

SUMMARY OF RESULTS FOR THE SOUTHWEST PLUME SITE INVESTIGATION

DOE/OR/07-2180&D1

Site Investigation Report for the
Southwest Plume at the
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky



Southwest Plume

Site Investigation Purpose

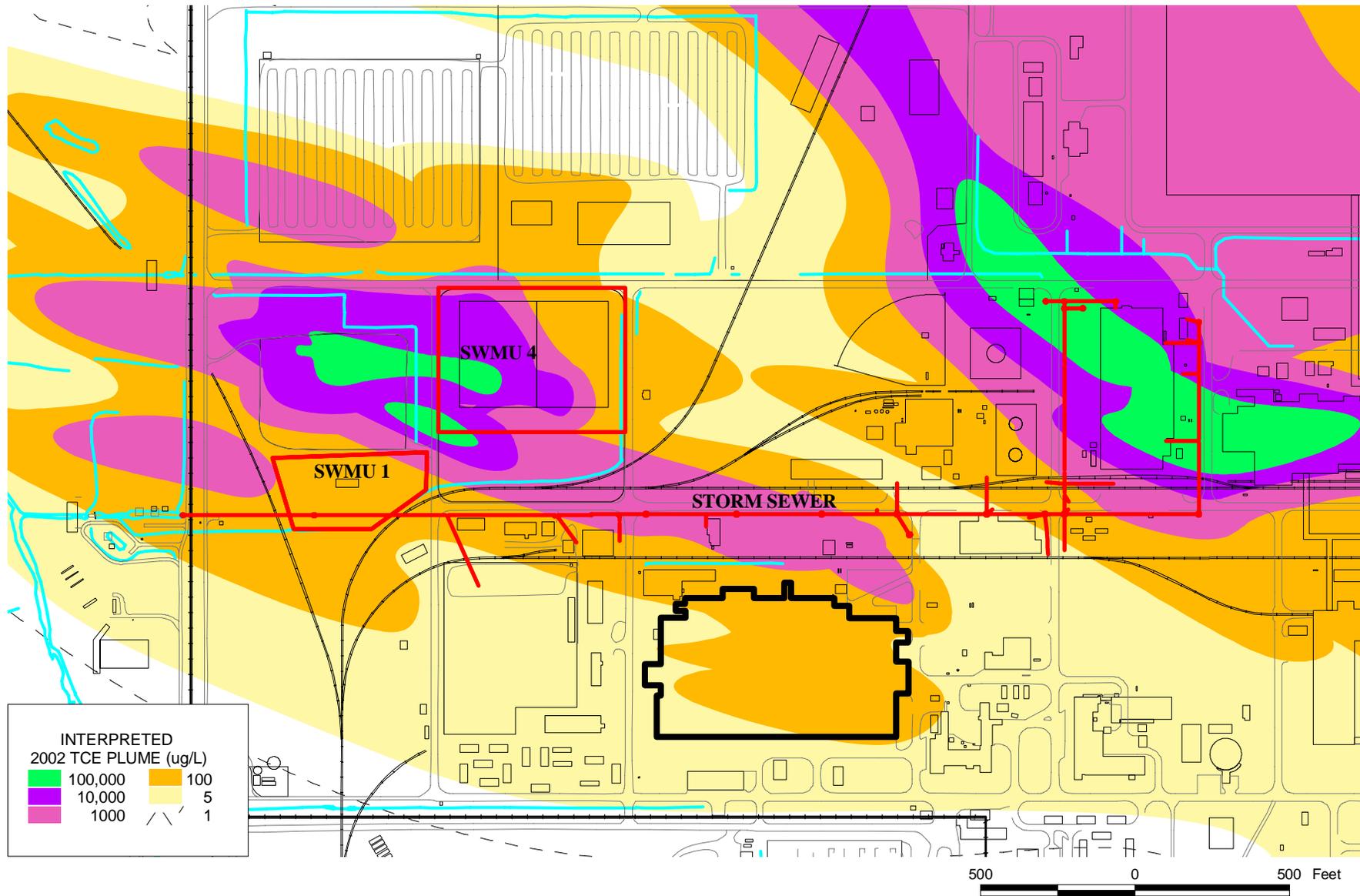
- Determine current concentrations of trichloroethylene (TCE) and Technetium 99 (^{99}Tc) in soils in four potential source areas to the Southwest Plume
- Determine contribution of TCE and ^{99}Tc from solid waste management unit (SWMU 4) to Southwest Plume
- Determine current levels of volatile organic compounds (VOCs) and ^{99}Tc in regional gravel aquifer (RGA) at west plant fence

