825
RUMBLE/TOK	C016N007E21						$33,785	$16,825
RUMBLE/TOK	C016N007E22						$33,785	$16,825
RUMBLE/TOK	C016N007E23						$33,785	$16,825
RUMBLE/TOK	C016N007E25						$33,785	$16,825
RUMBLE/TOK	C016N007E26						$33,785	$16,825
RUMBLE/TOK	C016N007E27						$33,785	$16,825
RUMBLE/TOK	C016N007E35						$33,785	$16,825
RUMBLE/TOK	C016N007E36						$33,785	$16,825
RUMBLE/TOK	C017N006E23						$33,785	$16,825
RUMBLE/TOK	C017N006E24						$33,785	$16,825
RUMBLE/TOK	C017N006E25						$33,785	$16,825
RUMBLE/TOK	C017N006E35						$33,785	$16,825
RUMBLE/TOK	C017N006E36						$33,785	$16,825
RUMBLE/TOK	C017N007E19						$33,785	$16,825
RUMBLE/TOK	C017N007E20						$33,785	$16,825
RUMBLE/TOK	C017N007E21						$33,785	$16,825
RUMBLE/TOK	C017N007E22						$33,785	$16,825
RUMBLE/TOK	C017N007E23						$33,785	$16,825
RUMBLE/TOK	C017N007E26						$33,785	$16,825
RUMBLE/TOK	C017N007E27						$33,785	$16,825
RUMBLE/TOK	C017N007E28						$33,785	$16,825
RUMBLE/TOK	C017N007E29						$33,785	$16,825
RUMBLE/TOK	C017N007E30						$33,785	$16,825
RUMBLE/TOK	C017N007E31						$33,785	$16,825
RUMBLE/TOK	C017N007E32						$33,785	$16,825
RUMBLE/TOK	C017N007E33						$33,785	$16,825
RUMBLE/TOK	C017N007E34						$33,785	$16,825
GUNN CRK	F020S012E17						$33,785	$16,825
GUNN CRK	F020S012E20						$33,785	$16,825
GUNN CRK	F020S012E28						$33,785	$16,825
GUNN CRK	F020S012E29						$33,785	$16,825
GUNN CRK	F020S012E33						$33,785	$16,825
GUNN CRK	F021S012E4						$33,785	$16,825
HOODOOS	F019S012E20						$0	$0
HOODOOS	F019S012E26						$0	$0
HOODOOS	F019S012E27						$0	$0
HOODOOS	F019S012E28						$0	$0
HOODOOS	F019S012E29						$0	$0
HOODOOS	F019S012E32						$0	$0
HOODOOS	F019S012E33						$0	$0
MENTASTA	C014N009E33						$33,785	$16,825
MENTASTA	C014N009E36						$33,785	$16,825

NAME	TOWNSHIP	TOTAC	QUAD	MIN DEPT1	NPV NSRT1	NPV NPIT1	PROB OFT	MIN DEPT2	NPV NSRT2	NPV NPIT2	PROB OFT	MIN DEPT3	NPV NSRT3	NPV NPIT3	PROB OFT
MULGRAVE HILLS	K028N020W2	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K028N020W3	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K028N020W4	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K029N019W30	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K029N019W31	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K029N020W25	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K029N020W26	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K029N020W34	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K029N020W35	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MULGRAVE HILLS	K029N020W36	640	NOATAK D3	SEDEXLIK	$99,258,182	$55,696,232	1								
MOUNT DISTIN	K008S033W13	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S033W14	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S033W23	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S033W24	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S033W25	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S033W26	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S033W35	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S034W24	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S034W26	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				
MOUNT DISTIN	K008S034W36	640	NOME C1&D1	LSAOCHAND	$9,230,162	$4,110,152	1	PLACAUPG	$12,020,466	$3,659,219	1				

NAME	TOWNSHIP	MIN DEPT4	NPV NSRT4	NPV NPIT4	PROB OFT4		NPV OF NSR	NPV OF NPI
MULGRAVE HILLS	K028N020W2						$63,525	$35,646
MULGRAVE HILLS	K028N020W3						$63,525	$35,646
MULGRAVE HILLS	K028N020W4						$63,525	$35,646
MULGRAVE HILLS	K029N019W30						$63,525	$35,646
MULGRAVE HILLS	K029N019W31						$63,525	$35,646
MULGRAVE HILLS	K029N020W25						$63,525	$35,646
MULGRAVE HILLS	K029N020W26						$63,525	$35,646
MULGRAVE HILLS	K029N020W34						$63,525	$35,646
MULGRAVE HILLS	K029N020W35						$63,525	$35,646
MULGRAVE HILLS	K029N020W36						$63,525	$35,646
MOUNT DISTIN	K008S033W13						$13,600	$4,972
MOUNT DISTIN	K008S033W14						$13,600	$4,972
MOUNT DISTIN	K008S033W23						$13,600	$4,972
MOUNT DISTIN	K008S033W24						$13,600	$4,972
MOUNT DISTIN	K008S033W25						$13,600	$4,972
MOUNT DISTIN	K008S033W26						$13,600	$4,972
MOUNT DISTIN	K008S033W35						$13,600	$4,972
MOUNT DISTIN	K008S034W24						$13,600	$4,972
MOUNT DISTIN	K008S034W26						$13,600	$4,972
MOUNT DISTIN	K008S034W36						$13,600	$4,972

APPENDIX G

EXPECTED NET PRESENT VALUE OF ROYALTY INCOME FROM METALLIC MINERAL RESOURCES ON PROPOSED SUBSTITUTE LANDS UNDER HB 201

							EXPECTED MINERAL NET PRES	
PRIOR	PAR NUM		PLAY NUM	ACREAGE	TOTAL ACRE IN PLAY	TOTAL ACRE IN PARCEL	TOWNSHIP	QUAD
			PLAY 5-0	320			T1S,R4E,19	BIG DELTA
				320			T1S,R4E,20	BIG DELTA
				320			T1S,R4E,21	BIG DELTA
				320			T1S,R4E,22	BIG DELTA
				320			T1S,R4E,23	BIG DELTA
				640			T1S,R4E,26	BIG DELTA
				640			T1S,R4E,27	BIG DELTA
				640			T1S,R4E,28	BIG DELTA
				640			T1S,R4E,29	BIG DELTA
				640			T1S,R4E,30	BIG DELTA
				640			T1S,R4E,31	BIG DELTA
				640			T1S,R4E,32	BIG DELTA
				640			T1S,R4E,33	BIG DELTA
				640			T1S,R4E,34	BIG DELTA
				640			T1S,R4E,35	BIG DELTA
				320			T1S,R5E,20	BIG DELTA
				320			T1S,R5E,21	BIG DELTA
				320			T1S,R5E,24	BIG DELTA
				640			T1S,R5E,28	BIG DELTA
				640			T1S,R5E,29	BIG DELTA
				640			T1S,R5E,30	BIG DELTA
				640			T1S,R5E,32	BIG DELTA
				640			T1S,R5E,34	BIG DELTA
				640			T1S,R5E,35	BIG DELTA
				320			T1S,R6E,19	BIG DELTA
				320			T1S,R6E,20	BIG DELTA
				320			T1S,R6E,21	BIG DELTA
				640			T1S,R6E,28	BIG DELTA
				640			T1S,R6E,29	BIG DELTA
				640			T1S,R6E,30	BIG DELTA
				640			T1S,R6E,31	BIG DELTA

