ACTION MEMORANDUM, Revision 0 CH2MHILL

DATE: July 1, 2004

SUBJECT: Action Memorandum for Operable Unit (OU) 13, Site 8 – Former Base Rifle Range and Disposal Area at Naval Air Station (NAS) Pensacola in Pensacola, Florida (FL9170024567)

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To: NAS Pensacola Administrative Record

I. Purpose

The purpose of this Action Memorandum is to request and document approval of the proposed removal action described herein for Operable Unit (OU) 13, Site 8 – Former Base Rifle Range and Disposal Area at NAS Pensacola in Pensacola, Escambia County, Florida. This removal action will be performed in accordance with the National Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Part 300.415.

II. Site Conditions and Background

Site Description

1. Removal Site Evaluation

Site 8 is the former base rifle range and disposal area at NAS Pensacola (CERCLIS ID FL9170024567). Various solid wastes and dry refuse were reportedly placed in trenches and burned there in the late 1950s and early 1960s (EnSafe, 2000). Aerial photographs and maps from the 1950s and 1960s show a rifle range at the location of the current Building 3561. An excavation shown on earlier aerial photographs at the northern end of the rifle range is shown overgrown with vegetation in later photographs (EnSafe, 2000). Most of the excavation noted in the earlier photographs is currently covered by Building 3561 and the surrounding paved area, which were constructed in the mid 970s. Figures 1 and 2 in Attachment A present the site location and layout.

Facility personnel reported no waste or residue was identified during construction of the building (Naval Energy and Environmental Support Activity [NEESA], 1983). Recent

interviews with Public Works Center (PWC) personnel indicate there may be trash and debris in the subsurface and possibly some drums in the area west of Building 3561.

NEESA completed an Initial Assessment Study in 1983, followed by a Phase I screening investigation in 1991. A Remedial Investigation/Feasibility Study (RI/FS) has also been completed for OU 13. An Interim Remedial Action (IRA) was recommended at OU 13 to remove soil to meet residential risk criteria and minimize human health and ecological risk.

From August 2002 through April 2004, additional soil sampling activities were conducted at OU 13 to delineate or confirm the presence of contaminants and determine the leachability properties using Synthetic Precipitation Leaching Procedure (SPLP) methodology. Soil sampling activities identified a cadmium-impacted area west of Building 3651 and a dieldrin-impacted area just east of Building 3561. The dieldrin contamination was further delineated into two smaller areas, one area to a depth of 5 ft bls and the second area to a depth of 10 ft bls. Based on the results of the investigations to date, approximately 468 cubic yards of cadmium contaminated soil and 374 cubic yards of dieldrin contaminated soil are present at the site. The proposed cadmium and dieldrin excavation areas are shown on Figures 3 and 4. Table 1 presents the proposed excavation volumes.

TABLE 1
Proposed Excavation Volumes
OU 13, NAS Pensacola

Excavation Area	Surface Area (square feet)	Depth (feet)	Volume (cubic yards)
08S01	1,075	0-10	398
08S03	376	0-5	70
	1,011	0-10	374
Total	2,462		842

In addition, groundwater monitoring wells were installed and groundwater samples were collected to evaluate whether the constituents detected in soil affected groundwater. Figure 5 presents the groundwater analytical data. All figures are located in Attachment A.

2. Physical Location

NAS Pensacola is located in the southern portion of Escambia County in the Florida Panhandle (see Figure 1). Site 8 lies within a developed area of the base. The site does not contain any nor is it adjacent to any surface water body or wetland. The extensive pavement at this site inhibits percolation of direct rainfall through site soil. Rainwater from Site 8 tends to run onto adjacent unpaved surfaces where it infiltrates (Ensafe, 2000). The site is an approximate 450- by 600-foot area currently occupied by Building 3561, which houses the NAS Pensacola Public Works Center Maintenance/Material Department, as shown on Figure 2.

3. Site Characteristics

An extensive asphalt-paved area surrounds Building 3561 to the north, east, and west, covering nearly all land surface. An approximate 20-foot wide concrete apron, covered by an awning, immediately surrounds the building to the east and west. Site 8 is generally flat

with a land surface elevation averaging 29 feet (ft) above mean sea level. The PWC stores building materials on the paved area west of the building. Miscellaneous office trailers, fences, and storage facilities, including Building 3678, are located north of Building 3561 (EnSafe, Inc. [EnSafe], 2000). The paved area east of the building is used for PWC storage and employee parking. Sidewalks and a grassy median are located to the south, between Buildings 3560 and 3561. Most of the site is surrounded by a chain-link fence.

The site is currently used by the PWC as office space as well as a maintenance facility and warehouse. A welding shop is also located inside Building 3561.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

Cadmium, detected in soil at 222 milligrams per kilograms (mg/kg), exceeds both the residential direct exposure goal of 75 mg/kg and the leachability remedial goal of 8 mg/kg. In addition, cadmium leachate, detected in soil at 257 micrograms per liter (µg/L), exceeds the groundwater remedial goal of 5.0 µg/L when analyzed using SPLP methodology. Cadmium was also detected in monitoring wells at the site at a concentration of 12.7 µg/L, which is above the groundwater remedial goal of 5 µg/L.

