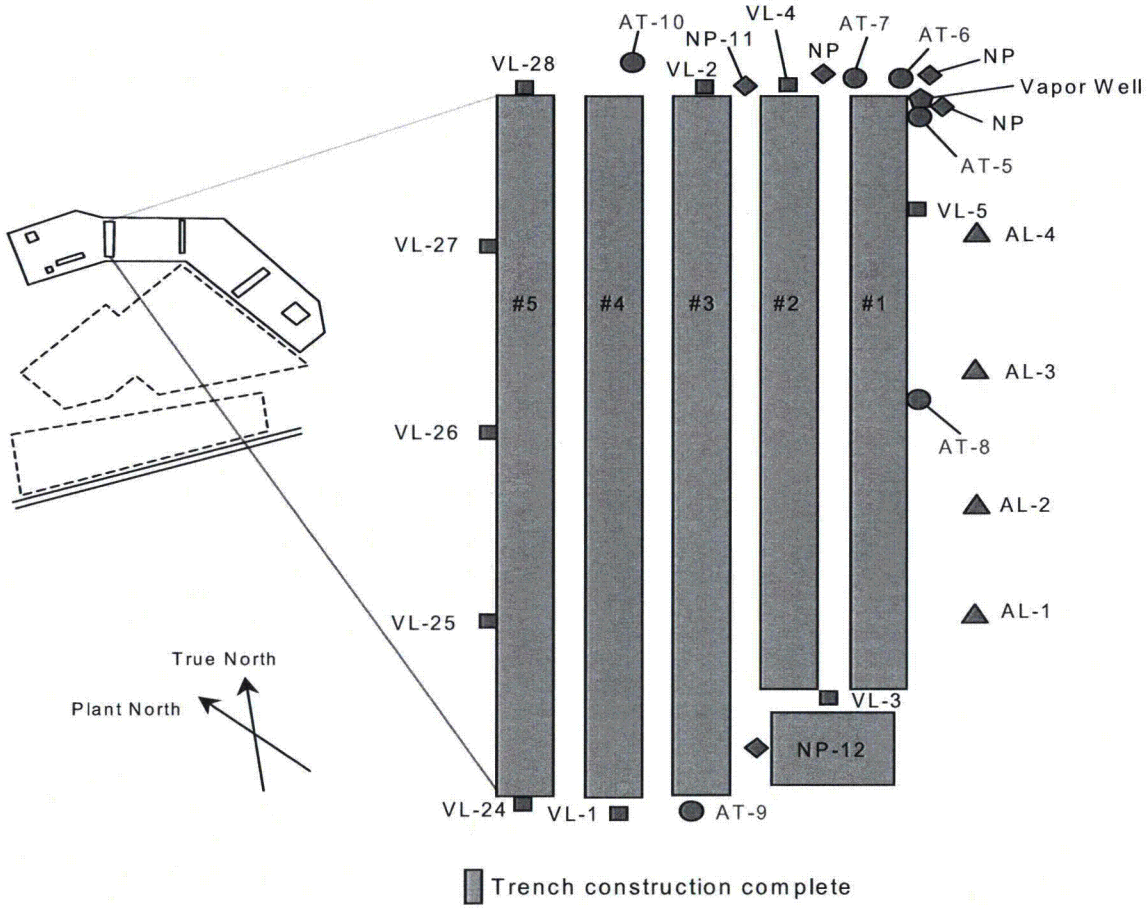
PORFLOW Model Validation

- <u>Vadose zone flow</u>
  - Vadose Zone Monitoring System (VZMS) soil suction (50-200cm) and water content (15-30%) data, WSRC-STI-2006-00198
  - Tracer test pore velocity (~4 ft/yr), WSRC-TR-2007-00283
- <u>Vadose zone transport</u>
  - Tritium migration beneath E-Area slit trenches, WSRC-MS-2005-00333
- <u>Aquifer flow and transport</u>
  - Surveyed seeplines, WSRC-TR-2004-00106
  - Pathline comparisons to existing plumes (herein)

Vadose Zone Monitoring System (VZMS)

