FUGITIVE DUST CONTROL PLAN

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Great River Energy – Coal Creek Station

Submitted To: Great River Energy
Coal Creek Station
2875 Third Street Southwest
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1.0 INTRODUCTION

This Coal Combustion Residuals (CCR) Fugitive Dust Control Plan (the Plan) has been prepared for Great River Energy's (GRE's) Coal Creek Station (CCS). This Plan has been developed in accordance with recognized and generally accepted best management practices and the CCR Rule (Criteria for Classification of Solid Waste Disposal Facilities and Practices, Subpart D – Standards for the Disposal of CCRs in Landfills and Surface Impoundments, published in the Code of Federal Regulations Title 40 Part 257 (40 CFR 257) on April 17, 2015). This Plan addresses measures to "effectively minimize CCR from becoming airborne at the facility, including CCR fugitive dust originating from CCR units, roads and other CCR management and material handling activities" (40 CFR 257.80).

This Plan includes identification of the CCR-related fugitive dust sources at CCS; measures to control the fugitive dust; reasons for selecting the dust control measures; procedures to evaluate the effectiveness of the Plan; procedures for documenting citizen complaints; and requirements for recordkeeping and notification. This Plan will be amended on an as needed basis. The most recent Plan will be maintained in the Operating Record.

1.1 Facility Description

CCS is a coal-fired electric generation facility located in McLean County, North Dakota, located approximately six miles south of the city of Underwood. The facility has two units with a total generation capacity of more than 1,100 mega-watts, and the plant and associated facilities cover an area of approximately 2,560 acres. CCS operates as a zero liquid discharge (ZLD) facility. As a ZLD facility, CCS does not discharge process water to surface waters. The plant and associated facilities pertaining to the handling of CCRs are shown on Figure 1.

CCRs generated at CCS include fly ash, bottom ash, flue gas desulfurization (FGD) material and economizer ash. CCRs produced at GRE's Spiritwood Station (SWS) and fly ash from GRE's Stanton Station (SS) may also be deposited at CCS. Fly ash is beneficially used or managed in a dry landfill that is owned and operated by GRE and regulated by the North Dakota Department of Health (NDDH). FGD material, bottom ash, economizer ash and coal reject materials are managed in dry landfills and several surface impoundments that are owned and operated by GRE and regulated by the NDDH. This Plan includes dust control measures for management and handling, transport and placement of CCRs.

1.2 Regulatory Requirements

At CCS, fugitive dust (both CCR-related and otherwise) and other air emissions are regulated by the NDDH in accordance with the Air Pollution Control Title V Operating Permit, Permit Number T5-F82006. Fugitive dust generated by CCR-related activities at CCS will also be managed in accordance with the CCR Rule, 40 CFR 257. This Plan is limited to addressing the requirements for the CCR Rule. Specific

requirements of the Title V Operating Permit are not duplicated in this Plan. The requirements of the Fugitive Dust Control Plan as listed in 40 CFR 257.80(b) are:

- Identify and describe the CCR fugitive dust control measures used at CCS, and explain the reasons for selection of these measures, in the Plan.
- Procedures to moisture condition CCRs prior to, during, and/or after placement.
- Provide procedures in the Plan to log citizen complaints regarding CCR fugitive dust at CCS.
- Describe procedures to evaluate the effectiveness of the Plan.
- Place the initial Plan in the Operating Record by October 19, 2015.
- Prepare an annual report of CCR fugitive dust control activities.
- Maintain the most recent Plan and annual reports for the previous five years in the Operating Record.
- Notify NDDH when the initial Plan, an amended Plan, or an annual report is placed in the Operating Record.
- Post the current version of the Plan and annual reports for the previous five years on a publically accessible website.