Dieldrin, detected in soil at 2.01 mg/kg, exceeds the site-specific residential remedial goal of 0.21 mg/kg, and the industrial direct exposure remedial goal of 0.3 mg/kg and the leachability remedial goal of 0.004 mg/kg. In addition, dieldrin leachate, detected in soil at 0.571 µg/L, exceeds the groundwater remedial goal of 0.005 µg/L when analyzed using SPLP methodology. Dieldrin was not detected in the groundwater monitoring wells at the site at concentrations above the groundwater remedial goal (0.005 µg/L) in the most recent sampling events.

5. NPL Status

NAS Pensacola was placed on the CERCLA National Priorities List (NPL) in 1989. Under CERCLA, the Navy is the lead agency and the EPA and FDEP are the oversight agencies. The EPA and FDEP have concurred on the removal determination. Removal actions are scheduled to begin June 2004 and last approximately six weeks.

6. Maps, Pictures, and Other Graphic Representations

The following figures have been included in Attachment A to this memorandum:

- Figure 1 Site Location Map
- Figure 2 Site Layout Map
- Figure 3 Cadmium Soil Sample Analytical Results and Proposed Excavation Area
- Figure 4 Dieldrin Soil Sample Analytical Results and Proposed Excavation Area
- Figure 5 Groundwater Analytical Results

B. Other Actions to Date

No previous or current actions have been taken at OU 13, Site 8.

C. State and Local Authorities' Role

1. State and Local Actions to Date

FDEP has been involved in the CERCLA process at Site 8 as it has progressed from investigation to this removal action. Because the site is limited in extent to the on-base industrial area, base leadership has been involved in the CERCLA process as well. A Restoration Advisory Board (RAB) has been established, and removal actions of this nature are presented to the board and public for comment and input. The removal action at OU 13 has been identified as a time-critical removal action.

2. Potential for Continued State/Local Response

Once EPA and FDEP approve No Further Action (NFA) status for OU 13 soils, no further oversight will be necessary by FDEP for site soils. However, due to the presence of cadmium, iron, lead, and manganese in groundwater, long-term monitoring (LTM) for groundwater is recommended to continue for a minimum of one year until it can be shown that the soil is no longer leaching into the groundwater and that all constituents in groundwater are below their respective remedial goals (per Chapter 62-780.680 Florida Administrative Code [FAC]). Table 2 lists the groundwater remedial goals for the constituents. FDEP will continue to provide oversight for Site 8 groundwater.

TABLE 2
Groundwater Remedial Goals
OU 13, NAS Pensacola

COC	Remedial Goal (µg/L)	Source
Cadmium	5	Primary standard as provided in Chapter 62-550 FAC
Dieldrin	0.005	Minimum criteria practical quantitation limit as provided in Chapter 62-777 FAC
Iron	1,707	Reference concentration (2 x mean) for NAS Pensacola
Lead	15	Primary standard as provided in Chapter 62-550 FAC
Manganese	50	Secondary standard as provided in Chapter 62-550 FAC

Notes:
CFR = *Code of Federal Regulations*
COC = contaminant of concern
µg/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
FAC = Florida Administrative Code
NAS = Naval Air Station

The most recent groundwater sampling event was conducted in July 2003 and lead was not detected above its groundwater remedial goal in any of the four monitoring wells sampled; therefore, it is anticipated this constituent may be dropped from LTM following one additional sampling event. The source of cadmium will be removed during the proposed remedial action, but the sources of iron and manganese are unknown.

III. Threats to Public Health or Welfare or the Environment, and Statutory and Regulatory Authorities

A. Threats to Public Health or Welfare

Currently, cadmium, detected in soil at 222 mg/kg, exceeds both the residential direct exposure and leachability remedial goals of 75 mg/kg and 8 mg/kg, respectively. Cadmium leachate in soil also exceeds the groundwater remedial goal of 5.0 µg/L when analyzed using SPLP methodology. Cadmium has also leached to the groundwater as evidenced by its detection in monitoring well 08-MW-02 at a concentration of 12.7 µg/L.

In addition, dieldrin, detected in soil at 2.01 mg/kg, exceeds the site-specific residential and industrial direct exposure remedial goals of 0.21 mg/kg and 0.3 mg/kg, respectively, as well as the leachability remedial goal of 0.004 mg/kg. Dieldrin leachate, detected in soil at 0.571 µg/L, also exceeds the groundwater remedial goal of 0.005 µg/L when analyzed using SPLP methodology.

The removal action objective is to prevent future migration of contaminants from the subsurface soil to the groundwater. Due to current and future activities at the site, there is a potential exposure to nearby human populations (i.e., construction workers, future residents).

