# U.S. ENVIRONMENTAL PROTECTION AGENCY

## SUPERFUND PROPOSED PLAN FACT SHEET

## *SANFORD DRY CLEANERS*

## *SUPERFUND SITE*

**Sanford, Seminole County, Florida** **May 2013**

### INTRODUCTION

The U.S. Environmental Protection Agency (EPA) invites comments on the proposed cleanup plan for the Sanford Dry Cleaners Superfund Site (Site) located in the City of Sanford, Florida. This **Proposed Plan[1] (PP)** describes the remedial alternatives evaluated to address the Site contamination, and provides the rationale for EPA's preferred alternative. EPA in consultation with Florida Department of Environmental Protection (FDEP) will select a remedy to address the Site contamination after reviewing and considering the comments submitted during public comment period.

From 1993 to 2009, Site investigation activities were conducted under FDEP's oversight. From May 2011 to April 2012, subsequent to the inclusion of the Site on the National Priority List (NPL), EPA conducted the **Remedial Investigation/Feasibility Study (RI/FS)** for the Site.

This PP has been developed to comply with the requirements of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**, Section 300.430(f)(2) and the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, Section 117(a). This PP presents a summary of the RI/FS data and other documents included in the Site **Administrative Record**. These documents can be found at the **Information Repository** for the Site, which is available at the Sanford Public Library located at 150 North Palmetto Avenue, Sanford, Florida.

### SITE LOCATION AND DESCRIPTION

The Sanford Dry Cleaners property is located in the historic district of downtown Sanford and is comprised of two contiguous parcels at 121 and 113/117 South Palmetto Avenue. The 121 South Palmetto Avenue property, the potential release area,

[1] All terms in bold typeface are defined in the Glossary attached to this Proposed Plan.

## Community Involvement Coordination

### Public Comment Period

**Dates:** May 20, 2013 – June 18, 2013
**Purpose:** To solicit comments on the Proposed Cleanup Plan

### Public Meeting

**Date:** Thursday, June 6, 2013
**Time:** 6:00 to 8:00 PM
**Place:** Sanford City Commission Chambers
300 North Park Avenue
Sanford, FL 32772
**Purpose:** To discuss the Proposed Cleanup Plan for the Sanford Dry Cleaners Superfund Site.

### EPA Contacts

Direct questions or written comments to:

**Robenson Joseph**, Remedial Project Manager
OR
**Kyle Bryant**, Community Involvement Coordinator
Superfund Remedial Branch
U.S. EPA
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, Georgia 30303
**(800) 435-9234**

The Administrative Record and an Information Repository for the Sanford Dry Cleaners Site are located at:

Sanford Public Library
150 North Palmetto Avenue
Sanford, FL 32771
(407) 322 2182

is approximately 0.1 acre in size and contains a two-story building with a single story addition. The location of the Site is presented on Figure 1. Site features are shown on Figure 2.

The Site is bordered by a vacant building (former Thrifty Service Station) to the south and an alley to the east, with a job/career center and a restaurant across the alley. South Palmetto Avenue is to the west, with a pottery store and wine company across the street. The City of Sanford historic fire house is to the north, which currently contains a photography studio and residence.

**SITE HISTORY**

Dry cleaning operations were first conducted at the 121 South Palmetto Avenue property in the 1940s (Downtown Drycleaners & Laundry). In 1964, the owner of the dry cleaning and laundry business purchased the adjoining 113 South Palmetto Avenue property. In the early 1970s, both properties were sold together with all dry cleaning equipment, and operations continued under the name Sanford Dry Cleaners. In the late 1970s, the property owner constructed the one-story building (now with the address of 117 South Palmetto Avenue) on the southern half of the 113 South Palmetto Avenue property, which had formerly been vacant. The property owners reportedly operated the dry cleaner at the location until both parcels were sold to EnCon Enterprises Trust (EnCon) in 1996. Dry cleaning operations continued under EnCon's ownership until 2001, when the property was sold as investment real estate. The buildings are currently unoccupied. The facility is anticipated to be redeveloped as a mixed-used (commercial and residential) property.

Limited information is available regarding the day-to-day operations at Sanford Dry Cleaners. However, it is known that the previous property owners/operators used tetrachloroethylene (PCE) as the cleaning agent, which is consistent with the historic use of dry cleaning solutions in the industry. Dry cleaning operations using PCE were believed to have been performed in the single-story portion of the 121 South Palmetto Avenue building. PCE is also sometimes called "perchloroethene" or "PERC."

**SITE INVESTIGATIONS**

From 2005 to 2012, FDEP and the EPA conducted several environmental investigations at the Site. During these investigations, soil, **ground water**, soil-vapor, and air samples were collected and analyzed to define the nature and extent of the Site contamination. In addition, pore water and surface water samples were also collected from Lake Monroe, located approximately 1,000 feet from the release area, to assess the potential ecological impacts.

Analytical results of the collected samples revealed the presence of **chlorinated volatile organic compounds (CVOCs)** in the soil, ground water, and indoor air samples at concentrations above the human health standards. The highest PCE concentrations detected in soil and ground water were 150 milligrams per kilogram (mg/kg) and 37,000 micrograms per liter (µg/L) respectively. These concentrations were observed in soil and ground water samples collected directly adjacent to the back door-way of the 121 South Palmetto Avenue property. These concentrations are well above the FDEP cleanup standards and the EPA **Maximum Contaminant Levels** (MCLs). In addition, PCE concentrations of 290,000 micrograms per cubic meter (µg/$m^3$) and 30 µg/$m^3$ were also observed in soil-vapor and indoor air samples collected from the 121 South Palmetto Avenue property respectively. These concentrations are above the EPA Region 4 screening levels (RSLs) for ambient air. Analytical results of the samples collected during these investigations are included in the RI Report (J. M. Waller, January 2013).

**SITE PHYSICAL CHARACTERISTICS**

The following sections present a summary of the Site geologic and hydrogeologic conditions. Details of the Site physical characteristics, including soil boring logs and stratigraphic cross sections, are presented in the RI report.

