S.C. Department of Health and Environmental Control

Proposed Plan for Site Remediation

Former Vermont Bosch Site

800 Woodside Avenue
Fountain Inn, South Carolina

August 2022

ANNOUNCEMENT OF PROPOSED PLAN

The South Carolina Department of Health and Environmental Control (DHEC or the Department) has completed an evaluation of cleanup alternatives to address soil and groundwater contamination at the Former Vermont Bosch facility (the Site). This Proposed Plan identifies DHEC's preferred Alternative for cleaning up the contaminated area and provides the reasoning for this preference. In addition, this Proposed Plan includes summaries of the other cleanup alternatives evaluated. These alternatives were identified based on information gathered during environmental investigations conducted at the Site since 2014.

The Department is presenting this Proposed Plan to inform the public of our activities conducted at the Site, gain public input, and fulfill the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan or NCP). This Proposed Plan summarizes information that can be found in greater detail in the Revised Feasibility Study (June 2020) and other documents contained in the Administrative Record file. The Department encourages the public to review these documents to gain an understanding of the Site and the activities that have been completed.

The Department will select a final cleanup remedy after reviewing and considering comments submitted during the public comment period. The Department may modify the Preferred Alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

DHEC's Preferred Cleanup Summary

Alternative 3: – In-Situ Chemical Oxidation (ISCO) Soil Blending and In-Situ Chemical Reduction (ISCR)

DHEC's preferred remedial option includes:

- In Situ Chemical Oxidation (ISCO) Blending for soil;
- In Situ Chemical Reduction (ISCR) using Zero Valent Iron for groundwater

MARK YOUR CALENDAR

- **PUBLIC MEETING:**

When: September 8, 2022, at 6:30

Where: Virtual meeting go to DHEC's website to register:

www.scdhec.gov/FormerVermontBosch

DHEC will hold a virtual meeting to explain the Proposed Plan and all alternatives presented in the Feasibility Study. After the Proposed Plan presentation, DHEC will respond to your questions. Oral and written comments will be accepted at the meeting and following the meeting during the public comment period.

- **PUBLIC COMMENT PERIOD:**

September 8, 2022 through October 10, 2022

DHEC will accept written comments on the Proposed Plan during the public comment period. Please submit your written comments to:

Cynde Devlin, Project Manager
SC DHEC Bureau of Land & Waste Management
2600 Bull Street
Columbia, SC 29201
devlincl@dhec.sc.gov

- **FOR MORE INFORMATION:**

Call: Cynde Devlin, Project Manager, 803-898-0816

See: DHEC's website at:
www.scdhec.gov/FormerVermontBosch

View: The Administrative Record at the following locations:
www.scdhec.gov/FormerVermontBosch

Fountain Inn Library
311 N Main Street, Fountain Inn, SC 29644
Hours: Monday - Thursday 9 am - 9 pm
Friday – Sat 9 am – 6:00 pm
Sunday Closed

DHEC Freedom of Information Office
2600 Bull Street, Columbia, SC
(803) 898-3817
Monday - Friday: 8:30 am - 5:00 pm

SITE HISTORY

The Former Vermont Bosch site includes approximately 24 acres and is located at 800 Woodside Avenue in Fountain Inn, South Carolina. The site is located northwest of the intersection of Highway 418 (McCarter Road) and Woodside Avenue. The facility consists of a 125,000 square foot building located in the center of the property. The area surrounding the site is a mix of industrial and commercial properties, residential properties, and undeveloped land.

The site was developed as a manufacturing plant in 1984 and began operations in 1985 as Rosco Tools, a division of Vermont American Corporation, which subsequently became Robert Bosch Tool Corporation (RTBC). Three primary manufacturing processes were performed at the facility which included screwdriver handles, screwdriver heads and spade bits. Metalworking operations included lathes and other machining equipment as well as salt bath heat treatment, filters to separate grinding swarf, vapor degreasing and nickel plating. Plastic operations included compounding, pellet storage, and the use of acetone. An oil water separator was used in line with the sanitary sewer discharge. Manufacturing operations ceased in November 2003 and the facility was vacant until September 2005 when it was sold to Fountain Inn Investments. The site is currently owned by Wirthwein Real Estate, LLC. South Carolina Plastics, LLC, a subsidiary of Wirthwein, currently manufactures parts for the automotive industry.

Environmental assessments completed at the site have confirmed releases of volatile organic compounds, semi volatile organics, and metals. The primary contaminants of concern are tetrachloroethene(PCE), methylene chloride, and polycyclic aromatic hydrocarbons (PAHs).

AREAS OF CONCERN

Nine areas of concern (AOC) have been identified at the site. These areas are described below and found on Figure 2.

AOC 1- Tank Containment and Underground Piping. AOC 1 is located on the east and southeast sides of the building and consists of a bermed and covered concrete containment structure with aboveground and underground product piping. The containment area contains two above ground storage tanks that are 6,000 gallons each. One contained acetone and one contained diethylphthalate. Acetone was released from a tank containment area. Soil samples collected in 1996 exceeded soil screening levels (SSL).

AOC 2- Heat Treat Cleaning Water Disposal Area. AOC 2 is located to the northwest of the building. The heat treat process consisted of a quench tank and two rinse tanks. The quench tank held about 2,200 gallons of quench salt containing potassium nitrate, sodium nitrate, and sodium nitrite. Each rinse tank held about 1,150 gallons of water. Wash water from heat treating equipment was discharged to soil. Contamination consisted of nitrates and nitrites. Following soil excavation in 2002, confirmation soil data were below residential RSLs.

AOC 3- Former Metals Baghouse. AOC 3 is located along the northwest side of the building. The Metals Baghouse was used to collect dust from grinding and grit blasting operations. Stained soil was documented during assessment. Arsenic was detected above the RSL and SSL.

AOC 4- Former Scrap Metal Rolloff. AOC 4 is located on the southwest of the building and received scrap steel from hydraulic press operations, metal swarf from grinding operations, and spent media from grit blast operations. Concentrations of acetone, diethylphthalate, bis(2-ethylhexyl)phthalate, barium, cadmium, chromium, lead, nickel, and total petroleum hydrocarbons were detected in soil. Soil was excavated from this area in 2012 down to approximately 1ft. Soil samples collected following excavation had detections of chromium and total petroleum hydrocarbons. Concentrations of diethylphthalate and bis(2-ethylhexyl)phthalate were found in soil exceeding the EPA soil screening level (SSLs).

AOC 5- Former Empty Drum Storage Pad. AOC 5 is located at the western corner of the building where empty drums of chemicals used in the manufacturing process were stored. Storage included various oils (compressor, hydraulic, stamping, lubrication, rust preventative, machining, and heat transfer), solvents (Freon 113, mineral spirits, and chlorinated degreasing solvents), aqueous coolants, various paints, inks, thinners, and plasticizers (phthalate compounds). Soil samples in this area contained volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and total petroleum hydrocarbons. Soil was excavated in 2012 down to approximately 1 ft. Total petroleum hydrocarbons were detected following excavation. Soil samples had concentrations of diethylphthalate, bis(2-ethylhexyl)phthalate and di-n-butyl phthalate exceeding EPA SSLs.

AOC 6- Compounding Room Blower Exhaust. AOC 6 is located along the southwest side of the building. Exhaust vapors were observed to condense on the piping near the exhaust vents and drip on the ground. Diethylphthalate, dimethylphthalate, and bis(2-ethylhexyl)phthalate were detected in soil. Soil samples had concentrations of diethylphthalate, bis(2-ethylhexyl)phthalate and di-n-butyl phthalate exceeding EPA SSLs.

AOC 7- Storm Water Outfalls. Storm Water Outfall 001 is in the southern portion of the property and Storm Water Outfall 002 is in the northern portion of the property. Water generated from cleaning operations inside the plant was historically discharged into a storm water catch basin to the west of the facility building that discharged to either or both outfalls. Soil samples exceeded SSLs and/or RSLs for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-c,d)pyrene, diethylphthalate, benzo(k)fluoranthene, chrysene, arsenic, and selenium.

AOC 8- Former Oil Water Separator. AOC 8 is located below grade on the southeast side of the building. The Former Oil Water Separator was connected to the facility sanitary sewer discharge line and received wastewater from floor drains inside the building. The separator was removed and soil around the separator was excavated in 2012. Concentrations of 1,1-dichloroethane, ethylbenzene, diethylphthalate and bis(2-ethylhexyl)phthalate were detected in soil above SSLs. Groundwater at this location had concentrations of 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2 above MCLs.

AOC 9- Former Hazardous Waste Accumulation Building. AOC 9 is located southwest of the facility building. The Former Hazardous Waste Accumulation Building contained various hazardous and non-hazardous wastes such as chlorinated degreasing solvents, paints, inks, thinners, and plasticizers. PCE and TCE were detected in groundwater and soil at this location. PCE concentrations in groundwater exceed MCLs.

SUMMARY OF SITE RISKS

Contamination from operations at the Robert Bosch site has been released to soil and groundwater. The latest analytical data indicates volatile organic compounds (VOCs) in soil and groundwater above regulatory standards.

Assessment of soil contamination was conducted over multiple investigations dating back to 1996. The nature and extent of impacts to surface and subsurface soil were delineated during completion of the Remedial Investigation (March 2016 and July 2017). PCE soil contamination above soil screening levels (SSLs) was found on-site in the vicinity of Area of Concern #9 (Former Hazardous Waste Accumulation Building).

Groundwater at the site is contaminated by VOCs and SVOCs with PCE as high as 1900 ug/l at monitoring well MW-09-07. Groundwater contamination extends from MW-09-9 to the unnamed tributary to Stoddard Creek. PCE was detected above MCLs in four surface water locations along the unnamed tributary with the highest concentration of 58 ug/l at SW-09-04.

The primary risk to the public and/or workers is from direct ingestion or exposure to contaminated soil and/or groundwater on-site. Preferred alternatives identified in this Proposed Plan and the Feasibility Study are necessary to protect public health and the environment from actual or threatened releases of hazardous substances to the environment.