B. Threats to the Environment

Since the contaminated areas at Site 8 are covered by asphalt, biouptake of inorganic constituents by small mammals is not expected to represent a significant pathway due to the limited infaunal community, as well as to the lack of floral diversity (Ensafe, 2000). Potential migration of contaminated water to surface water bodies at the facility will be greatly reduced after source removal.

IV. Endangerment Determination

Potential threats to human health and the environment due to the existing conditions and future releases are described above. Prior leaching of the metals has been detected in groundwater, and if not addressed, could leach in the future, if site conditions change. Further, excessive residential risk exists for future residents. Actual or threatened releases of pollutants and contaminants from the soils, if not addressed by implementing the response action selected in this Action Memorandum may present an imminent and substantial endangerment to public health or welfare, or to the environment.

V. Proposed Actions and Estimated Costs

A. Proposed Action

1. Proposed Action Description

The proposed removal action is designed to address soil in the area of Site 8. The soils at this site shall be remediated for residential land use and protection of further leaching of cadmium and dieldrin into the groundwater. The removal action and disposal of the soil will be conducted in a manner that complies with all state, local, and federal regulations including established quality assurance/quality control protocols.

The proposed removal action consists of excavation and off-site disposal of approximately 842 cubic yards of soil with concentrations in excess of the leachability remedial goal, which is more stringent than both the residential direct exposure and industrial remedial goals. The eastern area will be excavated to 5 ft below land surface (bls) north of the collection location of sample 08S110 and to the water table (approximately 10 ft bls) south of the collection location of sample 08S110. The western excavation will extend to the water table (approximately 10 ft bls). Since the excavation depths are expected to stop at groundwater, the final depth will be corrected if groundwater is encountered at different depths.

2. Contribution to Remedial Performance

Following completion of this proposed remedial action, a Proposed Plan and Record of Decision (ROD) may be prepared stating NFA is required for soils at Site 8. Following concurrence from EPA and FDEP, no additional remedial work is expected for soils at Site 8 of OU 13. Due to the presence of cadmium, iron, lead, and manganese in groundwater, LTM will continue for a minimum of one year until it can be shown that the soil is no longer leaching into the groundwater and that all constituents in groundwater are below their respective remedial goals (per Chapter 62-780.680 FAC). The removal of soil in the source area should greatly minimize the migration of contaminated soil to the groundwater.

3. Description of Alternative Technologies

A Final Feasibility Study (FFS) was prepared by Ensafe and submitted in May 2000 and a FFS Addendum was submitted in September 2001. Three remedial alternatives were developed to address soil and groundwater at OU 13, Sites 8 and 24. The remedial alternatives developed in the FFS for soils are as follows:

- No Action (S1)
- Institutional Controls (S2)
- Excavation with Off-site Disposal (S3) -This alternative considered removing soil under four different cleanup scenarios: residential (S3a), industrial (S3b), residential and leachability (S3c), or industrial and leachability (S3d) criteria.

The remedial alternatives developed in the FFS for groundwater are as follows:

- No Action (G1)
- Institutional Controls (G2)
- Institutional Controls and Monitoring (G3)

The proposed remedial action is more protective to both future residents and site workers since it will eliminate the soil contamination. In addition, the proposed remedial action will eliminate the long-term threat of soil-to-groundwater transfer. Additionally, implementation of the proposed action is a cost effective alternative to mitigate site risks and is economically feasible.

4. EE/CA

An Engineering Evaluation/Cost Analysis (EE/CA) was not developed for this site. Rather, a Remedial Investigation (RI) Report (EnSafe 1997 and 1999) and FFS (EnSafe 2000 and 2001) were prepared, submitted, and reviewed by the regulatory agencies.

5. Applicable or Relevant and Appropriate Requirements

The proposed action complies with federal and state applicable or relevant and appropriate requirements (ARARs). Table 2 presented the groundwater ARARs. Table 3 below presents the soil ARARs.

TABLE 3
Soil Remedial Goals
OU 13, NAS Pensacola

Contaminant of Concern	Remedial Goal (mg/kg)		
	Residential Direct Exposure	Industrial Direct Exposure [a]	Leachability to Groundwater [b]
Cadmium	75[c]	1300	8
Dieldrin	0.21[d]	0.3	0.004

Notes:
[a] Chapter 62-777 FAC
[b] Leachability based on groundwater criteria, Chapter 62-777 FAC
[c] SCTL based on acute toxicity considerations, Chapter 62-777 FAC
mg/kg = milligrams per kilogram
[d] Based on statistical analysis using the Upper Confidence Limit 95%UCL 95%, 3 x SCTL
SCTL = soil cleanup target level from Chapter 62-777 FAC

Soil remedial goals were based on the State of Florida residential direct exposure and leachability SCTLs found in Chapter 62-777 FAC.