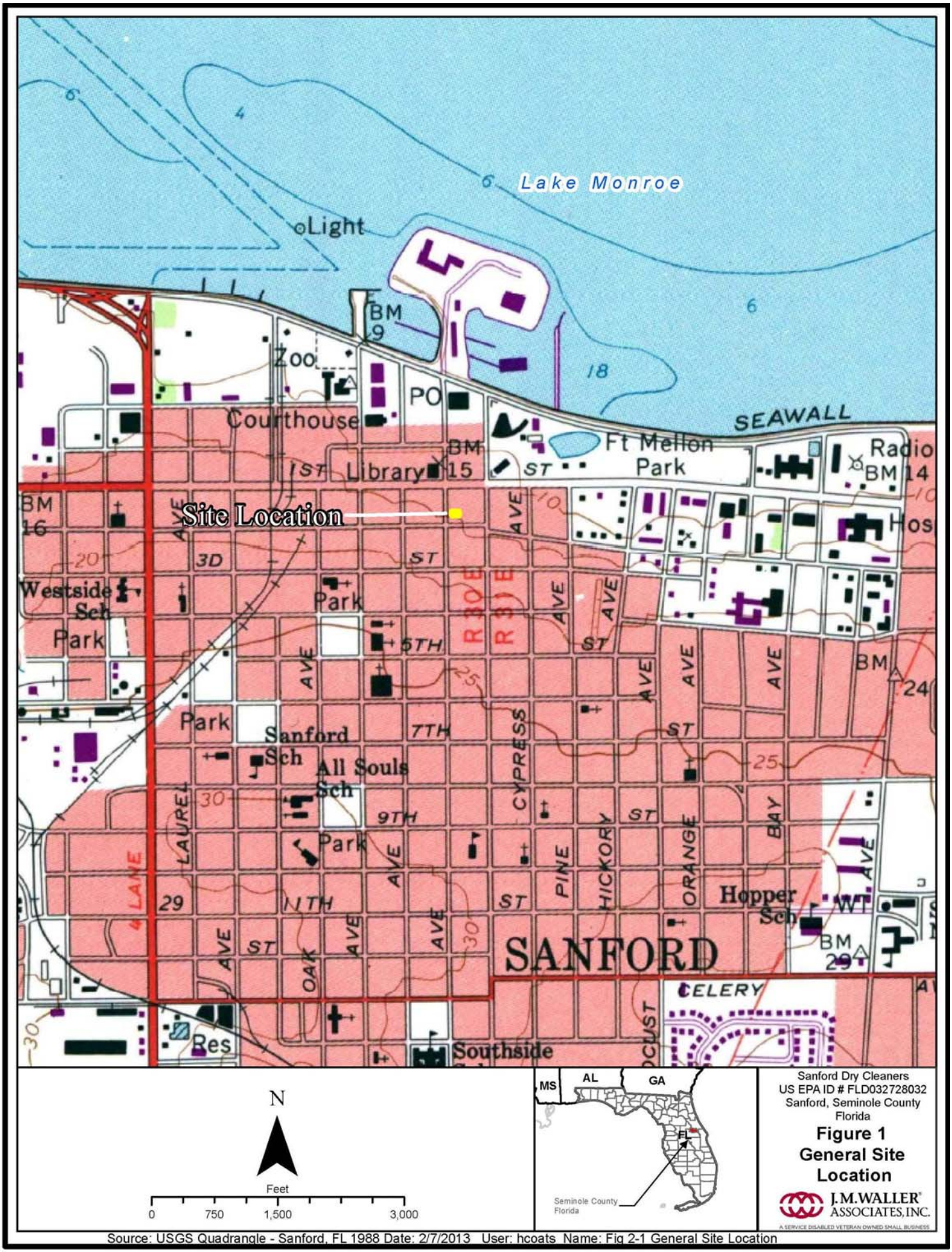
## Site Geology

The sediments underlying the Site include sand, shells, silt, and clay. The general stratigraphy of the Site consists of a surficial unit of fine sand with varying amounts of silt and shells that extends to depths ranging from approximately 35 feet below ground surface (bgs) near the release area to approximately 66 feet bgs adjacent to Lake Monroe. A continuous layer of stiff to hard, plastic clay is present beneath the surficial unit. The clay layer is approximately 14 feet thick. Sediments below the clay layer consist of sand and shells.

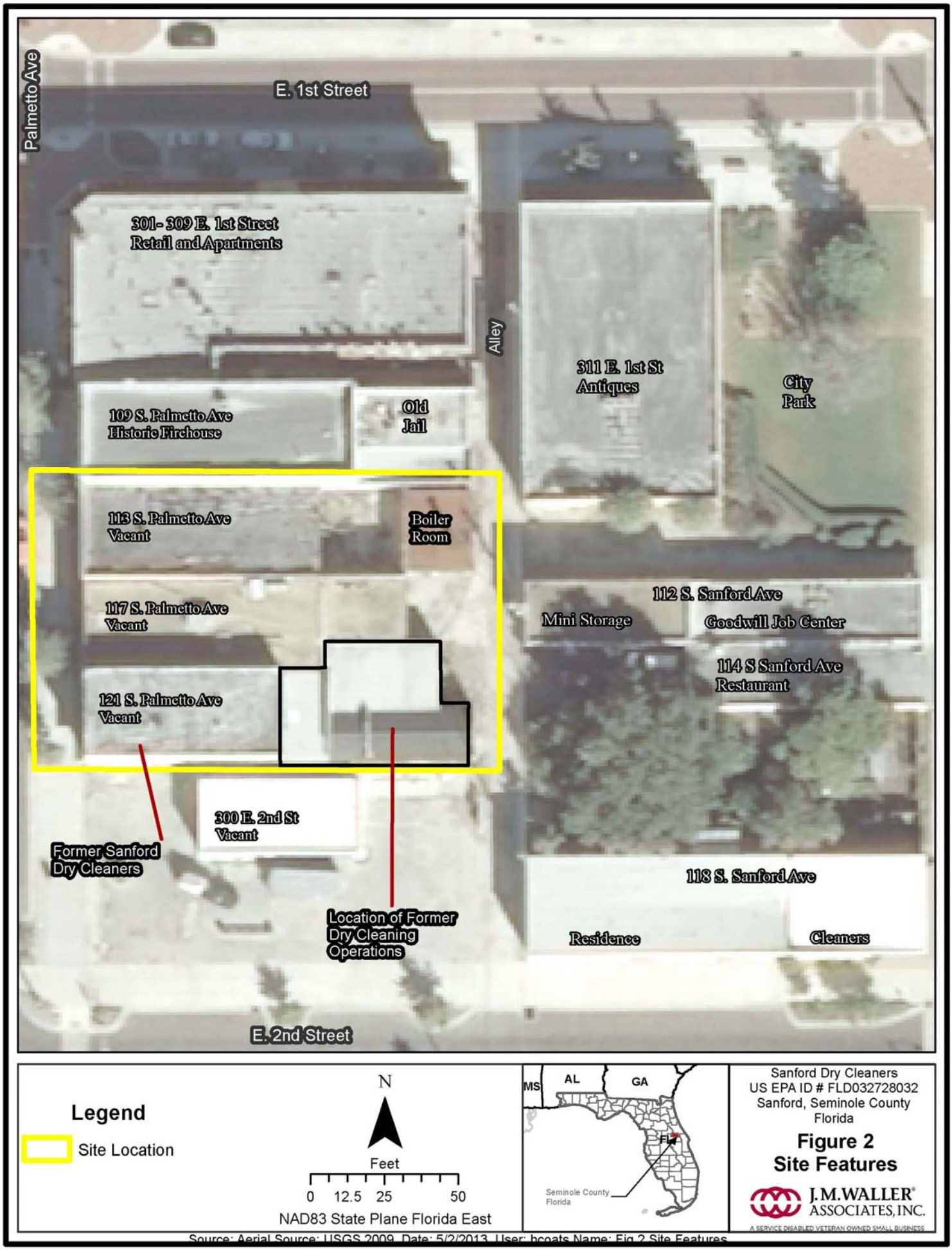
## Site Hydrogeology

Ground water at the Site is typically found at depths ranging from 4 to 6 feet bgs. The uppermost aquifer is the surficial aquifer, which occurs in the surficial sand, silt, and shell unit above the clay layer.

The sand and shells beneath the clay layer is the upper portion of the Floridan aquifer, which is a primary source of drinking water supply in the region.




Source: USGS Quadrangle - Sanford, FL 1988 Date: 2/7/2013 User: hcoats Name: Fig 2-1 General Site Location


Palmetto Ave
E. 1st Street
301- 309 E. 1st Street
Retail and Apartments
Alley
311 E. 1st St
Antiques
City
Park
109 S. Palmetto Ave
Historic Firehouse
Old
Jail
113 S. Palmetto Ave
Vacant
Boiler
Room
117 S. Palmetto Ave
Vacant
112 S. Sanford Ave
Mini Storage
Goodwill Job Center
114 S Sanford Ave
Restaurant
121 S. Palmetto Ave
Vacant
300 E. 2nd St
Vacant
Former Sanford
Dry Cleaners
118 S. Sanford Ave
Location of Former
Dry Cleaning
Operations
Residence
Cleaners
E. 2nd Street
Legend
Site Location
N
Feet
0 12.5 25 50
NAD83 State Plane Florida East
MS
AL
GA
FL
Seminole County
Florida
Sanford Dry Cleaners
US EPA ID # FLD032728032
Sanford, Seminole County
Florida
Figure 2
Site Features
J.M.WALLER
ASSOCIATES, INC.
A SERVICE DISABLED VETERAN OWNED SMALL BUSINESS
Source: Aerial Source: USGS 2009 Date: 5/2/2013 User: bcoats Name: Fig 2 Site Features

Ground water elevation measurements collected during the RI indicate the Site ground water flows primarily to the north/northeast toward Lake Monroe.

## NATURE AND EXTENT OF CONTAMINATION

From 1993 through 2012, EPA, FDEP and the representatives of the potentially responsible parties (PRP) conducted several environmental investigations at the Site. During these investigations, soil samples were collected inside and outside the former dry cleaning building and ground water monitoring wells were installed and sampled. CVOCs were detected in the collected soil and ground water samples. In addition, soil-vapor and air samples were also collected and analyzed to assess the potential vapor intrusion pathway. To evaluate the potential ecological impacts of the contamination, pore water and surface water samples were collected from Lake Monroe. Analytical results of the samples collected during the RI are included in the RI report and are summarized below.

