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IN THIS ISSUE

**Mining-information office*

DGGS readying for oil and gas lease sales

By DGGS petroleum geologist Richard W. Kornbrath

The new DGGS tract evaluation group recently completed a geological and geophysical analysis of state acreage being offered in the Upper Cook Inlet oil and gas lease sale, No. 33. This sale includes 202 tracts totaling 815,000 acres, both onshore and offshore. The sale is scheduled to be held in Anchorage on May 13 at the International Banquet House, 549 W. International Airport Rd.

Lease-data analysis

The State purchased 1,720 miles of seismic data for the sale for about $750,000. Geophysicists James Hansen, Don Krouskop, and John Meyer interpreted these seismic data and constructed seismic time maps at a scale of 1 in. = 8,000 ft for four horizons: basement (pre-Tertiary), and the tops of the Hemlock, Tyonek, and Beluga Formations. Depth maps were then completed over prospective tracts.

Over 200 Cook Inlet wells were examined by DGGS petroleum geologists Bill Lyle and Rich Kornbrath and used to construct structure and isopach maps at a scale of 1:250,000. Next, a computer economic analysis was done by the Division of Minerals and Energy Management (DMEM). The findings and recommendations of the group were presented to Commissioner LeResche on March 17 to aid in his selection of bidding methods for the May 13 sale.

Bidding

Bids will be accepted at DMEM, 703 W. Northern Lights Blvd, Anchorage, on May 12, between 8 a.m. and 4:30 p.m and at the International Banquet House between 8 and 9 a.m.; they will be opened between 9 and 10 a.m.

The bidding method will be royalty bidding with a minimum bid of 20 percent and a fixed cash bonus of $10 per acre. Tracts that are within or partially within state game refuges will have a primary lease term of 10 years; all other tracts will have a primary lease term of 7 years.

Future Sales

The tract evaluation group, which has a new geophysicist, Sonja M. Weum, is continuing seismic interpretation work on the Kenai Peninsula sale (No. 32), which will be held August 25. Data are also being acquired for both

the lower Cook Inlet sale (No. 35) to be held January 19, 1982, and the Prudhoe Bay Uplands-Second Beaufort Sea sale (Nos. 34 and 36), which is scheduled for May 26, 1982.

Large-scale mining seen turning north

(from Fairbanks Daily News-Miner, Mar. 26, 1981)

Large-scale mining will begin in Southeast Alaska, says the man responsible for guiding the state's interests in mining, but eventually the real action will be in the Interior.

"This is truly elephant country when it comes to resource development," John Sims, director of the new Office of Mineral Development, told the Fairbanks Chamber of Commerce Tuesday.

Sims outlined many benefits for Alaska from large-scale mining, but he warned that "we must get over some very parochial attitudes" in preparing for that day.

Sims' office is part of the Department of Commerce and Economic Development, and he stressed that his office is intended to influence state policy, not regulate the mining industry.

"I support the need for regulations," he said. "To say otherwise is to turn anarchy into chaos." But he went on to warn against the current mood of "overregulation" in the state government.

Large-scale mining will move slowly north during the next decade, Sims predicted, starting from the U.S. Borax molybdenum discovery at Quartz Hill.

The $22.5 billion worth of minerals that will come out of the open-pit mine there will provide substantial employment for the Ketchikan area over the mine's 70-year life, Sims said.

Farther north, at Green's Creek on Admiralty Island, another 350 jobs will be created for the Juneau area by an underground mine that will extract a number of base and precious metals. Sims said the deposit of 3 or 4 million tons is "quite small" by industry standards.

Anaconda's copper deposit near Ambler is the closest thing in the future of the Interior right now, Sims said, but a belt of copper, lead, zinc, and precious metals on the north side of the Delta Mountains may provide another new mining venture.

Development plans are also "well advanced" for the asbestos deposit near Eagle, he added.

With major mining development in the Interior, Sims predicted, extension of the Alaska Railroad into Canada becomes a real possibility——but with a new wrinkle for Alaska. Rather than exporting all minerals down the railroad extension through Canada, Sims believes a railroad extension would bring minerals from the Yukon Territory to Alaskan ports for export.

Ex-miners miss the diggings

(from Fairbanks Daily News-Miner, Mar. 27, 1981)

Two old timers from Alaska have decided retirement is not for them and are heading north again to try their luck on prospecting.

Fred Bryant, 69, and his partner, Ken Charlesworth, 64, have built a huge dredge to mine gold and other precious metals from the rivers of Alaska and the Yukon.

"There's a fortune in minerals still sitting up there waiting for someone with the right machine to bring it up," said Bryant.

The two, who operated a business in Alaska for years, stopped off in Winnipeg to make adjustments to their dredge's trailer. They intend to use the dredge for the next three or four years to recover gold left behind by conventional mining in the north. A couple of years ago they obtained plans for a dredge and set to work building it in Minneapolis, Charlesworth's hometown.

"Because the season is limited by the weather to about 100 days, we hope to work around the clock," he said.

The Alaska Lands Act: How it will affect oil and gas exploration

(from Anchorage Daily News insert, Mar. 1981)

The Act contains an oil and gas study provision for the coastal plain of the Arctic National Wildlife Refuge. To facilitate this study, a one million acre area is excluded from the Refuge's wilderness classification. The study includes wildlife assessments and oil and gas seismic exploration followed by a report to Congress in five years. In addition, a study of wildlife, wilder-

ness, and oil and gas values of the Federal lands on the central North Slope is also directed.

The Secretary is also required to establish a program to pursue oil and gas leasing on non-North Slope federal lands outside conservation system units.

Lastly, the Secretary is directed to act on applications for oil and gas leasing---in Wildlife Refuges which are not also designated as Wilderness. A decision on such an application must be made within a specified period of time. Leases are to be issued pursuant to an environmental compatibility finding. However, the Secretary has the burden of proof of documenting the basis of denying a lease appliation---a change from prior law.

The Alaska Lands Act: How it will affect prospecting and mining in the National Forest Wilderness

(from Anchorage Daily News insert, Mar. 1981)

The prospecting for and development of mineral resources are long established uses on national forests. A number of restrictions on such use apply to designated Wilderness areas. National Monuments are closed to further mineral entry, but valid claims remain.