Groundwater remedial goals were based on the Florida Primary Drinking Water Standard maximum contaminant levels (MCLs) found in Chapter 62-550 FAC; the Florida Secondary Drinking Water Standard found in Chapter 62-550 FAC; groundwater cleanup target levels (GCTLs) found in Chapter 62-777 FAC; or the National Primary Drinking Water Standard MCLs found in 40 CFR Part 141. The most stringent requirement was applied to OU 13 groundwater unless an alternative remedial goal was established using background concentrations, such as the case with iron.

6. Projected Schedule

The proposed remedial action is scheduled to begin June 2004 and will take approximately six weeks to complete.

B. Estimated Costs

The estimated cost of implementation of this alternative, which includes costs associated with delineation of the extent of soil contamination, is $450,000. Since this is a current action, no contingencies are required.

VI. Expected Change in the Situation Should the Response Action be Delayed or Not Taken

Delay in implementing the removal actions will allow contaminated cadmium and dieldrin soils above the residential direct exposure remedial goal and leachability criteria to remain in the soil and provide the continual potential for soil-to-groundwater transfer. This situation will place site workers at a potential risk during activities that may disturb the soils at OU 13. In addition, the risk would not be acceptable for future residential users.

VII. Outstanding Policy Issues

No outstanding policy issues exist for this site.

VIII. Enforcement

No potentially responsible parties are involved in this action.

IX. Recommendation

This Action Memorandum represents the selected removal action for OU 13, Site 8, at NAS Pensacola in Pensacola, Florida, and was developed in accordance with CERCLA as amended and consistent with the National Oil and Hazardous Pollution Contingency Plan (NCP). This decision to excavate and dispose soils offsite in a time-critical manner is based on information to be provided in the administrative record for this site.

Conditions at OU 13 meet the NCP Section 300.415(b)(2) criteria for a removal, and it is recommended that this removal action be conducted. The total cost of this remedial action is expected to be $450,000. NAS Pensacola will be responsible for implementing the action and funding the implementation.

References

CH2M HILL Constructors, Inc. 2000. Basewide Work Plan Naval Air Station Pensacola, Pensacola, Florida. June.

CH2M HILL Constructors, Inc. 1998. Contract Management Plan, Contract No. N62467-98-D-0995. July.

CH2M HILL, 2002a. *Evaluation of Site Conditions based on Results of Soil and Groundwater Sampling, Operable Unit 13 – Site 8, Revision 01.* October.

CH2M HILL, 2002b. *Evaluation of Site Conditions based on Results of Soil and Groundwater Sampling, Operable Unit 13 – Site 24, Revision 01.* October.

EnSafe, Inc. 2001. *Focused Feasibility Study Addendum, Operable Unit 13,* Naval Air Station Pensacola, Florida.

EnSafe, Inc. 2000. *Focused Feasibility Study, Operable Unit 13,* Naval Air Station Pensacola, Florida. May.

EnSafe, Inc. 1999. *Remedial Investigation Report Addendum, Operable Unit 13 – Sites 8 and 24, NAS Pensacola.*

EnSafe. 1997. *Remedial Investigation Report, Operable Unit 13 – Sites 8 and 24, NAS Pensacola.* June 20.

Florida Department of Environmental Protection. 1999. *Use of the 95 Percent Upper Confidence Level (UCL) in Developing Exposure Point Concentrations of Contaminants in Soil.* May 11.

Naval Energy and Environmental Support Activity. 1983. *Initial Assessment Study of Naval Air Station Pensacola, Pensacola, Florida.* (NEESA 13-015).

U.S. Environmental Protection Agency (EPA). 2001. Region IV Environmental Investigations *Standard Operating Procedures and Quality Assurance Manual* (SOPQAM).