### Soil

Soil sampling conducted during the various investigations at the Site showed the presence of CVOC-impacted soil above FDEP cleanup levels. The collected soil samples were grouped into two categories surface soil samples (0 – 1 foot bgs) and subsurface soil samples (1 – 3 feet bgs). PCE and trichloroethene (TCE) were the primary Site-related contaminants detected in the collected soil samples. The horizontal extent of the impacted soil is presented in Figure 3.

### Ground Water

CVOCs detected in the surficial aquifer at concentrations above the MCLs and/or FDEP ground water cleanup levels included PCE, TCE, cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and vinyl chloride. The highest CVOCs concentrations were observed in ground water samples collected near the rear of the 121 South Palmetto Avenue building. The horizontal extent of the CVOCs plume extends offsite to the north-northeast approximately 1,000 feet to the southern shore of Lake Monroe. Figure 4 shows the extent of contaminated ground water in the surficial aquifer.

The vertical extent of the contamination extends to the clay confining layer at the base of the surficial aquifer. Laboratory results of ground water samples collected from ground water monitoring well SDCMW-13F (screened in the Floridan aquifer) were below the MCLs and the FDEP ground water cleanup levels.

### Ground Water Monitored Natural Attenuation (MNA) Evaluation

Ground water monitored natural attenuation (MNA) evaluation was conducted during the RI/FS. The purpose of this evaluation was to assess the potential effectiveness of MNA as a remedial technology to address the Site ground water contamination in accordance with the EPA guidance titled "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites," dated April 21, 1999. The guidance lays out a three-tiered approach to evaluate the potential effectiveness of MNA as a remedial alternative. These three tiers of site-specific information, or "lines of evidence," which are:

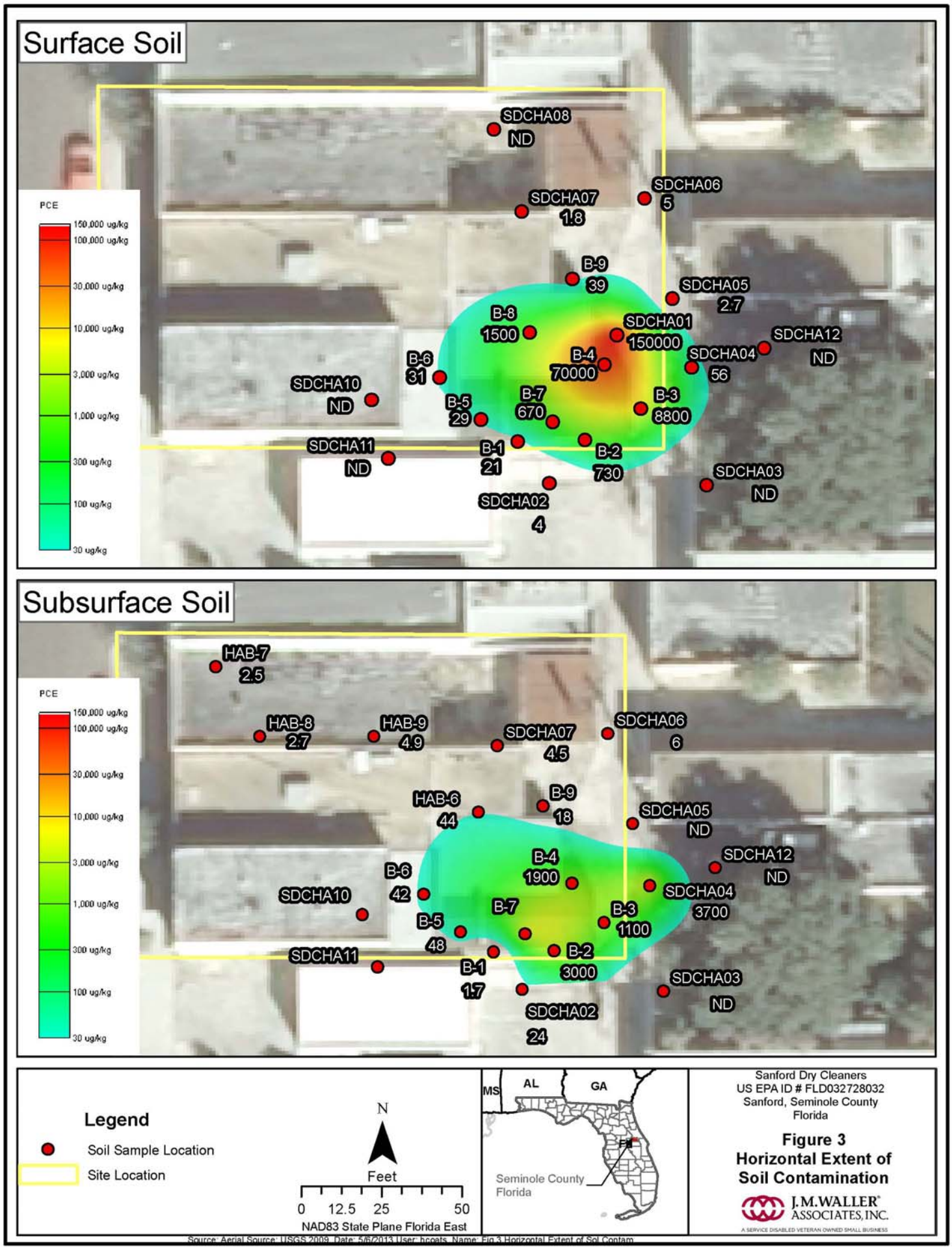
1) Historical data that demonstrate a clear and meaningful trend of decreasing contaminant mass and/or concentration over time.
2) Hydrogeologic and geochemical data to demonstrate indirectly the MNA processes that are active at the site, and the rate at which such processes will reduce contaminant concentrations to required levels.
3) Data which directly demonstrate the MNA process at the site and its ability to degrade the contaminants of concern.

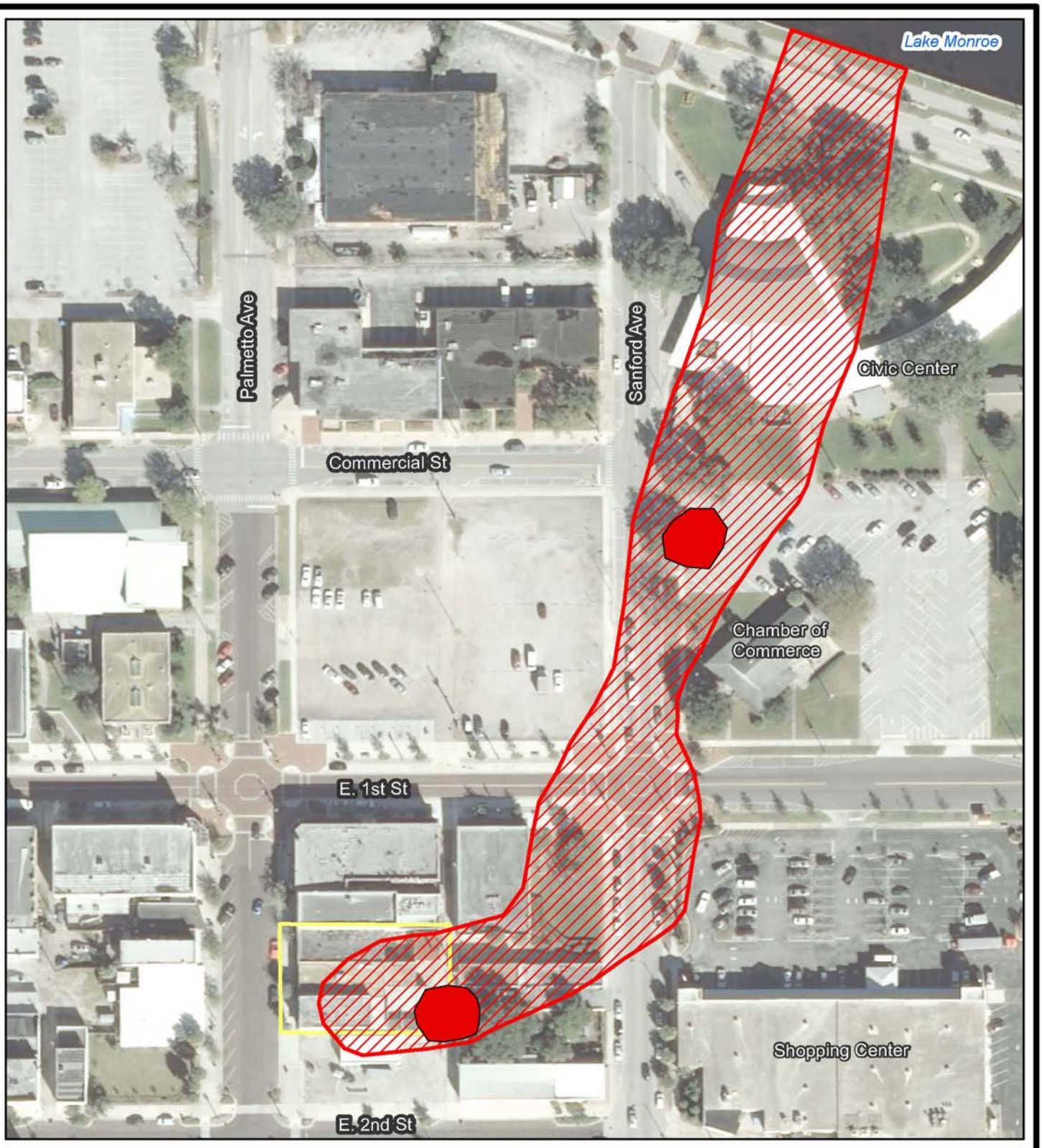
The guidance also states that MNA will be most appropriate when used in conjunction with or as a follow-up to other remediation measures such as source control or other active remediation measures.