The Wilderness Act permits exploration for mineral deposits until December 31, 1983. Mining claims determined to be valid as of December 31, 1983, can be developed. Mining claims located in these Wilderness areas prior to establishment by the Act include both the land surface and minerals beneath the surface.

Although National Monuments are closed to mineral entry, the Alaska Lands Act provides for mineral development in specific portions of both Misty Fiords and Admiralty Island National Monuments. These provisions accommodate proposed mining development by U.S. Borax and Chemical Corporation at Quartz Hill in the Misty Fiords National Monument and the Pan Sound Venture at Greens Creek in the Admiralty Island National Monument.

Although the lands in the area of both Quartz Hill and Greens Creek are withdrawn from entry, the Act provides for continued prospecting on lands within 3/4 mile of valid claims. This will permit some expansion of both operations should additional valuable deposits be located adjacent to the valid claims. The new legislation prohibits new mining claims in the Copper/Rude River addition to the Chugach National Forest. However, mineral removal on existing claims will be allowed under reasonable regulations.

The Alaska Lands Act: How it will affect mining

(from Anchorage Daily News insert, Mar. 1981)

No doubt about it, the Alaska Lands Act has a lot to say about mining in Alaska.

The act clears the way for a number of mines in Southeast Alaska, initiates a study of the mineral potential in the Kantishna Hills/Dunkle Mine areas and closes other areas to mineral development.

Lands managed by the National Park Service and the U.S. Fish and Wildlife Service, including the new units created by the act, are withdrawn from any new mining claim locations, entry and patent.

Wildife refuges created by the act might be opened to mineral leasing in the future if such activities are compatible with the refuges' purposes. The national parks, monuments and preserves administered by the National Park Service are closed to all mineral leasing.

Of course, those holding valid mining claims in the new units may continue to operate on both National Park and Fish and Wildlife lands, subject to reasonable regulation. Proposed interim regulations on this subject have been issued by the National Park Service and Fish and Wildlife Service.

Regulations regarding mining claims, such as annual assessment work, recording requirements and patenting procedures, still are in effect. The Bureau of Land Management is responsible for those requirements and for supplying information about federal mining claims recordation to other agencies.

Studies of the Kantishna Hills and Dunkle Mine areas will be conducted by the Alaska Land Use Council to determine the mineral potential of the areas, the environmental consequences

of industrial development and the estimated cost of acquiring existing mining properties.

Two special management areas created by the new act are to be managed by the Bureau of Land Management. The Steese National Conservation Area and the White Mountain National Recreation Area, located in interior Alaska, contain about 7,300 mining claims. Access to these claims is guaranteed by the legislation.

Although valid existing rights will be honored, both areas are withdrawn by Congress from new location, entry or patent under the mining laws. Mineral development---whether leasing, location, entry or patent---may be permitted in the future if development is consistent with land-use plans developed for them. The decision to open up the areas to new mineral uses depends on detailed land-use plans to be completed with five years.

Holders of valid mining claims in the two special management areas must comply with applicable federal and state mining laws. Claim holders also are subject to reasonable restrictions to protect the environment and other resources.

Those interested in mining should understand that federal lands not specifically mentioned in the act remain in the same status as before: that is, those lands that were open to mineral location, entry and patent remain open and those lands that were closed remain closed.

The act also requires the Interior Department to conduct a thorough evaluation of mineral potential, including oil and gas, on all public lands in Alaska. Findings must be sent to Congress by Oct. 1982 and updated yearly from then on.

If you have any questions about how the act affects your mining claim, consult the proposed interim regulations or contact the agency that manages the land on which it is located.

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According to DGGS hydrology chief Bill Long, nearly as much water flows from Alaskan lands to the sea as it does in the 'lower-48.' One and one-half million cu ft/sec flow to the oceans from Alaska; 1.7 million cu ft/sec flows from 'Outside' rivers.

DGGS Assay Lab cites capital improvements

During the 1980 legislative session, several state senators were successful in responding to a primary concern of the state's mining and prospecting community---namely, that modern analytical equipment be obtained for the state assay laboratory. After personally reviewing some of the analytical equipment needs of the lab, Sens. Fahrenkamp, Bennett, Hackney, and Sumner submitted a bill that subsequently resulted in the appropriation of funds for an inductively coupled plasma spectrograph (ICP), a replacement X-ray diffractometer (XRD), and many smaller items necessary for a more efficient laboratory.

The ICP will take over the main instrumental burden of the DGGS public assays and will also provide primary support for the geochemical aspect of the DGGS mineral-assessment programs. Unlike previous quantitative-analysis instruments, the spectrograph is not limited to analyzing a sample for one element at a time. Rather, it can provide quantitative data for many elements simultaneously, thereby saving much time in the final steps of several analytical procedures. The ICP, scheduled for installation in April, will require several months of 'hands-on' training before becoming fully operational.

The new semiautomated XRD, also scheduled for delivery in April, replaces a 20-year-old manual system. This instrument will provide greater operator safety, ease of use, and sensitivity for identifying minerals. The diffractometer also will support both public assays and DGGS mineral-assessment programs. The unit is expected to be fully operational from the date of installation.

The Legislature's capital-improvement appropriation to the assay lab will result in a broader range of analytical capability, a greater volume, and faster service to the public. In fact, the appropriated ancillary equipment already in place has helped the laboratory to process twice as many public assays since July 1980 as in a similar period the preceeding year.

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There are nine Eldorado Creeks on the Seward Peninsula.

"Summer of '42" revisited

Here is another letter from the DGGS 'Musty Files' Dept. In this one, Assayer Art Glover beseeches the flinty Territorial Legislature for a raise in salary during the early part of World War II. We thank Mr. Glover, who retired from the state many years ago and now resides in Squim, Washington, for allowing us to share with you a poignant glimpse at life as it was in a cheaper, smaller, pre-Prudhoe Alaska.-Ed. note.

October 19, 1942

Mr. B.D. Stewart
Commissioner of Mines
Juneau, Alaska

Dear Mr. Stewart:

I regret having to bring up this matter, and perhaps you have already given it some thought, but I would like to learn what possibility there may be for me to receive a salary increase from the next session of the legislature. As you are probably aware, living costs in Fairbanks have increased considerably over what they were in 1937, when the legislature fixed the salary of Territorial assayer at two hundred and fifty dollars. I have no desire to climb on the bandwagon and receive as much as most laborers around here are receiving, but frankly, I would like to feel that, after paying income taxes, I still had enough to pay insurance and support Mrs. Glover and myself. During this last year costs have mounted to a point where my salary now just pays all expenses [and] makes ends meet, and I hope that she will not have to continue working unless, of course, the war emergency demands it.

