	Alaska Gasline Development Corporation Alaska Department of Environmental Conservation Information Request for AGDC Liquefaction Plant Permit No. AQ1539CPT01	Date: 6/3/2022
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REFERENCE INFORMATION

Agency	Request Date	AGDC Response No.
ADEC	May 27, 2022 (via e-mail)	RFI-691

REQUEST:

E-mail *Re: Ex Parte'*: Information Request to Assist in Response to Comments from Dave Jones (ADEC) to Lisa Haas (AGDC) on May 27, 2022, with June 1, 2022 clarification, indicated:

The Department is requesting assistance in responding to public comments for AGDC's Liquefaction Plant construction permit. Please provide the following information that will assist the Department in responding to comments received during public notice:

1. Provide a fugitive dust control plan for the construction phase of the project that will be included in the permit with a Condition that sunsets once construction activities have completed. The fugitive dust control plan should offer a level of detail that is sufficient to ensure that the construction activities associated with the Liquefaction Plant will not cause or contribute to an exceedance of the NAAQS.
2. Provide a discussion related to how the mercury removal bed will operate including: any potential mercury emissions and whether they are activated carbon beds.
3. How will leakage from the LNG storage tanks and piping throughout the facility be monitored. Is the facility subject to leak detection requirements under any NSPS or NESHAP Subparts?
4. Provide updated CO and VOC best available control emission rates that take into account the addition of oxidation catalysts on the turbines, since the preliminary permit used an AP-42 emission factor of 0.0022 lb/MMBtu for VOC and a 5 ppmv emission factor for CO. The VOC emission rate is an uncontrolled emission factor from AP-42. The majority of combined cycle turbines in the RBLC achieve 2 ppmv for CO with oxidation catalysts. There are 10 findings in the RBLC for simple cycle turbines with oxidation catalysts, three of which achieve 2 ppmv or lower.
5. Provide a cost analysis on positive crankcase ventilation to control particulate emissions on EU 12.

ALASKA LNG RESPONSE:

This response covers items 1-3 from the Alaska Department of Environmental Conservation's (ADEC) request for information (RFI) dated May 27, 2022. Question 4 will be part of a separate response, and Question 5 was deleted by ADEC from the RFI in a clarification e-mail from Dave Jones dated June 1, 2022.

1. **Fugitive Dust Control Plan** – AGDC prepared two plans to address fugitive dust control for the construction phase of Alaska LNG Project specific to the Liquefaction Plant. The *Fugitive Dust*

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Control Plan (USAI-PE-SRREG-00-000009-010, Attachment 1) outlines dust control measures that would be used during construction for project-wide activities and specific requirements for the Liquefaction Plant. The second plan, *Ambient Air Quality Monitoring Plan for Particulate Matter (PM10/PM2.5)* (AKLNG-4030-AIR-PLN-DOC-0001, Attachment 2) addresses National Ambient Air Quality Standards/Alaska Ambient Air Quality Standards protection during construction. It outlines the process for selection of air quality monitor locations and identifies procedures for data management, reporting, and management of any potential exceedances observed during the monitoring activities.

2. **Mercury Removal Bed** – The inlet gas treating, mercury removal, and dehydration system for the Liquefaction Plant includes activated carbon mercury adsorber beds. Activated carbon systems in mercury adsorber beds have been used for mercury removal by the natural gas industry, including LNG applications, for more than 40 years. Over this period, an extensive performance database has been developed from laboratory testing and field studies. Activated carbon products and technologies are proven safe and effective and are considered the benchmark of performance for LNG applications under a wide variety of treatment conditions. The service life of these systems can range from 5 to 10 years to up to 20 years. Prior to construction, technical “cradle-to-grave” support would be procured from specialized activated carbon treatment vendors, which would include design, installation, and commissioning of the mercury adsorber beds, as well as removal and disposal of spent carbon media.