The evaluation concluded that MNA as a stand-alone remedy for the Site ground water would not be effective because of the long timeframe that would be required to achieve the cleanup goals. The evaluation also concluded if enhanced or combined with source treatment or source control technologies, MNA would be an effective technology to address the contaminated ground water. A copy of this evaluation is included in the Final Feasibility Study Report (J. M. Waller, April 2013).

### Indoor Air

Indoor air samples were collected inside six buildings at the Site. PCE and/or TCE were detected at concentrations above the EPA residential indoor air screening levels from the samples collected inside the 121 South Palmetto Avenue and 114 South Sanford Avenue buildings.


Surface Soil
PCE
150,000 ug/kg
100,000 ug/kg
30,000 ug/kg
10,000 ug/kg
3,000 ug/kg
1,000 ug/kg
300 ug/kg
100 ug/kg
30 ug/kg
SDCHA08 ND
SDCHA07 1.8
SDCHA06 5
B-9 39
SDCHA05 2.7
B-8 1500
SDCHA01 150000
SDCHA12 ND
B-6 31
B-4 70000
SDCHA04 56
SDCHA10 ND
B-5 29
B-7 670
B-3 8800
SDCHA11 ND
B-1 21
B-2 730
SDCHA03 ND
SDCHA02 4
Subsurface Soil
PCE
150,000 ug/kg
100,000 ug/kg
30,000 ug/kg
10,000 ug/kg
3,000 ug/kg
1,000 ug/kg
300 ug/kg
100 ug/kg
30 ug/kg
HAB-7 2.5
HAB-8 2.7
HAB-9 4.9
SDCHA07 4.5
SDCHA06 6
HAB-6 44
B-9 18
SDCHA05 ND
SDCHA12 ND
B-4 1900
B-6 42
SDCHA10
SDCHA04 3700
B-7
B-3 1100
B-5 48
SDCHA11
B-2 3000
B-1 1.7
SDCHA03 ND
SDCHA02 24
Legend
Soil Sample Location
Site Location
N
Feet
0 12.5 25 50
NAD83 State Plane Florida East
MS
AL
GA
FL
Seminole County
Florida
Sanford Dry Cleaners
US EPA ID # FLD032728032
Sanford, Seminole County
Florida
Figure 3
Horizontal Extent of
Soil Contamination
J.M.WALLER ASSOCIATES, INC.
A SERVICE DISABLED VETERAN OWNED SMALL BUSINESS
Source: Aerial Source: USGS 2009 Date: 5/6/2013 User: hcpats Name: Fig 3 Horizontal Extent of Soil Contam




**Legend**

**Horizontal Extent Zone**

- Extent of Surficial Aquifer Groundwater Contamination
- Contaminant Source Area
- Site Location

N

Feet

0 30 60 120

NAD83 State Plane Florida East


Sanford Dry Cleaners
US EPA ID # FLD032728032
Sanford, Seminole County
Florida

**Figure 4**
**Extent of Surficial Aquifer Groundwater Contamination**

J.M.WALLER® ASSOCIATES, INC.
A SERVICE DISABLED VETERAN OWNED SMALL BUSINESS

Source: Aerial Source: USGS 2009 Date: 5/7/2013 User: hcoats Name: Fig 4 Extent of Suficial Aquifer GW Contam

## Pore Water and Surface Water

Sediment pore water and surface water samples were collected from Lake Monroe to evaluate the potential for ecological impacts to the lake. CVOCs, primarily cis-1,2-DCE and TCE, were detected in pore water samples collected from 5 of the 15 sampling locations. TCE and cis-1,2-DCE were also detected at only one of the 15 surface water sampling locations. All detected concentrations were below the ecological screening levels (freshwater and narcosis).

### SUMMARY OF SITE RISKS

EPA conducted a **Baseline Risk Assessment** to evaluate the potential human health and ecological risks from exposure to chemical constituents detected in the Site soil, ground water, indoor air, pore water, and surface water samples. Chemical constituents resulted in concentrations above the screening levels were considered to be contaminants of potential concern (COPCs). The results of this assessment and Site-specific characteristics serve as the baseline for determining whether remedial action is necessary. The findings of the risk assessment are summarized below. Details of the risk assessment are presented in the RI Report.

## Human Health Risks

The Human Health Risk Assessment (HHRA) evaluated the potential health risks from exposure to site-related contaminants to future Site residents and workers. For soil, the primary routes of exposure were incidental ingestion and inhalation of soil particulates and soil vapors. For ground water, there is no current human exposure to contaminated ground water; however risk calculations were performed using the conservative assumption that surficial aquifer ground water could possibly be used for water supply in the future. The following table presents a summary of the human health risks associated with the contaminated soil and ground water at the Site. Indoor air risks for each of the six buildings sampled are included in the RI Report.

| Medium | Scenario | Receptor | Cancer Risk | HI |
|---|---|---|---|---|
| Soil | Future | Resident | $5.5x10^{-5}$ | 2.6 |
| | | Worker | $6.4x10^{-6}$ | 0.53 |
| Upper Surficial Aquifer | Future | Resident | $4.0x10^{-3}$ | 278 |
| | | Worker | $6.9x10^{-4}$ | 72 |
| Intermediate Surficial Aquifer | Future | Resident | $1.6x10^{-3}$ | 3.2 |
| | | Worker | $1.4x10^{-4}$ | 0.89 |
| Lower Surficial Aquifer | Future | Resident | $1.2x10^{-3}$ | 236 |
| | | Worker | $3.4x10^{-4}$ | 50 |

The HHRA concluded the following:

- The cancer risks from future exposure to Site soil for residents and workers are within EPA's acceptable cancer risk range of $1x10^{-6}$ to $1x10^{-4}$, but exceed FDEP's cancer risk limit of $1x10^{-6}$. The non-cancer Hazard Index (HI) from child exposure to Site soil is 2.6, which is greater than the non-cancer benchmark of 1.
- Both cancer and non-cancer risks associated with the potential future use of Site ground water exceed EPA and FDEP acceptable risk standards. There is currently no human exposure pathway for Site ground water since the area is supplied with potable water from the City of Sanford.
- Indoor air cancer risks ($4.4x10^{-7}$ to $1.2x10^{-5}$) are within or less than EPA's acceptable cancer risk range of $1x10^{-6}$ to $1x10^{-4}$, but exceed FDEP's cancer risk limit of $1x10^{-6}$. TCE and PCE concentrations from indoor air samples collected inside the 121 South Palmetto Avenue building resulted in HI that slightly exceeds the non-cancer benchmark of 1.