Please understand that I am not requesting an increase because of my extra duties in connection with the MRC program.* I am happy to contribute all effort necessary and I wish I could do more. However, it is apparent that the salary, as fixed in 1937, will not be a livable wage if costs continue to mount and income tax deductions are made. Too, it has often seemed that the Fairbanks post should be entitled to some differential to offset the higher costs and having to maintain transportation, not to mention the greater volume of work at the Fairbanks office.

You may think it odd that, in spite of the above, we plan a vacation trip this winter. However, Mrs. Glover and I both feel that this will be our last chance for several years and we would like to make the trip while we have the opportunity.

For your information I am listing the present expenses of Mrs. Glover and myself.

Rent	$ 60.00
Light & Telephone	15.00
Heat	12.00
Food	75.00
Clothing	22.00
Car	20.00
Insurance	25.00
Entertainment	5.00
	$234.00

The above is the monthly average based on yearly expenditure. Assuming a continuation of the present costs, this leaves us sixteen dollars each month, out of which we must pay taxes, dentist, doctor, misc., etc. If we are to deduct in the neighborhood of fifteen or twenty percent of our income for taxes for the next few years, you will readily appreciate the difficulty of maintaining a home in Fairbanks.

It is my earnest desire to continue with the Department, as I would much prefer to live modestly on a job I really enjoy than make a lot of money on one I do not care for. But I would like to feel that by careful saving we could eventually acquire our own home, and since this job has no retirement benefits - not even Social Security benefits - we should be entitled to a salary sufficiently greater than the bare cost of living, to allow us some savings.

I would be grateful for your opinion in this matter and I am sure you will agree that some adjustment should be made. You know better than I how the legislature may receive such a suggestion, but if for any reason they should refuse an adjustment, they should certainly remove some of their restrictions against employees assuming outside work. If Mrs. Glover was not working it would be necessary for me to find part-time work in the evenings so

*Metals Reserve Corp.—A wartime government agency set up to buy certain strategic minerals (tin, tungsten, nickel, etc.).

I could afford to stay with the Department.

Between you and me, tho, I would rather starve to death on this job than work on some others -- but I hope we won't have to.

With kind regards.

Respectfully yours,

Art Glover
Assayer-in-charge

'Short notes' out

DGGS updated an information circular and printed two new geologic reports---one of which is the long-awaited 'Short notes.' The other geologic report describes Cook Inlet lahars.

Geologic Report 63, 'Short notes on Alaskan geology - 1979-80,' is the fifth in a series of reports containing brief contributions on recent geological investigations in the 49th State.

'Short notes is an assortment of recent research on Alaska geology,' said State Geologist Ross G. Schaff. 'Each contribution is of limited scope and does not merit a document of its own and therefore might never be published.'

The authors include University of Alaska graduate students, UA faculty, and personnel from the DGGS and the U.S. Geological Survey.

Subjects range from permafrost-induced ground-water blockage in the Prudhoe Bay oil field to fossil algae found on the Canadian border near Eagle.

The 32-page report, complete with illustrations and tables, sells for $1.

The second geologic report printed during the quarter describes lahars (volcanic mudflows) near Anchorage.

About 3,500 years ago, lahars from Mt. Redoubt were deposited on the shore of Cook Inlet in the Crescent River valley, about 80 miles from Anchorage. Such an event can happen again, say the authors, J.R. Riehle, Juergen Kienle, and K.S. Emmel.

Lahar deposits now extend from glacier valleys on the southwest flank of Redoubt Volcano to the shore of Cook Inlet, a distance of more than 7 miles. Radiocarbon dating suggests that the lowest, or oldest, lahar exposed in the sea cliffs of Cook Inlet was deposited about 3,500 years ago.

Riehle, Kienle, and Emmel say these lahars may have been produced by events similar to the 1966 eruption of the volcano, which caused such mudflows and flooding of the nearby Drift River.

Geologic Report 53, 'Lahars in the Crescent River valley, lower Cook Inlet, Alaska,' is 10 pages long, has one map and three photos (including a stereo pair of a lahar fan north of Lake Fork of the Crescent River), and sells for $1.

Also available is updated Information Circular 8, 'Consultants available for work in Alaska.' This 8-page booklet lists firms---both Alaskan and 'Outside'---that are interested in minerals work here. The IC is free.

Another booklet that is free---but not from DGGS---is 'The guide to preparation of mineral patent applications.' This 38-page pamphlet, which answers common questions about patenting and delineates the procedures to be followed, is available from the BLM. For a copy, write BLM, Box 13, Anchorage, AK 99513. Do not write DGGS.

Engineering geology studies of Anchorage area continue

By Randall G. Updike, DGGS geological engineer

The upper Cook Inlet area of south-central Alaska, which includes Anchorage, sustained considerable damage and loss of life in the Good Friday Earthquake of Mar. 27, 1964.

Much of the destruction was caused by massive slide failure of Quaternary soils. Sadly, very little research has been conducted recently on earthquake hazards related to ground failure in the region. However, DGGS has begun a) a detailed study of present-day susceptibility for sensitive clay failure and liquefaction of Quaternary soils in response to a seismic event, b) characterizing and mapping soil units that exhibit potential failure modes, and c) establishing an engineering soils data bank of borehole logs and associated testing results for the upper Cook Inlet region.

The Government Hill area---site of the Port of Anchorage, major fuel depots, and Elmendorf Air Force Base---was used as a model for the present DGGS study. Seven engineering geologic facies within the Bootlegger Cove formation were identified according to their static and dynamic behavior. The distinct characteristics of these facies, together with information stored in the new DGGS geotechnical data bank, facilitated three-dimensional mapping of the units. Of particular interest is a facies often susceptible to liquefaction.

Similar methodology, modified by our experience at Government Hill, is being used in a DGGS study of south Anchorage.