2.0 FUGITIVE DUST CONTROL MEASURES

Fugitive dust may be generated at CCS by loading, transport and placement operations. The specific locations of potential CCR fugitive dust sources are as follows:

- Collection, Handling and Loading
  - Fly Ash
    - Electrostatic precipitator (ESP) to Dome/Fly Ash Silos
    - Stanton Station and/or Spiritwood Station to Fly Ash Silos
    - Fly Ash Silo to Haul Trucks, Tanker Trucks, or Rail Cars
  - Economizer Ash
    - Hopper to Ash Pond 91/Bottom Ash Handling Area
    - Ash Pond 91/Bottom Ash Handling Area to SE 16 Landfill
  - Bottom Ash
    - Hopper to Ash Pond 91/Bottom Ash Handling Area
    - Ash Pond 91/Bottom Ash Handling Area to Upstream Raise/SE 16 Landfill
  - FGD Material
    - Scrubber Building to Upstream Raise/Ash Pond 91 Raise
- Transport
  - Haul Trucks
  - Tanker Trucks/Rail Tanker Cars
  - Haul Roads
- Placement
  - Surface Impoundments
  - Landfills

2.1 Collection, Handling and Loading

Fly ash generated at CCS is collected in an ESP and is pneumatically conveyed directly to the Fly Ash Dome and Silos for temporary storage. Dry fly ash is also pneumatically conveyed from the Dome to the Fly Ash Silo 93 when needed for beneficial reuse. Fly ash is stored in Fly Ash Silo 91 and 92 until it is loaded into haul trucks for disposal or onsite beneficial reuse, or tanker trucks or rail tanker cars for off-site beneficial reuse. Fly ash that is not used for off-site beneficial reuse is moisture conditioned prior to loading into haul trucks. Fly ash received from SWS and SS in tanker trucks is pneumatically blown into the fly ash silo then moisture conditioned and loaded into haul trucks. A limited amount of fly ash from SWS and/or SS cannot be blown in to the fly ash silo and is placed without moisture conditioning at the dry landfills.

Economizer ash generated at CCS is collected in enclosed hoppers below the economizer, and then hydraulically conveyed to either Ash Pond 91 or the Bottom Ash Handling Area. Economizer ash is periodically removed from the surface impoundments and hauled to one of the dry landfills.

Bottom ash generated at CCS is quenched with water in a hopper beneath the boiler. From the hopper, bottom ash is hydraulically conveyed to either Ash Pond 91 or the Bottom Ash Handling Area. A dozer is used to stack the bottom ash to allow dewatering of free liquids by gravity. After dewatering, the material is loaded into haul trucks and taken to one of the dry CCR landfills or beneficially used in the Upstream Raise.

FGD material is collected in the scrubber and hydraulically conveyed to the interior of the Upstream Raise or Ash Pond 91 Raise. The Upstream Raise and Ash Pond 91 Raise consist of a bottom ash drainage layer and fly ash shell that allows the FGD material to dewater by gravity. The in-place FGD material is typically covered with water associated with continual sluicing of new FGD material.

Fugitive dust during CCR collection, handling and loading may be created by wind, dozer operations and/or truck loading operations. Fugitive dust emissions for CCR collection, handling and loading, are controlled by:

- Operating the ESP with best practice operation and maintenance practice and in accordance with the Title V Operating Permit.
- Pneumatically conveying dry CCRs.
- Capturing airborne particulate matter in a baghouse or bin vent filter for air displaced from the Fly Ash Silo.
- Loading fly ash via chutes from the Fly Ash Silo into trucks.
- Moisture conditioning fly ash to limit dust emissions.
- Limited handling of unconditioned fly ash to the extent possible.
- Hydraulically conveying economizer ash, and transporting it to the landfill with sufficient moisture content to limit fugitive dust generation.
- Hydraulically conveying bottom ash and loading with sufficient moisture content to limit fugitive dust generation.
- Limiting the fall distance to haul trucks.
- Reducing or halting operations during high winds.

2.2 Transport

Control measures that are used to limit fugitive dust emissions from CCR transport are as follows:

- Restricting haul road speeds to less than 25 mph.
- Maintaining gravel surface on the haul roads at CCS. Wetting the haul road and access roads with water or chemical dust suppressants as needed to limit fugitive dust generation during periods when temperatures are above freezing.

- Fly ash sold for off-site beneficial reuse is pneumatically conveyed into closed tanker trucks or closed rail tanker cars.