Activated carbon treatment vendor services would also include the development of procedures for removal and safe disposal of the spent activated carbon containing adsorbed mercury. The general procedures that would be included are as follows:

- During facility operations, the activated carbon granules in mercury adsorber beds would become spent or exhausted and would need to be replaced.
- Depending on the final design, the spent activated carbon would either be removed from the vessel, or the entire vessel could be exchanged with another adsorber bed unit filled with fresh carbon media.
- The removal and management and/or disposal of spent carbon media or vessels would be performed in accordance with applicable regulations by a qualified third-party contractor.
- Spent activated carbon would be transported off site and managed in compliance with hazardous waste regulations. Likely scenarios would be disposal at an Environmental Protection Agency (EPA)-permitted hazardous waste landfill or treatment at a permitted thermal treatment site where material is destroyed in permitted, high-temperature kilns with proper scrubbing of exhaust gases.

3. **Leak Detection** – The Liquefaction Plant will be subject to New Source Performance Standards (NSPS) Subpart OOOOa, which constitutes the leak detection and repair (LDAR) regulations applicable to the facility. National Emission Standards for Hazardous Air Pollutants (NESHAP)

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Subpart HH LDAR regulations apply, as the plant has potential to emit more than 10 tons per year (tpy) of a single hazardous air pollutant (HAP) or 25 tpy of total HAPs (formaldehyde and ethylbenzene).

The LNG storage tanks will be designed for full containment. Current plans anticipate they will be composed of primary and secondary wall panels, primary and secondary tank floors, a suspended deck, a foundation slab, a floor slab on seismic isolation, and a reinforced outer tank dome roof. The primary and secondary wall panels will have a non-load bearing vapor barrier. Insulation materials will be installed between the inner and outer tanks to minimize heat gain from the atmosphere to the inner tank contents. The LNG storage tank leak detection instrumentation will consist of four resistance temperature detectors (RTDs) at 90-degree intervals in the bottom of the annular space (secondary bottom). Two additional RTDs will be installed notionally within the first 30 feet of the secondary wall facing the annular space. Low temperature alarms will alert operators in the event of an inner tank breach.

Piping systems will be included in a LDAR program consistent with the EPA's *Leak Detection and Repair: A Best Practices Guide* (2007). Fugitive volatile organic compounds and carbon dioxide equivalent emissions estimates included in AGDC's permit application and Draft Permit Appendix A, Table 12 were based on LDAR control efficiencies from Table 5-2 in the EPA's *Protocol for Equipment Leak Emission Estimates*, EPA-453/R-95-017.

ATTACHMENT:

Attachment 1 – Fugitive Dust Control Plan (USAI-PE-SRREG-00-000009-010)

Attachment 2 – Ambient Air Quality Monitoring Plan for Particulate Matter (PM10/PM2.5) (AKLNG-4030-AIR-PLN-DOC-0001)

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ATTACHMENT 1

Fugitive Dust Control Plan (USAI-PE-SRREG-00-000009-010)



FUGITIVE DUST CONTROL PLAN

USAI-PE-SRREG-00-000009-010


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1.0 INTRODUCTION

This *Fugitive Dust Control Plan* (Plan) provides procedures to minimize fugitive dust during construction and outlines similar measures to be used during facility operations. The dust control methods described herein would be applied as frequently as necessary in response to landowner or other affected stakeholder requests, safety concerns, and/or permit requirements.


1.1 REGULATORY REQUIREMENTS

Fugitive dust consists of small airborne particles called particulate matter (PM). The U.S. Environmental Protection Agency and the Alaska Department of Environmental Conservation (ADEC) define fugitive dust as "particulate matter that is generated or emitted from open air operations (emissions that do not pass through a stack or a vent)." The most common forms of PM are known as PM₁₀ (particulate matter with a diameter of 10 microns or less) and PM_{2.5} (particulate matter with a diameter of 2.5 microns or less).

Alaska's current regulations that address fugitive dust include:

- 18 AAC 50.045(d): A person who causes or permits bulk materials to be handled, transported, or stored, or who engages in an industrial activity or construction project, shall take reasonable precautions to prevent particulate matter from being emitted into the ambient air.
- 18 AAC 50.110: No person may permit any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.