Slit Trenches 1



Well Types

- Electronic well with advanced tensiometer (AT, New 1999 Deployment) water content reflectometers, lysimeters, data loggers
- Vertical suction lysimeter well
- Angled lysimeter well
- Vapor Well (New 2000 Deployment)
- Neutron probe access ports

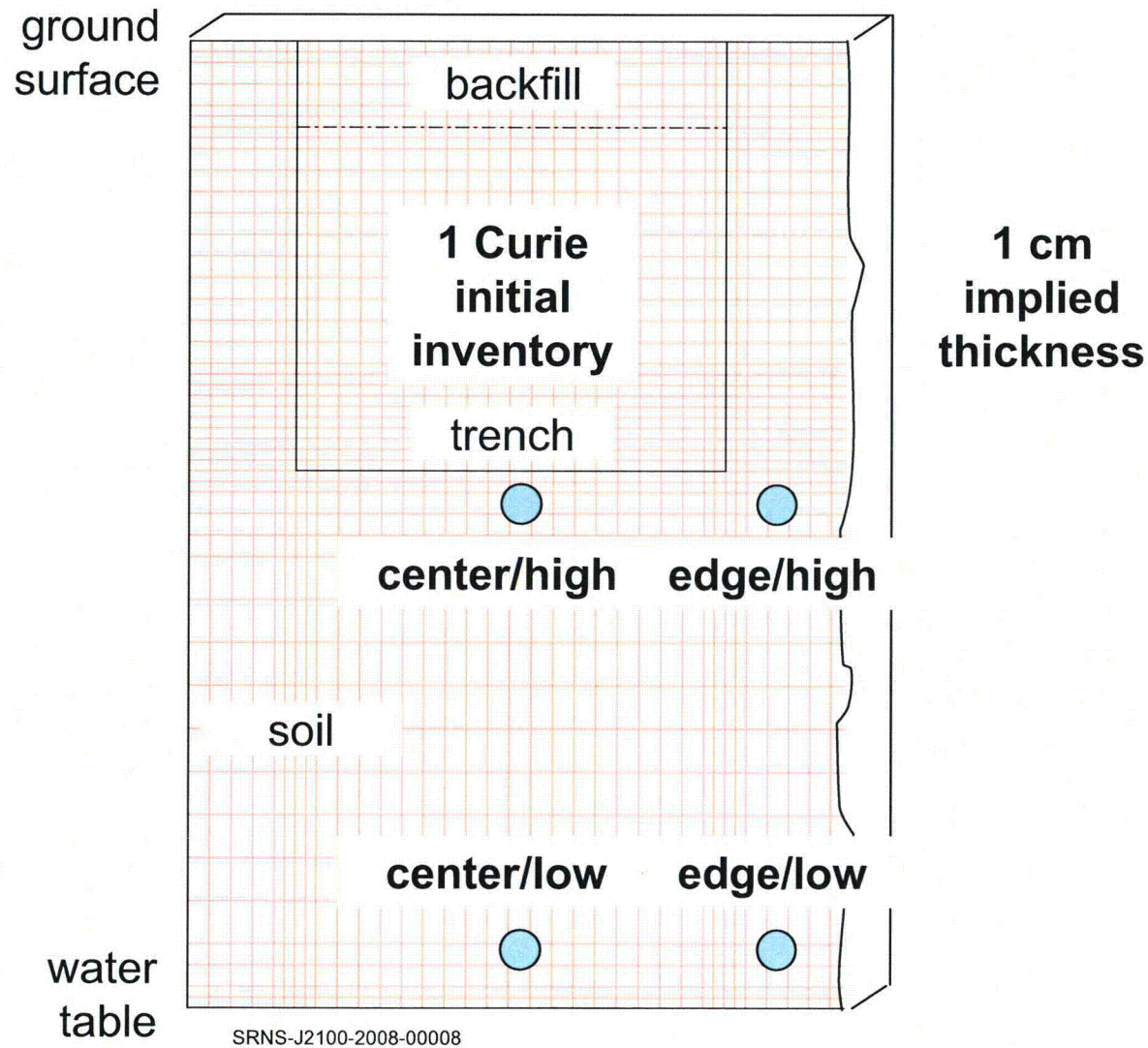
Basis for Model and VZMS Data Comparison

