

Record of Decision

Site 7 – RTC Silk Screen Shop

Naval Training Center Great Lakes
Great Lakes, Illinois



Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0263

May 2003



TETRA TECH NUS, INC.

661 Andersen Drive ■ Pittsburgh, Pennsylvania 15220-2745
(412) 921-7090 ■ FAX (412) 921-4040 ■ www.tetrattech.com

PITT-05-3-035

May 27, 2003

Project 4278

Commander, Southern Division
Naval Facilities Engineering Command
Attn: Mr. Anthony Robinson (ES 31)
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order 0263

Subject: Final Record of Decision and Response to Illinois EPA Comments
Site 7 RTC Silk Screen Shop
Naval Training Center Great Lakes
Great Lakes, Illinois

Dear Mr. Robinson:

Please find attached one copy of the subject report and the response to Illinois EPA comments. Copies have also been distributed as indicated below. The signed title page and authorizing signature page will be provided when these pages are completed.

If you have any questions, please call Aaron Bernhardt at 412-921-8433 or me at 412-921-7251.

Sincerely,

Robert F. Davis, P.E.
Task Order Manager

RFD/kf

Enclosure

cc: D. Fleming/M. Schultz, NTC Great Lakes (2 copies)
B. Conrath, Illinois EPA (3 copies)
O. Thompson, USEPA Region 5 (2 copies)
D. Wroblewski, TtNUS (Cover Letter Only)
Mark Perry/File 4278, TtNUS (1 copy)
A. Bernhardt, TtNUS (1 copy)

RECORD OF DECISION

SITE 7 – RTC SILK SCREEN SHOP

NAVAL TRAINING CENTER GREAT LAKES
GREAT LAKES, ILLINOIS

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

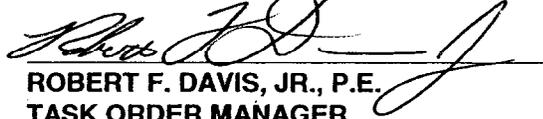
Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

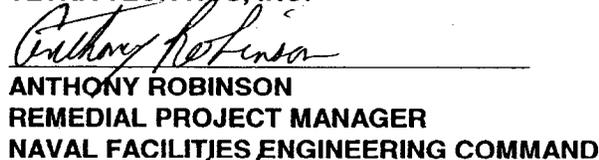
Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0263

MAY 2003

PREPARED UNDER THE SUPERVISION OF:

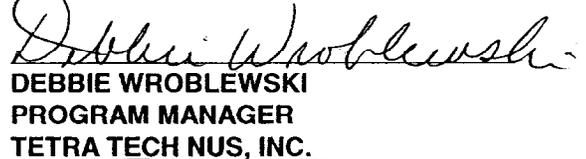

ROBERT F. DAVIS, JR., P.E.
TASK ORDER MANAGER
TETRA TECH NUS, INC.

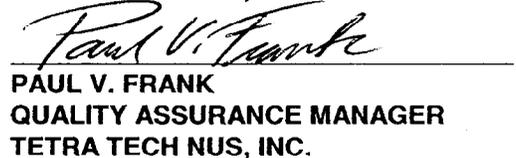

ANTHONY ROBINSON
REMEDIAL PROJECT MANAGER
NAVAL FACILITIES ENGINEERING COMMAND

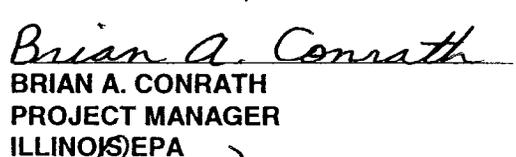

MARK SCHULTZ
ENVIRONMENTAL SITE MANAGER
NAVAL TRAINING CENTER GREAT LAKES

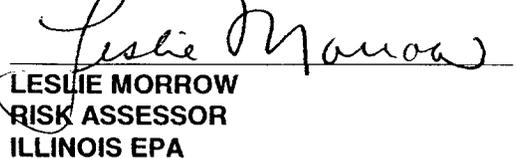

DAN FLEMING
IR PROGRAM MANAGER
NAVAL TRAINING CENTER GREAT LAKES

APPROVED FOR SUBMITTAL BY:


DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.


PAUL V. FRANK
QUALITY ASSURANCE MANAGER
TETRA TECH NUS, INC.