Currently, ADEC applies its regulatory authority under 18 AAC 50.045(d) to request fugitive dust sources apply "reasonable precautions" to reduce emissions.

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2.0 FUGITIVE DUST SOURCES

Fugitive dust could be generated directly from pipeline installation and aboveground facility construction. The following construction activities have been identified as having the potential for generating fugitive dust:

- Movement of vehicles and motorized equipment on paved and unpaved roads.
- Clearing, including vegetation removal.
- Bulldozing, scraping, and grading.
- Excavation and filling.
- Blasting.
- Material movement, including loading and unloading.
- Hauling of loose materials.
- Use of parking, staging, and storage areas.

During facility operations, fugitive dust could be generated from movement of vehicles and motorized equipment on paved and unpaved roads.


It is the responsibility of the Project entity's Construction Contractor(s) (Contractor) and the Project entity's Environmental Inspectors to ensure all sources of dust generation are identified.

During operations, it would be the responsibility of the Operating entity to ensure all sources of dust generation are identified.

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3.0 FUGITIVE DUST ABATEMENT

The Project area would be monitored for fugitive dust generation during construction and operations. Abatement of fugitive dust would be required on the construction areas associated with Liquefaction Facility and Gas Treatment Plant (GTP) sites, and Mainline right-of-way (ROW) or access roads when a visible plume of dust with an estimated opacity exceeding 20 percent (objects partially obscured) extends more than 300 feet from the source. Project contractors and the Project Operating entity would be responsible for controlling dust using measures such as reducing travel speeds and/or applying dust suppressants (e.g., water). A listing of fugitive dust control measures that may be used during Project construction is included in Section 4.0 of this *Fugitive Dust Control Plan*.

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4.0 FUGITIVE DUST CONTROL MEASURES


The generation of fugitive dust during construction would be reduced through the application of appropriate control measures. Abatement measures would be used as needed and as appropriate to a particular situation. Based on typical practices for similar construction projects and best management practices in Alaska (Alaska Department of Transportation and Public Facilities Dust Control Field Guides for Gravel Driving Surfaces), the following specific control measures would be used as needed to control fugitive dust emissions from the Project:

- Use only Project entity-approved roads for access. Paved access roads would be kept free of mud and soil that may track onto the road surface from the construction ROW through the use of gravel access pads and/or equivalent. If soil is transported onto a public road surface or other paved area, including parking lots, by construction equipment and vehicles, it would be removed as soon as practical from the road by shoveling or sweeping, and would be transported back to a designated sediment control disposal area within the construction ROW. Road washing, if necessary, would only be allowed after the soil has been scraped from the paved road surface.
- Reduce vehicle speeds on unpaved roads; speed limits may be set on unpaved roads.
- Clean up track-out and/or carry-out areas at paved road access points.
- Ensure that all haul truck cargo compartments are maintained so as to minimize spills and loss of materials. Cover haul loads of open body trucks where applicable.
- Apply water to affected unpaved roads, unpaved haul/access roads, and staging areas (when in use). Water for fugitive dust control purposes would be obtained as necessary through permits or purchase contracts with owners of valid existing water rights, as described in the Project's *Water Use Plan*. These approvals would be acquired prior to construction. Current proposed sources of water for dust abatement are listed in the *Water Use Plan*.
- When appropriate and as needed, apply approved dust suppressant such as a water/magnesium chloride mixture or calcium chloride. The use of magnesium chloride would be restricted in sensitive vegetative areas, where only water or alternative dust suppressants would be considered.
- Apply water to active construction areas as needed. Areas should be pre-watered and soils maintained in a stabilized condition where support equipment and vehicles would operate. Water-disturbed soils would form a crust, reducing the potential for dust creation.
- Control water spray so that over-spraying and pooling would be avoided to the extent possible.
- Where roads are paved, no dust mitigation will be necessary.
- The Project Restoration Plan, including associated revegetation plan, would be followed for as part of the construction process to prevent dust generation.

