



*Columbia River at Hanford*

# ***ERSP Breakout Session: Identifying New Science Opportunities in Biogeochemistry for DOE Sites***

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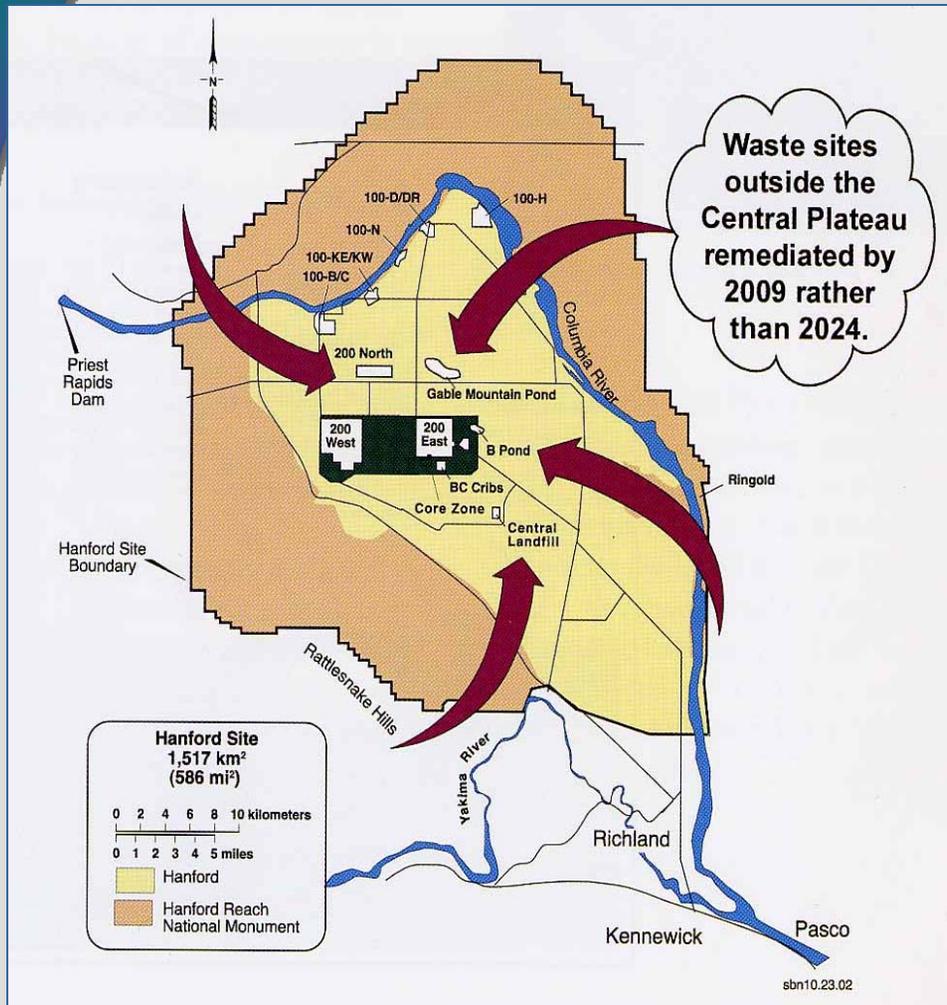
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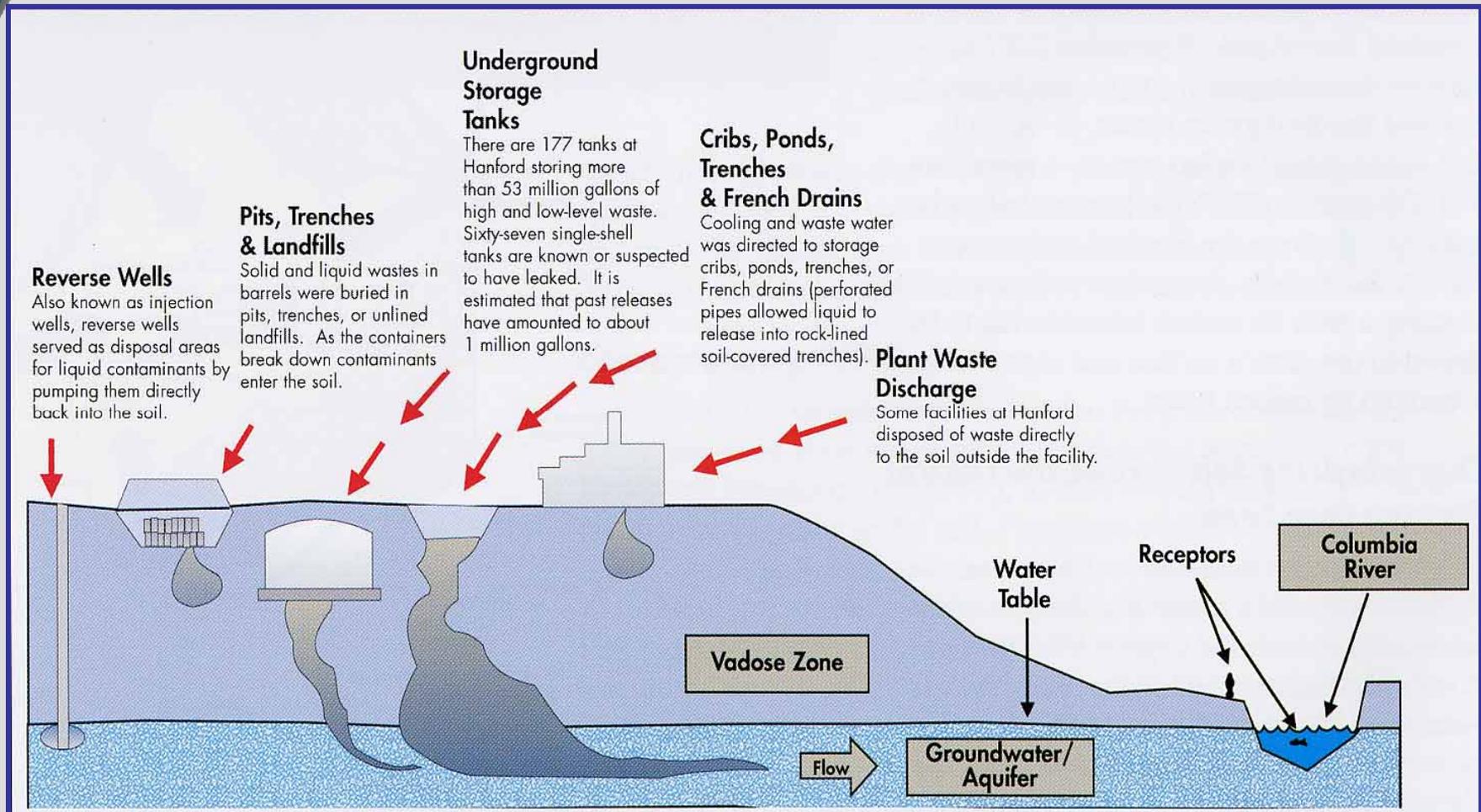
# Hanford Site – DOE's Largest Legacy Waste Site