				640			T1S,R6E,32	BIG DELTA
				640			T1S,R6E,33	BIG DELTA
				640			T2S,R4E,06	BIG DELTA
				640			T2S,R4E,07	BIG DELTA
				640			T2S,R4E,08	BIG DELTA
				640			T2S,RE4,09	BIG DELTA
				640			T2S,R4E,16	BIG DELTA
				640			T2S,R4E,17	BIG DELTA
				640			T2S,R4E,18	BIG DELTA
				640			T2S,R4E,19	BIG DELTA
				640			T2S,R4E,20	BIG DELTA
				640			T2S,R4E,21	BIG DELTA
				640			T2S,R4E,22	BIG DELTA
				640			T2S,R4E,27	BIG DELTA
				640			T2S,R4E,28	BIG DELTA
				640			T2S,R4E,29	BIG DELTA
				640			T2S,R4E,32	BIG DELTA
				640			T2S,R4E,33	BIG DELTA
				640			T2S,R4E,34	BIG DELTA
				640			T2S,R4E,35	BIG DELTA
				640			T2S,R4E,36	BIG DELTA
				640			T2S,R5E,01	BIG DELTA
				640			T2S,R5E,02	BIG DELTA
				640			T2S,R5E,04	BIG DELTA
				640			T2S,R5E,05	BIG DELTA
				640			T2S,R5E,06	BIG DELTA
				640			T2S,R5E,11	BIG DELTA
				640			T2S,R5E,12	BIG DELTA
				640			T2S,R5E,13	BIG DELTA
				640			T2S,R6E,03	BIG DELTA
				640			T2S,R6E,04	BIG DELTA
				640			T2S,R6E,05	BIG DELTA
				640			T2S,R6E,06	BIG DELTA
				640			T2S,R6E,12	BIG DELTA
				640			T2S,R6E,13	BIG DELTA
				640			T2S,R6E,15	BIG DELTA

				640			T2S,R6E,16	BIG DELTA
				640			T2S,R6E,17	BIG DELTA
				640			T2S,R6E,18	BIG DELTA
				640			T2S,R6E,19	BIG DELTA
				640			T2S,R6E,20	BIG DELTA
				640			T2S,R6E,21	BIG DELTA
				640			T2S,R6E,22	BIG DELTA
				640			T2S,R6E,24	BIG DELTA
				640			T2S,R6E,35	BIG DELTA
				640			T2S,R6E,36	BIG DELTA
				640			T2S,R7E,07	BIG DELTA
				640			T2S,R7E,08	BIG DELTA
				640			T2S,R7E,09	BIG DELTA
				640			T2S,R7E,10	BIG DELTA
				640			T2S,R7E,11	BIG DELTA
				640			T2S,R7E,12	BIG DELTA
				640			T2S,R7E,13	BIG DELTA
				640			T2S,R7E,14	BIG DELTA
				640			T2S,R7E,15	BIG DELTA
				640			T2S,R7E,16	BIG DELTA
				640			T2S,R7E,17	BIG DELTA
				640			T2S,R7E,18	BIG DELTA
				640			T2S,R7E,19	BIG DELTA
				640			T2S,R7E,20	BIG DELTA
				640			T2S,R7E,21	BIG DELTA
				640			T2S,R7E,22	BIG DELTA
				640			T2S,R7E,23	BIG DELTA
				640			T2S,R7E,24	BIG DELTA
				640			T2S,R7E,25	BIG DELTA
				640			T2S,R7E,26	BIG DELTA
				640			T2S,R7E,27	BIG DELTA
				640			T2S,R7E,28	BIG DELTA
				640			T2S,R7E,29	BIG DELTA
				640			T2S,R7E,30	BIG DELTA
				640			T2S,R7E,32	BIG DELTA
				640			T2S,R7E,34	BIG DELTA

				640			T2S,R7E,35	BIG DELTA
				63040	63040			
			PLAY 5-7	640			T2S,R4E,01	BIG DELTA
				640			T2S,R4E,02	BIG DELTA
				640			T2S,R4E,03	BIG DELTA
				640			T2S,R4E,10	BIG DELTA
				640			T2S,R4E,11	BIG DELTA
				640			T2S,R4E,12	BIG DELTA
				640			T2S,R4E,13	BIG DELTA
				640			T2S,R4E,14	BIG DELTA
				640			T2S,R4E,15	BIG DELTA
				640			T2S,R4E,23	BIG DELTA
				640			T2S,R4E,24	BIG DELTA
				640			T2S,R4E,25	BIG DELTA
				640			T2S,R4E,26	BIG DELTA
				640			T2S,R4E,30	BIG DELTA
				640			T2S,R4E,31	BIG DELTA
				640			T2S,R5E,07	BIG DELTA
				640			T2S,R5E,08	BIG DELTA
				640			T2S,R5E,09	BIG DELTA
				640			T2S,R5E,10	BIG DELTA
				640			T2S,R5E,14	BIG DELTA
				640			T2S,R5E,15	BIG DELTA
				640			T2S,R5E,16	BIG DELTA
				640			T2S,R5E,17	BIG DELTA
				640			T2S,R5E,18	BIG DELTA
				640			T2S,R5E,19	BIG DELTA
				640			T2S,R5E,20	BIG DELTA
				640			T2S,R5E,21	BIG DELTA
				640			T2S,R5E,22	BIG DELTA
				640			T2S,R5E,23	BIG DELTA
				640			T2S,R5E,24	BIG DELTA
				640			T2S,R5E,25	BIG DELTA
				640			T2S,R5E,26	BIG DELTA
				640			T2S,R5E,27	BIG DELTA

				640			T2S,R5E,28	BIG DELTA
				640			T2S,R5E,29	BIG DELTA
				640			T2S,R5E,30	BIG DELTA
				640			T2S,R5E,31	BIG DELTA
				640			T2S,R5E,32	BIG DELTA
				640			T2S,R5E,33	BIG DELTA
				640			T2S,R5E,34	BIG DELTA
				640			T2S,R5E,35	BIG DELTA
				640			T2S,R5E,36	BIG DELTA
				640			T2S,R6E,29	BIG DELTA
				640			T2S,R6E,30	BIG DELTA
				640			T2S,R6E,32	BIG DELTA
				640			T2S,R6E,33	BIG DELTA
				29440	29440			
			PLAY 5-12	320			T1S,R4E,24	BIG DELTA
				640			T1S,R4E,25	BIG DELTA
				640			T1S,R4E,36	BIG DELTA
				320			T1S,R5E,19	BIG DELTA
				320			T1S,R5E,22	BIG DELTA
				320			T1S,R5E,23	BIG DELTA
				640			T1S,R5E,25	BIG DELTA
				640			T1S,R5E,26	BIG DELTA
				640			T1S,R5E,27	BIG DELTA
				640			T1S,R5E,31	BIG DELTA
				640			T1S,R5E,33	BIG DELTA
				640			T1S,R5E,36	BIG DELTA
				320			T1S,R6E,22	BIG DELTA
				640			T1S,R6E,27	BIG DELTA
				640			T1S,R6E,34	BIG DELTA
				640			T2S,R4E,04	BIG DELTA
				640			T2S,R4E,05	BIG DELTA
				640			T2S,R5E,03	BIG DELTA
				640			T2S,R6E,01	BIG DELTA
				640			T2S,R6E,02	BIG DELTA
				640			T2S,R6E,07	BIG DELTA