Southwest Plume

Site Investigation Areas

- C-747-A Oil Landfarm (SWMU 1)
- C-747 Contaminated Burial Yard (SWMU 4)
- C-720 Building, northeast and southeast corners
- Outfall 008 storm sewer

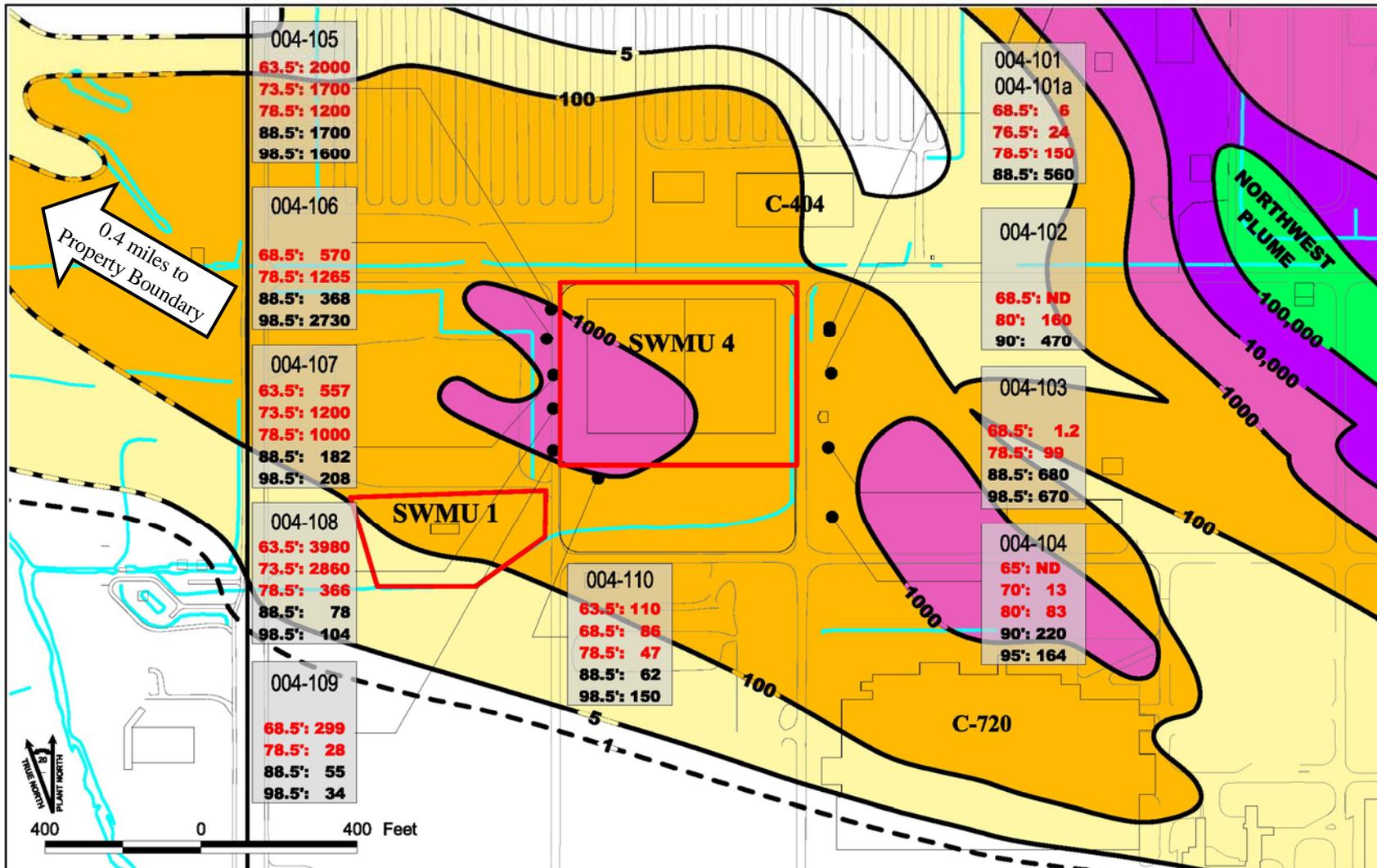
TCE 2002 Map



Southwest Plume

Conclusions SWMU 4

- Based on source delimitation from WAG 3 RI, migration of TCE from source area may result in TCE concentrations greater than the MCL at the property boundary.
- SWMU 4 is a source of ^{99}Tc to the RGA (less than MCL at the source area).
- Based on WAG 3 results, may be a source of RGA contamination for metals and radionuclides.
- A significant source of TCE contamination upgradient from the SWMU 4 exists. This source may be the C-400 Building area.
