Hanford Cleanup Integration

Status of Groundwater/ Vadose Zone Integrated Project Teams (IPTs)

April, 2007

E M Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

Discussion Topics

- Status of Integrated Project Teams
  - Groundwater/Vadose Zone Executive Council
  - Groundwater/Vadose Zone Integrated Project Team (Core Team)
  - B Area Integrated Project Team
    - ***Tank Farm and Waste Sites High Resolution Resistivity (HRR) investigation***
  - T Area Integrated Project Team
    - ***New Tc-99 pump & treat system***
  - Central Plateau Deep Vadose Zone Integrated Project Team (HRR Peer Review)
  - River Corridor and Groundwater Integrated Project Team
    - ***100 D Area Chromium investigations***
- Opportunities for HAB, Tribes and Oregon involvement

Integrated Project Teams

IPTs are project-to-project teams focused on day-to-day coordination issues and opportunities, e.g., field sampling, data communication and data interpretation.

GW/VZ Executive Council

Ensure consistent decision making process and maintain holistic view on Hanford cleanup

GW/VZ IPT

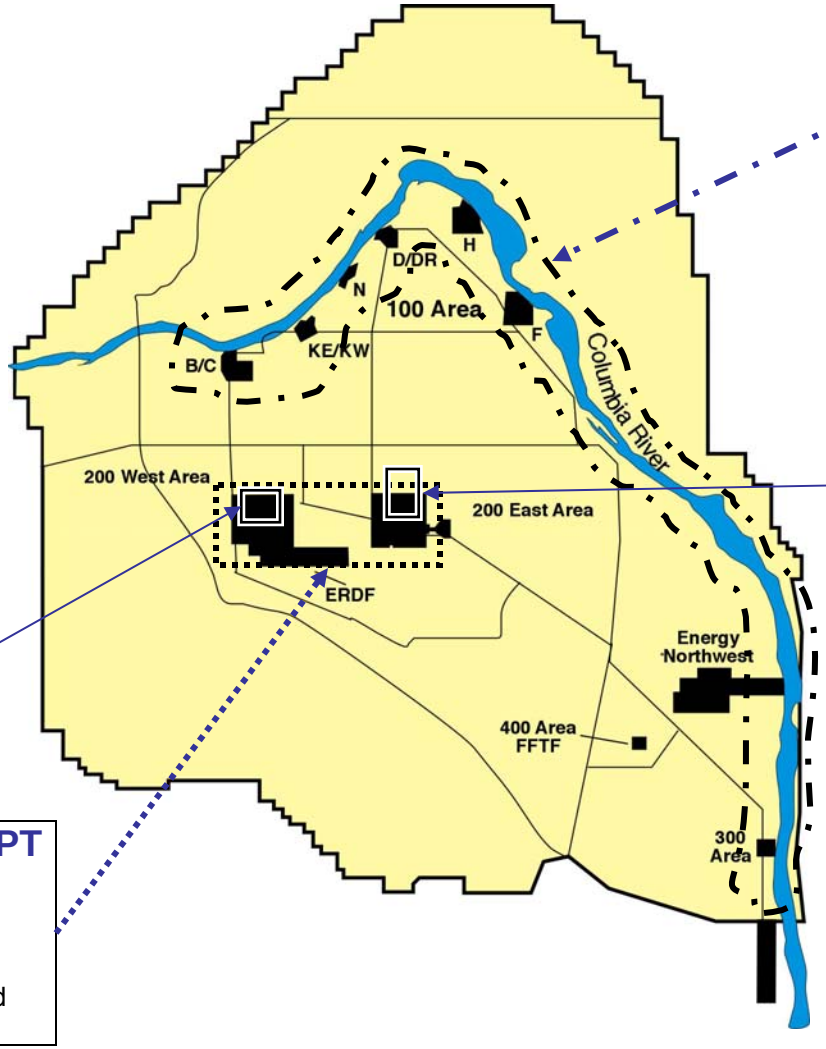
- Develop schedules to facilitate optimization of field work and decision documents
- Establish, monitor and oversee Sub-IPTs
- Maintain communication forum among projects

T Area Sub-IPT

- Coordinate GW and VZ investigations of the T Area plumes (Tc-99)
- Ensure that applicable products and actions are coordinated with affected DOE and contractor organizations

Deep Vadose Zone Sub-IPT

- Coordinate investigations of deep vadose zone contamination and identification of remedies
- Ensure that applicable products and actions are coordinated with affected DOE and contractor organizations