2.3 Placement

CCR materials are placed and stored in CCR landfills and several surface impoundments. Fly ash from CCS is beneficially used in the Upstream Raise or managed in a dry landfill, and fly ash from SS and SWS is managed in a dry landfill. The FGD material is managed in the Upstream Raise and the economizer ash and coal reject materials are managed in dry landfills. Bottom ash is managed in dry landfills and beneficially used in the Upstream Raise.

Fugitive dust may be created by vehicle traffic, truck unloading operations, CCR Facility maintenance operations and/or wind. Fugitive emissions from these operations are controlled by:

- Placing CCRs with sufficient moisture content to help reduce fugitive dust generation.
- Placing fly ash that cannot be moisture conditioned due to the method of transport, such as unloading vacuum trucks or belly dump trucks containing fly ash from SS/SWS, only if conditions are favorable. Water is added to this fly ash in the dry landfill during and after placement using a water truck.
- Limiting the fall distance from haul trucks.
- Adding moisture to CCRs with a water truck after placement to prevent off-property transport of visible emissions.
- Compacting CCRs after placement. Compaction may be achieved by making a pass over spread materials with a haul truck or other heavy equipment.
- Reducing or halting operations during high winds.

2.4 Control Measure Explanation

This section provides the explanation and reasoning behind the CCR fugitive dust control measures used at CCS:

- Operating the ESP in Accordance with the Title V Operating Permit – The ESP at CCS is designed to collect fine particulates. Operation of the ESP with best practice operation and maintenance practice and in accordance with the Title V Operating Permit helps assure that recognized and generally accepted good engineering practice is followed.
- Pneumatic Conveyance for Dry CCRs – Dry CCRs are enclosed during pneumatic conveyance, limiting the potential for fugitive dust generation.
- Baghouses and Bin Vent Filters – Baghouses and bin vent filters are designed to control fugitive dust emissions when air is displaced during filling of a silo, like those used for fly ash storage at CCS.
- Chutes – Fly ash is loaded into haul trucks from the rotary unloader deck directly below the Fly Ash Silos. This results in a long fall distance between the rotary unloader and the haul truck bed. Chutes are used to decrease this fall distance, which reduces the energy and radius of dispersal.

- Moisture conditioning CCRs during Collection, Handling, Loading and Transport – Adding moisture to CCRs with water or other permitted liquid to achieve a moisture content that will limit wind dispersal, but will not result in free liquids (40 CFR 257.80(b)(2)), is an effective strategy for controlling fugitive dust. In addition to providing dust suppression, moisture conditioning takes advantage of the pozzolanic (i.e., cementing) properties of fly ash by binding particles together and creating a crust at the ground surface. Particles joined by moisture also have increased mass and require more energy to become airborne. Moisture conditioning is used at CCS because fly ash is transported to the dry landfill in haul trucks or to the surface impoundments for beneficial use as a structural material for the facility.
- Limited Handling of Dry CCRs – Avoiding disturbance of dry CCRs to the extent possible limits the potential for fugitive dust emissions as a result of such disturbance.
- Off-site Beneficial Reuse of Fly Ash will be Transported in Closed Tanker Trucks or Rail Cars – Closed tanker trucks/rail cars allow for pneumatic filling with fly ash and limits the potential for CCRs to become airborne during transport. Most of the fly ash from CCS is used for off-site beneficial reuse.
- Reducing or Halting Hauling and Placement in High Winds – Reducing or halting operations during periods of high wind reduces the potential for CCRs to become airborne. Sustained winds over 25 miles per hour (mph) or wind gusts over 35 mph are considered to be high winds.
- Speed Limits – CCS has long haul roads where speeds greater than 25 mph could be reached. Limiting equipment speeds to 25 mph or less during CCR transport results in reduced wind dispersal.
- Gravel Surfacing – Gravel surfacing limits fugitive dust generation due to the relatively large particle size and is also effective for track-out control. The roads at CCS are gravel surfaced.
- Watering Roads – The haul roads at CCS are gravel surfaced and have the potential for developing fugitive dust. Watering is an effective method for limiting fugitive dust emissions from roadways, particularly unpaved roads. For paved roads, the use of watering, flushing, or sweeping is effective in removing potential fugitive dust, thereby minimizing mechanical interaction between tires or blowing wind and dust on roads.
- Limited Fall Distance – Limiting the fall distance at the drop point helps to contain the flow of material into a confined area, reducing the energy and radius of dispersal.
- Compacting CCRs After Placement – Compaction of moisture conditioned CCRs helps establish a crust at the ground surface, which can be effective for limiting the generation of fugitive dust.

