US Army Corps of Engineers

Proposed Plan

Former Naval Ammunition Depot, Mecklenburg County, Charlotte, North Carolina

Dates to remember: **MARK YOUR CALENDAR**

PUBLIC COMMENT PERIOD: September 1 – 30, 2009.

The U.S. Army Corps of Engineers will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING: September 9, 2009

U.S. Army Corps of Engineers will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at the Steel Creek Library, 13620 Steele Creek Road, Charlotte, NC 28273 at **1:30 pm**.

For more information, see the Administrative Record at the following location:

Public Library of Charlotte and Mecklenburg County
Carolina Room (Third Floor)
310 North Tryon Street
Charlotte, NC 28202
(704) 336-2725

USACE ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternative for cleaning up the contaminated groundwater at the former Naval Ammunition Depot (NAD) and provides the rationale for this preference. In addition, this Plan includes summaries of other alternatives evaluated for use at this site.

This document is issued by the U.S. Army Corps of Engineers (USACE), the lead agency for site activities; and the North Carolina Department of Environment and Natural Resources (NCDENR), the regulatory agency. USACE, in consultation with the NCDENR, will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period. USACE, in consultation with the NCDENR, may modify the Preferred Alternative or select another response action 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.

The USACE is required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to issue this Proposed Plan and seek public comment and participation under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Focused Feasibility Study (FFS) report prepared for the

NAD (TPMC, 2009), and other documents contained in the Administrative Record file. The USACE and the NCDENR encourages the public to review these documents to gain a more comprehensive understanding of the site and investigation activities that have been conducted.

Site History

On June 1, 1942, the Bureau of Ordnance, Department of Navy signed a contract with the United States (U.S.) Rubber Company for the construction of a 40-mm anti-aircraft ammunition shell loading and assembly plant. U.S. Rubber Company operations began in December 1942 and continued until 1945.

In 1945, plant production was cut and the operation of the facility was transferred to the U.S. Navy. In 1956, the NAD status was changed from Maintenance Status to Inactive Status. The U.S. Navy continued to operate the site until 1959 at which time it was sold to a local partnership. For the most part, the property was dormant between 1959 and the early 1980's. During this period all buildings related to the Former NAD complex were demolished. At the time of operation, the entire NAD complex occupied approximately 2,266 acres of land southwest of Charlotte, North Carolina (Figure 1). The area is currently occupied by light industrial and commercial businesses as well as residential developments.

The investigation and decision documents detailed in this Proposed Plan focused on Areas 1 and 2 within the Former NAD. Areas 1 and 2 were used for the production of 40-mm anti-aircraft munitions (Figure 1). Figure 2 depicts the locations of the Former NAD buildings superimposed on the current building footprint (M&E 2000). Area 1 consisted of anti-aircraft ammunition loading lines. This area was dedicated to the assembly of final rounds and was composed of 22 buildings. The largest of the buildings in Area 1, Buildings I-60 and I-70, were used for final assembly, packaging, and shipping of munitions (M&E 2000). A trinitrotoluene (TNT) consolidating unit was also reportedly located in this area.

The operations carried out in Area 2 were reportedly identical to those conducted in Area 1. Area 2 was also used to process ammunition "fleet returns" (returned ammunition) after World War II for distribution to other Allied Forces Branches. Only Area 2 was used after 1945 for reconditioning of returned munitions. A trichloroethylene (TCE) vapor-degreasing operation was also located on the southeast corner of Building 2-30 (Figure 2). The unit was used to remove cutting oil and preservatives on the exteriors of returned shells (M&E 2000). Sludge from the degreasing vessel was removed approximately once per week and reportedly disposed of at the NAD burn pit area.

The majority of Former NAD Areas 1 and 2, and the mass of the contaminant plume, are located on property owned by Arrowood Southern Company and Norfolk Southern Railway Company. The remaining portions of the site are owned by Alliance IV LLC; Box USA Group Inc.; Textron Inc.; Cabot Industrial Properties; Prologis North Carolina LP; and Frito-Lay Inc.

SITE INVESTIGATION

Soil and groundwater characterization activities were conducted at the site between 1989 and 1992. Beginning in 1994, CERCLA Remedial Investigations (RIs) were conducted to determine the nature and extent of the contamination previously identified at former DOD operational areas.

Phase I and II RIs were conducted from 1994 through 2000 with supplemental investigations conducted in 2001 and 2002. The investigations focused on three groundwater zones (shallow, transition, and bedrock). The RI and supplemental investigations concluded that the groundwater in the transition and bedrock zones is contaminated with chlorinated volatile organic compounds (CVOCs). Although groundwater is not used currently as a source of potable water in this area, the prevalence of high contaminant concentrations in the transition and bedrock zones necessitated further consideration.

TCE was found to be the predominant contaminant by mass with concentrations in groundwater exceeding the North Carolina Administrative Code (NCAC) 2L groundwater standard of 2.8 parts per billion (ppb). Based on the results of the supplemental investigations, it is determined that active treatment of the contaminant plume below 2 ppb is not practical from a technical standpoint. Therefore, recommendations were made to focus on hot spot areas with TCE concentrations greater than 500 ppb. The distribution of TCE exceeding 500 ppb was found in five hot spot areas within the transition zone (Figure 3); and within the bedrock zone (Figure 4). The shallow groundwater zone was not contaminated. A brief summary of each Hot Spot is presented below.