River Corridor Sub-IPT

- Develop a strategy for achieving final cleanup decisions in the River Corridor
- Integrate planning and scheduling for source and GW unit investigations

B Area Sub-IPT

- Coordinate GW and VZ investigations of the B Area plumes (U and Tc-99)
- Ensure that applicable products and actions are coordinated with affected DOE and contractor organizations

Key Issues for Executive Council Resolution during 2007

- Align decision approaches and schedules for River Corridor waste site and groundwater units
- Align decision approaches and schedules for Central Plateau waste sites, tank farms, groundwater
- Approval of GW/VZ Management Plan
- Implement ongoing evaluation of the status of groundwater and vadose zone coordination efforts

Groundwater/Vadose Zone Integrated Project Team (Core Team)

Purpose

- Ensure that Central Plateau and River Corridor vadose zone investigation and actions are coordinated, i.e., actions designed and executed efficiently to meet the needs of waste sites, groundwater, and tank farm vadose zone projects
- Monitor and direct sub-IPTs as needed

Accomplishments

- Commissioned 4 sub-IPTs to address priority integration opportunities
- Maintains a regular (every other week) forum
- EPA and Ecology project leads have participated since November

Key Activities for FY-07

- Maintain and review integrated schedules for field activities
- Maintain oversight of sub-IPTs
- Identify and resolve/elevate integration issues and opportunities
- Define and implement Business Processes to ensure integration:
  - Field work planning and scheduling
  - Emergent data
  - Data interpretation and conceptual models
  - Multi-project reviews of joint products