3.0 EVALUATION OF PLAN EFFECTIVENESS

As specified in the preamble to the CCR Rule, performance standards will be employed to evaluate the effectiveness of the Plan. GRE staff will make visual emission observations and perform routine functions to assure that CCR fugitive dust at CCS is adequately controlled. Descriptions of these activities follow:

- Routine visual emission observations will be conducted to determine whether dust is visible at the collection, handling and loading sources per the Title V Operating Permit. Certification to perform these visual emission observations is not required. Corrective action will be taken if fugitive emissions at these sources are visible.
- For fugitive emissions resulting from transport and/or placement, routine visual emission observations will be conducted to determine if dust is becoming airborne in such quantities and concentrations that it remains visible in the ambient air beyond the premises where it originates or visible plumes cross the property boundary. Corrective action will be taken if fugitive emissions are observed crossing the property boundary.
- The ESPs are monitored continuously using the Precipitator Operating Software (POS) in accordance with the Title V Operating Permit. Also, as part of the operations and maintenance routine, the operation of the ESP is observed at least once per day.

The observations and routine functions listed above are standard practice at CCS. Visual emissions are observed daily during operations to assure that fugitive dust at the site is controlled. Personnel involved in CCR handling and placement are instructed on an annual basis in specific procedures to ensure compliance with the permits, facility plans and appropriate regulations. When conditions are not in line with the site standards for fugitive dust emissions, designated facility personnel are notified and corrective action is taken as needed.

4.0 CITIZEN COMPLAINTS

Citizen complaints regarding CCR fugitive dust generated at CCS can be submitted on GRE's website. The website address is: www.greatriverenergy.com.

Documenting citizen complaints and implementing corrective action will be in accordance with GRE's Environmental Communication Procedure, Section 4.4.3. In summary, this procedure requires that the complaint will be recorded, the cause of the complaint will be investigated, and corrective action will be taken if warranted. The complaint will be incorporated into the annual report, along with a summary of the corrective measure(s) taken to address the complaint.

5.0 REPORTING

The recordkeeping, notification and posting of information to a publicly accessible website required for this Plan are described in the following sections.

5.1 Fugitive Dust Control Plan

The initial Plan will be placed in the Operating Record on or before October 19, 2015. The NDDH will be notified before the close of business on the day the Plan is placed in the Operating Record. Within 30 days of placement in the Operating Record, the initial Plan will be posted to the publicly accessible website. Certification by a professional engineer registered in North Dakota is required and provided in Section 6.0.

The Plan will be amended on an as needed basis with the most recent Plan maintained in the Operating Record. Notification will be provided before the close of business on the day an amended Plan is placed in the Operating Record. Within 30 days of placement in the Operating Record, the most recent Plan will be posted to the publicly accessible website. The amended Plan will be certified by a professional engineer registered in North Dakota.

5.2 Annual Report

The following items will be addressed in each annual report:

- Descriptions of actions taken to control CCR fugitive dust at CCS during the previous year.
- A record of citizen complaints received during the previous year.
- A summary of corrective measures taken during the previous year

The first annual report will be placed in the Operating Record within 14 months of the Plan's placement in the Operating Record. Subsequent reports will be placed in the Operating Record within one year of the previous annual report's placement in the Operating Record.

The NDDH will be notified before the close of business on the day an annual report is placed in the Operating Record. Within 30 days of placement in the Operating Record, the annual report will be posted to the publicly accessible website. At least the five most recent annual reports will be retained in the Operating Record and posted to the website.