To further understand the static and dynamic behavior characteristics of the Bootlegger Cove formation, DGGS is directing a cooperative state-federal-private program of deep geotechnical drilling, undisturbed core sampling, advanced static laboratory testing, and dynamic testing. Cyclic triaxial and resonant column loading systems are being used to subject samples to seismic conditions under in situ stress fields. This program, the first of its kind conducted in Alaska, will provide a better understanding of the geologic history, engineering characteristics, and engineering design of the Bootlegger Cove formation.

Results of this study, when combined with those of the Government Hill and downtown Anchorage areas, will supply——in the form of DGGS and U.S. Geological Survey publications---the needed ground-response information for both emergency preparedness and future development.

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State's water-well data program delineated

By Larry L. Dearborn (DGGS) and
Ingrid Donnerstag (DFLWM)

Ground-water hydrology is finally receiving a well-deserved scrutiny at DGGS as a result of expansion of the Water-Resources section. The foremost concern of Alaskan ground-water hydrologists, namely 'beefing up' the generally scant data base, is not a simple task.

Ground water is a resource that is determined indirectly through sampling and testing of the subsurface at specific but often randomly distributed points. Even an experienced hydrologist cannot often state that he can reliably determine the supply potential of an aquifer within a set degree of accuracy, even with given sampling techniques and preselected sample points. The crux of the data-base problem is that, given Alaska's complex geologic environment, many ground-water data points are needed to adequately define the geohydrologic variables that control well-yield potential and natural water movement.

There is no substitute for 'ground truth' when quantitative appraisals are requested. But test drilling is very expensive, particularly if located away from the major business centers; thus, no governmental agency can afford to inventory ground water availability by test drilling throughout a basin. There are other methods of inferring the occurrence of ground water, but they are expensive. In short, DGGS is actively pursuing the day-to-day subsurface information from driller's well logs.

Well logs

Historically, most studies of Alaskan ground-water supply originate with data supplied to the hydrologist via well logs. This dependence is not likely to change in the foreseeable future. Hydrologists are not banking on the recent speculation that laser beams will outdate existing well-drilling technology. Hydrologists at both DGGS and the U.S. Geological Survey work daily with information recorded on well logs. To facilitate acquisition of these data, DGGS has devised a well log format (fig. 1) that is available to Alaskan drillers free of charge. The three-carbon form is intended to serve the customer, driller, and the state.

Increasing noncompliance by drillers

In years past, some drillers regularly turned in logs to a state or federal office. Rapport was established and strengthened by exchanges of ground-water information. Today, however, the industry-wide attitude appears to have degenerated, and fewer drillers are complying with Alaska Statute 41.08.020, which requires the submission of well logs to the DNR. Many drillers do not recognize the

RETURN TO: Division of Geological and Geophysical Surveys (DGGS)
3001 Porcupine Drive (Telephone: 274-9681)
Anchorage, Alaska 99501

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES

WATER WELL RECORD

Drilling Company Name _____

U.S.G.S. Local No. _____
Drilling Permit No. _____
A.D.L. No. _____

LOCATION OF WELL — Please complete either 1a, 1b, or 1c.

1a. Borough	Subdivision	Lot	Block	1b. Fraction / / /	Section No.	Township N/S	Range E/W	Meridian

1c. Distance and Direction from Road Intersections

Street Address and Area of Well Location

3. OWNER OF WELL:
Address:

2. WELL LOG Material Type	Feet Below Surface Top	Bottom

4. WELL DEPTH: (completed) _____ ft. | Surface Elevation | Date of Completion

5. ☐ Cable tool ☐ Rotary ☐ Driven ☐ Dug
☐ Auger ☐ Jetted ☐ Bored ☐ Other: _____

6. USE: ☐ Domestic ☐ Public Supply ☐ Industry
☐ Irrigation ☐ Recharge ☐ Commercial
☐ Test Well ☐ Other: _____

7. CASING: ☐ Threaded ☐ Welded
_____ in. to _____ ft. Depth Weight _____ lbs/ft.
_____ in. to _____ ft. Depth

8. FINISH OF WELL:
Type: _____ Diameter: _____
Slot/Mesh Size: _____ Length: _____
Set between _____ ft. and _____ ft.
Fittings:

9. STATIC WATER LEVEL: _____ ft.
☐ Above ☐ Below land surface
Type of Measurement: _____

10. PUMPING LEVEL below land surface
_____ ft. after _____ hrs. pumping _____ g.p.m.
_____ ft. after _____ hrs. pumping _____ g.p.m.

11. WELL HEAD COMPLETION: ☐ In Approved Pit
☐ Pitless Adapter _____ inches above grade

12. GROUTING: Well Grouted: ☐ Yes ☐ No
Material: ☐ Neat Cement ☐ Other: _____

13. PUMP: (if available) HP _____
Length of Drop Pipe _____ ft. capacity _____ g.p.m.
Type: ☐ Submersible ☐ Reciprocating
☐ Jet ☐ Other: _____

14. REMARKS:

15. WATER WELL CONTRACTOR'S CERTIFICATION:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief:

Registered Business Name _____ Contract License Number _____

Address: _____

Signed: _____ Date: _____
Authorized Representative

Form 02-WR Copy Distribution: WHITE - State DGGS, PINK - Driller, CANARY - Customer

Figure 1. State water-well-log form.

value of their work. Others dislike record keeping or erroneously believe their data are proprietary. Some think drill-hole data at any given site have no bearing on any other site.

The DGGS hydrology staff, however, believes it can present persuasive arguments to nullify most of these attitudes and always welcomes the opportunity to talk with drillers.

State processing of well logs

The Water Management section of the State Division of Forest, Land and Water Management (DFLWM) plays a key role in the collection and processing of well logs, as does the Water Resources Division of the U.S. Geological Survey. Almost all the well logs now handled by the state are received from applicants filing at DFLWM for water rights.

DFLWM reviews all certificate, permit, and closed water-rights case files for additional information, assigns a unique ADL (Alaska Division of Lands) number, records the owner name and location, and sends the information to DGGS, which further examines each log for completeness and for problems with technical data. Data packages are then sent to the USGS computer unit, where well-construction and groundwater data are entered into the National Water Data Storage and Retrieval System, or WATSTORE. The original data package is returned to DGGS. (Both the USGS and DGGS manual filing of well logs is based on the USGS Local Number.)