- Hot Spot No. 1 is located along the northeastern corner of Arrowood Building IV, 100 ft from the southwestern corner of Arrowood Building II, and 200 ft southeast of NAD MW-38 (Figure 3); and is centered on well NAD MW-58. This hot spot is characterized by concentrations of TCE > 500 ppb with peak concentrations of up to 6,200 ppb. The vertical distribution of TCE > 500 ppb in this area is located in the transition groundwater zone.
- Hot Spot No. 2 is located along the southwestern corner of Arrowood Building III; and is roughly centered on monitoring well VERSAR 17 (Figure 3). This hot spot is characterized by concentrations of TCE > 500 ppb with peak concentrations of 627 ppb. The vertical distribution of TCE > 500 ppb in this area is located in the transition groundwater zone.
- Hot Spot No. 3 is located along the southwestern side of the Box USA Group Inc. Building, centered on NAD MW-49, and terminating around NAD MW-32 (Figure 3). This hot spot is characterized by concentrations of TCE > 500 ppb with peak concentrations of up to 3,900 ppb. The vertical distribution of TCE > 500 ppb in this area is located in the transition groundwater zone.
- Hot Spot No. 4 is located along the southwestern side of Arrowood Building IV, and is centered on NAD MW-42 (Figure 3). This hot spot is characterized by concentrations of TCE > 500 ppb with peak concentrations of up to 2,000 ppb. The vertical distribution of TCE > 500 ppb in this area is located in the transition groundwater zone.
- Hot Spot No. 5 (centered on NAD MW-25) is located 460 ft southeast of Hot Spot No. 4, 350 ft west of NAD MW-32 and bordered on the west by NAD MW-44 (Figure 3). This hot spot is characterized by concentrations of TCE > 500 ppb with peak concentrations of up to 3,200 ppb. The vertical distribution of TCE > 500 ppb in this area is located in the transition groundwater zone.
- A single large TCE plume centered around SAIC-14 was observed for the bedrock zone (Figure 4). This plume was generated using the maximum concentrations from all wells from the most current data set. The concentration distribution in this area ranges from 2 to 40,000 ppb.

WHAT IS THE PRIMARY "CONTAMINANT OF CONCERN"?

Although several chlorinated volatile organic compounds (CVOCs) were identified as contaminants of concern (COCs), TCE was detected at much higher concentrations than the other chemicals and is the primary contaminant of concern, as it poses the greatest potential risk to human health and the environment at this site.

Trichloroethylene (TCE): TCE, detected in groundwater at concentrations ranging from approximately 1 to 40,000 ppb, is a halogenated organic compound historically used as a solvent and degreaser in many industries. Exposure to this compound has been associated with deleterious health effects on humans, including anemia, skin rashes, diabetes, liver conditions, and urinary tract disorders. Based on laboratory studies, TCE is considered a probable human carcinogen.

Surface water in the site area consists of small man-made drainage ditches. These waters are non-navigable and are not used for potable water. All drainage ditches transport water in a southwestern direction towards Nevada Boulevard.

Surface water samples (including background locations) were collected in 1997 in support of the Phase II RI. Samples were collected from the drainage feature located in the west/central portion of NAD Area 1, and in a surface drainage ditch located toward the center of Former NAD Area 2 before the current railroad facility was built. Background samples were collected from the north and east of the property. An additional surface water sample was collected in 1999 between NAD MW-21 and NAD MW-23 after the completion of the new rail facility to determine if contaminated groundwater was discharging into the ditch.

Results from the last surface water sample were compared to NCAC 2B standards for Class C waters. The federal MCL was used for contaminants for which no NCAC 2B standard was available. None of the site related COCs were identified in the surface water samples.

FOCUSED FEASIBILITY STUDY

The FFS completed for the site developed, screened, and evaluated possible alternatives for cleaning up the TCE groundwater contamination based on the Remedial Action Objectives (RAO) established by the USACE and NCDENR. The overall goal is to meet all applicable or relevant and appropriate requirements (ARARs) and to be protective of human health and the environment.

The primary chemical-specific ARARs established for the site are the NCAC 2L groundwater standards. The RAOs established for the NAD include:

- Actively remediate the groundwater where the TCE concentrations exceed 500 ppb.
- After active remediation, monitor residual groundwater contamination to track contaminant levels as they naturally attenuate to achieve the NCAC 2L standard of 2.8 ppb. The monitoring program will verify that TCE levels are declining.
- Restoring the aquifer to North Carolina groundwater quality standards within a reasonable time frame.

SUMMARY OF SITE RISKS

As part of the FFS, an evaluation of potential exposure pathways that included a receptor survey and a baseline risk assessment was conducted for the site. The receptor survey indicated that the NAD site is located in an area that is zoned for commercial and industrial use with residential areas.

A water well survey (SAIC, 2002) indicated that the NAD site and adjacent properties are served by a municipal water supply and that no private drinking wells are present within a 1-mile radius. However, in 2001, three private commercial water supply wells were identified with 1,500 ft of the site. The use of these wells was discontinued in 2001.

Based on this information and considering that the groundwater contaminant plume does not extend off-site, exposure to groundwater via potable use (i.e., drinking water and other domestic or industrial use) was not considered to be a complete exposure pathway and there is no known current risk. However, it is possible that an undocumented well could exist outside the Former NAD site. Therefore, to be conservative, future exposure to groundwater (i.e., industrial/commercial use) is considered to be a complete pathway under a hypothetical situation.

Under this hypothetical situation, the potential risk from TCE was calculated to be 4.2×10^{-04}. This result only marginally exceeded the upper-bound of the acceptable range for remediation of Superfund sites of 1.0×10^{-04}. Because groundwater from beneath the site is not currently used as a potable source, the risk calculations were used for informational purposes and not considered for determining the need for remediation. It was determined that remediation is required because TCE concentrations in groundwater exceed an ARAR, the NCAC 2L standard.

SUMMARY OF REMEDIAL ALTERNATIVES

As directed by the RAOs, alternatives were developed and evaluated for remediation of the contaminated groundwater. The three remedial alternatives for the NAD site are presented below. The alternative numbers correspond with the numbers in the FFS Report.

SUMMARY OF REMEDIAL ALTERNATIVES FORMER CAMP SITE

Medium	FS Designation	Description
Ground water	1	No action
	2	Monitored Natural Attenuation (MNA)
	3	Enhanced Bioremediation using Sodium Lactate Injection

Alternative 1: No Action

Estimated Capital Cost: $0
Estimated Annual Operation and Maintenance (O&M) Cost: $0
Estimated Present Worth Cost: $0

Regulations governing CERCLA generally require that the No Action alternative be evaluated generally to establish a baseline for comparison. Under this alternative, no remedial action would be implemented at the Former NAD site in an attempt to reduce contaminant concentrations in the contaminant plume to return the impaired groundwater to beneficial use. Access to contaminated groundwater would be unrestricted, allowing exposure to contaminated media, and no monitoring of groundwater would be performed. No institutional controls would be implemented.

