Savannah River NUCLEAR SOLUTIONS℠

Scoping Summary for the C Area Groundwater Operable Unit

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SAVANNAH RIVER SITE • AIKEN, SOUTH CAROLINA

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1.0 PROJECT PHASE AND STATUS

Subsequent to submittal of the *Statement of Basis/Proposed Plan* (SB/PP) (SRNS-RP-2011-00207, Revision 0, April 2011) proposing monitored natural attenuation (MNA) for the C-Reactor Groundwater Operable Unit (CAGW OU) in April 2011, the Core Team (consisting of the United States Department of Energy [USDOE], the United States Environmental Protection Agency [USEPA], and South Carolina Department of Environmental Services [SCDES]) agreed to continue groundwater monitoring and annual reporting for the CAGW OU in support of a final remedial action. A non-time-critical removal action (NTC RA) injecting bioaugmented emulsified oil in two (2) locations to target the distal trichloroethylene (TCE) plume near Castor Creek was implemented in 2019 and monitored to date.

As stated in the *Groundwater Monitoring Report for the C-Area Groundwater (CAGW) Operable Unit (OU)* July 2024 through June 2025 report (SRNS-RP-2025-00992, Revision 0, October 2025), surface water and sediment samples with detections of per- and polyfluoroalkyl substances (PFAS) were collected from Castor Creek during a 2022 field study. Additional PFAS monitoring of surface water and groundwater was conducted in 2024 – 2026, and soil samples were collected in 2026 from a wooded area suspected to be the location of a 2010 fire and a fire training area inside the C Area fenceline were periodic fire training exercises included the deployment of aqueous film forming foam (AFFF) solution.

The purpose of this scoping summary is to present and discuss the current extent of the TCE and tritium southern groundwater plumes and a planned approach for updating the CAGW OU groundwater flow and transport model, present and discuss the detectable concentrations of PFAS in surface water, groundwater, and soil data and the development of a sample and analysis plan (SAP) for PFAS characterization (surface water, groundwater, and soil), and the impact of the additional PFAS investigation to the current Federal Facility Agreement (FFA) schedule.

2.0 OPERABLE UNIT HISTORY AND BACKGROUND

2.1 *C Area Operations*

C Area occupies the west-central part of the Savannah River Site (SRS) in Barnwell County, South Carolina (Figure 1). The C-reactor (the primary SRS operation facility in C Area) achieved criticality in March 1955 and was operational until June 1985. SRS operations conducted in C Area resulted in impacts to the soil and groundwater. Soil and groundwater investigations conducted from 1998 to 2002 found that TCE and tritium were at concentrations above the maximum contaminant level (MCL) of 5 micrograms per liter (µg/L) and 20 picocuries per milliliter (pCi/mL), respectively. Known sources of soil and groundwater contamination include the C-Reactor Seepage Basins (CRSBs) 904-66G, 904-67G, and 904-68G, the distillation columns outside building 105-C (purification wing), the C Area Discharge Canal, a TCE vadose source zone near the C-reactor building, and non-specified sources associated with reactor operations.

2.2 *CAGW OU*

The CAGW OU, which is located in the Fourmile Branch (FMB) watershed, encompasses an area of approximately (~) 3.29 square kilometers (1.27 square miles) starting from a northeastern apogee (105-C reactor building and ancillary structures) continuing west to the FMB, south to Castor Creek, and ending to the southwest at the confluence of the FMB and Castor Creek (Figure 2). Volatile Organic Compound (VOC) contamination in the Twin Lakes area is associated with releases from the C Area Burning/Rubble Pit (CBRP) and comingled with the CAGW-OU northern tritium plume. However, the CBRP TCE plume is being remediated by MNA as part of the final remedy for the CBRP OU and is not part of the CAGW OU scope. Groundwater flow is towards the west and southwest from the C-Reactor area towards the FMB and Castor Creek. The nature and extent of the groundwater contamination within the CAGW OU have been comprehensively investigated using direct-push technology (DPT) and the installation of groundwater monitoring wells, as documented in the 2004 *Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation Report* (RFI/RI) (WSRC-RP-2003-4073, Revision 1, May 2004).

Groundwater plumes with tritium and TCE concentrations above their respective MCLs originate beneath C Area and extend southward to Castor Creek and westward towards the FMB. Figure 3 (circa 2000) is a hydrogeologic conceptual model depicting a simplified representation of the groundwater flow system and contaminant flow path of the CAGW OU to Castor Creek. Groundwater and surface water data has been collected since 2002 from key monitoring well and surface water stations to provide tracking of the TCE and tritium groundwater plume concentrations. The data gathered in 2011 identified where the CAGW OU tritium and TCE plumes discharged to Castor Creek. A monitoring network was established in 2012 to evaluate changes in the CAGW OU TCE and tritium plumes, as well as their impacts to the FMB, Castor Creek, and an unnamed tributary to Castor Creek.

2.3 *Regulatory History*

- The *RCRA Facility Investigation/Remedial Investigation Report for the C-Reactor Groundwater Operable Unit (U)* (WSRC-RP-2003-4073, Revision 1, May 2004) was approved by SCDES and USEPA in 2004. Report identified principal threat source material contributing to groundwater contamination.
- The *Corrective Measures Study/Feasibility Study Report for the C-Reactor Groundwater Operable Unit (U)* (WSRC-RP-2004-4113, Revision 1.1, October 2005) was approved by SCDES and USEPA in 2005. An interim action to address TCE in the vadose zone source area was successfully implemented in 2006.
- A *Statement of Basis/Proposed Plan* (SB/PP) (SRNS-RP-2011-00207, Revision 0, April 2011) proposing MNA for the CAGW OU, was submitted in April 2011, by USDOE. The USEPA and SCDES provided comments on the SB/PP (Revision 0) in letters dated June 30, 2011, and July 5, 2011. The Core Team agreed to not pursue an early response action for the CAGW OU based on unresolved comments to the SB/PP.
- In December 2016, a scoping meeting was held to evaluate final remedial action alternatives for the CAGW OU groundwater and surface water subunits in support of a Focused Corrective Measures Study/Feasibility Study (CMS/FS). The Core Team reached agreement that additional groundwater characterization and additional seepline monitoring were needed.

- The additional characterization activities were documented in the *Sampling and Analysis Plan Addendum for the C-Area Groundwater (CAGW) Operable Unit (OU) (U)* (SRNS-RP-2017-00100, Revision 0, April 2017). The Core Team reconvened on July 18, 2017, to review the new data and evaluate NTC RA alternatives in place of a focused CMS/FS to address the distal portion of the contamination plume discharging TCE in concentrations exceeding the 5 µg/L MCL to an unnamed Castor Creek tributary. The removal action alternatives (specifically the application of In Situ Chemical Oxidation [ISCO] or Enhanced Bioremediation with edible oil) were documented in the *Removal Site Evaluation Report / Engineering Evaluation / Cost Analysis* (RSER/EE/CA) (SRNS-RP-2017-00365, Revision 0, September 2017).
- In 2018, the *Removal Action Design Plan with Effectiveness Monitoring Plan for the C-Area Groundwater Operable Unit (U)* (SRNS–RP–2018-00807, Revision 1, October 2018) was submitted stating the selected Alternative 2 (treatment barrier using emulsified oil) for the distal portion of the TCE plume.
- The NTC RA commenced on January 30, 2019, followed by five (5) subsequent Effective Monitoring Reports (EMRs) which reported on the effectiveness of the NTC RA. Based on the four (4) years of TCE groundwater analytical data showing limited success of the treatment barrier in reducing the distal plume concentrations, SRS did not recommend continued bioaugmented oil injections in the fifth and final EMR (SRNS-RP-2024-01334, Revision 0, November 2024).
- In 2025, SRS resumed the annual groundwater report for the CAGW OU and submitted the *Groundwater Monitoring Report for the C-Area Groundwater (CAGW) Operable Unit (OU)* (SRNS-RP-2025-00992, Revision 0, October 2025).

3.0 LAND USE

The CAGW OU sources are located within an industrial use area, but the distal portion of the plume extends beyond the industrial use boundary. Land use of the entire CAGW OU area is controlled consistently with the SRS Land Use Control Assurance Plan to prevent

the use of and contact with groundwater or surface water that exceeds MCLs. The groundwater plumes are located in the Upper Three Runs Aquifer (UTRA), which is not used as a drinking water source at the SRS.

4.0 CAGW OU SUBUNITS

The CAGW OU is divided into three (3) subunits: (1) vadose zone, (2) groundwater, and (3) surface water. The sections below build upon the information presented in the RFI/RI Report with recent data collected for each of the three (3) CAGW OU subunits.

4.1 *CAGW OU Vadose Zone Subunit*

The Vadose Zone Subunit includes four (4) areas that provide a potential source of groundwater contamination: (1) a tritium source near the former moderator distillation tower on the east side of the C-Reactor Building Complex, (2) the C-Reactor Area TCE Vadose Zone Source near the southern corner of the Assembly Area of the C-Reactor Building (105-C), (3) a petroleum source at the former Fuel Unloading Facilities Power (108-3C), and (4).potential PFAS source areas.

Tritium Source

Monitoring well CDB 1, located near the 105-C Disassembly Basin, experienced a six-month spike in tritium groundwater concentration between 2008 and 2009 (maximum tritium concentration 9,130 pCi/mL). The level of concentration led SRS to suspect that a continuing source of tritium (not been previously identified) may exist in the vadose zone upgradient of the monitoring well CDB 1. An investigation (using DPT) was conducted to collect groundwater samples from four (4) locations (CTA 4 through CTA 7) adjacent to building 105-C. The tritium concentration in the groundwater directly below the decommissioned moderator distillation tower was found to be contaminated with more than 29,000 pCi/mL (CTA 4) while a groundwater sample collected from 24 meters (m) (80 feet [ft]) away contained less than 800 pCi/mL (CTA 5). The significant drop in concentration gradient indicated that tritium contamination was attributed to a localized tritium source (spatially limited) in the vicinity of the moderator distillation tower pad. This conclusion was confirmed by additional vadose zone and groundwater sampling in 2011 (Figure 4 and Figure 5). The 2011 groundwater sampling near the former moderator distillation tower found only background levels of tritium while DPT location CRTA-03 (immediately

downgradient of building 105-C Purification Area) had a high tritium concentration of 1,730 pCi/ml. Therefore, a monitoring well (CTA003D) was installed at this location in 2011. Tritium has decreased from the maximum concentration of 8,230 pCi/mL in 2013, to 189 pCi/mL in 4Q25. (Figure 6).

Tritium is present in the concrete pad east of building 105-C (Purification Area) which was the location of the moderator distillation columns that were deactivated and decommissioned in circa 1980. The ~1.4 m (4.5 ft)-thick concrete pad is ~11 x 4.9m (36 x 16 ft) yielding a volume of 75.4 cubic meters (m^3) (2,592 cubic feet [ft^3]). The maximum tritium concentration for the concrete pad is 4,830 pCi/ per gram (g). This value is well below the contaminant migration (CM) cleanup level (68,000 pCi/g) used at D Area OU (DAOU) moderator processing subunit concrete at 420-D, 420-2D and 421-2D. The CM cleanup level is conservative given the shallow depth of ~2.4 m (8 ft) to groundwater in D-Area compared to the shallowest depth to water in C Area (~22.1m [72.4ft]). The tritium maximum concentration of 117 pCi/g in the vadose zone soil adjacent to the Purification Area (CRTA-03, Figure 4) is also below the CM cleanup level for soils (120 pCi/g) used at DAOU moderator processing subunit. Based on the continued tritium groundwater concentration decreasing trend from the maximum of 8,230 pCi/ml 2013 to 189 pCi/mL in 2025, tritium in the vadose zone does not present as a continuing source of groundwater above the MCL at the CAGW OU.

C-Reactor Area TCE Vadose Zone Source

An area of TCE contamination exceeding 1,000 micrograms per kilogram (µg/kg) was documented in the RFI/RI Report. The ~18.3 x 18.3 m (60 x 60 ft) area extended at ~9.1m (30ft) below ground surface (bgs) increasing to an area of ~27.4m x 48.8m (90ft x 160ft) at the base of the vadose zone at ~22m (72ft) bgs (Figure 7). The maximum TCE concentration observed in the vadose zone was 51.8 milligrams per kilograms (mg/kg) at CRGW-004.

An action to address the C-Reactor Area TCE Vadose Zone Source, based on an Interim Record of Decision (WSRC-RP-2004-4022, Revision 1, June 2004), was implemented in 2006 using electrical resistance heating (ERH) combined with soil vapor extraction (SVE). The ERH system (consisting of a 10-m [30-ft] diameter ERH array with associated SVE wells) operated from June 2006 through

September 2006. An estimated 330kg (730 pounds) of TCE was removed. The overall removal efficiency (derived from two [2] soil cores collected within the center of the ERH array in 2006) was estimated at 99.4%. In addition, the ERH reduced the residual TCE concentrations outside of the target zone with an overall TCE removal efficiency of 95% (derived from soil data collected for a C Area OU [CAOU] soil investigation in 2011) (Figure 8, Table 3). Figure 9 presents the vertical distribution of the data, which indicates average concentrations are less than 200 µg/kg. Using the USEPA Vadose Zone Leaching (VLEACH) model (SRNS-RP-2011-01166) the residual TCE flux from the source zone was predicted to impact the groundwater above the TCE MCL for two (2) to three (3) years. In addition, the vadose zone total flux to the aquifer is less than 0.5kg, which is less than one percent of the mass estimated to be present in the aquifer. In November 2025, the maximum groundwater concentration was 89.9 µg/L (CRW023C). Continued detections of TCE concentrations in the groundwater (above the MCL) are primarily the result of diffusion of the residual parent source TCE from sediments below the water table.

Total Petroleum Hydrocarbon (TPH) Source

Deisel generators were utilized to provide emergency backup power for the C Area reactor. The fuel supply for the C Area backup generators was stored in above-ground tanks at the Fuel Unloading Facilities Power building (108-3C). Fuel spills and leaks at building 108-3C resulted in petroleum contamination of the soil. In 1994, approximately 383m^3 (500 cubic yards [yd^3]) of contaminated soil was removed from the area around building 108-3C to a depth of 6.1m (20ft). Hand augured samples were collected at the bottom of the excavated area, and the analytical results indicated that soil contamination continued another 3m (10ft), or a total of 9.1m (30ft) bgs. In lieu of continued soil excavation, the 383m^3 (500yd^3) excavation pit was backfilled, and SRS implemented a bioventing system to remediate the residual hydrocarbons. Soil samples were collected in 1998, and a closure report was submitted indicating that all contaminants had been reduced to acceptable levels. The SCDES approved the closure on January 26, 1999. Due to concerns of residual contaminants migrating to groundwater, the 108-3C facility was added as a subunit to the CAOU.

The USEPA currently assesses toxicity of TPH by considering the low, medium and high molecular weight categories of both aliphatic and aromatic TPH constituents. Naphthalene and 2-methylnaphthalene are representative compounds of the medium aromatic TPH

fraction. Naphthalene is a mobile constituent and elevated soil concentrations could result in groundwater contamination exceeding the EPA TPH Aromatic Medium Tap Water Regional Screening Level [RSL] of 5.5 µg/L. During the 2011 CAOU sampling effort, residual hydrocarbons were observed in the soil at 6.1m (20ft) bgs at 108-3C. Analysis indicated the presence of TPH-DRO and semi-volatile organics, including naphthalene and 2-methylnaphthalene. Figure 10 and Figure 11 show the distribution of naphthalene and 2-methylnaphthalene in the subsurface. Naphthalene and 2-methylnaphthalene concentrations were below the detection limit in two (2) groundwater samples collected at the 108-3C facility subunit. However, due to elevated TPH-DRO levels in the soil and groundwater (Figure 12), additional groundwater samples were collected from the three (3) DPT locations and one (1) monitoring well (CRW022D) in the spring of 2017 (Figure 12). Detections of both TPH-DRO and individual constituents were below levels of concern. Therefore, no problem warranting action was identified, although monitoring of the CRW022D continues.

PFAS Contamination Potential Sources

On October 8, 2010, the SRS fire department responded to a fire located in the wooded area south of C Area complex. Upon arrival at the scene, fire department personnel observed a Feller Buncher (motorized vehicle used for tree harvesting) completely engulfed in flames. A mixture of ~65 gallons of aqueous film forming foam (AFFF) and ~3,000 gallons of water, was applied to suppress the heat and flames generated from the large tires of the tree harvester. On January 28, 2026, six (6) soil samples were collected from 0-1 ft bgs at what is presumed to be the Feller Buncher fire location to determine if residual PFAS contamination exists in the shallow subsurface. Three (3) additional samples were collected at drainage points along a paved road downgradient of the presumed Feller Buncher fire location (Figure 13).

During a July 2025 walkdown to identify the Feller Buncher location, the fire department employee commented that periodic fire training exercises (deploying AFFF solution) were conducted along the perimeter road inside the C Area fenceline located west of building 105-C and south of building 706-C. In addition to the training exercises, a portable (trailer mounted) 300-gallon plastic tote filled with AFFF solution was assessed annually in the same area (Figure 14). On January 27, 2026, ten (10) soil samples (0-1 ft bgs) were collected

along the ~700-foot-long fire training exercise area, and six (6) additional samples were collected in the area where the portable tote was staged during the annual assessments.

The regional screening level (RSL) concentrations for perfluorooctanoic acid (PFOA) in residential and industrial soils are 0.02 nanograms per gram (ng/g) or parts per billion (ppb) and 0.08 ppb, respectively. The PFOA MCL-based soil screening level (SSL) for the protection of groundwater is 0.03 ppb. Two (2) of the six (6) soil samples collected at the presumed Feller Buncher fire location exceeded the RSL for both residential and industrial and the MCL-SSL (CAGWSS-015, 2.4 ppb, CAGWSS-021, 0.35 ppb). The table in Figure 13 provides a summary of PFOA concentrations at all Feller Buncher fire locations. Five (5) of the 16 soil samples collected at the fire training exercise area location exceeded the RSL for both residential and industrial and the MCL-SSL (CAGWSS-001, 0.74 ppb, CAGWSS-002, 0.11 J [estimated concentration] ppb, CAGWSS-005, 0.11 J ppb, CAGWSS-008, 0.14 J ppb, and CAGWSS-012, 0.25 ppb). The table in Figure 14 provides a summary of PFOA concentrations at all fire training exercise locations.

The RSL concentrations for perfluorooctanesulfonic acid (PFOS) in residential and industrial soils are 6.30 ppb and 58.00 ppb, respectively. The PFOS MCL-based SSL for the protection of groundwater is 0.06 ppb. Two (2) of the six (6) soil samples collected at the presumed Feller Buncher fire location exceeded the RSL for both residential and industrial and the MCL-SSL (CAGWSS-015, 890 ppb and CAGWSS-021, 0.35 ppb). The table in Figure 13 provides a summary of PFOS concentrations at all Feller Buncher fire locations. Fourteen of the 16 soil samples collected at the fire training exercise area location exceeded the MSL-SSL, and two (2) locations exceeded the RSL for both industrial and residential soils (CAGWSS-003, 300 ppb and CAGWSS-012, 15 ppb). The table in Figure 14 provides a summary of PFOS concentrations at all fire training exercise area locations.

Vadose Zone Subunit			
Problem(s) Warranting Action	**Remedial Action Objectives**	**Scope of Problem(s)**	**Likely Response Actions**
• There is potential for residual TCE in the vadose zone that will continue to impact groundwater above the MCLs of 5.0 µg/L for several years.	• Prevent TCE leaching to the groundwater above the MCL.	• Residual TCE is present throughout the vadose zone near the southern corner of the Assembly Area where the water table is currently ~78 ft bgs. The area of contamination is about 12.2 x 24.4 m (40 x 80 ft) with average concentrations less than 200 ug/kg.	• No Action. • Monitored Natural Attenuation with LUCs. • Passive Soil Vapor Extraction (PSVE).
• Based on preliminary soil sample results, PFAS constituents are present in the subsurface soils at the 2010 equipment fire location and the C Area fire training exercise area near building 706-C and 105-C at levels that pose a potential surficial risk to human health and a risk of leaching to groundwater.	• Prevent exposure to the industrial worker and potential future resident to PFAS in surface soils above acceptable risk levels. • Prevent PFAS in surface and subsurface soils from leaching to the groundwater above the respective MCLs.	• Approximately 65 gallons of AFFF dispersed at Feller Buncher fire location (less than 0.5 acres). An unknown quantity of AFFF dispersed during training fire exercises at the fire training area (~1 acre) inside C Area fenceline.	• No action. • Monitored Natural Attenuation with LUCs. • Excavation and offsite treatment/disposal. • In-situ treatment.
Uncertainties			
• It is uncertain whether the amount of TCE remaining in the vadose zone in the general vicinity of the Interim Remedial Action (ERH with SVE) will continue to contaminate groundwater at concentrations significantly above the MCL. This impacts on the assumption that source control is adequate. This uncertainty will be managed through continued monitoring. • It is uncertain whether the PFAS contamination in the subsurface significantly impacts groundwater. This uncertainty will be managed by soil boring investigations and collection of soil samples extending vertically and horizontally (out) from elevated PFAS soil concentrations identified in the preliminary sampling event to determine the concentration and extent of PFAS contamination in the vadose zone impacting the groundwater.			

4.2 *CAGW OU Groundwater Subunit*

Tritium and TCE Groundwater Contamination

Two (2) groundwater contamination plumes, exceeding their respective MCLs, are delineated within the CAGW OU groundwater subunit: (a) a northern tritium plume originating near the Retention Basin for 100-C Containment (904-89G) extending to the FMB, and (b) a southern plume (intermingled TCE and tritium plumes) originating near building 105-C extending in a south-southwesterly direction and discharging to Castor Creek , an unnamed tributary to Castor Creek, and a portion of the FMB. A smaller lobe of the southern plume splits from the main plume near the former CRSBs and extends west to the vicinity of the Twin Lakes drainage and the C Area Burning Rubble Pit (CBRP) OU boundary.