The processing of well logs is complex (fig. 2), but appears necessary for now. As each agency becomes more accustomed to the other's input and output, more records will be processed

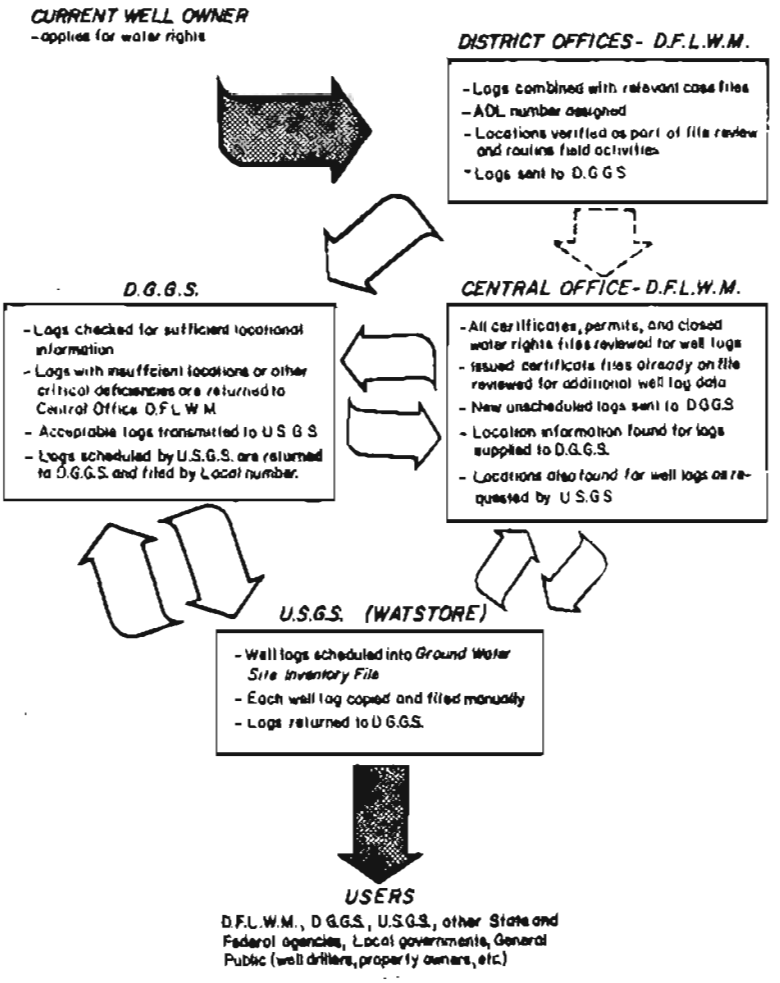

Figure 2. Well-log processing flow chart.

each month with exact location, current well owner, and water-rights file number, resulting in a shorter turn-around time for new entries to appear on the computer printouts.

Well-log users

Each agency not only contributes in generating the ground-water data base but also is an ardent user of it, as follows.

USGS - Needs a representative sampling of well-log data in many areas to define ground-water conditions to determine the impact of development; occasionally requires all available subsurface information for detailed hydrologic studies of discrete areas.

DGGS - Similar to USGS, but with state interests dictating where interpretation of hydrologic conditions are addressed; also supplies data for other state agencies and answers ground-water problems brought in by the general public. DGGS is aiming toward a well-rounded statewide data base with a greater regional density of point data than the USGS desires.

DFLWM - Needs well logs to provide information for sound appropriation of private and public water rights and for making appropriate adjudications when water-use conflicts arise. Well logs are essential to establish individual water-rights files. Ideally, DFLWM would like to have logs for all wells drilled to help determine if a new applicant for water rights might adversely affect existing water supplies.

All well logs with finite locations are processed into WATSTORE and the USGS Ground-water Site Inventory File. Each well coded into this file is given a site ID number based on latitude and longitude and a local number based on the official rectangular subdivision of public lands (meridian, township, range, and section). Information stored includes all data the driller can enter on DGGS's well- log form, plus a description of the water-yielding stratum (aquifer).

To increase well data accessibility, DFLWM is now working with the USGS to enter the ADL number into WATSTORE for cross-reference data printouts. About 200 well logs are now retrievable through such a sequential ADL-number cross-reference listing. Many backlog entries need to be added, and new entries are received daily.

DGGS has four long-term goals: a) to gather and process well logs for as many sites as is necessary to adequately define ground-water potential, b) to continue computer processing the records of all wells for which an application for water rights has been filed, c) to promote good rapport with, and voluntary participation from well drillers and others who acquire subsurface data, and d) to develop specialized ground-water data retrievals and maps by using both WATSTORE and the ALARS (Alaska Land Resources), the computer system designed to be the DNR data bank.

Help wanted

Although the USGS computer now stores records for about 6,500 wells in Alaska, records of many wells drilled in the last 5 years have not been entered. However, when more drillers recognize that they have a legal and professional obligation to record and submit well logs to the state, everyone concerned with ground water will benefit, both new and established residents. Ground water is an essential ingredient in the economic growth of Alaska, and while the resource is yet undamaged we must work together---the water-rights applicant, the driller, and the government agencies---to maximize its long-term value.

In short, fellas, give DGGS a holler. We'll be glad to offer you a cup of coffee and discuss your problems with you. As a bonus, we'll set you up with a package of well-log forms.

New-claims total drops

The number of new mining claims recorded in the past 3 months dropped somewhat, but it was still a much larger total than was recorded at this time last year, according to DGGS files.

This quarter, 4,153 new documents were received---nearly one-fourth of those in one month from one recording district. Only 1,833 new claims were filed at this time last year; 7,877 were recorded during the last report period, which covered 4 months.

The heavy staking in the Kotzebue district was done mostly by General Crude Oil, according to mining-information specialist Mildred Brown. "I presume they're extending their Red Dog

claims in the De Long Mountains down into the Noatak Quadrangle," she said.

Other staking activity centered in the Fairbanks and Anchorage Quadrangles. The totals by recording district are:

	Jan.	Feb.	Mar.
Fairbanks	268	150	138
Manley Hot Spr.	75	2	2
Nulato	6	0	123
Mt. McKinley	251	0	19
Nenana	36	8	0
Ft. Gibbon	120	0	0
Kotzebue	917	0	0
Talkeetna	30	150	79
Palmer	8	76	0
Nome	39	0	15
Seward	138	92	84
Haines	11	0	0
Petersburg	6	0	0
Ketchikan	75	178	4
Sitka	3	0	0
Anchorage	0	418	567
Bristol Bay	0	23	0
Cordova	2	0	3
Chitina	0	17	0
Valdez	0	0	10
Homer	0	0	10
Totals	1,985	1,114	1,054

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DGGS has several new employees

Several new personnel are squeezing themselves into the cramped DGGS facilities.

