



Groundwater Contamination and Treatment at Department of Energy Sites

August 2008

Compiled by the Office of Engineering & Technology

Contents

Acronyms	3
Introduction.....	4
Plume Map Function.....	5
Plume Assessment Function	6
Hanford Site: Plume Map	8
Hanford Site: Plume Assessments	9
Idaho National Laboratory: Plume Map	11
Idaho National Laboratory: Plume Assessments	12
Los Alamos National Laboratory: Plume Map.....	13
Los Alamos National Laboratory: Plume Assessments	14
Moab UMTRA Project: Plume Map	15
Moab UMTRA Project: Plume Assessments	16
Oak Ridge Reservation: Plume Map	17
Oak Ridge Reservation: Plume Assessments	18
Paducah Gaseous Diffusion Plant: Plume Map	19
Paducah Gaseous Diffusion Plant: Plume Assessments	20
Portsmouth Gaseous Diffusion Plant: Plume Map.....	21
Portsmouth Gaseous Diffusion Plant: Plume Assessments.....	22
Savannah River Site: Plume Map.....	23
Savannah River Site: Plume Assessments	24
West Valley Demonstration Project: Plume Map	26
West Valley Demonstration Project: Plume Assessments	27

Acronyms

ACL	Alternate Concentration Limit	P&T	Pump and Treat
Be	Beryllium	PBS	Project Baseline Summary
Car. Tet.	Carbon Tetrachloride	PCE	Perchloroethylene
Cd	Cadmium	pCi/L	Picocurie per Liter
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	R&D	Research and Development
CFA	Central Facilities Areas	RCRA	Resource Conservation and Recovery Act
Cr	Chromium	ROD	Record of Decision
Cs	Cesium	RTC	Reactor Technology Complex
DCE	Dichloroethylene	RWMC	Radioactive Waste Management Complex
DCGLs	Derived Concentration Guideline Levels	Sr	Strontium
DNAPL	Dense Non-Aqueous Phase Liquids	SVE	Soil Vapor Extraction
DOE	Department of Energy	TAN	Test Area North
ERH	Electrical Resistance Heating	TBD	To Be Determined
ETTP	East Tennessee Technology Park	TCA	Trichloroethane
FY	Fiscal Year	TCE	Trichloroethylene
GW	Groundwater	Tc	Technetium
Hg	Mercury	TI	Technical Impracticability
I	Iodine	UEFPC	Upper East Fork Poplar Creek
INTEC	Idaho Nuclear Technology and Engineering Center	U	Uranium
MCL	Maximum Concentration Levels	UMTRA	Uranium Mill Tailings Remedial Action
MNA	Monitored Natural Attenuation	VC	Vinyl Chloride
NA	Not Applicable	VOC	Volatile Organic Compounds
NPL	National Priority List	WAG	Waste Area Group
		WMA	Waste Management Area

Introduction

The Department of Energy (DOE) has one of the largest groundwater contamination problems and subsequent cleanup responsibilities in the world, in terms of the sheer volume of affected groundwater, number of plumes, range of hydrogeologic settings, and diversity of contaminant types. Plume maps and assessments have been prepared for DOE sites to summarize the nature and extent of groundwater contamination and to identify approaches being taken to remediate the contaminated groundwater.

The purpose of this document is to provide DOE Program/Project Managers, upper management, and other interested parties with a snapshot in time of the status of major groundwater contamination and remedial approaches across the DOE Complex.

It also provides the Program/Project Managers with a “quick look” tool that sufficiently describes the plumes and helps in the decision making for setting priorities and allocating resources for remediation.

The document gives an assessment of the 74 currently identified plumes at eight DOE sites. In addition, it presents a map and assessment showing the various contaminants and their locations at the Los Alamos site. Characterization of the Los Alamos site is ongoing and, to date, no plumes have been delineated.

The plume maps and assessments for this document will be updated annually.

Plume Map Function

The plume maps provide a high level visual representation of groundwater information at each site. The components and use of the plume maps are listed below:

- Illustrates location and extent of groundwater contamination
- Lists major groundwater contaminants
- Summarizes major remedial activities
- Identifies remedial research projects