Alternative 2: Monitored Natural Attenuation (MNA)

Estimated Capital Cost: $ 336,195
Estimated O & M Cost: $ 6,227,047
Estimated Present Worth Cost: $ 6,563,242
Estimated Time to Achieve RAOs: 63 years

This alternative would track the reduction of contaminant concentrations through natural processes (e.g., contaminant degradation). Alternative 2 would include the use of institutional controls, such as restricting groundwater access and legal controls. Access controls would restrict access to the area of remediation through physical controls. Physical controls would include posting warning signs to deter unauthorized access to the site.

Groundwater monitoring would be included as an institutional action. The purpose of groundwater monitoring would be to show that natural attenuation was decreasing the CVOCs contamination as predicted. Analytical results would be evaluated after each monitoring event to verify that concentrations of CVOCs are decreasing and that the RAO is ultimately achieved. Long-term monitoring would allow assessment of contaminant migration and would be an important part of preventing potential unacceptable exposures.

Modeling has indicated that CVOCs in the transition zone groundwater would naturally attenuate to the NCAC 2L standards within 47 years; whereas, in the bedrock zone groundwater, it would take approximately 63 years. Therefore, the transition zone groundwater would be monitored for 47 years and the bedrock zone groundwater would be monitored for 63 years or until such time as the transition zone and bedrock zone groundwater at the site meets the NCAC 2L standards.

Restriction on site groundwater use would be imposed until groundwater at the site meets the NCAC 2L standards. Five-year reviews of the data would be conducted to determine how rapidly the aquifer is attenuating residual contaminants.

This alternative would require the installation of nine new monitoring wells. Four monitoring wells would be installed in the transition zone, and five wells would be installed in the bedrock zone. Figures 5 and 6 show the approximate location of the new transition and bedrock monitoring wells, respectively.

Following NCDENR Division of Water Quality Policy, groundwater monitoring would be performed quarterly for the first three years. At that time, USACE may seek to reduce the sampling frequency to a semiannual basis for the next two years. The decision to allow reduced monitoring would be jointly agreed upon by USACE and NCDENR. At the completion of these five years, if concentrations are reducing to the satisfaction of USACE and NCDENR, USACE may seek authorization to conduct annual sampling events.

Consequently, if contaminant levels are detected above the remediation goals, then quarterly sampling will resume. All monitoring wells will be sampled for all COCs in anticipation of 5-year reviews to be conducted for the site.

Alternative 3: Enhanced Bioremediation with Sodium Lactate Injection

Estimated Capital Cost: $ 4,555,321
Estimated O&M Cost: $ 2,568,755
Estimated Present Worth Cost: $ 7,124,076
Estimated Time to Achieve RAOs: 14 years

Alternative 3 would use a combination of enhanced bioremediation (sodium lactate injection) and MNA to achieve the remedial levels in groundwater at the Former NAD site. The plume area with contamination greater than 500 μg/L will be treated using a sodium lactate injection program. Injection of sodium lactate stimulates the contaminant degradation process thereby destroying the COCs. The residual contamination within the treatment areas and the contamination located outside of the radius of influence of the horizontal injection wells will attenuate naturally following the treatment period. Contamination levels would be monitored to ensure natural attenuation of contamination to below remedial levels. Modeling predicted that after active treatment of TCE to 500 μg/L using sodium lactate, natural attenuation would degrade contaminants to the NCAC 2L standard of 2.8 μg/L in approximately 14 years in the transition zone and 12 years in the bedrock zone.

The enhanced bioremediation program would be established by installing 85 injection wells and nine new monitoring wells. The sodium lactate solution will be injected into the transition wells every two months over a six-month period for a total of four injections. Based on the process pilot study completed at the site, the rate of injection is estimated to be 1.5 gallons per minute (gpm) of 1% sodium lactate solution for 48 hours.

Injection into the bedrock wells is expected to proceed every two months over a 12-month period for a total of seven injections. The rate of injection in these wells is expected to be 6 gpm of 1% sodium lactate solution for 48 hours.

Once the active treatment operations have been completed, it is assumed that natural attenuation would continue to reduce TCE concentrations over time. During this phase, the groundwater would be monitored every 5 years until the RAO is achieved (anticipated to be 14 years).

EVALUATION OF ALTERNATIVES

Nine criteria are used in the feasibility study process to evaluate the different remedial alternatives individually and against each other in order to select a preferred remedy. The following section profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. A Detailed Analysis of Alternatives can be found in the FFS (TPMC, 2009).

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-term Effectiveness considers the length of time needed to implement an alternative and the risks implementation of the alternative poses to workers, residents, and the environment.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual O&M costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State/Support Agency Acceptance considers whether the State agrees with the analyses and recommendations, as described in the FS and Proposed Plan.
Community Acceptance considers whether the local community agrees with the analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

1. Overall Protection of Human Health and the Environment

All of the alternatives evaluated, except the No Action alternative, would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through treatment, engineering controls, and/or institutional controls. These action alternatives would achieve the RAO to reduce TCE contamination below the NCAC 2L standard. The primary distinction between the action alternatives with respect to attainment of this RAO is the time required; Alternative 2 would achieve this RAO in 63 years whereas Alternative 3 would achieve this RAO in 14 years. All action alternatives would reduce both the mass and volume of contamination, while also largely preventing the migration of the contamination exceeding the NCAC 2L (2.8 ppb) groundwater standards outside the property boundary. The action alternatives would, therefore, be protective of human health and the environment, whereas the No Action alternative would not be protective.

2. Compliance with ARARs

The No Action alternative would do nothing to address and/or monitor TCE in groundwater that exceeds drinking water standards. Therefore, the No Action alternative does not comply with the primary chemical-specific ARAR for the site.

Alternative 2 would not actively address TCE contamination, but would monitor groundwater to determine if natural processes are reducing concentrations. Also, Alternative 2 will implement institutional controls to limit potential exposure to contaminated groundwater. Alternative 2 (MNA) would track natural degradation which is expected to degrade TCE to NCAC 2L standards in 63 years.

Alternative 3 would result in the destruction of both TCE and degradation products. Active treatment of high contaminant concentrations followed by MNA is expected to result in achieving NCAC 2L standards in 14 years. Although the NCAC 2L groundwater standard would not be met until the residual contamination throughout the aquifer decreases through attenuation processes, it is projected that active remediation within the treatment zone to achieve a TCE concentration of less than 100 ppb would prevent residual contamination from leaving the NAD before attaining the RAO.