BRIAN A. CONRATH
PROJECT MANAGER
ILLINOIS EPA


LESLIE MORROW
RISK ASSESSOR
ILLINOIS EPA

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JUN 02 2003

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TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NO.</u>
ACRONYMS AND ABBREVIATIONS	3
1.0 DECLARATION	1-1
1.1 SITE NAME AND LOCATION	1-1
1.2 STATEMENT OF BASIS AND PURPOSE	1-1
1.3 ASSESSMENT OF THE SITE	1-1
1.4 DESCRIPTION OF THE SELECTED REMEDY	1-1
1.5 STATUTORY DETERMINATIONS	1-1
1.6 AUTHORIZING SIGNATURES	1-2
2.0 DECISION SUMMARY	2-1
2.1 SITE NAME, LOCATION, AND DESCRIPTION	2-1
2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES	2-2
2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION	2-2
2.4 SCOPE AND ROLE OF ACTION	2-2
2.5 SUMMARY OF SITE CHARACTERISTICS	2-3
2.5.1 Geology	2-3
2.5.2 Hydrology	2-3
2.5.3 Nature and Extent of Contamination	2-4
2.6 SUMMARY OF SITE RISKS	2-7
2.7 DOCUMENTATION OF SIGNIFICANT CHANGES	2-9
3.0 RESPONSIVENESS SUMMARY	3-1
3.1 COMMUNITY PREFERENCES	3-1
3.2 INTEGRATION OF COMMENTS	3-1
3.3 COMMENT RESOLUTION	3-1
REFERENCES	R-1

TABLES

SECTION

- 2-1 Occurrence, Distribution, and Selection of Chemicals of Potential Concern, Post-Removal Surface Soil
- 2-2 Occurrence, Distribution, and Selection of Chemicals of Potential Concern, Post Removal Surface and Subsurface Soils
- 2-3 Occurrence, Distribution, and Selection of Chemicals of Potential Concern, Groundwater
- 2-4 Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
- 2-5 Cancer Toxicity Data Summary - Oral/Dermal
- 2-6 Reasonable Maximum Exposure (RME) - Post-Removal, Risk Assessment Summary - Future Civilian Residents - Surface Soil
- 2-7 Reasonable Maximum Exposure (RME) - Post-Removal, Risk Assessment Summary - Military Residents - Surface Soil
- 2-8 Reasonable Maximum Exposure (RME) - Post-Removal, Risk Assessment Summary - Future Civilian Residents - Surface/Subsurface Soil
- 2-9 Reasonable Maximum Exposure (RME) - Post-Removal, Risk Assessment Summary - Military Residents - Surface/Subsurface Soil

FIGURES

SECTION

- 2-1 Site Location Map
- 2-2 Site Map
- 2-3 Sample Locations
- 2-4 Human Health Conceptual Site Model

ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
AST	Aboveground storage tank
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
cm/sec	Centimeters per second
COC	Chemical of Concern
COPC	Chemical of Potential Concern
CSM	Conceptual Site Model
GRO	Groundwater Remediation Objectives
HI	Hazard Index
HQ	Hazard Quotient
IAS	Initial Assessment Study
Illinois EPA	Illinois Environmental Protection Agency
ILCR	Incremental lifetime cancer risk
MCL	Maximum Contaminant Level
mg/kg	Milligrams per kilogram
msl	Mean sea level
NTC	Naval Training Center
PAH	Polynuclear aromatic hydrocarbon
PRG	Preliminary Remediation Goal
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RA	Risk Assessment
RI	Remedial Investigation
RTC	Recruit Training Center
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SRO	Soil Remediation Objective
SSL	Soil Screening Level
SVOC	Semivolatile organic compound
TACO	Tiered Approach to Corrective Action Objectives
TtNUS	Tetra Tech NUS, Inc.

ug/kg	Micrograms per kilogram
ug/L	Micrograms per liter
USCS	Unified Soil Classification System
U. S.	United States
USEPA	U. S. Environmental Protection Agency
VOC	Volatile organic compound

1.0 DECLARATION

1.1 SITE NAME AND LOCATION

Site 7 is the Silk Screening Shop and former Aboveground Storage Tank (AST) area associated with the Recruit Training Center (RTC) at Naval Training Center (NTC) Great Lakes located in Great Lakes, Illinois.

1.2 STATEMENT OF BASIS AND PURPOSE

This Decision Document presents the selected remedy for Site 7, RTC Silk Screening Shop and Former AST Area, located at NTC Great Lakes, Great Lakes, Illinois. The Decision Document was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA).

The Illinois Environmental Protection Agency (Illinois EPA) concur with the selected remedy.

1.3 ASSESSMENT OF THE SITE

Based on a Remedial Investigation/Risk Assessment (RI/RA) evaluation of current conditions and a removal action for polynuclear aromatic hydrocarbons (PAH)-contaminated soil, no pathways pose a threat to human health or the environment.