Attachment A - Figures

Figure 1
Site Location Map

Figure 2
Site Layout Map

Figure 3
Cadmium Soil Analytical Results and Proposed Excavation Area

Figure 4
Dieldrin Soil Analytical Results and Proposed Excavation Area

Figure 5
Groundwater Analytical Results

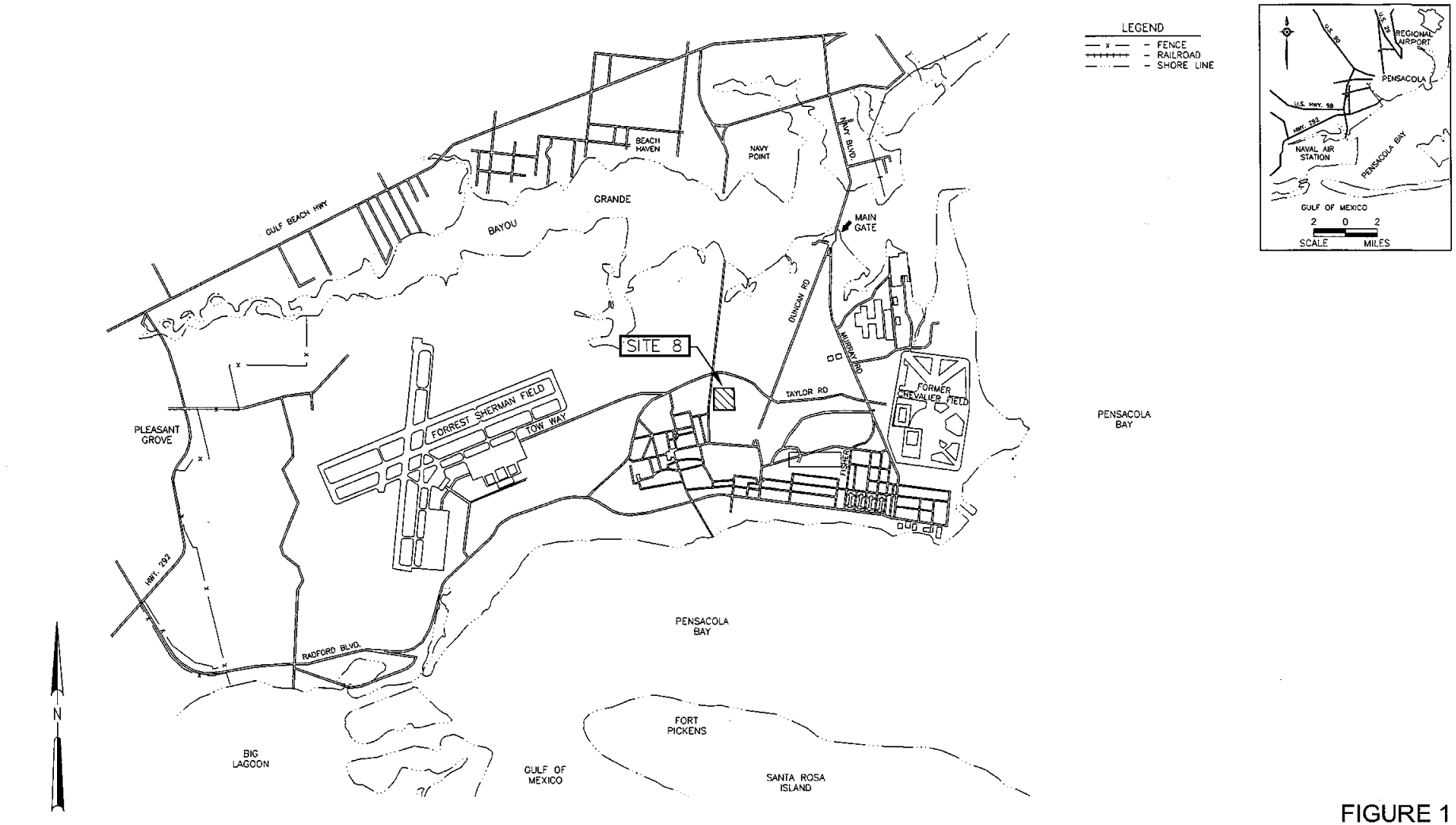

FIGURE 1

Site 8 Location Map

OU13, NAS Pensacola

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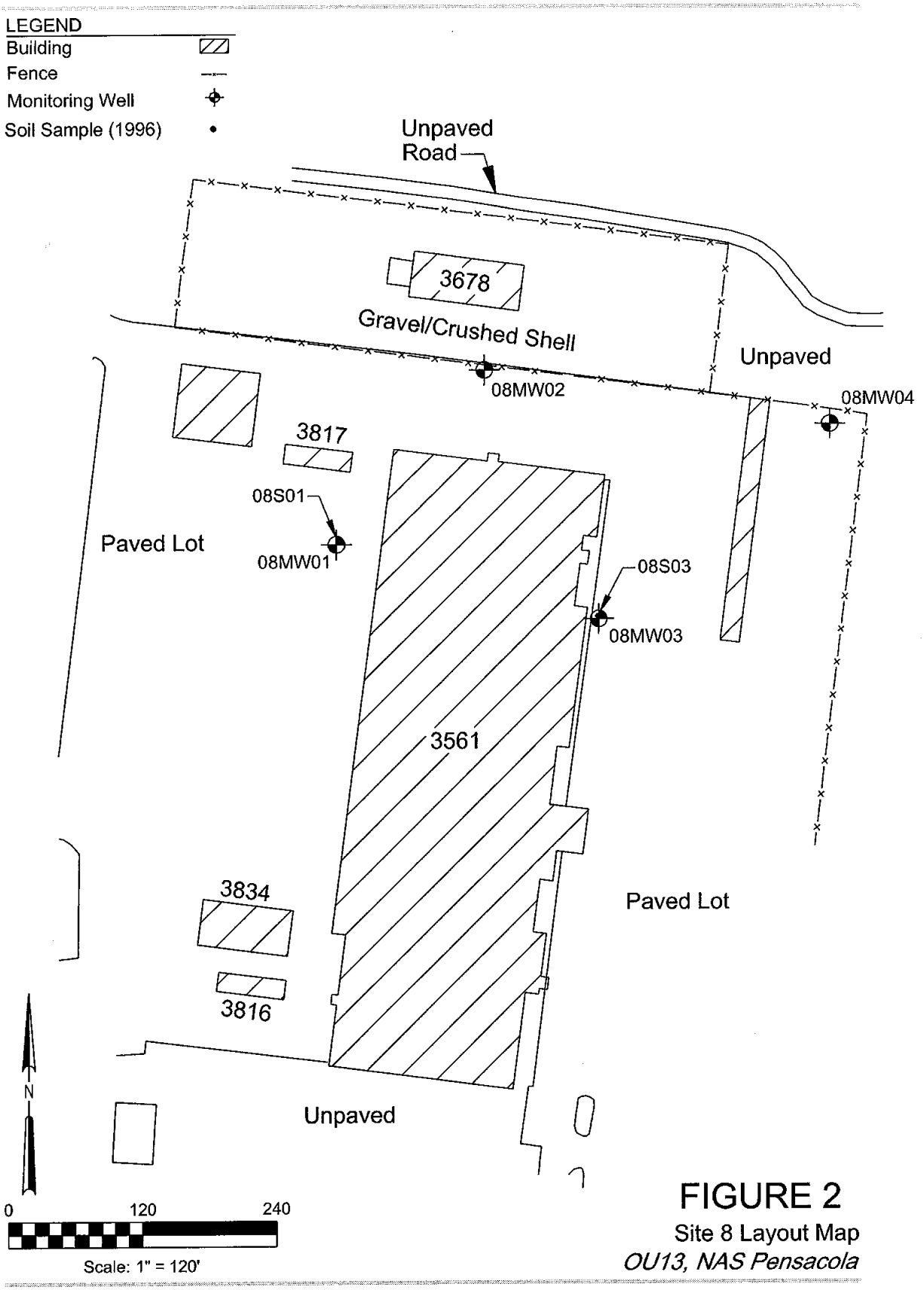