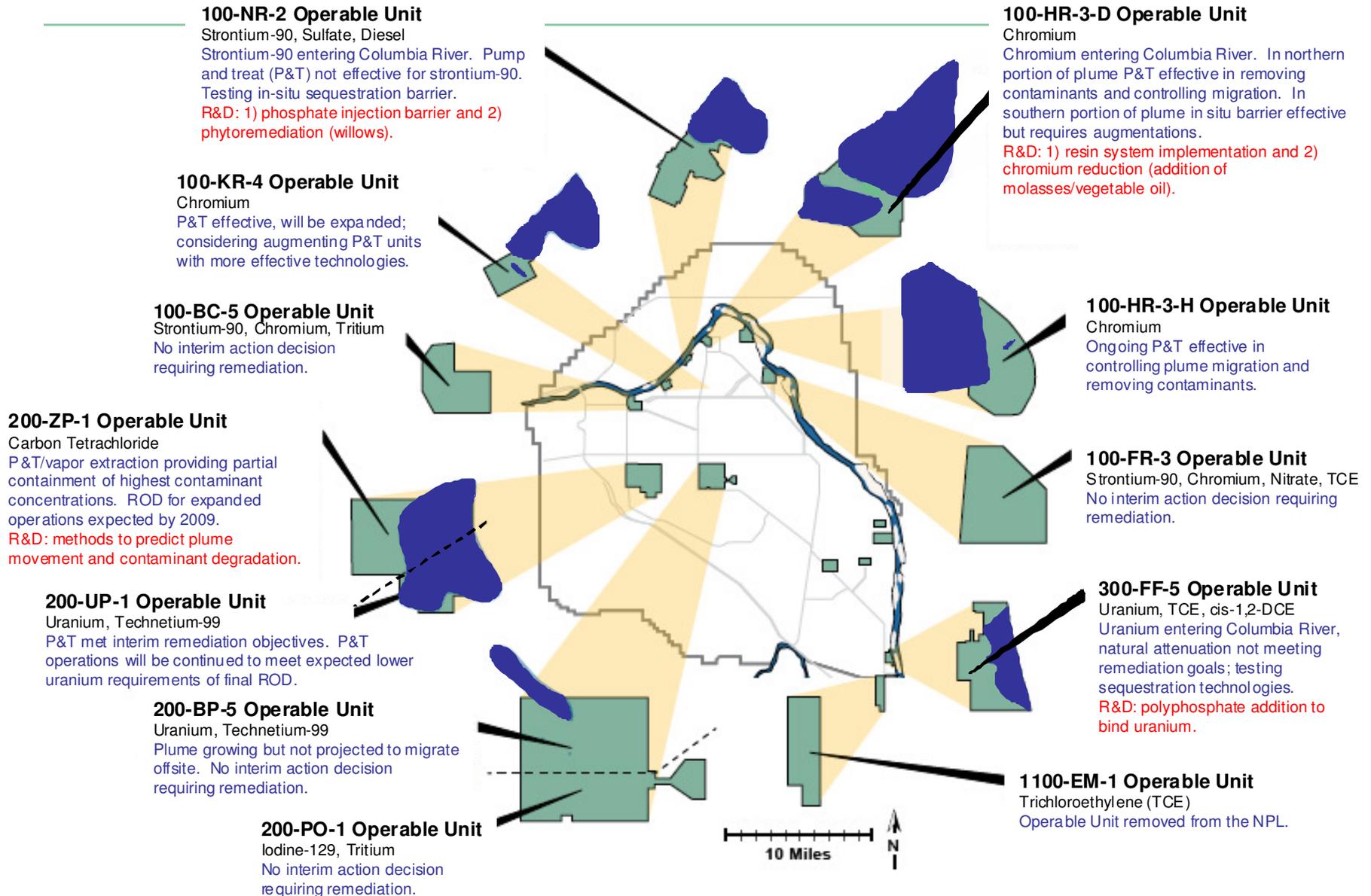
Plume Assessment Function

The plume assessment function provides a “Consumer Report” style depiction of groundwater contamination and treatment on all the plumes identified at a particular site. The components and use of the assessments are listed below:

- Contains information on contaminated groundwater plumes, categorized by:
 - Site
 - Contractor
 - Plume/Area
 - PBS #
 - Major Contaminants (that required, currently require, or may require remediation)
 - Current Plume Size (greater than 320 acres, 40 to 320 acres, or less than 40 acres)
 - Source (active, controlled, or not present)
 - Plume Status
 - **Red**—contaminants offsite or projected to migrate offsite,
 - **Yellow**—plume expanding but not expected to migrate offsite, or
 - **Green**—plume static or shrinking in size.

- Regulatory Status (assessment ongoing, remedial approach proposed, or decision document in place)
- Treatment Status
 - **Red**—remedial approaches are not performing as identified in decision documents,
 - **Yellow**—remedial approaches are not performing optimally, or
 - **Green**—remedial approaches are performing as identified in decision documents.
- Assists in identifying and prioritizing technology needs and external review needs.
- Identifies where potential remediation effort improvements can be made—turning **Red** and **Yellow** designations into **Green** designations.

Hanford Site: Plume Map



(Note: Plume details not to scale.)

Hanford Site: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Hanford Site	Fluor Hanford	100-BC-5	RL-0030	Sr, Cr, Tritium			Red		NA	No active treatment required at this time.
Hanford Site	Fluor Hanford	100-FR-3	RL-0030	Sr, Cr			Green		NA	No active treatment required at this time.
Hanford Site	Fluor Hanford	100-HR-3-D/ 100-D North	RL-0030	Cr			Red		Yellow	Cr is entering the Columbia River. P&T has been somewhat effective in controlling migration and removing Cr. Larger treatment facilities are being investigated to increase system performance.
Hanford Site	Fluor Hanford	100-HR-3-D/ 100-D South	RL-0030	Cr			Red		Yellow	Cr is entering the Columbia River. The selected remedy, an in situ barrier, has had some breakthrough. Barrier mending and other alternative approaches being investigated.
Hanford Site	Fluor Hanford	100-HR-3/ 100-H	RL-0030	Cr			Green		Green	P&T has been effective in controlling plume migration and removing Cr.
Hanford Site	Fluor Hanford	100-KR-4	RL-0030	Cr			Red		Yellow	P&T has been effective but need to expand system. Also need to develop alternative treatment methods to supplement P&T.
Hanford Site	Fluor Hanford	100-N	RL-0030	Sulfate, Diesel			Red		NA	Diesel required to be removed from wells.
Hanford Site	Fluor Hanford	100-NR-2/ 100-N	RL-0030	Sr			Red		Yellow	Sr is entering the Columbia River. P&T has stabilized plume migration but has not significantly reduced contaminant levels. The site is now testing apatite sequestration of the Sr and phytoremediation.
Hanford Site	Fluor Hanford	200-BP-5	RL-0030	Tc, U			Yellow		NA	The plume is growing but not projected to migrate offsite.
Hanford Site	Fluor Hanford	200-UP-1	RL-0030	Tc, U			Green		Green	P&T shut down, checking rebound. May have to turn P&T back on to meet new cleanup requirements.
Hanford Site	Fluor Hanford	200-ZP-1	RL-0030	Car. Tet.			Yellow		Yellow	P&T operations have provided partial containment of high concentration portion of plume at top of the aquifer. Source control technologies are being investigated.
Hanford Site	Fluor Hanford	300-FF-5/ 300 Area U Plume	RL-0030	U			Red		Red	U is entering the Columbia River. The selected remedy, natural attenuation, did not work and the site is investigating other approaches.
Hanford Site	Fluor Hanford	1100	RL-0030	TCE			Green		Green	Plume taken off the NPL.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current): ○ = Greater than 320 acres, ◐ = 40 to 320 acres, ● = Less than 40 acres

Source: ○ = Active, ◐ = Controlled, ● = Not Present

Plume Status: Red—Contaminants above MCLs/ACLs are currently offsite or projected to migrate offsite, Yellow—Plume is expanding but is not expected to migrate offsite above MCLs/ACLs, Green—Plume is static or shrinking in size.
MCL=maximum concentrations level (levels are promulgated standards). ACL=alternate concentration limit (levels are negotiated).

Regulatory Status: ○ = Assessment ongoing, ◐ = Remedial approach proposed (i.e., Proposed Plan), ● = Decision Document in place. Decision Documents are defined as legally binding agreements (i.e., RCRA or CERCLA Interim or Final Records of Decision, Permits, Closure Plans, Corrective Actions, Interim Actions).

Treatment Status: Red—Remedial approaches are not performing as identified in Decision Documents, Yellow—Remedial approaches are not performing optimally (as identified in Decision Documents), Green—Remedial approaches are performing as identified in Decision Documents.