In addition, dust control measures would also be implemented as appropriate in response to any landowner concerns that may arise during construction. Fugitive dust is not anticipated to be an issue during winter construction seasons for the GTP, Point Thomson Gas Transmission Line, and Mainline spreads.

During facilities operations, the following measure would be used for the movement of vehicles and motorized equipment on paved and unpaved roads:

- Reduce vehicle speeds on unpaved access roads and parking areas; speed limits may be set on unpaved roads

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- Apply water, or where appropriate and as needed, apply approved dust suppressant such as a water/magnesium chloride mixture or calcium chloride to affected unpaved access roads and parking areas as required based on weather conditions the result in dust generation.

4.1 RESPONSIBILITIES

The Project entity and its designated Contractors would be responsible for all dust control in the Project area during the construction phase of the Project (seven days a week, including weekends and holidays). Each Contractor supervisor would have a copy of their respective Plan available on site at all times. Problem areas, or potential problem areas observed via site monitoring during construction, must be controlled as soon as possible after being brought to the attention of the Contractor.

Prior to construction, affected landowners would be provided with the local construction office phone number to facilitate communication with the Project entity's construction management and environmental inspection teams. A landowner complaint resolution process would be used to quickly and effectively remedy any dust-related issues that may arise.

During operations, it would be the responsibility of the Operating entity to ensure all sources of dust control measures are implemented.

4.1.1 Inspection, Monitoring, and Recordkeeping

This Plan will form part of the Contractor tender package to ensure the proposals are appropriately resourced and to assist with contract evaluations. The Contractors chosen for the Project would implement the dust control measures specified in this *Plan*, while the Project entity's Environmental Inspectors would be primarily responsible for monitoring and enforcing the implementation of needed dust control measures, as well as ensuring that dust control is effective and proper documentation is maintained. All construction site personnel would be trained on the measures outlined in this Plan.

Field inspection for dust control would occur daily throughout the construction and reclamation phases of the Project. The Project contractors and Environmental Inspectors would be responsible for recording the following information on a daily basis for the purpose of fugitive dust monitoring and control:

- Weather conditions (temperature, wind speed, and direction).
- Number of water trucks in use.
- Instances where fugitive dust was of such a concentration that abatement measures were implemented.
- Condition of Project soils (crusted, damp, or unstable).
- Presence of tracked-out fugitive dust and when it was cleaned.
- Overall status of dust control compliance.

The Environmental Inspector's daily report would include this information and would be made available for review by interested local agency representatives upon request.

During operations, the Operating entity would incorporate the dust control measures into the facilities operations plans and procedures, that would include compliance inspection, monitoring, and record keeping requirements

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5.0 REFERENCES

- ADEC 2011, Fugitive Dust Facts: Frequently Asked Questions,
<https://dec.alaska.gov/air/ap/docs/Fugitive%20Dust%20FAQs%203-31-11.pdf>
- ADEC Division of Air Quality, 2015, State of Alaska Air Regulations,
<http://dec.alaska.gov/air/ap/regulati.htm>
- ADOT Research, Development, and Technology Transfer, 2015, Dust Control Field Guide for Gravel Driving Surfaces

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ATTACHMENT 2

Ambient Air Quality Monitoring Plan for Particulate Matter (PM10/PM2.5)

(AKLNG-4030-AIR-PLN-DOC-0001)



Liquefaction Facility – Nikiski, Alaska
Ambient Air Quality Monitoring Plan for Particulate
Matter (PM₁₀/PM_{2.5})


December 4, 2019

AKLNG-4030-AIR-PLN-DOC-00001

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REVISION HISTORY

Rev	Date	Description	Originator	Reviewer	Approver
0	12/04/2019	For Use	C. Humphrey (exp)	L. Haas	F. Richards
Approver Signature*					

*This signature approves the most recent version of this document.