FIGURE 2

Site 8 Layout Map

OU13, NAS Pensacola

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	62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. Residential Direct Exposure (mg/kg)	Groundwater Cleanup Target Level (µg/L)
Cadmium	8	1,300	75	5

Soil analytical results are shown in mg/kg.
SPLP results are shown in µg/L.
* Indicates an exceedance of one or more cleanup criteria.

LEGEND

- Building
- Soil Sample (1996) •
- Soil Sample (August 2002) ▲
- Soil Sample (June/August 2003) ▼
- Monitoring Well
- Estimated Value J
- Undetected Value U

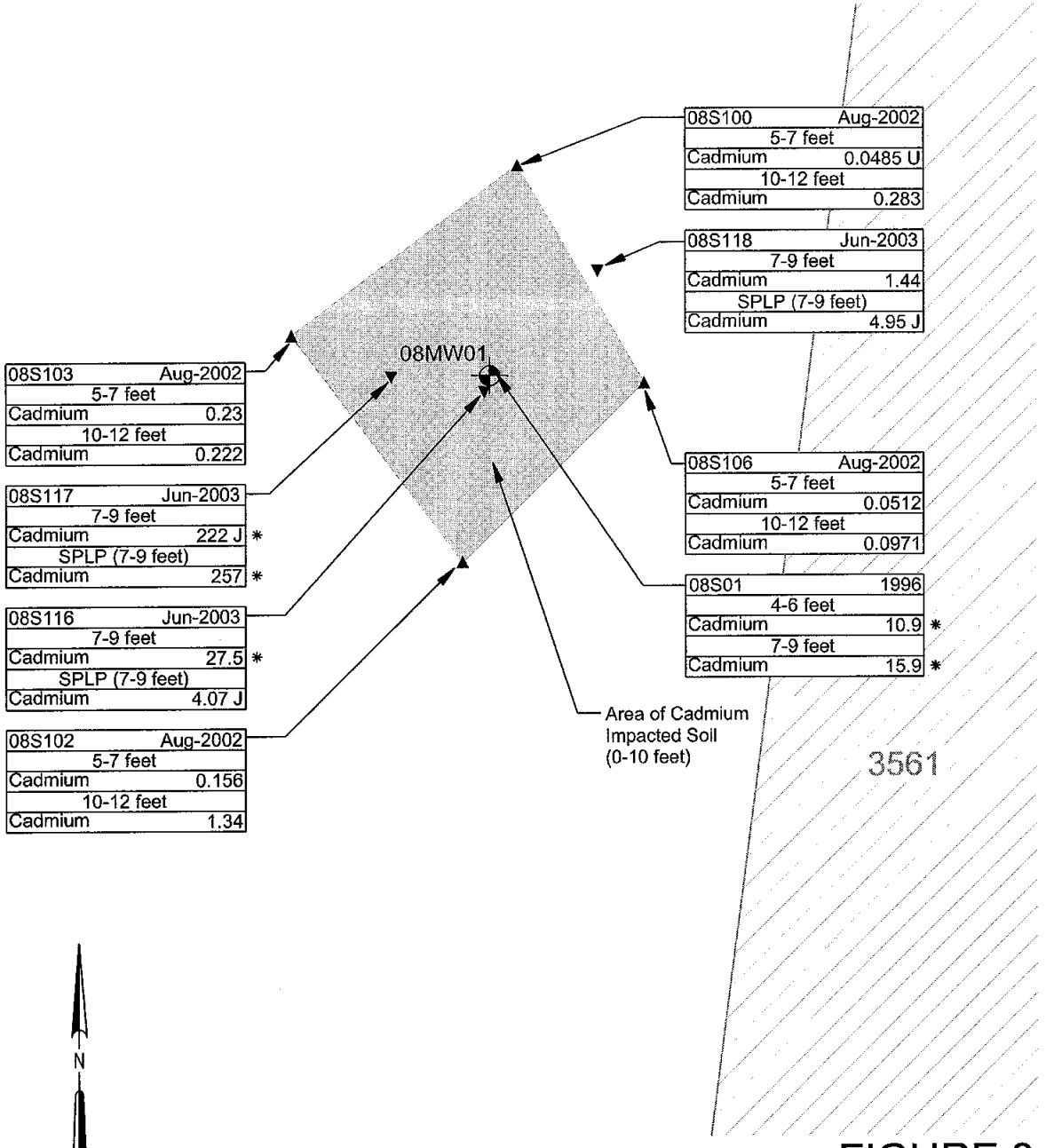

FIGURE 3

Site 8 Cadmium Soil Sample Analytical Results and Proposed Excavation Areas

OU13, NAS Pensacola

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	62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. 3X Residential Direct Exposure (mg/kg)	Groundwater Cleanup Target Level (µg/L)
Dieldrin	0.004	0.3	0.21	0.005

Soil analytical results are shown in mg/kg.
SPLP results are shown in µg/L.
* Indicates an exceedance of one or more cleanup criteria.

