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GE-Hitachi Global Laser Enrichment LLC Facility Mandatory Hearing

July 11-13, 2012

NRC Staff Presentation Topic 6: Environmental Monitoring Program

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Topic 6(a)

Presenter:

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NRC Guidance for Radiological Monitoring Program

- NUREG-1748 – *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs* (Ex. NRC006, at 5-26, 6-30)
- NUREG-1520 – *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility* (Ex. NRC005, at 9-12 to 9-15)
- RG 4.15 – *Quality Assurance for Radiological Monitoring Programs – Effluent Streams and the Environment* (Ex. NRC077)
- RG 4.16 – *Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluent from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants* (Ex. NRC078)
- NUREG-1302 – *Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for BWRs* (Ex. NRC079, at 39-42, 46-49, 59-66, 70-72, 83, and 87-91)

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Environmental Monitoring Program Components

- Effluent Monitoring – Addresses monitoring, recording, and reporting of data for contaminants (radiological and non-radiological) in gaseous and liquid effluents emitted from specific points at the proposed GLE Facility
- Environmental Monitoring – Addresses monitoring of various environmental media (e.g., ambient air, groundwater, stormwater, surface water, sediment, and soil) within and outside the proposed GLE Facility's boundaries
- The existing Wilmington Site monitoring program would be expanded to include the proposed GLE Facility, and would be known as the *Expanded Monitoring Program*

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Effluent Monitoring Summary

Source: FEIS (Ex. NRC003) at 6-2 to 6-10

Sample Location	Type	Analysis/ frequency
Ventilation system exhaust stack	Continuous air particulate filter	Weekly gross alpha/beta; quarterly isotopic composite
Treated process wastewater effluent (final process lagoon facility)	Continuous proportional	• Total uranium – daily composite • Gross alpha and beta – weekly composite of daily samples • Technetium-99 – quarterly composite of weekly samples • Metals, pH, cyanide, fluoride, nitrogen, suspended solids, oil and grease, toxic organics – weekly, monthly, or quarterly
Treated sanitary wastewater effluent (if discharges resume)	Continuous proportional	Biochemical oxygen demand, chlorine, suspended solids, fecal coliform, flow, phosphorous, nitrogen, temperature – weekly, monthly, or quarterly

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Environmental Monitoring Summary

Source: FEIS (Ex. NRC003) at 6-2 to 6-11

Sample Type	Locations	Minimum analysis/frequency
Continuous airborne particulate	11 locations (9 fenceline)	Weekly gross alpha and isotopic uranium
Groundwater	21 wells in seven groups of three depths	Quarterly total uranium (gross alpha/beta if >0.02 mg/L); fluoride; elevation, pH, temperature, and specific conductance
Stormwater	UF_6 cylinder storage pad holding pond	Quarterly isotopic
Stormwater	3 outfalls	Semiannual lead, oil and grease, pH, and suspended solids
Surface water	3 locations	Monthly gross alpha and isotopic uranium
Sediment	Existing locations, including effluent channel	Semiannual total uranium
Soil	4 new locations (plus existing locations)	Semiannual total uranium
TLD	18	Quarterly gamma/neutron