MODIFICATION HISTORY

Rev	Section	Modification

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ACRONYMS AND ABBREVIATIONS

AAAQS	Alaska Ambient Air Quality Standards
AGDC	Alaska Gasline Development Corporation
BMP	best management practice
DQO	data quality objective
EPA	United States Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
LNG	liquefied natural gas
MQO	measurement quality objective
NAAQS	National Ambient Air Quality Standards
PM	particulate matter
PM	particulate matter
PM _{2.5}	particulate matter with diameters that are less than 2.5 micrometers
PM ₁₀	particulate matter with diameters that are less than 10 micrometers

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1. OVERVIEW

The Alaska Gasline Development Corporation (AGDC) plans to construct one integrated liquefied natural gas (LNG) pipeline (the Alaska LNG Project [Project]) with interdependent facilities for the purpose of liquefying supplies of natural gas from Alaska, in particular the Point Thomson Unit and Prudhoe Bay Unit production fields on the Alaska North Slope, for export in foreign commerce and opportunity for in-state deliveries of natural gas.

The proposed Liquefaction Facility would be constructed on the eastern shore of Cook Inlet just south of the existing Agrium fertilizer plant on the Kenai Peninsula in Alaska. The Liquefaction Facility would include the structures, equipment, underlying access rights, and other associated systems for final processing and liquefaction of natural gas, as well as storage and loading of LNG.

The Federal Energy Regulatory Commission (FERC) requested that AGDC establish a monitoring plan for particulate matter (PM) with diameters that are less than 2.5 micrometers (PM_{2.5}) and diameters less than 10 micrometers (PM₁₀) at the Liquefaction Facility during the phase of simultaneous construction and operation of the Project. The United States Environmental Protection Agency (EPA) focuses on PM_{2.5} and PM₁₀ because the size of particles is directly linked to their potential for causing health problems. Inhalable particulate matter (i.e., PM_{2.5} and PM₁₀) pose the greatest health risks to the lungs. The smallest particles can travel deep into the lungs, and some may even pass into the bloodstream. Therefore, to protect human health, National and Alaska Ambient Air Quality Standards (NAAQS/AAAQS) have been established for PM_{2.5} and PM₁₀.

The objective of this plan is for AGDC to monitor compliance with the NAAQS/AAAQS during the simultaneous construction and operation phase at the Liquefaction Facility by installing and operating an AAAQS ambient air monitoring station. This document serves as a monitoring plan and outlines the steps that would be followed during this period.

2. BACKGROUND FOR PM2.5 AND PM10 CONSTRUCTION AND OPERATION MONITORING

PM at the Liquefaction Facility will be emitted directly from fugitive and point sources from construction and operation.

The EPA defines fugitive dust as "particulate matter that is generated or emitted from open air operations (emissions that do not pass through a stack or a vent)."¹ Fugitive dust originates from a wide variety of sources including travel or wind erosion from unpaved roads, extraction and transportation of mined materials, material handling, civil construction activities, storage of bulk materials (sand, etc.), abrasive blasting, and a variety of other sources. The biggest concerns surrounding fugitive dust are often during

¹ Alaska Department of Environmental Conservation. 2019. Fugitive Dust in Alaska. Alaska Department of Environmental Conservation, Division of Air Quality Air Permit Program. Available at: <https://dec.alaska.gov/air/air-permit/fugitive-dust/>.

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the construction phase of projects when civil and material handling activities are underway. Activities that have the potential for generating fugitive dust during construction of the Liquefaction Facility include:

- Soil disturbance;
- Movement of construction equipment on the construction site; and
- Use of unpaved or paved roads.