				640			T2S,R6E,08	BIG DELTA
				640			T2S,R6E,09	BIG DELTA
				640			T2S,R6E,10	BIG DELTA
				640			T2S,R6E,11	BIG DELTA
				640			T2S,R6E,14	BIG DELTA
				640			T2S,R6E,23	BIG DELTA
				640			T2S,R6E,25	BIG DELTA
				640			T2S,R6E,26	BIG DELTA
				640			T2S,R6E,27	BIG DELTA
				640			T2S,R6E,28	BIG DELTA
				640			T2S,R6E,31	BIG DELTA
				640			T2S,R6E,34	BIG DELTA
				640			T2S,R7E,01	BIG DELTA
				640			T2S,R7E,02	BIG DELTA
				640			T2S,R7E,03	BIG DELTA
				640			T2S,R7E,04	BIG DELTA
				640			T2S,R7E,05	BIG DELTA
				640			T2S,R7E,06	BIG DELTA
				640			T2S,R7E,31	BIG DELTA
				640			T2S,R7E,33	BIG DELTA
				640			T2S,R7E,36	BIG DELTA
				25280	25280			
						117760		
	C81209		PLAY 36-1	40			T26S,R53E,13	SKAGWAY
				80			T26S,R53E,23	SKAGWAY
				600			T26S,R53E,24	SKAGWAY
				100			T26S,R53E,25	SKAGWAY
				40			T26S,R54E,17	SKAGWAY
				300			T26S,R54E,18	SKAGWAY
				640			T26S,R54E,19	SKAGWAY
				400			T26S,R54E,20	SKAGWAY
				0			T26S,R54E,21	SKAGWAY
				320			T26S,R54E,28	SKAGWAY
				640			T26S,R54E,29	SKAGWAY
				600			T26S,R54E,30	SKAGWAY

				40			T26S,R54E,31	SKAGWAY
				480			T26S,R54E,32	SKAGWAY
				620			T26S,R54E,33	SKAGWAY
				160			T26S,R54E,34	SKAGWAY
				60			T27S,R54E,02	SKAGWAY
				580			T27S,R54E,03	SKAGWAY
				400			T27S,R54E,04	SKAGWAY
				400			T27S,R54E,09	SKAGWAY
				640			T27S,R54E,10	SKAGWAY
				500			T27S,R54E,11	SKAGWAY
				20			T27S,R54E,12	SKAGWAY
				320			T27S,R54E,13	SKAGWAY
				640			T27S,R54E,14	SKAGWAY
				640			T27S,R54E,15	SKAGWAY
				400			T27S,R54E,16	SKAGWAY
				60			T27S,R54E,20	SKAGWAY
				580			T27S,R54E,21	SKAGWAY
				640			T27S,R54E,22	SKAGWAY
				640			T27S,R54E,23	SKAGWAY
				640			T27S,R54E,24	SKAGWAY
				640			T27S,R54E,25	SKAGWAY
				640			T27S,R54E,26	SKAGWAY
				640			T27S,R54E,27	SKAGWAY
				640			T27S,R54E,28	SKAGWAY
				240			T27S,R54E,29	SKAGWAY
				40			T27S,R54E,31	SKAGWAY
				580			T27S,R54E,32	SKAGWAY
				640			T27S,R54E,33	SKAGWAY
				640			T27S,R54E,34	SKAGWAY
				640			T27S,R54E,35	SKAGWAY
				640			T27S,R54E,36	SKAGWAY
				20			T27S,R55E,29	SKAGWAY
				520			T27S,R55E,30	SKAGWAY
				640			T27S,R55E,31	SKAGWAY
				520			T27S,R55E,32	SKAGWAY
				20			T27S,R55E,33	SKAGWAY

				640			T28S,R54E,01	SKAGWAY
				640			T28S,R54E,02	SKAGWAY
				640			T28S,R54E,03	SKAGWAY
				260			T28S,R54E,04	SKAGWAY
				0			T28S,R54E,09	SKAGWAY
				640			T28S,R54E,10	SKAGWAY
				640			T28S,R54E,11	SKAGWAY
				640			T28S,R54E,12	SKAGWAY
				420			T28S,R54E,13	SKAGWAY
				320			T28S,R54E,14	SKAGWAY
				20			T28S,R54E,15	SKAGWAY
				100			T28S,R55E,04	SKAGWAY
				640			T28S,R55E,05	SKAGWAY
				640			T28S,R55E,06	SKAGWAY
				640			T28S,R55E,07	SKAGWAY
				640			T28S,R55E,08	SKAGWAY
				160			T28S,R55E,09	SKAGWAY
				480			T28S,R55E,16	SKAGWAY
				520			T28S,R55E,17	SKAGWAY
				120			T28S,R55E,18	SKAGWAY
				28720	28720			
				480			T28S,R53E,07	SKAGWAY
				640			T28S,R53E,08	SKAGWAY
				240			T28S,R53E,16	SKAGWAY
				640			T28S,R53E,17	SKAGWAY
				640			T28S,R53E,18	SKAGWAY
				640			T28S,R53E,19	SKAGWAY
				640			T28S,R53E,20	SKAGWAY
				480			T28S,R53E,21	SKAGWAY
				140			T28S,R53E,26	SKAGWAY
				480			T28S,R53E,27	SKAGWAY
				640			T28S,R53E,28	SKAGWAY
				640			T28S,R53E,29	SKAGWAY
				640			T28S,R53E,30	SKAGWAY
				640			T28S,R53E,31	SKAGWAY

				640			T28S,R53E,32	SKAGWAY
				640			T28S,R53E,33	SKAGWAY
				640			T28S,R53E,34	SKAGWAY
				640			T28S,R53E,35	SKAGWAY
				400			T28S,R53E,36	SKAGWAY
				80			T28S,R54E,31	SKAGWAY
				800			T29S,R53E,01	SKAGWAY
				800			T29S,R53E,02	SKAGWAY
				640			T29S,R53E,03	SKAGWAY
				480			T29S,R53E,10	SKAGWAY
				640			T29S,R53E,11	SKAGWAY
				640			T29S,R53E,12	SKAGWAY
				640			T29S,R53E,13	SKAGWAY
				640			T29S,R53E,14	SKAGWAY
				480			T29S,R53E,15	SKAGWAY
				480			T29S,R53E,22	SKAGWAY
				640			T29S,R53E,23	SKAGWAY
				640			T29S,R53E,24	SKAGWAY
				640			T29S,R53E,25	SKAGWAY
				640			T29S,R53E,26	SKAGWAY
				480			T29S,R53E,27	SKAGWAY
				400			T29S,R53E,34	SKAGWAY
				640			T29S,R53E,35	SKAGWAY
				640			T29S,R53E,36	SKAGWAY
				80			T29S,R54E,01	SKAGWAY
				160			T29S,R54E,02	SKAGWAY
				760			T29S,R54E,03	SKAGWAY
				800			T29S,R54E,04	SKAGWAY
				800			T29S,R54E,05	SKAGWAY
				800			T29S,R54E,06	SKAGWAY
				640			T29S,R54E,07	SKAGWAY
				640			T29S,R54E,08	SKAGWAY
				640			T29S,R54E,09	SKAGWAY
				640			T29S,R54E,10	SKAGWAY
				640			T29S,R54E,11	SKAGWAY
				640			T29S,R54E,12	SKAGWAY