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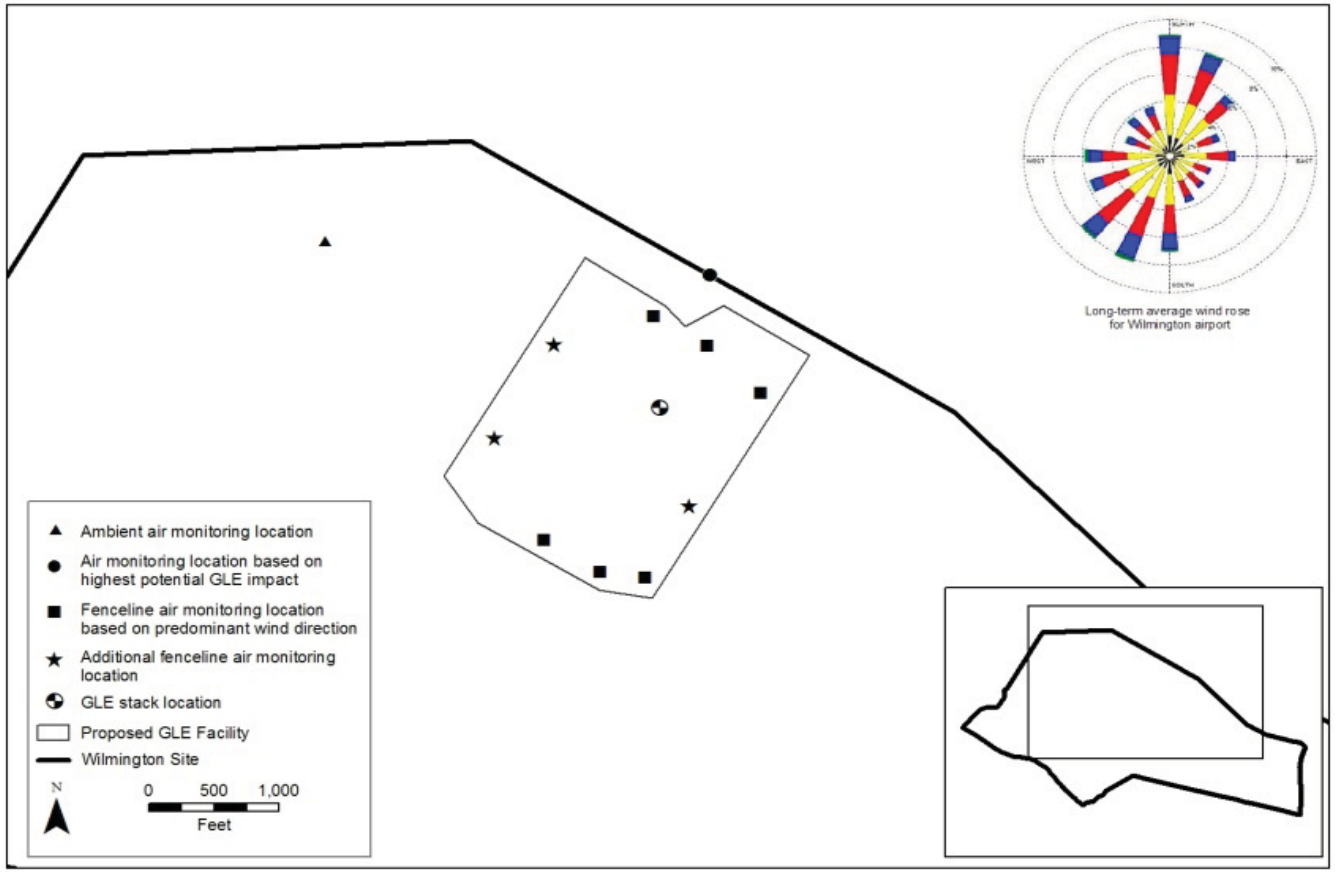
Air Monitoring Locations