CLEANUP GOALS

Remedial action objectives (RAOs) are developed in order to set goals for protecting human health and the environment. The goals should be as specific as possible, but should not unduly limit the range of remedial alternatives that can be developed. Accordingly, the following RAOs were developed for the Site:

1. Prevent leaching of soil contamination to groundwater.
2. Prevent exposure of human receptors to contaminated groundwater.
3. Prevent human exposure to indoor air contamination.
4. Restore groundwater to MCLs.
5. Monitor soil and groundwater to determine effectiveness of remedial alternative.
6. Mitigate further migration of groundwater contamination to surface water.

The remediation goals for contaminated groundwater at the site are the Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) for drinking water or the Tap Water Screening Levels in EPA’s Regional Screening Level tables if a MCL does not exist.

SCOPE AND ROLE OF THE ACTION

The proposed actions in this Proposed Plan will be the final cleanup action for the Site. The remedial action objectives (RAOs) for these proposed actions include reducing the potential for contamination to leach to groundwater, minimizing the time required for groundwater contaminants of concern to reduce below MCLs, and to further mitigate and control the migration of contaminants through groundwater.

SUMMARY OF REMEDIAL ALTERNATIVES

Based on information collected during previous investigations, *a Revised Feasibility Study* (Wood, June 2020) was conducted to identify, develop, and evaluate options and remedial alternatives to address the contamination at the Site. This evaluation considered the nature and extent of contamination and associated potential human health risks developed during the remedial investigations and associated studies to determine and evaluate potential remedial alternatives and their overall protection of human health and the environment. Each remedial alternative evaluated by the Department is described briefly below.

SUMMARY OF REMEDIAL ALTERNATIVES	
Alternative	**Description**
1: No Action	• No action or monitoring for soil • No action or monitoring for groundwater • Cost: $0
2: Soil Vapor Extraction (SVE) and Air Sparging (AS) with In-Situ Chemical Reduction (ISCR) using zero valent iron ZVI	• Soil vapor extraction for soil contamination • Air sparge wells for groundwater and saturated soil • In-situ chemical reduction using zero valent iron for groundwater remediation • Cost: $ 611,000
3: In-Situ Chemical Oxidation (ISCO) Blending and ISCR with ZVI	• In-situ chemical oxidation of vadose zone soil for shallow and deeper treatment zones • Stabilization of treatment zones using Portland cement • In-situ chemical reduction using zero valent iron for groundwater remediation • Cost: $ 480,500
4:Soil Excavation, ISCO and ISCR	• Soil excavation and concrete slab removal • In-situ oxidation using potassium permanganate for soil and saturated soil • In-situ chemical reduction using zero valent iron for groundwater remediation • Cost: $539,000

DESCRIPTION OF ALTERNATIVES

Alternative 1 - No Action

The No Action alternative is required by the National Contingency Plan to be carried through the screening process, as it serves as a baseline for comparison of the other remedial action alternatives.

The no action alternative does not include any on-site or legal controls. No monitoring, institutional controls, or remedial measures are employed for soil or groundwater at the site. This alternative would not be protective of the environment and would take an unreasonable time to achieve remedial action objectives. There is no cost associated with implementing this alternative.

Alternative 2 – Soil Vapor Extraction (SVE) and Air Sparging (AS) with In-Situ Chemical Reduction (ISCR) using Zero Valent Iron (ZVI)

Soil Vapor Extraction (SVE) would include the installation of ten extraction wells located in the source area. The SVE wells would be screened from 5 to 10 feet below ground surface (bgs) and from 12 to 17 feet bgs in the areas of highest soil contamination. The wells would be connected to a vacuum blower for volatile organic vapors to be extracted and discharged to the surrounding air.

Air sparge wells would be installed beneath the concrete pad of the former hazardous waste accumulation building. Ten injection wells would be utilized to inject air into groundwater and saturated soil to volatilize contamination into the vapor phase and transport the contamination from the saturated zone to the vadose zone. SVE wells would capture the volatilized contaminants.

The SVE and AS treatment system would consist of a mobile trailer mounted system that would be staged in a secure equipment compound.

Additional source area and downgradient groundwater treatment would be conducted using In-Situ Chemical Reduction (ISCR) using Zero Valent Iron (ZVI). A direct push drill rig would inject granular ZVI into 10 foot spaced borings situated in perpendicular rows along the axis of the groundwater plume. Injections would be up to 30 feet bgs.

Alternative 3 – In-Situ Chemical Oxidation (ISCO) Soil Blending and In-Situ Chemical Reduction (ISCR)

In-Situ Chemical Oxidation (ISCO) remediation would include blending impacted vadose zone soil and underlying saturated soil in the source area with potassium permanganate. The former hazardous waste accumulation building concrete pad would be removed.

Unsaturated soil within a 640 sq foot area would be excavated and temporarily stockpiled. ISCO blending would be conducted in the deep treatment zone. Following soil sampling to confirm successful treatment, stabilization of the deep treatment zone would be conducted using Portland cement. Stockpiled soil would be placed back into the excavation for ISCO blending followed by soil sampling and stabilization.

ISCR using ZVI would be conducted for source area and downgradient groundwater contamination. A direct push drill rig would inject granular ZVI into 10 foot spaced borings situated in perpendicular rows along the axis of the groundwater plume. Injections would be up to 30 feet bgs.

Alternative 4 – Excavation and Off-Site Disposal with In-Situ Chemical Oxidation (ISCO) Blending and In-Situ Chemical Reduction (ISCR)

The concrete pad associated with the former hazardous waste accumulation building would be removed for this alternative. Soil excavation in the source area would be completed down to approximately 19 feet for off-site disposal. Soil up to 5 feet into the saturated zone would be treated by ISCO blending using potassium permanganate. Following completion of blending activities, clean backfill would be put in the excavation and compacted to the ground surface.

ISCR using ZVI would be conducted for source area and downgradient groundwater contamination. A direct push drill rig would inject granular ZVI into the subsurface in perpendicular rows along the axis of the groundwater plume. Additional groundwater monitoring wells will be installed to replace those affected by excavation and blending activities.

EVALUATION OF ALTERNATIVES

The National Contingency Plan requires the Department use specific criteria to evaluate and compare the different remediation alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the criteria, noting how it compares to the other options under consideration. The criteria are:

1. Overall protection of human health and the environment;
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs);
3. Long-term effectiveness and permanence;

4. Reduction of toxicity, mobility, or volume through treatment
5. Short-term effectiveness;
6. Implementability;
7. Cost; and
8. Community acceptance

The main objectives for the preferred remedial action are to be protective of human health and the environment and to comply with State and Federal regulations. These two objectives are considered *threshold criteria*. Threshold criteria are requirements each alternative must meet in order to be eligible for selection.

The following measures are considered *balancing criteria*: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. These criteria are used to weigh the technical feasibility, strengths and weaknesses, and cost advantages and disadvantages of each alternative.

Community acceptance of the cleanup alternative and the other considered alternatives is a *modifying criterion* that will be carefully considered by the Department prior to final remedy selection.

COMPARATIVE ANALYSIS OF ALTERNATIVES

A comparative analysis of each alternative was performed. The alternatives were evaluated in relation to one another for each of the evaluation criteria. The purpose of the analysis is to identify the relative advantages and disadvantages of each alternative. The alternatives are ranked from 1 to 6 (1 being the lowest) and the comparative analysis is illustrated in the attached table.

Note: Although Alternative 1 (No Action) does not meet the threshold criteria, it is retained for discussion because it provides a baseline for comparing the other alternatives to the criteria outlined above.

Overall Protection of Human Health and the Environment

When evaluating alternatives in terms of overall protection of human health and the environment, consideration is given to the way site-related risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Alternative 1 (No Action) does not achieve the remedial action objectives and provides the least protection of human health and the environment because no measures would be implemented to eliminate potential pathways and reduce risk for human exposure to contaminants in soil or groundwater.

Alternative 2 (SVE/AS and ISCR), Alternative 3 (ISCO blending with ISCR) and Alternative 4 (Excavation and offsite disposal with ISCO blending and ISCR) include treatment of soil and groundwater and/or elimination of source material using various technologies. All three of these alternatives protect human health and the environment at a similar level.

Compliance with ARARs (Applicable or Relevant and Appropriate Requirements)

This evaluation criterion evaluates whether an alternative meets federal and state environmental statutes and regulations that pertain to the site. Each alternative is evaluated with respect to its ability to comply with such requirements.

Alternatives 1 does not meet regulatory limits for soil and groundwater since no active remediation would be conducted.
Alternatives 2 will may require additional permitting or monitoring for the air sparging system. Alternatives 2, 3 and 4 would comply with regulatory limits within various time frames.

Long-Term Effectiveness and Permanence
The magnitude of residual risk remaining from untreated impacted media or treatment residuals and the adequacy and reliability of containment systems and institutional controls are evaluated under this criterion.

Alternative 1 does not provide long term effectiveness and permanence because this remedy does not involve any active remediation therefore extending the length of time soil and groundwater contamination remain.

Alternatives 2 through 4 use various technologies to treat source area soil and saturated soil to reduce contamination that would leach to groundwater. Each of these alternatives potentially reduces impacted media to remedial goals with institutional controls implemented for any remaining residual risk. These three alternatives treat contaminated groundwater migrating to the unnamed tributary to reduce migration to surface water.

Reduction of Toxicity, Mobility, or Volume through Treatment (TMV)
The degree to which an alternative employs treatment to reduce the harmful effects of contaminants, their ability to move in the environment, and the amount of contamination present is evaluated by this criterion.

Alternatives 1 does not employ treatment of groundwater or soil therefore would not result in a reduction of toxicity, mobility, or volume of contamination.

Alternative 2 treats contaminated soil using soil vapor extraction and air sparging in the source area reducing toxicity and volume of contamination. Air sparging may discharge vapor phase contamination into the surrounding environment. Alternative 2, Alternative 3 and Alternative 4 reduce toxicity and mobility of contamination using similar techniques and will reduce toxicity and mobility in addition to preventing contamination from discharging to the unnamed tributary.