- Of the four potential source areas investigated as part of the SI, SWMU 4 is predicted to have the greatest release of TCE to the RGA (orders of magnitude less contamination than at C-400).



TCE Plume Boundary (ug/L): (modified from BJC 2004)	Color	Concentration Range (ug/L)
	Green	>100,000
	Purple	10,000-100,000
	Light Purple	1000- 10,000
	Yellow	100- 1000
	Light Yellow	*5- 100
	White	1- 5

*TCE DRINKING WATER STANDARD

Sample Depth & TCE : Result** (ug/L)	Depth (feet)
60': 20	60'
70': 22	70'
80': 15	80'
90': 18	90'
100': 18	100'

**maximum result of regular and headspace sampling
ND=non-detect

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 DOE PORTSMOUTH/PADUCAH PROJECT OFFICE
 PADUCAH GASEOUS DIFFUSION PLANT

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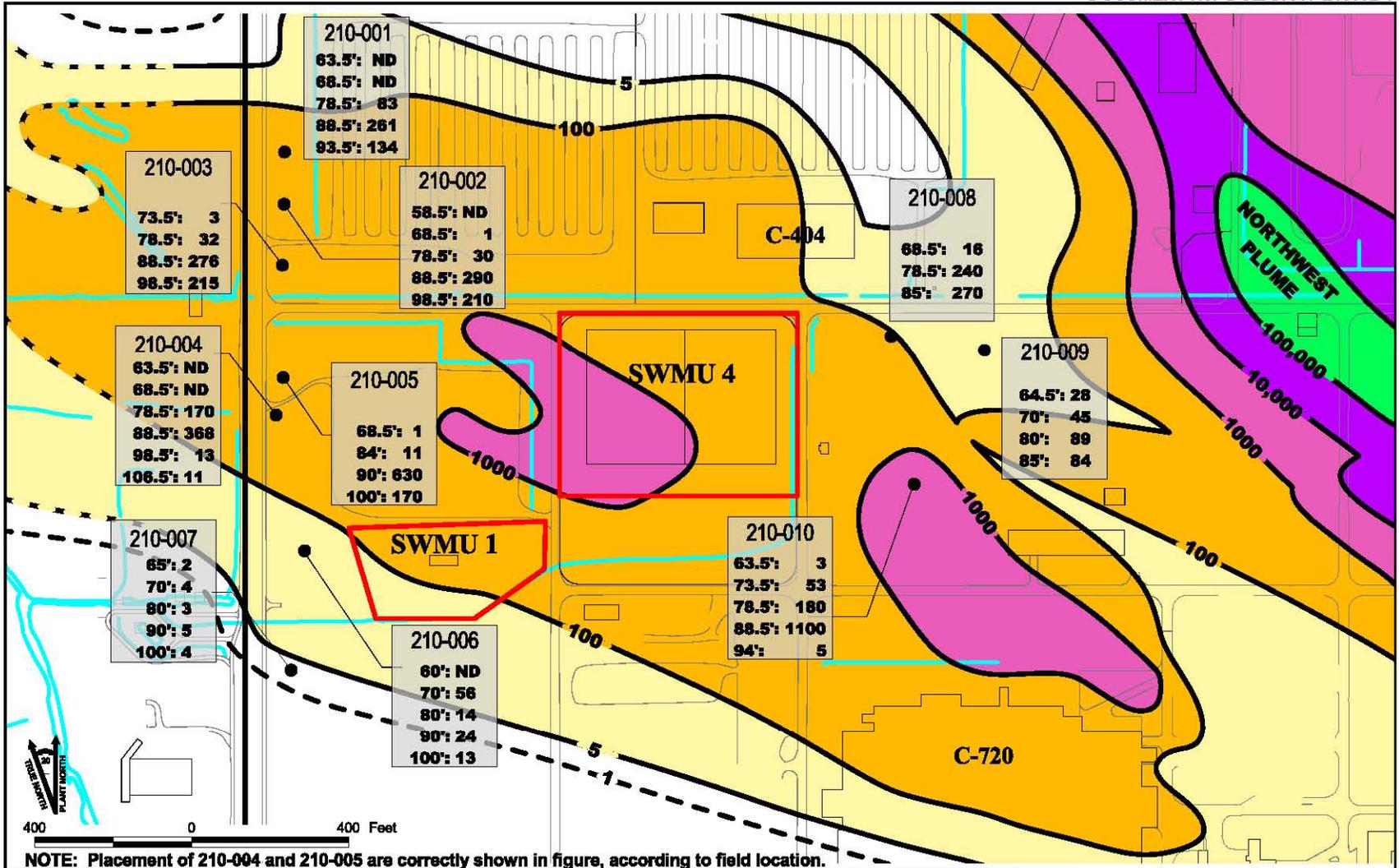
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 P.O. Box 2502
 Oak Ridge, Tennessee 37831

