GLE Commercial Facility Mandatory Hearing

ASLB Presentation Topic #'s 6.A. & 6.C.

Environmental Monitoring Program

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Overview of GLE's Environmental Monitoring Program (6.A.)

Purpose

- Detection of effluents and emissions at or below regulatory limits
- Monitor at points of release, verified by additional samples taken farther away

Quality Assurance (QA) Program

- Sampling, analytical, and reporting procedures
- Instrument maintenance and calibration
- Laboratories participate in third-party, inter-comparison programs
- Validation of field and laboratory results

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Overview of GLE Environmental Monitoring Program

Organization of EMP

- Implemented by the GLE Environmental, Health and Safety Organization (EHS)
- GLE EHS has independent oversight of operations

Modifications to EMP

- To maintain effectiveness, changes to the EMP may be made based on, for example: 1) operations, 2) vendor information, 3) removal of materials, and 4) regulatory actions

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Air Pathway

Atmospheric Setting

- Influence of jet stream position and Bermuda High on weather

- Meteorological and atmospheric data collected from Wilmington International Airport

- Annual wind direction predominantly southwesterly

- Prevailing wind speed 9 knots

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Air Pathway

Air Monitoring

- Potential Radiological Emission Releases
  - Primary release point: GLE operations building, but contained and vented through high-efficiency filter
  - Sampling strategy:
    (1) Vent stack exhaust gas
    – continuous
    (2) Ambient air
    – 11 samplers (Figure 6-2)
    (3) Soil
    – assess for deposition
    on a semi-annual basis (Figure 6-3)

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Air Pathway

Air Monitoring

- Potential Non-radiological Emission Releases
    - Primary source is small gaseous emissions from the GLE operations building potentially containing the air toxic, hydrogen fluoride (HF)
    - Initial daily measurements planned to decrease to weekly measurements
    - Sample analyses conducted according to North Carolina Division of Air Quality requirements (Table 6-2)

Surface Water Pathway

Surface Water Environmental Setting

- Northeast Cape Fear River (NCFR) Sub-basin

- NCFR nearest waterbody, (southwestern portion of the Wilmington Site)

- Drained by small streams and an effluent channel that begins in eastern portion of Site (Figure 6-4)

- Surface water not used for drinking water at or downstream of Site

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Surface Water Pathway

Surface Water Monitoring

- Potential Radiological Effluent Releases
  - Monitored by GNF-A/GLE at Site dam and NCFR
  - Sampling done according to North Carolina standard operating procedures and applicable best practices

- Potential Non-radiological Effluent Releases
  - GNF-A/GLE will monitor at the Site dam, via a partnership with Lower Cape Fear River Program, and will monitor the NCFR upstream and downstream from the Site (Figure 6-5)

- Monitoring also includes wastewater effluent, stormwater discharge, and sediment samples (Table 6-2)

Surface Water Pathway

Wastewater Effluent Monitoring

- Discharge combined with effluent discharges for treatment at Site lagoon treatment facility

- Utilize GNF-A monitoring locations (Figure 6-6)

- Treatment of process wastewater
  – Uranium removal by adjusting pH
  – Fluoride removed by adding salt

- Routed to lagoon, then discharge according to 10 CFR Part 20 and NPDES permit

- Treated process wastewater collected daily

- Sanitary wastewater treated at existing facility

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Surface Water Pathway

Stormwater Discharge Monitoring

- Three current site-wide monitoring locations (Figure 6-7)
- GLE cylinder pad runoff to be collected in holding pond, monitored, and then released to a stormwater basin

Sediment Monitoring

- Semiannual sampling in effluent channel downstream (Figure 6-8)
- Samples analyzed for uranium (Table 6-2)

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Groundwater Pathway

Hydrogeologic Setting

- Site is located within the North Carolina Coastal Plain physiographic province

- Surficial aquifer (Figure 6-10)

- Semiconfining layer

- Principal aquifer (Figure 6-11)
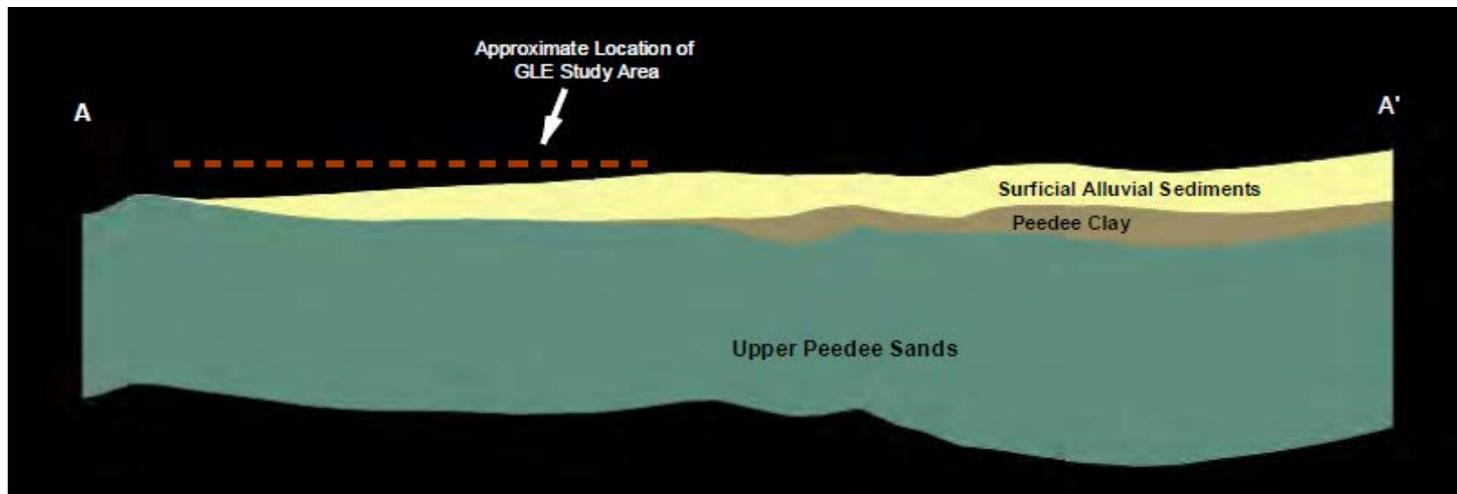
Groundwater Pathway

Groundwater Monitoring

- Will add 13 wells to eight currently in GLE Study Area
- Wells positioned in seven clusters
  - Two positioned near and slightly upgradient of main GLE operations building
  - Five positioned to cover the perimeter of the Proposed GLE Facility in downgradient locations
- Quarterly sampling
  - Analyzed for uranium and fluoride (Table 6-2)

Management and Tracking of Environmental Monitoring Data (6.C.)

QA Program

- Procedures for reviewing, handling, retaining, retrieving and maintaining records
- Records will include results of tests and inspections

Program-specific relational database

Data Tracked by Database Modules

- Designed to ensure sample completeness and to conduct timely reviews of monitoring results

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Application of Monitoring Results (6.C.)

Internal Action Levels

- Primary purpose is to provide margin and identify off-standard conditions

- Provide guidance on compliance with regulatory requirements

- Levels will be specified in procedures

- Levels will be based on guidelines, regulations, best professional judgment, minimum detection limits, and historical data

Application of Monitoring Results

Correcting Problems

- Enter corrective action request into the CAP
- CAP captures precursors to more significant issues, possibly involving noncompliances
- CAP includes follow-up actions to verify proper implementation
- Investigation
  - Begin with decision to initiate immediate or long-term remedial actions
  - Possible re-sampling and analysis
  - Careful scrutiny of timing of incident

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