Coastal flooding in Golovin, Alaska (Photo by Toby Anungazuk, November 2011)

An Impact Communication Tool from DCCED Community Maps

A conceptual idea to address the need for improved and expedited resident/NWS communication during storm events that have the potential to cause coastal flooding

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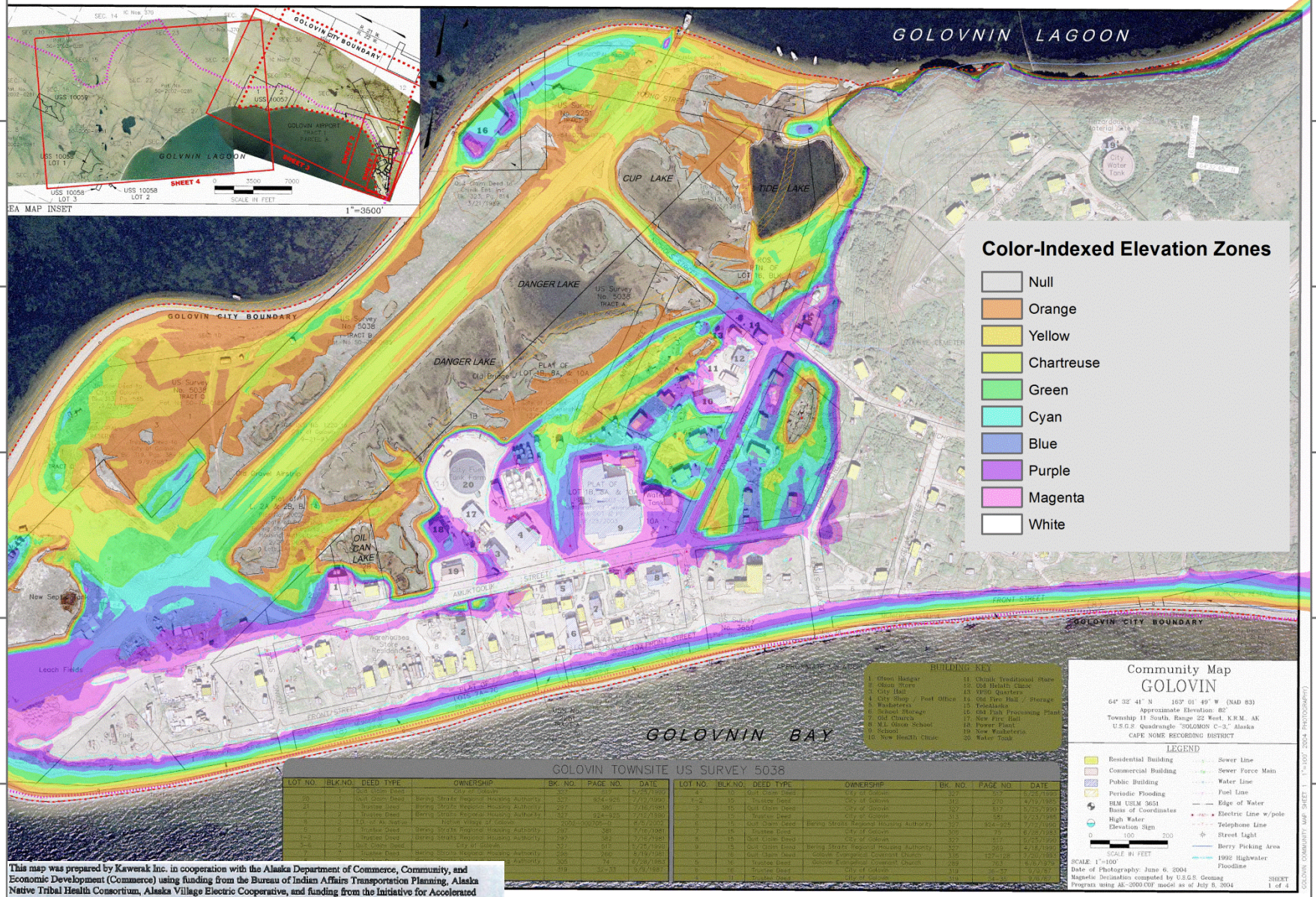
Example made from the current Golovin DCCED Community Map (2004)

- Created from the DCCED CAD DSM source data
- All maps would require a disclaimer regarding:
  - Vertical and horizontal accuracies (location specific)
  - Does not account for terrain modifications since map was last updated (sometimes up to 10 years ago)
  - Setup, wave and runup conditions = all locations are approximate due to local effects
  - Not all areas in one color may be inundated at any given time for a particular storm event (will vary with storm directions and magnitude, could add an index grid over the top)
- Displayed elevation zones patterns are consistent with flood progression and final inland extents of November 2011 Storm mapped by DGGS (was between the purple and magenta scenarios)
- This is not a vulnerability map product but a visual aid to facilitate communication in emergency situations.