Idaho National Laboratory: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Idaho National Laboratory	CWI	WAG 1	ID-0030	PCE, TCE, DCE, Sr-90, Cs-137			Green		Green	In situ bioremediation for "hot spot," pump and treat for medial zone, monitored natural attenuation for distal portion.
Idaho National Laboratory	CWI	WAG 2	ID-0030	Cr			Green		Green	Remediation is not required—continuous monitoring required and ongoing.
Idaho National Laboratory	CWI	WAG 3	ID-0030	Sr-90, Nitrate, Tc-99, I-129			Green		Green	The remediation action identified by the ROD is capping and infiltration controls with monitoring to ensure drinking water standards are met in a reasonable timeframe for Sr-90, nitrate, Tc-99, and I-129.
Idaho National Laboratory	CWI	WAG 4	ID-0030	Nitrate			Green		Green	Remediation is not required—continuous monitoring required and ongoing.
Idaho National Laboratory	CWI	WAG 7	ID-0030	Car. Tet.			Green		Green	Active vapor extraction system in place. Monitoring is ongoing.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current): = Greater than 320 acres, = 40 to 320 acres, = Less than 40 acres

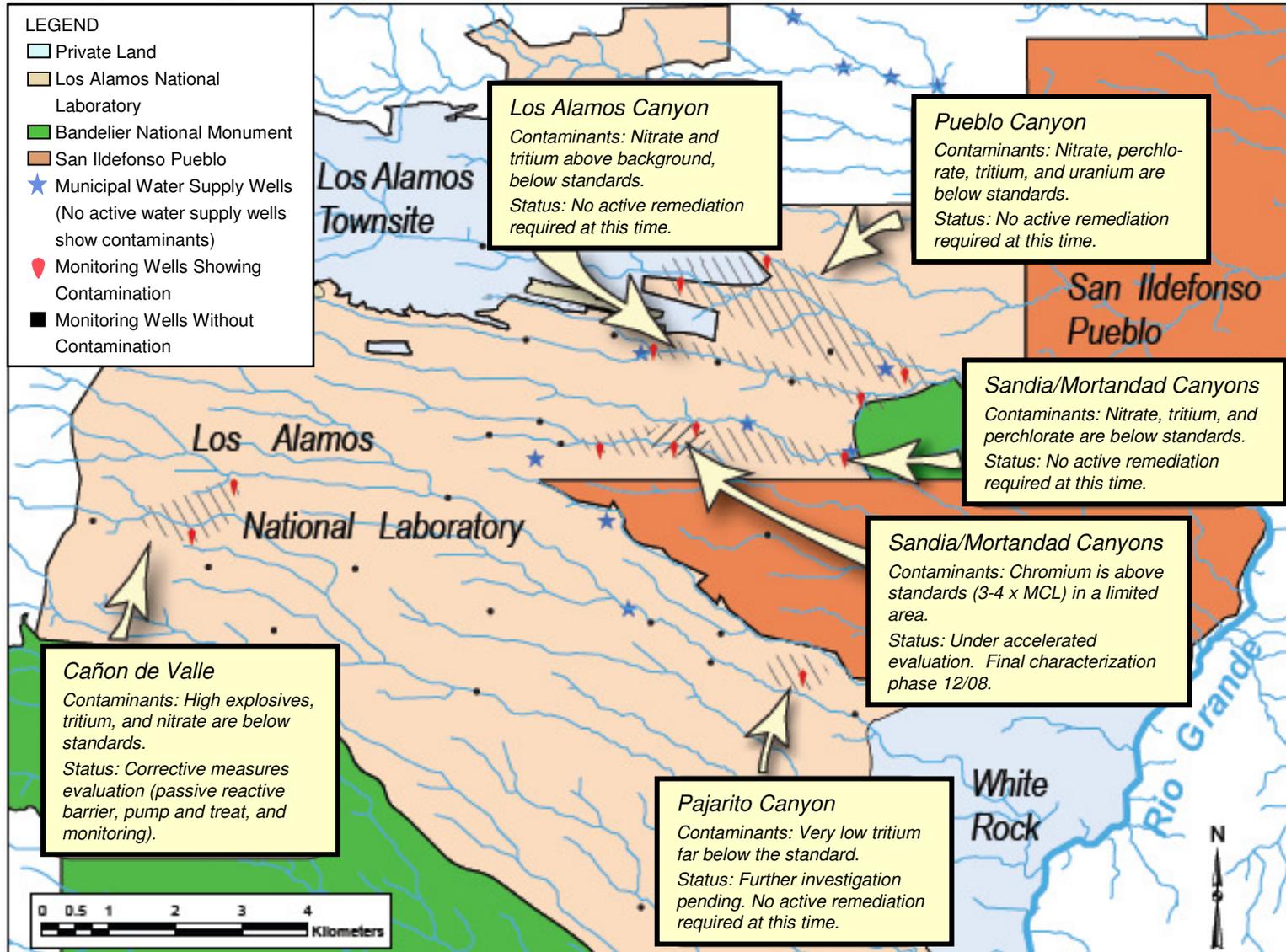
Source: = Active, = Controlled, = Not Present

Plume Status: —Contaminants above MCLs/ACLs are currently offsite or projected to migrate offsite, —Plume is expanding but is not expected to migrate offsite above MCLs/ACLs, —Plume is static or shrinking in size.
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Treatment Status: —Remedial approaches are not performing as identified in Decision Documents, —Remedial approaches are not performing optimally (as identified in Decision Documents), —Remedial approaches are performing as identified in Decision Documents.

Los Alamos National Laboratory: Plume Map



Los Alamos National Laboratory: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Los Alamos National Laboratory	LANS	Sandia/Mortandad Canyon West Area	LANL-0030	Chromium	NA	NA	NA		NA	Chromium is 8X above State regulatory cleanup standards in limited area. Extent of plume not yet fully delineated, but is undergoing accelerated evaluation.
Los Alamos National Laboratory	LANS	Cañon De Valle Area	LANL-0030	Explosive (RDX), Tritium, Nitrate	NA	NA	NA		NA	Plume extent not yet fully delineated. Contaminants are above background but below regulatory cleanup standards. Corrective measures, passive reactive barrier, pump and treat, and monitored natural attenuation are being evaluated.
Los Alamos National Laboratory	LANS	Los Alamos Canyon Area	LANL-0030	Nitrate, Tritium	NA	NA	NA		NA	Plume is limited and not migrating. Contaminants are above background but below regulatory cleanup standards. No active remediation required at this time.
Los Alamos National Laboratory	LANS	Pajarito Canyon Area	LANL-0030	Tritium	NA	NA	NA		NA	Trace concentrations of tritium have been detected in one well. Plume extent not yet fully delineated. Contaminants are above background but below regulatory cleanup standards. Further characterization is pending to confirm presence.
Los Alamos National Laboratory	LANS	Pueblo Canyon Area	LANL-0030	Nitrate, Tritium, U, Perchlorate	NA	NA	NA		NA	Plume is limited and not migrating. Contaminants are above background but below regulatory cleanup standards. No active remediation required at this time.
Los Alamos National Laboratory	LANS	Sandia/Mortandad Canyon East Area	LANL-0030	Nitrate, Tritium, Perchlorate	NA	NA	NA		NA	Plume is limited and not migrating. Contaminants are above background but below regulatory cleanup standards. No active remediation required at this time.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current): = Greater than 320 acres, = 40 to 320 acres, = Less than 40 acres