TCE results from SWMU 4 SI groundwater sampling.

Southwest Plume

Conclusions SWMU 1

- Not a source of ^{99}Tc contamination to RGA water.
- Migration of TCE from source area could result in concentrations greater than the TCE MCL at the property boundary.
- SWMU 1 is not expected to be a source of metals or radionuclides contamination greater than the MCLs at property boundary.



NOTE: Placement of 210-004 and 210-005 are correctly shown in figure, according to field location.

LEGEND							
TCE Plume Boundary (ug/L): (modified from BJC 2004)	<table border="1"> <tr> <td>>100,000</td> <td>10000-100,000</td> <td>1000- 10,000</td> <td>100- 1000</td> <td>*5- 100</td> <td>1- 5</td> </tr> </table>	>100,000	10000-100,000	1000- 10,000	100- 1000	*5- 100	1- 5
>100,000	10000-100,000	1000- 10,000	100- 1000	*5- 100	1- 5		
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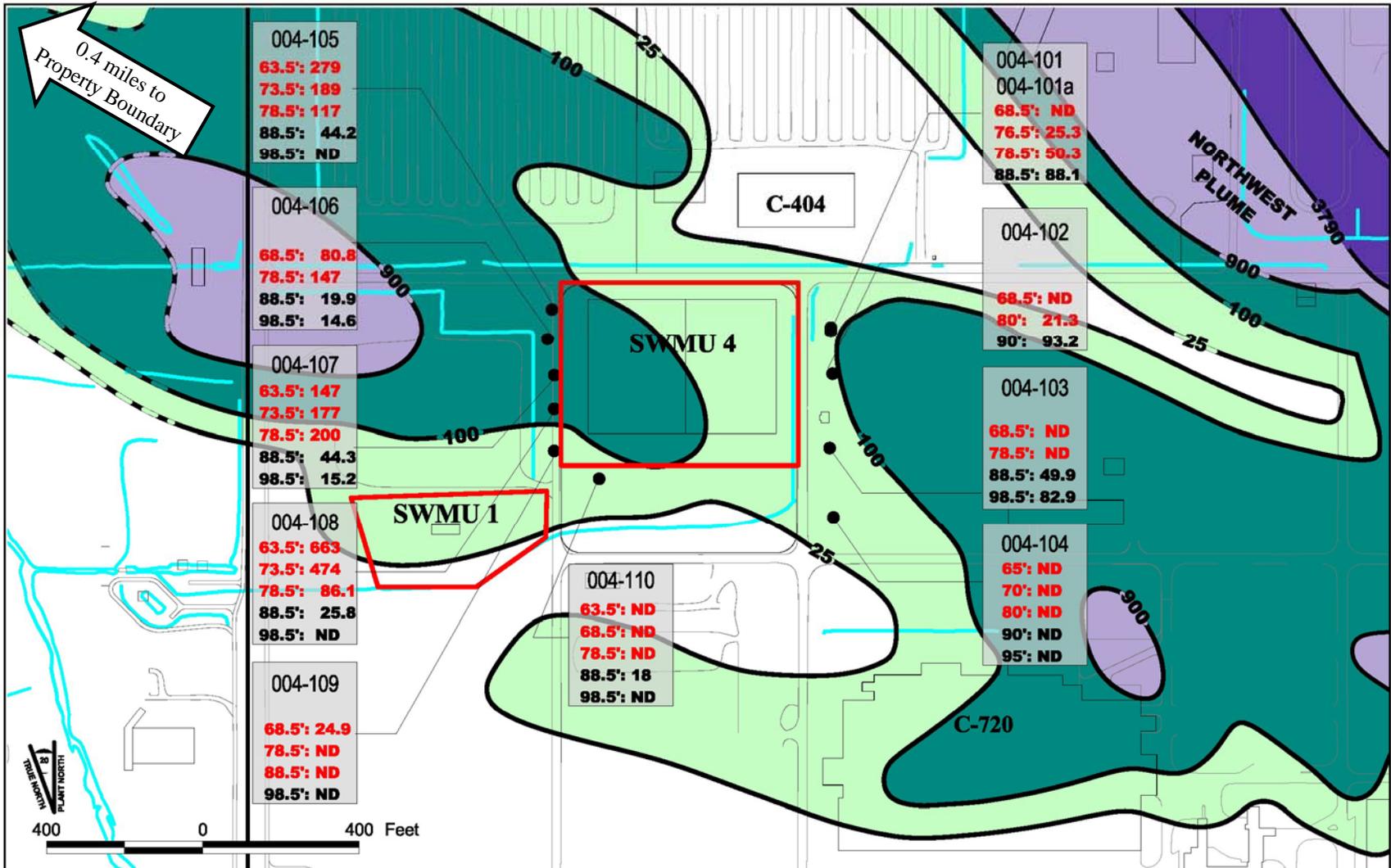