## Ecological Risks

A Screening Level Ecological Risk Assessment (SLERA) was conducted to evaluate the potential ecological risks from contaminants detected in sediment pore water and surface water samples collected from Lake Monroe. The SLERA concluded that current or potential risks to aquatic life in Lake Monroe from the migration of the impacted ground water are anticipated to be negligible.

### REMEDIAL ACTION OBJECTIVES AND CLEANUP LEVELS

Remedial Action Objectives (RAOs) provide the overall goals that an alternative is to achieve and are used to guide the development of the remedial alternatives. EPA has identified the following RAOs for Site **Contaminant of Concern** (COC)-impacted soil and ground water:

- Prevent human exposure to soil with COCs concentrations above the cleanup levels
- Prevent and/or minimize COCs migration from the impacted soil to the ground water
- Prevent human exposure to ground water with COCs above the cleanup levels
- Prevent and/or minimize COC-impacted ground water migration into Lake Monroe
- Prevent and/or minimize COCs migration from soil and ground water to indoor air
- Restore the Site ground water to beneficial use within a reasonable timeframe

The Site-specific cleanup levels are presented in Table 1. The cleanup levels were developed based on potential risk scenarios and the findings of the HHRA, and reflect the current EPA MCLs and/or current FDEP Ground water Cleanup Target Levels (GCTL) and Soil Cleanup Target Levels (SCTL). The cleanup levels also consider Site-specific cleanup levels based on attaining concentrations of noncarcinogenic contaminants that affect the same target organ(s) corresponding to a Hazard Quotient (HQ) no greater than 1, and a Site-specific cumulative lifetime excess cancer risk level of $1x10^{-6}$ or one in one million.

**Table 1 – Remedial Cleanup Levels**

| Contaminant of Concern | Cleanup Level | Basis of Cleanup Level |
|---|---|---|
| **Soil (mg/kg)** | | |
| Tetrachloroethene (PCE) | 0.03 | Leachability-Based SCTL |
| Trichloroethene (TCE) | 0.03 | Leachability-Based SCTL |
| **Ground water (µg/L)** | | |
| Tetrachloroethene (PCE) | 3 | GCTL |
| Trichloroethene (TCE) | 3 | GCTL |
| cis-1,2-Dichloroethene (cis-1,2-DCE) | 70 | MCL/GCTL |
| trans-1,2-Dichloroethene (trans-1,2-DCE) | 100 | MCL/GCTL |
| Vinyl Chloride | 1 | MCL |

## DESCRIPTION OF ALTERNATIVES

When developing the **Feasibility Study** (FS), medium-specific remedial alternatives were evaluated. After an initial screening process, some of the evaluated alternatives were retained for further examination to develop comprehensive remedies capable of addressing the impacted media (soil and ground water). The alternatives were developed using various combinations of general response actions and evaluated with respect to their effectiveness in protecting human health and the environment, compliance with **Applicable Relevant and Appropriate Requirements (ARARs)**, implementability, cost, and the time required to achieve the RAOs and cleanup levels. For additional details regarding the remedial alternatives, refer to the final FS report.

The following sections present a summary of the remedial alternatives evaluated to address the impacted soil and ground water.

### ALTERNATIVE 1
### No Action

***Estimated Project Cost: $0***
***Estimated Operation & Maintenance (O&M) Cost: $0***
***Estimated Present Worth Cost: $0***

As required by the NCP, this alternative was evaluated to provide a comparative basis for the other alternatives. Under this alternative, no action would be taken and the Site would remain in its present conditions. The timeframe to achieve cleanup levels would be excessively long.

### ALTERNATIVE 2
### Capping, Passive Venting, Monitored Natural Attenuation (MNA), and Institutional Controls (ICs)

***Estimated Project Cost: $379,000***
***Estimated O&M Cost: $2,402,000***
***Estimated Present Worth Cost: $2,026,000***

Alternative 2 includes soil capping, passive soil-vapor mitigation system, monitored natural attenuation (MNA), and **Institutional Controls** (ICs). Under this alternative, concrete/asphalt would be installed over COC-impacted soil. MNA would be utilized to treat the impacted ground water. A passive venting system would also be implemented to mitigate the potential vapor intrusion pathway. ICs such as restrictive covenants, land and ground water use restrictions will be required to ensure protectiveness of the remedy.

### ALTERNATIVE 3
### Excavation and Offsite Disposal, Soil Vapor Extraction (SVE), Source Area In-Situ Enhanced Bioremediation (ISEB), MNA, and ICs

***Estimated Project Cost: $1,273,000***
***Estimated O&M Cost: $2,480,000***
***Estimated Present Worth Cost: $3,056,000***

Alternative 3 consists of excavation and offsite disposal of COC-impacted soil outside the footprint of the existing buildings. Soil vapor extraction (SVE) would be utilized to address the impacted soil beneath the buildings. In-situ enhanced bioremediation (ISEB) would be implemented to treat the ground water "Hot Spot" areas (where PCE and/or TCE concentrations are greater than 1,000 µg/L). MNA, which relies on natural biological processes, would be utilized to address the dissolved ground water plume. ICs such as restrictive covenants, land and ground water use restrictions will be required to ensure protectiveness of the remedy.

## WHAT IS RISK AND HOW IS IT CALCULATED?

**Human Health Risk**

A Superfund human health risk assessment estimated the "baseline risk." This is an estimate of the likelihood of health problems occurring if no cleanup action were taken at a site. To estimate the baseline risk at a Superfund site, EPA undertakes a four-step process:

Step 1: Analyze Contamination
Step 2: Estimate Exposure
Step 3: Assess Potential Health Dangers
Step 4: Characterize Site Risk

In Step 1, EPA looks at the concentrations of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). Comparisons between site-specific concentrations and concentrations reported in past studies help EPA to determine which contaminants are most likely to pose the greatest threat to human health.
In Step 2, EPA considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of the exposure. Using the information, EPA calculates a "reasonable maximum exposure" (RME) scenario, which portrays the highest level of human exposure that could reasonably be expected to occur.
In Step 3, EPA uses the information from Step 2 combined with information on the toxicity of each chemical to assess potential health risks. EPA considers two types of risk: cancer risk and non-cancer risk. The likelihood of any kind of cancer resulting from a Superfund site is generally expressed as an upper bound of probability; for example a "1 in 10,000" chance." In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to site contaminants. EPA's target range for acceptable cancer risk is "1 in 1,000,000" to "1 in 10,000." These probabilities are often expressed in scientific notation (i.e., $1 \times 10^{-6}$ or 1E -6 to $1 \times 10^{-4}$ or 1E -4). An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. For non-cancer health effects, EPA calculates a "hazard index." The key concept here is that a "threshold level" (measured usually as a hazard index less than 1) exists below which non-cancer health effects are no longer predicted.
In Step 4, EPA determines whether site risks are great enough to cause health problems for people at or near the Superfund site. The results of the three previous steps are combined, evaluated, and summarized.

**Ecological Risk**

Current EPA guidance recommends an eight-step process for designing and conducting ecological risk assessments (ERAs) for the Superfund Program. Steps 1 and 2 constitute a screening level ecological risk assessment (SLERA), which compares existing site data to conservative screening level values to identify those chemicals which can confidently be eliminated from further evaluation, and those for which additional evaluation is warranted. At the end of Step 2, all involved parties meet and discuss whether: there is adequate information to conclude that ecological risks are negligible and therefore no need for remediation on the basis of ecological risk; if the information is not adequate to make a decision at this point, the ERA process will continue to Step 3; or the information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted.
If further evaluation is warranted, Step 3 of the eight-step process is initiated as the planning and scoping phase for implementing a baseline ecological risk assessment (BERA). Step 3 includes several activities, including refinement of the list of contaminants of potential concern (COPCs), further characterization of ecological effects, refinement of information regarding contaminant fate and transport, complete exposure pathways, ecosystems potentially at risk, selecting assessment endpoints, and developing a conceptual model with working hypotheses or questions that the site investigation will address. In Step 4, a sampling and analysis plan (SAP) is developed and used to gather further data to support the BERA. Step 5 is a site visit to verify the Step 4 sampling design. Step 6 of the process is the actual data collection for the BERA. Step 7 is the summary and analysis of the data, and prediction of the likelihood of adverse effects based on the data analysis, which is presented as the risk characterization. It also includes consideration of uncertainties and ecological significance of risks in view of the types and magnitude of effects, spatial and temporal patterns, and likelihood of recovery. Step 8, the final step, results in a discussion of significant risks, recommended cleanup (if any), and future efforts.