Source: = Active, = Controlled, = Not Present

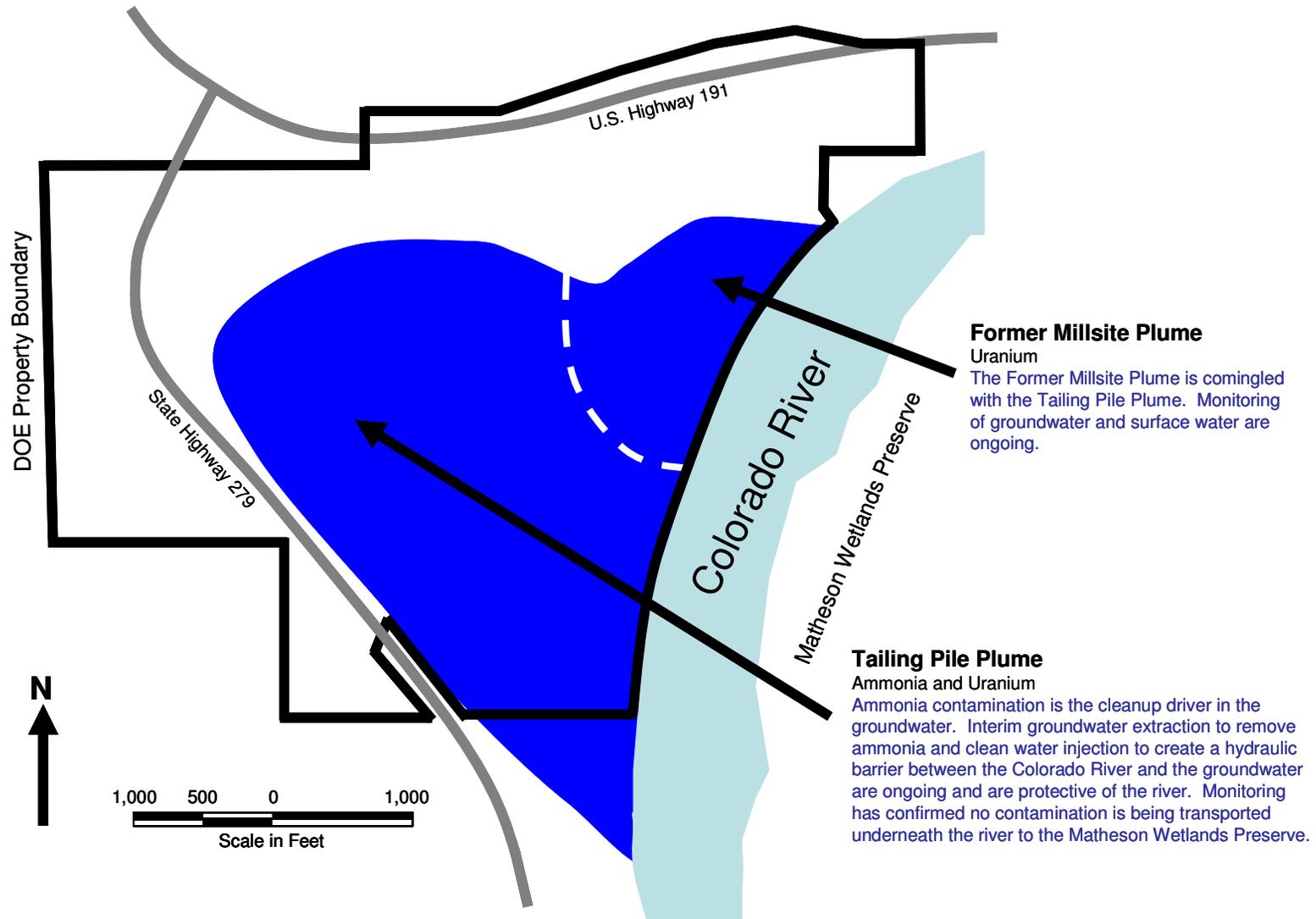
Plume Status: —Contaminants above MCLs/ACLs are currently offsite or projected to migrate offsite, —Plume is expanding but is not expected to migrate offsite above MCLs/ACLs, —Plume is static or shrinking in size.

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Treatment Status: —Remedial approaches are not performing as identified in Decision Documents, —Remedial approaches are not performing optimally (as identified in Decision Documents), —Remedial approaches are performing as identified in Decision Documents.

Moab UMTRA Project: Plume Map



Moab UMTRA Project: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Moab Site	S&K Aerospace	Tailings Pile/ 150 acres	CBC-Moab-0031	Uranium, Ammonia			Red		Green	Interim actions (extraction and injection) protect contaminants from entering Colorado River above negotiated levels. Groundwater is not potable due to natural high total dissolved solids. Contamination slightly above MCLs has migrated offsite.
Moab Site	S&K Aerospace	Former Millsite/ 35 acres	CBC-Moab-0031	Uranium			Green		NA	No active treatment necessary before final corrective action for groundwater is approved. Contaminants not entering Colorado River above negotiated levels. Groundwater is not potable due to natural high total dissolved solids.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current): = Greater than 320 acres, = 40 to 320 acres, = Less than 40 acres