## Hanford Site

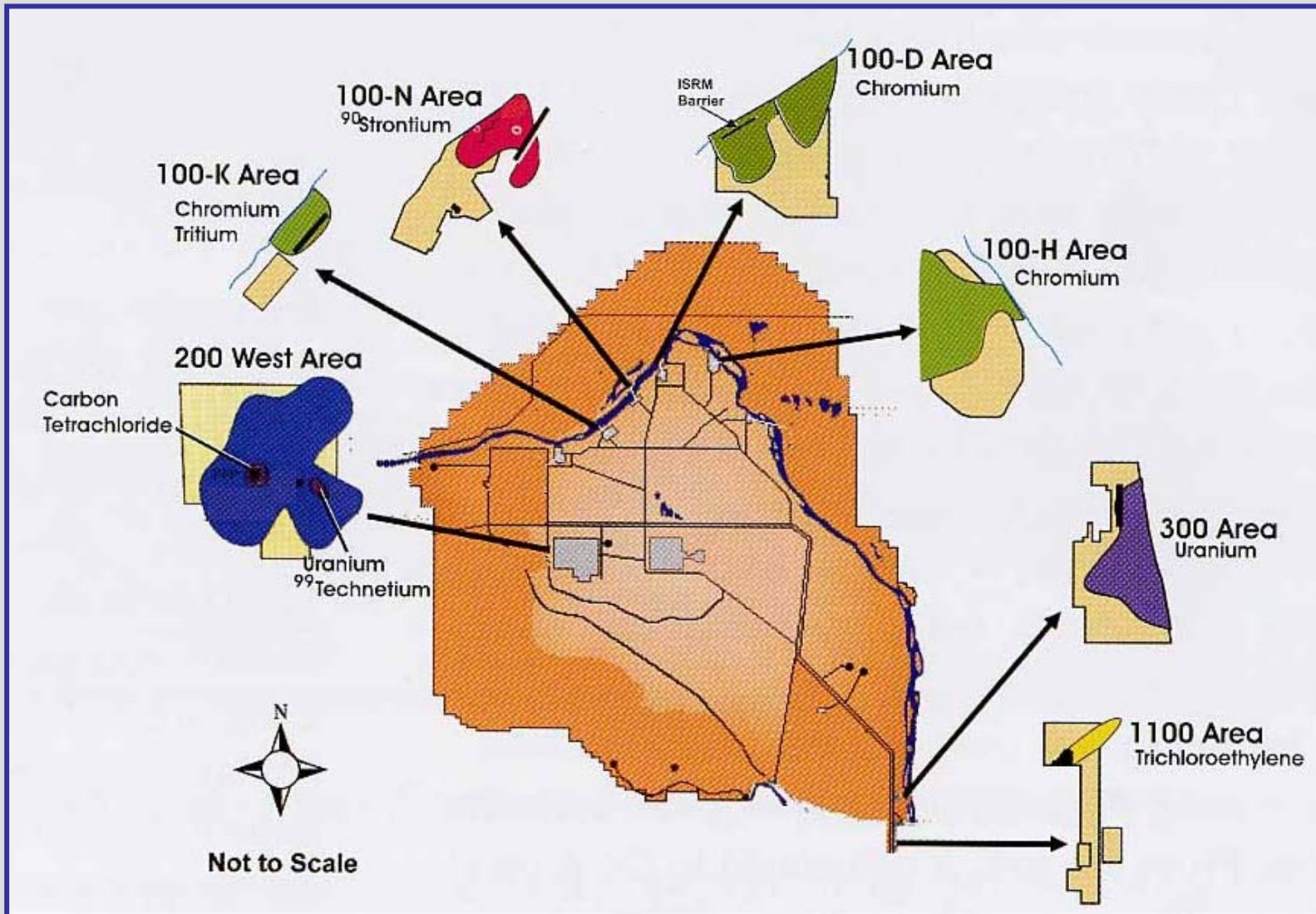


- ▶ > 1000 contaminated “soil sites” [cribs, retention basins, disposal trenches, solid waste burial grounds]  
Pu, <sup>137</sup>Cs, <sup>90</sup>Sr, U, <sup>99</sup>Tc
- ▶ 177 massive storage tanks with 53 million gallons of HLW and LLW. 67 suspected leakers  
<sup>137</sup>Cs, <sup>90</sup>Sr, U, <sup>99</sup>Tc, Cr
- ▶ Over 15 well developed groundwater plumes  
U, Cr, <sup>99</sup>Tc, <sup>129</sup>I, <sup>90</sup>Sr, NO<sub>3</sub>, CT
  - 200 Area plateau
  - Columbia River Corridor
- ▶ 4 major canyon complexes
  - U plant, B plant, REDOX, PUREX

# Sources of Hanford Groundwater Contamination



# Hanford Site Groundwater Contaminants



# Hanford – One of the World’s Largest Environmental Remediation Projects

- ▶ Definitive chemical inventories for waste sites, site-wide assessment model
- ▶ Massive excavations of contaminated soil from the river corridor to ERDF
- ▶ Remediation of select sites
  - In-situ redox barrier for Cr(VI) at 100-D
  - Pump and treat at 100 N ( $^{90}\text{Sr}$ ) and 244-U ( $^{99}\text{Tc}$ , U)
- ▶ Characterization of leaked SST’s and “high risk” soil sites to determine contaminant distribution and inventory
  - Conceptual model development
  - Modeling to project future migration and impact of corrective actions
- ▶ Remedial action evaluations for select river corridor sites
  - 100 N ( $^{90}\text{Sr}$ ), 300-FF-5 (U)
  - Conceptual model development
  - Projections of long term plume evolution

In the future – tank farm closure, site closure, many contaminants left in-ground