### ALTERNATIVE 4

### Excavation and Offsite Disposal, SVE, Source Area ISEB, ISEB Barriers (treatment zones), MNA, and ICs

***Estimated Project Cost: $1,457,000***
***Estimated O&M Cost: $2,480,000***
***Estimated Present Worth Cost: $3,242,000***

Alternative 4, which includes excavation and offsite disposal of COC-impacted soil outside the footprint of the existing buildings; SVE system to address the impacted soil beneath the buildings; ISEB to treat the ground water "Hot Spot" areas, and MNA. This Alternative is identical to Alternative 3. However, to enhance the natural biodegradation of the dissolved ground water plume and to minimize the migration of COC-impacted ground water into Lake Monroe, additional ISEB treatment zones (ISEB injection barriers) would be utilized downgradient to the "Hot Spot" areas. ICs such as restrictive covenants, land and ground water use restrictions will be required to ensure protectiveness of the remedy.

### ALTERNATIVE 5

### Excavation and Offsite Disposal, SVE, Pump-and-Treat, MNA, and ICs

***Estimated Project Cost: $945,000***
***Estimated O&M Cost: $6,127,000***
***Estimated Present Worth Cost: $4,917,000***

Alternative 5 includes soil excavation and offsite disposal; extraction, treatment and disposal of ground water "Hot Spot" areas. To address the dissolved ground water plume, MNA which relies on natural processes would be implemented under this alternative. ICs such as restrictive covenants, land and ground water use restrictions will be required to ensure protectiveness of the remedy.

### ALTERNATIVE 6

### Excavation and Offsite Disposal, SVE, In-situ Thermal Treatment, MNA, and ICs

***Estimated Project Cost: $8,135,000***
***Estimated O&M Cost: $2,480,000***
***Estimated Present Worth Cost: $9,920,000***

Alternative 6 includes soil excavation and offsite disposal; in-situ thermal heating (ISTH) for the ground water "Hot Spot" areas; MNA which relies on natural processes to cleanup or attenuate the dissolved ground water plume would be implemented to under this alternative. ICs such as restrictive covenants, land and ground water use restrictions will be required to ensure protectiveness of the remedy.

## EVALUATION OF ALTERNATIVES

A summary of the evaluation of the potential alternatives to address the Site contamination is presented below. Detailed evaluation of the alternatives is included in the Final FS Report, which can be found in the Information Repository. The objective of this evaluation is to compare and contrast the alternatives, and to ultimately select and present a preferred alternative.

### Common Elements

Implementation of a ground water sampling and monitoring program, ICs, and engineering controls are common to all remedial alternatives.

Since all remedial alternatives anticipate COC-impacted soil and/or ground water will remain at the Site for an extended timeframe, **Five-Year Reviews** will be conducted to ensure the effectiveness of the selected remedy in protecting human health and the environment.

The remedial alternatives presented in this PP were evaluated using the nine criteria specified the NCP. A summary of the evaluation is presented below.

### Overall Protection of Human Health and the Environment

All alternatives evaluated in the FS except for Alternative 1 (No Action) would be protective of human health and the environment. Since Alternative 1 does not meet this threshold criterion, it will not be carried through the remaining criteria. Alternatives 3 through 6 would address the "Hot Spot" areas. Therefore, these Alternatives would achieve overall protection of human health and the environment. Alternative 2, which relies solely on natural processes to treat the contaminated soil and ground water would also achieve overall protection of human health and the environment but over a long timeframe.

### Compliance with ARARs

Under Alternative 2, which rely solely on natural degradation processes to remediate the impacted soil and ground water, RAOs would not be achieved within a reasonable timeframe and is inconsistent with the expectation of treatment for principal threat materials. By contrast, alternatives 3 through 6 include active treatment technologies to address the "Hot Spot" areas thereby meeting the expectation for treatment and significantly reducing the overall cleanup timeframe. Implementation of any of these alternatives would likely comply with all chemical, location and action-specific ARARs.

### Long-Term Effectiveness and Permanence

Alternatives 3 through 6, which include active treatment for soil and ground water would achieve the RAOs, comply with ARARs within a shorter timeframe, and provide effectiveness and permanence over the long-term. In contrast, Alternative 2, which relies solely on natural processes to remediate the contaminated ground water would provide limited protectiveness and attainment of RAOs and cleanup goals would not be achieve with a reasonable timeframe.

### Reducing Toxicity, Mobility or Volume through Treatment

Alternative 2 primarily rely on natural degradation processes to remediate the Site. For Alternatives 3 through 6, active remedial technologies would be utilized to treat the impacted soils and the ground water "Hot Spot" areas, therefore reducing the toxicity and volume of the contamination.

### Short-Term Effectiveness

Alternatives 2 through 6, which include soil excavation and in-situ technologies, capable of treating, and/or degrading site-specific COC in the surficial ground water, are established technologies with reasonable and manageable risks to site workers.

### Implementability

Alternatives 2 through 6 consist of proven and well established technologies that are relatively comparable in implementability.

### Cost

Cost estimates for all remedial alternatives were developed during the FS and are summarized below. It should be noted that present worth costs are based on an effective discount rate of 7 percent (%).

| Remedial Alternative | Estimated Project Costs | Estimated O&M Costs | Estimated Present Worth |
|---|---|---|---|
| 1 | $0 | $0 | $0 |
| 2 | $379,000 | $2,402,000 | $2,026,000 |
| 3 | $1,273,000 | $2,480,000 | $3,056,000 |
| 4 | $1,457,000 | $2,480,000 | $3,242,000 |
| 5 | $945,000 | $6,127,000 | $4,917,000 |
| 6 | $8,135,000 | $2,480,000 | $9,920,000 |

### State Acceptance

FDEP has been actively involved in the development and review of the RI, FS, and the cleanup plan for the Site. State support for the preferred alternative plan is anticipated.

### Community Acceptance

Community acceptance of the preferred alternative will be evaluated subsequent to the Proposed Plan

#### CRITERIA FOR EVALUATING REMEDIAL ALTERNATIVES

In selecting a preferred cleanup alternative, EPA uses the following criteria to evaluate those screened in the **Feasibility Study (FS)**. The first two criteria are threshold criteria and must be met for an option to be considered further. The next five are balancing criteria for weighing the merits of those that meet the threshold criteria. The final two criteria are used to modify EPA's proposed plan based on state and community input. All nine criteria are explained in more detail here.

1. **Overall Protection of Human Health and the Environment** – Eliminates, reduces, or controls health and environmental threats through institutional or engineering controls or treatment.
2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)** – Compliance with Federal/State standards and requirements that pertain to the site or whether a waiver is justified.
3. **Implementability** – Technical feasibility and administrative ease of conducting a remedy, including factors such as availability of services.
4. **Short-Term Effectiveness** – Length of time to achieve protection and potential impact of implementation.
5. **Long-Term Effectiveness and Permanence** – Protection of people and environment after cleanup is complete.
6. **Reduce Toxicity, Mobility, or Volume by Treatment** – Evaluates the alternative's use of treatment to reduce the harmful effects of principal contaminants and their ability to move in the environment.
7. **Cost** – Benefits weighed against cost.
8. **State Acceptance** – Consideration of state's opinion of the preferred alternative(s).
9. **Community Acceptance** – Consideration of public comments on the Proposed Plan.

comment period. Comments received during this period will be addressed and responses will be presented in the **Responsiveness Summary**, which will be included in the **Record of Decision (ROD)**.