Source: = Active, = Controlled, = Not Present

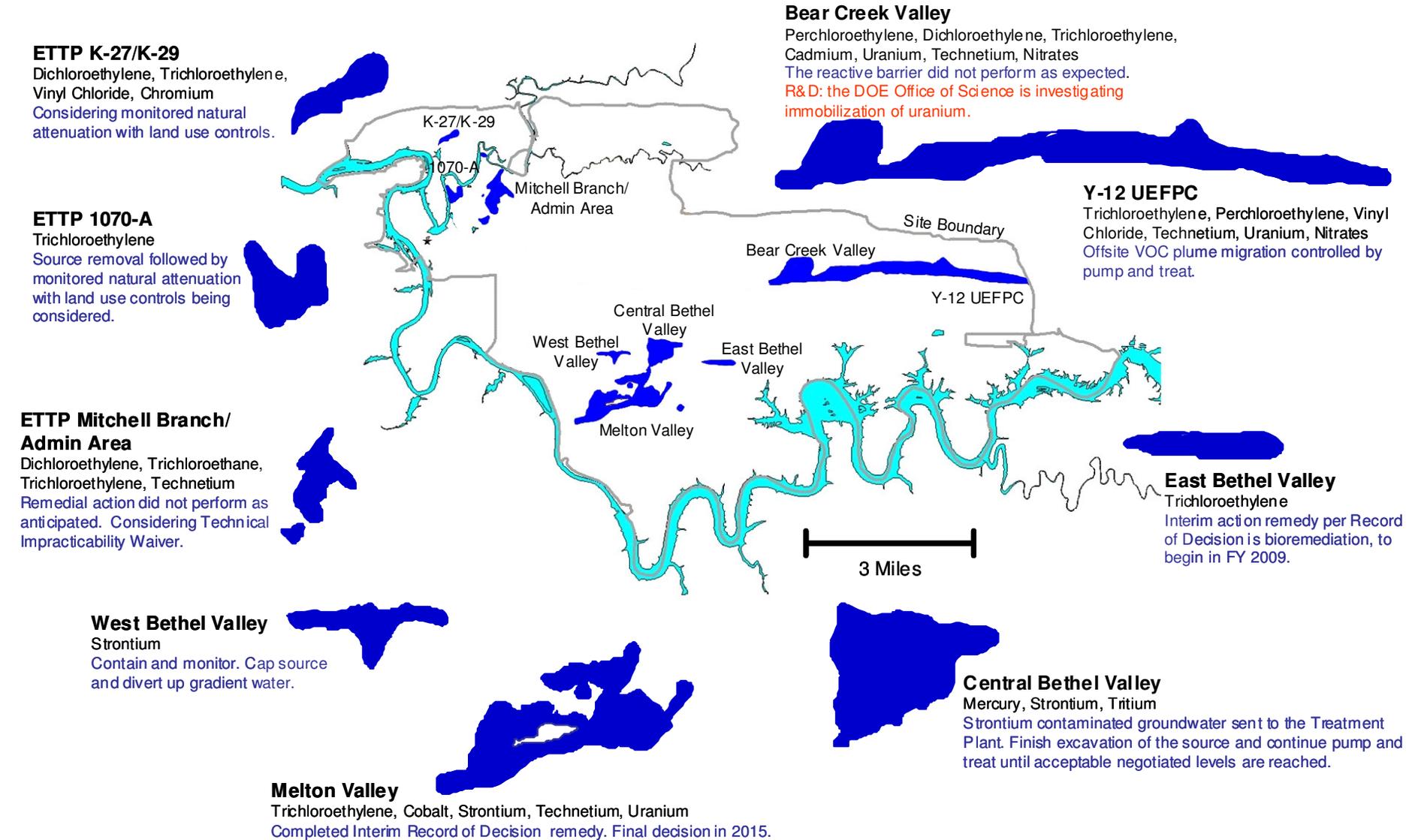
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Oak Ridge Reservation: Plume Map



(Note: Plume details not to scale.)

Oak Ridge Reservation: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Oak Ridge Reservation	Bechtel Jacobs	Bear Creek Valley	OR-0041	PCE,DCE, TCE, Cd, U, Tc, Nit.			Yellow		Red	The reactive barrier did not perform as expected. R&D: the DOE Office of Science is investigating iodization of the U.
Oak Ridge Reservation	Bechtel Jacobs	Central Bethel Valley	OR-0042	Hg, Sr, Tritium			Yellow		Green	Sr contaminated GW sent to the Central Treatment Plant. Finish excavation of the source and continue P&T until acceptable negotiated levels are reached.
Oak Ridge Reservation	Bechtel Jacobs	East Bethel Valley	OR-0042	TCE			Yellow		NA	Remedy is bioremediation per ROD for interim actions. Interim actions to begin in FY 2009.
Oak Ridge Reservation	Bechtel Jacobs	ETTP 1070-A	OR-0040	TCE			Yellow		Green	Source removal. Considering MNA. No risks.
Oak Ridge Reservation	Bechtel Jacobs	ETTP K-27/K-29	OR-0040	DCE, TCE, VC, Cr			Yellow		NA	Considering MNA. No current or future risks identified.
Oak Ridge Reservation	Bechtel Jacobs	ETTP Mitchell Branch/Admin Area	OR-0040	DCE, TCA, TCE, Tc			Yellow		Yellow	Remedial action did not perform as anticipated. No actions have been identified that can succeed. Considering TI Waiver for DNAPLs in the fractured bedrock. Conditions did not deteriorate upon cessation of the remedial action.
Oak Ridge Reservation	Bechtel Jacobs	Melton Valley	OR-0042	TCE, Co, Sr, Tc, U			Yellow		Green	Performance of hydraulic containment and seepage capture and containment exceed ROD requirements. Final decision in 2015.
Oak Ridge Reservation	Bechtel Jacobs	West Bethel Valley	OR-0042	Sr			Yellow		NA	Contain and monitor. Cap and divert up gradient water.
Oak Ridge Reservation	Bechtel Jacobs	Y-12 UEFCP	OR-0041	TCE, PCE, VC, Tc, U, Nitrates			Green		Green	Offsite VOC plume migration is controlled by P&T.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current): = Greater than 320 acres, = 40 to 320 acres, = Less than 40 acres

Source: = Active, = Controlled, = Not Present

Plume Status: —Contaminants above MCLs/ACLs are currently offsite or projected to migrate offsite, —Plume is expanding but is not expected to migrate offsite above MCLs/ACLs, —Plume is static or shrinking in size.

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Paducah Gaseous Diffusion Plant: Plume Map

Northwest Plume

Trichloroethylene, Technetium-99

Alternate water supply provided to residents. Pump and treat ongoing since 1995. Plume shift reduced system effectiveness at northern extraction points.

R&D: Enzyme probe and carbon isotope being utilized to assess trichloroethylene biodegradation rates in an aerobic environment.

