



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

**Department of Environmental  
Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE  
Contaminated Sites Program

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File No: 2510.38.003

Article: 7012 1010 0003 0389 1853

December 16, 2014

Mark Moderow  
General Communications Inc. (GCI)  
2550 Denali Street, Suite 1000  
Anchorage, Alaska 99503

Re: Decision Document; Muklung Hills GCI Plane Crash  
Cleanup Complete

Dear Mr. Moderow;

The Alaska Department of Environmental Conservation (ADEC) has reviewed the environmental records for the Muklung Hills GCI Plane Crash. This decision letter memorializes the site history, cleanup actions, and standard conditions for long-term site management. No further remedial action is required.

**Site Name and Location:**

Muklung Hills GCI Plane Crash  
Muklung Hills, 9 miles NE of Aleknagik  
Aleknagik, Alaska 99555

**Name and Mailing Address of Contact Party:**

Mark Moderow, GCI  
2550 Denali Street, Suite 1000  
Anchorage, Alaska 99503

**ADEC Site Identifiers:**

File: 2510.38.003  
Hazard ID: 25606

**Regulatory Authority for Determination:**

18 AAC 75

**Background**

On August 10, 2010, the Prevention and Emergency Response Program (PERP) received notification from General Communication Inc. (GCI) that a GCI-owned and -operated airplane had crashed on the evening of August 9, 2010 in the Muklung Hills, northeast of Dillingham. Five of the nine people were killed in the crash, including Alaska Senator Ted Stevens.

The plane crashed on the remote west-southwest-facing mountainside of the Muklung Hills at an elevation of 1,000 feet. The volume of Jet-A fuel released to the ground surface is unknown, but estimated by GCI to be less than 100 gallons; lube oil for the turbine engine was likely no more than 5 gallons. The wreckage was removed from the site on 8/14/2010.

This is a remote site. The only access is by helicopter with only one practical landing zone a half mile away from the site. Access to the site involves walking through a scree/ boulder field in steep terrain followed by alders. Soil at the site is a thin layer of less than 6 inches in depth of loamy peat that is unevenly distributed over rock material. The site appears to be underlain by bedrock.

### Contaminants of Concern

During the investigations at the site, soil and groundwater samples were analyzed for the following: gasoline range organics (GRO); diesel range organics (DRO); residual range organics (RRO); polycyclic aromatic hydrocarbons (PAHs); and the volatile organic compounds (VOCs) benzene, toluene, ethylbenzene, and xylenes. Based on these analyses and knowledge of the source area, the following contaminants of concern (COCs) were identified in soil:

- GRO
- DRO
- RRO
- Benzo(a)pyrene
- 1-methylnaphthalene
- 2-methylnaphthalene

### ADEC Cleanup levels

The default soil cleanup levels for this site are established in 18 AAC 75.341, Method Two, Table B1 and B2, *Over 40 Inch Zone*.

**Table 1- Soil and Groundwater Cleanup Levels**

Contaminants of Concern	Soil- Method Two, Direct Contact /Ingestion*	Soil-, Inhalation*	Soil- Method Two Migration to Groundwater*
GRO	1,400	1,400	300
DRO	10,250	12,500	250
RRO	10,000	22,000	11,000
Benzo(a)pyrene	0.49	na	2.1
1-methylnaphthalene	280	760	6.2
2-methylnaphthalene	280	750	6.1

**Notes to Table 1.** \*All soil contaminant concentrations are presented in mg/kg.

### Site Characterization

In 2010, soil samples were collected along the length of the 100 foot impact zone. Six soil samples collected at the soil rock interface at 4 to 6 inch below ground surface (bgs) contained DRO up to 42,900 and RRO up to 11,900 mg/kg RRO.

In 2011, extent of contamination was bounded horizontally by screening results, but only the highest results were analyzed by the lab. Nine soil samples collected at the soil rock interface at 4 to 6 inch below ground surface (bgs) contained DRO up to 43,400 mg/kg, GRO up to 433 mg/kg, benzo(a)pyrene up to 0.957 mg/kg, 1-



methylnaphthalene up to 15 mg/kg, and 2-methylnaphthalene. After soil samples were collected, fertilizer was added to the crash site to promote re-vegetation.