Two-dimensional vadose flow and transport models

Predictions:

Flux in Ci/yr per Ci

Concentrations in pCi/L per Ci/cm



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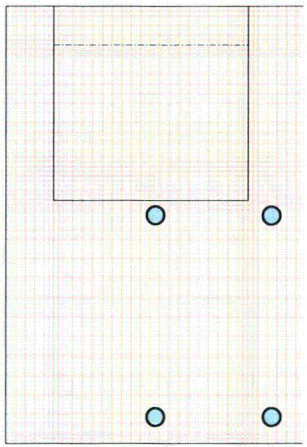
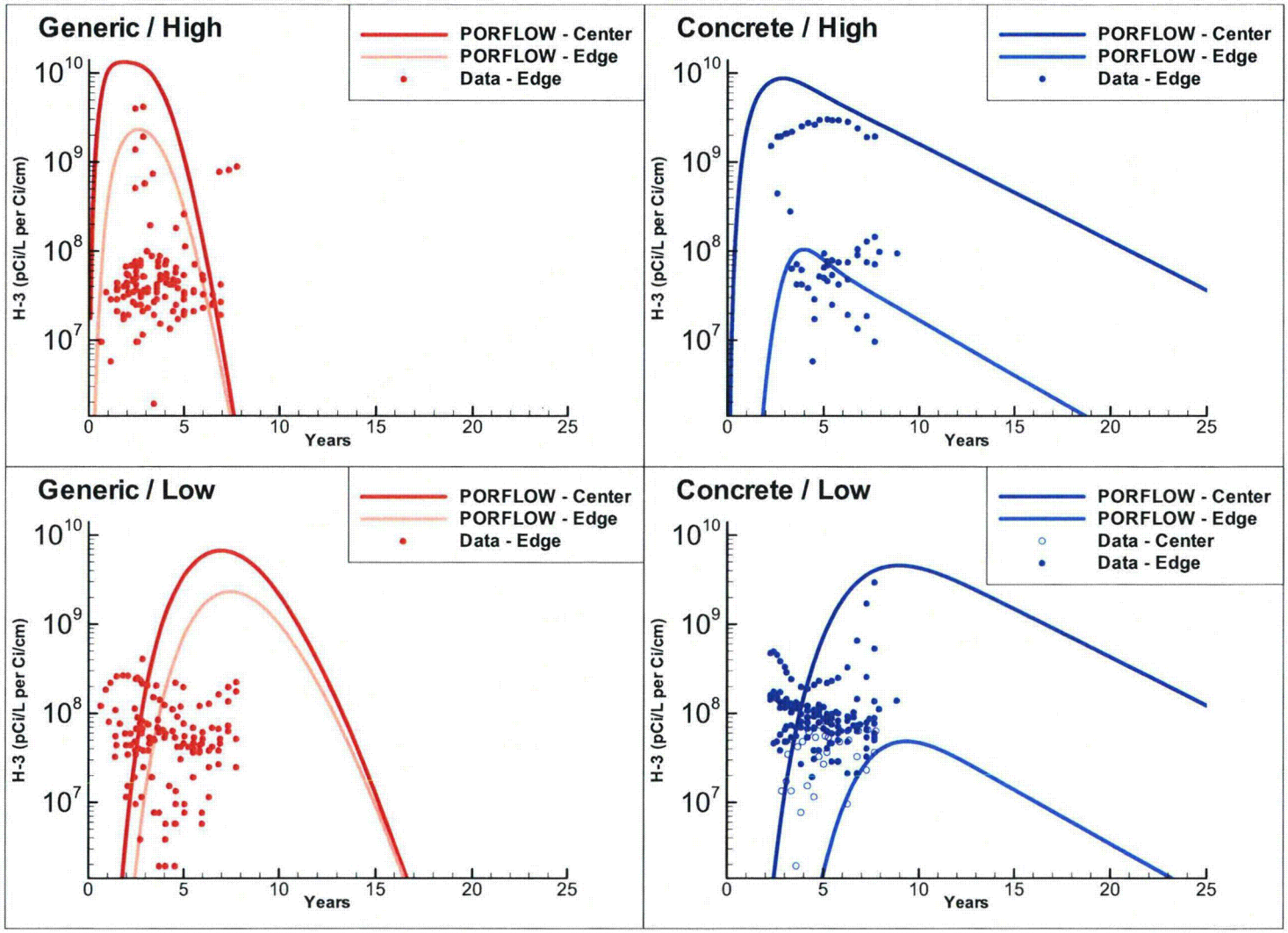
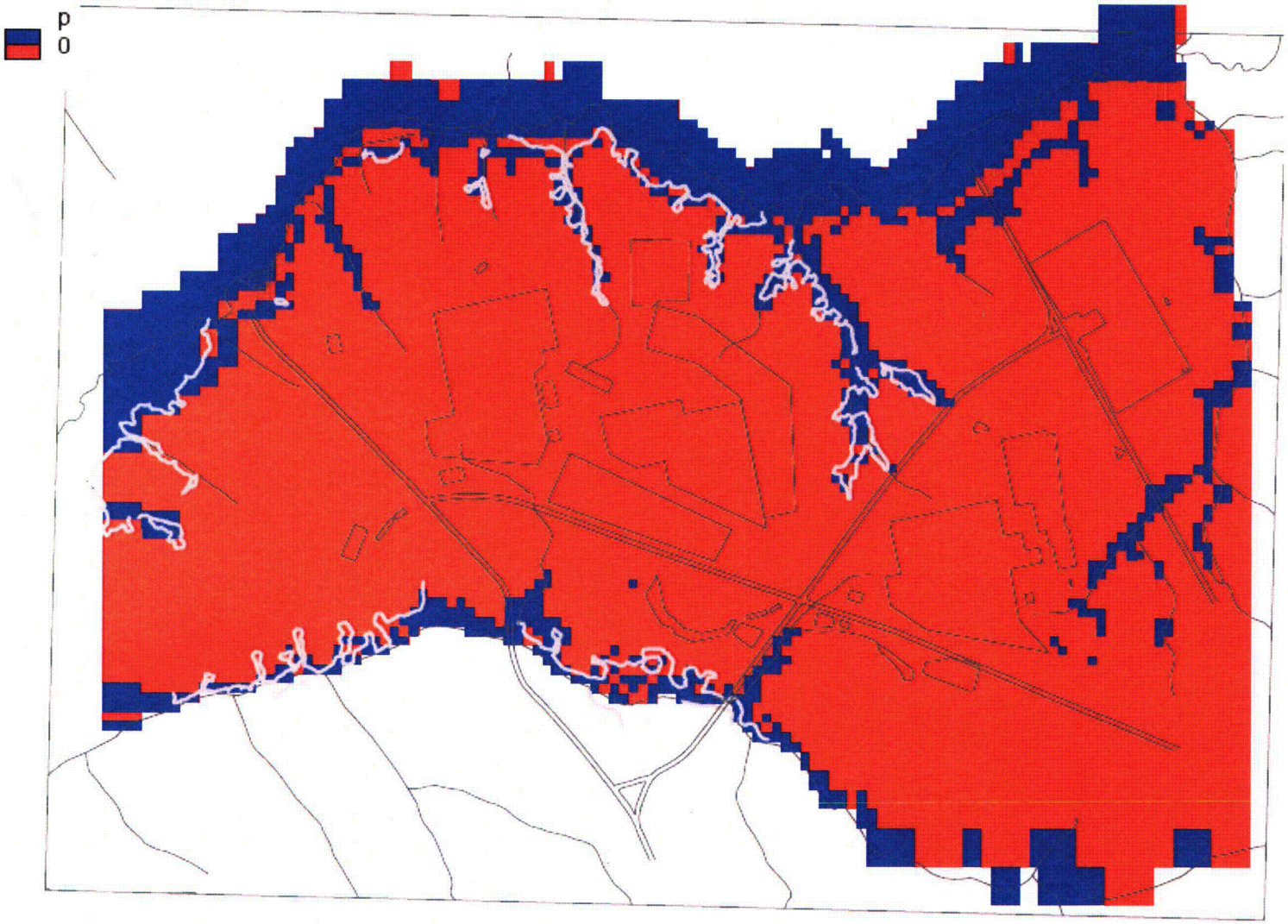
VZMS Data vs. Closure Model