**PREFERRED REMEDIAL ALTERNATIVE**

Alternative 4 is EPA's preferred remedial alternative and consists of the following components:

### Soil

- Excavation and offsite disposal of Site-specific COC-impacted soil outside the footprint of the existing buildings. Soil will be excavated to a depth of approximately 6 feet bgs (water table).
- Implementation of an SVE system to treat the impacted soil beneath the existing buildings.
- Backfilling of the excavated areas with clean backfill material and restoration of construction-impacted hardscape areas.

Additional investigation will be conducted prior to the **Remedial Design** (RD) to determine whether or not COC-impacted soil is present within the unsaturated zone of the ground water "Hot Spot" area identified between the Civic Center and the Chamber of Commerce buildings. If the results of this investigation show that COC-impacted soil is present in this area, the impacted soil will be addressed via excavation and offsite disposal.

### Ground water

- Implementation of ISEB to treat the highly impacted ground water areas also identified as "Hot Spot" or areas where PCE and/or TCE concentrations are greater than 1,000 µg/L. These areas were identified during the RI and are located directly adjacent to the release area (121 South Palmetto Avenue property) and in parking area between the Civic Center and the Chamber of Commerce buildings.
- Implementation of ISEB barriers (injection treatment zones) downgradient to the "Hot Spot" areas to enhance the natural degradation process of the dissolved ground water plume and to mitigate the potential migration of COC-impacted ground water into Lake Monroe.
- Implementation of ground water sampling and monitoring program to assess the effectiveness of the remedy.
- Implementation of ICs such as restrictive covenants, land and ground water use restrictions will be required to ensure protectiveness of the remedy until cleanup

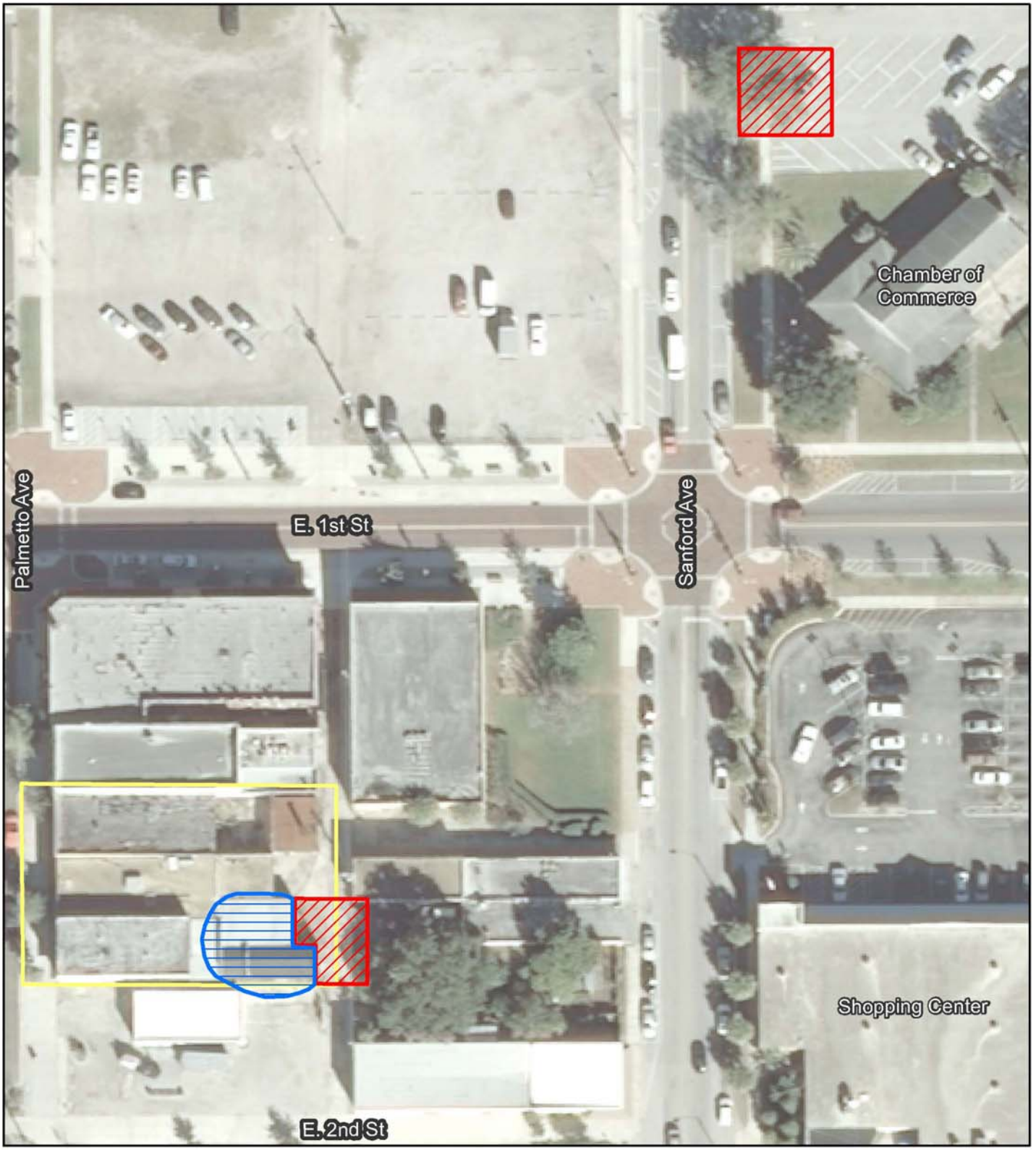
Bench and/or pilot scale testing will be conducted to identify the most effective stimulant and loading rates, verify the effectiveness of the technology, and to refine the design parameters prior to full scale implementation. Conceptual layout of the preferred remedy is presented in Figures 5 and 6.

EPA believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. EPA expects the preferred alternative to satisfy the following statutory requirements of CERCLA 121(b): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the statutory preference for treatment as a principal element to the extent practicable.

The preferred alternative was selected over the other alternatives because of its overall potential effectiveness and efficiency in addressing the Site contamination. The proposed remedy will provide for permanent long term risk reduction.

Based on the information currently available, EPA believes the preferred remedial alternative will be protective of human health and the environment. Because the preferred alternative will utilize active treatment technologies to address the soil and ground water contamination, the remedy also meets the statutory preference for the selection of a remedy that involves treatment as a principal element.

Since COC-impacted ground water is anticipated to remain at the Site for an extended timeframe, Five-Year Reviews will be conducted to ensure the effectiveness of the selected remedy in protecting human health and the environment.