Northeast Plume

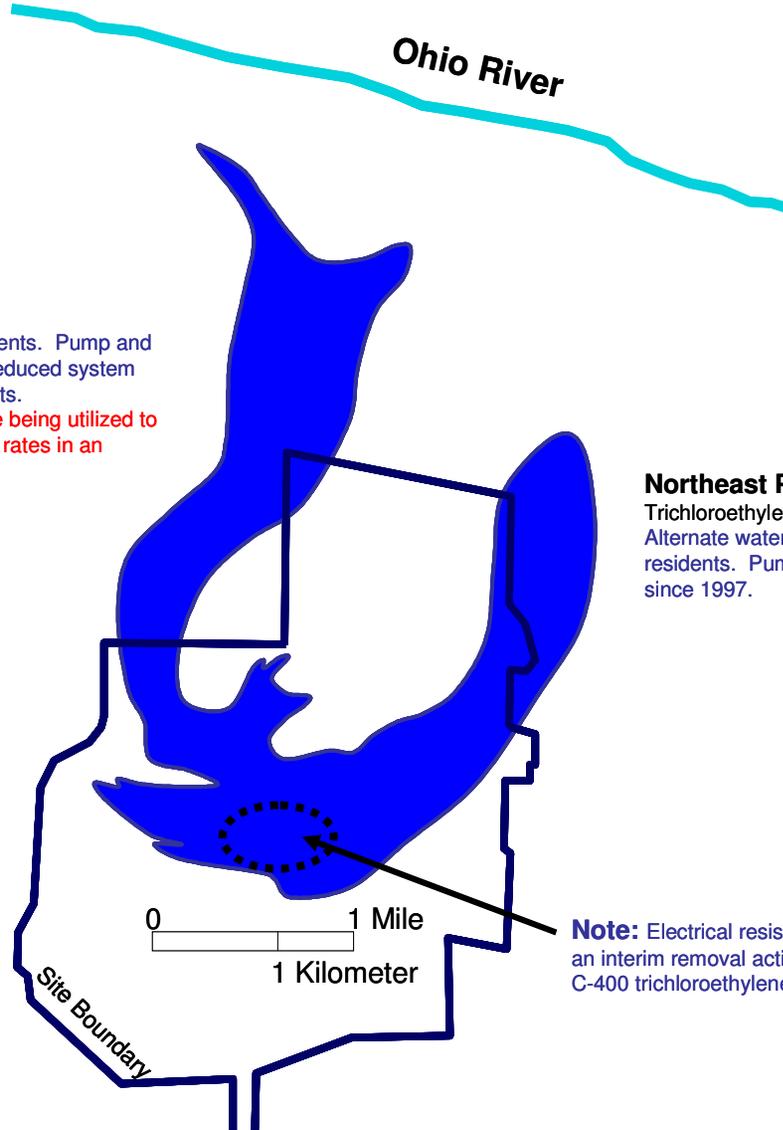
Trichloroethylene, Technetium-99

Alternate water supply provided to residents. Pump and treat ongoing since 1997.

Southwest Plume

Trichloroethylene,
Technetium-99

No active remediation required.



Note: Electrical resistive heating being deployed as an interim removal action for the high concentration C-400 trichloroethylene source area.

Paducah Gaseous Diffusion Plant: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Paducah Plant	Paducah Remediation Services	NE	PA-0040	TCE Tc			Red		Green	Pump & treat interim action to control high concentration portion of plume has attained remedial objective. Current and future Tc concentrations, a contaminant defining the plume, not expected to exceed the current MCL (900 pCi/L) in offsite areas.
Paducah Plant	Paducah Remediation Services	NW	PA-0040	TCE Tc			Red		Yellow	Plume shift has reduced pump & treat effectiveness. Pump & treat optimization under development. Primary DNAPL source control action in design phase. Current and future Tc concentrations not expected to exceed MCL in offsite areas.
Paducah Plant	Paducah Remediation Services	SW	PA-0040	TCE Tc			Yellow		NA	Plume expansion possibly being attenuated by natural and anthropogenic recharge; however, additional monitoring needed to adequately determine down-gradient extent of plume. Contaminant concentrations not expected to exceed MCLs in offsite areas.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current): = Greater than 320 acres, = 40 to 320 acres, = Less than 40 acres

Source: = Active, = Controlled, = Not Present

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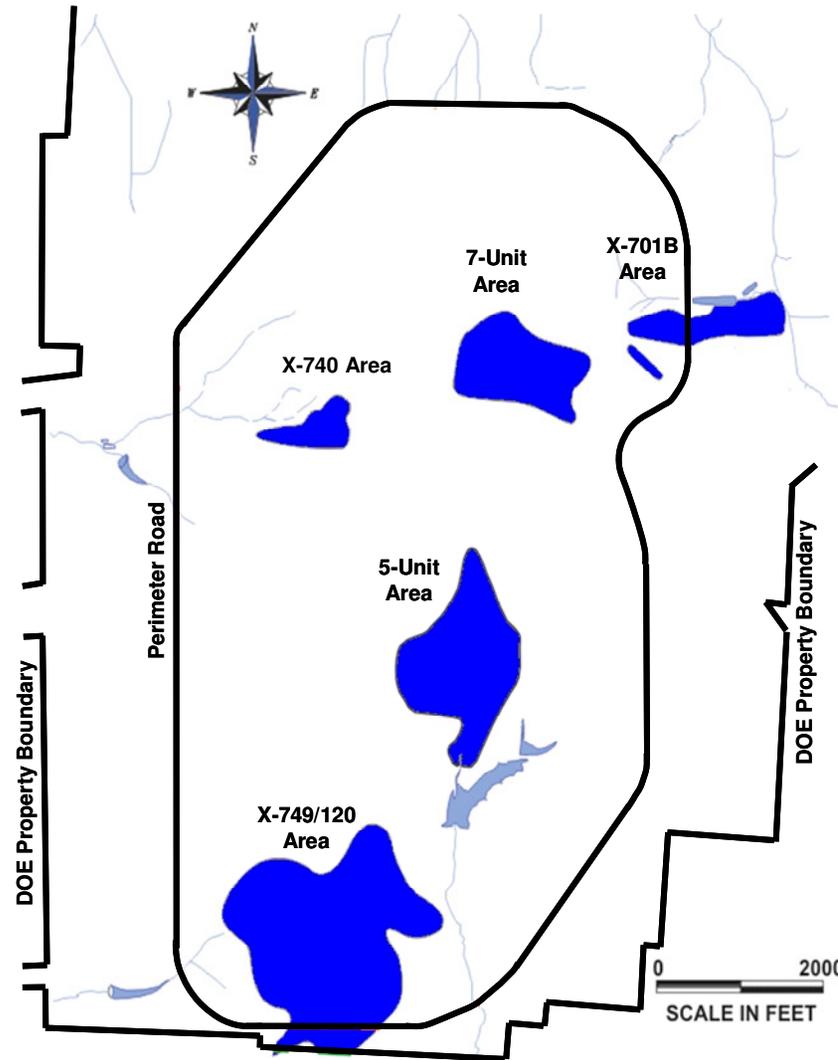
Portsmouth Gaseous Diffusion Plant: Plume Map

X-740 Area Plume

Trichloroethylene
Phytoremediation ongoing since 1999.
Modifications to enhance remediation are underway.

X-749/120 Area Plume

Trichloroethylene, Technetium-99
Barrier wall installed in 1994. Additional pumping wells have been installed to address plume migration.
Phytoremediation ongoing since 2002.



X-701B Area Plume

Trichloroethylene, Technetium-99
Source area pump and treat ongoing since 1988; groundwater interceptor trench at discharge area since 1991. In situ chemical oxidation currently in progress.

7-Unit Area Plume

Trichloroethylene, Technetium-99
Building sumps capturing plume. Further corrective action deferred to D&D.