3. Long-term Effectiveness and Permanence

The No Action alternative does not verify any reduction of contaminant mass or volume; and provides no other measures to protect human health or the environment. Therefore, it is not known how effective the alternative is in the long-term.

Alternative 2 implements institutional controls while tracking contaminant degradation thereby providing long-term protection from potential exposure. Such protection will remain until such time as contaminant concentrations are no longer a concern.

Although the RAO is expected to be achieved under Alternative 2, the remediation does rely upon natural processes that may or may not be efficient over the years and is predicted to last 63 years. Therefore, there is uncertainty associated with Alternative 2.

Alternative 3 involves reducing the contaminant mass and volume over the projected treatment time. Alternative 3 actively treats the highest concentrations of TCE. Following treatment the risk is relatively eliminated with contaminant concentrations being reduced below the remedial goals within 14 years in the transition zone and 12 years in the bedrock zone.

4. Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment

The No Action alternative would not provide any data to demonstrate reduction in the toxicity, mobility, or mass of contaminants.

Alternative 2 is expected to result in overall reduction of contaminant mass but will rely upon natural processes. Alternative 3 would provide the quickest overall reduction in the mass of organic contaminants in the groundwater.

5. Short-term Effectiveness

The No Action alternative and Alternative 2 are both effective in the short-term in that their actions (or lack of action) do not result in any short-term risk. However, the risk from site contaminants remains under Alternative 1, and is reduced by institutional controls under Alternative 2. Alternative 3 results in a slightly higher short-term risk while the remedy is being implemented. These risks are greatly reduced by performing all work activities under a designed health and safety program.

6. Implementability

The No Action alternative is readily implementable; since no activities would be conducted. The remaining alternatives would be readily implemented in that materials, equipment, and technologies are readily available; however, each would involve varying complexities. Implementing Alternative 3 would be more complicated because it involves drilling and multiple injections of a solution within an area of ongoing industrial activities for 14 years.

7. Cost

The estimated Present Worth costs for each of the three alternatives are as follows:

- Alternative 1, $0
- Alternative 2, $6,563,242
- Alternative 3, $7,124,076

Alternative 1, the No Action alternative, has no costs associated with implementation. Of the two action alternatives, Alternative 2, MNA, is the least expensive followed by Alternative 3, Enhanced Bioremediation.

Alternatives 2 and 3 will achieve the RAO, but will do so in different time periods. Enhanced Bioremediation has proved effective through the pilot study conducted at the NAD site.

8. State/Support Agency Acceptance

The State of North Carolina supports the Preferred Alternative.

9. Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the ROD for the site.

SUMMARY OF THE PREFERRED ALTERNATIVE

The selected remedial alternative for cleaning up the groundwater contamination at the former NAD site is Alternative 3. However, due to the complex site-specific geologic, hydrogeologic, and groundwater geochemical conditions; a pilot study was conducted at the site prior to completing the FFS to determine the effectiveness of the selected remedial alternative. The results indicated that he treatment was effective in reducing the TCE in the groundwater at the site. A separate report was prepared that summarized the results of the Pilot Study.

This remedial technology was proven to be effective in reducing the TCE contamination present in the groundwater and because it provides the highest overall protection of human health and the environment, complies with ARARs, and would effectively reduce the TCE levels in a reasonable amount of time. Although the costs to implement Alternative 3 are higher than the other Alternatives, this alternative would utilize permanent solutions and treatment technologies to the maximum extent practicable. Because it would treat the contamination, the remedy also would meet the preference for the selection of a remedy that involves treatment as a principal element.

The Preferred Alternative can change in response to public comment or new information.

COMMUNITY PARTICIPATION

USACE and NCDENR provide information regarding the cleanup of the former NAD site to the public through:

- public meetings,
- providing information/documents to property owners,
- the Administrative Record file for the site, and
- announcements published in the newspaper.

USACE and NCDENR encourage the public to gain a more comprehensive understanding of the site and the activities that have been conducted at the site.

The dates for the public comment period, the date, location, and time of the public meeting, and the location of the Administrative Record files, are provided on the front page of this Proposed Plan.

For further information on the Former Naval Ammunition Depot please contact:

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Environmental & Interagency & International Services Management Branch
U.S.Army Corps of Engineers, Savannah District
Phone (912) 652-5363

email: **julie.a.hiscox@usace.army.mil**

GLOSSARY OF TERMS

Specialized terms used in this handout are defined below:

Action Levels – The existence of a contaminant concentration in the environment high enough to warrant action or trigger a response under the Superfund Amendments and Reauthorization Act of 1989 (SARA) and the National Oil and Hazardous Substances Contingency Plan (NCP).

Administrative Record – All documents that are considered, or relied on, in selecting the response action at a site, culminating in the Record of Decision for remedial action or, an action memorandum for removal actions.

Applicable or relevant and appropriate requirements (ARARs) – The Federal and State environmental laws that a selected remedy will meet. These requirements vary among sites and alternatives.

Bioremediation – The use of microorganisms to transform or alter, through biological action, hazardous organic contaminants into nonhazardous substances.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)– The Cleanup Program focuses on human health and environmental concerns related to human health. The Cleanup Program is primarily directed by the U.S. EPA, working with the states, on sites designated for cleanup on the National Priorities List (NPL). CERCLA emphasizes local source contact and prevention of further spread from sources.

Contaminant – Harmful or hazardous matter introduced into the environment.

Contaminant plume – A column of contamination with measurable horizontal and vertical dimensions that is suspended in, and moves with, groundwater.

Feasibility Study (FS) – Analysis of the practicability of a proposal; e.g., a description and analysis of potential cleanup alternatives for a site. It usually recommends selection of a cost-effective alternative and starts during the remedial investigation; together, they are commonly referred to as the "RI/FS".

Groundwater – Underground water that fills pores in soils or openings in rocks to the point of saturation. Groundwater is often used as a source of drinking water via municipal or domestic wells.

In Situ – In its original place; unmoved unexcavated; remaining at the site or in the subsurface.

Monitoring – Ongoing collection of information about the environment that helps gauge the effectiveness of a clean-up action. Monitoring wells drilled at different levels would be used to detect any leaks from containment structures.

Organic compounds – Carbon compounds, such as solvents, oils, and pesticides. Most are not readily dissolved in water. Some organic compounds may cause cancer.