## Legend

**Soil Capping Areas**

- Excavation Area
- SVE Area
- Site Location

N

Feet

0 20 40 80

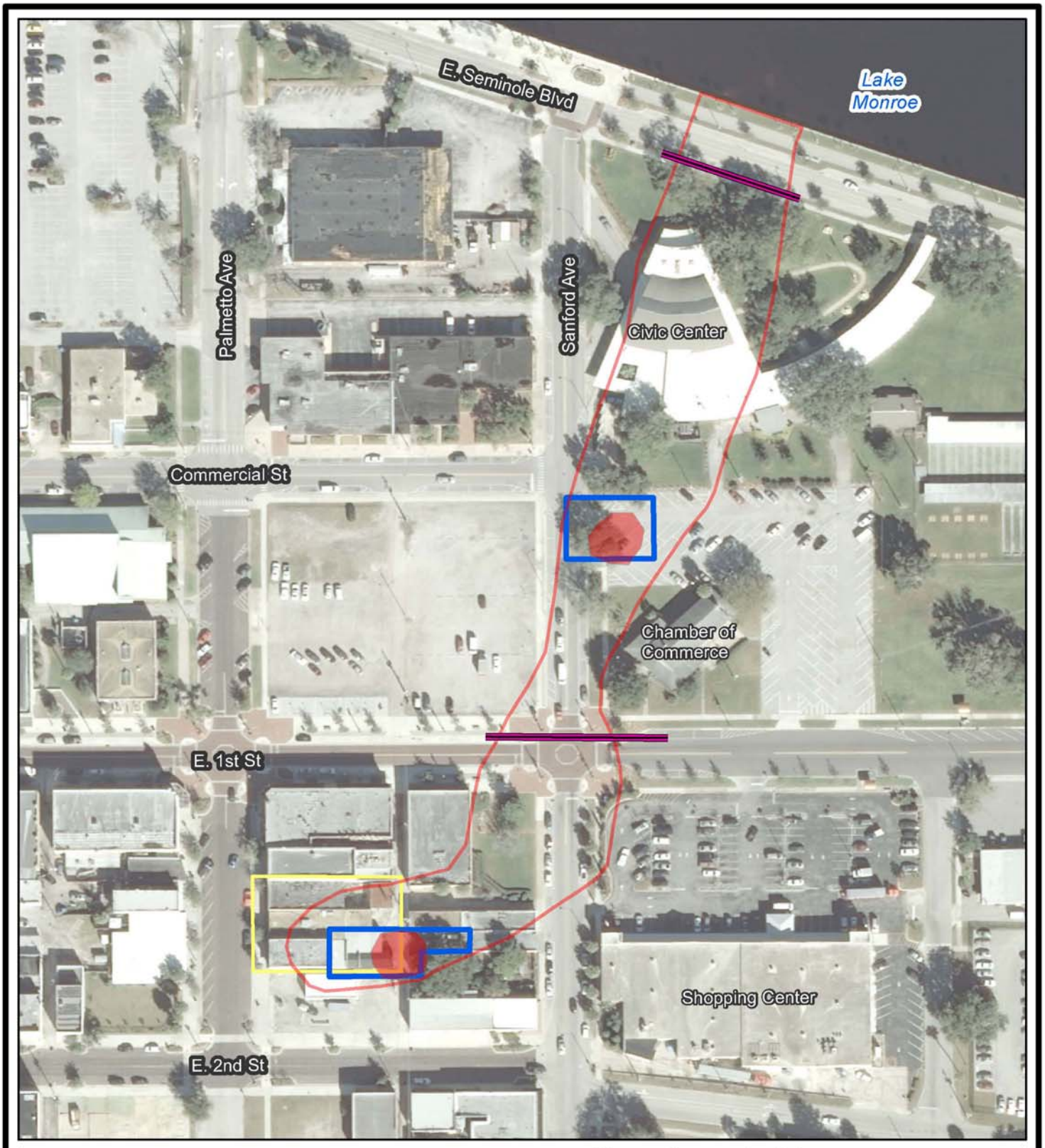
NAD83 State Plane Florida East


Sanford Dry Cleaners
US EPA ID # FLD032728032
Sanford, Seminole County
Florida

**Figure 5**
**Preferred Alternative - Soil**

J.M. WALLER ASSOCIATES, INC.
A SERVICE DISABLED VETERAN OWNED SMALL BUSINESS

Source: Aerial Source: USGS 2009 Date: 5/6/2013 User: hcoats Name: Fig 5 Preferred Alt. Soil




**Legend**

- ISEB Barrier Wall
- Site Location
- Extent of Surficial Aquifer Groundwater Contamination
- Contaminant Source Area
- ISEB Source Treatment Area

N

Feet

0 37.5 75 150

NAD83 State Plane Florida East


Sanford Dry Cleaners
US EPA ID # FLD032728032
Sanford, Seminole County
Florida

**Figure 6**
**Preferred Alternative - Groundwater**

J.M.WALLER ASSOCIATES, INC.

Source: Aerial Source: USGS 2009 Date: 5/7/2013 User: hcoats Name: Fig 6 Preferred Alt Groundwater

## GLOSSARY

**Administrative Record:** Material documenting EPA's selection of cleanup remedies at Superfund Sites, a copy of which is placed in the **information repository** near the Site.

**Applicable or Relevant and Appropriate Requirements (ARARs):** Refers to Federal and State requirements a selected remedy must attain which vary from site to site.

**Baseline Risk Assessment:** A qualitative and quantitative evaluation performed in an effort to define the risk posed to human health and the environment by the presence or potential presence of specific contaminants.

**Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):** Also known as **Superfund**, is a federal law passed in 1980 and modified in 1986 by the Superfund Amendment and Reauthorization Act (SARA); the act created a trust fund, to investigate and cleanup abandoned or uncontrolled hazardous waste sites. The law authorizes the federal government to respond directly to releases of hazardous substances that may endanger public health or the environment. EPA is responsible for managing the Superfund.

**Contaminants of Concern (COCs)**: Chemical constituents associated with a Superfund Site that have been released into the environment and pose a risk to human health.

**Chlorinated Volatile Organic Compounds (CVOCs)**: For this site, these consist of tetrachloroethylene (PCE), trichloroethylene (TCE), dichloroethylene (DCE), and vinyl chloride.

**Feasibility Study (FS)**: Study conducted after the Remedial Investigation to determine what alternatives or technologies could be applicable to cleanup the site-specific COCs.

**Five-Year-Review**: A statutory requirement to evaluate the implementation and performance of a remedy in order to determine whether the remedy is or will be protective of human health and the environment.

**Ground water**: The supply of fresh water found beneath the Earth's surface (usually in aquifers) which is often used for drinking water.

**Source areas:** Subsurface areas of the Site where a high concentration of contamination has been found.

**Information Repository**: A library or other location where documents and data related to a Superfund project are placed to allow public access to the material.

**Institutional Controls (ICs)**: Restriction that prevents an owner inappropriately developing a property. The restriction is designed to prevent harm to workers or the general public and maintain the integrity of the remedy.

**In-Situ Enhanced Bioremediation (ISEB)**: A remedy for contaminated ground water that features injection of an amendment, e.g., emulsified oil substrate (EOS), which promotes anaerobic degradation of CVOCs to carbon dioxide and chlorides.

**Maximum Contaminant Levels (MCLs):** Standards that are set by the United States Environmental Protection Agency (EPA) for drinking water quality in Title 40 of the Code of Federal Regulations. A Maximum Contaminant Level (MCL) is the legal threshold limit on the amount of a hazardous substance that is allowed in drinking water under the Safe Drinking Water Act.

**Monitored Natural Attenuation (MNA):** This term refers to the reliance on natural attenuation processes to achieve site-specific remediation objectives. The natural attenuation processes that are at work in such remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or ground water.

**National Contingency Plan (NCP)**: The Federal Regulation that guides the Superfund program. The NCP was revised in February 1990.

**Operation and Maintenance (O&M)**: Activities conducted at sites after cleanup remedies have been constructed to ensure that they continue functioning properly.

**Proposed Plan (PP)**: A Superfund public participation fact sheet which summarizes the preferred cleanup strategy for a Superfund Site.

**Record of Decision (ROD)**: A public document describing EPA's rationale for selection of a Superfund remedy.

**Remedial Design (RD):** The technical analysis procedures which follow the selection of remedy for a site and result in a detailed set of plans and technical specifications for implementing the remedial action.

**Remedial Investigation / Feasibility Study (RI/FS):** A two part investigation conducted to fully assess the nature and extent of a release, or threat of release, of hazardous substances, pollutants, or contaminants, and to identify alternatives for clean up. The Remedial Investigation gathers the necessary data to support the corresponding Feasibility Study.

**Responsiveness Summary**: A summary of oral and written comments received by EPA during a comment period on key EPA documents, and EPA's responses to those comments. The responsiveness summary is a key part of the ROD, highlighting community concerns for EPA decision-makers.

**Superfund:** The common name used for the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), the federal law that mandates cleanup of abandoned hazardous waste sites

USE THIS SPACE TO WRITE YOUR COMMENTS

***Your input on the Proposed Plan for the Sanford Dry Cleaners Superfund Site is important in helping EPA to select a remedy for the Site. Use the space below to write your comments, then fold and mail. A response to your comment will be included in the Responsiveness Summary.***

---

---

---

---

---

---

---

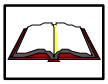
---

---

Place Stamp Here

Name_____
Address_____
City_____State_____Zip_____

Robenson Joseph, Remedial Project Manager
U. S. EPA, Region 4
Superfund Remedial Branch
Superfund Division
61 Forsyth St., SW
Atlanta, GA 30303

 ***SANFORD DRY CLEANERS SUPERFUND SITE***
**PUBLIC COMMENT SHEET**

U. S. EPA, Region 4
Superfund Remedial Branch
Superfund Division
61 Forsyth St., SW
Atlanta, GA  30303