				640			T29S,R54E,13	SKAGWAY
				640			T29S,R54E,14	SKAGWAY
				640			T29S,R54E,15	SKAGWAY
				640			T29S,R54E,16	SKAGWAY
				640			T29S,R54E,17	SKAGWAY
				640			T29S,R54E,18	SKAGWAY
				640			T29S,R54E,19	SKAGWAY
				640			T29S,R54E,20	SKAGWAY
				640			T29S,R54E,21	SKAGWAY
				640			T29S,R54E,22	SKAGWAY
				640			T29S,R54E,23	SKAGWAY
				640			T29S,R54E,24	SKAGWAY
				640			T29S,R54E,25	SKAGWAY
				640			T29S,R54E,26	SKAGWAY
				640			T29S,R54E,27	SKAGWAY
				640			T29S,R54E,28	SKAGWAY
				640			T29S,R54E,29	SKAGWAY
				640			T29S,R54E,30	SKAGWAY
				640			T29S,R54E,31	SKAGWAY
				640			T29S,R54E,32	SKAGWAY
				640			T29S,R54E,33	SKAGWAY
				640			T29S,R54E,34	SKAGWAY
				640			T29S,R54E,35	SKAGWAY
				640			T29S,R54E,36	SKAGWAY
				160			T29S,R55E,05	SKAGWAY
				240			T29S,R55E,06	SKAGWAY
				640			T29S,R55E,07	SKAGWAY
				640			T29S,R55E,08	SKAGWAY
				560			T29S,R55E,09	SKAGWAY
				360			T29S,R55E,10	SKAGWAY
				160			T29S,R55E,11	SKAGWAY
				320			T29S,R55E,13	SKAGWAY
				640			T29S,R55E,14	SKAGWAY
				640			T29S,R55E,15	SKAGWAY
				640			T29S,R55E,16	SKAGWAY
				640			T29S,R55E,17	SKAGWAY

				640			T29S,R55E,18	SKAGWAY
				640			T29S,R55E,19	SKAGWAY
				640			T29S,R55E,20	SKAGWAY
				640			T29S,R55E,21	SKAGWAY
				640			T29S,R55E,22	SKAGWAY
				560			T29S,R55E,23	SKAGWAY
				160			T29S,R55E,24	SKAGWAY
				600			T29S,R55E,26	SKAGWAY
				640			T29S,R55E,27	SKAGWAY
				640			T29S,R55E,28	SKAGWAY
				640			T29S,R55E,29	SKAGWAY
				640			T29S,R55E,30	SKAGWAY
				640			T29S,R55E,31	SKAGWAY
				640			T29S,R55E,32	SKAGWAY
				640			T29S,R55E,33	SKAGWAY
				640			T29S,R55E,34	SKAGWAY
				640			T29S,R55E,35	SKAGWAY
				0			T29S,R56E,17	SKAGWAY
				40			T29S,R56E,18	SKAGWAY
				320			T29S,R56E,19	SKAGWAY
				560			T29S,R56E,20	SKAGWAY
				280			T29S,R56E,21	SKAGWAY
				20			T29S,R56E,22	SKAGWAY
				100			T29S,R56E,26	SKAGWAY
				560			T29S,R56E,27	SKAGWAY
				640			T29S,R56E,28	SKAGWAY
				640			T29S,R56E,29	SKAGWAY
				640			T29S,R56E,30	SKAGWAY
				640			T29S,R56E,31	SKAGWAY
				640			T29S,R56E,32	SKAGWAY
				640			T29S,R56E,33	SKAGWAY
				640			T29S,R56E,34	SKAGWAY
				360			T29S,R56E,35	SKAGWAY
				20			T29S,R56E,36	SKAGWAY
				360			T30S,R53E,01	SKAGWAY
				360			T30S,R53E,02	SKAGWAY

				400			T30S,R53E,03	SKAGWAY
				60			T30S,R53E,09	SKAGWAY
				480			T30S,R53E,10	SKAGWAY
				640			T30S,R53E,11	SKAGWAY
				640			T30S,R53E,12	SKAGWAY
				640			T30S,R53E,13	SKAGWAY
				580			T30S,R53E,14	SKAGWAY
				600			T30S,R53E,15	SKAGWAY
				240			T30S,R53E,16	SKAGWAY
				20			T30S,R53E,21	SKAGWAY
				80			T30S,R53E,22	SKAGWAY
				280			T30S,R53E,23	SKAGWAY
				640			T30S,R53E,24	SKAGWAY
				40			T30S,R53E,25	SKAGWAY
				20			T30S,R53E,26	SKAGWAY
				72860	72860			
						101580		

ENT VALUE BY PARCEL/DEPOSIT TYPE							
MIN DEP TYPE 1	NPV OF NSR TYPE 1	NPV OF NPI TYPE 1	PROB PER ACRE TYPE 1	MIN DEP TYPE 2	NPV OF NSR TYPE 2	NPV OF NPI TYPE 2	PROB PER ACRE TYPE 2
NONE	$0	$0	0	0	$0	$0	0

NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0
NONE	$0	$0	0	0	$0	$0	0

NONE	$0	$0	0	0	$0	$0	0

NONE	$0	$0	0	0	$0	$0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0

TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
TINCHENA	$28,519,218	($2,813,732)	0.000048	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0

PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
PLACAU	$691,226	($202,423)	0.000068	0	0	0	0
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003

GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	CYPKI	$34,055,082	$16,221,012	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	ZNPBSEA	$50,754,191	$28,391,061	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	ZNPBSEA	$50,754,191	$28,391,061	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,652	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	COPSSEA	$20,781,761	$7,148,268	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	COPSSEA	$20,781,761	$7,148,268	0.00003
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013

GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRANAUVN	$6,818,636	($1,555,925)	0.000002	VMSHAINE	$52,789,761	$28,233,488	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	COPSSEA	$20,781,761	$7,148,268	0.00003
GRAUVN7	$5,402,526	($1,232,787)	0.000027	COPSSEA	$20,781,761	$7,148,268	0.00003
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013

GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013

GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	COPSSEA	$20,781,761	$7,148,268	0.00003
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	COPSSEA	$20,781,761	$7,148,268	0.00003
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	COPSSEA	$20,781,761	$7,148,268	0.00003
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013

GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	SEDEXLIK	$99,258,182	$55,696,232	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013

GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
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GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013
GRAUVN7	$5,402,526	($1,232,787)	0.000027	CYPKI	$34,055,082	$16,221,012	0.000013

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$662,585	$309,452
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$363,950	$189,240
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$282,520	$85,242
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$1,148,980	$552,613
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$919,184	$442,090
$919,184	$442,090
$689,388	$331,568
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$229,796	$110,523
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$229,796	$110,523
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$804,286	$386,829
$229,796	$110,523
$861,735	$414,459
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$459,592	$221,045
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$402,143	$193,414
$28,724	$13,815
$143,622	$69,077
$804,286	$386,829
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$919,184	$442,090
$517,041	$248,676
$28,724	$13,815
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$211,890	$63,932

$235,434	$71,035
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$282,520	$85,242
$376,694	$113,656
$376,694	$113,656
$376,694	$113,656
$341,379	$103,001
$353,151	$106,553
$141,260	$42,621
$11,772	$3,552
$47,087	$14,207
$164,804	$49,725
$376,694	$113,656
$23,543	$7,104
$11,772	$3,552
$88,614,327	$40,292,431

APPENDIX H

CURRICULUM VITA

PAUL A. METZ, PH.D.