An additional VOC groundwater contamination plume in the Twin Lakes area is associated with historical releases from the CBRP which is identified and addressed in the *Biennial Effectiveness Monitoring Report (EMR) for Monitored Natural Attenuation (MNA) at the C-Area Burning/Rubble Pit (131-C) and Old C-Area Burning/Rubble Pit (NBN) Operable Unit (U)* report (SRNS-RP-2025-00608, Revision 0, June 2025) and is not part of the CAGW OU reporting.

Groundwater was extensively characterized from 1998 to 2002 and documented in the RFI/RI report. The monitoring well and DPT locations are shown in Figure 15 and Figure 16 along with the 2002 northern and southern tritium plume extents, and southern TCE plume extent, respectively. Known historical tritium sources include: (1) building 105-C (near the Purification Area), (2) the CRSBs, (3) miscellaneous spills near building 105-C (Disassembly Basin Area), and possibly (4) the Retention Basin for 100-C Containment (904-89G). These potential sources have been investigated as part of the CAOU. The only identified source for TCE groundwater contamination was identified in the CAGW OU Vadose Zone Subunit near building 105-C Assembly Area.

Predictions of future plume development in the CAGW OU were based on groundwater flow and contaminant transport modeling studies conducted by SRS in 2000, 2001, and 2003. The northern tritium plume concentrations (as of 2017) have decreased below MCL.

In the *Groundwater Transport Modeling for the Southern TCE and Tritium Plumes in C-Area Groundwater Operable Unit (U)* technical report (WSRC-TR-2001-00206, Revision 0, June 2001), six (6) observation points within the southern plume footprint were selected for prediction modeling of remedial alternatives compared to the base run A scenario, where there was assumed to be no continuing source and no selected remediation alternative (Figure 18). Figure 19 through Figure 21 shows the predicted TCE concentrations of the base run model at three (3) distal plume point locations (MAZ and LAZ layers) compared to empirical data collected from collocated monitoring well stations. In general, the model overpredicted the TCE concentrations as compared to the empirical data. This could be attributed to the effectiveness of the interim remedial action (ERH + SVE) removal of TCE at the vadose zone source area near 105-C in 2006 (not selected as a remedial alternative in 2000 modeling report) and/or potential preferential pathways for contaminant transport that were not accounted for in the original transport model.

Groundwater samples collected in 2024 have higher concentrations of TCE and tritium in the groundwater near the 105-C TCE and tritium source areas than predicted by the model, as shown in Figure 22. The current data suggests that transport of tritium and TCE mass from the groundwater near the source area to the mid and distal portions of the southern plume is slower than predicted and low permeability zones could be attributing to extending the retention time of contaminants in certain areas of the aquifer.

Overall, the size and concentration of both tritium (northern and southern) and TCE (southern) have markedly decreased since 2002 based on the current monitoring network (Figure 15, Figure 16, Figure 22). The decrease in tritium is expected as tritium naturally attenuates with a half-life of 12.3 years and the decrease in TCE is expected as the 2006 interim action greatly reduced the TCE concentrations in TCE vadose source zone area near building 105-C.

Overall, the TCE concentrations have continually decreased in the southern plume with the exception of the distal portion of the southern plume (near the unnamed tributary to Castor Creek), which have increased. The NTC RA was implemented in 2019 to address the distal portion of the contamination plume discharging TCE (above the MCL) to an unnamed Castor Creek tributary (Figure 23). The RA consisted of injecting an emulsified oil mixture along with a bioaugmentation supplement in two (2) transects to create two (2) treatment

barriers in the MAZ perpendicular to the groundwater flow. The design plan was for the emulsified oil to sequester TCE, create an anoxic zone promoting the growth of injected Dehalococcoides, which would biodegrade TCE within the barriers. For about two years, the TCE concentrations in the MAZ decreased through a combination of sequestration by the emulsified oil, anaerobic biodegradation, and aerobic (co)metabolism. However, the anaerobic areas returned to the predominant aerobic conditions in the MAZ, the life span of the Dehalococcoides was short-lived (about three years), and the barriers are no longer as effective in reducing TCE. The limited short-term decrease followed by subsequent rebound can be seen in Figure 29, which shows the concentrations in the downgradient tributary to Castor Creek, which receives groundwater discharge downgradient from the injection transects.

PFAS Groundwater Contamination

In 2022, sediment and surface water samples were collected sitewide as part of a Savannah River Ecology Laboratory (SREL) thesis field study that measured the bioaccumulation of PFAS in the environment (*Spatial Dynamics and Bioaccumulation of Per- and Polyfluoroalkyl,* Webb, 2024). Analytical results from surface water and sediment samples collected at Castor Creek showed detectable amounts of PFAS, with surface water concentrations exceeding the EPA MCL of 4 nanograms per liter (ng/L) or parts per trillion (ppt) for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) (22.95 ppt and 6.63 ppt, respectively). Although PFAS use is not directly related to C Area operations, groundwater samples were collected in 4Q24 and 2Q25 at selected monitoring stations (Figure 24) to detect for potential PFAS contamination in the CAGW OU groundwater that could be discharging to Castor Creek. Subsequent to the 4Q24 and 2Q25 detectable concentrations of PFOS and PFOA exceeding the EPA MCL at monitoring well CRW 7D (8.2 ppt and 18 ppt, respectively) an interview was conducted with former fire department personnel (who performed work in C Area) to locate potential source areas where AFFF was used. Based on statements during the interview, additional well locations were sampled in 4Q25 for PFAS closer to Castor Creek and the unnamed tributary to Castor Creek (downgradient of CRW 7D) and closer to the identified fire training exercise area (upgradient of CRW 7D) (Figure 24). The highest PFOA groundwater concentration to date was collected at CRW 4A in 4Q25 (370 ppt). Concentrations of PFOS and PFOA exceeding the EPA MCL were detected upgradient to the fire training exercise location at monitoring well CRW 3D (55 ppt and 27 ppt, respectively). In the second quarter of 2026 (2Q26), all

4Q25 sample locations were sampled to confirm results and nine (9) additional monitoring wells were sampled to further delineate the extent of the PFAS contamination in the groundwater.

Groundwater Subunit			
Problem(s) Warranting Action	**Remedial Action Objectives**	**Scope of Problem(s)**	**Likely Response Actions**
• Groundwater contains levels of TCE and tritium in excess of MCLs (5 µg/L and 20 pCi/mL, respectively).	• Prevent human exposure to groundwater contaminated with TCE and tritium above MCLs. • Reduce the concentration of TCE and tritium in groundwater to below MCLs and attenuate the contaminant plumes to the extent practicable. • Reduce discharge of TCE and tritium above MCL to surface water.	• Tritium groundwater plume above 20 pCi/mL covers an area of about 350 acres and discharges into both FMB and Castor Creek. This plume is located in UTRA and is up to 25 m [80 ft] thick. Maximum tritium concentration in 2025 was 450 pCi/mL in well CRW024C, located in the distal portion of the southern plume nearest to Castor Creek. • TCE groundwater plume above 5 µg/L covers an area of about 100 acres and discharges into a small unnamed tributary to Castor Creek. This plume is located in UTRA and is up to 18 m [60 ft] thick. The 2025 maximum TCE concentration in the distal end of the plume was 89.9 µg/L at well CRW029C and 67.4 µg/L at CRW020D in the source area.	• No Action. • Monitored Natural Attenuation with LUCs. • Phytoremediation (Evapotranspiration) • Anaerobic biodegradation or chemical oxidation at distal end of TCE plume
• Groundwater contains levels of PFAS in excess of MCLs of 4.0 ppt for PFOA and PFOS.	• Prevent human exposure to groundwater contaminated with PFAS above MCLs. • Reduce discharge of PFAS above MCLs to surface water.	• Detectable concentrations of PFAS (some above the MCL) are present in groundwater with further characterization needed to determine the full extent of contamination.	• No action. • Monitored Natural Attenuation with LUCs. • GW recovery and carbon adsorption • In-situ treatment. (e.g. PAB)
Uncertainties			
• It is uncertain whether the 2000 model is still reasonably accurate to determine the fate and transport of contaminants in support of an effective remedy selection for TCE and tritium in the southern plume. This uncertainty will be managed by continued collection of empirical data and updating the groundwater flow and transport model with additional empirical data collected since 2000. • The full extent of PFAS contamination in groundwater is uncertain. This uncertainty will be managed by soil boring investigations and collection of soil and groundwater samples near the fire training exercise area and the Feller Buncher fire location area in the southern portion of the CAGW OU to determine the concentration and extent of PFAS contamination. Additional wells will be installed based on investigation results to monitor PFAS in groundwater.			

4.3 *CAGW OU Surface Water Subunit*

Groundwater in the CAGW OU discharges to three (3) distinct surface water bodies; (1) the FMB to the west, which is a tributary to the Savannah River, (2) the Twin Lakes to the northwest, which discharges to the FMB, and (3) Castor Creek to the southwest, which also discharges to the FMB (Figure 2).

Tritium Contamination in Surface Waters

The FMB receives groundwater with tritium contamination effluent from H-Area, E-Area, and F-Area before receiving groundwater discharge from C Area. Current and historical tritium concentrations in surface water samples collected in the FMB upgradient to C Area, have consistently exceeded concentrations relative to the surface water concentrations detected in the FMB at C Area; indicating that the additional tritium loading (flux) from the CAGW OU to the FMB is not significant. Tritium surface water concentration in the FMB during 4Q25 decreased from 30.0 pCi/mL at FMC-002F (upstream of the Twin Lakes confluence with the FMB) to 11.6 pCi/mL at CC-04 near the FMB and Castor Creek confluence (the distal end of the FMB receiving the combined effluent from C Area (Figure 25). Tritium concentrations in the two (2) C Area water bodies discharging to the FMB (Twin Lakes and Castor Creek) are currently below the MCL and have been since 2008 and 2023, respectively (Figure 26).

The tritium groundwater plume is estimated to be currently discharging along an ~900m (3,000 ft) section of the FMB (A'-A) between seepline wells FMT-01 (26.3 pCi/mL, 4Q25), CSL002 (10.3 pCi/mL, 4Q25), and FMT-02 (12.5 pCi/mL, 4Q25). The tritium groundwater plume is also estimated to be currently discharging to Castor Creek along an ~90m (300 ft) section of Castor Creek (B'-B) between seepline wells CCSL-23R (107 pCi/mL, 4Q25) and CCSL-08 (24.0 pCi/mL) (Figure 2). The 2000-model predicted the mass flux of tritium into the FMB would be ~5 Ci/yr and ~10 Ci/yr into Castor Creek by 2026 (Figure 27), with a steady decline after 2010. Measured concentrations from FMB and Castor Creek are generally consistent with this prediction. The flow in the FMB is about 3-times greater than the flow in Castor Creek.

An unnamed tributary to Castor Creek discharges near the central portion of Castor Creek ~300m (1,000 ft) downstream from surface water station CC-06 (Figure 2). The discharge flow from the tributary is 10 percent of the flow in Castor Creek. Tritium concentrations at CCT-01 (near the discharge point to Castor Creek) have always exceeded the MCL (highest concentration of 736 pCi/mL in 2018). Since 2018, tritium concentrations have steadily declined to below the MCL along most of the ~150m (500ft) tributary but are still above the MCL at the discharge end with 119 pCi/mL at CCT-01 in 4Q25 (Figure 28).

TCE Contamination in Surface Waters

TCE concentrations in the FMB and Castor Creek have rarely exceeded the MCL (just above 5 µg/L). However, the concentrations in the Castor Creek tributary exceeded the MCL, as high as 53.6 µg/L at CCT-01 in 2012. Elevated TCE concentrations in the Castor Creek tributary became the focus of the NTC RA to reduce the concentrations in the tributary by installing the emulsified oil barrier with Dehalococcoides to reduce the concentration upgradient in the MAZ. Concentrations of TCE decreased in the tributary for the first three (3) years showing the effectiveness of the treatment wall but began rebounding as conditions deteriorated for the injected bacteria and the barriers were no longer as effective. The concentrations of TCE overall have decreased along the tributary but still remain above the MCL at CCT-01 (8.14 µg/L, 4Q25) (Figure 29). The 2000-model predicted the amount of TCE discharging from the CAGW-OU to the FMB in 2025 would be ~1.7 kilograms per year (kg/yr) and 3.5 kg/yr into Castor Creek (Figure 30). In 4Q25, there were no detectable TCE concentrations along the FMB seepline discharge transect (A'-A) (only surface water sample FM-TL, [0.55 J] which monitors the input from the upgradient CBRP OU), and three (3) estimated concentrations of TCE along Castor Creek (CC 05, 0.98 J, CC 07, 0.48 J, and CC 08, 0.82 J). These sample concentrations generally support model predictions.

PFAS Contamination in Surface Waters

Concentrations of PFAS were detected near surface water station CC-06 in Castor Creek during the field study conducted in 2022 (PFOS and PFOA, 22.95 ppt and 6.63 ppt, respectively). As a result, in 4Q24, three (3) surface water stations were sampled for PFAS (CC-01, CC-02, and CC-06), expanding to include CC-04, CC-03, and CCT-01 in 2Q25, and CCT-02 and CCT-03 in 4Q25. As expected, PFOS and PFOA were detected in surface water locations downgradient from CC-06 (Figure 24). Detectable concentrations in the Castor

Creek tributary samples indicate that PFAS contamination is discharging from the CAGW OU groundwater. Detectable concentrations at surface water station CC-03 (FMB) indicate PFAS is discharging from the CAGW-OU groundwater or possibly from upgradient sources (i.e., H-Area, E-Area, or F-Area) discharging to the FMB. In 2Q26, three (3) additional surface water locations (upgradient of the CC-03 station) were sampled to determine the extent of PFAS detections in the FMB. Surface water sample station CC-06 is upgradient from the Castor Creek seepline discharge points and the unnamed Castor Creek tributary which indicates that either a PFAS plume farther to the east of the known VOC/tritium plume is discharging upgradient into Castor Creek, or that historical surface water discharge and sediments upgradient of CC-06 (possibly the C Area Discharge Canal) are the source(s).

Surface Water Subunit			
Problem(s) Warranting Action	**Remedial Action Objectives**	**Scope of Problem(s)**	**Likely Response Actions**
• Surface water in the unnamed Castor Creek tributary contains tritium and TCE levels that exceed the MCL.	• Reduce TCE and tritium surface water concentrations in the unnamed Castor Creek tributary below the MCLs. • Prevent human exposure to surface water contaminated with tritium and TCE above MCLs.	• The CAGW OU tritium and TCE plume continues to discharge TCE and tritium to the FMB, Castor Creek, and Castor Creek tributary.	• No Action • Monitored Natural Attenuation with LUCs. • Phytoremediation (evapotranspiration). • Anaerobic biodegradation or chemical oxidation at distal end of TCE plume to prevent MCL exceedance in surface water.
• Detectable concentrations of PFAS are present in the FMB, Castor Creek, and the unnamed Castor Creek tributary.	• Reduce PFAS surface water concentrations in in the FMB, Castor Creek and the unnamed Castor Creek tributary below the MCLs. • Prevent human exposure to surface water contaminated with PFAS above MCLs.	• The CAGW OU is discharging PFAS to Castor Creek, the unnamed Castor Creek tributary, and possibly, the FMB. There is an upgradient PFAS source to the Castor Creek sample station CC-06 location.	• No action. • PFAS remediation of surface waters with treatment system to remove PFAS. • Excavation of potentially contaminated stream bed sediments and offsite treatment/disposal
Uncertainties			
• It is uncertain that tritium concentrations in the Castor Creek tributary will decrease at a substantial rate. This uncertainty will be managed by continued collection of empirical data and updating the groundwater flow and transport model with groundwater and surface water monitoring data from the past 25 years. This will help improve model-estimated plume concentrations and support remedial action. • It is uncertain whether TCE will continue to exceed the MCL in the Castor Creek tributary. This uncertainty will be managed by continued collection of empirical data and updating the groundwater flow and transport model with groundwater and surface water monitoring data from the past 25 years. This will help improve model-estimated TCE plume concentrations. The predicted concentrations will aid in the development of a RSER/EE/CA to evaluate removal alternatives to address TCE discharges to the Castor Creek tributary followed by monitoring and reporting. • The full impact of PFAS contamination in groundwater to surface water is uncertain. This uncertainty will be managed by expanding the number of PFAS sampling to all surface stations in the FMB and expanding surface water sampling upstream from CC-06 to determine extent of PFAS contamination in the Castor Creek and the C Area Discharge Canal.			

5.0 OPERABLE UNIT STRATEGY

The Project Team proposes the following for the CAGW OU:

- Develop an SAP for PFAS (soil, surface water, and groundwater) executed in two (2) phases. Submittal of the Second Sampling and Analysis Plan Addendum for C-Area Groundwater Revision 0 in FY26.
- Develop plan for the updating of the CAGW OU Groundwater Flow and Transport Model with incorporation of recent potentiometric and contaminant data.
- Recommend submitting the most recent data (4Q25 and 2Q26) with the SAP submittal in FY26 in lieu of the FY26 Annual Groundwater Report.
- Consider development of appropriate administrative path for soils data evaluation (outside of CAGW OU).
- Revise the current FFA Implementation Schedule to include additional PFAS investigations:

Activity	Date	Current FFA Milestone Date	Proposed FFA Milestone Date	Comment
Submit SAP Rev 0	Sept. 14, 2026	NA	NA	
Implement SAP	May 2027- June 2028	NA	NA	
Update GW Model	Apr 2028 – Feb 2029	NA	NA	
Submit SRS Rev. 0 RFI/RI/BRA*		NA	**Feb 7, 2030**	
SRS Submit Rev. 0 CMS/FS		Apr 20, 2028	**Aug 1, 2031**	
Submit SRS Rev. 0 Statement of Basis/Proposed Plan		Dec 2, 2028	**Apr 5, 2032**	
Submit SRS Rev. 0 Record of Decision (ROD)		Jul 19, 2029	**Sept 16, 2032**	
Submit SRS Rev. 0 CMIP/RAIP		Aug 9, 2030	**Feb 21, 2033**	
Submit SRS Rev. 0 LUCIP		Aug 9, 2030	**Feb 21, 2033**	
Issue ROD		Apr 8, 2030	**Jun 30, 2033**	
Remedial Action (RA) Start		Jul 18, 2031	**Sept 28, 2034**	

*Title of Document: Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation (RFI/RI) and Baseline Risk Assessment (BRA) Report for C-Area Groundwater Operable Unit Rev. 0 Document.

Normally, for a groundwater operable unit, the RFI/RI does not include a BRA, since there is no surface exposure risk. However, due to the PFAS contamination present at the surface (and vadose zone) that is impacting the groundwater, the project team is proposing to include a BRA specific to the PFAS soil contamination within the CAGW primary documents instead of revising the existing C-Area OU combined document [RCRA Facility Investigation / Remedial Investigation (RFI/RI) Report with Baseline Risk Assessment (BRA) and Focused Corrective Measures Study / Feasibility Study (CMS/FS) for the C-Area Operable Unit (U), SRNS-RP-2013-00456, Rev. 1, May 2014].

Table 1. Record of Key Agreements[1]

RECORD OF KEY AGREEMENTS	
Date	**Description of Agreement**
3/16/05	Core Team agreed that lead is no longer a refined constituent of concern.
7/28/11	Core Team agreed that an additional well should be installed to monitor potential tritium source at location CRTA-003.
5/14/14	Core Team agreed that TPH groundwater contamination associated with the Fuel Unloading Facilities Power (108-3C) would be addressed as part of the CAGW OU.
12/20/16	Core Team agreed to address the six TPH sub-groups by using surrogate constituents from the existing target compound list for organics, since analytical methods for the six TPH categories have not been explicitly developed. The individual RSLs for the surrogate constituents will be used for risk screening when available.
12/20/16	Core Team agreed to document the additional characterization activities in a Sampling and Analysis Plan.
7/18/17	Core Team agreed to implement scope of Sampling and Analysis Plan as proposed.
7/18/17	Core Team agreed that characterization for 108-3C petroleum release potential to groundwater is complete.
	Core Team agreed to the objectives and scope of the proposed removal action for TCE discharges to the unnamed tributary to Castor Creek.
	Core Team agreed that a Removal Action Design Plan (contents will follow CMI/RAIP template with similar level of detail) was needed.
	Core Team agreed to suspend the submittal of the CAGW groundwater monitoring report until the results from monitoring effectiveness of the removal action are ready to be incorporated. Monitoring will continue during this timeframe, and any unexpected results will be reported to the Core Team.
6/16/2026	Core Team agreed to document additional PFAS characterization in Second Addendum to the Sampling and Analysis Plan.
6/16/2026	Core Team agreed to suspend CAGW groundwater monitoring report until PFAS characterization completed. Annual monitoring will continue during this timeframe, and data will be provided in subsequent FFA documentation (phase dependent).
6/16/2026	Core Team agreed to extend FFA current implementation schedule to accommodate additional PFAS characterization.
6/16/2026	Core Team agrees to address PFAS contamination in the surface and subsurface soils (vadose zone) as part of the CAGW OU in lieu of C-Area Operable Unit (CAOU).

[1] Core Team agreements are documented at each scoping phase and are retained to maintain a comprehensive list for the life of the project.

Table 2. Key Changes to Scoping Summary[2]

KEY CHANGES TO SCOPING SUMMARY			
Date	**Section**	**Description of Change**	**Rationale for Change**
6/2026	All	Updated to reflect status of the project including sampling activities, reports and 2024-2026 TCE, tritium, and PFAS data.	2017 Scoping Summary was updated to reflect current status of data and reporting.
6/2026	4.1, 4.2, 4.3	Added PFAS problem warranting action and the uncertainties associated with PFAS contamination problem.	2024-2026 data identified detectable PFAS concentrations in soils, groundwater, and surface water samples.

[2] Significant changes from the previous scoping summary are identified is this table. The Key Changes table is not a comprehensive list, but rather, is populated each time the previous scoping summary is updated.