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TCE results from dissolved-phase SI groundwater sampling.



LEGEND:

Tc-99 Plume Boundary :
(modified from BJC 2004)

- 3,790 pCi/L
- *900 pCi/L • ⁹⁹Tc DRINKING WATER STANDARD
- 100 pCi/L
- 25 pCi/L

Sample Depth & ⁹⁹Tc :
Result (pCi/L)

60': 20
70': 22
80': 15
90': 18
100': 18

ND=non-detect

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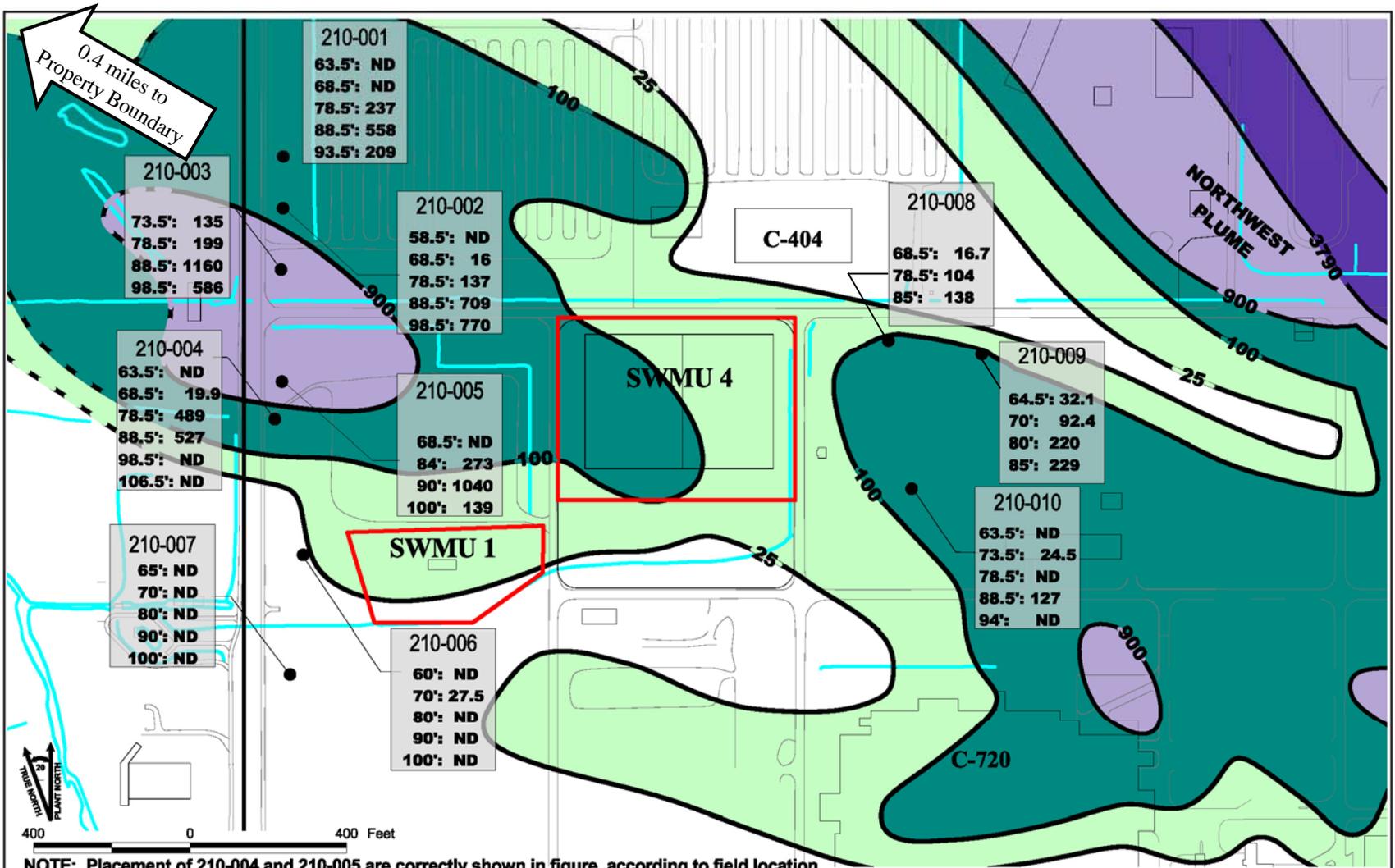
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⁹⁹Tc results from SWMU 4 SI groundwater sampling.

Southwest Plume

Conclusions C-720 Area

- TCE source at the southeast corner is of greater importance, in terms of potential migration impacts, than the source at the northeast corner.
- Migration of TCE from source area is not likely to result in concentrations greater than the TCE MCL at the property boundary.
- C-720 area is not expected to be a source of metals or radionuclides contamination greater than the MCLs at property boundary.



NOTE: Placement of 210-004 and 210-005 are correctly shown in figure, according to field location.

LEGEND:

Tc-99 Plume Boundary :
(modified from BJC 2004)

- 3,790 pCi/L
- *900 pCi/L * ⁹⁹Tc DRINKING WATER STANDARD
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Sample Depth & ⁹⁹Tc :
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⁹⁹Tc results from dissolved-phase SI groundwater sampling.

Southwest Plume

Site Investigation Conclusions

- Most important source of TCE is SWMU 4.
- A significant source of TCE exists upgradient of SWMU 4.
- Width of plume at plant boundary consistent with what was found in earlier reports.
- At plant boundary, higher concentrations found at greater depths and toward northern edge of plume.
- Extent of plume within the plant boundary is likely smaller than depicted on earlier plume maps
- Storm Sewer not a source of TCE contamination to the RGA.

Southwest Plume Schedule

- **05/18/05 – Review of D1 SI report complete.**
- **07/02/05 – Submittal of D1 PRAP.**
- **01/03/06 – Submittal of D1 ROD.**

Preliminary Assessment/ Site Investigation	Site Evaluation (SWMU Assessment Report)	Remedial Investigation/ Feasibility Study Work Plan	Remedial Investigation	Remedial Investigation Report (Site Investigation Report)	Feasibility Study Report	Proposed Plan	Record of Decision	Remedial Design Work Plan	Remedial Design Report	Remedial Action Work Plan	Remedial Action Report (Post-Construction Report)	O&M Phase
		Feb '05 - D1				Jul '05 - D1	Jan '06 - D1					

