



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

Department of  
**Environmental Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE  
Prevention, Preparedness, and Response Program

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March 23, 2017

William G. Britt, Jr.  
Environmental Manager  
Hilcorp Alaska, LLC  
PO Box 244027  
Anchorage, AK 99524-4027

Re: Middle Ground shoal Platform, Natural Gas Pipeline Release Report (Sampling Period #1 ending 03/21/2017)

Mr. Britt:

The Alaska Department of Environmental Conservation (ADEC) has completed a cursory review of Hilcorp's first "Middle Ground Shoal (MGS) Gas Leak Sampling and Monitoring Plan Summary Report for Sampling Period #1 ending 03/21/2017, dated March 22, 2017. Site characterization activities generally consisted of fish and wildlife reconnaissance flights, water quality monitoring, and air monitoring for personnel safety and background characterization. The department will continue to review the report more fully in cooperation with our agency partners. This letter summarizes our initial review.

The Hilcorp report concludes:

- "a small and localized reduction in dissolved oxygen concentrations" was noted.
  - From data provided in the present report, the department determined that Hilcorp characterized one of four transects conducted on March 18 and 19. This transect, labeled "0319 BuoyTrack3" drifted 13 meters (43 feet) parallel to the bubble field (AKA methane release point) until affected water diffused and intercepted the tracking buoy's trajectory approximately 40 meters (131 feet) downcurrent from the bubble field. At this point, dissolved oxygen concentrations were measured as low as 7.8 mg/L, which is approximately 4mg/L (on average) less than comparable background concentrations. Yet, this measurement doesn't represent maximum most probable concentrations from the bubble field.
  - Please clarify whether nominal sampling depths were reported based on sensor attachments or measured sampling depths based on CTD readings. This will clarify the extent to which line drag affected measurements, if any.
  - Please report/depict all data using multiple graphs, if necessary. The narrative suggests the water quality buoy and sensors were retrieved 2,900 meters (1.8 miles) downcurrent while methane and carbon dioxide concentrations were still elevated, but Figure 5 only depicts data up to approximately 2,400 meters downcurrent. Other water quality parameters are similarly truncated.

- Please report/depict all sampling data (except % of total dissolved gases) in terms of mg/L or ppm to match water quality standards described in 18 AAC 70.
- Figure 2 depicts two flood tides and two ebb tides, but Table 1 describes one ebb tide and three flood tides. Please clarify.
- The narrative describes six atmospheric samples being collected from two locations, but the daily job report describes six samples from 5-6 locations. The drift sampling was not described from the same vessel on the same day. Please clarify whether a separate crew performed these distinct tasks and if so, please provide their work report.
- “The lowest dissolved oxygen reading observed was well above the water quality standard.”
  - Low dissolved oxygen concentrations at depth (i.e. 12.5 meters) could be influenced by limited surface diffusion through periodically ice infested waters at slack tide or from bacterial consumption. The depth of minimal oxygen concentration is consistent with both hypotheses and is much lower than the lowest background measurements from 9-15 meters depth, indicating potential environmental degradation (see 18 AAC 70.015) directly in line with the plume.
  - Dissolved oxygen levels should be highest in moving water and lowest in still water since it’s under the influence of microbial consumption. Thus, the greatest effect of DO would be directly in line with, and downcurrent from, the bubble field at slack tide. Recording water quality parameters so close to slack tide during a neap tide cycle offered the best opportunity to collect these data, and the next best opportunities are occurring now and in late April.
  - Report total dissolved gas concentrations, which may not exceed 110% in solution per 18 AAC 70.20(b)(A)(15).
- “The sampling also showed low dissolved methane concentrations consistent with the initial modeling estimates that Hilcorp provided to the Department on February 20, 2017.”
  - Hilcorp’s models predicted methane concentrations at approximately 0.05 mg/L (ppm). Measured methane concentrations at 7 meters depth reached 0.15 mg/L, which is above concentrations shown to cause adverse responses to fish (i.e. 0.02 – 0.05 mg/L), based on published data previously shared with Hilcorp.
  - Hilcorp’s sampling report show curious results with highest *measured* methane concentrations at 7 meters below water surface (BWS), with lower concentrations at 2 and 15 meters BWS, extending to the maximum measured distance of 2,900 meters (1.8 miles) downcurrent of the bubble field.
  - Hilcorp’s models (and published literature) indicate maximum methane concentrations should occur at the deepest impacted point in the water column [i.e. near the leaking pipeline at approximately 21 meters (70 feet) below mean low low water (MLLW)]. This draws into question the influence of mid-column current “rips” and sensor accuracy. Therefore, further sampling and perhaps sampling strategy modifications may be necessary to resolve this paradox.
  - It appears as if only 1-4 methane measurements were collected between approximately 24 and 40 minutes after the platform was deployed (i.e. when the sensor was closest to the bubble field). Please provide raw data for further analysis.
- “There has been no observed impact on fish, marine mammals, or other wildlife and this initial round of monitoring results indicates no such impacts are likely to occur.”
  - Aerial observations of fish and diving marine mammals would be hampered by the presence of silty water, winter beluga diving bouts lasting 5-10 minutes each, and ice coverage ranging from 3/10 to 9/10. Thus, detecting impacted fish and wildlife is challenging in these