PM_{2.5} and PM₁₀ may also be generated from combustion point sources as a result of complex reactions of from power plants, industrial processes, vehicle operations, and construction equipment. Combustion sources will be operating during both the construction and operation phases for the Liquefaction Facility. To control and mitigate impacts, the Project will develop and implement the following:

- Construction Emissions Control Plan
- Fugitive Dust Control Plan
- Operation Emissions Management Plan
- Best available control technology on applicable equipment for PM_{2.5} and PM₁₀

Generally, it is the responsibility of construction contractors to implement best management practices (BMP) to provide that dust and PM emissions from construction operations are mitigated. Inspection and monitoring of BMPs will be conducted, as necessary.

This monitoring plan goal is to monitor PM_{2.5} and PM₁₀ levels to protect NAAQS/AAQs during the period of maximum activity.

3. MONITORING SITE SELECTION

Monitoring site considerations will be established once the final facilities design and construction zones have been established. Special considerations will be taken to confirm that the monitoring site is representative of the area monitored and that it is not significantly impacted by surrounding structures, vegetation, and terrain. Considerations in selecting a site will include:

- Historic meteorological data;
- Distances from buildings, roads, and vegetation;
- Local topography;
- Potential fugitive and combustion sources;
- Site safety; and
- Site access and power supply.

The proposed monitoring site will be submitted to FERC for comment at least 9 months prior to the start of the simultaneous construction and operation phase. FERC comments on the selected site would need to be received at least 6 months prior to the start of monitoring.

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4. MEASUREMENT AND DATA QUALITY OBJECTIVES

The monitoring plan measurement quality objectives (MQOs) and data quality objectives (DQOs) will be similar to the relevant MQOs and DQOs outlined in the *Quality Assurance Project Plan for the State of Alaska Air Monitoring & Quality Assurance Program*, as amended through February 23, 2010. The monitors will be installed or placed according to manufacturer's specifications and will meet the appropriate sampling methodology to evaluate PM_{2.5} and PM₁₀ at the site. Monitoring should be continuous during simultaneous construction and operation. Monitoring data should be reduced to the 24-hour averaging periods specified by the NAAQS/AAQs. Specific care should be taken to provide adequate data availability and back-up. If a monitor is out of service, the operator will record such outages in the station monitoring log and make best efforts to restore service. Outages and data capture will be recorded following the monitoring plan protocols. If necessary during outages, visible emissions monitoring can be conducted to provide continuity in protecting the PM_{2.5} and PM₁₀ NAAQS/AAQs.

5. DATA REVIEW AND REPORTING

Monitoring data will be recorded locally and accessed by a trained data analyst once each normal working day. Regular data analytics reviews will be conducted to screen for elevated readings. Any data reported to FERC, or other designated parties, will be reviewed prior to submittal to confirm that it meets the MQOs and DQOs. If the DQOs are not met, the operator will take appropriate corrective actions to resume normal operation of the monitor. During events when PM concentrations reaches levels that would threaten the NAAQS/AAQs, the operator will submit a notification report to the State of Alaska within a reasonable amount of time consistent with the monitoring procedure in place. Any such report will detail the duration of event, reasons for elevated PM_{2.5} and PM₁₀ levels, and actual measurements values and contemporaneous nearby meteorological conditions.

6. MONITORING PLAN ACTION LEVELS AND MITIGATION

Action levels and thresholds will be established based on NAAQS/AAQs compliance. Elevated readings identified through the monitoring program will be reported to the construction site operator and on-site environmental coordinator. It is the responsibility of the construction site operator and environmental coordinator on site to confirm sources of PM generation are identified and that BMPs are followed to minimize potential effects. BMPs include but are not limited to:

- Water will be the primary means of dust abatement for civil construction and unpaved roads during the phase of simultaneous operation and construction.
- Maximum speed of vehicles at the construction site will be established to confirm excessive fugitive dust is not generated.
- Construction and operation equipment will be properly maintained to reduce emissions.
- Track-outs will be installed at zones of egress, as needed, to control excessive tire tracking.
- If dust management results in unsatisfactory mitigation, the construction site operator may decide to reduce or stop work activities.

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Operations of combustion related sources should follow BMPs, including compliance with the FERC Order and applicable provisions in the air quality construction permit that would be issued by the State of Alaska.