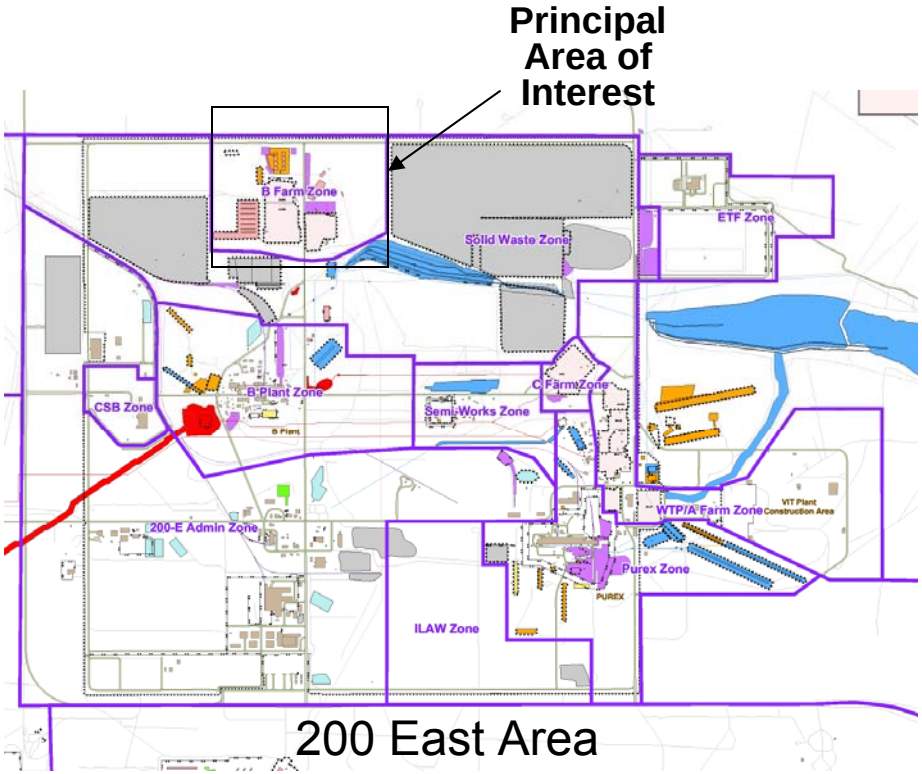
B Area Integrated Project Team

Purpose

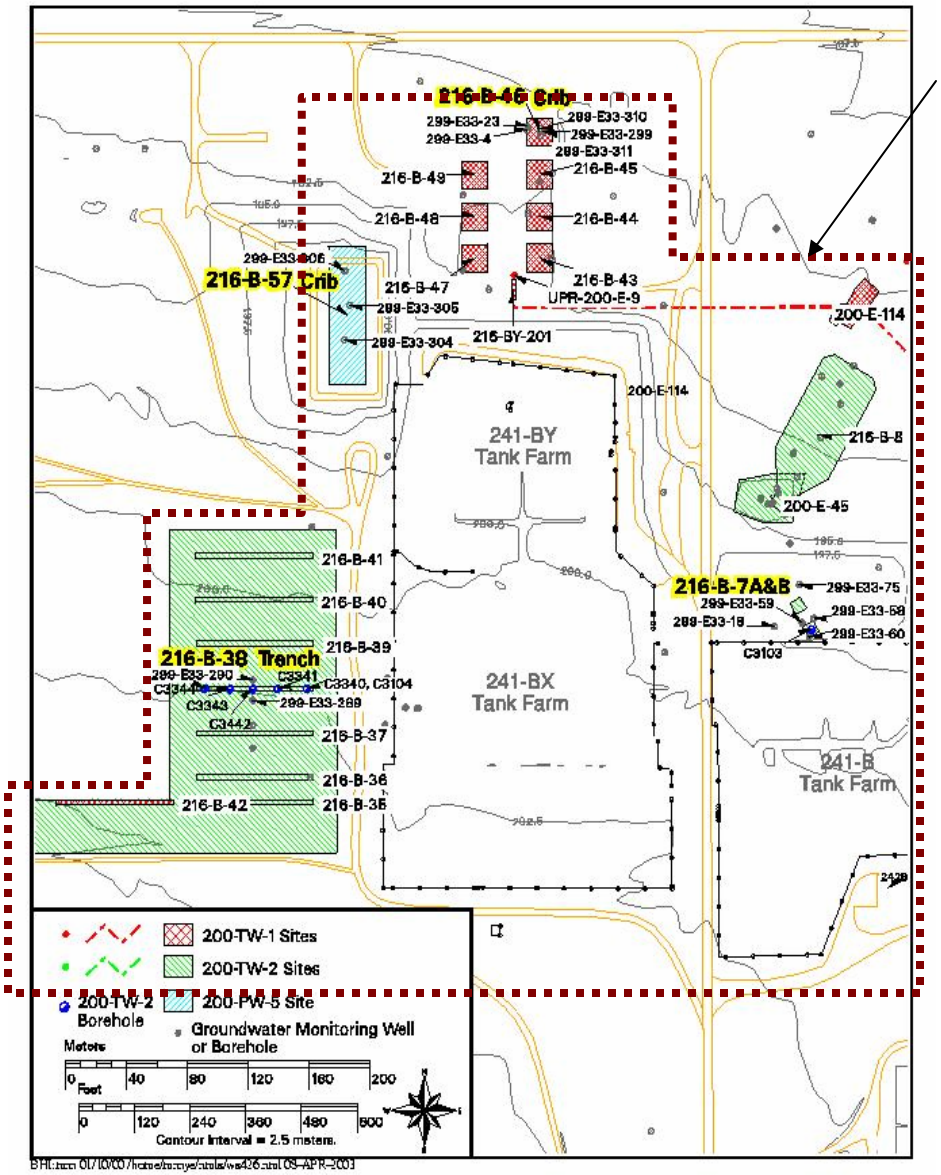
- Coordinate investigations of the B Area Uranium and Technetium plumes and ensure that applicable products and actions are coordinated with affected DOE and contractor organizations

Key Activities and Recent Highlights

- Developed integrated schedule for field work
- Integrated priorities (waste sites, tank farms, and groundwater) within the 200-BP-5 Data Quality Objectives – jointly set locations and priorities for additional monitoring wells, deep boreholes, and waste site characterization
- ***Developed comprehensive scope and approach for application of surface geophysical survey (High Resolution Resistivity) to B Area (currently underway)***
- Provides forum to ensure timely communication of emergent data. ***Currently addressing emergent data relative to subsurface fate and transport of uranium***



Surface Geophysical Survey for B Area



Approximate coverage area for High Resolution Resistivity (HRR) grid

- Area-wide high resolution resistivity investigation includes B, BX, BY tank farms, BX Trenches, BY Cribs, and B-7A&B Cribs
- Co-funded by CH2M Hill and Fluor.
- Non-intrusive investigation of subsurface region with co-mingled (tank farm and non-tank farm) contaminants
- ~48 acres
- Intended to provide insight regarding desired location for intrusive sampling (e.g., boreholes and direct pushes) to support tank farm vadose zone, waste site and 200-BP-5 groundwater investigations
- Results available by end of FY-07