Curriculum Vita

PAUL A. METZ

PERSONAL DATA

Date of Birth: December 26, 1945

Marital Status: Single, two children

EDUCATION

Imperial College of Science Technology and Medicine, University of London, London England - Ph.D. in Mining Geology, 1991.

University of Alaska Fairbanks, Fairbanks Alaska - M.S. in Economic Geology, 1975.

University of Alaska Anchorage, Anchorage Alaska - MBA emphasis in Economics and Finance, 1972.

Michigan Technological University, Houghton Michigan - B.S. in Geological Engineering, 1968.

POSITIONS HELD AND EXPERIENCE

May 1991 to Present: Associate Professor of Geological Engineering, Department of Mining and Geological Engineering, School of Mineral Enginerring, University of Alaska Fairbanks.

July 1984 to May 1991: Assistant Professor of Geological Enginering, Department of Mining and Geological Engineering, School of Mineral Engineering, University of Alaska Fairbanks.

May 1975 to June 1984: Instructor, Mineral Industry Research Laboratory, School of Mineral Engineering, University of Alaska Fairbanks.

June 1985 to Present: Director, Fairbanks Exploration Inc.

August 1973 to Present: Consulting Mining Geologist/Geological Engineer conducting mineral exploration and mine evaluations and as an expert witness in legal disputes related to the mineral industries.

January to June 1977: Instructor, Geology Program, Chapman College, Fort Wainwright and Eilsen Air Force Base, Alaska. Teaching duties included Introduction to Physical Geology.

February to June 1974: Geologist, Alaska Division of Geological and Geophysical Surveys. Work included compilation of a 1:1,000,000 scale map of the intrusive rocks of Alaska and tabulation of all published and unpublished major oxided analyses for the intrusive rocks of the state.

August 1973 to February 1974: Geological Engineer, Alaska Air National Guard, Kulis Air Force Base, Alaska. As Chief of Engineering and Construction, prepared design plans and cost estimates for base construction and maintenance projects. Supervised both inhouse and contract projects.

August 1968 to August 1973: Geological Engineer, United States Air Force, 21st Civil Engineering Squadron, Elmendorf Air Force Base, Alaska. Work included preliminary design and cost estimation for various soils, foundation, and civil engineering projects.

June to August 1968: Geological Draftsman and Field Assistant, Michigan Technological University, Houghton Michigan. Work included preparation of drawings, diagrams, and maps for a National Science Foundation sponsored Field Guide to the Geology of the Lake Superior Region.

July to September 1967: Geologist, Anaconda American Brrass Ltd, Port Arthur, Ontario Canada. As a field geologist, conducted reconnaissance geological mapping, prospect evaluation and ground magnetic surveys in Northwestern Ontario, Canada.

COURSES DEVELOPED AND\OR TAUGHT

GE 101 1 Credit Fall
Introdction to Geological Engineering
Multiple aspects of geological engineering as a profession; the area and scope of the field.

GE 261 3 credits Spring
General Geology for Engineers
Study of common rocks and minerals, landforms, and erosion. Geologic materials and engineering applications of geology.

GE 365 3 credits Fall
Geological Engineering I
Geological and geotechnical factors for the solution of engineering problems. Special emphasis on soils and permafrost. Some field work and student report.

GE 381 2 credits Summer
Field Methods and Applied Design I

Techniques of geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation.

GE 382 4 credits Summer
Field Methods and Applied Design II
Techniques of geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation.

GE 405 4 credits Fall
Exploration Geophysics
Theory and application of gravity, magnetic, electrical, electro-magnetic, radioactive, and seismic methods as used for geophysical exploration. Some field work.

GE 435 3 credits Spring
Exploration Design
Geologic, engineering, and economic considerations applied to the design and development of mineral exploration programs. Case studies of mineral exploration programs in Alaska and elsewhere.

GE 630 3 credits Alternate Fall
Advanced Mining Geology
Investigative procedures used in mining geology from preproduction to terminal phases of the operation. Mining models ranging from open pit to deep underground methods are examined. Methods of mapping, sampling, and on-going evaluation, and geotechnical aspects of water and ground control are examined.

GE 631 3 credits Alternate Spring
Electron Microprobe Methods
Applications of electron micro-analysis of rocks and minerals to mineral exploration, mine evaluation, mine planning and mineral processing. The physics of x-rays, x-ray spectrometry, and qualitative and quantitative elemental analysis by wavelength and energy dispersive methods are reviewed.

GE 633 3 credits Alternate Fall
Fluid Inclusion Methods in Mineral and Petroleum Exploration
Study of fluid inclusions in minerals. Thermodynamics, chemical and physical properties of fluids trapped in rocks in rock forming minerals. Laboratory work includes sample preparation, thermometric measurements, and direct-current plasma emission spectrographic analysis.

GEOS 351 6 credits Summer
Field Geology
Practical experience in collecting and presenting basic field data. Includes field mapping of stratigraphic and structural problems using topographic and aerial photographic base maps, and the construction of base maps through tape and compus and plane table

methods. Professional report writting and the preparation of geologic maps for publication are reviewed.

MIN 101 3 credits Fall
Minerals, Man, and the Environment
A general survey of the impact of the mineral industries on man's economic, political, and environmental systems.

MIN 408 3 credits Spring
Mineral Valuation and Economics
Introdution to engineering economics applied to the mineral industries. Application of the theory of sampling and ore reseve estimation to the evaluation of minig properties and mining operations. Final project includes completion of a pre-feasibility study for a proposed mining operation.

MIN 621 3 credits Alternate Fall
Advanced Mineral Economics
Economics of mineral exploitation and utilization. Supply and demand for mineral commodities and the international trade of mineral commodities, Examination of the role of state and federal policies in the utilization of mineral resources.

MIN 631 3 credits Alternate Fall
Research Methods in Mineral Engineering
Research methods including problem definition and statement, designing of experiments, collecting of data, and interpretation methods. Methods of theoretical and experimental analysis are reviewed and examples are given.

MIN 688 1 credit Fall
Graduate Seminar
Preparation and presentation of research work by graduate students and participation in regularly scheduled departmental seminars.

FUNDED RESEARCH PROJECTS

Completed Projects

Minerals Availability System: Mineral Mineral Resources of the Fairbanks and Livengood Quadrangles, Alaska - U.S. Bureau of Mines Grant No. G0155010, $62,636.

