

**Statewide Digital Mapping Initiative**

**FY2013 Request: \$15,936,168**

**Reference No: 50770**

**AP/AL:** Appropriation

**Project Type:** Research / Studies / Planning

**Category:** Transportation

**Location:** Statewide

**House District:** Statewide (HD 1-40)

**Impact House District:** Statewide (HD 1-40)

**Contact:** Steven Hatter

**Estimated Project Dates:** 07/01/2012 - 06/30/2017

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**Brief Summary and Statement of Need:**

This project will advance the data acquisition and development of the Digital Elevation Model (DEM) which is a fundamental component of the Statewide Digital Mapping Initiative (SDMI). FY2013 funding will be targeted towards Northwest Alaska and the Arctic. The DEM is a foundational to all infrastructure development. United States Geological Service (USGS) topographic maps are over 50 years old, and are out of date. Alaska lacks a statewide digital elevation dataset of any kind. Accurate elevation is foundational to infrastructure development and greatly enhances economic development, the preservation of human life (disaster response, mitigation and recovery), and the advancement of physical science.

<b>Funding:</b>	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	Total
Fed Rcpts	\$12,249,138						\$12,249,138
Gen Fund	\$3,687,030						\$3,687,030
<b>Total:</b>	<b>\$15,936,168</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$15,936,168</b>

<input type="checkbox"/> State Match Required	<input type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input checked="" type="checkbox"/> Phased - underway	<input type="checkbox"/> On-Going
0% = Minimum State Match % Required		<input type="checkbox"/> Amendment	<input type="checkbox"/> Mental Health Bill	

**Operating & Maintenance Costs:**

	<u>Amount</u>	<u>Staff</u>
Project Development:	0	0
Ongoing Operating:	0	0
<u>One-Time Startup:</u>	<u>0</u>	<u>0</u>
Totals:	0	0

**Additional Information / Prior Funding History:**

Prior funding: DNR FY2008 \$2,000,000 (GF); FY2007 \$2,000,000 (GF), and FY2006 \$2,000,000 (GF). DOT/PF (GF) FY2012 \$1.75M (GF). Federal: National Geospatial-Intelligence Agency (NGA) FFY2010 \$2.4M; USGS FFY2011 \$1M, FY2012 \$600,000; BLM FFY 2010 \$200,000 FFY2009 \$100,000; NPS FFY2012 \$150,000 FFY2011 \$100,000; National Resource Conservation Service (NRCS) FFY2012 \$100,000 FFY2011 \$100,000; US Forrest Service FFY 2012 \$350,000; USFWS FY2012 \$350,000; BOEMRE / CIAP FFY2010 \$2.590,000.

**Project Description/Justification:**

**THIS IS A JOINT MULTI-DEPARTMENT REQUEST SUBMITTED BY: DOT/PF on behalf of and in coordination with the Statewide Digital Mapping Initiative (SDMI) Executive Committee. The SDMI consists of the DNR, DMVA, DOT&PF, DEC, DF&G, DECD and UA.**

Attached is a map image of next year's elevation collection area. Area 1B, which spans from approximately the western border of the National Petroleum Reserve - Alaska (NPR-A) to 64 degrees north latitude (approximately Unalakleet), holds critical national and state significance. The following are some of the reasons for federal and state prioritization of the Arctic:

1. Climate Change science/prediction;
2. Determination of future fresh water sources (thawing tundra making it permeable so fresh water seeps through);
3. Methane poisoning and sewage lagoon poisoning of groundwater;
4. Resource development/extraction (mineral/oil & gas, Oil Spill Response);
5. Transportation/transportation security;
6. Infrastructure development;
7. SAR (Search & Rescue);
8. National Defense;
9. Arctic border dispute(s) [Canada and Russia]
10. Defense Support for Civil Authorities (disaster relief/response/preparedness and mitigation);
11. Northern Distribution/shipping hub and commerce.

Some of these issues are tied in one way or another to the thawing of the northern ice pack which will allow over the pole shipping and commerce during the summer months among other predicted or foreseeable factors. Many of these factors figure predominantly over the entire state as well as the Arctic and although the Arctic is prioritized it should not be considered an exception. The State has a critical need for elevation data on a statewide basis.