Valerie L. Reger joined DGGS in March as a clerk-typist in the DGGS Administrative Services section. She assists the College mining-information office and provides typing and clerical support.

Mining geologist Mark S. Robinson joined the College staff in late February. He manages the land-disposal-review projects, provides liaison with other DNR agencies, and participates in the Interior Mining Districts project. Robinson was an economic geologist with the UA Mineral Industry Research Laboratory.

In Anchorage, there are two new faces. One belongs to Sonja M. Weum, a geophysicist with the Oil and Gas tract-evaluation group. The other newcomer is Garth E. Olson, a cartographer who was previously employed with the BLM in the Branch of Photogrammetry.

Mining geologist Paul A. Metz joined the DGGS College staff on a part-time basis in early March. He is surveying Alaska's mineral-industry activity and potential, and is working on the Interior Mining Districts project. Metz is also employed as an economic geologist at MIRL.

In late May, Dr. Thomas E. Smith will rejoin the College staff. Currently a Professor of Geology at the University of Alaska, Smith has started to contribute to DGGS mineral-resource-assessment projects and will coordinate exploration geophysics activities. He was DGGS Chief Mining Geologist before rejoining the world of academics in 1975.

In a related personnel note, DGGS geological assistant Larry Lueck, who has been with DGGS 2 years, has accepted a promotional transfer to the Division of Forest, Land, and Water Management. He will be a geologist in the DFLWM Fairbanks office.

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Annual placer conference held

At the third annual Placer Miners Conference at the UA Fairbanks campus in early April, miners were unanimous in their vocal complaints of government. They charged that unnecessary regulations were stifling the mining industry in Alaska.

In a conference-ending forum on the last day of the 2-day meeting, officials from the state and the federal government attempted to explain new methods to streamline the permit process and to cut existing red tape, but some of the miners were not convinced.

Topics covered at the conference included drilling techniques, fine-gold recovery, financial aspects of gold sales, recreational mining, and placer operations at Livengood, the Kenai Peninsula, Porcupine Creek, the upper Yukon River, and Slate Creek.

At the forum on mining regulations, permits, and enforcement, Scott Grundy of the Department of Fish and Game said ADFG is trying to relax identifications of rivers and streams designated for fish protection. He said the listing being written will be more finite, designating critical 'portions' rather than the previous 'broad' listing of those waters.

An attorney general's opinion

(p. 2) that the miners may have to obtain leases rather than stake claims was also brought up. Such a system would have a dramatic impact on the mining industry in Alaska, many miners said.

DNR's Jeff Haynes, quoting Commissioner Robert LeResche, said that if the state must impose such a system, it would not be on a competitive lease basis but would be one that would attempt to duplicate the present system as closely as possible. He added, 'Over a period of time we expect mining to occupy the magnitude of oil and gas.'

On the federal level, BLM district manager Carl Johnson delineated major legislation that has affected the miner since the Alaska Statehood Act. Still, he insisted, the miners' rights under the 1872 federal mining act remain intact. Budget cutbacks, he added, will mean the BLM 'will have to trust the miner.' Johnson also said the BLM plans to streamline environmental assessments on a regional basis.

The conference had an indoor trade fair featuring sluice boxes, generators, and dredges; heavy equipment was shown outdoors.

About 500 persons attended the conference, according to chairman Earl Beistline, Dean of the UA School of Mineral Industry.

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Natural gas find precedes NPRA sale

(from Alaska Industry, Mar. 1981)

A natural gas discovery by the U.S. Geological Survey in National Petroleum Reserve Alaska at the same time a public lease sale there is being prepared and a possible offshore oil discovery in the Beaufort Sea which can't be confirmed for at least a year are among the recent interesting events in Alaska's revitalized oil industry.

In a cautiously worded statement from the operator, Sohio Alaska, it was disclosed that the Challenge Island well off Point Thomson found hydrocarbons in the targeted zone at 13,500 ft but the porous, high-pressure formation caused mechanical problems preventing adequate testing. No further drilling is planned until next winter because of state environmental restrictions.

The USGS announced completion of a well and a small new natural gas field about 20 miles south of Barrow. The announcement came after industry nominations closed but, despite that fact, a dozen companies nominated virtually all of the 23 million acres in the reserve.

About four million acres will now be selected for a planned December sale. Selections will be made in part by areas of highest interest as indicated by total values of priorities given to nominations. True industry interest will be determined by the bidding in the competitive lease sale, however.

Two federal government exploratory drilling programs spanning more than a dozen years and including dozens of holes have produced only some small gas fields and an oil field which is only now approaching commercial potential some 25 years after its discovery. But private industry explorationsists are reportedly eager to prove they can be better.

ARCO has formally advertised for participants in three Bering Sea stratigraphic wells to be drilled in deep water with a semisubmersible rig.

The St. George COST No. 2 would be drilled to 14,500 ft on a location 115 miles northwest of Cold Bay. The North Aleutian Shelf COST No. 1 would be drilled to 13,000 ft some 80 miles northeast of Cold Bay. The Navarin COST No. 1 would be drilled to either 14,500 ft at a primary location or 16,500 ft at an alternate location nearly 300 miles southwest of Gambell on St. Lawrence Island.

Parsons Corp. has received two contracts totaling more than $400 million from Sohio for water flood and hydrocarbon gathering facilities in the western sector of the field.

ARCO has called for the state to establish pool rules for production of the adjacent Kuparuk oil field and a public hearing has been set by the Oil and Gas Conservation Commission for March 25 in Anchorage to consider the proposal.

Contractors are also expanding service facilities at Prudhoe. Four companies have purchased five barracks units from Alyeska Pipeline Service Co. at Valdez and are moving the units to Prudhoe Bay.

Crowley Maritime Corp. bought two

of the Atco buildings, while Professional Contractors, GSL Oil Field Services, and Atwood Pipe Co. each bought one, according to sources in Valdez.