Short-Term Effectiveness
The short-term effectiveness evaluation takes into consideration any risk the alternative poses to on-site workers, the surrounding community, or the environment during implementation, as well as the length of time needed to implement the alternative.

Alternative 1 does not include any actions which might create increased risk to the community, workers, or the environment.

Alternative 2 and Alternative 3 use similar technologies to treat soil and groundwater contamination. The SVE/AS treatment system and ZVI materials may provide exposure to workers during system installation. Safety training and personal protective equipment will be utilized mitigate any risks.

Alternative 4 includes excavation and disposal of contaminated soil which may potentially expose workers and the community to contaminants during construction and transport activities. Oxidant and ZVI material injections may also provide exposure to workers. Safety training and personal protective equipment will be utilized during construction activities.

Implementability
The analysis of implementability considers the technical and administrative feasibility of remedy implementation, as well as the availability of required materials and services.

Alternative 1 does not involve construction, operation, or maintenance of a remedial system.

Alternatives 2 through 4 require injection of amendments and excavation/disposal, all of which have been successfully used to remediate similar sites in similar geologic settings. These services are commonly implemented and there are ample experienced contractors to perform these services.

Cost
The cost criterion includes estimated initial capital costs and annual O&M costs, as well as a present worth cost evaluation. Present worth cost is the total cost of an alternative over time in terms of today’s dollar value.

Alternative 1	$0
Alternative 2	$611,000
Alternative 3	$480,500
Alternative 4	$539,000

Community Acceptance
Community acceptance of the preferred remedy will be evaluated after the public comment period. Public comments will be summarized and responses provided in the Responsiveness Summary Section of the Record of Decision document that will present the Department’s final alternative selection. The Department may choose to modify the preferred alternative or select another remedy based on public comments or new information.

SUMMARY OF THE DEPARTMENT’S PREFERRED ALTERNATIVE

The Department has identified a preferred alternative to address the contamination in both soil and groundwater at the Site. The preferred remedial alternative is Alternative 3 which combines In-Situ Chemical Oxidation soil blending and In-Situ Chemical Reduction for source area soils and groundwater using Zero Valent Iron.

Alternative 3 includes removing a concrete pad in the former hazardous waste accumulation building and excavating unsaturated source area soil. Excavated soil will be temporarily stockpiled next to the excavation. ISCO blending of shallow aquifer soil within the excavation would be conducted using potassium permanganate. Following verification of successful treatment, stabilization of the deep treatment zone will be conducted using Portland cement. Stockpiled soil will be returned to the excavation and treated using potassium permanganate and stabilization as previously described. Granular Zero Valent Iron will be injected into the subsurface across the groundwater plume in three locations. The most downgradient injections would focus on the downgradient edge of the plume to address contaminant discharge to the unnamed tributary to Stoddard Creek.

The total estimated cost is $480,500.

It is the Department’s judgment that the Preferred Alternative identified in this Proposed Plan is necessary to protect public health and the environment.

Table 1

COMPARISON OF REMEDIAL ALTERNATIVES TO EVALTATION CRITERIA													
Remedial Options	**Overall Protection of Human Health And the Environment**		**Compliance with ARARs**		**Short Term Effectiveness**		**Long Term Effectiveness**		**Reduction of Toxicity, Mobility & Volume through Treatment**		**Implementability**		**Cost Score**	**Total Score**
Alternative 1 **No Action** $0	Not protective of human health or the environment.	1	Will not comply with chemical or location specific ARARs	1	No action taken. No change in risk to workers or community.	1	No removal or treatment of contamination. Would not provide long term effectiveness or permanence.	1	Provides no reduction in volume, toxicity, or mobility.	1	No construction, operation or maintenance required.	6	6	17
Alternative 2 **SVE/AS and ISCR with ZVI** $611,000	Soil vapor extraction reduces PCE mass in source area. ZVI injections address groundwater contamination both on and off-site.	5	Treatment of soil and groundwater contamination expected to shorten time to meet MCLs for on-site and off-site groundwater. Monitoring well and UIC permits will be required. Air permits will be requested if necessary.	4	Potential emissions during SVE/AS system operation. Worker and community risk will be monitored and controlled.	3	Combination of SVE/AS anticipated to achieve SSLs in source area in 3-5 years. ZVI injections expected to meet MCLs for groundwater within 2-4 yrs.	5	SVE/AS treatment in the source area expected to reduce toxicity and volume of COCs. ZVI injection anticipated to reduce toxicity, mobility, and volume of COCs in groundwater.	5	SVE/AS system installation uses standard techniques and methods. ZVI is an established technique.	5	2	29
Alternative 3 **ISCO Soil Blending and ISCR with ZVI** $480,500	Soil contamination addressed through potassium permanganate blending down to shallow aquifer soils. ZVI injections address groundwater contamination both on and off-site.	5	Treatment of soil and groundwater contamination expected to shorten time to meet MCLs for on-site and off-site groundwater. Monitoring well and UIC permits will be required.	5	No community exposure anticipated. Worker exposure during soil blending and ZVI injection will be controlled using training and PPE. Worker risk will be monitored and controlled.	4	Soil blending anticipated to reduce COCs in source area soil below SSLs within 3-5 years. ZVI injections expected to reduce COCs to MCLs in groundwater within 2-4 yrs.	5	Soil blending using potassium permanganate expected to reduce toxicity, volume, and mobility of COCs in source area. Injection of ZVI into subsurface anticipated to reduce COCs in groundwater.	6	Demolition of existing concrete required prior to treatment. ISCO blending requires specialized equipment. Techniques and methods are standard and established. ZVI injections are routine.	4	5	34
Alternative 4 **Soil Excavation and Disposal, ISCO Blending and ISCR with ZVI** $539,000	Soil excavation removes source material down to groundwater. ZVI injections address groundwater contamination both on and off-site.	5	Treatment of soil and groundwater contamination expected to shorten time to meet MCLs for on-site and off-site groundwater. Monitoring well and UIC permits will be required.	5	Soil excavation and disposal activities could potentially expose community and workers to contaminated media. Worker community risk will be monitored and controlled.	3	Excavation of source area soil with ISCO blending expected to reduce soil contamination levels to below SSLs within 3-5 yrs. ZVI expected to reduce COCs to MCLs in groundwater within 2-4 yrs.	5	Excavation of contaminated soil with ISCO blending of vadose zone soil reduces mobility, volume, and toxicity of COCs. ZVI is expected to reduce COCs in groundwater.	6	Demolition of existing concrete required prior to treatment. Excavation requires benching and sloping. ISCO blending requires specialized equipment. Techniques are established. ZVI injections are routine.	4	3	31

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the Former Vermont Bosch Site is important. Comments provided by the public are valuable in helping DHEC select a final cleanup remedy.

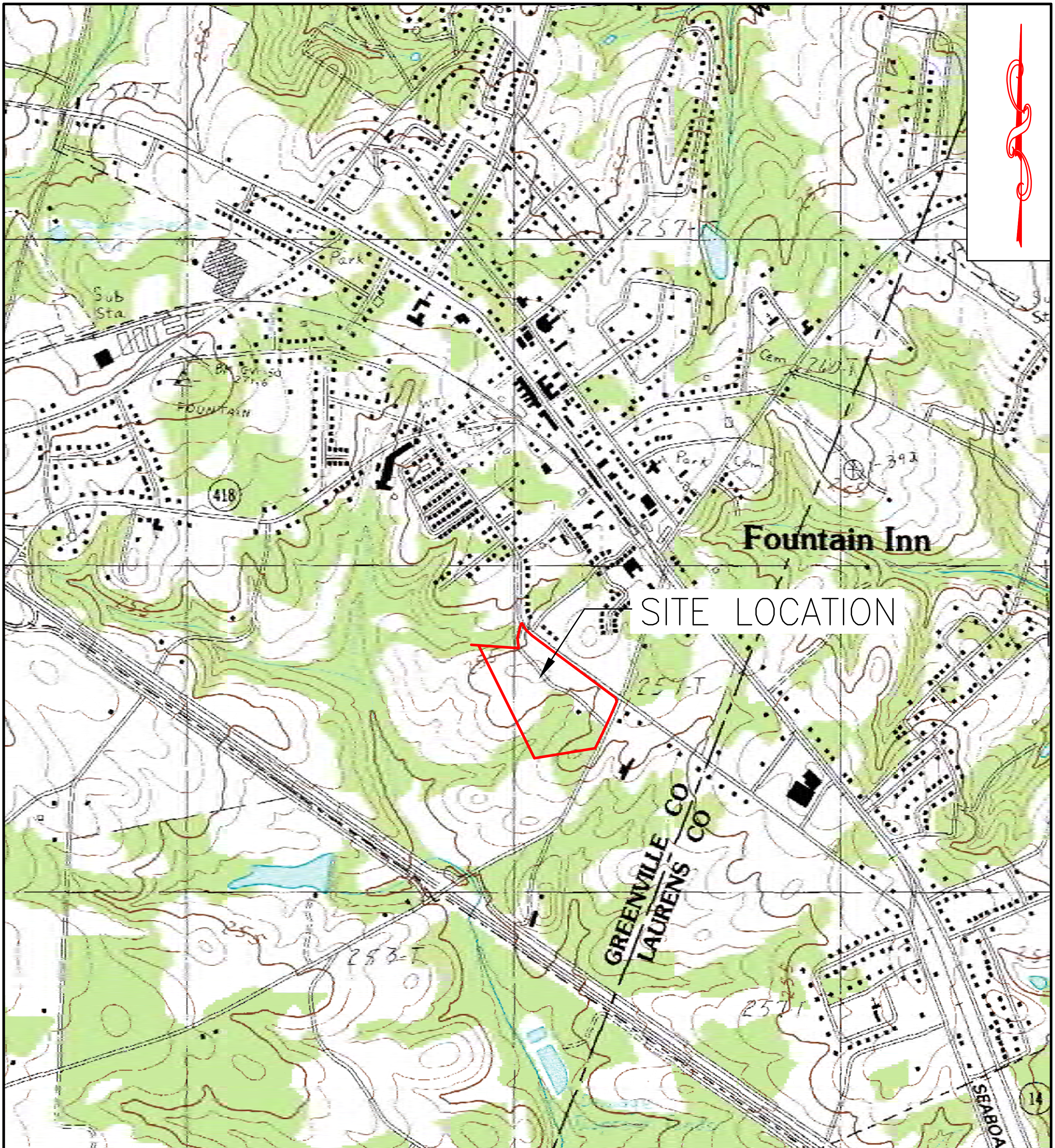
You may use the space below to write your comments, then fold and mail. Comments must be postmarked by **October 10, 2022**. If you have any questions, please contact Cynde Devlin at 803-898-0816. You may also submit your questions and/or comments electronically to: devlincl@dhec.sc.gov

Name ________________________________ Telephone ________________________________

Address ________________________________ Email ________________________________

City ________________________________

State ______________ Zip ______________



REFERENCE:
2001 DELORME STREET ATLAS USA

0.25 0.125 0 0.25 0.5

APPROXIMATE SCALE IN MILES

wood.