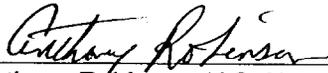
1.4 DESCRIPTION OF THE SELECTED REMEDY

No CERCLA remedial action is necessary for Site 7. Therefore, the selected remedy for the site is no further action. This involves taking no measures to address the environmental media at Site 7, including no further investigation or remediation.

1.5 STATUTORY DETERMINATIONS

An interim remedial action, i.e., a hot spot removal (excavation and off site disposal) of PAH-contaminated soil, was conducted in July 2002 (TtNUS, 2003). As a consequence of these remedial activities, no unacceptable risks are associated with the site, and, therefore, no further remedial action is necessary and no five- year reviews will be required.

1.6 AUTHORIZING SIGNATURES

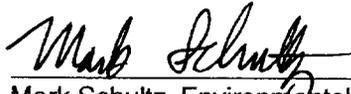


Anthony Robinson, U.S. Navy, Southern Division
MAY 29, 2003
Date

Concurrence:



Renee Cipriano, Director, Illinois EPA
August 11, 2003
Date



Mark Schultz, Environmental Site Manager
June 9, 2003
Date

(703) 527-2785

Tom
myers

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION

NTC Great Lakes is located in Lake County, Great Lakes, Illinois along the shores of Lake Michigan (see Figure 2-1). It is bounded on the north by the City of North Chicago, on the south by the Veterans Administration Hospital and Shore Acres Golf Course & Country Club, on the east by Lake Michigan, and on the west by United States (U.S.) Route 41 (Skokie Highway).

NTC Great Lakes lies within both the North Branch Chicago River Drainage Basin and the Lake Michigan North Drainage Basin. The divide between the drainage basins lies along Green Bay Road. The overland flow from precipitation that does not infiltrate the ground flows into the Skokie River or Pettibone Creek. The areas east of Green Bay Road, including NTC Great Lakes, drain into Lake Michigan through Pettibone Creek and areas west of Green Bay Road drain into the Skokie River.

Pettibone Creek is located on the Mainside of NTC Great Lakes between Sheridan Road and the western shoreline of Lake Michigan. Pettibone Creek originates in North Chicago and enters the northwest corner of NTC Great Lakes, meandering through Mainside and discharging into Lake Michigan. The south branch of Pettibone Creek originates in a residential area southwest of NTC Great Lakes, meandering through the golf course country club and Mainside, and joins Pettibone Creek approximately 1,500 feet west of Lake Michigan.

Site 7 covers approximately 4,000 square feet and is bounded on the south by Building 1212, on the west by a paved parking area and Indiana Street, on the north by a concrete vault and 8th Avenue, and on the east by Ohio Street (see Figure 2-2). Site 7 currently serves as a parking lot and is covered with asphalt. Two ASTs and a fenced drum accumulation area were formerly located across from the former silk screening shop drain. North of the former AST area is a fenced, unpaved storage area for trailers and equipment that extends northward to 8th Avenue. A concrete vault housing steam pipes is located between the AST area, 8th Avenue, and Ohio Street. Underground steam lines reportedly run in a north-south and east-west direction from the vault.

The topography of Site 7 is relatively flat; the ground surface slopes to the east toward Lake Michigan at elevations between 581 to 584 feet above mean sea level (msl).

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The RTC Silk Screening Shop has been located in the RTC Training Aids Branch in Building 1212 between 1943 and 1995. Various flags and banners that recruits use during parades, graduations, and other events were made in this shop, and the wastes from this operation were allowed to pass through a drain that emptied onto the unpaved ground immediately outside of the building.

Two 500 gallon ASTs were located about 35 feet northwest of the northeast corner of Building 1212. One was used for diesel fuel storage; the other was used for gasoline storage. A petroleum release from one of the tanks in 1992 is documented; however, it is not clear from which tank the release occurred. Some of the contaminated soil in the area was removed at that time, but the actual soil volume of that removal was not specified.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

A Community Involvement Plan (CIP) was not developed for NTC Great Lakes because the removal action was triggered by the PAH-contaminated soil from the petroleum spill, and petroleum and petroleum-related products do not fall under the jurisdiction of CERCLA. Therefore, a public meeting was not necessary. However, a Proposed Plan for this No-Action Decision Document was drafted and made available to the public for their input. See Section 3.0 for details relating to comments received on the Proposed Plan.