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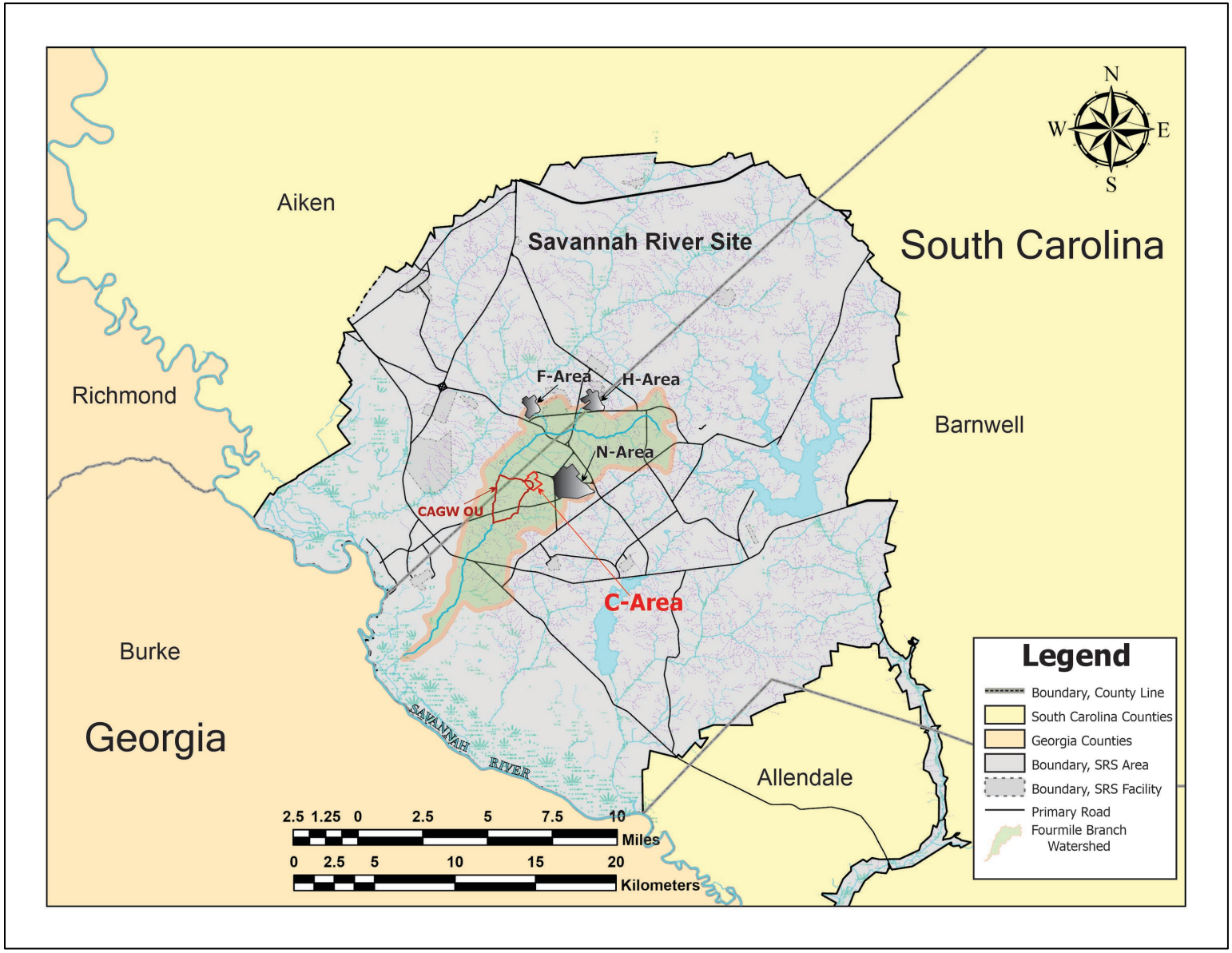


Figure 1. Savannah River Site Location Map

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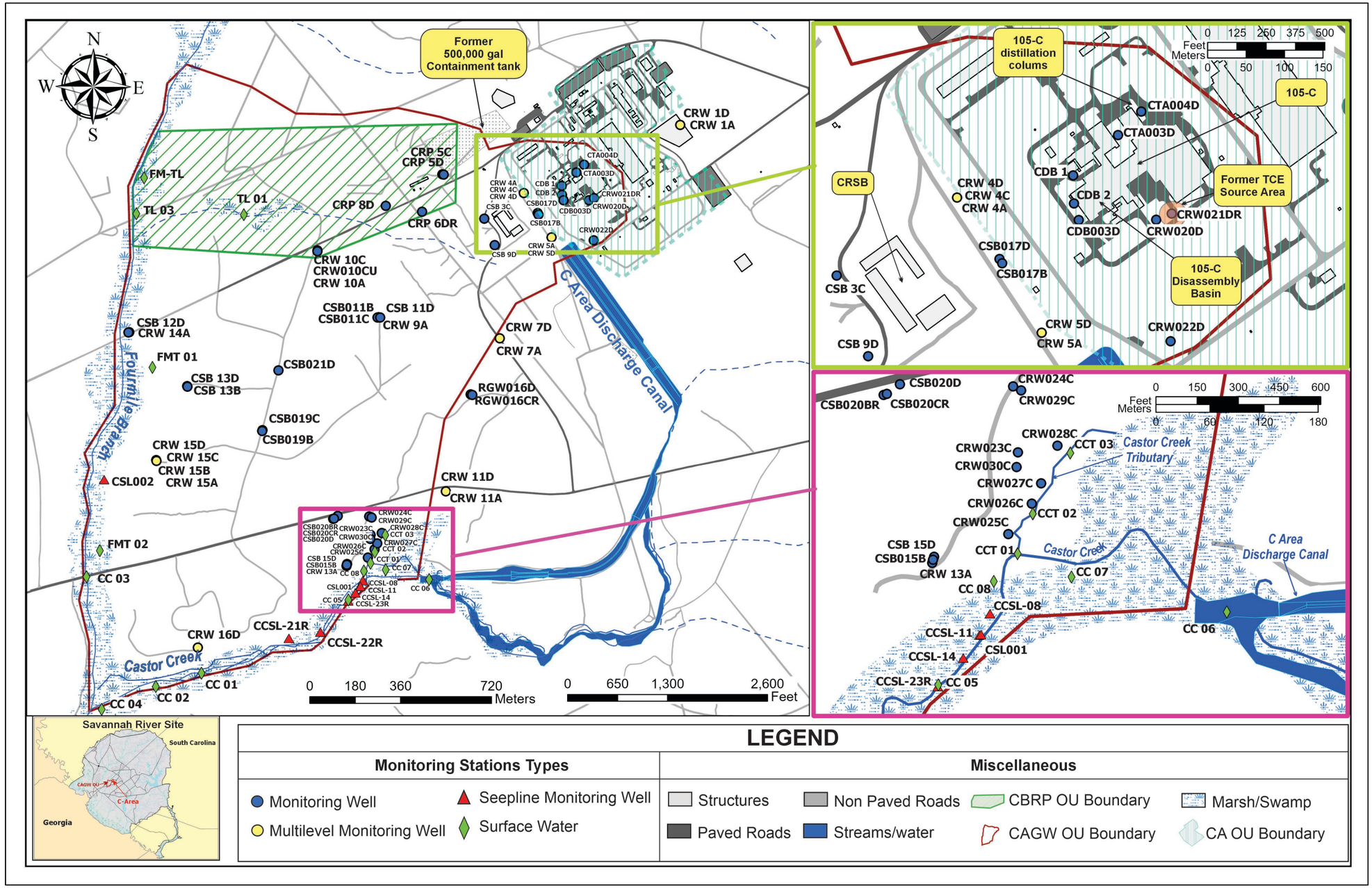


Figure 2. Location of CAGW OU Boundary and Current Monitoring Network

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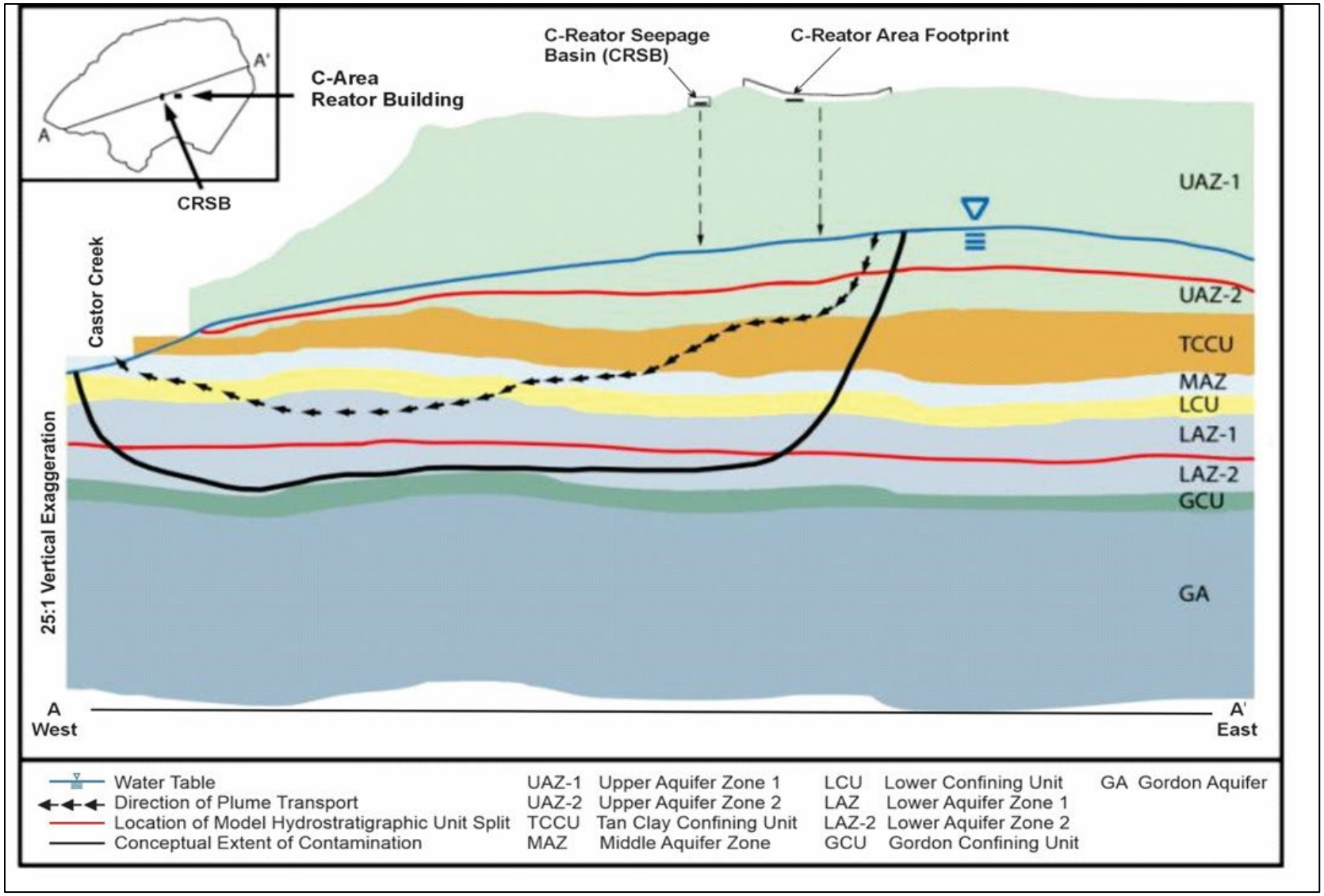


Figure 3. Hydrological Conceptual Model of CAGW OU

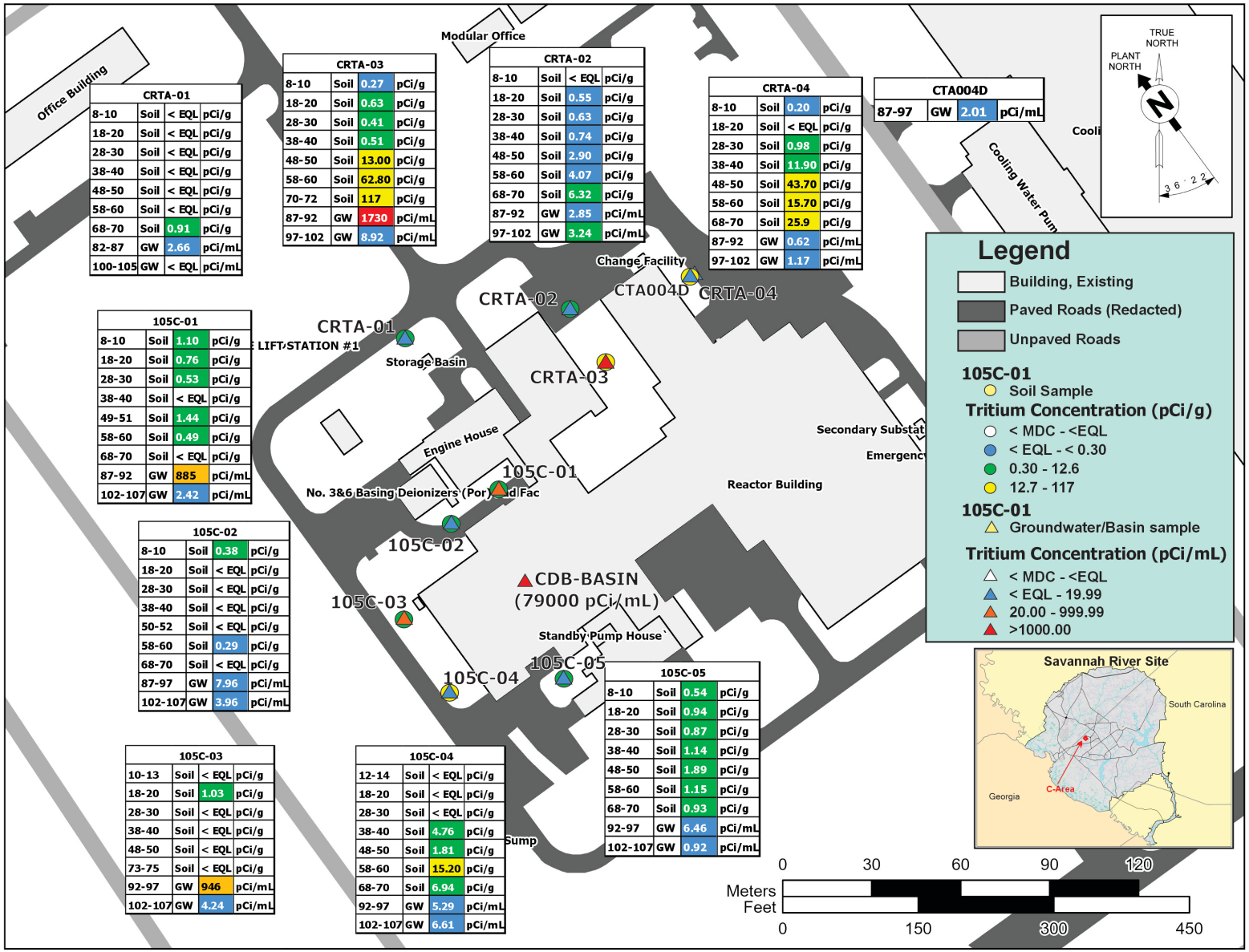


Figure 4. 2011 Vadose Zone Concentrations in Tritium Anomaly Area and near C-Reactor Disassembly Basin

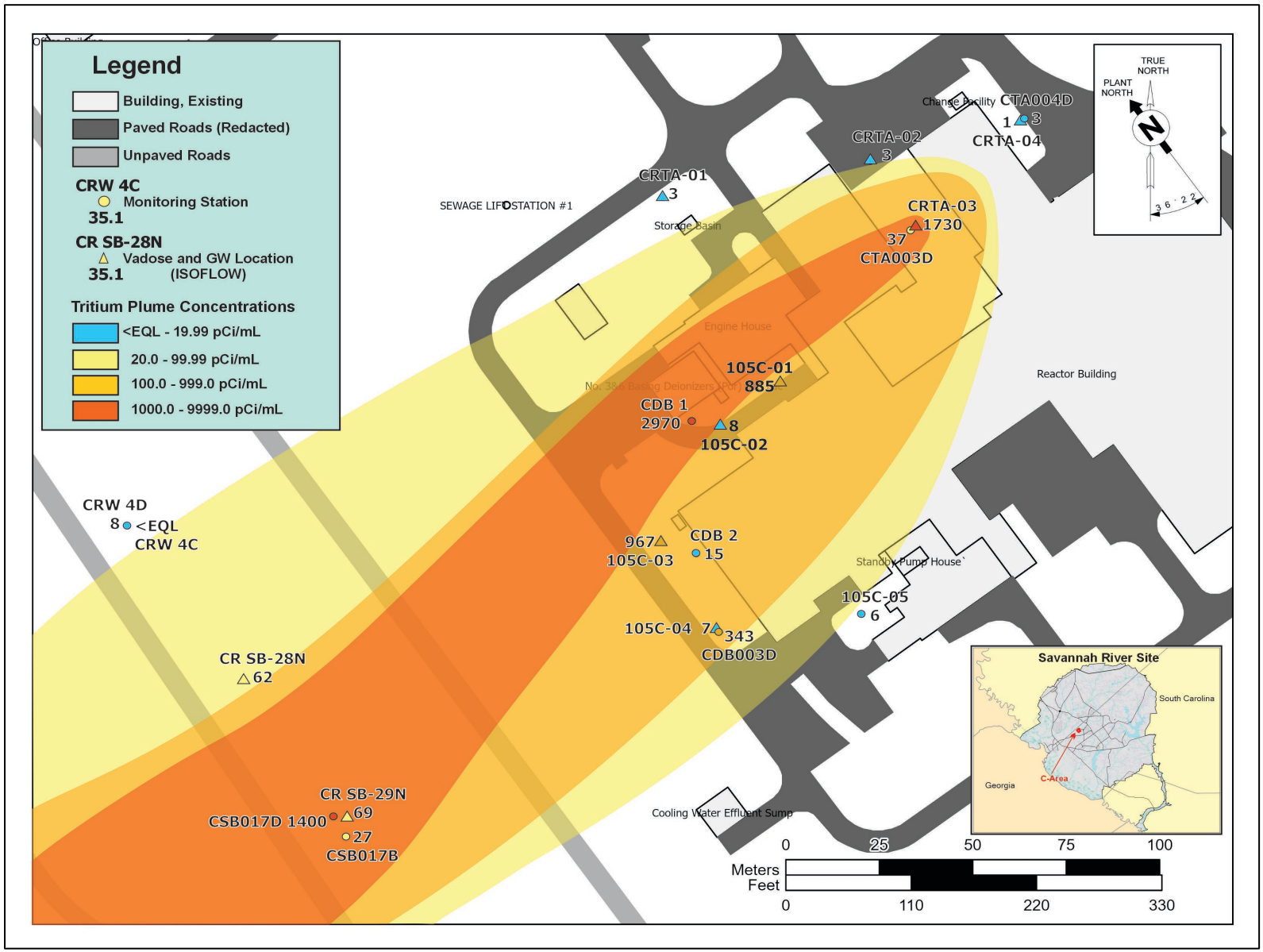


Figure 5. Groundwater Data in Tritium Anomaly Area (2011)

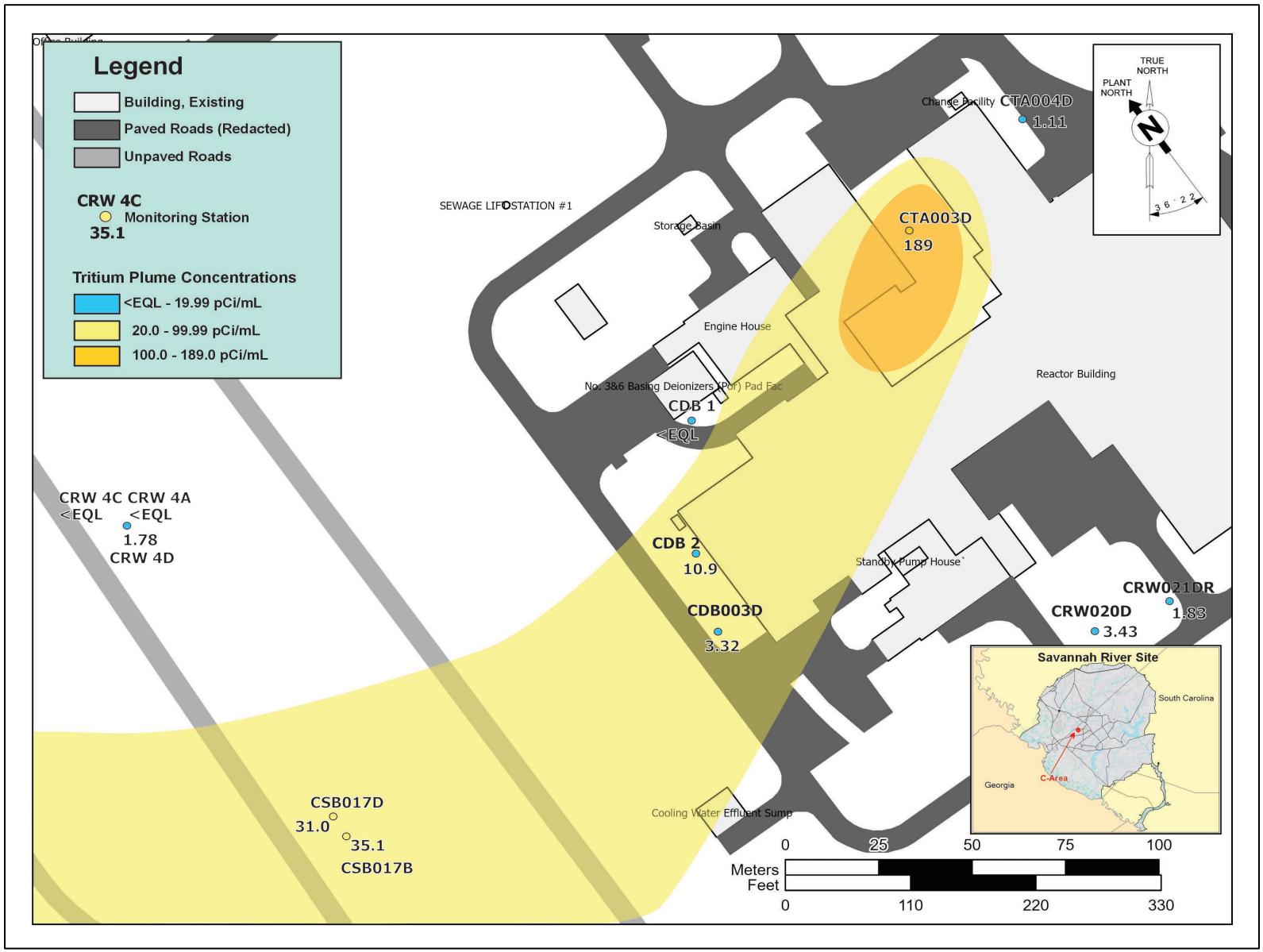


Figure 6. Groundwater Data in Tritium Anomaly Area (2025)