30 PATEWOOD DRIVE
SUITE 200
GREENVILLE, S.C. 29615
Phone: (864) 458-3600
Fax: (864) 458-3700

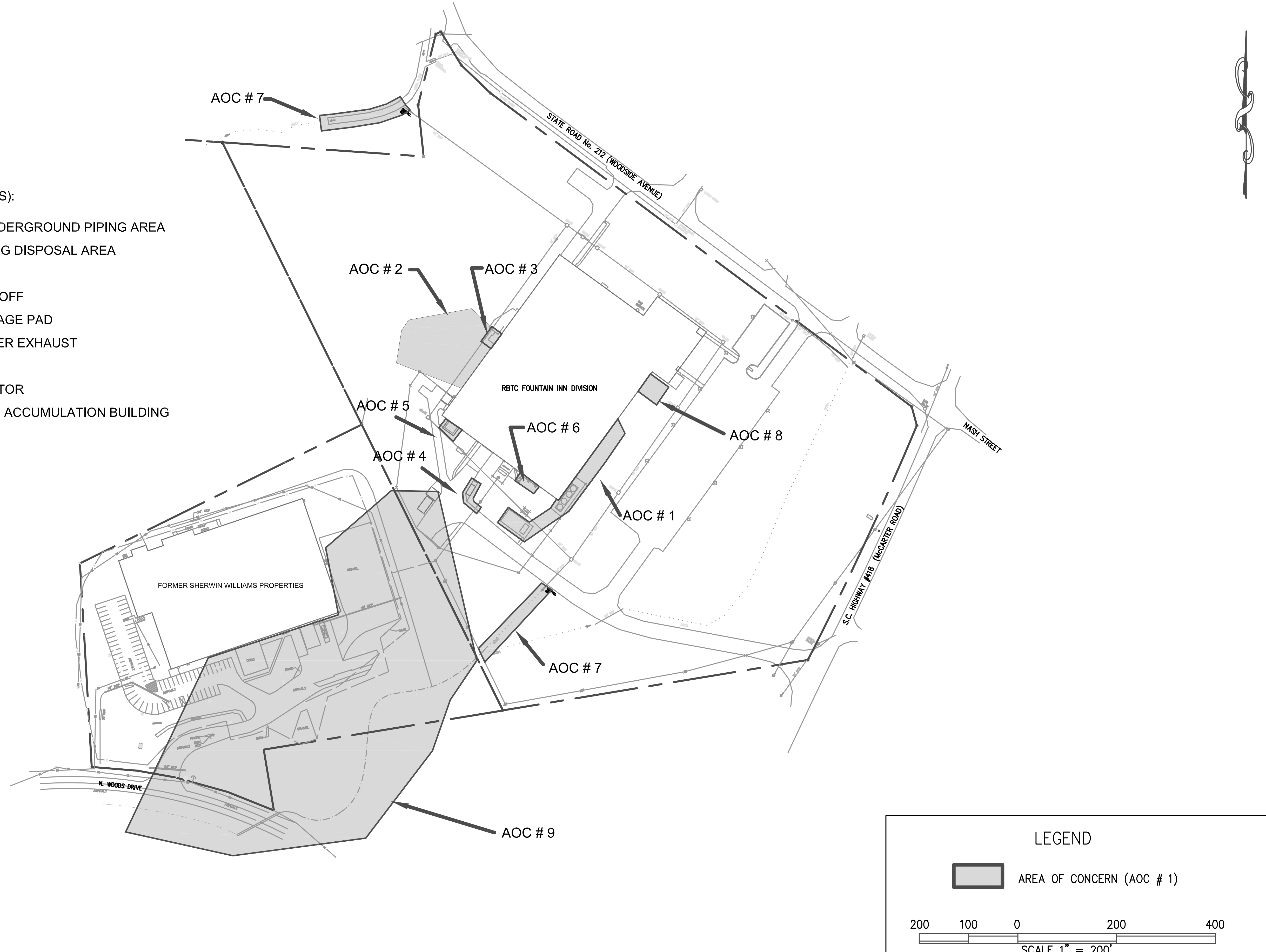
SITE LOCATION MAP
FORMER VERMONT BOSCH SITE
FOUNTAIN INN, SOUTH CAROLINA

FIGURE
2.1

FILE:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:	JOB NO:
FIGURE 1.DWG	CHB	PSJ	PSJ	5/14/12	6251161022.04.02

SITE AREAS OF CONCERN (AOCS):

AOC #1 TANK CONTAINMENT AND UNDERGROUND PIPING AREA
AOC #2 HEAT TREAT WATER CLEANING DISPOSAL AREA
AOC #3 FORMER METALS BAGHOUSE
AOC #4 FORMER SCRAP METAL ROLLOFF
AOC #5 FORMER EMPTY DRUM STORAGE PAD
AOC #6 COMPOUNDING ROOM BLOWER EXHAUST
AOC #7 STORM WATER OUTFALLS
AOC #8 FORMER OIL/WATER SEPARATOR
AOC #9 FORMER HAZARDOUS WASTE ACCUMULATION BUILDING



DRAWN BY: CHB	DATE: 4/1/16	REVISIONS		
		No.	DESCRIPTION	BY
CHECKED BY: GWW	DATE: 4/1/16			
PROJECT NO: 6251161022.04.02				

wood.

30 Patewood Drive
Suite 200
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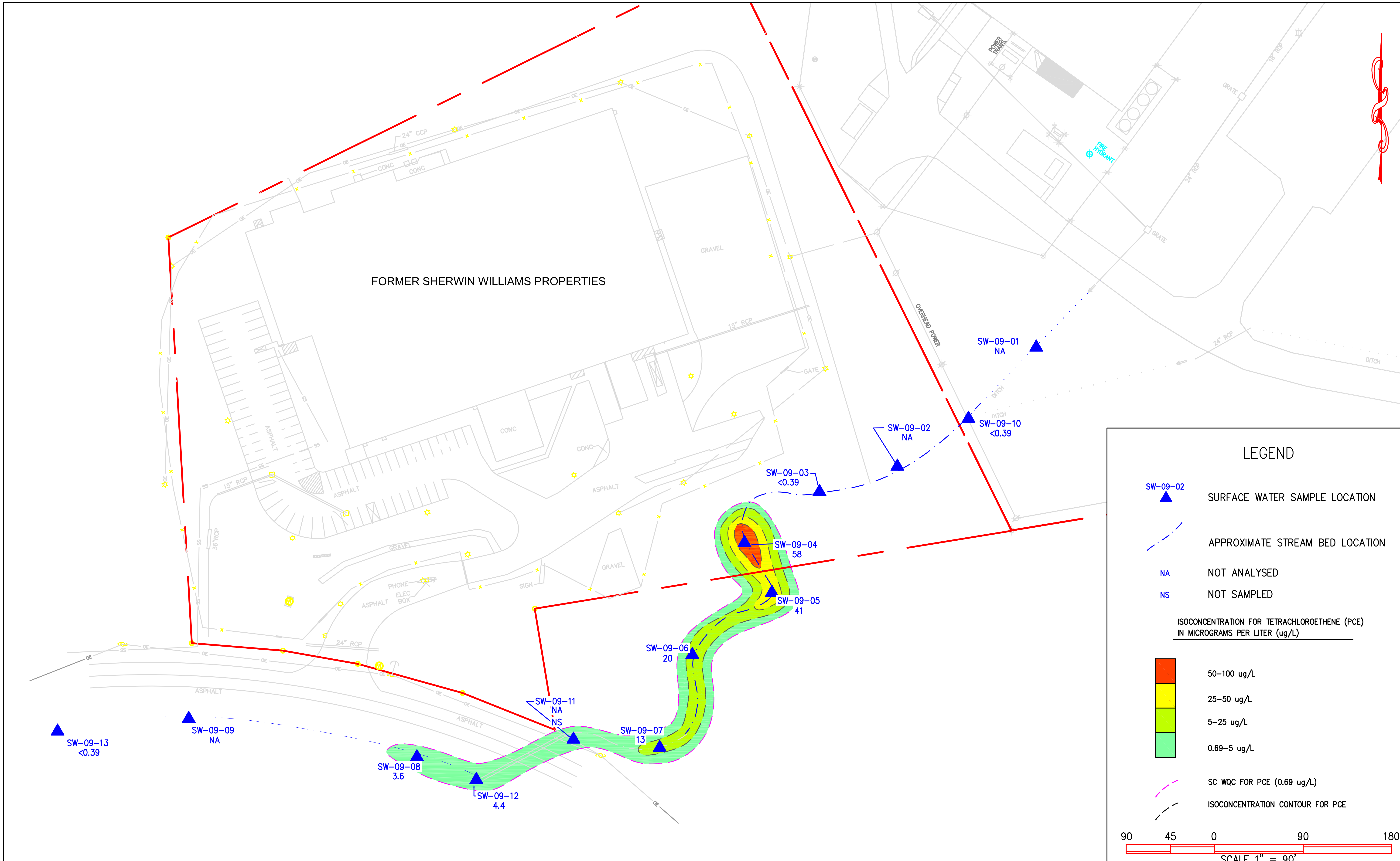
AREAS OF CONCERN LOCATION MAP
RBTC FOUNTAIN INN DIVISION/FORMER SHERWIN WILLIAMS PROPERTIES
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 2.2



DRAWN BY: ZJD	DATE: 10/28/15
CHECKED BY: PSJ	DATE: 10/28/15
PROJECT NO: 6251161022.04.02	

REVISIONS

No.	DESCRIPTION	BY

wood.