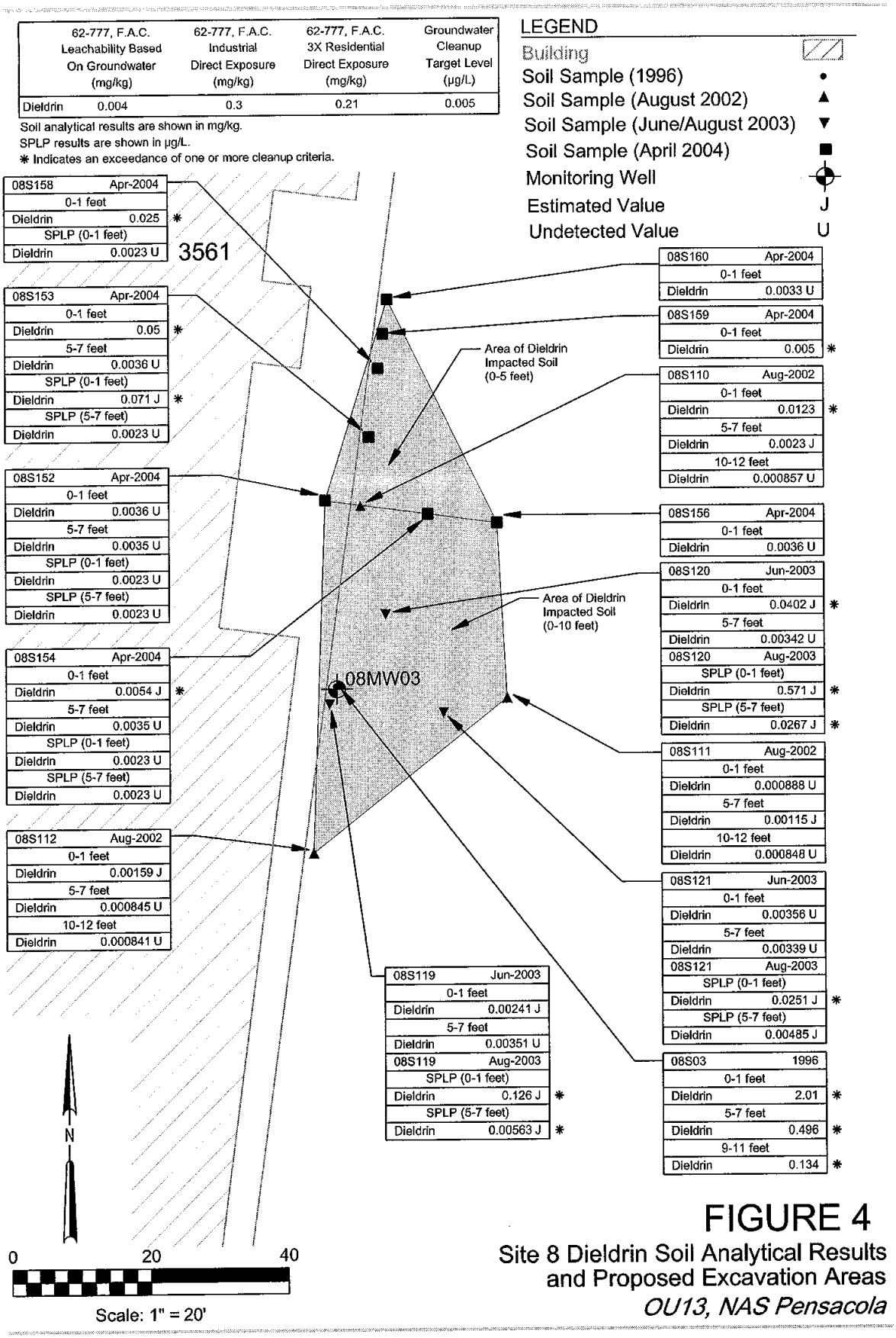

FIGURE 4

Site 8 Dieldrin Soil Analytical Results and Proposed Excavation Areas

OU13, NAS Pensacola

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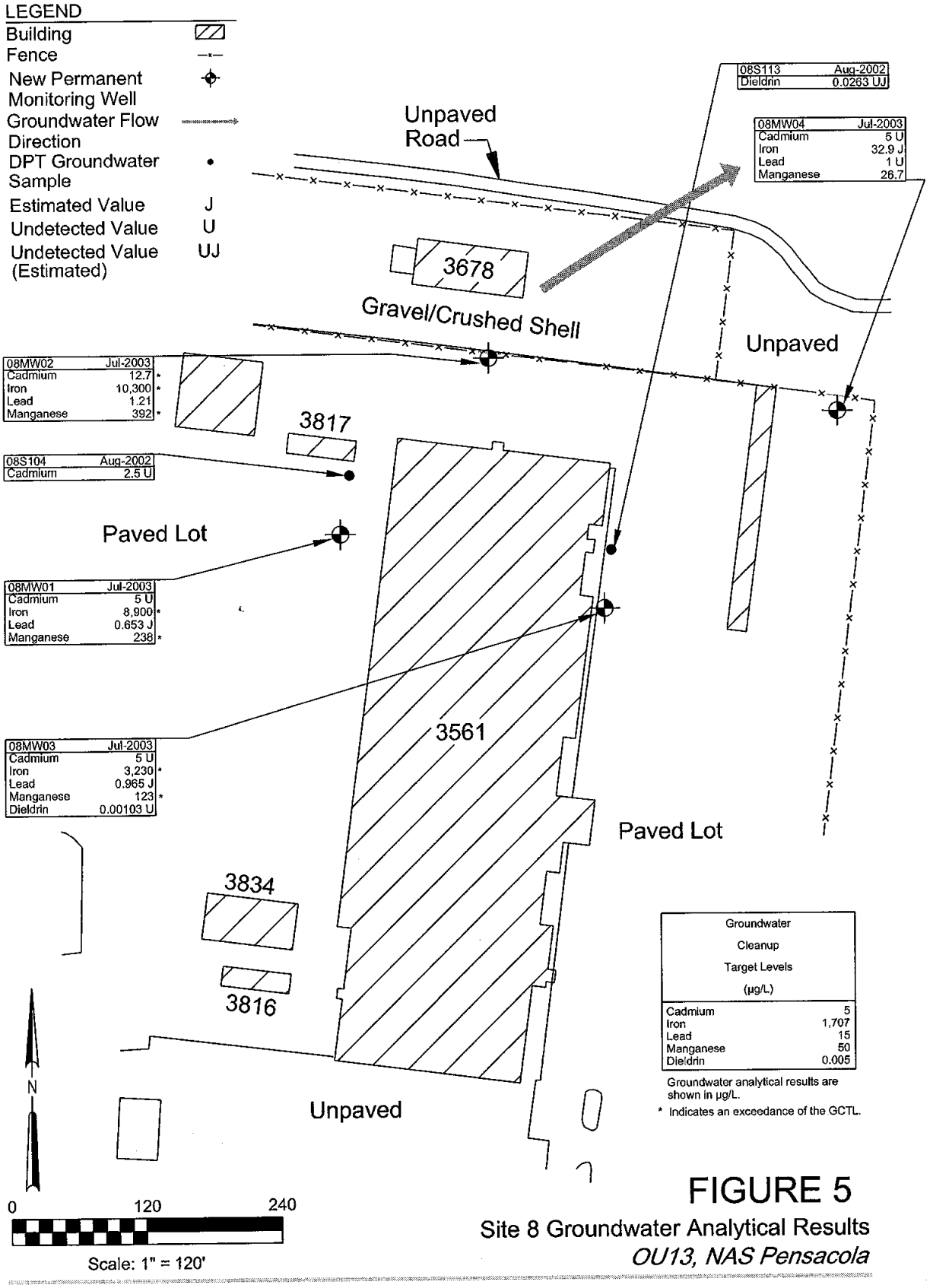

FIGURE 5

Site 8 Groundwater Analytical Results

OU13, NAS Pensacola

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