

# ALASKA NATURAL GAS PIPELINE GIS PROTOTYPE MAY 2010

The Office of the Federal Coordinator (OFC) is creating a prototype Alaska Geographic Information System (GIS) to address the need for a single reference system for project data information collection and better mapping of the natural gas pipeline route in Alaska.

## BACKGROUND

Currently, there is not a consistent, standard set of maps detailing the 750-mile pipeline route from the arctic to the Canadian border. While each state and federal agency has data pertinent to its mission, the information can be difficult to access and sometimes seem inconsistent. The agencies have identified the need for improved data integration and display.

The purpose of the GIS prototype is to give every agency and the public access to the same geospatially-referenced baseline data on fault and landslide hazard detection, wetlands, stream crossings and relevant studies resulting in an authoritative and transparent foundation to help streamline permitting activities and land and resource management.

The OFC 20-mile prototype of the GIS is focused on Atigun Pass, a project pinch-point.

## TECHNICAL

The GIS prototype uses Light Detection and Ranging [LiDAR] technology to create a base map that is then layered with existing documents, studies and research from private sector and government sources to create the web-based data source. When complete, agencies can click on any point along the 20-mile stretch included in the prototype to extract and view relevant mapping and report data.

LiDAR technology—an active remote sensing system analogous to radar that uses laser light as the measurement source—can provide range and other information that gives users an overview of broad, continuous features that would be otherwise indistinguishable. The system measures the roundtrip time for a pulse of laser energy to travel between the sensor and a target. Specific LiDAR applications for the OFC GIS include: base mapping, pipeline corridor mapping, hydrologic and hydraulic modeling, floodplain mapping, terrain unit mapping, land-cover classification, transportation and transmission corridor mapping and urban modeling.

The power of the GIS prototype is in providing a single platform for displaying many types of relevant project information. For example:

- Existing elevation data for the area is coarse. LiDAR data reveals the terrain in far more detail. The OFC system uses detailed LiDAR as the base map. The LiDAR data collected in late 2009 has been analyzed to show the varying degrees in slope - the color and the intensity reflects slope steepness.
- The prototype incorporates original northwest boreholes. More than 1,000 boreholes were digitized as part of the prototype project. The northwest borehole logs have been geo referenced and provide a stratification of soil types and permafrost data. There are more than 10,000 boreholes in Alaska but the data has never been integrated.

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- With GIS, a user can click on any point along the pipeline to extract and view relevant mapping and report data. A user, for example, can click on a stream crossing point to pull up a photo then click on a stream to get information about that stream, its name and essential fish habitat. The pipeline is shown in one color while the proposed gas line mileposts are in another color.
- The prototype's web browser application would provide public access to the GIS database. Data can be displayed with varying levels of necessary confidentiality. Each layer will have its own security/confidentiality level.

A White Paper titled "LiDAR for Terrain Mapping on the Alaska Pipeline Corridor" can provide more information on the LiDAR used in the OFC's prototype and can be found on the website at [http://www.arcticgas.gov/sites/default/files/lidar\\_terrain\\_mapping\\_for\\_pipeline.pdf](http://www.arcticgas.gov/sites/default/files/lidar_terrain_mapping_for_pipeline.pdf).

### NEXT STEPS

The OFC coordinated with the other federal agencies, the State of Alaska and the project applicants to make sure the prototype specifications were appropriate and data obtained would be a valuable asset that could help expedite permitting. The OFC currently is reviewing the prototype with federal agencies, State of Alaska and applicants to determine if moving forward on a full GIS is in the project's and public interest.

### CONTACTS AND ADDITIONAL INFORMATION

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