5-Unit Area Plume

Trichloroethylene
Pump and treat ongoing since 1991.
Pumping rate optimization in progress to improve performance.

Portsmouth Gaseous Diffusion Plant: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Portsmouth Plant	LATA/Paralax	5UA	PO-0040	TCE Tc			Yellow		Yellow	Flow rate efficacy issues with pump & treat interim action. Primary source areas capped, but residual source likely under deferred units (e.g., process building).
Portsmouth Plant	LATA/Paralax	7UA	PO-0040	TCE Tc			Yellow		Green	Primary source removed; however, additional source material suspected under deferred building; contaminant migration in ground water controlled via sumps.
Portsmouth Plant	LATA/Paralax	X701B	PO-0040	TCE			Yellow		Yellow	Dewatering of interceptor trench not fully effective; overall effectiveness of chemical oxidation to treat primary DNAPL not yet confirmed.
Portsmouth Plant	LATA/Paralax	X740	PO-0040	TCE			Yellow		Red	Phytoremediation extracting minimal contaminants due to failure of plant roots to reach contaminant zone.
Portsmouth Plant	LATA/Paralax	X749-X120	PO-0040	TCE Tc			Red		Yellow	Contaminants moving around south boundary barrier wall.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current): = Greater than 320 acres, = 40 to 320 acres, = Less than 40 acres

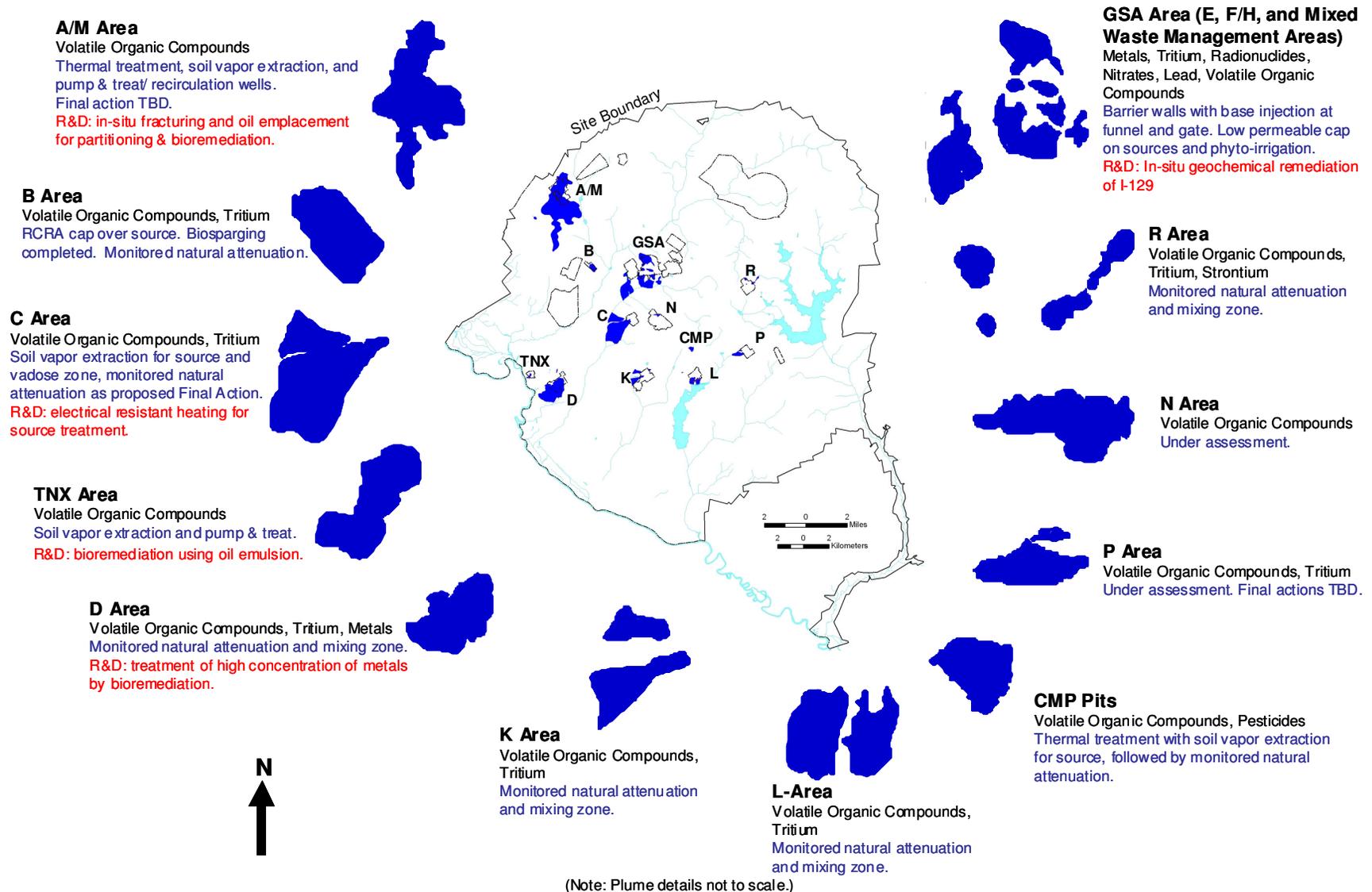
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Treatment Status: —Remedial approaches are not performing as identified in Decision Documents, —Remedial approaches are not performing optimally (as identified in Decision Documents), —Remedial approaches are performing as identified in Decision Documents.