- conditions, at best, and increased used of the area becomes more likely as the event continues.
- Nancy Tankersley's bird survey narratives were particularly detailed and useful but references associated data forms and maps, which may have described distances between concentric circle routes, yet they were not included in the wildlife report. Please provide these products, and indicate distances between concentric circle routes to ensure sufficient overlap and 100% coverage of the survey area.
  - Protocols for aerial observations of migratory birds under USFWS jurisdiction is in conflict with NMFS protocols precluding observations below 1,000 feet. Therefore, a dedicated fish and wildlife observer is required to be on each monitoring vessel, looking for presence/absence, condition, number, and species identification (if possible).

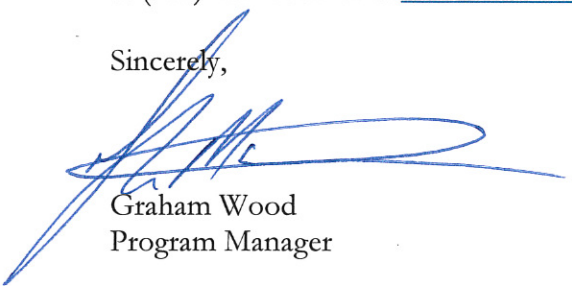
All lab quality control data fell within normal parameters. We note that EPA method 25 and EPA method 25mod are sufficient to characterize atmospheric methane and carbon dioxide, so Hilcorp may consider omitting EPA method TO-15, which doesn't characterize carbon dioxide or methane.

Sample IDs for background atmospheric gas concentrations to not correspond to IDs provided in the background report and, therefore, cannot be confidently correlated with their collection sites. Specifically, lab samples are reported as B0-B5, and background the background report, dated March 14, 2017, reports air sample locations as A1-A5. We presume A1 and B1 are the same, but please clarify.

Please continue to submit the future reports electronically. If your submittal exceeds 8 megabytes, you may submit it to me through the Alaska ZendTo "drop-off" option at <https://drop.state.ak.us/drop/>. If the document is less than 8 megabytes, it can be emailed to [geoff.merrell@alaska.gov](mailto:geoff.merrell@alaska.gov). The Division of SPAR/Prevention, Preparedness, and Response Program (PPRP) prefers and encourages electronic only submittals.

As always, please feel free to contact the State On-Scene Coordinator, Mr. Geoff Merrell with any questions at (907) 269-7682 or at [Geoff.merrell@alaska.gov](mailto:Geoff.merrell@alaska.gov).

Sincerely,



Graham Wood  
Program Manager