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Anti-mining suit lists bears as plaintiffs

(from Fairbanks Daily News-Miner, Mar. 4, 1981)

Twenty grizzly bears who inhabit the Kottenia National Forest in Montana are listed among the plaintiffs in a suit filed in U.S. District Court in Washington by environmental groups seeking to halt mining exploration in the forest.

The suit contents the mining exploration would threaten the 20 grizzlies, which inhabit the Cabinet Mountains Wilderness area in the national forest in northwestern Montana.

The bears, "ursus horribilis," were listed as plaintiffs in a rare legal maneuver that is "a symbolic gesture in defense of an animal that has its back to the wall," said Bill Cunningham, a Wilderness Society spokesman in Helena.

In addition to the bears, plaintiffs in the suit filed last fall are the Sierra Club, Defenders of Wildlife and the Western Sanders County Involved Citizens.

The suit was filed in an attempt to halt a copper and silver exploration project planned by Asarco, an international mining firm.

The director of the U.S. Fish and Wildlife Service and the chief of the National Forest Service were named as defendants. The lawsuit alleges the agencies have not enforced the requirements of the Endangered Species Act and the National Environmental Policy Act.

Agency spokesmen say their enforcement of the regulations has been adequate. Helicopter flight paths have been changed to avoid areas considered important to the bears, they said, and the agencies have shortened the time in which exploration can occur so the bears will not be disturbed.

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Coal, gold lands now Chugach Natives concerns

(from Alaska Industry, Mar. 1981)

Two mining claimants on the seaward side of the airstrip at Yakutaga have found themselves in conflict with the Chugach Natives Inc. which has claimed the land under the settlement act. A spokesman for CNI said a third placer claim at the mouth of the Yakataga River's south channel is also being examined for possible ownership conflict.

Kenneth McClarty, holder of the A-P No. 1 claim, and Lord's Mine, Inc., holder of the A-P 2 claim, have appealed a decision of the Bureau of Land Management in Anchorage that the land was closed to mineral entry as an air navigation site when the claims were filed in 1976. The withdrawal was subsequently lifted and the lands claimed by CNI. A spokesman for BLM said the special appeals board in Washington, created by the claims act, will rule on the conflict. Any appeal of that ruling will have to be to the federal courts. The mining claimants have applied for Corps of Engineers permits to work the ground.

Following a coal-development conference in Anchorage, three officials of Samchully Industrial Co. of Korea recently went to Cordova to consult with Chugach Natives, Inc. on possible purchases of Bering River coal. One problem is ownership of lands in the Carbon Mountains along the Bering River. CNI received title to about 64,000 acres but most of the coal land is in public domain which is now undergoing a "regional study" to determine the most suitable ownership pattern.

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William P. Horn, Alaska lands expert, to be appointed Deputy Under Secretary

(from Dept. Interior news release, Mar. 12, 1981)

Interior Secretary James Watt today announced his intention to appoint William P. Horn as Deputy Under Secretary of the Interior with special responsibility for coordinating policy initiatives relating to Alaska.

From early 1977 to early this year, Horn was minority staff consultant to the House Interior and Insular Affairs Committee, working especially on the Alaska Lands legislation that became law in December 1980. Prior to that, he was a special assistant to the Assistant Secretary of the Interior for Land and Water Resources during the year 1976-77.

"Bill Horn knows Alaska lands legislation as few people do, and he will be especially valuable to us as we move into implementation of the com-

prehensive new Alaska Lands Act, which mandates dozens of studies and actions to be taken during the next few years," Watt said.

New development opens pipeline corridor lands to mineral entry

As Mines & Geology went to press, the DNR Commissioner's Office announced the amending of Mineral Closure Order 67, which had invoked a 6-mile-wide corridor down the length of Alaska for the management of the Trans-Alaska Pipeline. This action, taken in the latter part of April, means that a substantial addition of state land has been opened to mineral entry.

Remaining closed is an corridor 'generally 1 mile wide,' according to the DNR news release. This is for management of the proposed Northwest Alaskan Gas Pipeline route.

The announcement was accompanied by an eight-page list of areas opened to mineral entry according to township, range, and section in the Fairbanks, Copper River, and Umiat Meridians. Previous minerals closing orders within the Trans-Alaska Pipeline route and closings made for state land disposals remain in effect, the release stated.

The information offices of DGGS and the Division of Forest, Land and Water Management (323 E. 4th, Anchorage 99501; 4420 Airport Way, Fairbanks, 99701; and 230 So. Franklin, Juneau, 99801) have further information on the closure.

DGGS has 'last-minute' AOF on Brooks Range for sale

Just as the Mines & Geology was to go to the print shop, an open-file report on the geology of the south-central Wiseman Quadrangle was completed.

The report, AOF-119, is a one-sheet, inch-to-the-mile blueline of the geology of the Wiseman A-3 Quadrangle. Principal author John Dillon says that this is the first in a series of open files on the Brooks Range. The next, on the A-4 Quadrangle, will be available for examination and purchase by July. Coauthors are Warren B. Hamilton (USGS) and Larry Lueck.

The report sells for $1.

Our Gangue....

By Frank Larson, DGGS editor

Riddle: What emerges every spring like clockwork, is full of vim and vigor, runs the hundred in 6 flat, and smells worse than a putrescent goat?... A jogger, you say? Sorry. (But 3 points for trying.) The answer: any of the family Ursidae. Yes, as many miners and geologists begin to prepare for their summer in the field, they are also starting to have springtime thoughts---not necessarily of girls in the heather, but of Br'er B'ar in the bush. Mostly, these are not kindly thoughts. They find the 'Gentle Ben' pap just doesn't wash....Ask DGGS geologist Dick Reger, for instance. In 1960, he found himself, unarmed, his arms loaded with seismic gear, 5 ft from a black-bear cub. Even worse, he slowly did a '180' and found himself face to face, a mere 10 ft away, from Mama. "There are very few more exciting ways to start your day," he says. What to do? Well, having been raised in "b'ar country" (Kenai Peninsula), he did what any redblooded UA geology student would have done: he slowly edged away, so that the sow was between him and the cub. Then he dropped everything but the 10-ft 'jug' pole he was carrying, and charged the bear, running and screaming like, in his words, "a regular Don Quixote." Luckily, the sow bolted, taking her cub with her....Then there was the anonymous USGS geologist who found himself at the top of a very skinny spruce in the Brooks Range. (Trees there are not in your basic Sequoia class, you know.) What was he doing up there, you ask? Scanning the horizon for Viking invaders? Looking for the tundra version of Poe's 'Gold Bug?'....Nooooo. He was entertaining an amused Hamms- like bear, hunkered at the base of the tree, patiently watching the esteemed earth scientist sway in the breeze, bobbing perilously close to his beloved nonmarine grit, sandstone, and carbonaceous shale. (A helicopter subsequently chased off his audience.). In McKinley Park 4 yr ago, DGGSers Wyatt Gilbert and John Decker did a northwoods rendition of a timorous Pink Panther. You see, they suddenly found themselves face to face with a humongous grizzly. Stunned and