Visual monitoring of the site was conducted in 2013 and 2014. Photos taken during the 2013 effort show recent growth of ferns, mosses, forbs, and tall grasses in the central and periphery sections of the impact footprint. Three primary areas remained less vegetated than the rest of the site. These areas include: the upslope 30-foot section of the footprint, a 25-foot sub-midsection of impact area, and a downslope 20-foot section. Dead alders and charred materials were noted throughout the impact site. Photos taken in 2014 indicate vegetation was more established with minimal areas of exposed soil as compared to 2013 photos. No petroleum odors or staining were noted throughout the site in 2013 or 2014. The nearest surface body, located 0.5 mile to the southwest of the site did not contain observable surface water sheen in 2013 or 2014.

In an effort to confirm natural attenuation, soil samples were collected in 2014. A total of 171 screening samples were collected and did not show any detections with PID screening. In addition, four soil samples were collected from the impacted zone based on historic elevated PID readings from the 2011 sampling event, and four soil samples were also collected from the perimeter of the impact zone. Soil samples collected 3 inches bgs in the impact zone contained DRO up to 3,510 mg/kg; soil samples collected 3 inches bgs along the perimeter contained DRO up to 810 mg/kg.

### Cumulative Risk Evaluation

Pursuant to 18 AAC 75.325(g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways. Based on a review of the environmental record, ADEC has determined that residual contaminant concentrations do not pose a cumulative human health risk.

### Exposure Pathway Evaluation

Following investigation and cleanup at this site, exposure to remaining contaminants was evaluated using ADEC's Exposure Tracking Model (ETM). Exposure pathways are conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 1.

**Table 1 – Exposure Pathway Evaluation**

Pathway	Result	Explanation
Surface Soil Contact	De Minimis Exposure	2014 soil samples collected were below direct contact/ingestion cleanup levels. Exposure via this pathway is assumed insignificant.
Sub-Surface Soil Contact	De Minimis Exposure	Collection of subsurface soil samples at the site is not practicable due to rock material and bedrock. This site is remote and can only be accessed by helicopter. Exposure via this pathway is assumed insignificant.
Inhalation – Outdoor Air	De Minimis Exposure	Remaining contaminated surface soil is below inhalation cleanup levels. Further subsurface soil sampling is not practicable due to bedrock and remote access. Exposure via this pathway is assumed insignificant.

Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	This site is on a steep remote hillside. Building construction is not anticipated in the future. Exposure via this pathway is incomplete.
Groundwater Ingestion	Pathway Incomplete	Groundwater is not utilized as a drinking water source in this area.
Surface Water Ingestion	Pathway Incomplete	Surface water is not utilized as a drinking water source in this area.
Wild Foods Ingestion	De Minimis Exposure	2014 soil samples collected were below direct ingestion cleanup levels. Exposure via this pathway is assumed insignificant.
Exposure to Ecological Receptors	De Minimis Exposure	This site is re-vegetating with soil amendments. Exposure through this pathway is assumed insignificant.

**Notes to Table 1:** “De minimis exposure” means that in ADEC’s judgment receptors are unlikely to be affected by the minimal volume of remaining contamination. “Pathway incomplete” means that in ADEC’s judgment contamination has no potential to contact receptors. “Exposure Controlled” means there is an administrative mechanism in place limiting land or ground water use, or a physical barrier in place that deters contact with residual contamination.

### ADEC Decision

Based on the information available to date, ADEC has determined no further assessment and/or cleanup action is required. There is no unacceptable risk to human health or the environment, and this site will be designated as closed on the Department's database.

### Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 78.600(h). A “site” [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. (See attached site figure.)
2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

### Appeal

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving the department’s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

If you have questions about this closure decision, please contact Grant Lidren at (907) 269-8685.

Sincerely,

A handwritten signature in blue ink that reads "Grant Lidren". The signature is fluid and cursive, with a long horizontal line extending to the right from the end of the name.

Grant Lidren  
Environmental Program Specialist

Cc: Larry Beck, Environmental Protection Specialist, BLM