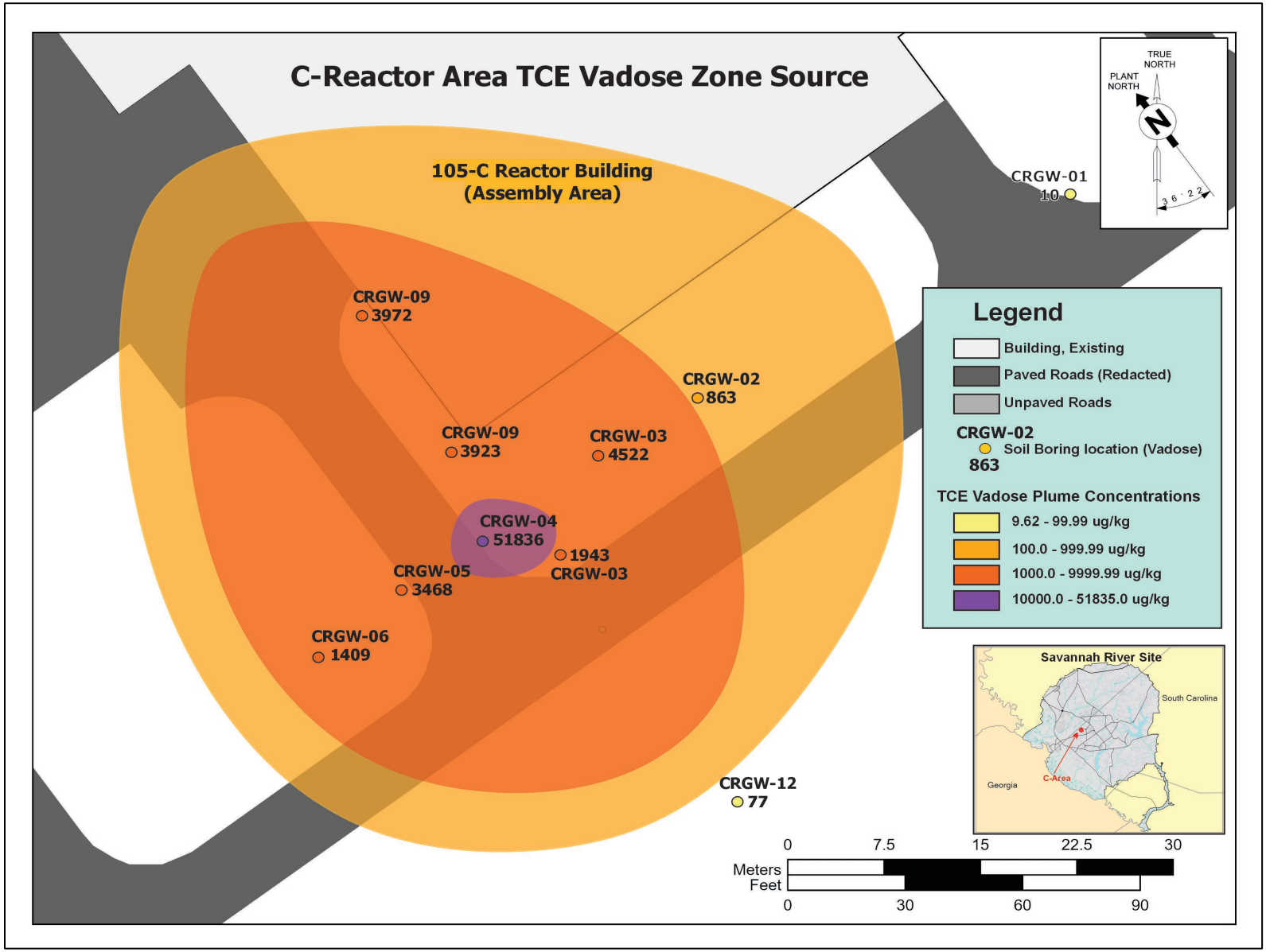


Figure 7. TCE in the Vadose Zone Subunit, Pre-ERH (2002)

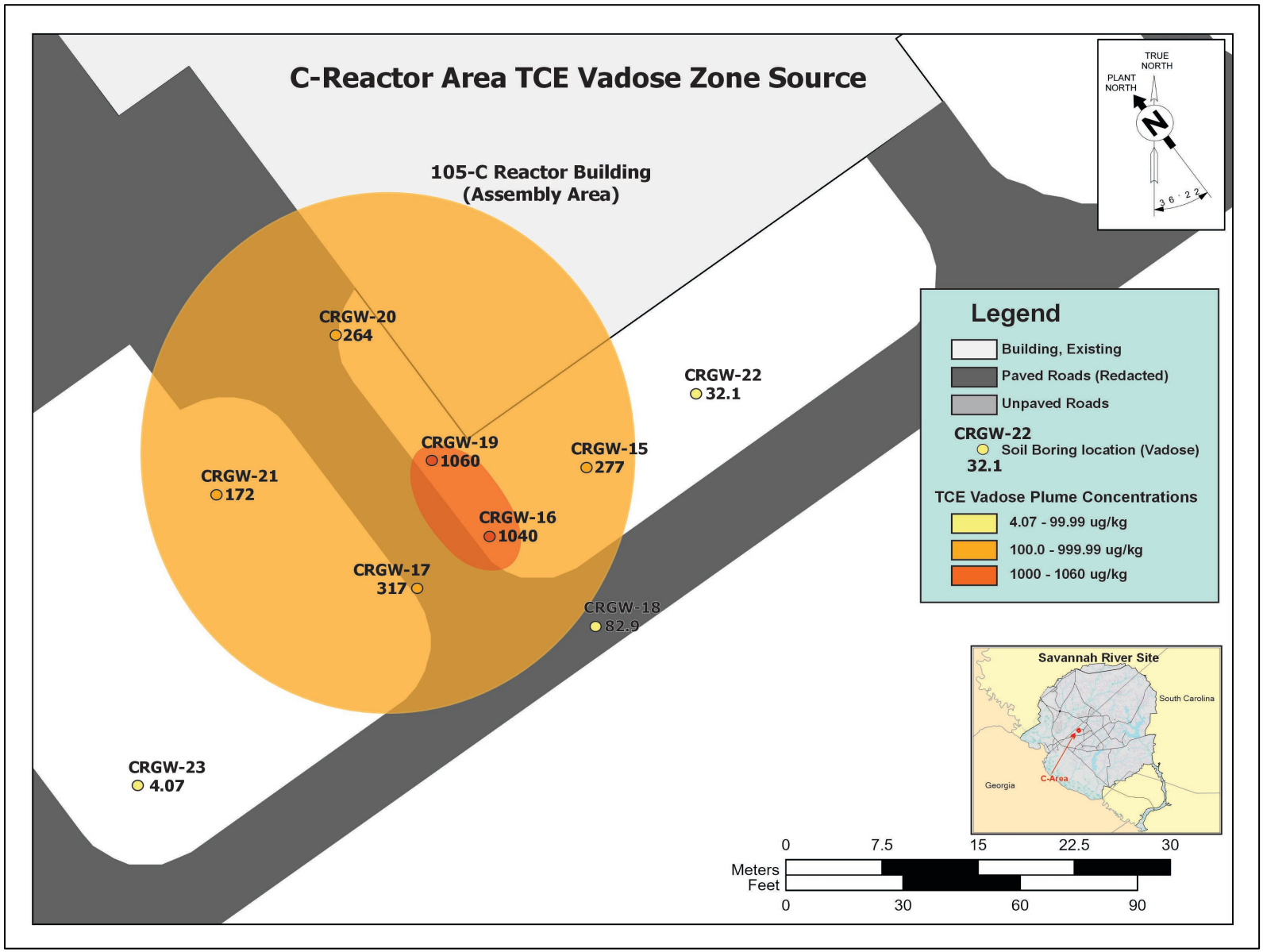


Figure 8. TCE in the Vadose Zone Subunit, Post-ERH (2011)

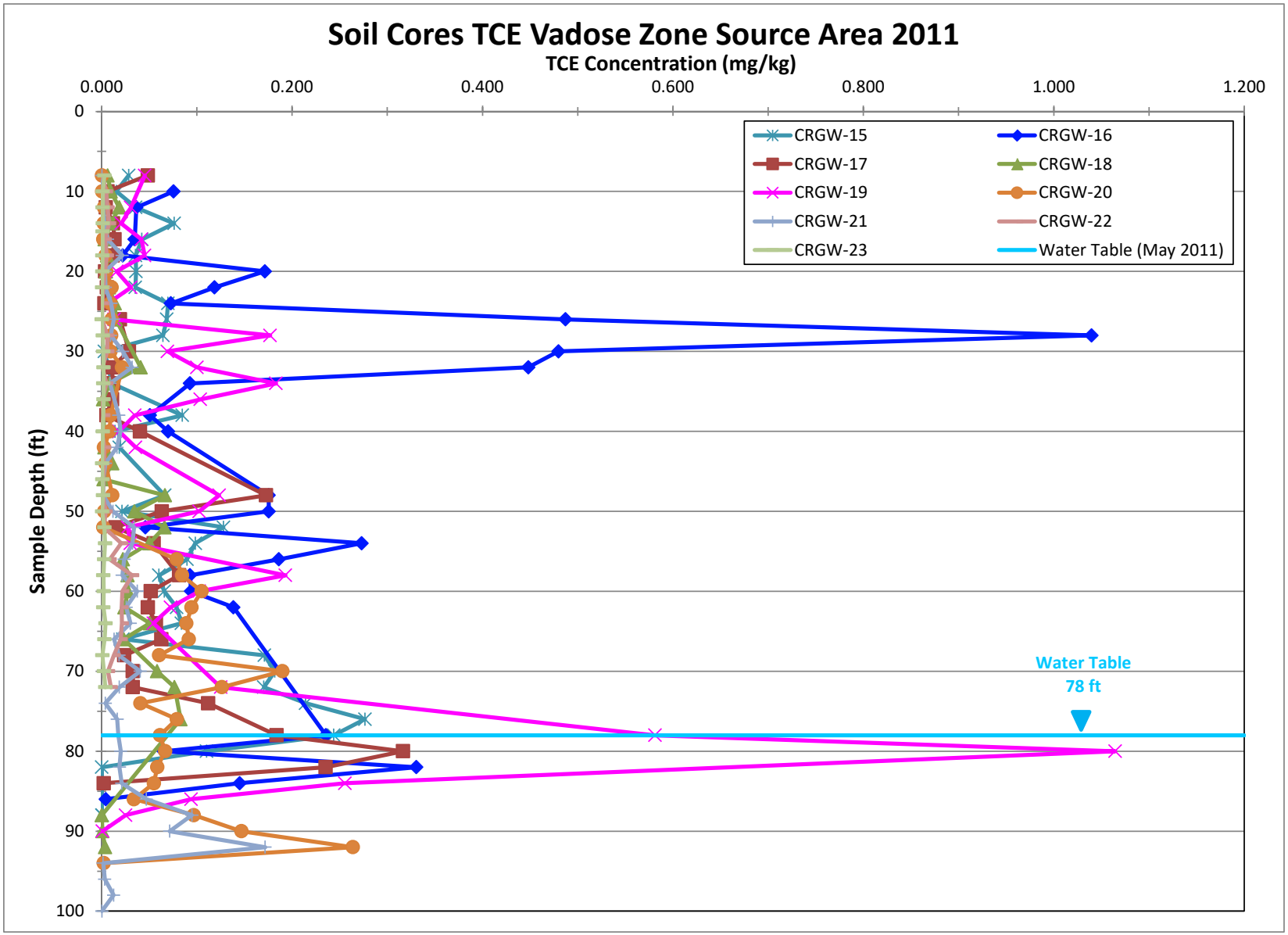


Figure 9. Soil Concentrations Verses Depth for Soil Borings in Vicinity of ERH Array (2011)

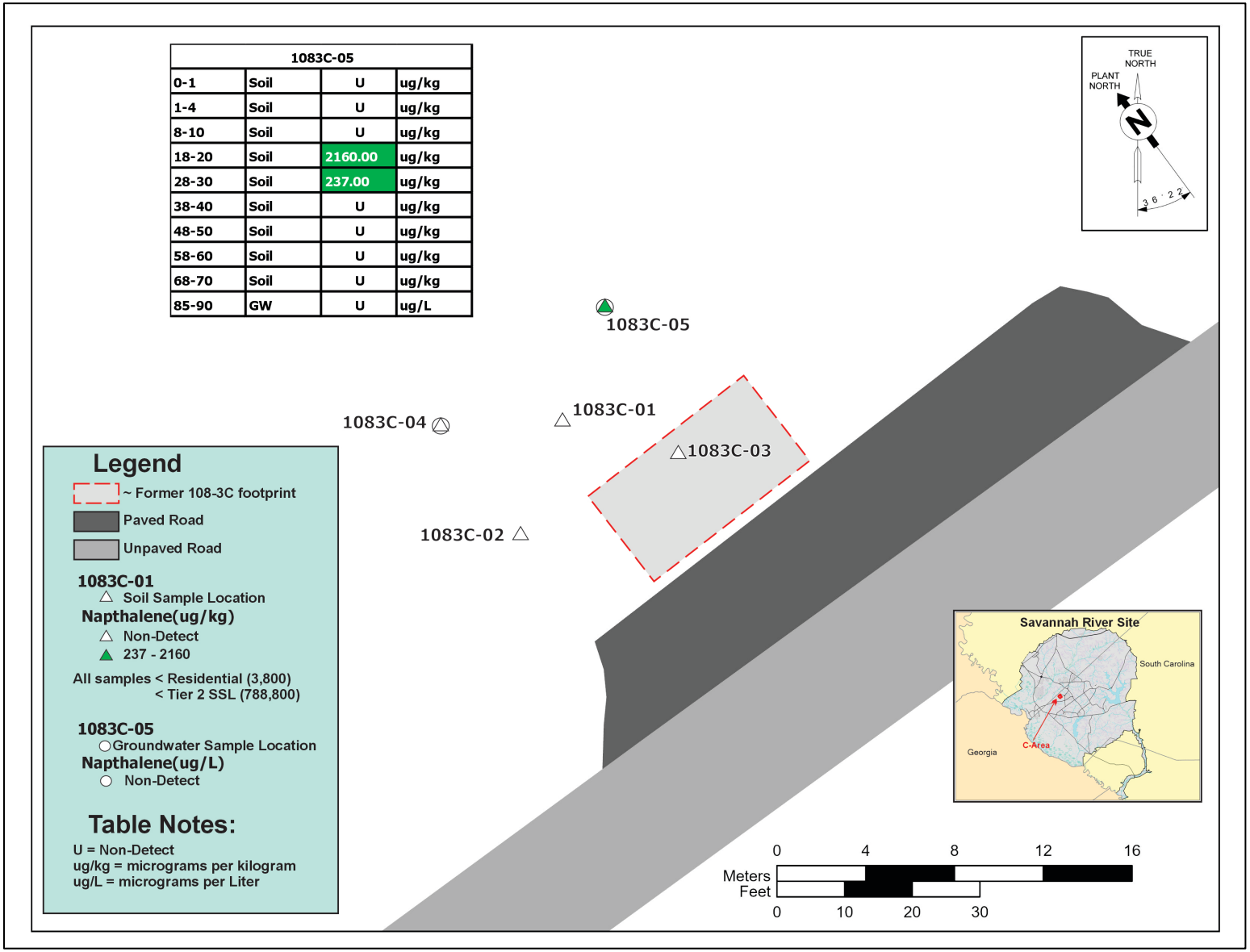


Figure 10. Fuel Unloading Facilities Power (108-3C) Naphthalene (2011)

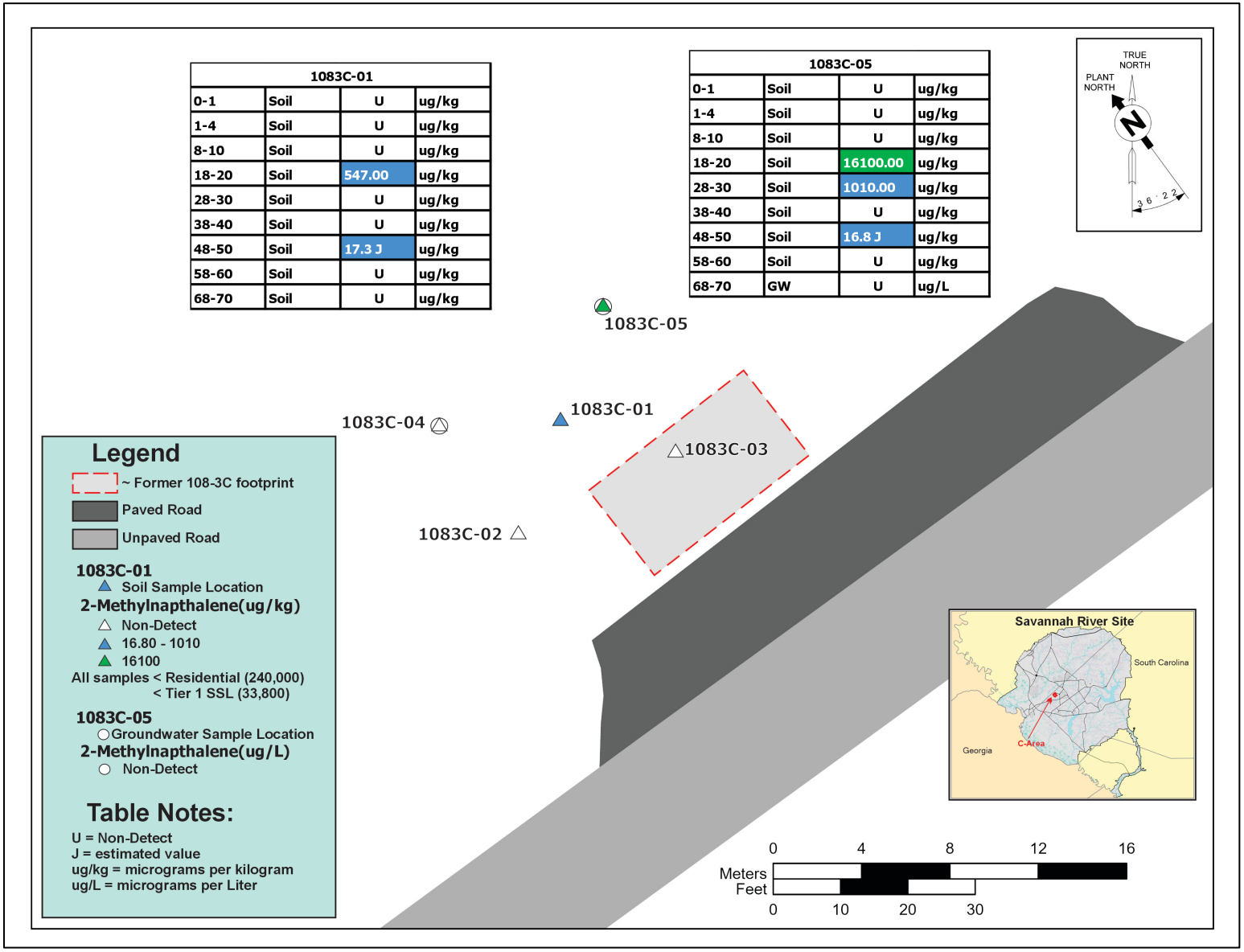


Figure 11. Fuel Unloading Facilities Power (108-3C) 2-Methylnaphthalene (2011)