breathless, they tippy-toed backward oh-so quietly, step by stealthy step, until they were sure they were safe. (They still hold the Guinness Book of Records mark for walking backward---106 miles.)....There are a zillion bear stories. These are but a few offered up during our Friday-night 'geoforum' at The Pub....Some are funny, most are scary, and a few are tragic....USGS geologist Cynthia Dusel-Bacon lost both arms to an attacking black bear near Fairbanks 4 yr ago. We're happy to report, though, that the plucky lady is back at work again after a long rehabilitation....As a youngster on a moose hunt near Fairbanks, DGGS's Tom Bundtzen watched, horror stricken, as a tentmate was severely mauled by a nocturnal black bear....In 1974, an overeager photographer on the Alaskan Peninsula was killed and eaten (a rarity) by his subject. His wallet was found in the bear's stomach. (Moral: never shoot a Brownie with a Brownie.). Bears are unpredictable...They will eat anything that happens to appeal to them. One Pubmate now has a 26-m measuring tape (a bear ate the other 4 m last summer). Bears also eat canned goods, Dinty Moore's beef stew and such, without bothering with amenities such as can openers...A bear ate the boots of an Interior hiker last summer. Luckily, they were unoccupied at the time. (Still, the hiker had to go barefoot for 3 days before a search party found him.)...Bears also remember. (Friends of the Earth will like this one.) Over the Canadian border in the Yukon Territory a few years ago, a helicopter pilot espied a bear loping along and decided to 'help it' on its journey---by goosing it with the spear-like single-sideband radio antenna that extends from the chopper's prow like a mosquito stinger. After a couple of sorties in which he zapped the bear's fanny with electrical bursts with his antenna transmitter trigger, the bear eluded him. That evening, the field party returned to their helicopter. Oh, it was there, still waiting for them, but in their absence they found it had been 'Nabisco-cized.' Their $300,000 aircraft was strewn about in convenient bite-sized pieces. (Moral: never goose a bear in the Yukon.).... But what to do when confronted with a bear? Schools of thought vary. Some favor the nonviolent approach. They say run like hell....Others say make noise. One Pubmate offered, 'Bears do not like metallic, clanking noises.' She was saved from a charging sow with cubs on Hinchinbrook Island when her partner vigorously flapped a loosened entrenching tool at them...DGGS's John 'Foghorn' Dillon has his own approach to the problem: he sings a paraphrased Tom T. Hall song, 'I like beer,' to them at the top of his lungs. Dillon says, "I scare off everyone else, too." But even John, who doesn't need a telephone to carry on long-distance conversations, carries iron....Most folks do. There have been way too many bear sightings for the summer 'bush' visitor not to favor the best-defense-is-a-good-offense approach. Large-caliber pistols---a .44 or .357 magnum---are a favorite. A shot or two to scare 'em off frequently works. But if not, or if Br'er B'ar is trying to enter your tent or snuggle up with you in your sleeping bag, you find yourself suddenly running low on options. Speed afoot or melifluous music notwithstanding, you have to make up your mind: either move over and make room for a grumpy, rather maladorous roommate or use the old shooting iron and continue paying taxes....Moving along, Omni Resources of Vancouver reports an 'unusually large' gold and silver strike on its copper-moly find in Southeastern, about 50 mi east of Juneau. If assays are accurate, more than $400/ton may be realized---in addition to its base-metal values, that is....Farther north, Doyon has, about 45 mi from the YT border, about 55 million tons of asbestos ore reserves that average 6.35% fiber. A 5-yr program with 98 diamond-drill holes (WGM, Inc.) substantiates the occurrence, which is found in three adjacent deposits...The DGGS hydrology staff no longer resides at the Anchorage office. They moved in mid-April to their new home, the former fish hatchery in Eagle River. (Appropriately enough, they had to drill a new well before moving in. But would you believe the first one was a dry hole?)....Cominco opened an Alaskan office. They moved to the Anchorage Industrial Center on B St., near the old (sigh) Prinz Brau brewery....You know, Dillon had me fooled for lo, these many years. Somehow, Ol' John just never struck me as an ardent 'Ballads, not Bullets' man.....Cheers.

Metals Market

	April 20, 1981	4 Months Ago (12/29/80)	1 Year Ago (March 7, 1981
Antimony metal per lb, NY dealer	$ 1.39	$ 1.47	$ 1.52
Barite (drilling-mud grade per ton)	$ 30-60	$ 30-60	$ 24-47
Beryllium ore, stu*	$100-130	$ 90.00	$ 75-85
Chrome ore per long ton (Transvaal)	$ 54.00	$ 51.00	$110.00
Copper per lb. (MW-prod.)	$ 0.848	$ 0.868	$ 1.19
Gold per oz.	$478.88	$594.75	$628.70
Lead per lb.	$ 0.38	$ 0.39	$ 0.50
Mercury per 76-lb flask	$420.00	$360.00	$490.00
Molybdenum conc. per lb. (Climax)	$ 8.75	$ 9.20	$ 10.31
Nickel per lb. (cathode)	$ 3.08	$ 3.45	$ 3.10
Platinum per oz.	$458.80	$475.00	$985.00
Silver, New York, per oz.	$ 11.14	$ 16.15	$ 34.71
Tin per lb., MW composite	$ 6.80	$ 7.69	$ 8.75
Titanium ore per ton (ilmenite)	$ 70.00	$ 55.00	$ 55.00
Tungsten per unit (GSA domestic)	$130.00	$128.05	$129.49
Zinc per lb. (MW-US PW)	$ 0.42	$ 0.406	$ 0.38

* - Standard ton unit (20 lb)

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