Parts per billion (ppb)/parts per million (ppm) – Units commonly used to express contamination concentrations.

Proposed Plan – A plan for a site cleanup that is available to the public for comment.

Remediation – Cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a site.

Remedial Action (RA) – The actual construction or implementation phase of a site cleanup that follows remedial design.

Remedial Design (RD) – A phase of the remedial process that follows the RI/FS and includes engineering drawing and specification development.

Remedial Investigation (RI) – An in-depth study designed to (1) gather data needed to determine the nature and extent of contamination at a site, (2) establish site cleanup criteria, (3) identify preliminary alternatives for remedial action, and (4) support technical and cost analyses of alternatives. The RI is usually done with the FS. Together they are commonly referred to as the “RI/FS”.

Risk – A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.

Risk Assessment – Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants.

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the former NAD Site is important to the USACE. Comments provided by the public are valuable in helping the USACE select a final cleanup remedy for the site.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by September 30, 2009. If you have any questions about the comment period, please contact Ms. Julie Hiscox at (912) 652-5363. Those with electronic communications capabilities may submit their comments to the USACE via Internet at the following e-mail address: **julie.a.hiscox@usace.army.mil**

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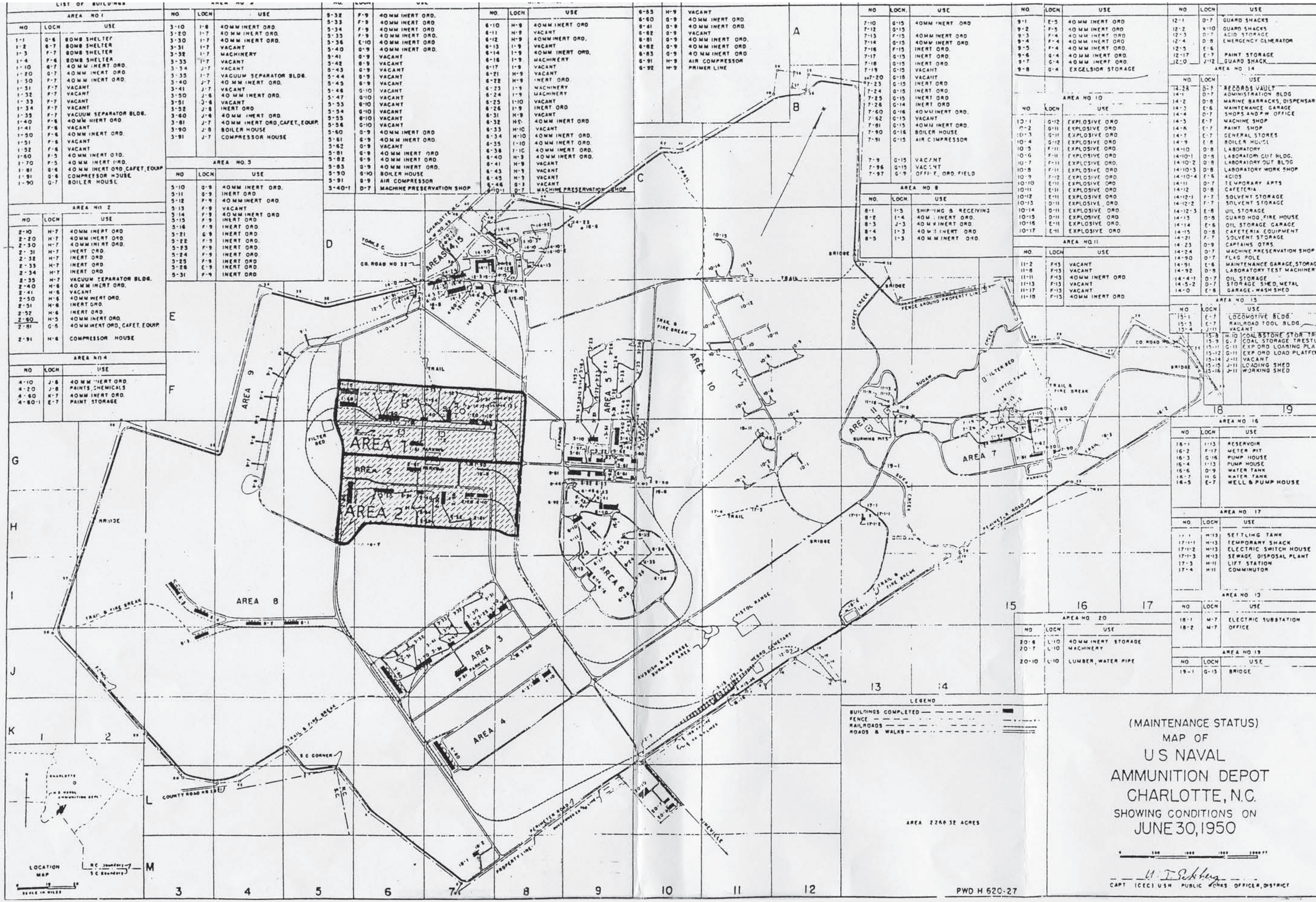