All data referenced to average inventory





Surveyed Seeplines



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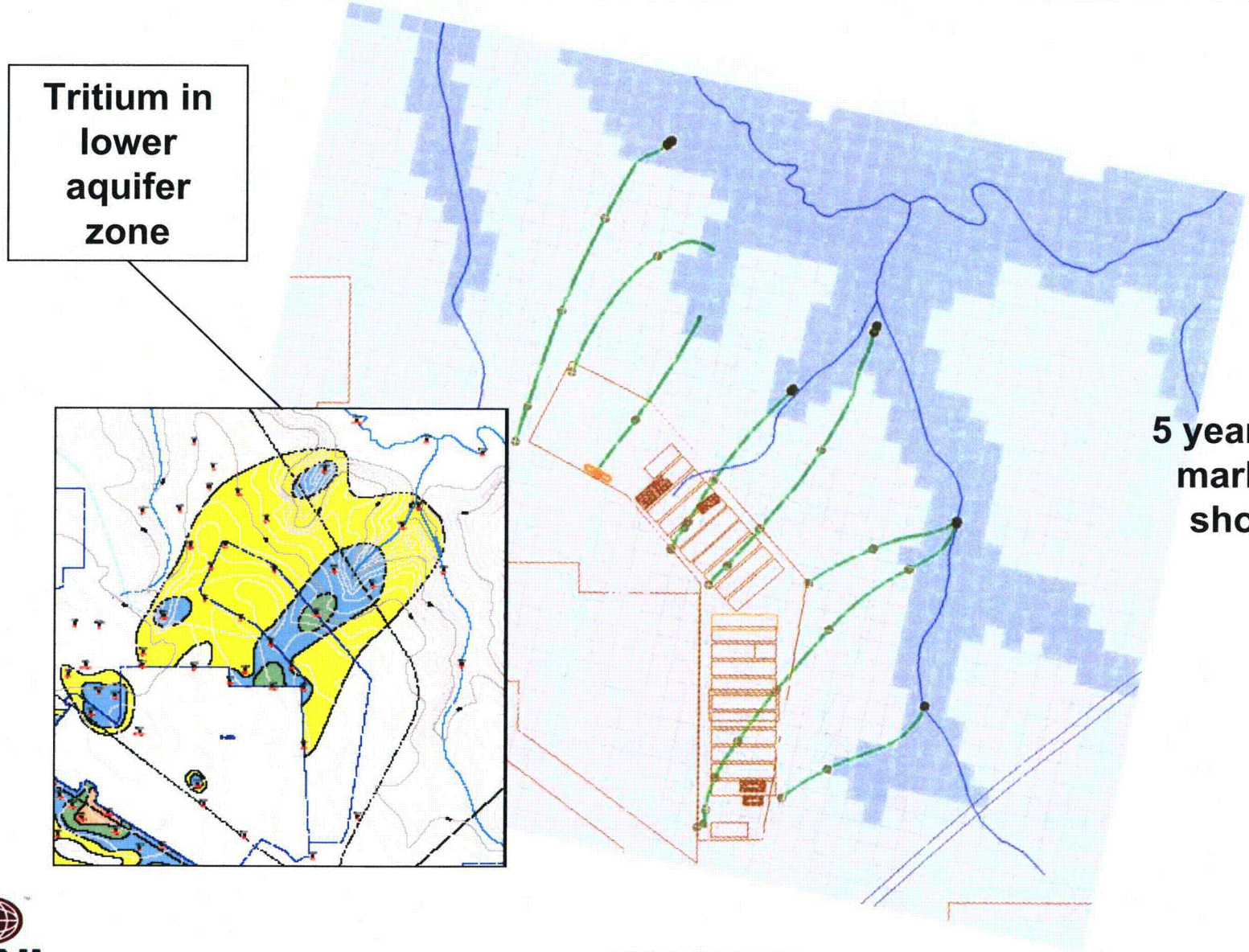
Tritium Plume vs. Groundwater Pathlines