30 PATEWOOD DRIVE
SUITE 200
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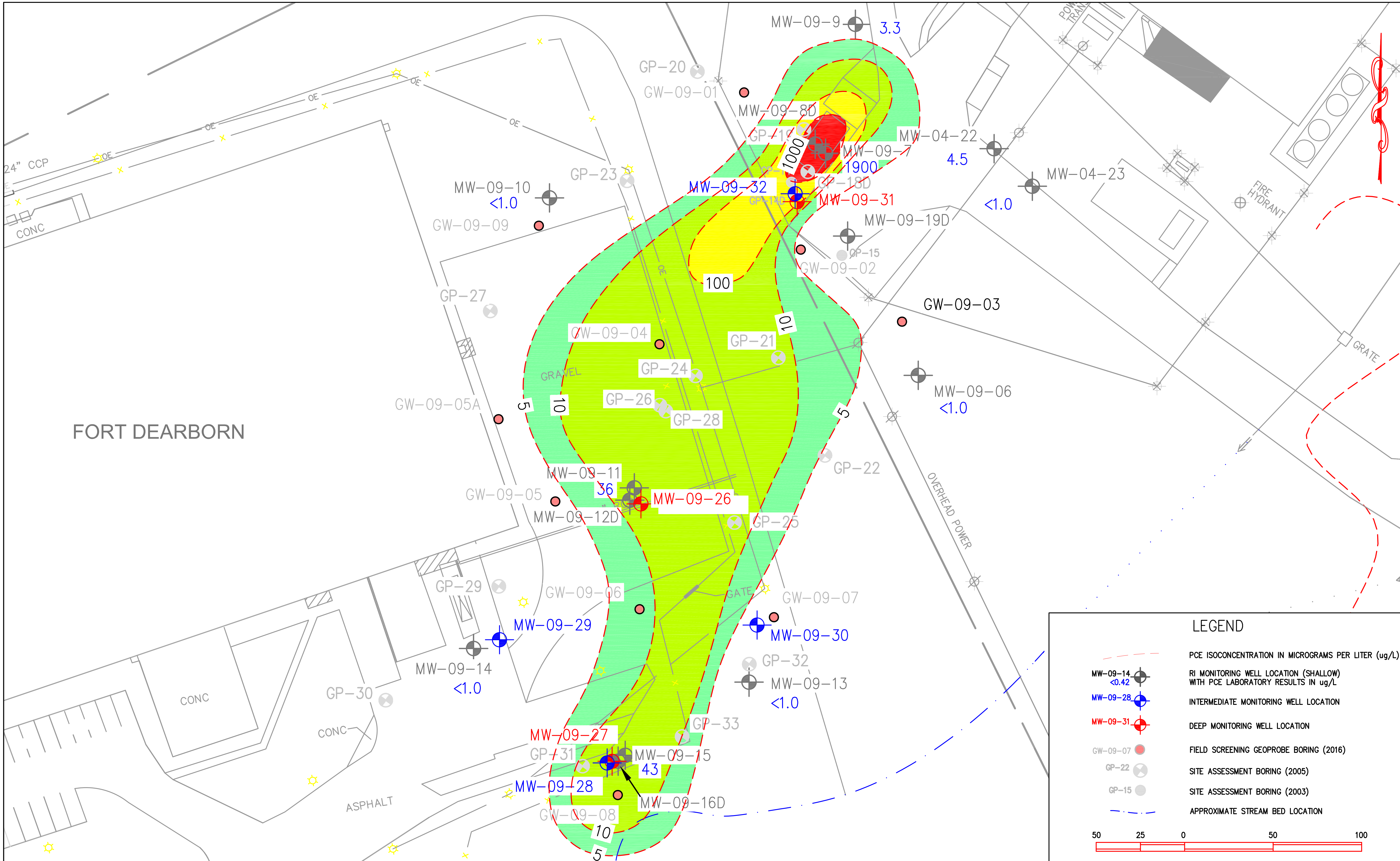
PCE-IMPACTED SURFACE WATER MAP
RBTC FOUNTAIN INN DIVISION/FORMER SHERWIN WILLIAMS PROPERTIES
FOUNTAIN INN, SOUTH CAROLINA

FIGURE
2.6



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PROJECT NO:	6251161022.04.02		

REVISIONS

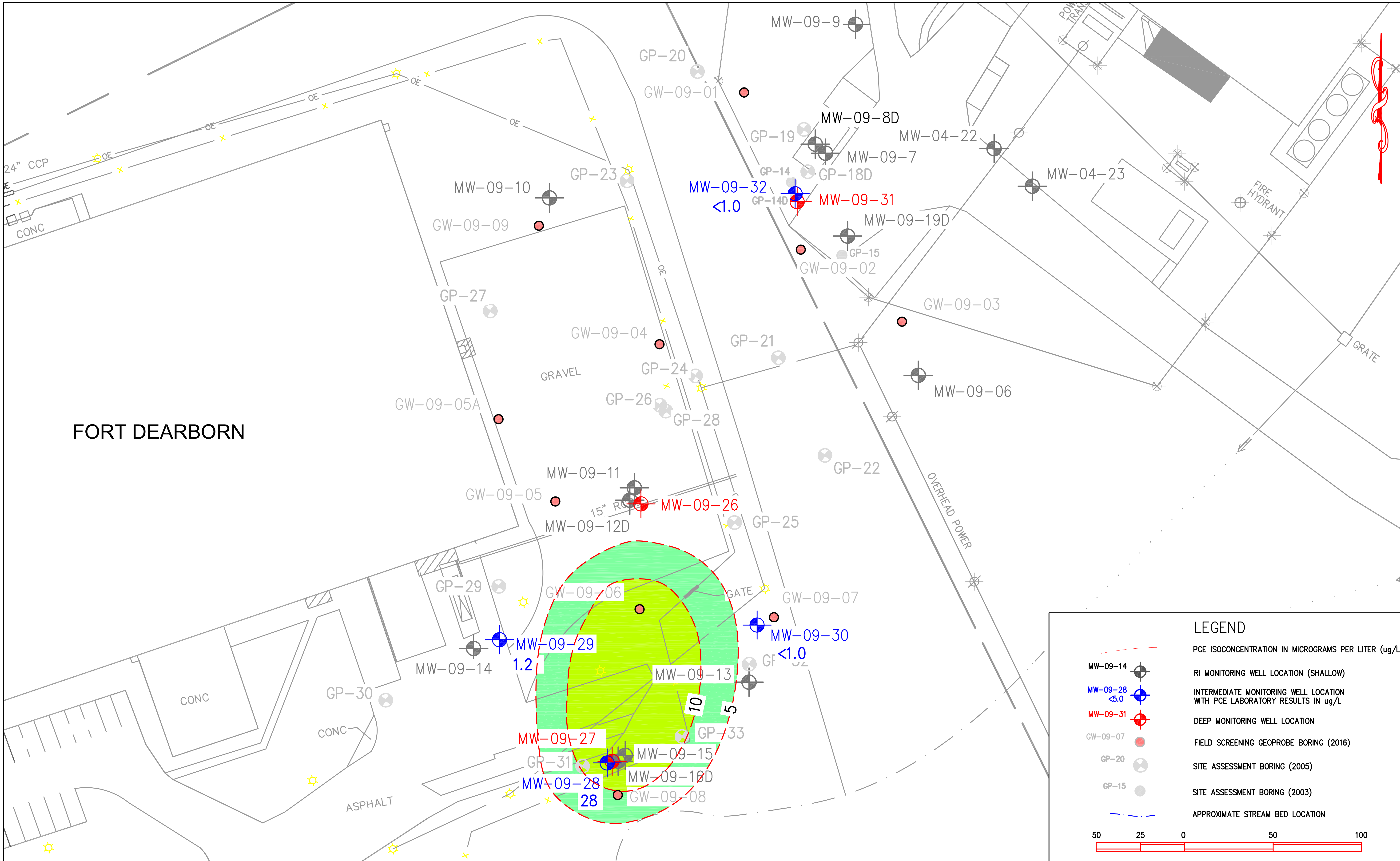
No.	DESCRIPTION	BY

wood.

30 PATEWOOD DRIVE
SUITE 200
GREENVILLE, S.C. 29615
Phone: (864) 458-3600
Fax: (864) 458-3700

SHALLOW ZONE PCE ISOCONCENTRATION CONTOUR MAP
FORMER VERMONT BOSCH SITE/FORT DEARBORN PROPERTY
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 2.8



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PROJECT NO:	6251161022.04.02		

