

RPP
(Tank Farm Vadose Zone, ILAW PA)
FIELD CHARACTERIZATION NEEDS

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CH2MHILL
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VADOSE ZONE PROJECT

- Goal:** Gather data, information, and understanding needed
- to implement RCRA corrective actions,
 - to efficiently perform tank waste retrieval, and
 - to safely close the tank farms

Background:

- Hanford Site has 177 underground storage tanks with hazardous, high-level radioactive waste arranged in 18 tank farms (12 single-shell, 6 double shell)
- Over 60 of these tanks have leaked or been overfilled
- Have had numerous surface and near-surface spills
- Have experienced large influxes of water
- Have detected tank waste contaminants in groundwater, hence we are under an RCRA compliance order

Deliverables

- Field Investigation Reports [FIR]
 - Estimate the environmental impact (no action, potential corrective actions)
 - Document existing knowledge
 - Document new information gained from field and other investigations
- RFI/CMS [Remediation Facility Investigation/Corrective Measures Study]
 - Summarize FIRs
 - Analyze potential corrective measures

Characterization Needs

- Determine inventory and spatial distribution of mobile, long-lived radionuclides and other important contaminants in major plumes
- Determine dominant characteristics of the system which affect contaminant transport
 - geologic (nature and extent of units)
 - hydrologic (parameters affecting moisture movement)
 - geochemical (parameters and processes affecting transport)

PLANS

- Analyze existing data (geophysical, borehole soil samples, tank leak and inventory information)
- Obtain and analyze samples from a limited set of new boreholes
- Obtain and analyze samples from a restricted set of near surface penetrations
- Perform numerical simulations to determine dominate features and processes
- Document findings

ILAW PA

Goal: Estimate the long-term environmental and human health impact of the disposal of immobilized low-activity tank waste (ILAW) at the Hanford Site

Background:

- After waste is retrieved from the tanks, it will be separated into two streams (low-activity and high-level) with both streams being vitrified.
- By DOE order and to support RCRA permit requirements, the environmental impact of disposal must be assessed
- In October of 1999, DOE conditionally approved the 1998 performance assessment for ILAW. The major conditions were
 - The PA has to be maintained
 - Needed more information on waste form (completed)

Deliverables

- Performance Assessments
 - next version due in 2001
 - then 2003
 - every 5 years thereafter until facility closure (~2028)

Characterization Needs

- Understand the movement of moisture under dry conditions in unaltered soils
- Understand the movement of moisture in engineered materials
- Understand any retardation for a few key materials (I, Se, Tc, U and daughters, Np and daughters, Pu and daughters)

PLANS

- Analyze existing data (geophysical, borehole soil samples, outcrop information)
- Obtain and analyze samples from 2 new boreholes
- Continue performing small scale field studies
- Perform numerical simulations to determine dominate features and processes
- Document findings

Functional Components of the Hanford River Protection Project