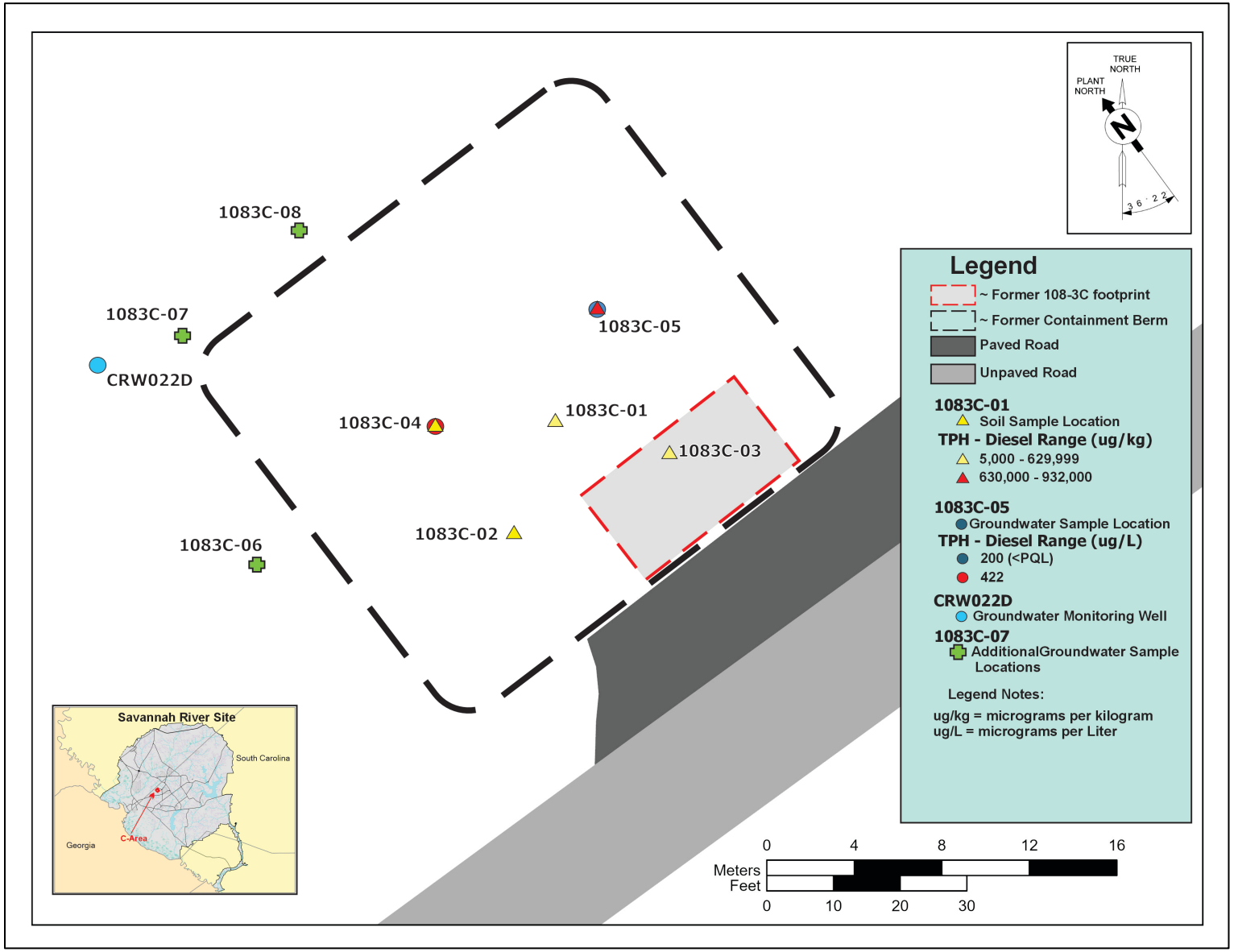
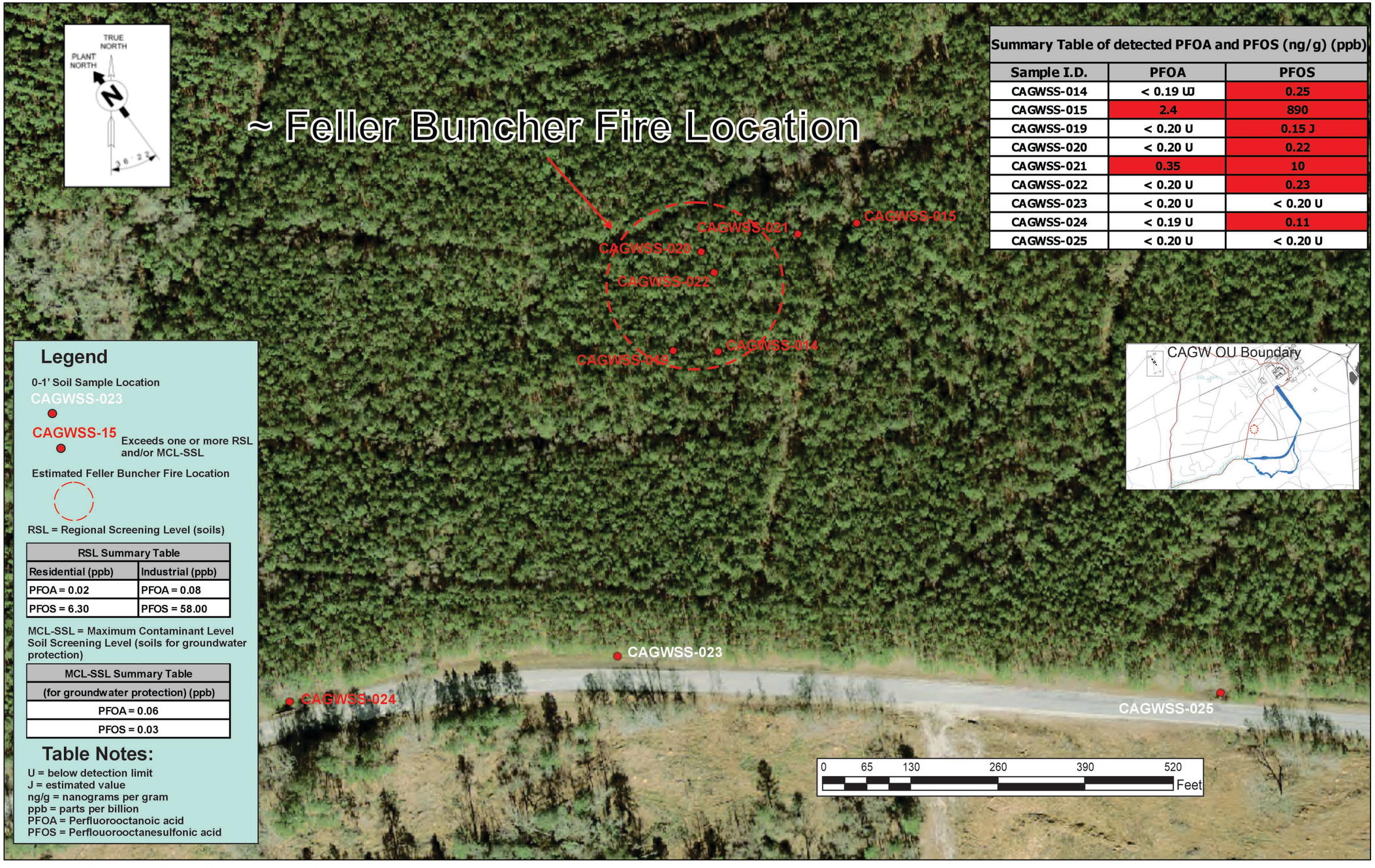


Figure 12. Fuel Unloading Facilities Power (108-3C) TPH and Proposed Sample Locations



Summary Table of detected PFOA and PFOS (ng/g) (ppb)		
Sample I.D.	PFOA	PFOS
CAGWSS-014	< 0.19 UJ	0.25
CAGWSS-015	2.4	890
CAGWSS-019	< 0.20 U	0.15 J
CAGWSS-020	< 0.20 U	0.22
CAGWSS-021	0.35	10
CAGWSS-022	< 0.20 U	0.23
CAGWSS-023	< 0.20 U	< 0.20 U
CAGWSS-024	< 0.19 U	0.11
CAGWSS-025	< 0.20 U	< 0.20 U

Legend

0-1' Soil Sample Location
CAGWSS-023

CAGWSS-15 Exceeds one or more RSL and/or MCL-SSL

Estimated Feller Buncher Fire Location

RSL = Regional Screening Level (soils)

RSL Summary Table	
Residential (ppb)	Industrial (ppb)
PFOA = 0.02	PFOA = 0.08
PFOS = 6.30	PFOS = 58.00

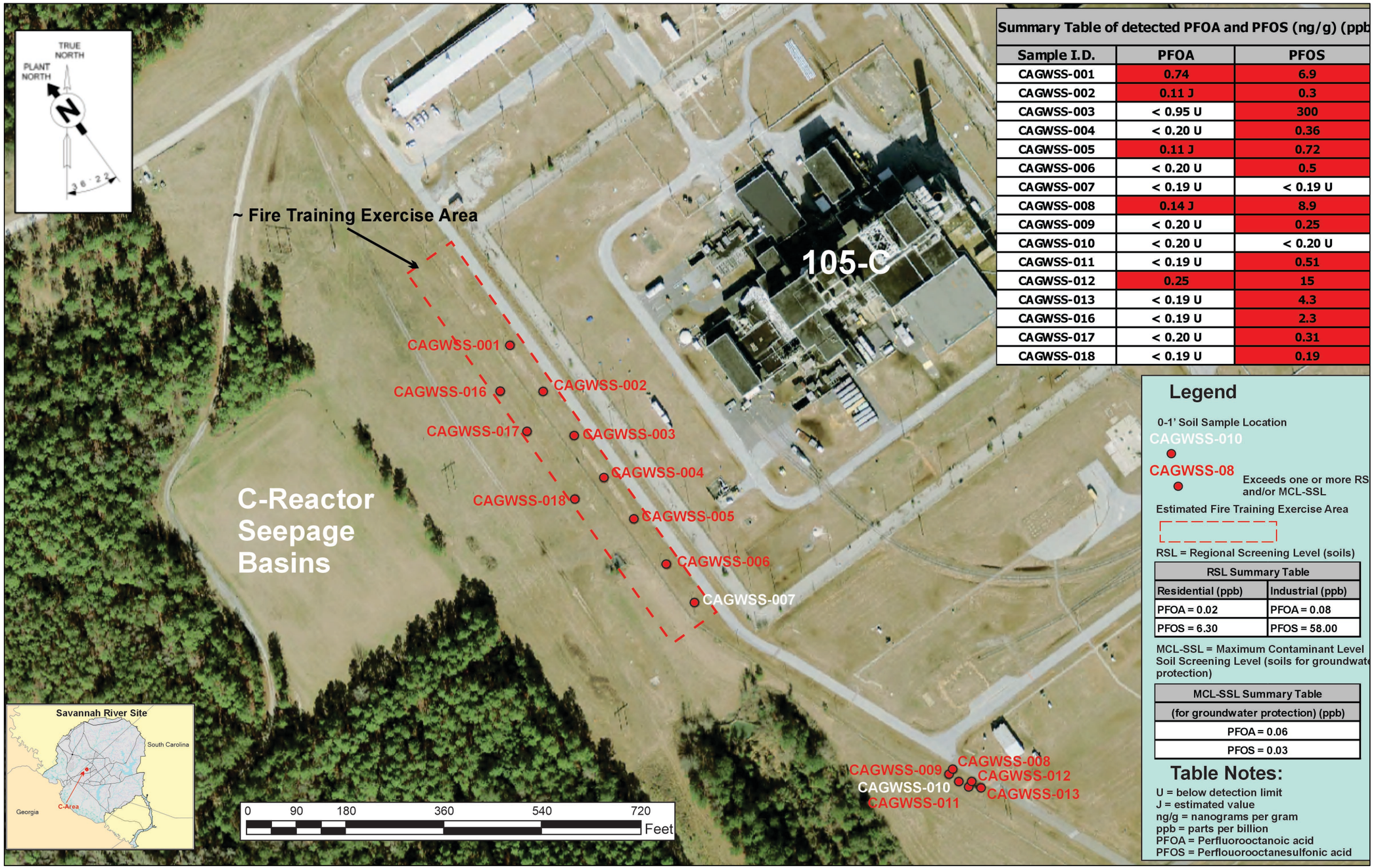
MCL-SSL = Maximum Contaminant Level Soil Screening Level (soils for groundwater protection)

MCL-SSL Summary Table
(for groundwater protection) (ppb)
PFOA = 0.06
PFOS = 0.03

Table Notes:

U = below detection limit
J = estimated value
ng/g = nanograms per gram
ppb = parts per billion
PFOA = Perfluorooctanoic acid
PFOS = Perflouorooctanesulfonic acid

Figure 13. Feller Buncher Fire Soil Sample Locations



Summary Table of detected PFOA and PFOS (ng/g) (ppb

Sample I.D.	PFOA	PFOS
CAGWSS-001	0.74	6.9
CAGWSS-002	0.11 J	0.3
CAGWSS-003	< 0.95 U	300
CAGWSS-004	< 0.20 U	0.36
CAGWSS-005	0.11 J	0.72
CAGWSS-006	< 0.20 U	0.5
CAGWSS-007	< 0.19 U	< 0.19 U
CAGWSS-008	0.14 J	8.9
CAGWSS-009	< 0.20 U	0.25
CAGWSS-010	< 0.20 U	< 0.20 U
CAGWSS-011	< 0.19 U	0.51
CAGWSS-012	0.25	15
CAGWSS-013	< 0.19 U	4.3
CAGWSS-016	< 0.19 U	2.3
CAGWSS-017	< 0.20 U	0.31
CAGWSS-018	< 0.19 U	0.19

Legend

0-1' Soil Sample Location

CAGWSS-010

CAGWSS-08 — Exceeds one or more RS and/or MCL-SSL

Estimated Fire Training Exercise Area

RSL = Regional Screening Level (soils)

RSL Summary Table	
Residential (ppb)	Industrial (ppb)
PFOA = 0.02	PFOA = 0.08
PFOS = 6.30	PFOS = 58.00

MCL-SSL = Maximum Contaminant Level Soil Screening Level (soils for groundwate protection)

MCL-SSL Summary Table
(for groundwater protection) (ppb)
PFOA = 0.06
PFOS = 0.03

Table Notes:

U = below detection limit
J = estimated value
ng/g = nanograms per gram
ppb = parts per billion
PFOA = Perfluorooctanoic acid
PFOS = Perflouorooctanesulfonic acid

Figure 14. Fire Training Exercise Area Soil Sample Locations

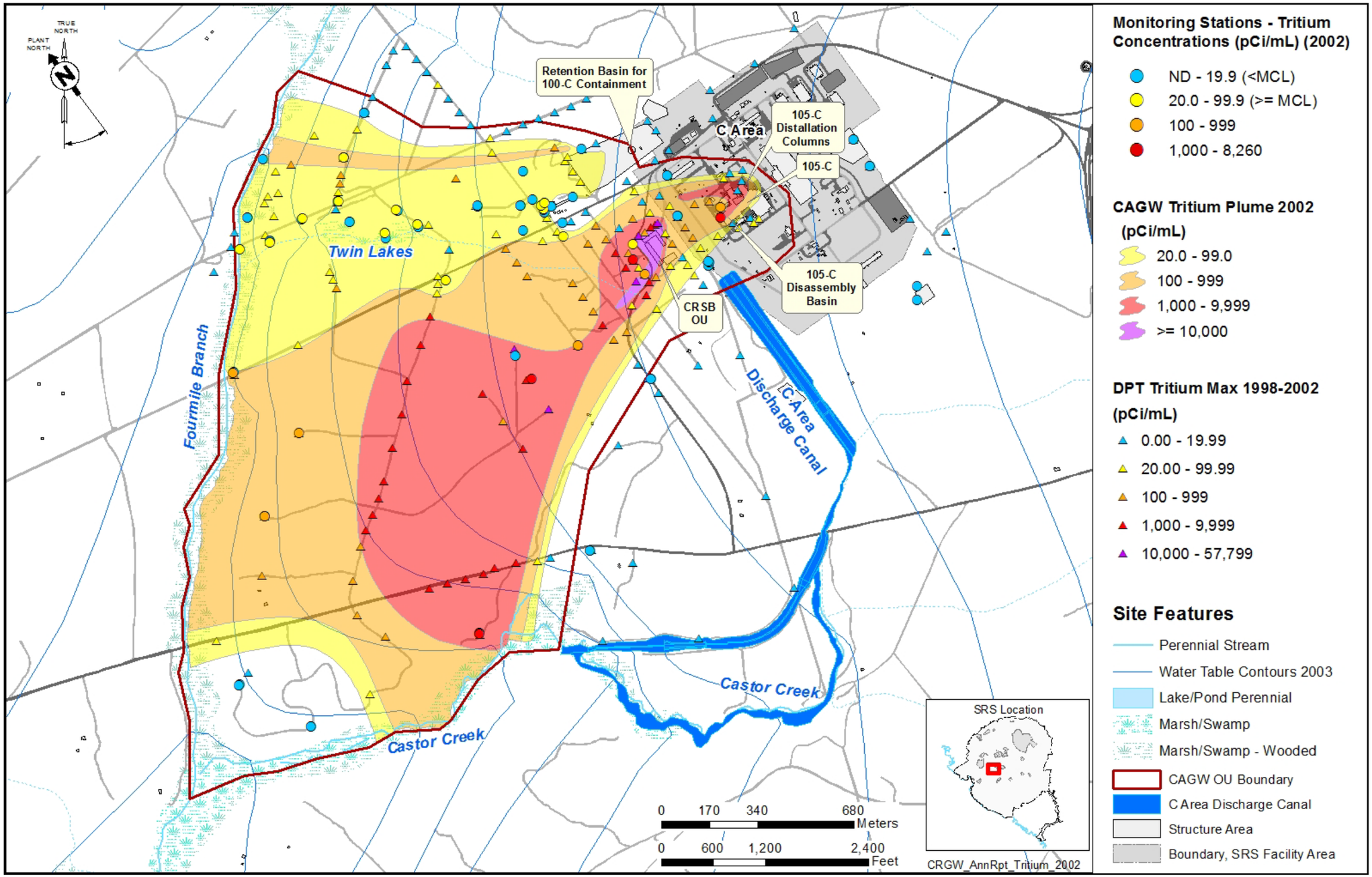


Figure 15. CAGW OU Tritium Plume, 1998 to 2002

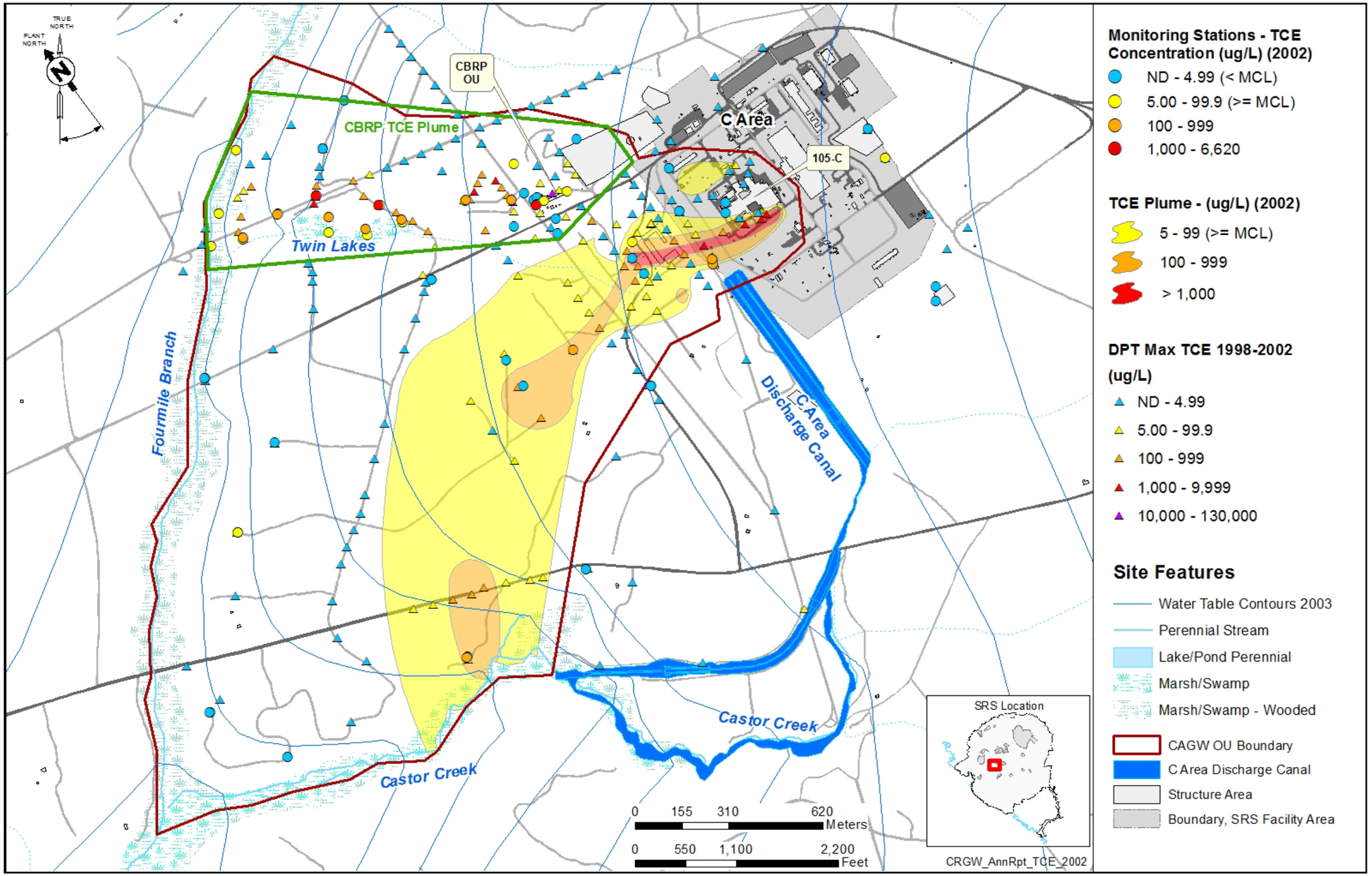


Figure 16. CAGW OU TCE Plume, 1998 to 2002

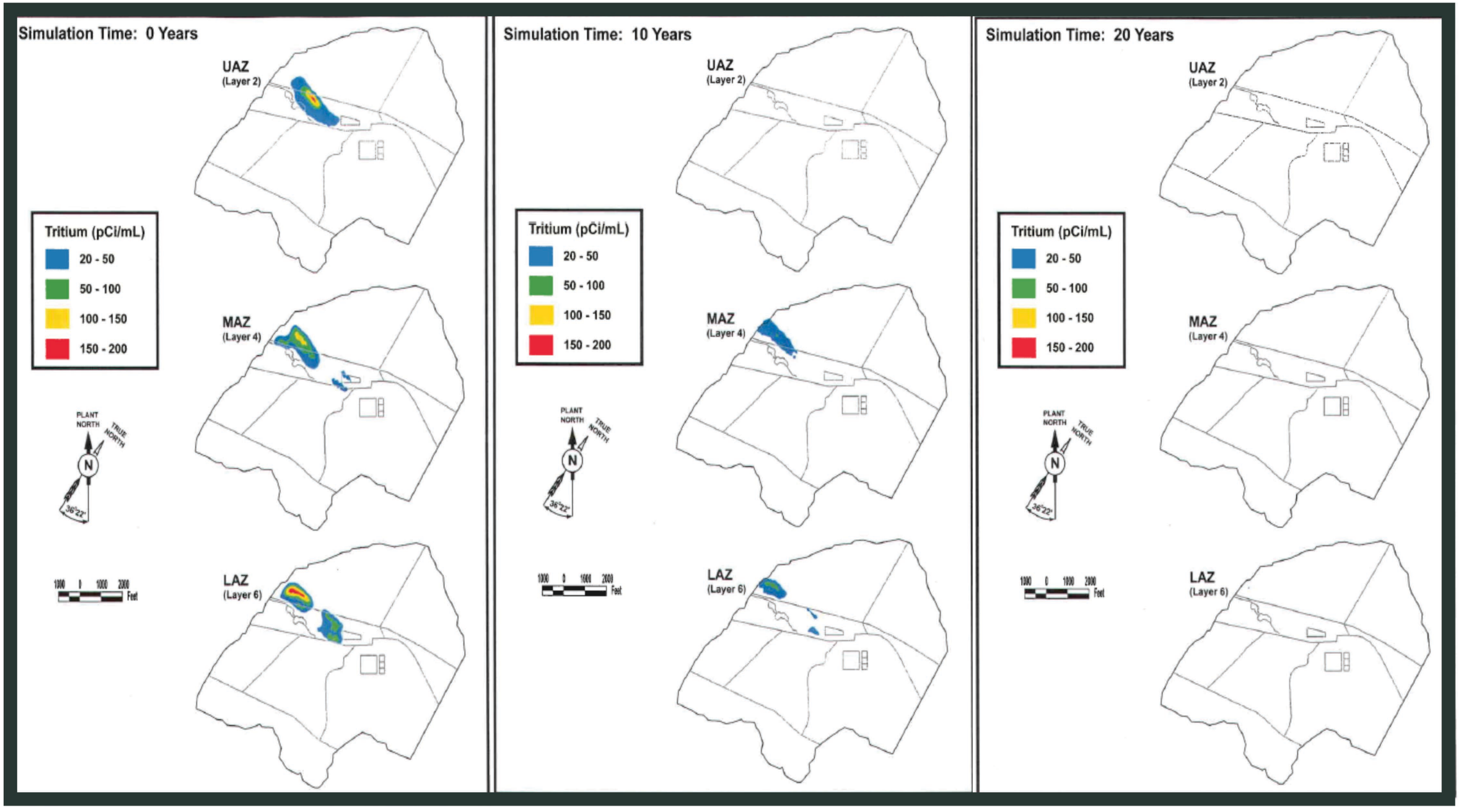


Figure 17. Northern Tritium Plume Simulation (WSRC-RP-2003-4129, Revision 0, September 2003)