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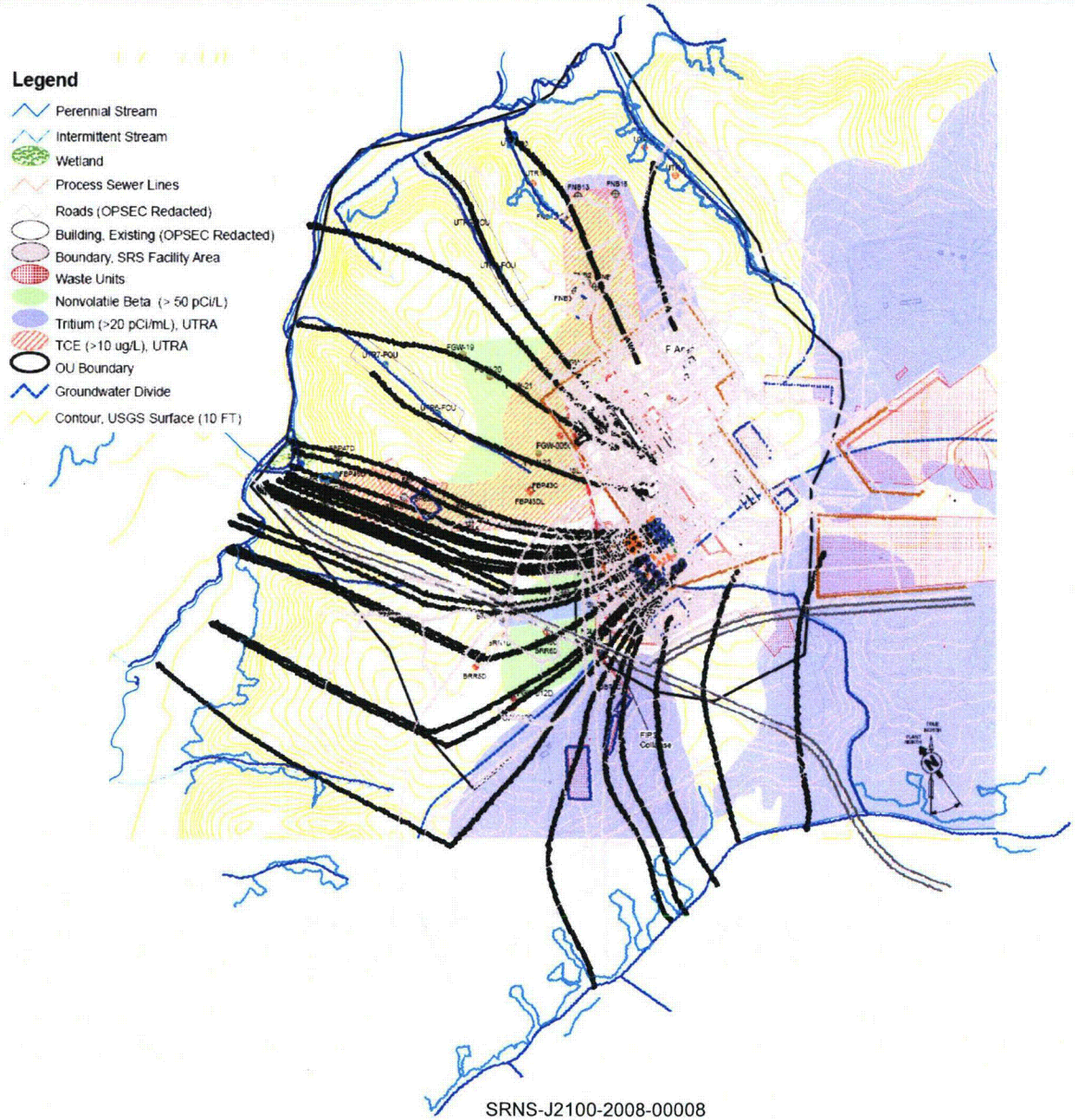
F-Area Plumes vs. Groundwater Pathlines



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