Source: FEIS (Ex. NRC003) at 6-6



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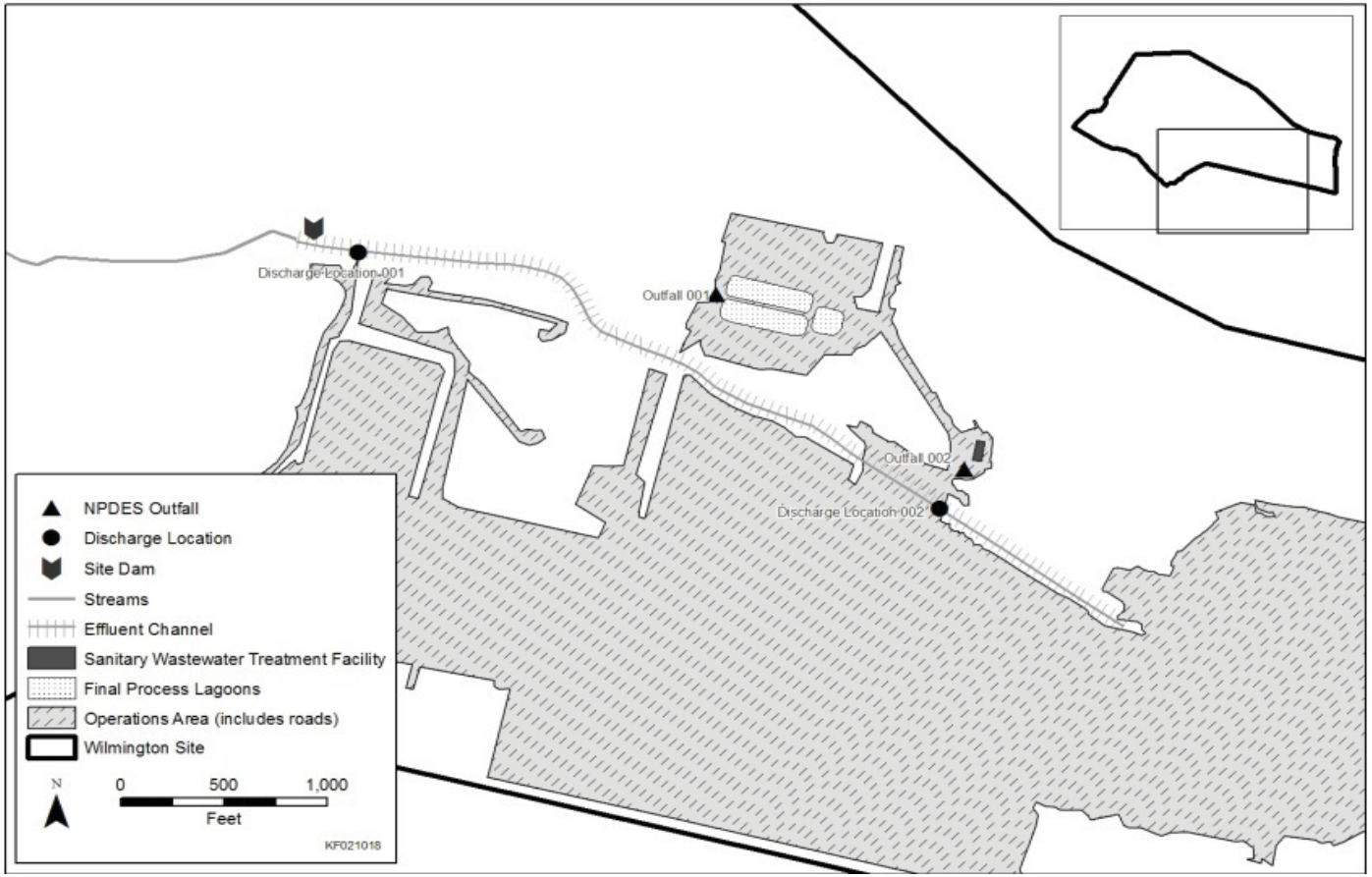
Liquid Effluent Discharge Locations