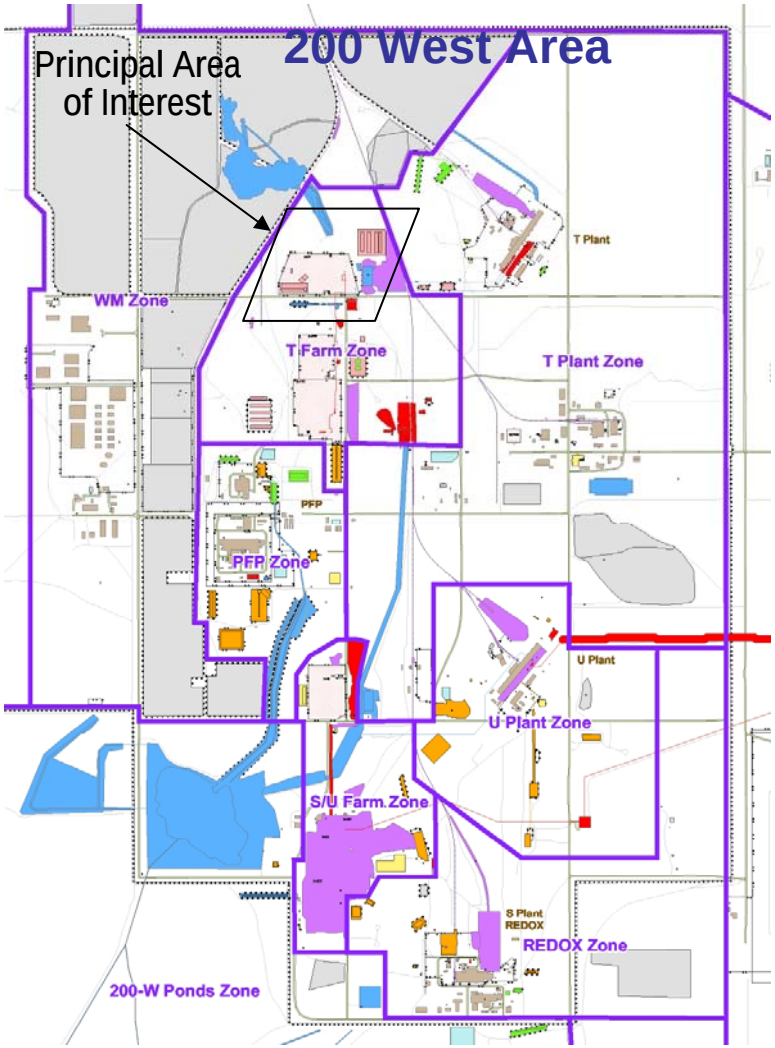
T Area Integrated Project Team

Purpose

- Coordinate investigations of the T Area Tc-99 plume(s)
- Ensure that applicable products and actions are coordinated with affected DOE and contractor organizations.