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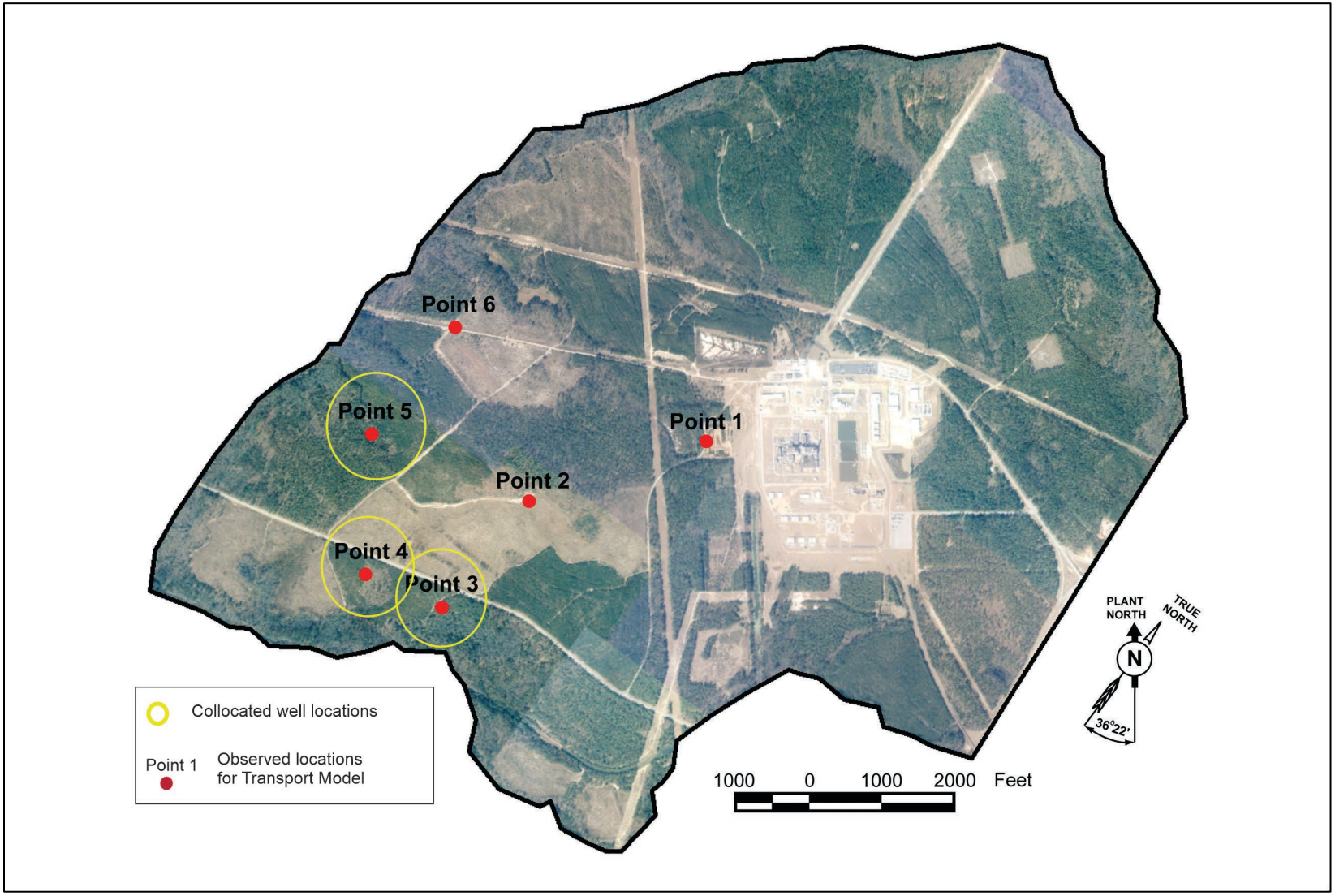
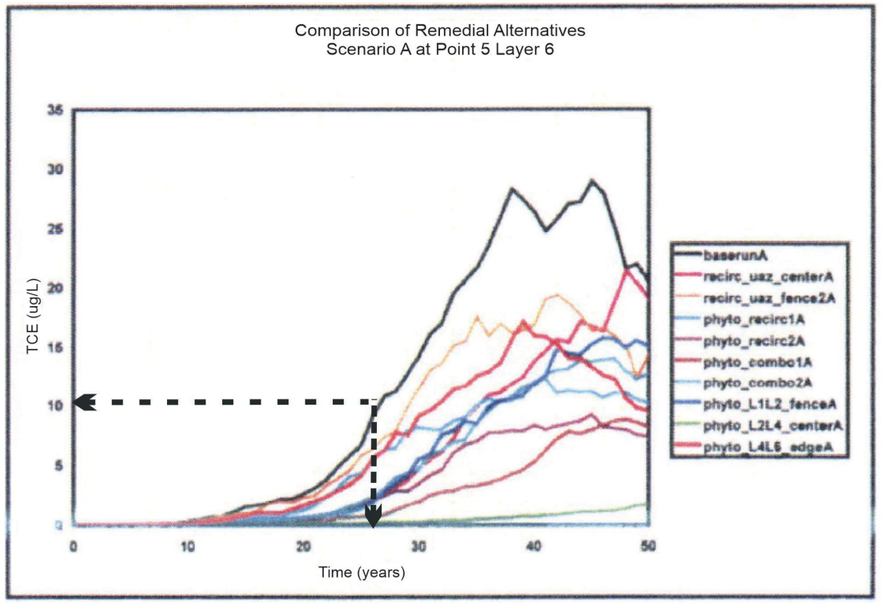
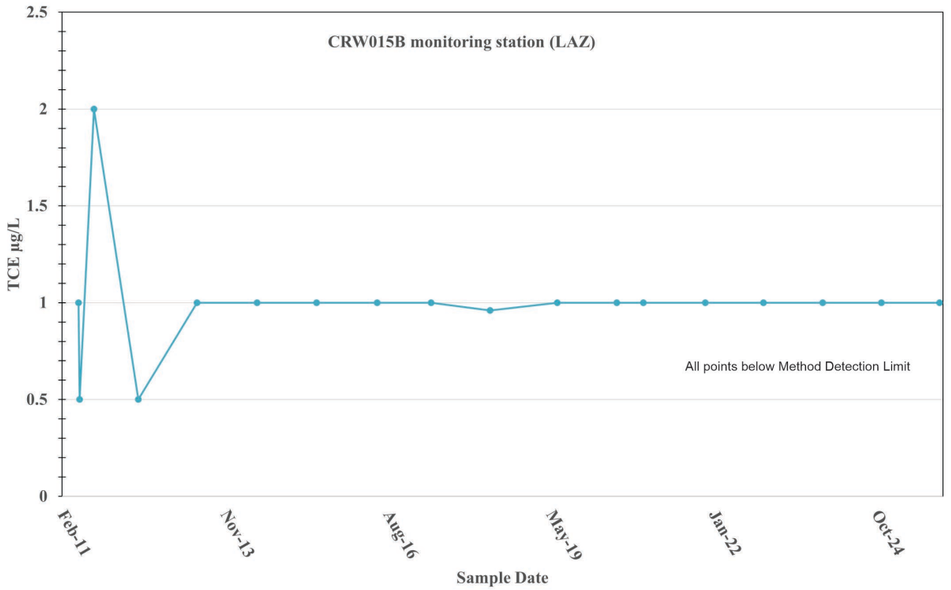
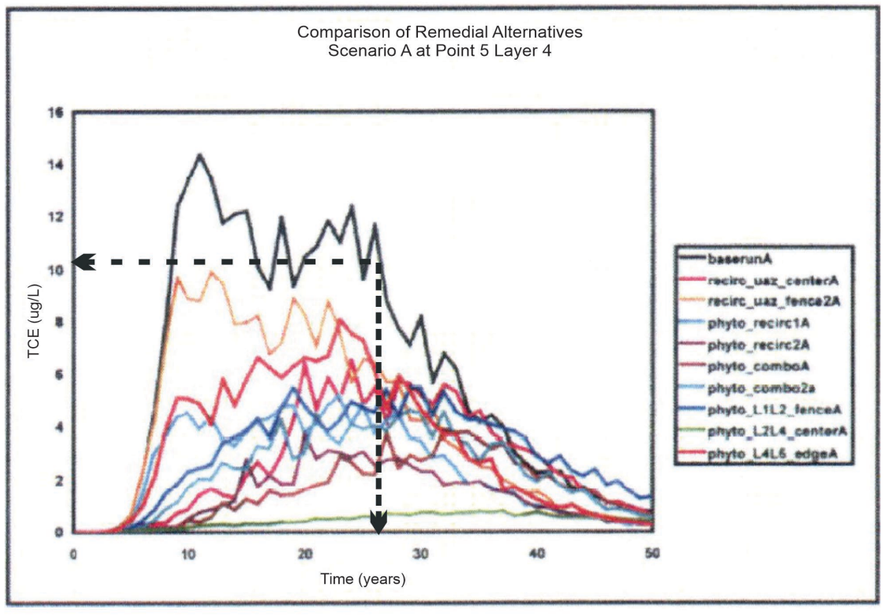


Figure 18. Observation Locations for Calibrated Transport Model (WSRC-TR-2001-00206, Revision 0, June 2001)

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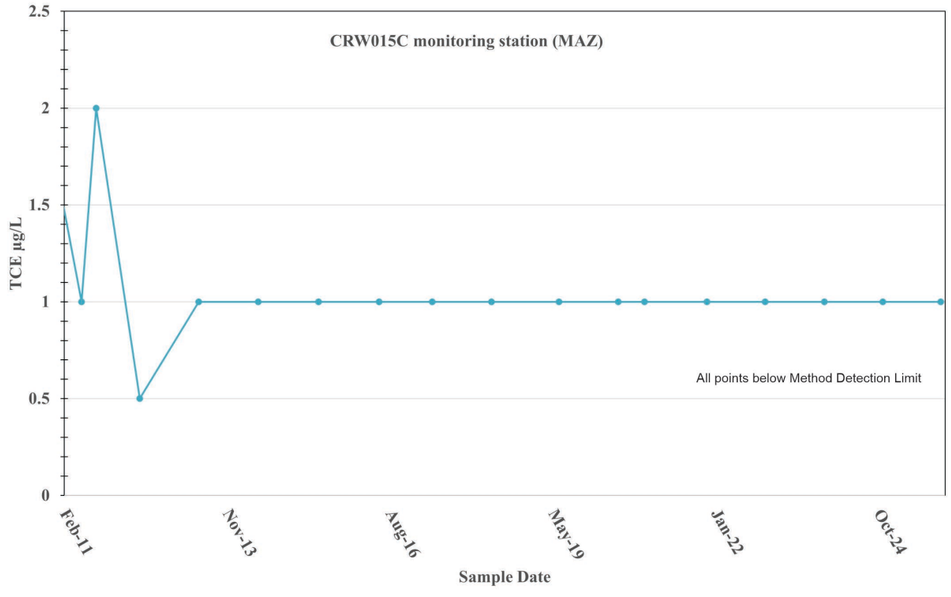
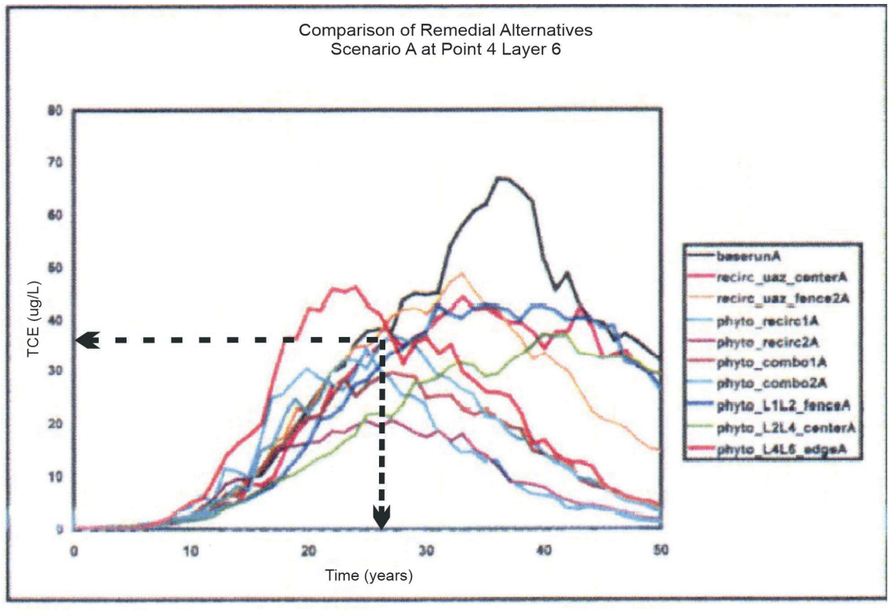
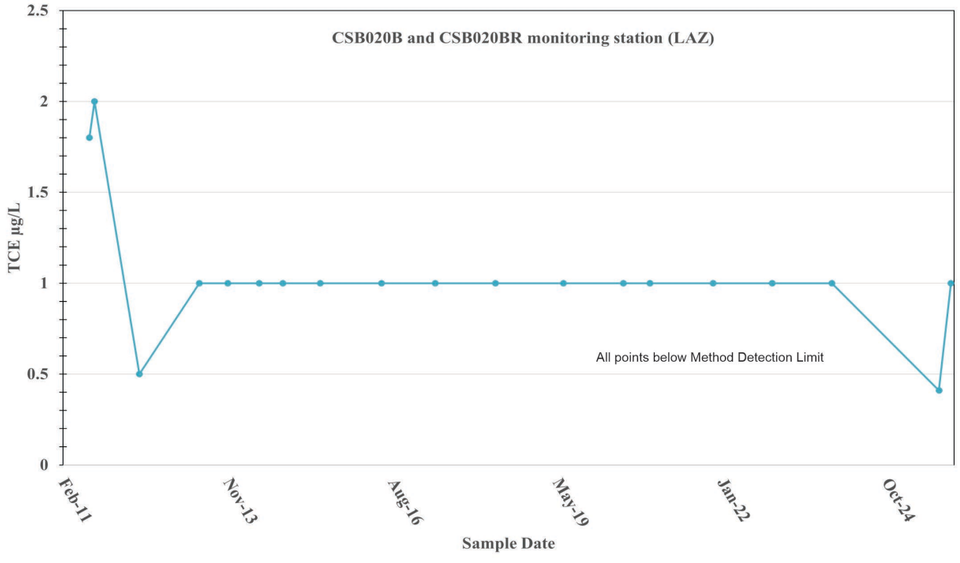
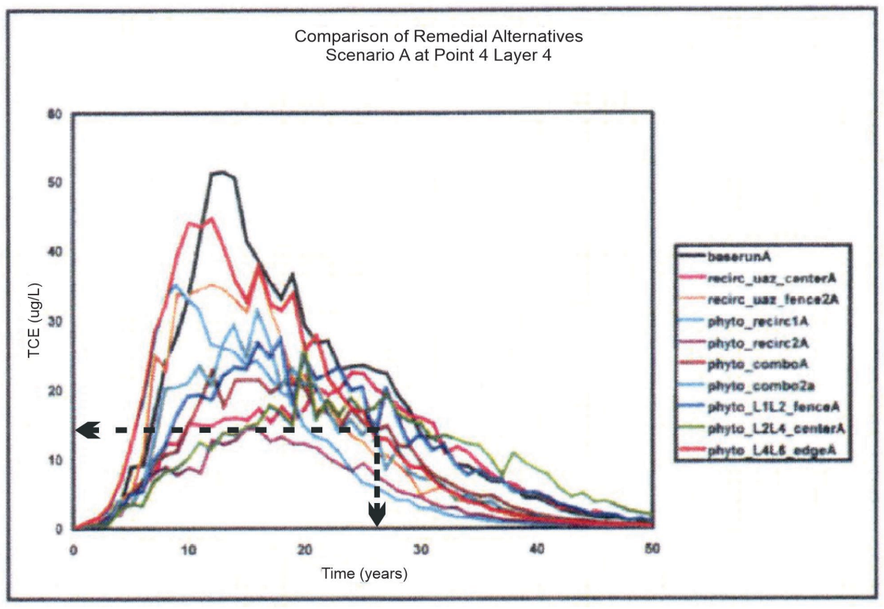


Figure 19. Comparison of Predicted TCE Concentrations at Model Point 5 and Collated Monitoring Well Locations