6.0 CERTIFICATION

The fugitive dust control measures selected for controlling CCR fugitive dust at CCS, as described in this Plan, represent recognized and generally accepted best management practice, are applicable and appropriate for site conditions, and are expected to effectively limit the amount of CCR that becomes airborne at CCS. Inquiries may be directed to:

Great River Energy
Coal Creek Station
Attn: Fugitive Dust Complaint
2875 Third Street SW
Underwood, North Dakota 58576

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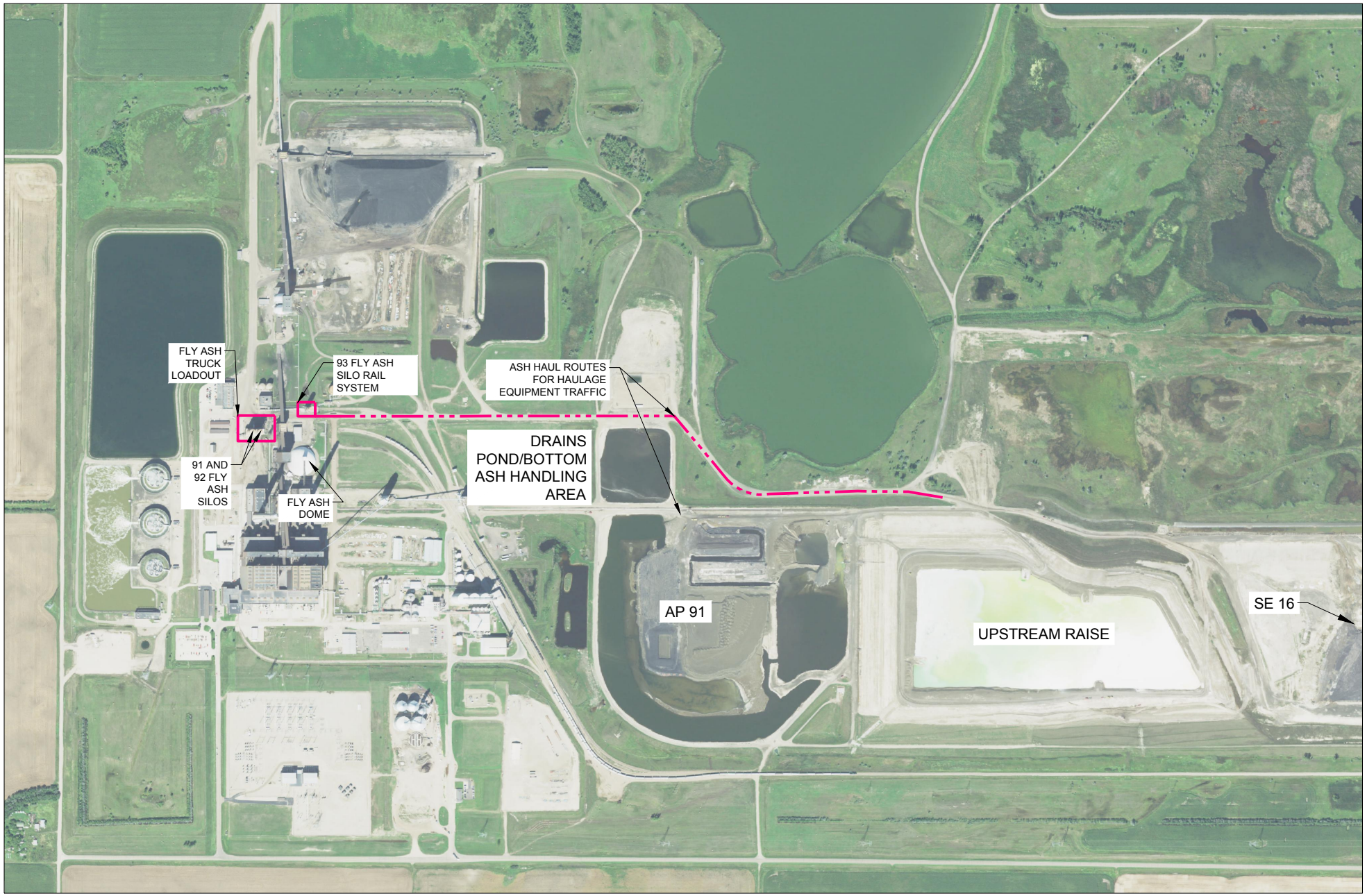

GREAT RIVER ENERGY
COAL CREEK STATION FUGITIVE DUST LOCATIONS AND HAUL ROUTE

FIGURE 1

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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Golder Associates

Engineering Earth's Development, Preserving Earth's Integrity