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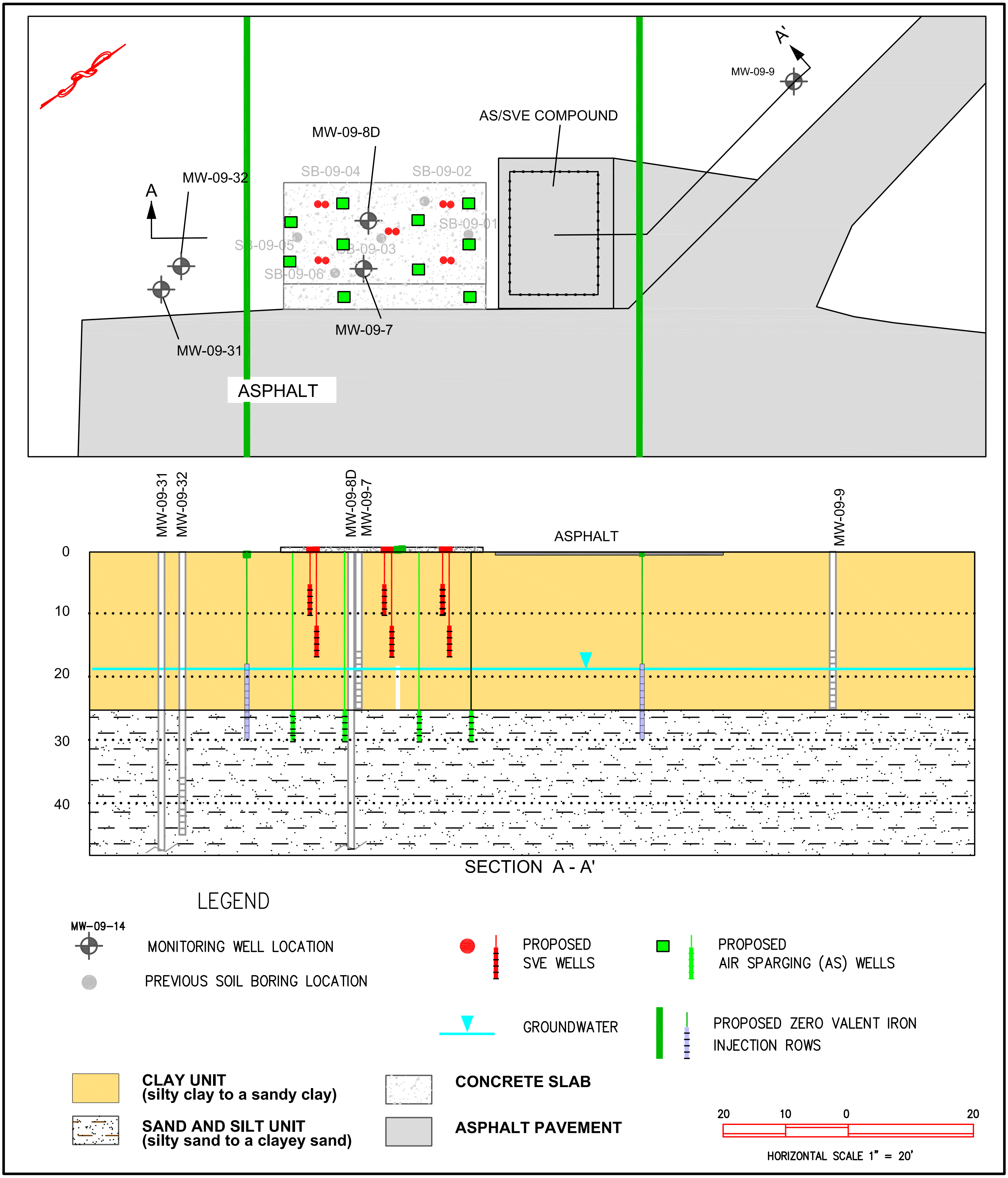
INTERMEDIATE ZONE PCE ISOCONCENTRATION CONTOUR MAP
FORMER VERMONT BOSCH SITE/FORT DEARBORN PROPERTY
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 2.9



wood.

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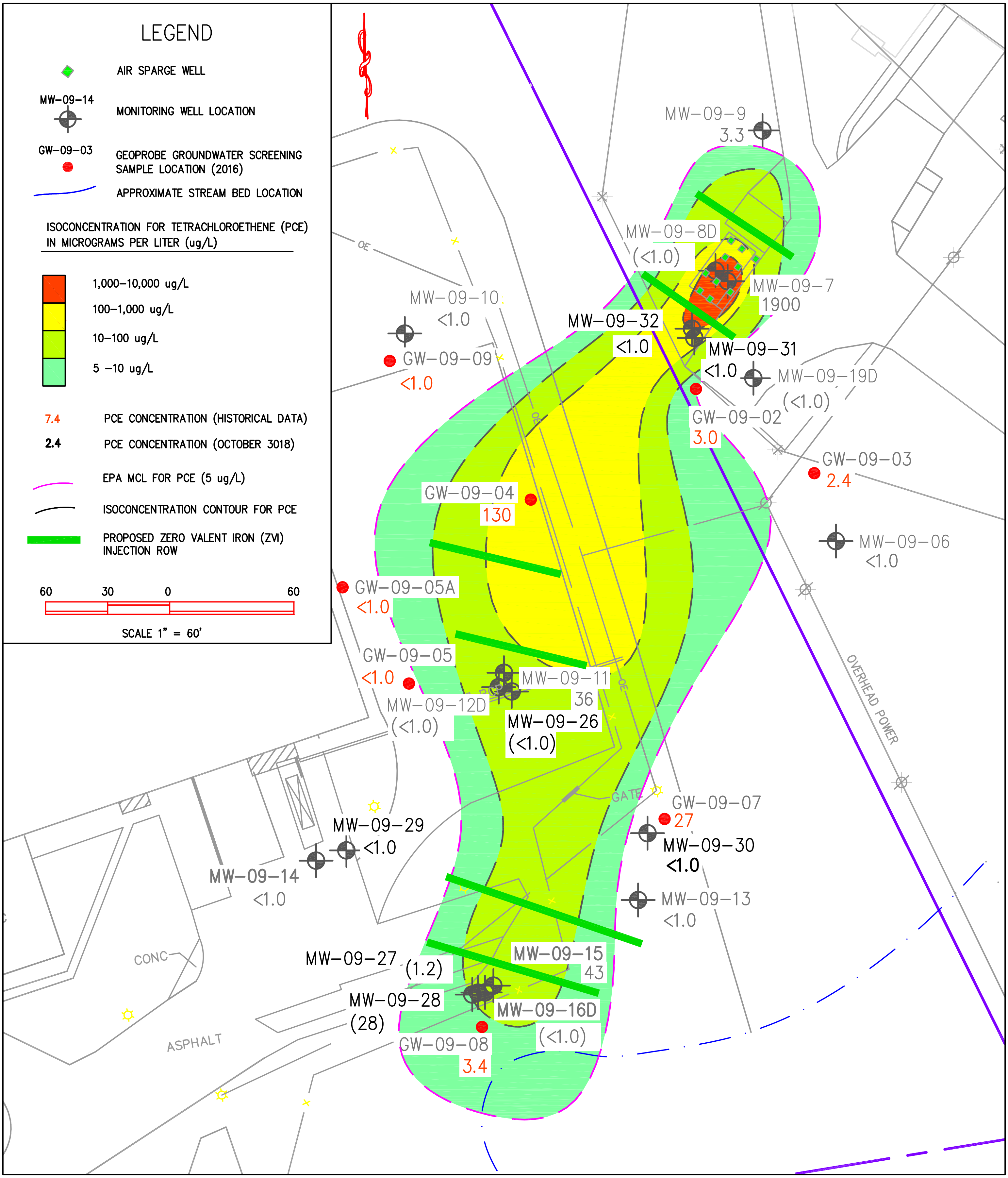
ALTERNATIVE 2 - SVE SOIL TREATMENT PLAN
RBTC FOUNTAIN INN DIVISION / FORMER
SHERWIN WILLIAMS PROPERTIES
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 5.1a

FILE: Fig 5.1a_alt–2	PREPARED BY: SEA	CHECKED BY: PSJ	DATE: 09–04–19	JOB NO: 6251161022.04.02



wood.