Key Activities

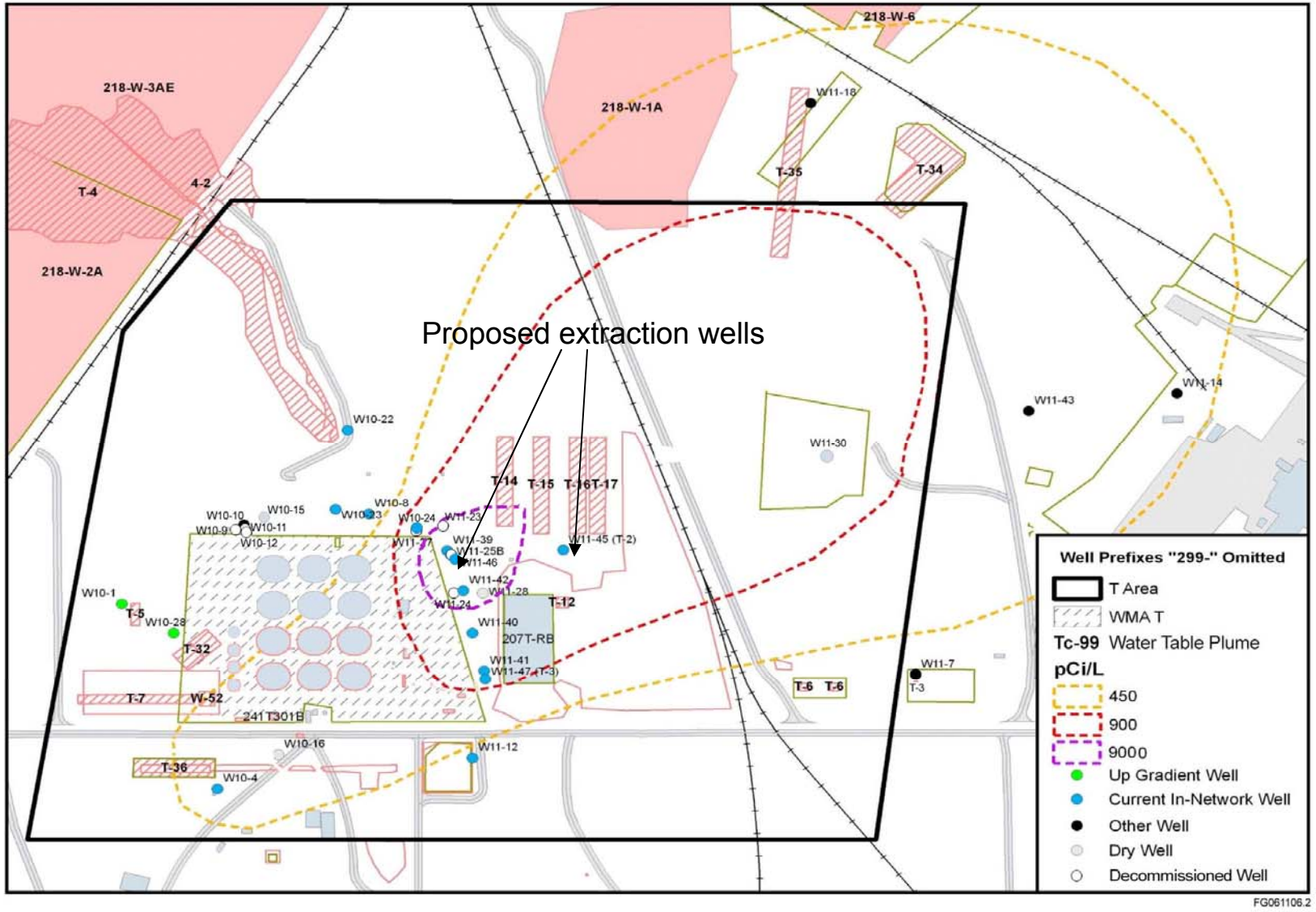
- Developed integrated schedule for field work
- Coordinated Data Quality Objectives process for T Area
- Set priorities and locations for additional groundwater monitoring wells near T Farm.
- ***Facilitated an analysis of options for initiating treatment of the Tc-99 plume near T Farm (see following charts for detail).***
- Provide forum to ensure timely communication of emergent data



Proposal to begin treatment of emerging Tc-99 plume near T Farm

- Monitoring data received February 14, 2005 indicating increasing trend in Tc-99 concentration (up to ~180,000 pCi/l, 200 times MCL)
- A joint RL/ORP team is leading additional characterization activities being incorporated into 200-ZP-1 Feasibility Study / Proposed Plan (Milestone 09/30/2007)
- T Area-wide High Resolution Resistivity (HRR) investigation was completed in 2006 by CH2M Hill; helped optimize location for additional monitoring wells
- Three new GW monitoring wells have been installed with the option to be used as extraction wells. A fourth well is undergoing installation

Technetium-99 Plume Near T Farm



T Area Emerging Tc-99 Plume Path Forward

- Intent is to address the high concentration portion of the Tc-99 plume down gradient of T Farm
- Install submersible pumps in two wells (45 and 46) and run a single above ground line to nearest ETF tie-in point (~5,000 ft); Combine flow rate expected to be ~43 gpm.
- Regulatory approach: Treatability Test
  - Enables prompt action
  - Provides regulatory coverage for ERDF disposal of treated secondary waste
  - Supports ZP-1 final remedy design
- DOE change board approved funding and the project is being implemented (Feb. 13)
- Engineering and construction requires ~4.5 months

Central Plateau Deep Vadose Zone IPT

Purpose

Coordinate investigations of deep vadose zone contamination and identification of remedies and ensure that applicable products and actions are coordinated with affected DOE and contractor organizations