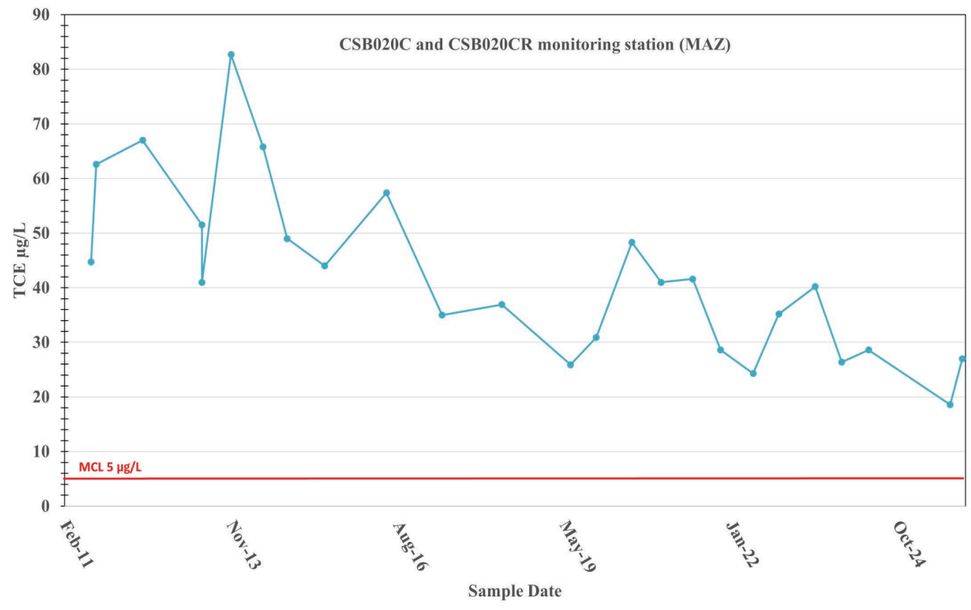
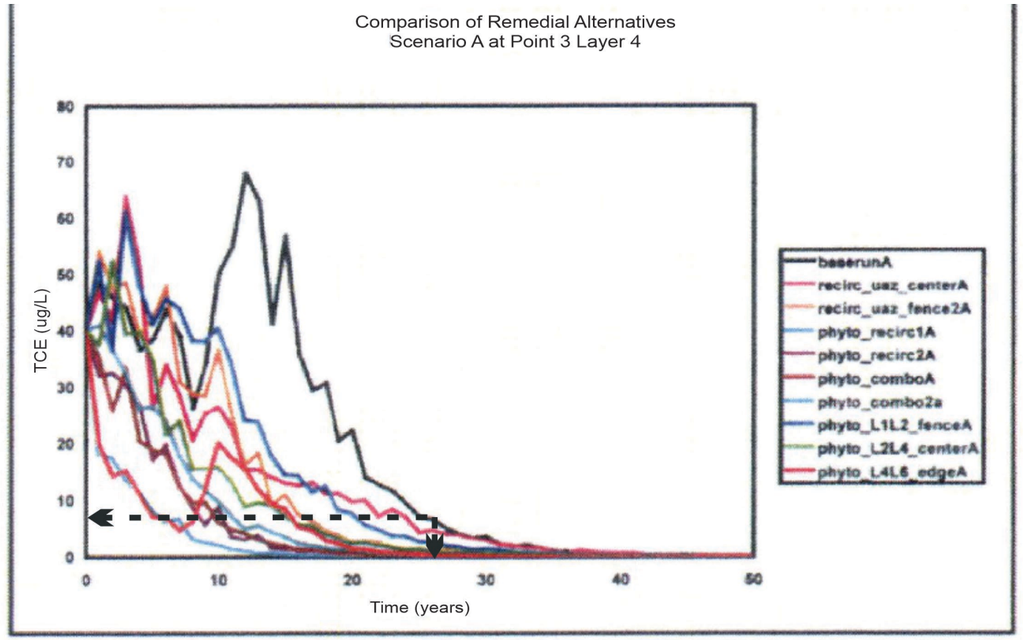
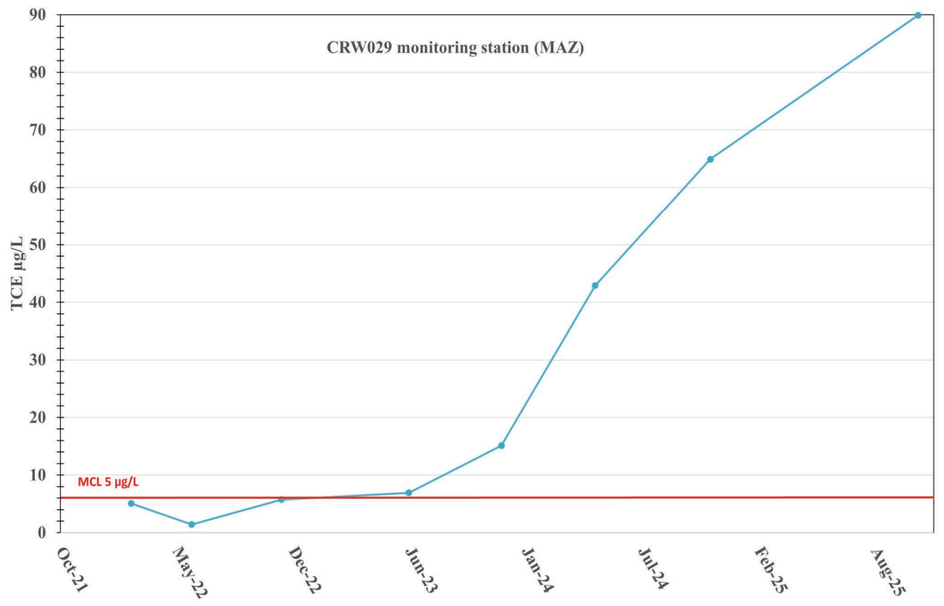
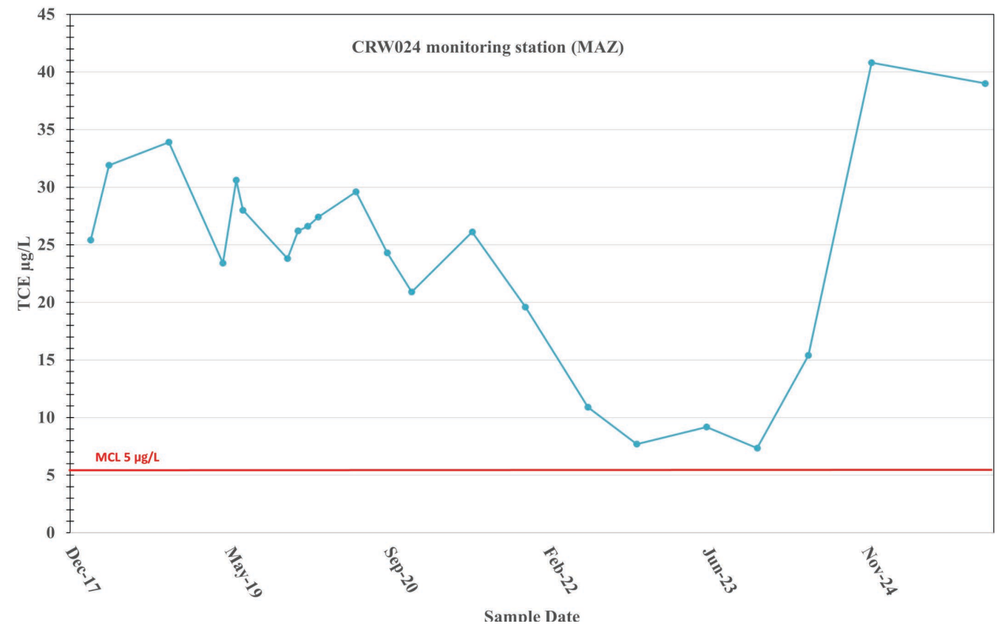


Figure 20. Comparison of Predicted TCE Concentrations at Model Point 4 and Collated Monitoring Well Locations







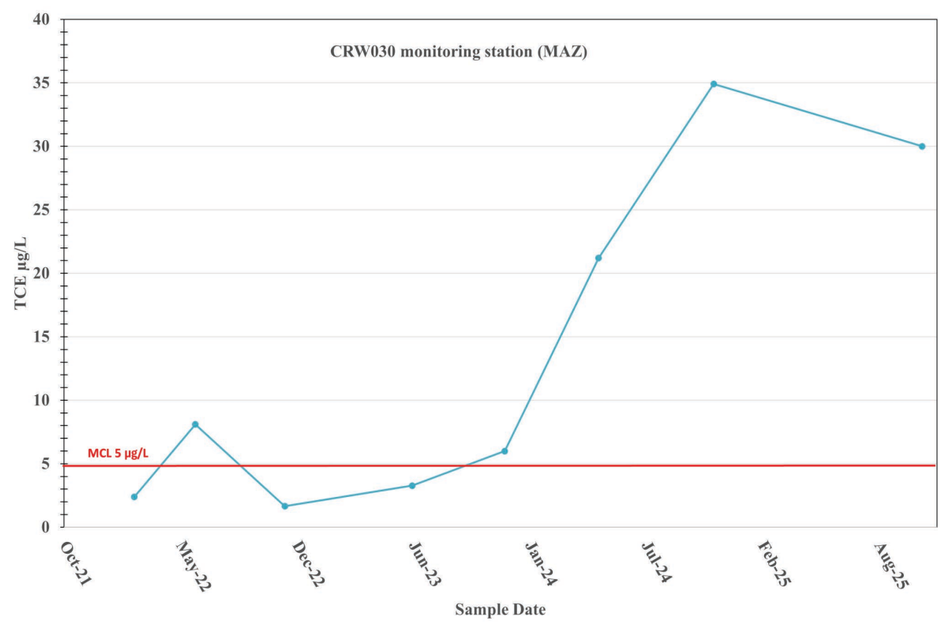


Figure 21. Comparison of Predicted TCE Concentrations at Model Point 3 and Collated Monitoring Well Locations

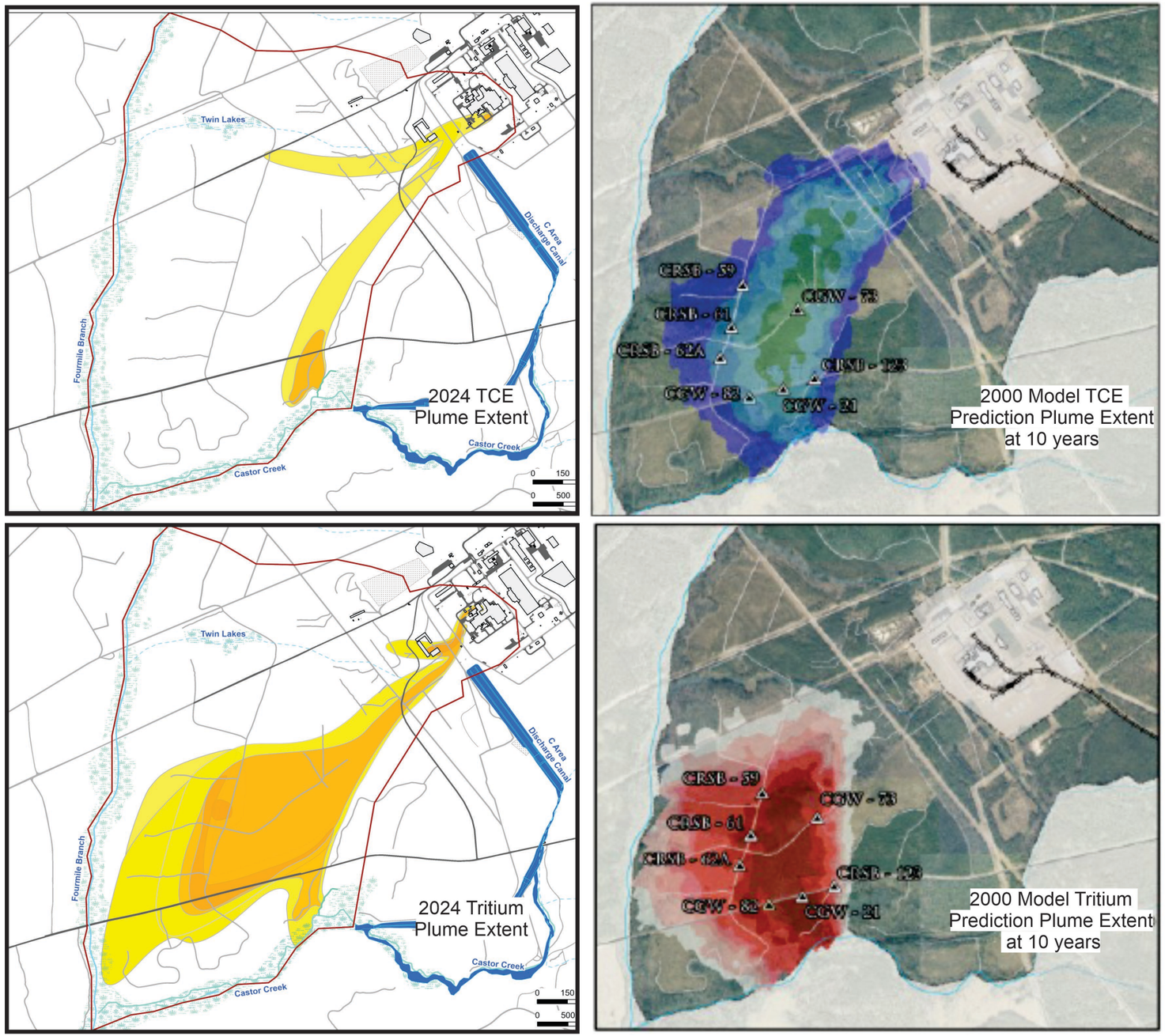


Figure 22. Comparison of 2000-Model Predicted TCE and Tritium Plumes to Current Plumes (2024)

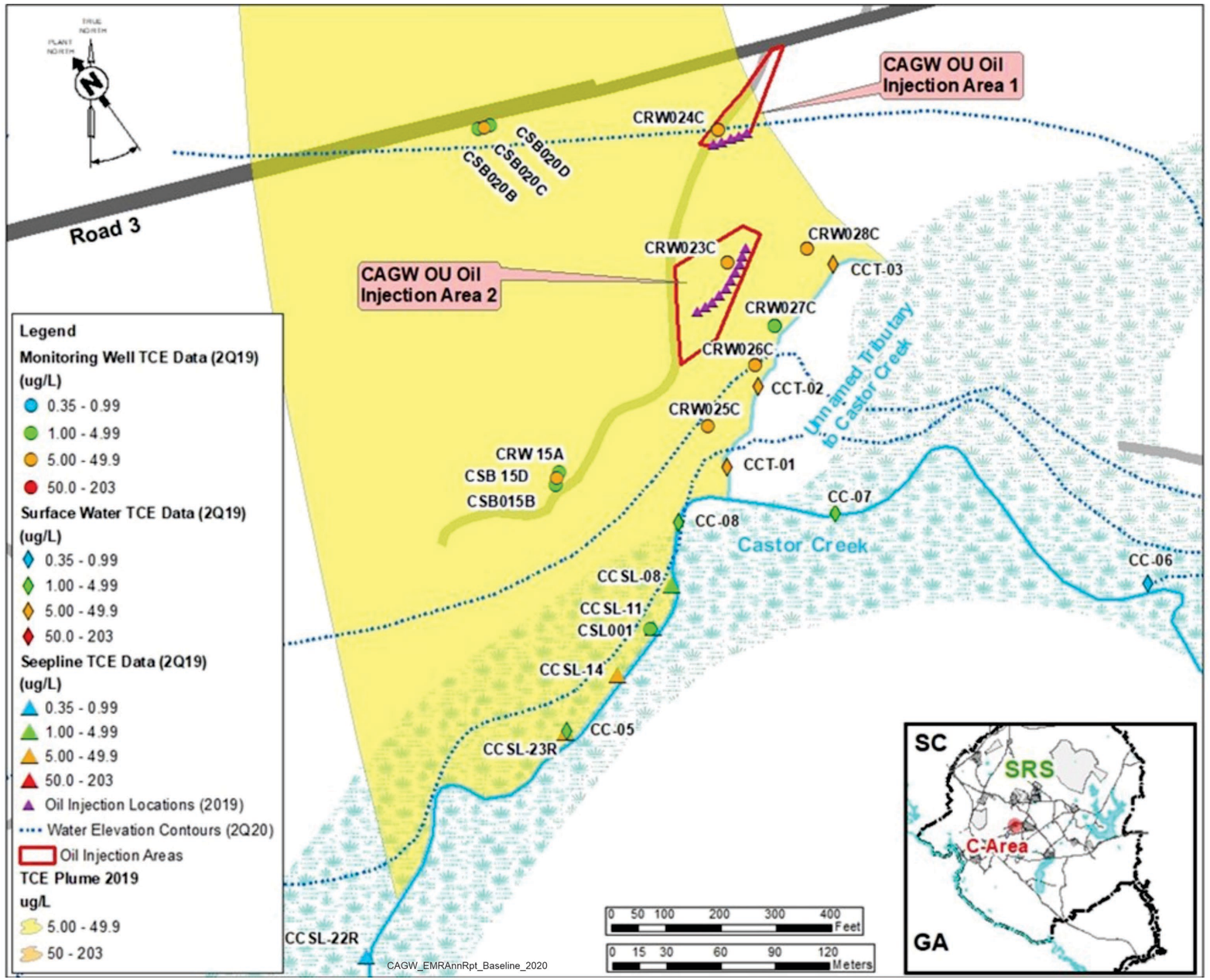


Figure 23. CAGW OU NTC RA Area

Summary Table for PFAS Groundwater and Surface Water				
Station I.D.	Type	Zone	PFOA (ppt)	PFOS (ppt)
CRW 3D	GW	UAZ	27	55
CRW 5D	GW	UAZ	5.4	<1.6 U
CRW 7D	GW	UAZ	17	0.64 J
CRW 11D	GW	UAZ	<1.6 U	<1.6 U
CRW022D	GW	UAZ	2.1	<1.5 U
CSB 7D	GW	UAZ	1.4 J	0.54 J
CSB 10D	GW	UAZ	0.47 J	<EQL
CSB 11D	GW	UAZ	10	0.34 J
CSB 15D	GW	UAZ	< 2.8	<1.6 U
CSB017D	GW	UAZ	4.3	0.69
CSB020D	GW	UAZ	<5.0 U	<5.0 U
CRW 3C	GW	MAZ	<1.4 U	<1.4 U
CRW 4C	GW	MAZ	<1.7 U	<1.7 U
CRW023C	GW	MAZ	0.99 J	<1.5 U
CRW024C	GW	MAZ	1 J	<1.5 U
CRW026C	GW	MAZ	0.84 J	<1.6 U
CSB 1C	GW	MAZ	< 1.5 U	<1.5 U
CSB011C	GW	MAZ	< 1.7 U	<2.8 U
CSB020CR	GW	MAZ	6.8	<1.6 U
CSB011B	GW	LAZ	0.72 J	<1.6 U
CSB015B	GW	LAZ	3	<1.7 U
CSB017B	GW	LAZ	3.8	0.72
CSB020BR	GW	LAZ	<3.0 U	0.81
RGW 16CR	GW	LAZ	<1.5 U	<1.5 U
CRW 4A	GW	GA	370	0.4 J
CRW 5A	GW	GA	4.7	<1.6 U
CRW 7A	GW	GA	1.6	1.8
CRW 9A	GW	GA	<1.6 U	<1.6 U
CRW 11A	GW	GA	<1.6 U	<1.6 U
CC 01	SW	NA	1.9	2.1
CC 02	SW	NA	2.1	2.2
CC 03	SW	NA	<1.6 U	1.3 J
CC 04	SW	NA	<8.0 U	2.1 J
CC 05	SW	NA	2.7	2.1
CC 06	SW	NA	1.7	3.8
CC07	SW	NA	2.4	2.9
CC08	SW	NA	2.1	1.9
CCT 01	SW	NA	2.7	0.55 J
CCT 02	SW	NA	3.4	1.6 J
CCT 03	SW	NA	3.7	1.4 J