2.4 SCOPE AND ROLE OF ACTION

In 1986, an Initial Assessment Study (IAS) conducted at NTC Great Lakes identified 14 potentially contaminated sites. Each site was evaluated with respect to contamination characteristics, migration pathways, and potential receptors. The study concluded that seven of these sites, including Site 7, warranted further investigation to assess potential long-term impacts. In 2001, a RI/RA was conducted at Site 7 and concluded that no pathways pose a threat to public health or the environment, indicating that no further remediation is necessary at this site. Following the removal action at the site that was conducted in July 2002, a remedy of no further action was selected ensuring the protection of human health and the environment.

2.5 SUMMARY OF SITE CHARACTERISTICS

2.5.1 Geology

The gently rolling topography of Lake County, Illinois is the result of glaciation. The most prominent topographic features are glacial moraines and unconsolidated glacial deposits that cover most of the study area. The terrain of NTC Great Lakes consists of relatively flat glacial drift deposits bordered by steep lake-facing bluffs with vertical sloping ravines. The unconsolidated glacial material that comprises the bluff faces and ravine walls is continually eroded.

The topography of Lake County creates poorly defined drainage patterns consisting of swales that enter depressions and marshes. Most of NTC Great Lakes is situated on a plateau elevated 640 to 660 feet above msl. Pettibone Creek lies approximately 600 feet above msl, and the eastern portion of NTC Great Lakes along the Lake Michigan shoreline is approximately 510 feet above msl.

Geologic conditions at Site 7 were characterized as part of the RI (TtNUS, 2003). Surface and subsurface materials at Site 7 were visually classified based on macrocore samples collected during the drilling of soil and well borings completed as part of the RI field investigation. The shallow subsurface lithology of Site 7 to a depth of 24 feet below ground surface (bgs) consisted of a heterogeneous mixture of sandy clays, gravelly clays, and silty clays with discontinuous sand stringers. Laboratory sieve analysis of composite samples from these deposits indicated Unified Soil Classification System (USCS) descriptions of ML (sandy silt) to CL (silty clay).

2.5.2 Hydrology

The shallow aquifer at Site 7 is composed primarily of unconsolidated silts and clays with discontinuous sand lenses interspersed throughout. In general, the water table within these heterogeneous soils is shallow and is typically encountered at depths of 6 to 9.5 feet bgs at the site. Groundwater can be expected to migrate in the more permeable materials found within the silts and clays. Recharge to the surficial aquifer is likely to occur through precipitation.

Groundwater flow direction was established based on water level measurements collected in September 2001 and in February 2002. Groundwater elevations in September 2001 indicated groundwater flow to the southeast primarily due to the low water level of a monitoring well located in the southeastern portion of the site. Water levels also indicated a minor northern flow component. The February 2001 water level measurements indicated groundwater flow direction is primarily to the north, possibly towards an

unnamed tributary of South Pettibone Creek. A southeastern flow direction is also indicated for the southeast portion of the site.

Aquifer testing consisting of rising-head and falling-head slug tests conducted at Site 7 was used to generate estimates of hydraulic conductivity of the aquifer soil in the immediate vicinity of the wells. The geometric mean hydraulic conductivity (K) for the six shallow aquifer wells was approximately 0.35 feet/day [1.24×10^{-4} centimeters per second (cm/sec)], within the typical range for sandy silts and clayey sands (Fetter, 1980). Based on the RI data the average hydraulic gradient for the site was approximated to be 0.034. The groundwater velocity was then calculated as 2.65×10^{-2} feet/day (9.37×10^{-6} cm/sec) (TtNUS, 2003).

2.5.3 Nature and Extent of Contamination

Soil and groundwater samples were collected at Site 7 during the RI/RA in order to characterize the extent of contamination. Figure 2-3 identifies these sampling locations. As shown, 17 soil borings were installed (NTC07SB01 through NTC07SB17), and eight of these borings were converted into monitoring wells. The monitoring wells were screened within the shallow aquifer zone. There were also six confirmatory soil samples (NTC07CS01 through NTC07CS06) collected after excavation of the AST storage area.

Section 4.0 in the Site 7 RI/RA (TtNUS, 2003) summarizes the analytical results of soil and groundwater sampling at Site 7. From the data, it appears that contamination occurred near the former AST area. Sampling locations NTC07SB09, NTC07SB12, and NTC07SB13, located in this area, showed PAH soil contamination. Post-excavation confirmation samples indicated that PAH concentrations were acceptable (within USEPA risk management range). The following sections briefly describe the nature and extent of contamination.