Source: FEIS (Ex. NRC003) at 3-107



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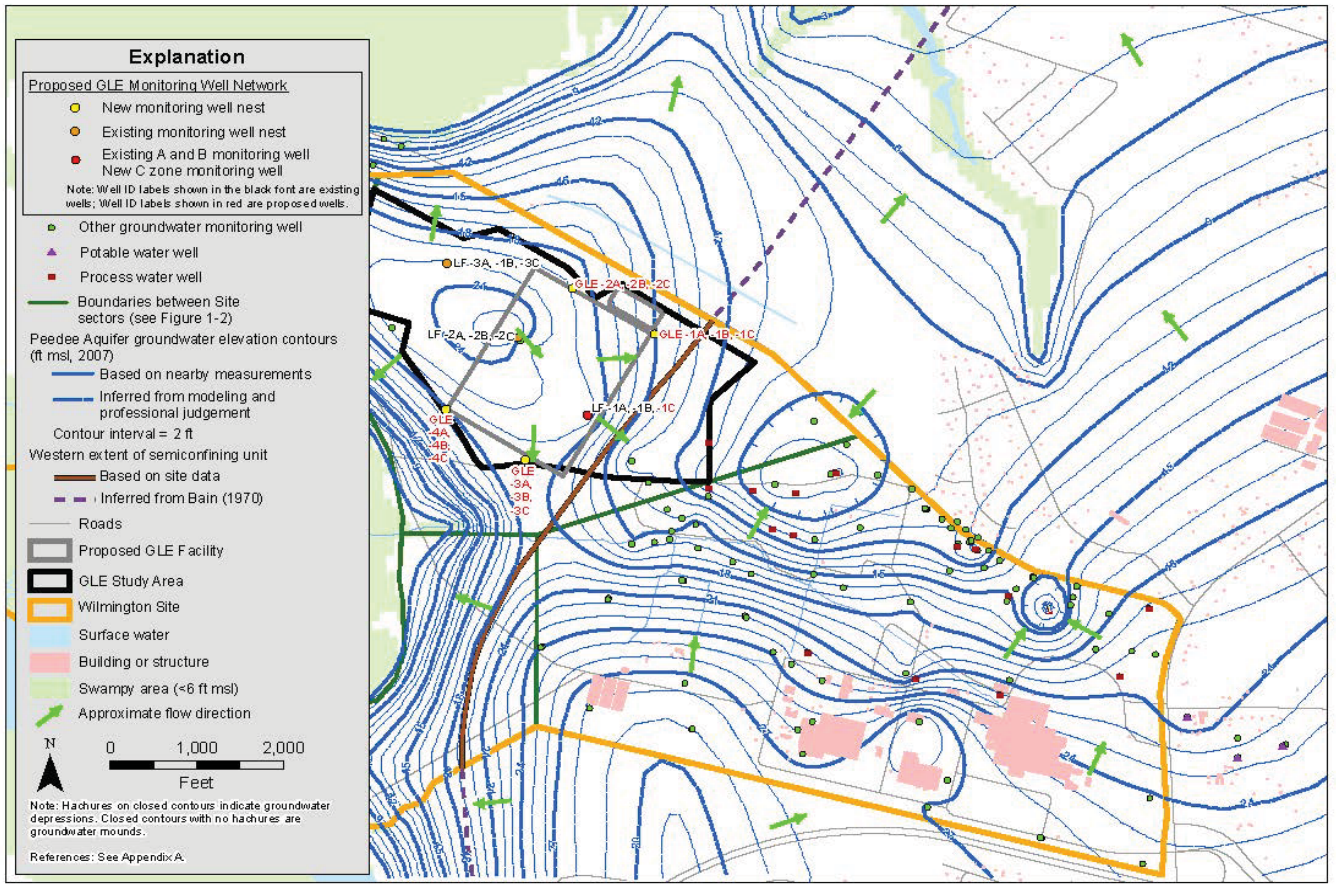
Groundwater Monitoring Locations

Source: ER (Ex. GLE006), Figure 6-2



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Other Monitoring Activities

- NCDENR Division of Water Quality conducts water quality monitoring in the Lower Cape Fear River watershed
- NC Radiation Protection Section conducts routine environmental sampling and analysis within the vicinity of the Wilmington Site
- Lower Cape Fear River Program performs water quality monitoring at 34 sites within the Cape Fear River Estuary and Lower Cape Fear River watershed

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Topic 6(b)

Presenters:

Timothy C. Johnson
Stan Echols
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Effluent Monitoring

- Proposed monitoring complies with 10 CFR 20.1302 and 70.59, and Regulatory Guide 4.16, “Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants” (Ex. NRC078)
- GLE will perform annual ALARA assessment
- GLE will submit semi-annual release reports in accordance with 10 CFR 70.59
- GLE will take corrective actions as necessary

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NUREG-1520 Review

- Conducted review of Applicant's environmental protection measures against acceptance criteria found in Chapter 9 of NUREG-1520 (Ex. NRC005)
- Concluded that acceptance criteria had been met
- Summarized relevant portions of Applicant's ER (Ex. GLE006) and LA (Ex. GLE004), as well as other chapters of the SER (Ex. NRC001) and the FEIS (Ex. NRC003), as they relate to the acceptance criteria

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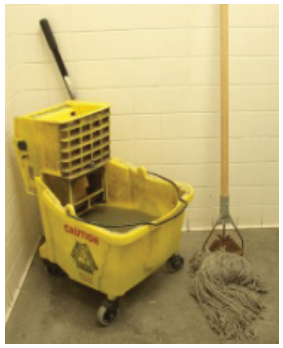
Requirements for Effluents

Solid Wastes

10 CFR 20.2006 and Appendix G

Approved disposal
Minimize Wastes

Liquid Wastes



10 CFR 20.1301-1302, Appendix B

Sample and remove contaminates

Air Effluents

10 CFR 20.1301-1302, Appendix B

HEPA /HEGA filters
Ventilation zones

10 CFR 20.1101(b) – ALARA

10 CFR 20.1406(a) – Minimize contamination

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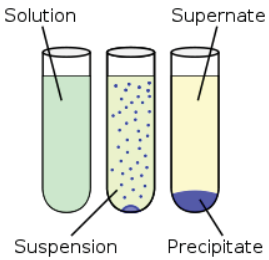
Adequate Measures

Complies with guidance – NUREG-1520 (Ex. NRC005),
RG 8.37 (Ex. NRC079)

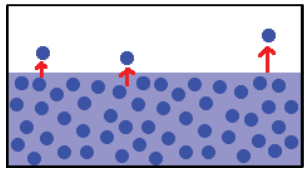
Radiation protection program - minimizes contamination

Containment

Cleaning

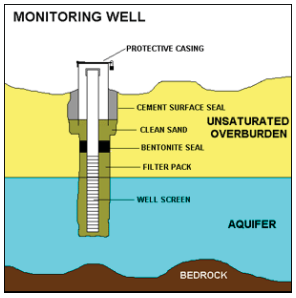


Precipitate



Evaporate

Counting



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Topic 6(c)

Presenter:

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Sr. Fuel Facility Project Inspector

Fuel Facility Inspection Branch 2

Region II, Division of Fuel Facility Inspection

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Types of NRC Inspections

- Operational Readiness Review
- Operational Safety & Safeguards Inspections
  - We use NRC Inspection Manual 2600 (Ex. NRC081)
    - Radiation Protection (IP88030) (Ex. NRC082)
    - Effluent Control and Environmental Protection (IP88045) (Ex. NRC083)
    - Radioactive Waste Management (IP88035) (Ex. NRC084)

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Inspection Findings

- **Process and Consequences**
  - Results can indicate if the environmental protection program is being effective.
  - The inspection program will identify and document occurrences in which the environmental monitoring program is not implemented properly or when effluent limits are exceeded.
  - The safety significance of issues is assessed with the NRC Enforcement Policy and the NRC Enforcement Manual.
  - Licensees are required to take effective corrective actions.
  - The NRC inspection program will track inspection findings and perform follow-up inspections.
- **Use of Results from Environmental Monitoring Program**
  - Results are identified during core or reactive inspections.
  - The NRC Enforcement Policy is used to ensure licensees return to compliance with any identified environmental requirements.

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