Figure 1. U.S. Naval Ammunition Depot Complex, June 30, 1950

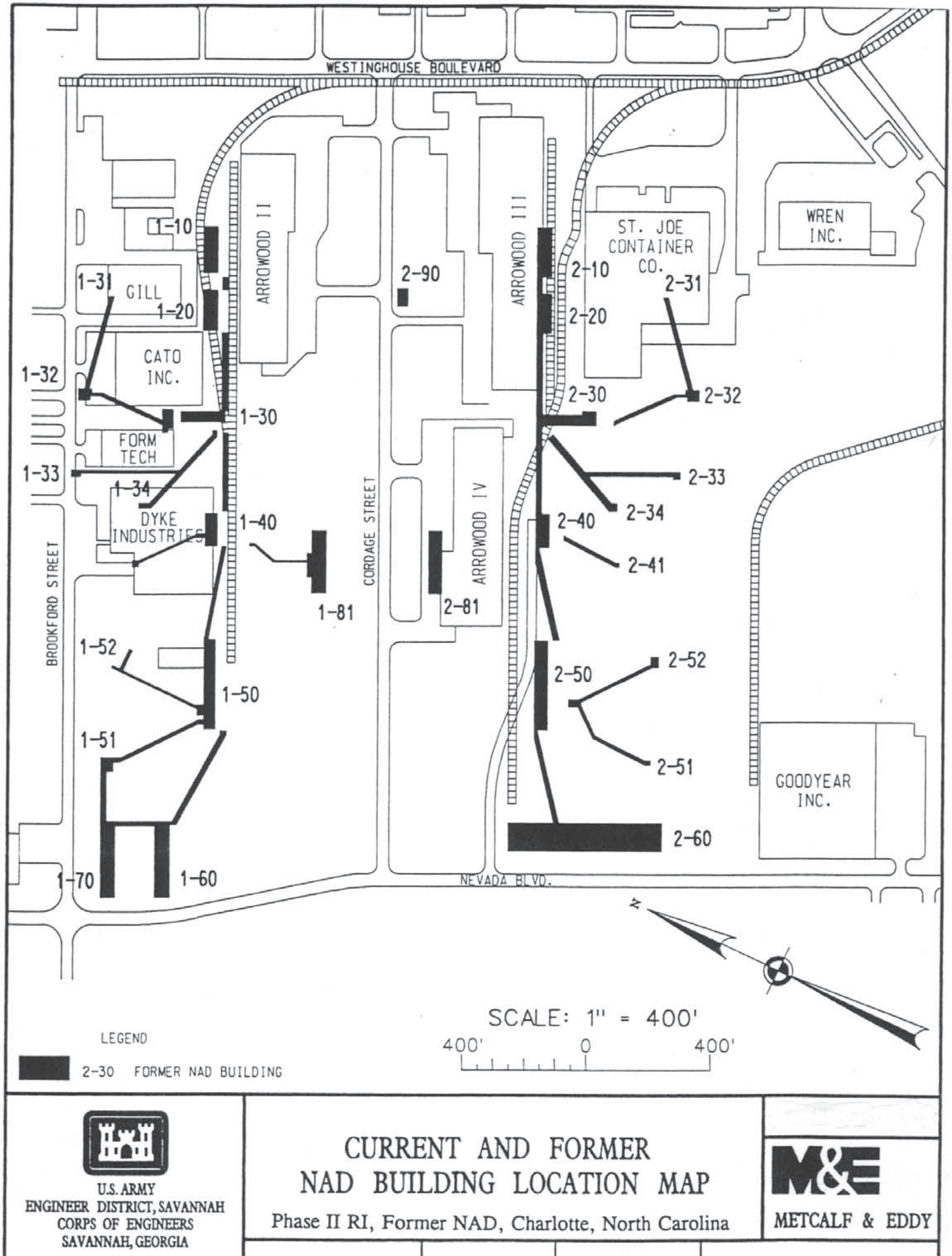

Figure 2. Current and Former NAD Buildings Location Map
(Source: Phase II RI, M&E 2000)