Savannah River Site: Plume Map



Savannah River Site: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Savannah River Site	WSRC	A-Area Burning/Rubble Pits/Misc. Chemical Basin	SR-0030	PCE, TCE, DCE			Yellow		Green	Recirculation wells operating under interim action. MNA proposed as final action. Plume size increasing slightly while contaminant mass decreasing. Administratively, this plume has been incorporated with the A/M Area Groundwater under RCRA.
Savannah River Site	WSRC	A/M Area Groundwater	SR-0030	PCE, TCE			Yellow		Green	Steam stripping, SVE, P&T, and recirculation wells. R&D: Fracturing and oil emplacement. Final actions TBD. Remediation time and cost will be very high unless alternative technologies are effective.
Savannah River Site	WSRC	C Area Burning/Rubble Pits	SR-0030	TCE, DCE, VC			Green		Green	Monitored natural attenuation (MNA).
Savannah River Site	WSRC	C-Area Groundwater Operable Unit	SR-0030	TCE, Tritium			Yellow		NA	Assessment phase, final action TBD. R&D: TCE source treated by electrical resistance heating (ERH).
Savannah River Site	WSRC	Central Shops GW OU	SR-0030	TCE			Green		NA	Assessment phase, final action TBD.
Savannah River Site	WSRC	CMP Pits	SR-0030	PCE, TCE			Green		Green	MNA. Source will be treated via ERH.
Savannah River Site	WSRC	D-Area Groundwater	SR-0030	TCE, Tritium, Be, U			Yellow		NA	Assessment phase, final action TBD. Modeling shows MNA viable. R&D: high concentration metals treated by bioremediation.
Savannah River Site	WSRC	D-Area Oil Seepage Basin	SR-0030	PCE, TCE, DCE, VC			Green		Green	MNA/mixing zone. Revised mixing zone evaluation indicates degradation and falling concentrations.
Savannah River Site	WSRC	GSA Eastern	SR-0030	Tritium			Green		NA	Four primary sources removed. Final actions TBD.
Savannah River Site	WSRC	GSA Western	SR-0030	PCE, Tritium, I, Tc			Green		NA	Source control covers at two units. Final actions TBD.
Savannah River Site	WSRC	F Area Seepage Basins	SR-0030	Tritium, Cd, U, I, Sr, Tc			Yellow		Yellow	Base injection at funnel and gate, barrier wall. Alternate remedial strategies for I-129 under investigation, otherwise remediation will be very costly.
Savannah River Site	WSRC	H Area Seepage Basins	SR-0030	Tritium, Hg, I, Sr, Tc			Yellow		Yellow	Barrier wall. Alternative strategies for I-129 under investigation, otherwise remediation will be very costly.
Savannah River Site	WSRC	K Area Burning/Rubble Pit	SR-0030	TCE, PCE			Green		Green	MNA/mixing zone
Savannah River Site	WSRC	K Area Groundwater Operable Unit	SR-0030	PCE, TCE, Tritium			Yellow		NA	Assessment phase, final actions TBD.

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
Savannah River Site	WSRC	L Area Burning/Rubble Pit	SR-0030	Car. Tet.			Green		Green	MNA/mixing zone
Savannah River Site	WSRC	L Area Southern Groundwater	SR-0030	PCE, TCE, Tritium			Green		Green	MNA
Savannah River Site	WSRC	Mixed Waste Manag. Facility NE Plume	SR-0030	Tritium, TCE, DCE			Green		Green	Low permeability cap on source. MNA proposed as part of final action.
Savannah River Site	WSRC	Mixed Waste Manag. Facility NW Plume	SR-0030	Tritium, TCE			Green		Green	Low permeability cap on source. MNA proposed as part of final action, phytoremediation if needed at creek.
Savannah River Site	WSRC	Mixed Waste Manag. Facility SE Plume	SR-0030	Tritium, TCE			Green		Green	Low permeability cap on source. MNA proposed as part of final action.
Savannah River Site	WSRC	Mixed Waste Manag. Facility SW Plume	SR-0030	Tritium, TCE			Green		Green	Low permeability cap on source. Phytoremediation.
Savannah River Site	WSRC	P-Area Groundwater Operable Unit	SR-0030	PCE, TCE, DCE, VC, Tritium			Yellow		NA	Assessment phase, final action TBD.
Savannah River Site	WSRC	R Seepage Basin	SR-0030	Sr			Green		Green	MNA/mixing zone
Savannah River Site	WSRC	R-Area Groundwater Operable Unit	SR-0030	PCE, TCE, Tritium			Yellow		NA	Assessment phase, MNA proposed.
Savannah River Site	WSRC	Sanitary Landfill	SR-0030	PCE, TCE, DCE, VC, Tritium			Green		Green	Biosparging transitioned to MNA (first Alternate Concentration Limit approved in state of South Carolina).
Savannah River Site	WSRC	TNX	SR-0030	TCE			Green		Green	Interim P&T (air stripping). R&D: bioremediation using oil emulsion will be proposed as final remedy.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current): = Greater than 320 acres, = 40 to 320 acres, = Less than 40 acres

Source: = Active, = Controlled, = Not Present

Plume Status: —Contaminants above MCLs/ACLs are currently offsite or projected to migrate offsite, —Plume is expanding but is not expected to migrate offsite above MCLs/ACLs, —Plume is static or shrinking in size.

MCL=maximum concentrations level (levels are promulgated standards). ACL=alternate concentration limit (levels are negotiated).

Regulatory Status: = Assessment ongoing, = Remedial approach proposed (i.e., Proposed Plan), = Decision Document in place. Decision Documents are defined as legally binding agreements (i.e., RCRA or CERCLA Interim or Final Records of Decision, Permits, Closure Plans, Corrective Actions, Interim Actions).

Treatment Status: —Remedial approaches are not performing as identified in Decision Documents, —Remedial approaches are not performing optimally (as identified in Decision Documents), —Remedial approaches are performing as identified in Decision Documents.

West Valley Demonstration Project: Plume Map



West Valley Demonstration Project: Plume Assessments

Site	Contractor	Plume/Area	PBS#	Major Contaminants	Current Plume Size	Source	Plume Status	Regulatory Status	Treatment Status	Comments
West Valley Demonstration Project	West Valley Environmental Services	WMA-1,2,3,4,5	OH-WVDP-0040	Strontium, Cesium			Yellow		Yellow	Pump and treat and a small permeable reactive barrier have reduced contaminant levels, but the permeable reactive barrier has experienced some bypass. Final remediation options are under evaluation.
West Valley Demonstration Project	West Valley Environmental Services	WMA-2	OH-WVDP-0040	Strontium, Tritium, Cesium			Yellow		Yellow	Plume consists of a non-mobile Cs-137 and mobile strontium and tritium. The plume has only migrated a short distance. At the point of compliance, contaminants predicted to remain below negotiated levels. Final remediation options are under evaluation.

Major Contaminants: Contaminants in plume that required, currently require, or may require remediation.

Plume size (Current):  = Greater than 320 acres,  = 40 to 320 acres,  = Less than 40 acres

Source:  = Active,  = Controlled,  = Not Present

Plume Status: —Contaminants above MCLs/ACLs are currently offsite or projected to migrate offsite, —Plume is expanding but is not expected to migrate offsite above MCLs/ACLs, —Plume is static or shrinking in size.
MCL=maximum concentrations level (levels are promulgated standards). ACL=alternate concentration limit (levels are negotiated).

Regulatory Status:  = Assessment ongoing,  = Remedial approach proposed (i.e., Proposed Plan),  = Decision Document in place. Decision Documents are defined as legally binding agreements (i.e., RCRA or CERCLA Interim or Final Records of Decision, Permits, Closure Plans, Corrective Actions, Interim Actions).

Treatment Status: —Remedial approaches are not performing as identified in Decision Documents, —Remedial approaches are not performing optimally (as identified in Decision Documents), —Remedial approaches are performing as identified in Decision Documents.