Minerals Availability System: Compilation of the Data on the Gold and Silver Resources of Alaska - U.S. Bureau of Mines Grant No. G0155201, $67,492.

Evaluation of the Mineral Resources of the Pipeline Corridor - U.S. Bureau Mines Grant No. 0166180, $103,904.

Compilation of the Data on the Land Withdrawals in Alaska - U.S. Bureau of Mines Grant No. G0177056, $22,552.

Mineral Investigations on D-2 Lands in the Philip Smith Mountains and Chandler Lake Quadrangles, Alaska - U.S. Bureau of Mines Grant No. G0177175, $44,112.

Baseline Geochemical Studies for Resource Evaluation on D-2 Lands - U.S. Bureau of Mines Grant No.G0177176, $35,330.

Compilation of the Data on the Land Withdrawals in Alaska - An Update: Alaska State Legislature, $30,000.

Cost of Exploration for Metallic Minerals in Alaska - Alaska Department of Commerce and Economic Development, $10,162.

Investigation of Mercury-Antimony-Tungsten Metal Provinces of Alaska - U.S. Department of the Interior, Office of Surface Mining, $22,751.

Interpretation of Large Geologic Features and Trends Associated with Alaskan Mineral Occurrences - U.S. Department of the Interior, Office of Surface Mining, $59,637.

Investigation of the Agricultural Limestone Demand Requirements and Supply Potential in Alaska - Alaska Department of Commerce and Economic Development, $18,273.

Preliminary Design and Feasibility Study of Mineral Beneficiation Facilities to Process Ore From the Fairbanks Mining District - Fairbanks North Star Borough $190,834.

Mineral Resource Appraisal of Interior Alaska Mining Districts - Alaska State Legislature, $948,000.

Critical and Strategic Minerals in Alaska: Tin - U.S. Department of the Interior, Office of Surface Mining, $6,500.

Fluid Inclusion Studies and Alteration Mineralogy of Precious Metals - Fairbanks Exploration Inc., $5,000.

Detailed Geological and Laboratory Studies of Selected Mineral Occurrences in South Central Alaska - SEDCOR Exploration Inc., $5,875.

Fluid Inclusion and Isotopic Investigations of Tin-Bearing Granites of Central Alaska - A Comparison with Tin Granites of South America, the British Isles, and Southeast Asia - University of Alaska Faculty Grant Program, $5,801.

Rubidium-Strontium Isotopic Analyses of the Tin-Tungsten Bearing Birch Lake Pluton, Yukon-Tanana Uplands Schist Terrane, Alaska - Krueger Enterprises Inc., $1,500.

Mineral Industry Research Laboratory - Electron Microprobe: Alaska State Legislature $436,000.

Mineral Industry Research Laboratory - Drill Core Facility: Alaska State Legislature $400,000.

Characterization and Evaluation of the Washability of Alaska's Coals (Associate Investigator with P.D. Rao) - Department of Energy Grant No. ET-78-G-01-8969, $48,487.

Isotopic Studies of the Au-Ag-Sb-W Mineralization of the Fairbanks Mining District, Alaska - National Environmental Research Council of Great Britain, $10,000.

Geochemical Trace Element Investigation of the Circle Mining District - Alaska Division of Geological and Geophysical Surveys, $15,000.

Unfunded Research Proposals

Mineral Studies of Certain ANCSA 17(d)(2) Lands in Alaska adjacent to Mt. McKinley National Park - U.S. Bureau of Mines, $ 245,321.

Mineral Studies of Certain ANCSA 17(d)(2) Lands in Alaska adjacent to Lake Clark National Park - U.S. Bureau of Mines, $ 223,131.

Gross Mineral Resource Appraisal Reports in Alaska - National Park Service, $ 132,170.

Optimal Mix of Public Policy for the Development of Alaskan Mineral Resources - U.S. Bureau of Mines, $ 26,576.

Evaluation of the Phosphate Resources of Northern Alaska - U.S. Bureau of Mines, $55,170.

Automated Bibliography of Alaskan Geological Literature - Alaska Division of Geological and Geophysical Surveys, $ 19,238.

Compilation of the Tungsten Resources of Alaska - U.S. Bureau of Mines, $ 33,145.

Cost of Exploration for Metallic Minerals in Alaska: An Update - Alaska Department of Commerce and Economic Development, $ 25,000.

Mercury Analysis of Soil Samples above the Gold Quartz Veins in the Cleary Summit Area and above the Base Metal Mineralization of the Silver Fox Mine, Fairbanks Mining District Alaska - U.S. Department of the Interior Office of Surface Mining, $ 7,633.

Delineation of Mercury Halos above the Gold Quatrz Vein Deposits in the Cleary Summit Area, Fairbanks Mining District, Alaska - U.S. Department of the Interior, Office of Surface Mining, $ 44,439.

Genetic Modeling of the Zinc and Zinc-Copper Mineral Occurrences of Alaska: Potential Sources of Gallium and Germanium - U.S. Department of the Interior, Office of surface Mining, $ 99,464.

Geology and Mineral Resources of Alaska - U.S. Department of the Interior, Office of Surface Mining, $ 16, 359.

Applications of Geophysical Exploration Methods for Coal Evaluation in Alaska's Arctic and Subarctic Regions - U.S. Department of the Interior, Office of Surface Mining, $40,394.

Coal Resource Evaluation and Environments of Deposits in Alaska - U.S. Department of the Interior, Office of Surface Mining, $ 118,160.

Index of Photomicrographs of Ore Minerals and Ore Textures from Mineral Occurrences in Alaska - U.S. Department of the Interior, Office of Surface Mining, $ 46,593.

Isotopic Studies and Radiometric Age Dating of Major Ba-Pb-Zn-F Mineralization in the Northern Brooks Range, Alaska - U.S. Department of the Interior, Office of Surface Mining, $ 29,082.

Interpretation of Large Geologic Features and Trends Associated with Alaskan Mineral Occurrences - Phase II , Genetic Modeling of Ba-Pb-Zn-F Mineralization in the Northern Brooks Range, Alaska - U.S. Department of the Interior, Office of Surface Mining, $39,514.

Electron Microprobe X-ray Analyser in Support of Srategic Mineral Investigations - U.S. Air Force, $ 436,000.

Mineral Resource Assessment of University of Alaska Lands - University of Alaska Facilities Planning and Construction, $ 597,744.

The Impact of the Mining Industry on the Economy of Alaska - Alaska Department of Commerce and Economic Development, $ 112,320.

Mineral Resource Appraisal of the Steese National Conservation Area and the White Mountains National Recreation Area - U.S. Bureau of Land Management, $ 2,606,008.

Mineral Resource Appraisal of the Interior Mining Districts - Phase II , Fairbanks North Star Borough - Fairbanks North Star Borough, $ 4,201,891.

Aeromagnetic Survey of the Interior Alaska Mining Districts - Fairbanks North Star Borough, $ 398,000.

Equipment Additions to the University of Alaska Fairbanks Electron Microprobe Laboratory - National Science Foundation $ 87,400.

Equipment Additions to the Mineral Industry Research Laboratory: Inductively Coupled Plasma Source Mass Spectrometer and Laser Raman Microprobe - U.S. Army Research Office, $ 432,710.