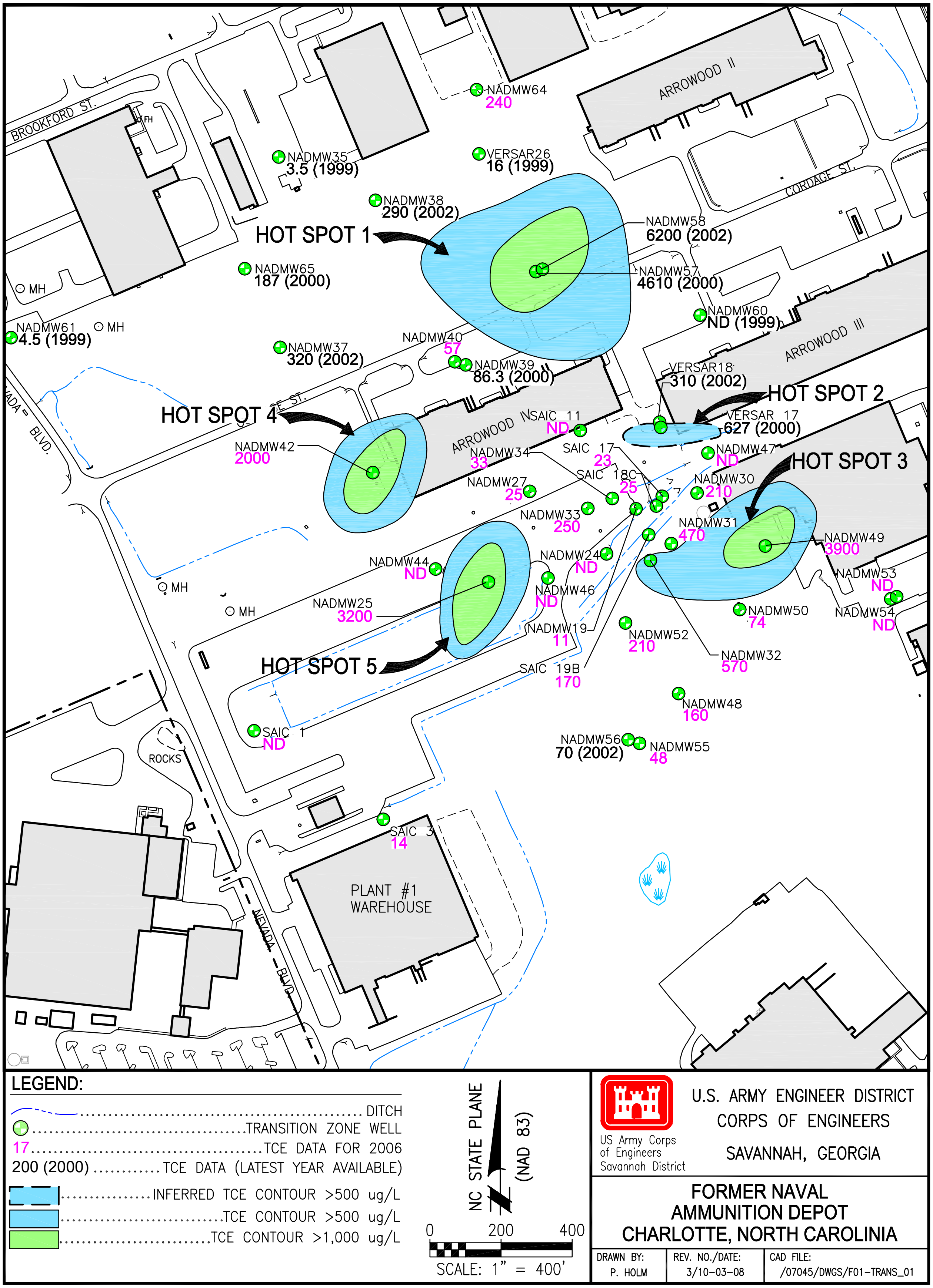

Figure 3. TCE Concentrations in the Transition Zone

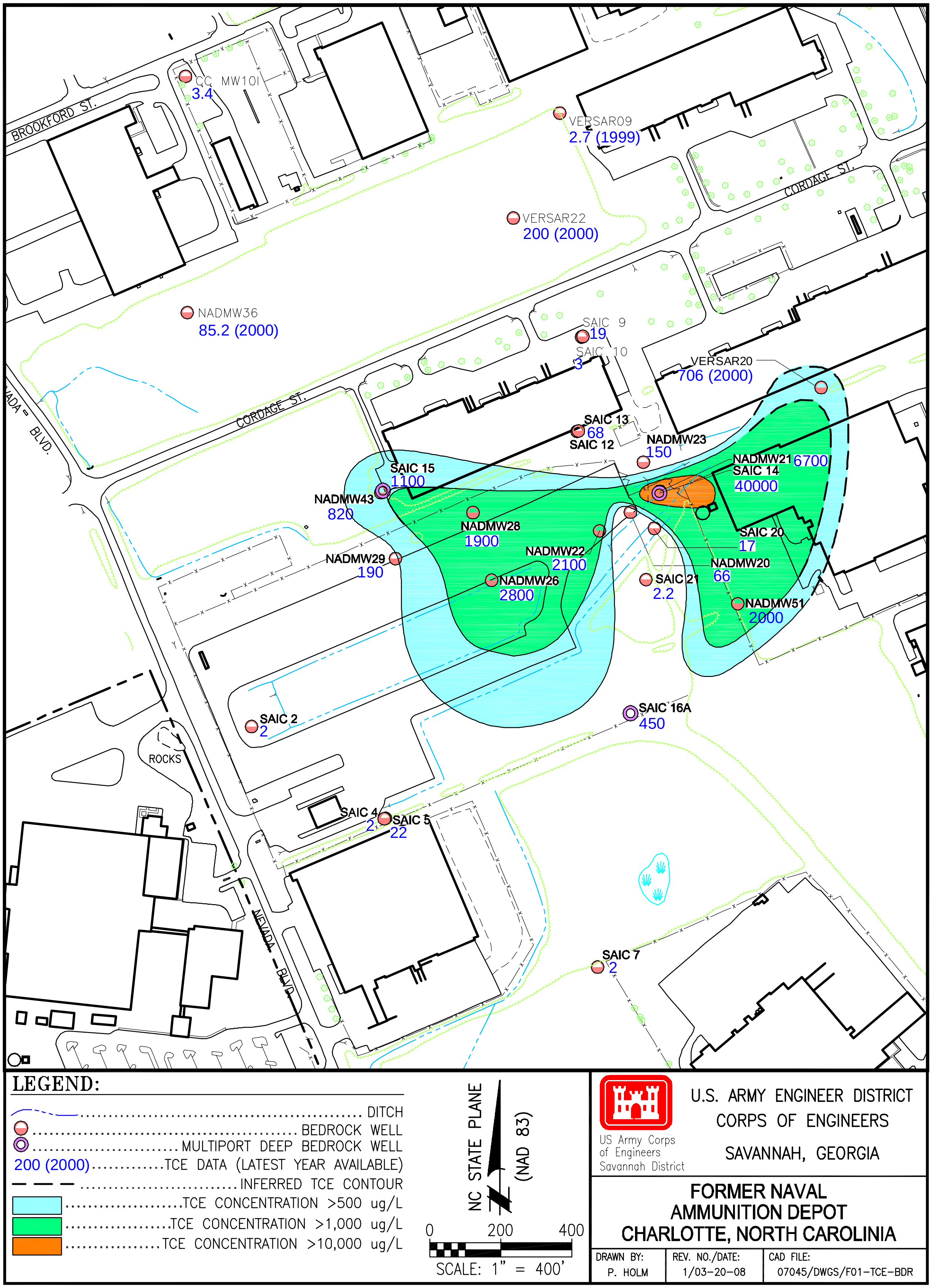

Figure 4. TCE Concentrations in the Bedrock Zone

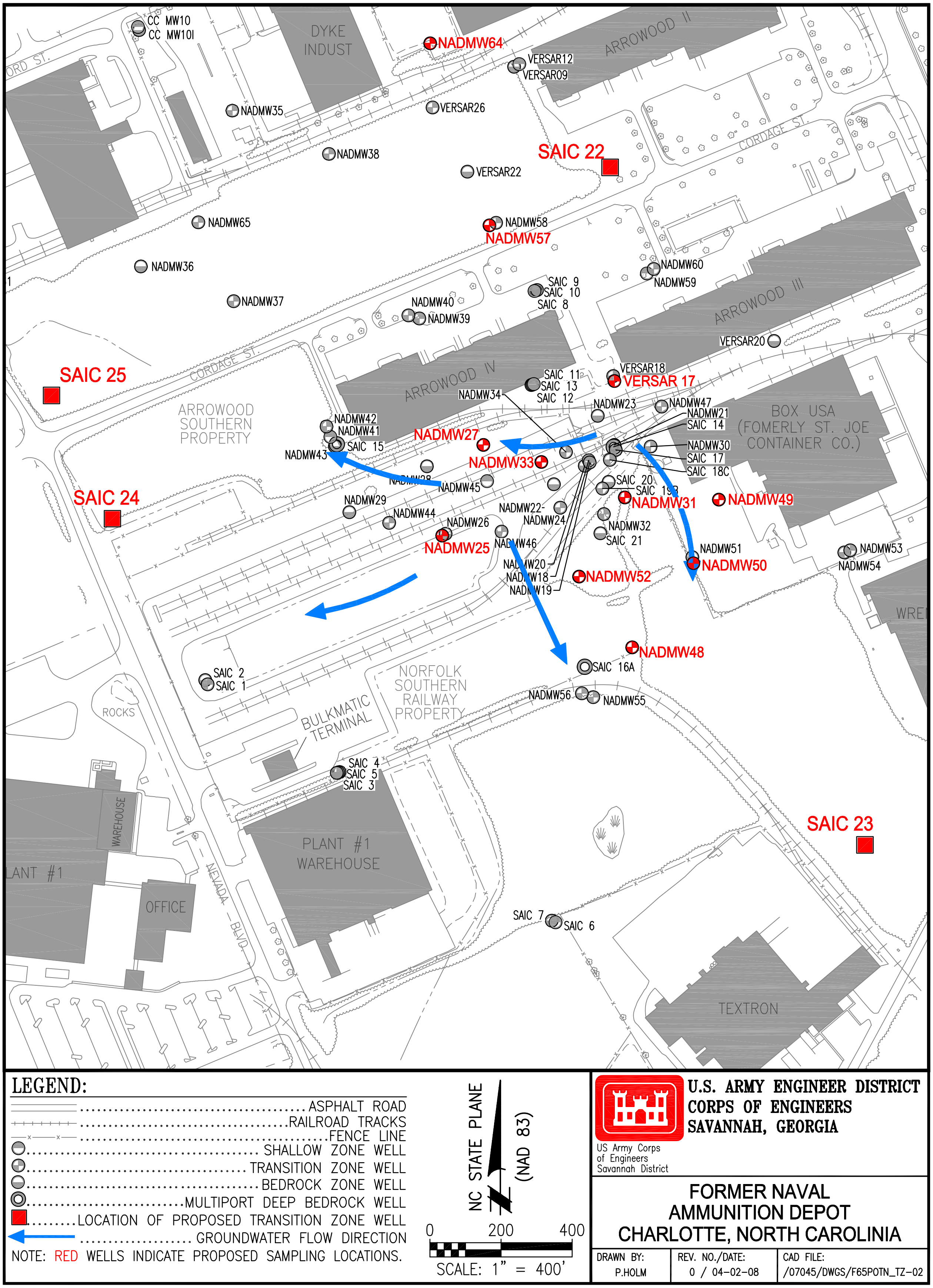