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SUITE 200
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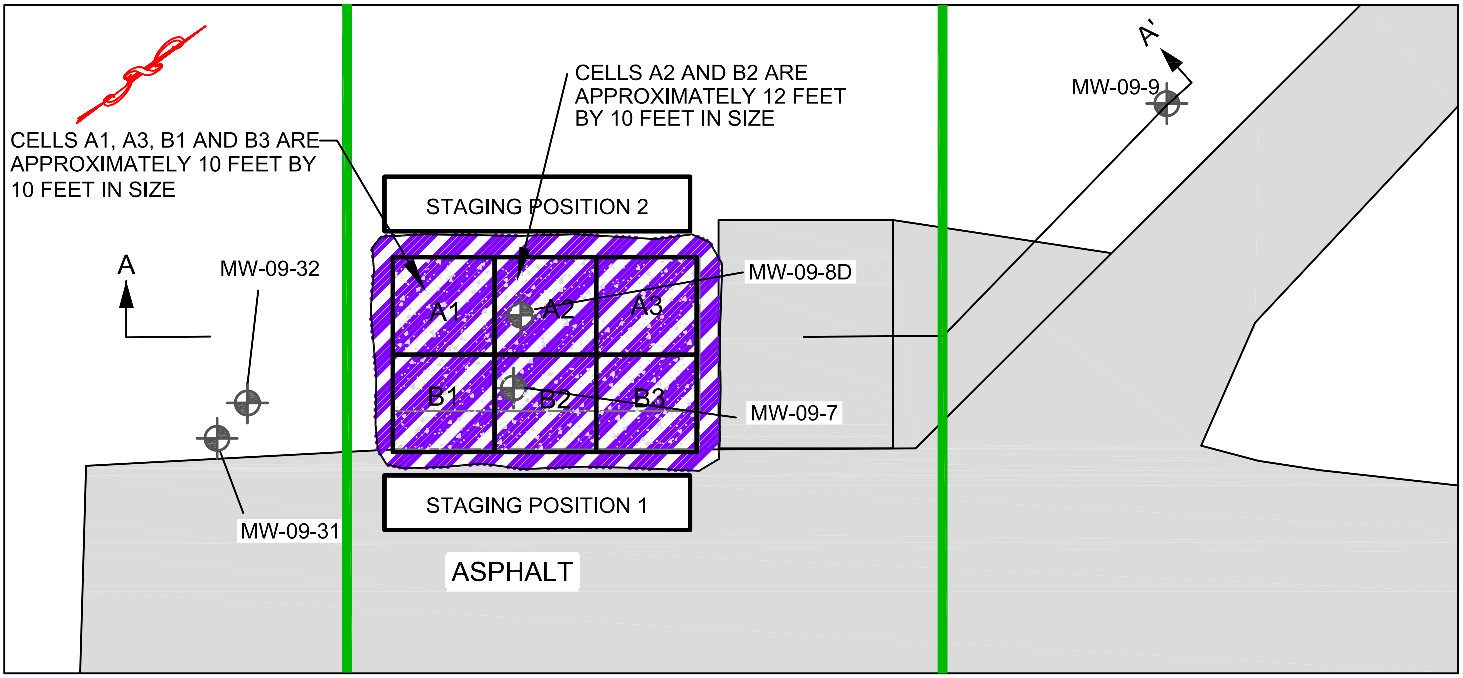
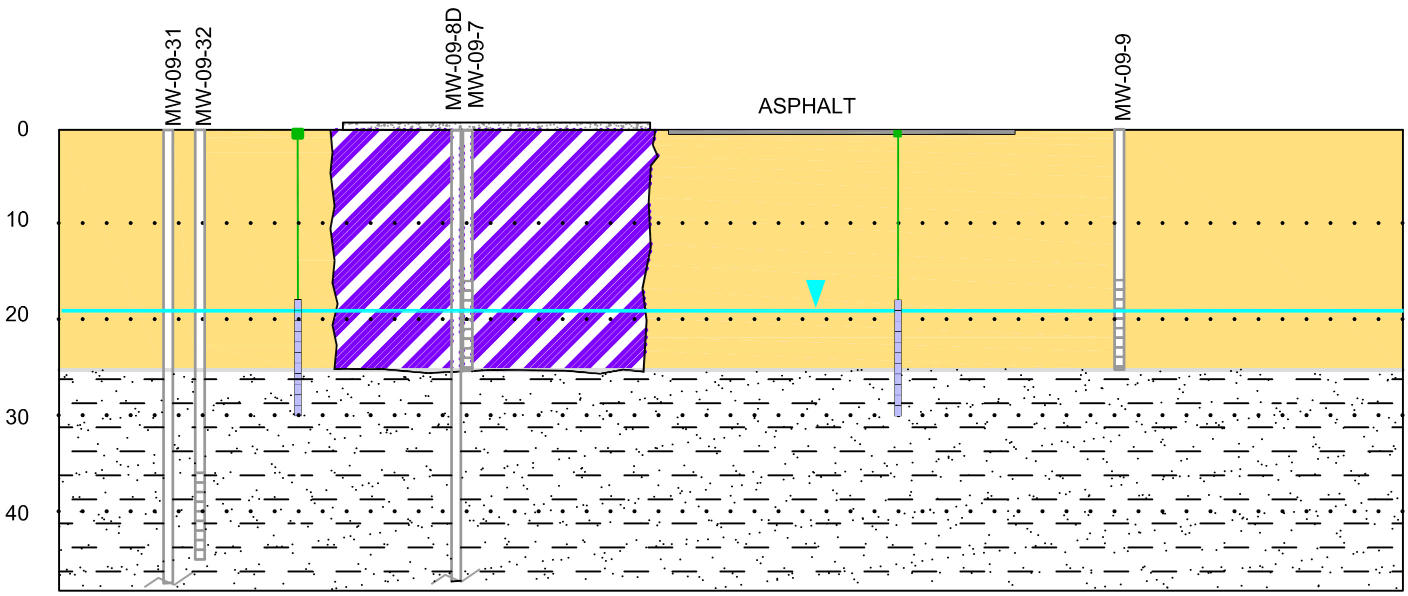
ALTERNATIVE 2 - AS AND ISCR GROUNDWATER TREATMENT PLAN
RBTC FOUNTAIN INN DIVISION / FORMER SHERWIN WILLIAMS PROPERTIES
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 5.1b

FILE: Fig 5.1b_alt2	PREPARED BY: SEA	CHECKED BY: PSJ	DATE: 09-04-19	JOB NO: 6251161022.04.02





SECTION A - A'

LEGEND

MW-09-14 MONITORING WELL LOCATION

PROPOSED ISCO SOIL BLENDING AREA

PROPOSED ZERO VALENT IRON INJECTION ROWS

GROUNDWATER

CLAY UNIT (silty clay to a sandy clay)

SAND AND SILT UNIT (silty sand to a clayey sand)

CONCRETE SLAB

ASPHALT PAVEMENT

20 10 0 20

HORIZONTAL SCALE 1" = 20'

wood.

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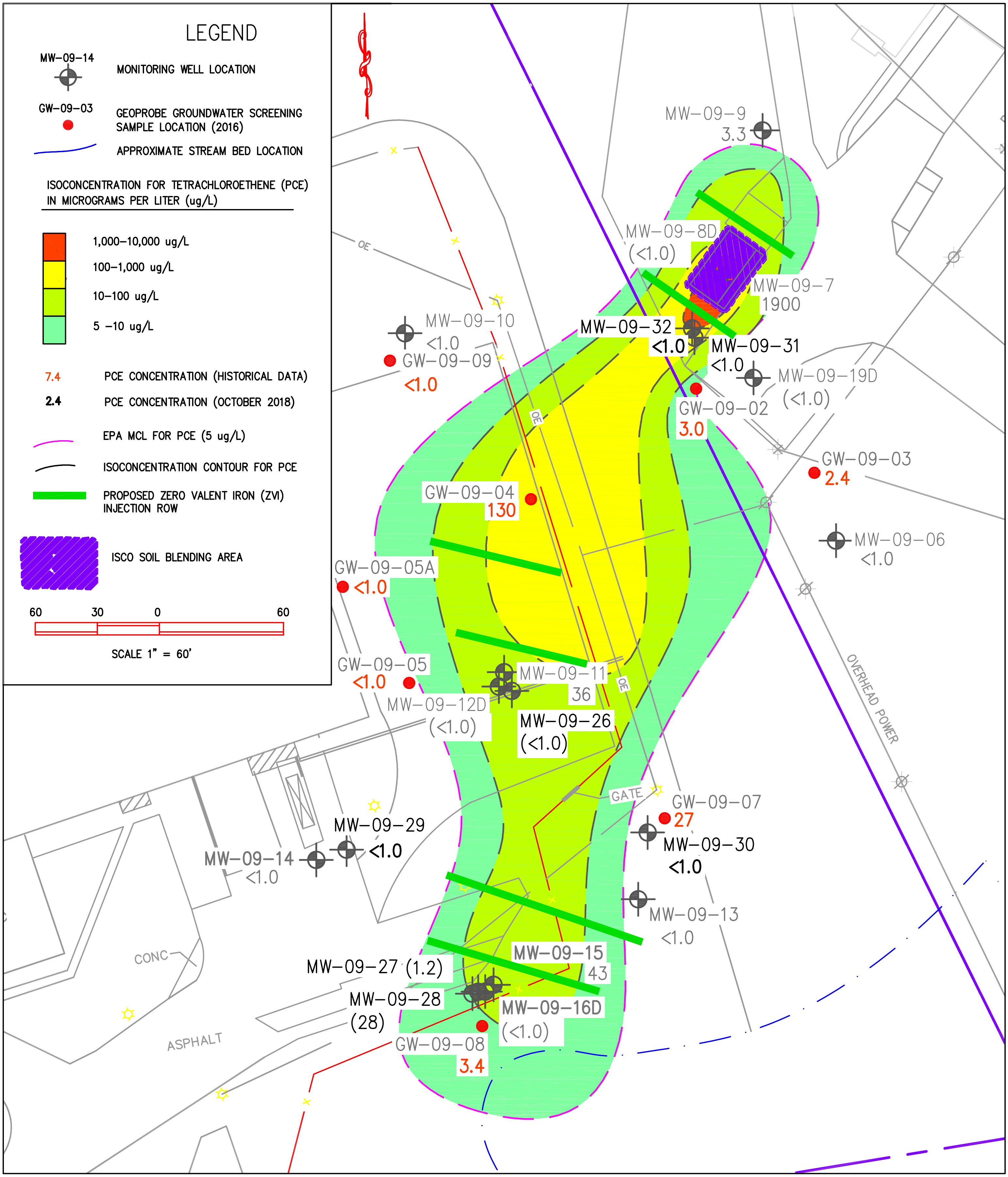
ALTERNATIVE 3 - ISCO BLENDING SOIL TREATMENT PLAN

RBTC FOUNTAIN INN DIVISION / FORMER SHERWIN WILLIAMS PROPERTIES
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 5.2a

FILE:	PREPARED BY:	CHECKED BY:	DATE:	JOB NO:
Fig 5.2a_alt-3	SEA	PSJ	09-04-19	6251161022.04.02



wood.
30 PATEWOOD DRIVE
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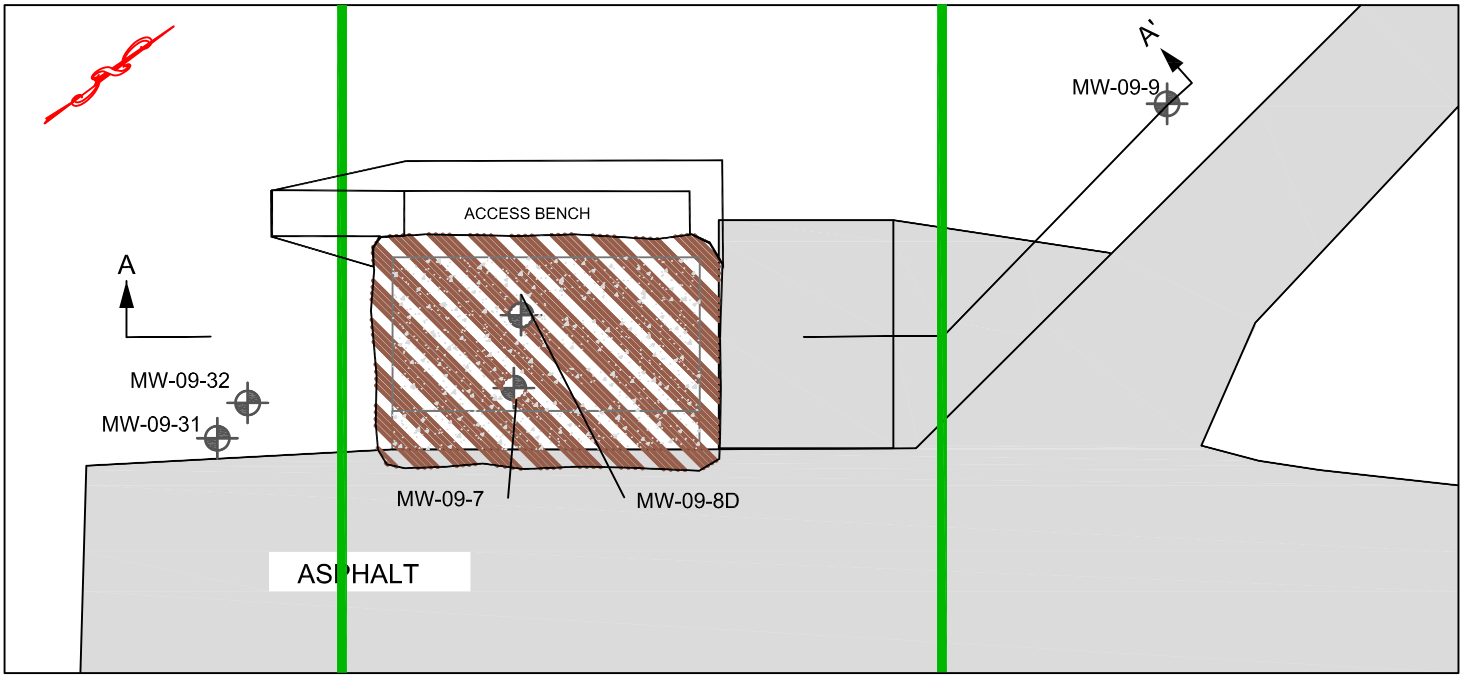
Fax: (864) 458-3700