Development of a Passive Thermal Convective System for Underground Mining of Placer Gold Deposits in Alaska - Alaska Science and Technology Foundation, $ 421,990.

Active Funded Projects

Mineral Economic Modeling of University of Alaska Trust Lands - University of Alaska Natural Resources Fund, $19,882.

Platinum-Group Element Dispersion Associated with Alaskan Type Intrusions - Alaska Science and Technology Foundation $48,800; RTZ $50,000.

Active Unfunded Projects

Handbook for the Alaskan Prospector Volume II - Exploration Design, Volume III - Mineral Deposits of Alaska: Co-operative publication with the staffs of the Alaska Division of Geological and Geophysical Surveys, the Alaska Division of Mining, and Private Industry.

Graduate Student Supervision

Burleigh, Roger E., 1987, A stable isotope, fluid inclusion and ore petrologic study of the gold-quartz veins in the Willow Creek Mining District, Alaska: unpublished University of Alaska M.S. thesis, 246 p.

Calvin, James S., 1985, Preliminary mine feasibility study of disseminated gold deposits located in the Fairbanks Mining District, Alaska: unpublished University of Alaska M.S. thesis, 99 p.

Dziubinski, David E., 1992, An assessment of the characteristics and recoverability of gold associated with the Christina Vein, Fairbanks Mining District, Alaska: unpublished University of Alaska M.S. project report, 38 p.

Hart, Dale, 1986, An evaluation of fluid inclusion techniques as tools in mineral exploration as applied at the Yellow Aster Gold Mine, California: unpublished University of Alaska M.S. thesis,

Li, Yuejin, 1993, Ground water modeling in the Fairbanks, Alaska area between the Chena and Tanana Rivers: unpublished University of Alaska M.S. project report, 49 p.

Masterman, J.S., 1990, A fluid inclusion study of an interior Alaskan gold mining district and its implications on the origin of the mineralization: unpublished University of Alaska M.S. thesis, 80 p.

Sanusi, Abu Cashopeh, 1983, Agricultural limestone demand requirements and supply in Alaska: unpublished University of Alaska M.S. thesis, 108 p.

Treible, Klaus, 1990, Faulting and extended igneous activity in the Circle Mining District, Alaska: unpublished University of Alaska M.S. project report, 29 p.

Other Graduate Students Supported by Research Grants

Allegro, Gail, 1987, Gilmore Dome tungsten mineralization, Fairbanks Mining District, Alaska: unpublished University of Alaska M.S. thesis,

Blum, Joel, 1982, The petrology , geochemistry, and isotope geochronology of the Gilmore Dome and Pedro Dome plutons, Fairbanks Mining District, Alaska: unpublished University of Alaska M.S. thesis,

Hall, Mark, 1985, Structural geology of the Fairbanks Mining District, central Alaska: unpublished University of Alaska M.S. thesis, 156 p.

Lee, Douglas, E., 1984, Surficial geology of the north Fairbanks D-1 and the south Livengood A-1 quadrangles, Alaska: unpublished University of Alaska M.S. thesis,

Lueck, Larry, 1985, Petrology and geochemical characterization of the Red Dog and other base-metal sulfide and barite deposits in the DeLong Mountains, western Brooks Range, Alaska: unpublished University of Alaska M.S thesis, 80 p.

UNPUBLISHED CONTRACT REPORTS

Metz, P.A., and Dixon, Colin, 1988, Mineral, coal, and aggregate resource appraisal of Alaska Mental Health Trust Lands: Metz, DeLong, and Associates, 153 p.

Metz, P.A., and Wolff, E.N., 1980, Interpretation of large geologic features and trends associated with Alaskan mineral occurrences by means of enhanced satellite imagery: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 74 p., maps, 6 sheets, scale 1:1,000,000.

Metz, P.A., and Robinson, M.S., 1980, Investigations of the Hg-Sb-W metal provinces of Alaska- occurrences in the Fairbanks and Tolovana Mining Districts: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 37 p.

Metz, P.A., Robinson, M.S., and Paris, C.E., 1979, Evaluation of the mineral resources of the pipeline corridor - barite mineral occurrences and geology of the Atigun Canyon area, Brooks Range, Alaska: Mineral Industry research Laboratory, University of Alaska, unpublished contract report, maps, 2 sheets, scale 1:20,000.

Metz, P.A., 1978, Summary file report - Arctic Camp prospect, Ambler Mining District, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 32 p.

Metz, P.A., 1978, Summary file report - Third, second, submarine, Monroeville, and intermediate beach deposits, Nome Mining District, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 45 p.

Metz, P.A., 1978, Summary file report - Chichagof and Hirst-Chichagof Mines, Chichagof Mining District, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 19 p.

Metz, P.A., 1976, Summary file report - McCarty Mine, Fairbanks Mining District, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 20 p.

Metz, P.A., 1976, Summary file report - Banner Mine, Fairbanks Mining District, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 18 p.

Metz, P.A., 1976, Summary file report - Ryan Lode Mine, Fairbanks Mining District, Alaska: Mineral industry research Laboratory, University of Alaska, unpublished contract report, 19 p.

Metz, P.A., and Robinson, M.S., 1979, Mineral investigations of D-2 lands in the Philip Smith Mountains and Chandler Lake quadrangles, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 27 pages.

Metz, P.A., Robinson, M.S., and Lueck, L., 1979, Baseline geochemical studies for resource evaluation of D-2 lands- Geophysical and geochemical investigations of the Red Dog and Drenchwater Creek mineral occurrences, western Brooks Range, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 21 p.

Metz, P.A., and Weibmer, J., 1977, Summary file report - Eureka, Kensington, Comet, Johnson, and Jualin Mines, Berner's Bay, Juneau Mining District, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished report, 56 p.

Albenese, Thomas, Robinson, M.S., Metz, P.A., and Wolff, E.N., 1979, Western and arctic transportation study, Phase I - Mineral resources inventory of northern and western Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 36 p.

Robinson, M.S., and Metz, P.A., 1979, Evaluation of the mineral resources of the Trans-Alaska Pipeline Corridor - Phases I and II: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 264 p.

Robinson, M.S., and Metz, P.A., 1977, Summary file report - Candle Creek, Fairhaven Mining District, Alaska: Mineral Industry Research Laboratory, University of Alaska, unpublished contract report, 23 p.

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Metz, P.A., 1991, Metallogeny of the Fairbanks Mining District, Alaska and adjacent areas: Mineral Industry Research Laboratory, University of Alaska, Report No. 90, 604 p., maps, 34 Plates, scales variable.

Robinson, M.S., Smith, T.E., and Metz, P.A., 1990, Bedrock geology of the Fairbanks Mining District, Alaska: Alaska Division of Geological and Geophysical Surveys, Professional Report No. 106, maps, 2 sheets, scale 1:63,360.

Metz, P.A., 1989, Lode gold and silver deposits of Alaska: Proceedings of the Conference on Resources and the Environment: National Cheng Kung University, Tainan, Taiwan, Republic of China, 43 p.