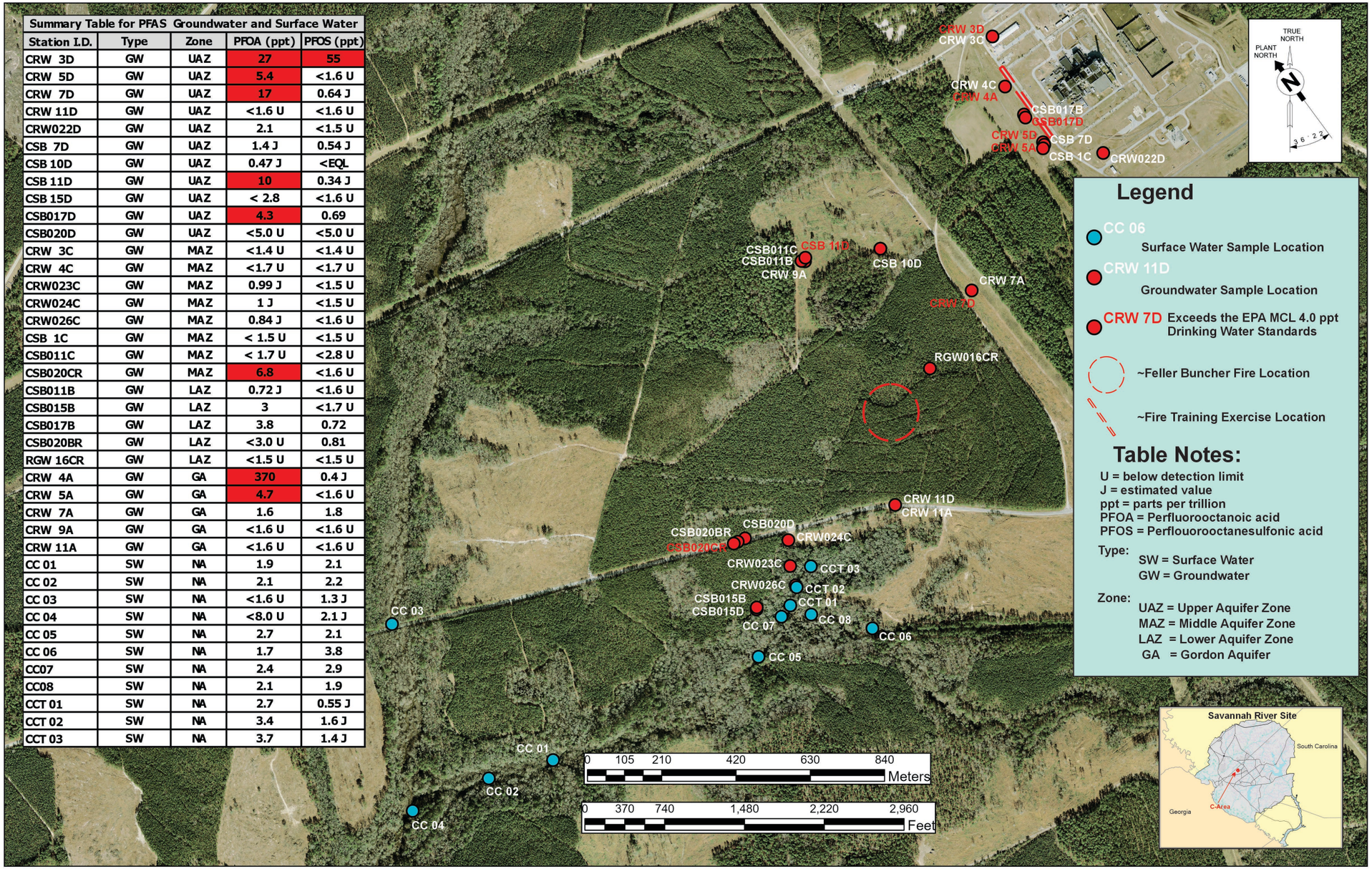


Figure 24. PFAS Groundwater and Surface Water Sample Locations

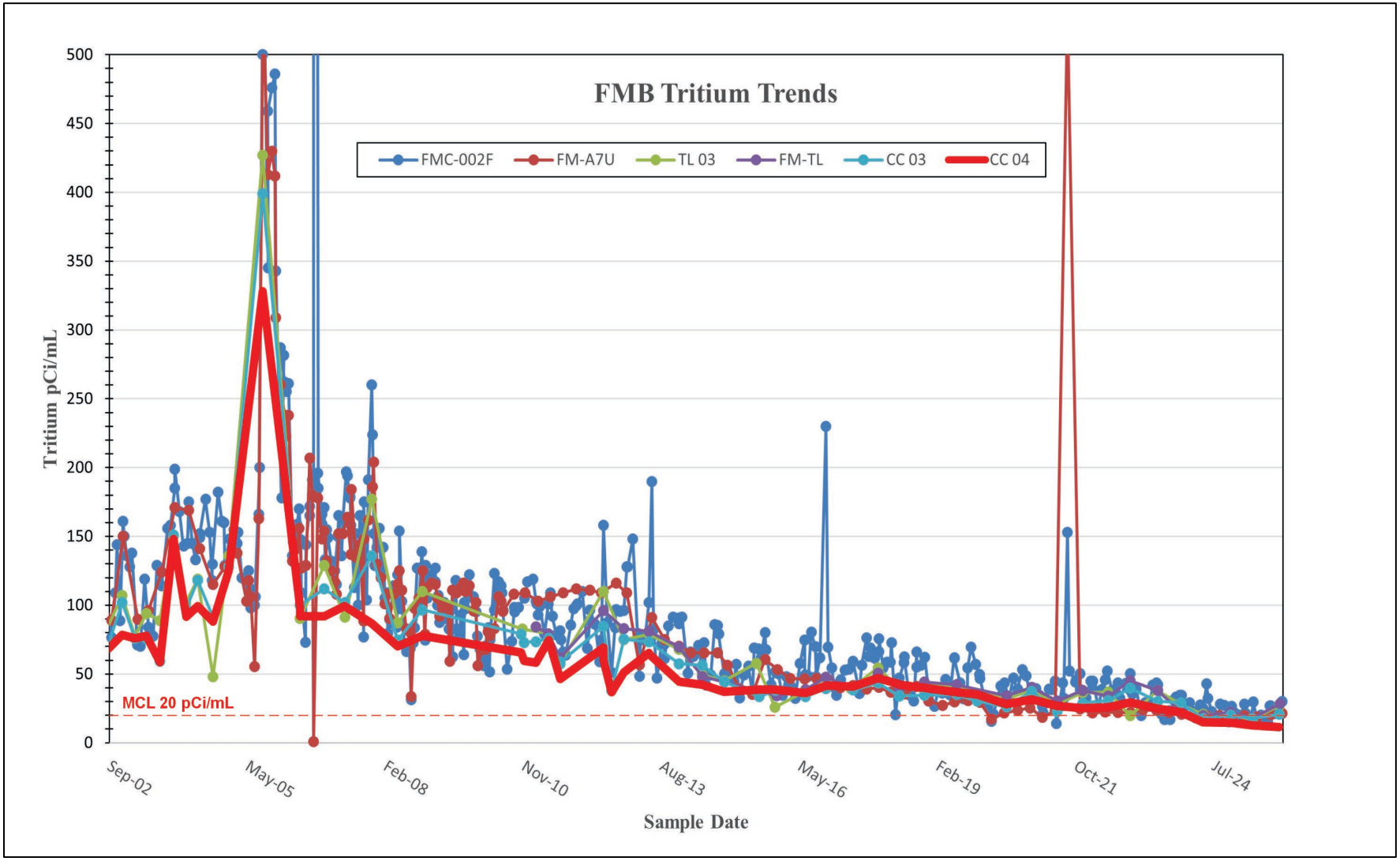


Figure 25. Fourmile Branch Tritium Trends 2002-2025

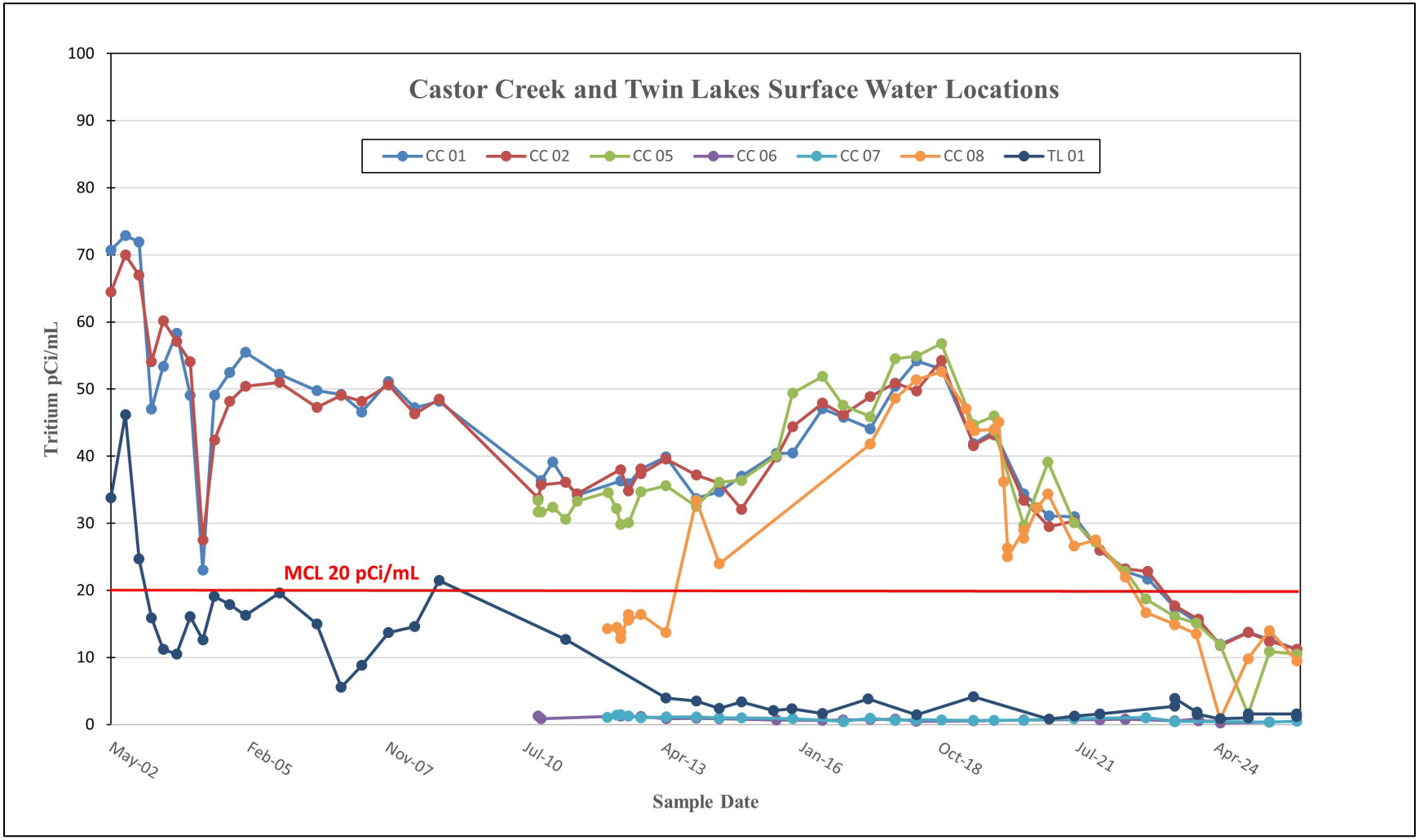


Figure 26. C Area Castor Creek and Twin Lakes Tritium Trends

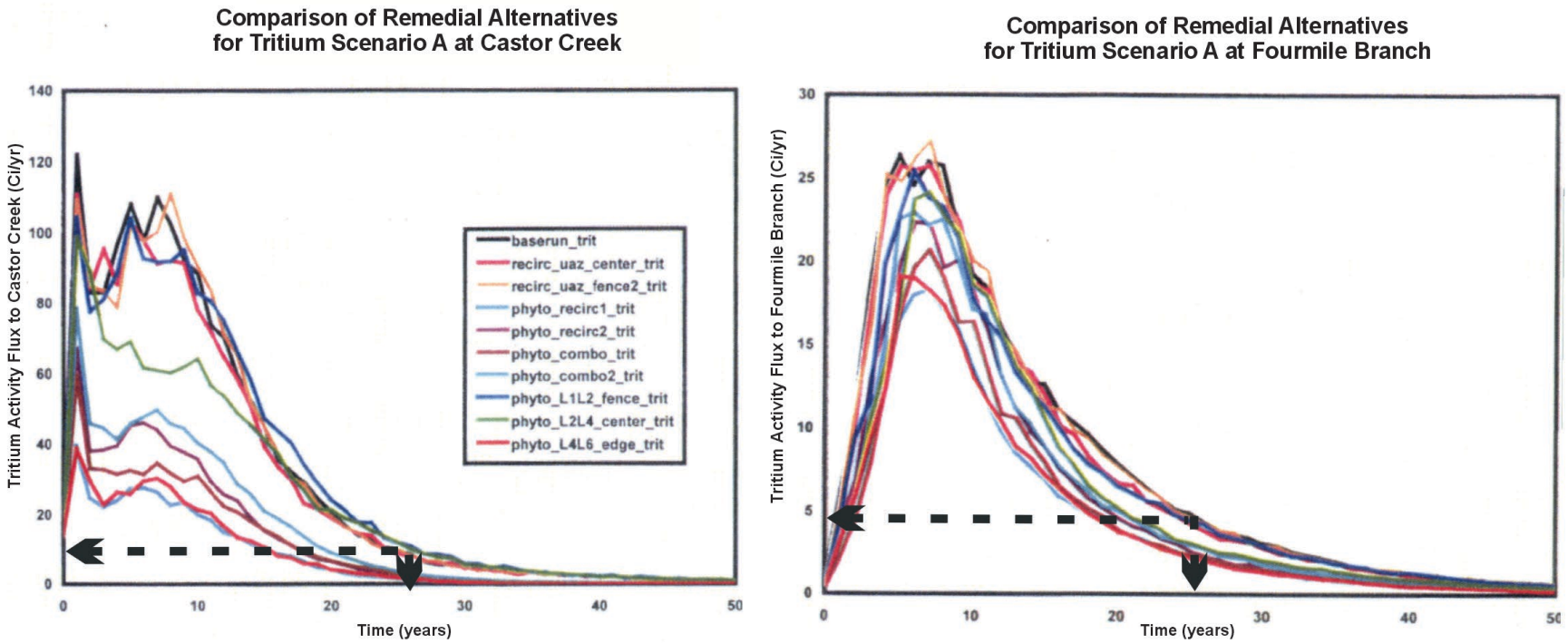


Figure 27. Comparison of 2000-Model Tritium Activity Flux to Castor Creek and Fourmile Branch (Ci/yr)

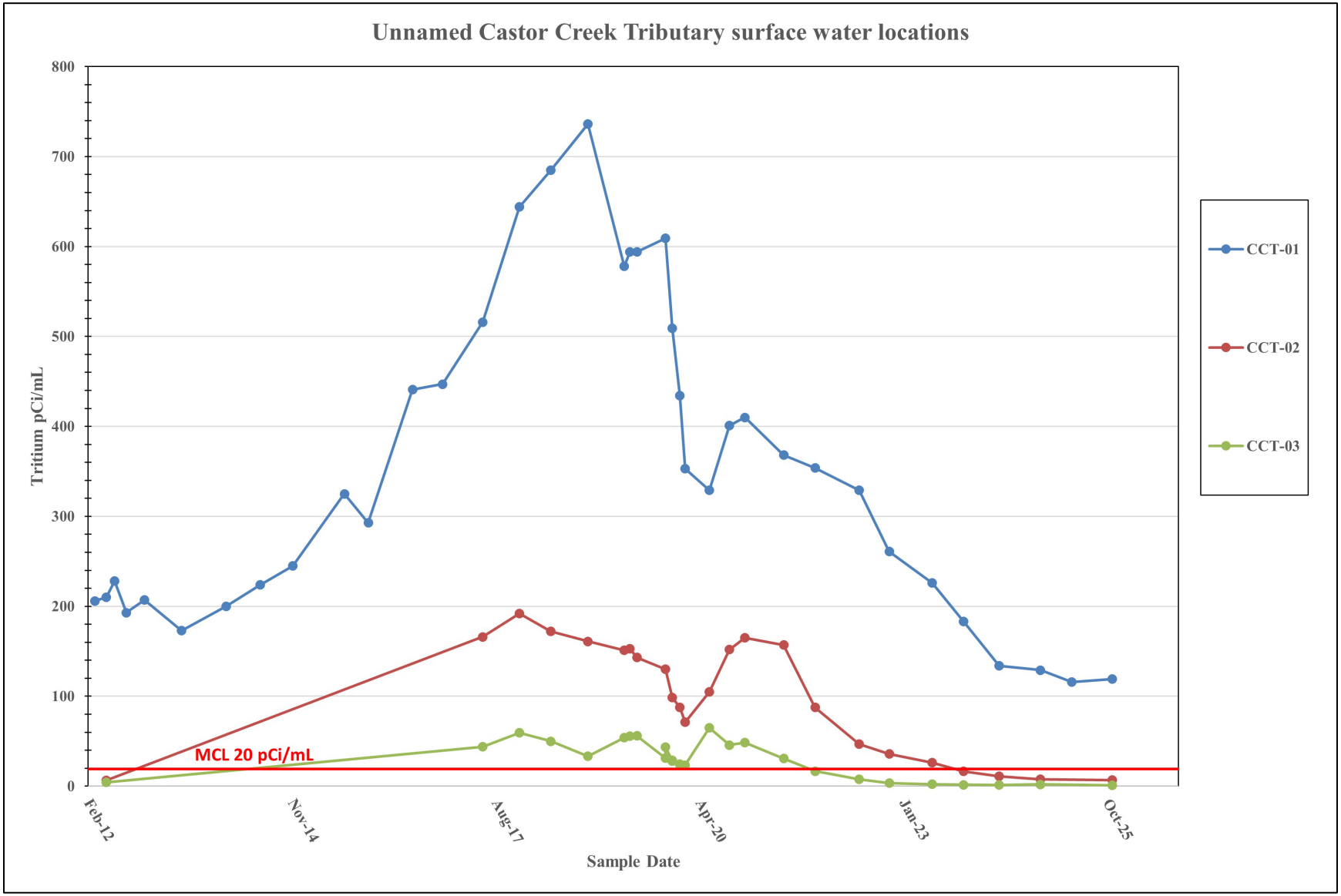


Figure 28. Castor Creek Tributary Tritium Trends

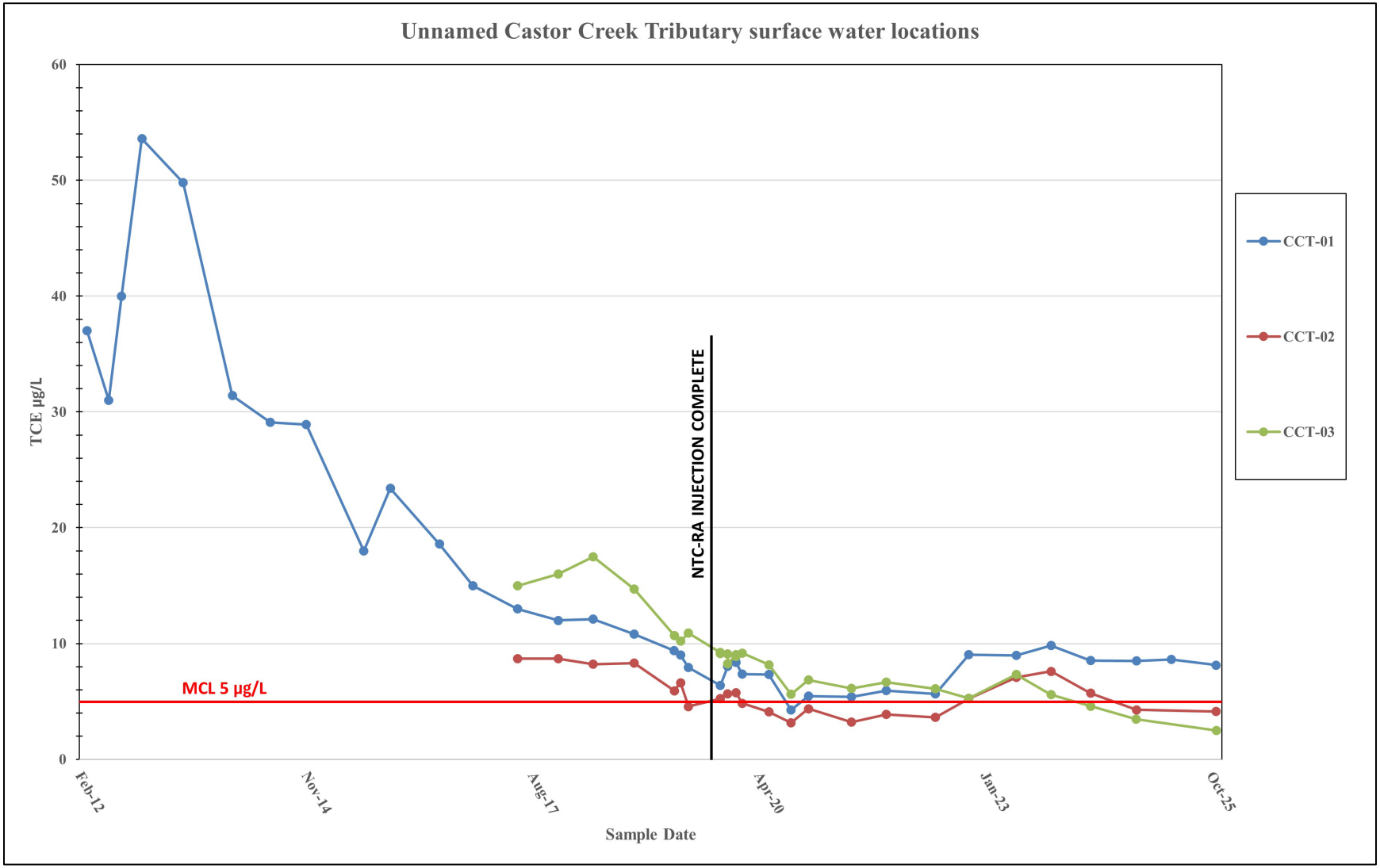


Figure 29. Castor Creek Tributary TCE Trends

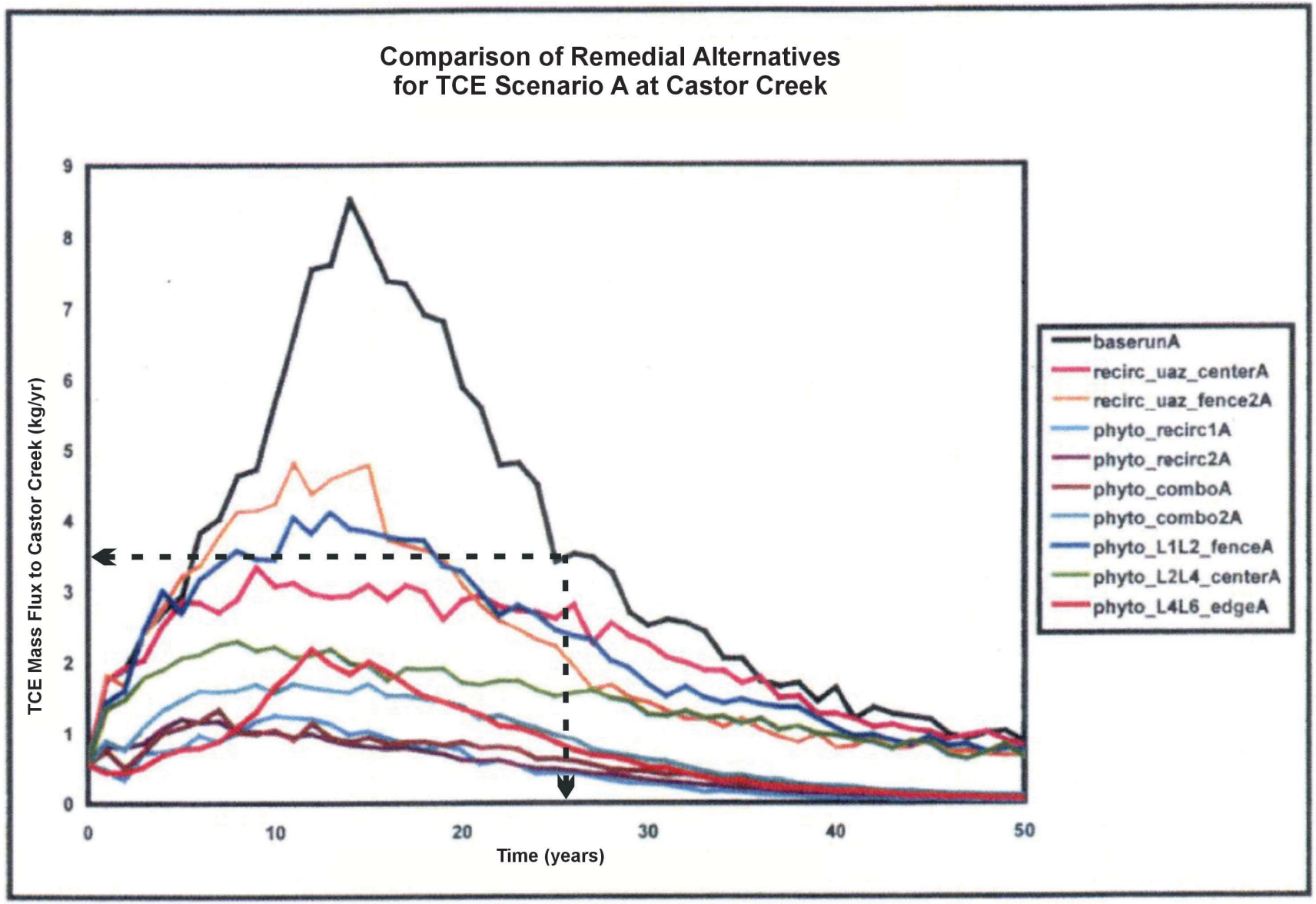


Figure 30. 2000-Model TCE Mass Flux to Castor Creek (kg/yr)

Table 3. TCE Reduction in the Vadose Zone Subunit, Pre-ERH Cores Compared to Post-ERH Cores

Pre-ERH Core (2002)	Core (0-72 ft) Average TCE Concentration (mg/kg)	Post-ERH Core (2011)	Core (0-72 ft) Average TCE Concentration (mg/kg)	Distance from Center Array (ft)
CRGW-02	0.234	CRGW-22	0.008	58
CRGW-03	0.994	CRGW-15	0.059	31
CRGW-04	4.445	CRGW-16	0.175	0
CRGW-05	0.672	CRGW-17	0.033	23
CRGW-07	0.482	CRGW-20	0.035	66
CRGW-09	1.383	CRGW-19	0.060	25
CRGW-011	0.494	CRGW-18	0.025	34
Overall Average	1.243	NA	0.056	34

Notes:
1. Historic water table depth ranges from 19.5-24 m (65-80 ft); 21.6 m (72 ft) is used as the average water table depth. Current water table depth is 23.4 m (78 ft) bgs.
2. CRGW-04 and CRGW-16 are the Center of the ERH Array.
3. The Pre- and Post-ERH paired cores were collected approximately 1.5 m (5 ft) apart (Range 0.75-2.25 m [2.5-7.5 ft]).
4. NA = Not applicable.

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