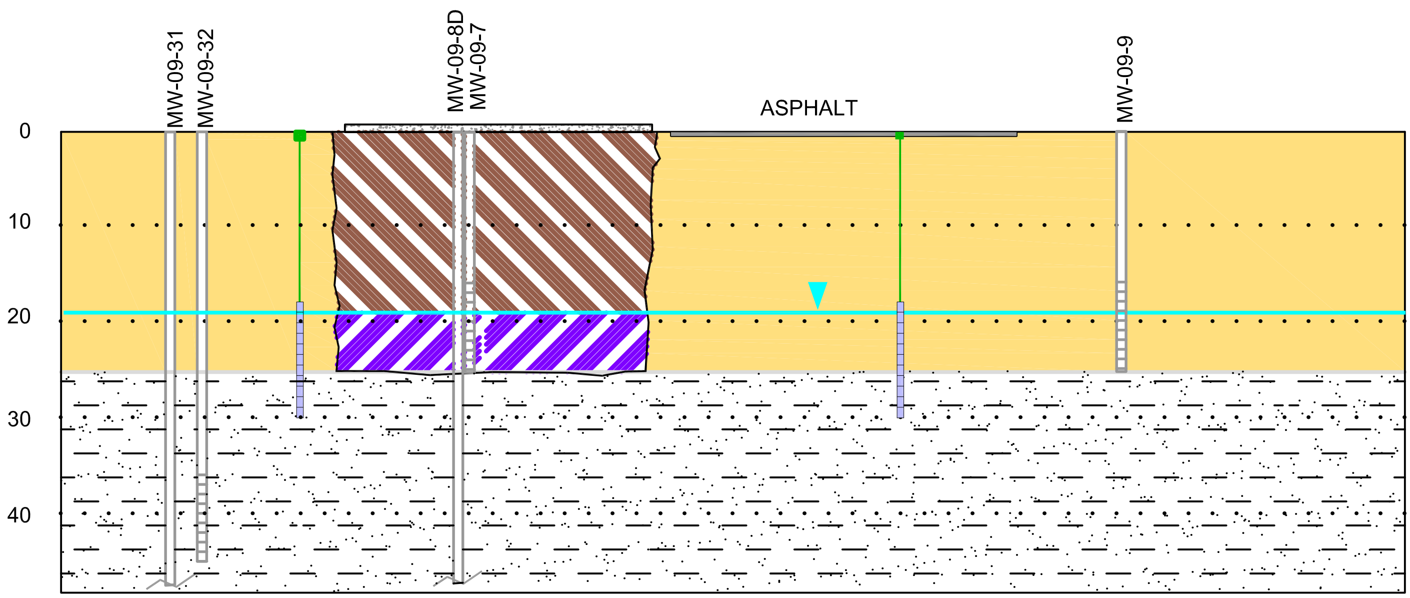
ALTERNATIVE 3 - ISCO BLENDING WITH ISCR
GROUNDWATER TREATMENT PLAN

RBTC FOUNTAIN INN DIVISION / FORMER
SHERWIN WILLIAMS PROPERTIES
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 5.2b

FILE:	PREPARED BY:	CHECKED BY:	DATE:	JOB NO:
Fig 5.2b_alt3	SEA	PSJ	09-04-19	6251161022.04.02





SECTION A - A'

LEGEND

MW-09-14 MONITORING WELL LOCATION

PROPOSED ZERO VALENT IRON INJECTION ROWS

PROPOSED SOIL EXCAVATION AREA

PROPOSED ISCO BLENDING AREA

GROUNDWATER

CLAY UNIT (silty clay to a sandy clay)

SAND AND SILT UNIT (silty sand to a clayey sand)

CONCRETE SLAB

ASPHALT PAVEMENT

20 10 0 20

HORIZONTAL SCALE 1" = 20'

wood.

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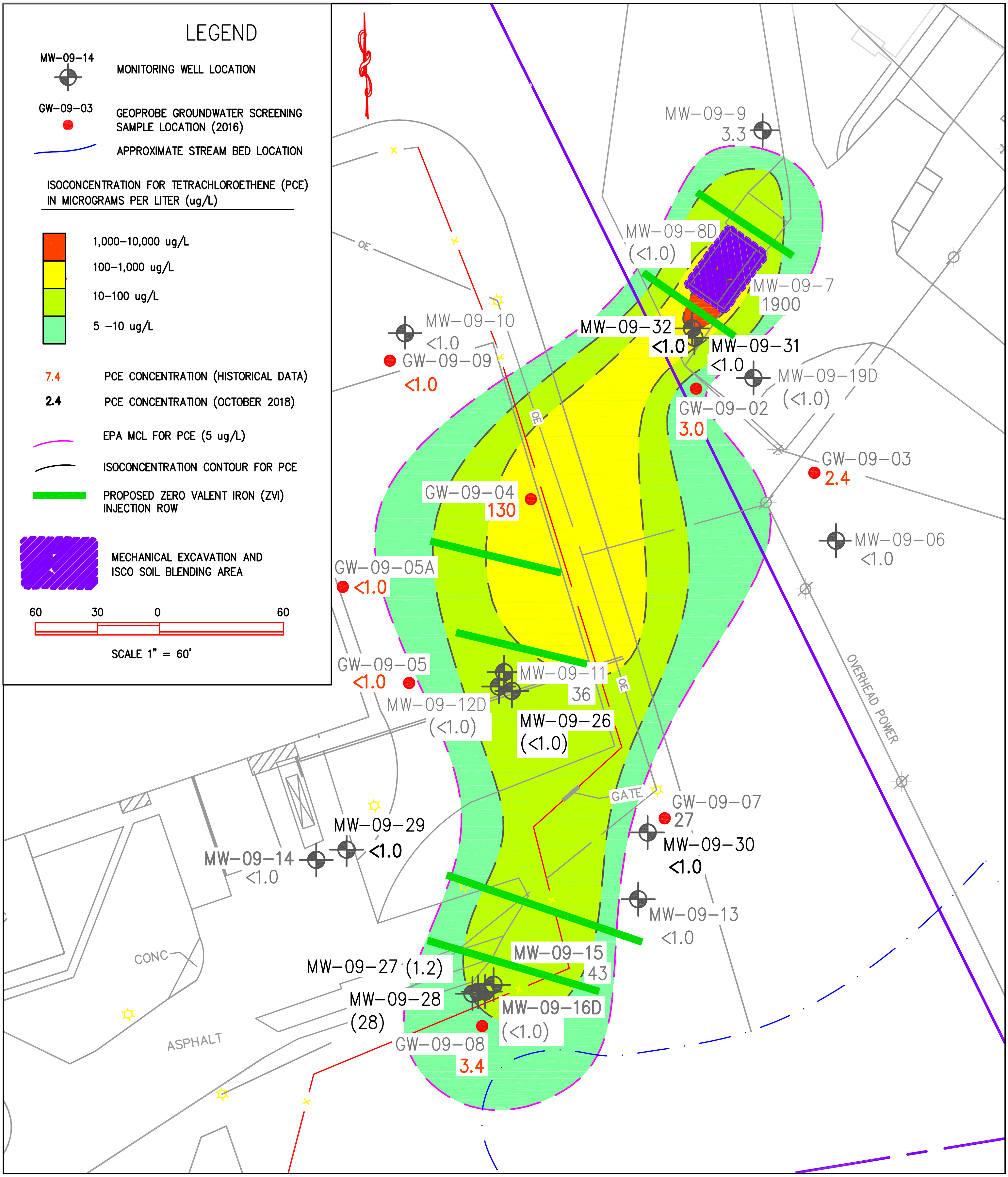
ALTERNATIVE 4 - EXCAVATION AND ISCO BLENDING TREATMENT PLAN
RBTC FOUNTAIN INN DIVISION / FORMER SHERWIN WILLIAMS PROPERTIES
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 5.3a

FILE: Fig 5.3a_alt-4	PREPARED BY: SEA	CHECKED BY: PSJ	DATE: 09-04-19	JOB NO: 6251161022.04.02



wood.

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ALTERNATIVE 4 - EXCAVATION AND ISCO BLENDING WITH ISCR GROUNDWATER TREATMENT PLAN

RBTC FOUNTAIN INN DIVISION / FORMER SHERWIN WILLIAMS PROPERTIES
FOUNTAIN INN, SOUTH CAROLINA

FIGURE 5.3b

FILE: Fig 5.3b_alt4	PREPARED BY: SEA	CHECKED BY: PSJ	DATE: 09-04-19	JOB NO: 6251161022.04.02