Metz, P.A., Freeman, C.J., Klessig, Pamela, Troupe, Arthur, and Gonzolez, R.A., 1988, Geology, gold deposit types, and mineral occurrences in the Yukon Tanana Uplands Schist Terrane, Alaska and Yukon Territory: Proceedings of Bicentennial Gold 88, Melbourne, Australia, May 16-20, 1988, 5 p.

Metz, P.A., 1988, Lode gold deposits of Alaska - A review: Proceedings of Symposium on Precious and Rare Metals, Alburquerque, New Mexico, (April 6-8, 1988), New Mexico Technological University, 41 p.

Metz, P.A., 1988, Ore mineralogic and petrologic constraints on heap leaching of various Alaskan precious metal deposits: in Heap Leaching in Alaska, A Short Course: Alaska Department of Commerce and Economic Development, 16 p.

Metz, P.A., 1987, Ore mineralogy and gold grain size distribution in the gold, silver, antimony, and tungsten mineralization of the Fairbanks Mining District, Alaska: in Proceedings of the Process Mineralogy Division of the American Institute of Mining, Metallurgical and Petroleum Engineers, (February 24-27, 1987), Process Mineralogy VII, 18 p.

Metz, P.A., 1987, Geological factors governing the formation of the gold placer deposits of the Fairbanks Mining District: in Proceedings of the Ninth Annual Placer Conference (March 25-28, 1987), Alaska Division of Geological and Geophysical Surveys Special Publication, p.199-228.

Metz, P.A., Calvin, J.S., and Freeman, C.J., 1987, Bulk mineable vein type and disseminated gold mineralization of the Fairbanks Mining District, Alaska: Proceedings of Pacific Rim Congress 87 (August 26-29, 1987), Australian Institute of Mining and Metallurgy, p. 333-342.

Metz, P.A., and Hamil, B.M., 1986, Origin and extent of the gold, silver, antimony, and tungsten mineralization of the Fairbanks Mining District, Alaska: Proceedings of the Process Mineralogy Division of the American Institute of Mining Metallurgical and Petroleum Engineers, (March 2-5, 1986), Process Mineralogy VI, p. 215-238.

Metz, P.A., 1985, Roman placer mines of the Iberian Peninsula: in Proceedings of the Seventh Annual Placer Mining Conference (March 28-29, 1985), Alaska Miners Association, p.42-45.

Metz, P.A., 1984, Sulphur isotopic evidence for the genesis of the Au-Ag-Sb-W mineralization of the Fairbanks Mining District, Alaska: British Geological Survey, Isotope Geology Laboratory Open File Report, 20 p.

Metz, P.A., 1983, Landsat linear features and mineral occurrences in Alaska: Mineral Industry Research Laboratory, University of Alaska Report No. 66, 83 p., maps, 6 sheets, scale 1:2,000,000.

Metz, P.A., and Campbell, Bruce, 1982, Cost of exploration for metallic minerals in Alaska - 1982: Mineral Industry Research Laboratory, University of Alaska Report No. 56, 83 p.

Metz, P.A., 1982, Bedrock geology of the Fairbanks Mining District, Alaska, northeast sector: Alaska Division of Geological and Geophysical Surveys Open File Report AOF-154 map, 1 sheet, scale 1:24,000.

Metz, P.A., and Hawkins, D.B., 1981, A summary of gold fineness values from Alaska placer deposits: Mineral Industry Research Laboratory, University of Alaska Report No. 45, 63 p.

Metz, P.A., Egan, A., and Johansen, O., 1982, Landsat linear features and incipient rift system model for the origin of the base metal and petroleum resources of northern Alaska: in Embry, A.F., and Balkwill editors: Arctic Geology and Geophysics, Proceedings of the Third Arctic Geology Symposium, Canadian Association of Petroluem Geologists, Memoir 8, p101-112.

Metz, P.A., 1980, Comment on collision - deformed Paleozoic continental margin, western Brooks Range, Alaska: Geology, v. 8, p. 345-367.

Metz, P.A., Pearson, R.W., and Lynch, D.F., 1979, Compilation of the data on the land withdrawals in Alaska: Mineral Industry Reasearch Laboratory, University of Alaska Report No. May 1979, 30 p.

Metz, P.A., Pearson, R.W.and Lynch, D.F., 1978,Compilation of the data on the land withdrawals in Alaska: Mineral Industry Research Laboratory, University of Alaska Report No. 40, 17 p.

MINERAL INDUSTRY CONSULTANCIES/WORKING AGREEMENTS

AMAX (American Metals Climax)
ASARCO (American Smelting and Refining Company)
BHP (Broken Hill Properties)
BP Minerals America (British Petroleum Minerals America)
FreeGold Recovery Inc
Kennicott Copper Corp
NERCO Minerals
RTZ (Rio Tinto Zinc Ltd)

EXPERT WITNESS

Bering Straits Native Corp Bankruptcy Case
Koppenberg vs National Park Service
St Amand vs State of Alaska (Midas Mine)
Swainbank vs National Park Service
Vogler vs Natonal Park Service
Weiss vs State of Alaska

PUBLIC SERVICE (PAST AND/OR PRESENT)

Geological Consultant to various governmental agencies, Native Regional Corporations, and private industry.

As a Director of the Alaska Miners Association (AMA), developed the concept of the Alaska Minerals Commission and drafted the resolution that resulted in the establishment of the Commission and the Alaska Minerals Policy Act.

Co-Chairman of the Minerals Development Committee of the Fairbanks Chapter of the Chamber of Commerce

UNIVERSITY SERVICE (PAST AND/OR PRESENT)

Negotiated Cooperative Research Agreement between University of Alaska Fairbanks and Imperial College of Science, Technology, and Medicine, University of London

Negotiated Cooperative Research Agreement between University of Alaska Fairbanks and the Central South Technology University of the Peoples Republic of China

Mineral Resources Consultant to the University of Alaska, Statewide Office of Land Management

Member, Campus Wide Promotion and Tenure Committee

Member, Campus Wide Master Planning Committee

Member University of Alaska Fairbanks Faculty Senate

COMMUNITY SERVICE (PAST AND/OR PRESENT)

Member, Monroe Foundation

Member, Immaculate Conception Parish Council

Member, Curriculum Committee, Catholic Schools Parents Teachers Association

Member, Knights of Columbus

MILITARY SERVICE

United States Air Force 1968-1973, Captain, Honorable Discharge, August 30, 1973

HONORS

Research Assistantship, Department of Business and Economics, University of Alaska Anchorage, 1971 (While on professional leave from the USAF)

Overseas Student Fellowship, Imperial College of Science, Technology, and Medicine, 1981-1982

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Institute of Mining, Metallurgical, and Petroleum Engineers

American Institute of Professional Geologists, Registration No. 6786

American Society for Engineering Education

Association of Engineering Geologists

International Association for Mathematical Geology

Society of Economic Geologists

Society for Geology Applied to Mineral Deposits

PROFESSIONAL TRAVEL

Professional travel to: Australia, Canada, China, France, Greenland, Germany, Great Britain, Japan, Mexico, Portugal, Russia, South Africa, Spain, and Taiwan to present papers and/or to examin mineral properties and mining operations. Frequent travel to the contiguous state to present technical papers and the visit major mining operations in most of the mining districts in the United States.