Key Activities

- Maintain integrated schedules for all deep vadose field activities
- Coordinate plans for High Resolution Resistivity technology application to meet needs of multiple site projects
  - ***Peer Review scheduled for April 16 – 19***
  - Peer Review Panel selected (5 members)
  - Will provide expert feedback on current and planned applications of the technology at Hanford; will support design of correlation efforts; will provide input to enhance technology application
- Periodic review of deep vadose zone treatability test plan to address integrated set of project needs – M-15-50, 12/31/2007
- Provide forum to ensure timely communication of emergent data

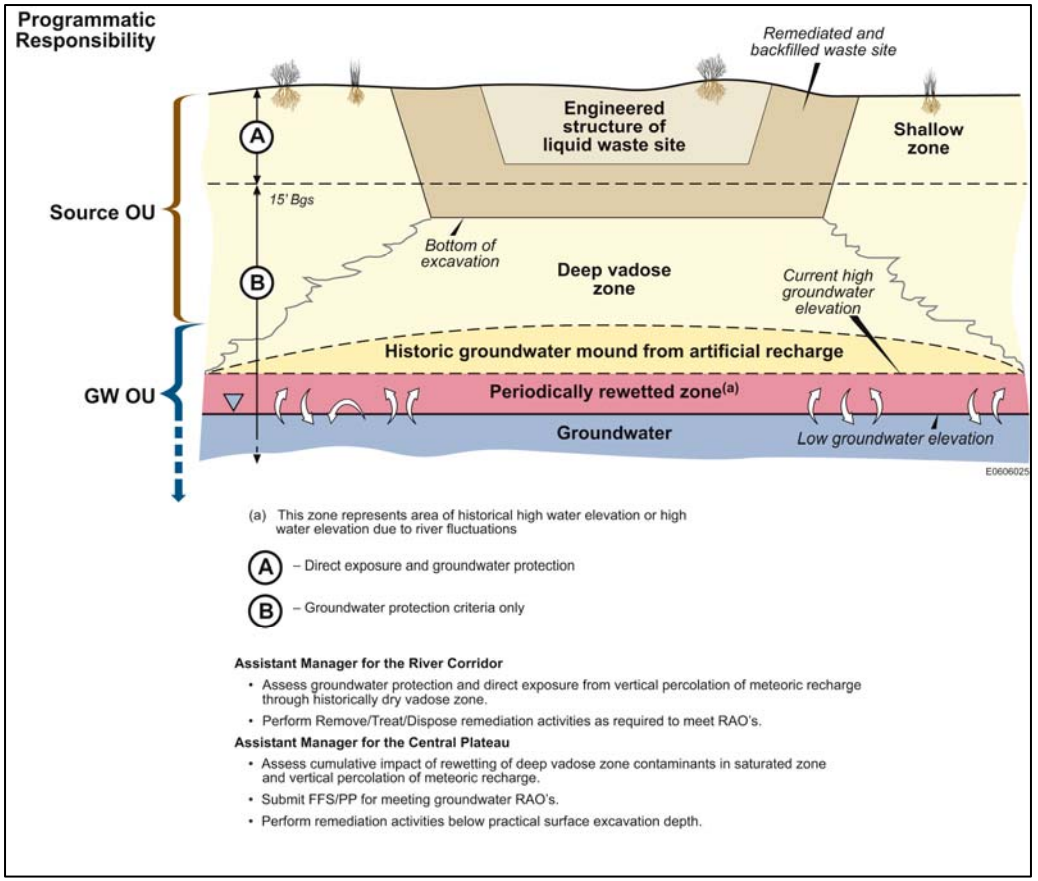
River Corridor/Groundwater Integrated Project Team

Purpose

- Produce and implement an integrated strategy for achieving final cleanup decisions in the River Corridor
- Integrate planning, scheduling, and implementation for all River Corridor source operable unit, deep vadose zone, groundwater operable unit and related Columbia River cleanup activities

Key Activities

- Develop decision strategy for River Corridor source and groundwater decisions to enable final completion of the River Corridor
- Update interface agreement for groundwater and River Corridor (approved January 2007)
- Maintain integrated schedule for field work for waste sites and groundwater
- Provide forum to ensure timely communication of emergent data – ***Current focus is on coordination of 100-D Area chromium investigations in groundwater and soils***