Figure 5. Location of Proposed Monitoring Wells and Sampling Locations for the Transition Zone

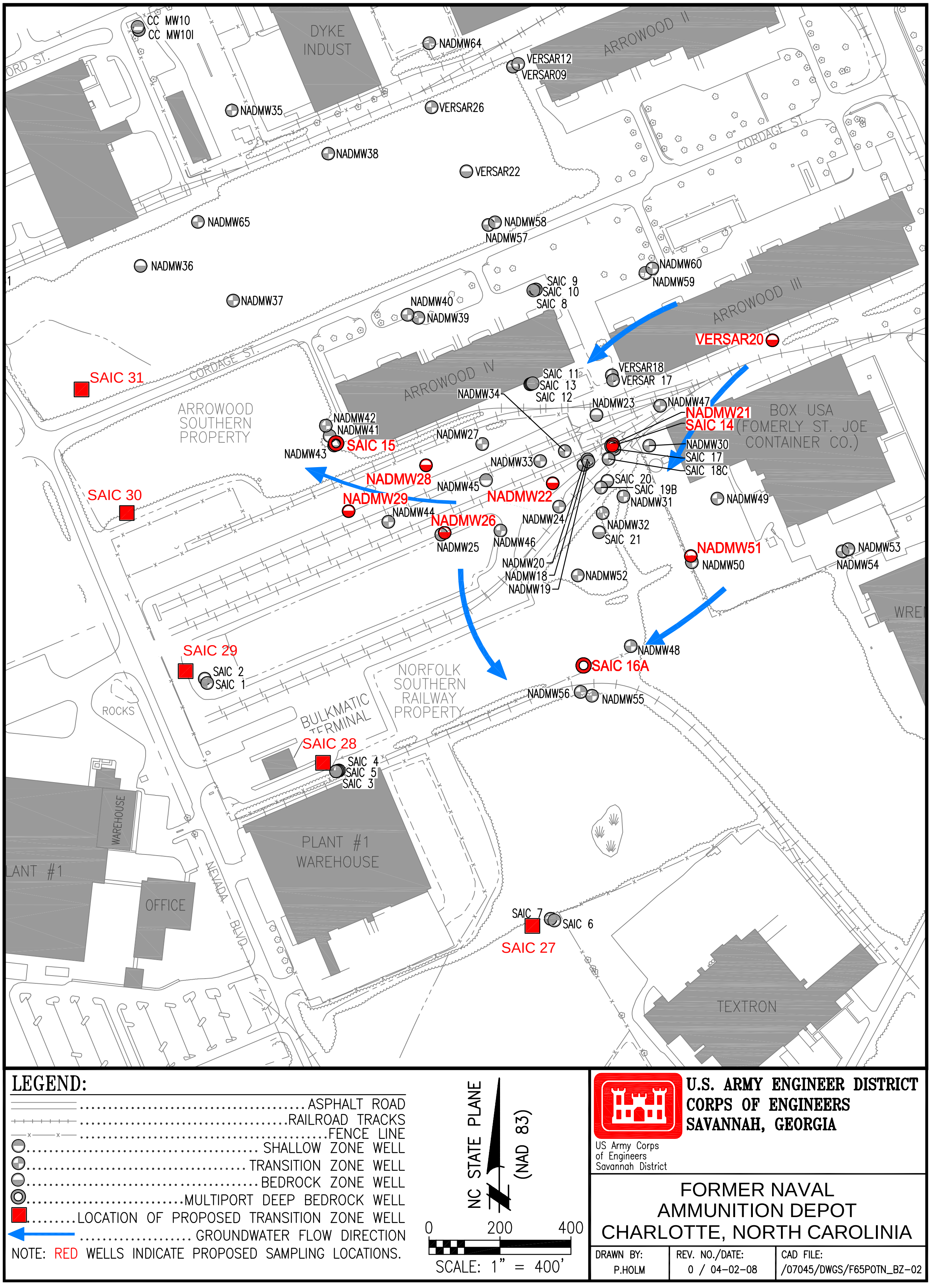

Figure 6. Location of Proposed Monitoring Wells and Sampling Locations for the Bedrock Zone