The deliverables of this project are foundational mapping elements contributing to topographical maps such as:

- Digital Terrain Model (Bald Earth);
- Digital Surface Model (Elevation including canopy, buildings and infrastructure), and
- Ortho-Rectified Radar Image.

### **Program Description / Justification**

State and federal agencies have a multitude of requirements that cannot be fully satisfied without an accurate digital base map. The largest component of this mapping initiative is the collection, acquisition and processing of accurate elevation data. This request addresses the elevation component in a phased approach. The other component is imagery and it has been addressed satisfactorily for the time being.

The planning phase of this project has been completed through a statewide stakeholder driven process which resulted in a published statewide requirement regarding the fidelity and resolution of elevation data. Currently the USGS has prioritized Alaska and many federal partners are anticipated.

Elevation and imagery acquisitions have commenced. In 2010 approximately \$4M in voluntary federal funding was leveraged against \$2M in state funding to pool funding in the amount of \$6M and acquire digital elevation data representing approximately 10% of the state. In 2011 \$50k in state funds was leveraged against approximately \$1M in federal funds to process an additional 4% of the state's elevation requirement.

### **Why This Project Is Needed Now:**

This project lays the foundational framework for the advancement of many public and private disciplines which have long been impeded by the absence of an accurate digital base map. This base map is also required to deliver essential government services in a cost effective manner while improving services and increasing public safety. The state has many requirements for an accurate base map and federal interest in teaming with the state for funding and implementation purposes is both high and timely. In order for the state to maintain this interest it must demonstrate that it will, in good faith, participate in the funding of the DEM. The proposed Federal versus State funding ratio of 73% Federal and 27% State is based on the respective land ownership levels in Alaska.

Some of the beneficiaries of the project are related to aircraft navigation, search and rescue, disaster preparedness (tsunami inundation studies, floodplain and evacuation route planning, storm surge analysis & coastal erosion), disaster recovery, emergency response & first responders, resource management, infrastructure development, engineering and design and scientific research. Once completed, the DEM will have a shelf life in excess of twenty years.

An accurate digital elevation model is critical for the following applications:

1. All infrastructure development has a common overarching requirement in that elevation data is foundational to all development and without elevation data development is delayed. Accurate elevation data is vital to responsible resource and economic development.
2. Advancements in aviation safety currently utilize elevation data for terrain avoidance purposes. Unfortunately the elevation (terrain) data in Alaska is so poor the very device intended to enhance aviation safety could literally cause accidents and associated fatalities.
3. Navigational devices, survey equipment and tracking applications require an accurate base map in order to function properly.
4. Modern emergency response capabilities and 911 dispatch advancements supporting first responders go largely underutilized in Alaska due to the absence of an accurate statewide digital base map.
5. Disaster preparation, recovery and mitigation efforts are greatly impeded by the lack of accurate elevation data. Analysis such as supply chain vulnerability, critical infrastructure and key resource disruption rely heavily upon an accurate base map. Disaster response training cannot be adequately addressed without an accurate base map in a digital context.
6. Floodplain management and mitigation analysis, sea wall construction and coastal erosion cannot be adequately addressed without accurate elevation data.
7. Tsunami inundation studies, storm surge analysis and safe evacuation route planning.
8. Global climate change and its effects on Alaska require accurate elevation data. For example, as the tundra becomes permeable existing safe drinking water supplies may be impacted and sewage lagoons may affect ground water.
9. Routing analysis for roads and pipelines.

**Supporting Federal Agencies:**

Potential federal support is anticipated from the following agencies and departments: Dept. of the Interior (DOI), US Geological Survey (USGS), Bureau of Land Management (BLM), Federal Aviation Administration (FAA), National Geospatial-Intelligence Agency (NGA), National Oceanic and Atmospheric Administration (NOAA), National Geodetic Survey (NGS), National Park Service (NPS), US Forest Service (USFS), National Atmospheric and Space Administration (NASA), Department of Defense (DOD), Federal Emergency Management Administration (FEMA) and the Department of Homeland Security (DHS). Other inter-agency federal programs potentially involved with this project include Imagery for the Nation (IFTN), National Geospatial Advisory Committee (NGAC), National Digital Elevation Program / National Digital Ortho Program (NDEP / NDOP) and the Federal Geospatial Data Committee (FGDC).

This project contributes to the Department's Mission by reducing injuries, fatalities and property damage and by improving the mobility of people and goods.