Accelerate Cleanup in 100-D:
Refine Location of the Chromium Source

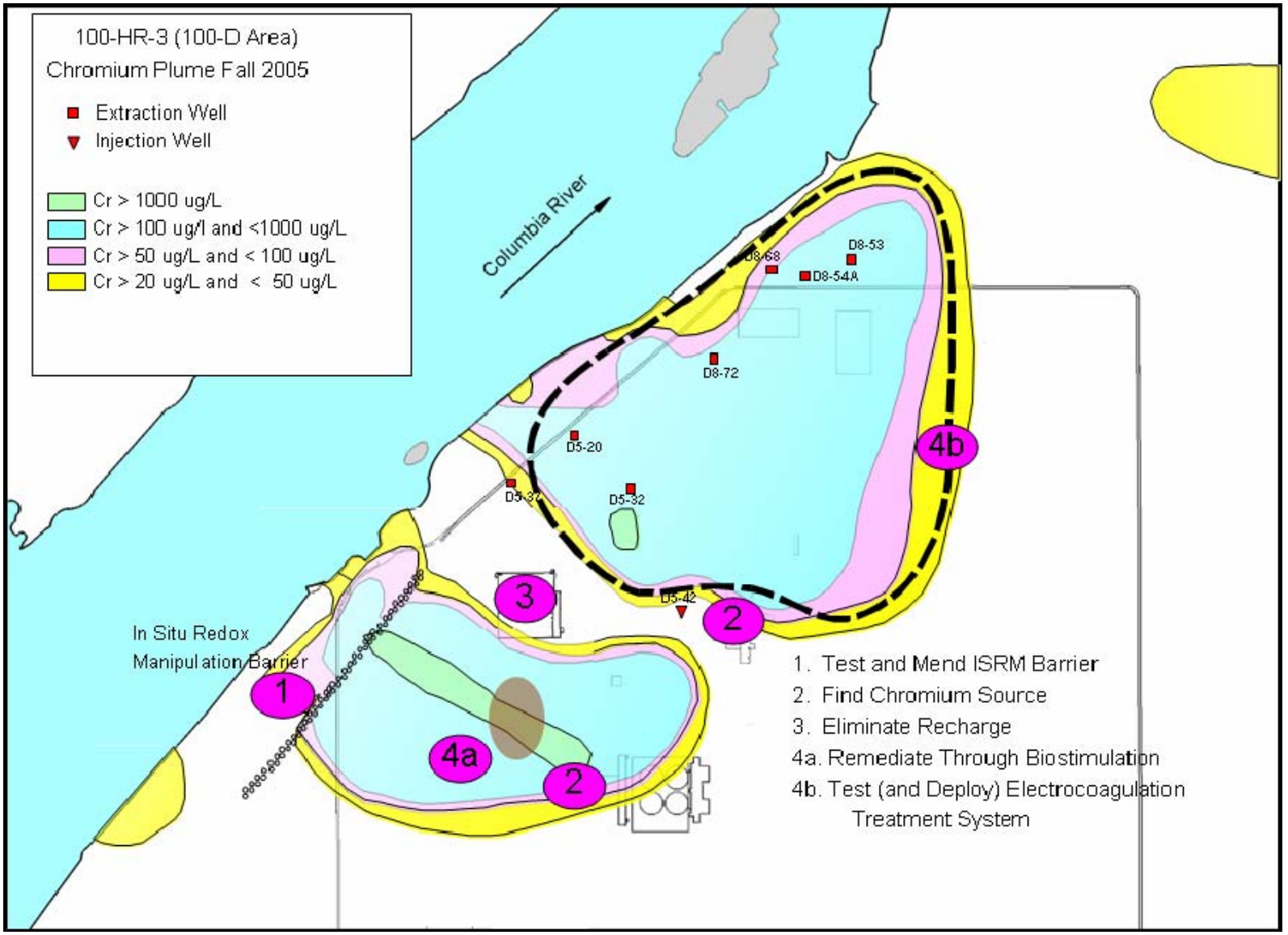
Problem: Groundwater data show that there is a continuing source of chromium intercepting the In-Situ Redox Manipulation barrier

Solution: Refine the source location. No indirect (e.g., geophysical) methods are able to do this, so physical samples must be obtained.