GOLOVIN TOWNSITE US SURVEY 5038

LOT NO.	BLK.NO.	DEED TYPE	OWNERSHIP	BK. NO.	PAGE NO.	DATE
4	1	Quit Claim Deed	City of Golovin	327	1	5/23/1990
20	1	Quit Claim Deed	Bering Straits Regional Housing Authority	257	934-935	7/17/1986
21	1	Trustee Deed	Bering Straits Regional Housing Authority	257	380	7/16/1986
22	1	Trustee Deed	Bering Straits Regional Housing Authority	257	924-925	7/17/1986
5	2	T.D. As Native	Native Village of Golovin	1-2002-0002	6/7/2002	
6	6	Trustee Deed	Bering Straits Regional Housing Authority	257	381	7/16/1986
5-2	7	Trustee Deed	Bering Straits Regional Housing Authority	257	382	7/16/1986
3-2	7	Quit Claim Deed	City of Golovin	327	517	5/25/1990
7	7	Trustee Deed	Bering Straits Regional Housing Authority	265	265	8/19/1986
8	7	Trustee Deed	Bering Straits Regional Housing Authority	305	74	6/28/1988
9	7	Trustee Deed	City of Golovin	319	32-33	5/9/1987

LOT NO.	BLK.NO.	DEED TYPE	OWNERSHIP	BK. NO.	PAGE NO.	DATE
4	15	Quit Claim Deed	City of Golovin	327	1	5/23/1990
1-2	15	Trustee Deed	City of Golovin	313	270	4/19/1989
3	15	Quit Claim Deed	City of Golovin	327	517	5/25/1990
4	15	Trustee Deed	City of Golovin	313	1-2	5/23/1990
6	15	Quit Claim Deed	Bering Straits Regional Housing Authority	257	934-935	7/17/1986
7	15	Trustee Deed	City of Golovin	325	13	6/28/1989
8	15	Quit Claim Deed	City of Golovin	327	517	5/25/1990
9	15	Quit Claim Deed	Bering Straits Regional Housing Authority	327	241	4/18/1990
5	16	Trustee Deed	Golovin Evangelical Covenant Church	325	127-128	7/20/1989
6	16	Trustee Deed	Golovin Evangelical Covenant Church	289	63	6/6/1979
8	16	Trustee Deed	City of Golovin	319	36-37	5/9/87
9	16	Trustee Deed	City of Golovin	319	34-35	5/9/87

This map was prepared by Kawerak Inc. in cooperation with the Alaska Department of Commerce, Community, and Economic Development (Commerce) using funding from the Bureau of Indian Affairs Transportation Planning, Alaska Native Tribal Health Consortium, Alaska Village Electric Cooperative, and funding from the Initiative for Accelerated Infrastructure Development (IAID). The IAID is supported by grants from the Denali Commission, USDA Rural Development, Alaska Department of Transportation and Public Facilities and Commerce. Kawerak Inc. contracted with Global Positioning Services Incorporated in May of 2004 to prepare the map. The original AutoCAD drawing or orthophoto has been revised or added to as described:

Elevation ranges have been highlighted by DGGS for potential use in hazard impact communication

Community Specific Tables

Golovin – Version 1.2 Last Updated Jan. 10, 2014 *Best available local datum offsets as computed by Jacquelyn Smith, UAF			
Map Color-Index	NAVD88 Elevation	Local MLLW*	Local MSL*
Red-Orange	0.0 – 1.0	-1.1 – -0.1	-1.3 – -0.3
Orange	1 .0 – 2.0	-0.1 – 0.9	-0.3 – 0.7
Yellow	2.0 – 3.0	0.9 – 1.9	0.7 – 1.7
Chartreuse	3.0 – 4.0	1.9 – 2.9	1.7 – 2.7
Green	4.0 – 5.0	2.9 – 3.9	2.7 – 3.7
Cyan	5.0 – 6.0	3.9 – 4.9	3.7 – 4.7
Blue	6.0 – 7.0	4.9 – 5.9	4.7 – 5.7
Purple	7.0 – 8.0	5.9 – 6.9	5.7 – 6.7
Magenta	8.0 – 9.0	6.9 – 7.9	6.7 – 7.7
Pink	9.0 – 10.0	7.9 – 8.9	7.7 – 8.7

Color-indexed DCCED Maps

Pros

- Visual, and rapid communication platform that can be viewed by NWS, emergency command center and local emergency response teams
- On well-known maps that are already trusted by residents
- Critical infrastructure is labeled and mapped- useful for people who are not used to interpreting the layout of their town from an aerial view AND for modelers unfamiliar with a site
- Since no data is ON the map, the tables can be updated to account for improved local datum information, sea level change, etc. and can be used to convey total surge heights w/ or w/o runup heights and also can account for tide conditions
- No need to explain if the height projections are in MSL, MHHW, geodetic elevations to those that are uninterested
- Could link colors to typical recurrence intervals for first-order community planning (i.e. the magenta zone roughly corresponds to our current understanding of a 100-year storm event for this area)

Cons

- The DCCED DSM models are available in most communities, but not all
- The DSM resolution varies, but in areas with better elevation models (lidar for example) the color zones could be made with the best available and still placed on the DCCED maps
- Color zones are restricted to DCCED map coverage, which sometimes excludes evacuation road routes etc.
- Still requires an improved understanding of local tide datums, and solid storm surge modeling
- Local runup effects will still be difficult to predict in most areas
- While I added a grid for this, it could still be difficult to convey some of the nonlinear effects (i.e. to the green zones on the front side of a barrier island and yellow in the lee OR excluding low-lying inland areas if overtopping will not fill them)