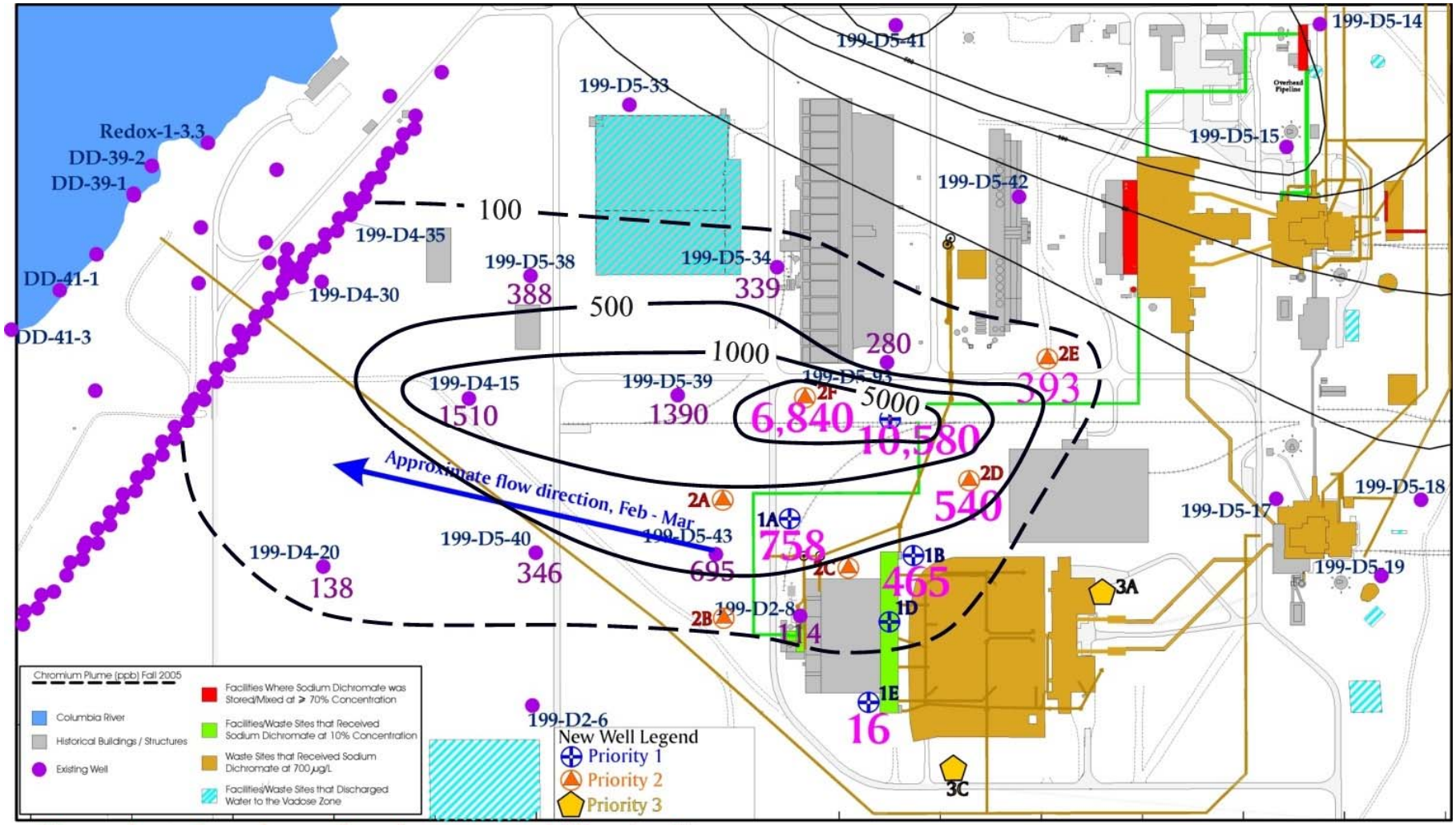
Approach:

- Drill approximately 7 boreholes near the expected source
- Collect and analyze vadose zone samples for chromate
- Monitor **chromium concentrations** and **groundwater levels** in the wells for 6 months
- Evaluate the data using geostatistics to refine the source location
- Develop and implement an action plan to remediate the source of chromium and ultimately the groundwater plume

Approach to Accelerating Chromium Cleanup



Groundwater Sampling Results to Date



Hexavalent chromium values in parts per billion (ug/L)

Opportunities for Involvement in Groundwater/Vadose Integration

- DOE will provide regular updates on IPT activities at existing meetings:
  - Monthly Tribes/Oregon technical interface meetings (to be focused primarily on groundwater/vadose zone issues)
  - HAB River and Plateau Committee meetings
  - Monthly Open Groundwater meeting
  - Oregon Hanford Cleanup Board meetings
- DOE will be seeking review and comment from HAB, Tribes and Oregon, for the update to the GW/VZ Management Plan – April and May 2007