2.5.3.1 Volatile Organic Compounds

Volatile organic compounds (VOCs) are not significant site-related contaminants for Site 7. Two common laboratory blank contaminants (acetone and 2-butanone) were the most frequently detected VOCs in environmental samples from the site. Other VOCs were noted in groundwater samples (carbon disulfide, methyl tert-butyl ether, and tetrachloroethene) and soil samples (cyclohexane, tetrachloroethene, trichloroethene, chloroform) at maximum concentrations not exceeding 1 microgram per liter ($\mu\text{g/L}$) and 5 microgram per kilogram ($\mu\text{g/kg}$), respectively. These chemicals were detected in one or two of the samples per media only. Some are fuel components or solvents that may be related to past materials

usage/disposal at Site 7. However, none of the VOC results reported for the groundwater samples exceeded Federal Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCLs), the conservative USEPA Region 9 Preliminary Remediation Goals (PRGs) for tap water (USEPA, 2000), or Tiered Approach to Corrective Action Objectives (TACO) Tier 1 Groundwater Remedial Objectives (GRO) criteria [Illinois Environmental Protection Agency (Illinois EPA, 2002)]. The maximum trichloroethene concentration reported for soils (5.2 µg/kg) exceeded the conservative Soil Screening Levels (SSLs) (dilution attenuation factor=1) criteria (3 µg/kg). However, trichloroethene was not detected in the Site 7 groundwater samples. No other VOC results reported for soil samples exceed the conservative USEPA Region 9 PRGs for residential soil, Illinois EPA TACO Tier 1 soil remediation objectives (SROs), and/or SSLs (dilution attenuation factor=1) criteria.

2.5.3.2 Semivolatile Organic Compounds - Soil

PAHs, the predominant semivolatile organic compounds (SVOCs) detected in Site 7 surface and subsurface soil samples, were detected in the 17 soil boring locations sampled and the six confirmatory/closure soil samples. PAH-contaminated soil resulting from the fuel release at the former ASTs was excavated and disposed off site during the hot spot removal. Detected PAH concentrations ranged from approximately 100 µg/kg to 5,000 µg/kg after the hot spot removal. Analytical results reported for several soil borings exceed the conservative USEPA Region 9 PRGs for residential soil, Illinois EPA TACO Tier 1 SROs, and/or SSLs (dilution attenuation factor=1). However, Site 7 is paved with petroleum asphalt and the asphalt is likely a predominant source of PAHs, particularly in surface soils. The PAH concentrations detected in soil at the site are within the concentration range reported in the scientific literature for background soil samples (ATSDR, October 1989 and Bradley et al, 1994).

2.5.3.3 Inorganics - Soil

Elevated metals concentrations were noted in several Site 7 surface and subsurface soil samples. The antimony, cadmium, copper, lead, and zinc concentrations reported for surface soil samples from borings NTC07SB08, NTC07SB09, NTC07SB11, and NTC07SB13 and the subsurface soil sample collected from boring NTC07SB13 exceeded TACO metropolitan background concentrations and were 5 to 10 times greater than concentrations reported for most other soil samples. These borings were located within 25 feet of source areas under investigation (i.e., the former AST, the drum storage area, the Building 1212 discharge pipe). However, analytical results reported for a majority of the metals at most sampling locations were less than USEPA Region 9 PRGs for residential soil and Illinois EPA TACO Tier SROs.

Lead concentrations in soil samples from borings NTC07SB08 (467 mg/kg), NTC07SB09 (595 mg/kg), and NTC07SB13 (569 mg/kg) exceeded the USEPA Region 9 PRG for residential soil and Illinois EPA TACO Tier 1 SRO (both 400 mg/kg). However, the average lead concentration at the site after the removal action was 80.6 mg/kg, less than the USEPA and Illinois EPA criteria.

The maximum chromium and iron concentrations reported for surface soil samples also exceed USEPA Region 9 PRGs for residential soil. However, the USEPA Region 9 PRGs for residential soil for these metals are very conservative and maximum detected soil concentrations do not exceed alternative (less conservative) screening criteria presented in the baseline RA.

Several metals (antimony, cadmium, chromium, nickel, selenium, silver, and zinc) were detected in soil at concentrations exceeding the TACO metropolitan background concentrations and SSLs (dilution attenuation factor=1). However, none of these metals were detected in the Site 7 groundwater samples at concentrations exceeding the USEPA Region 9 PRGs for tap water, Illinois EPA TACO Tier 1 GROs, or MCLs. The migration of metals from soil to groundwater at Site 7 is likely to be very limited because of the small size of the site (less than ¼ acre) and the fact that the site is paved with asphalt.

2.5.3.4 Semivolatile Organic Compounds - Groundwater

The SVOCs detected in Site 7 groundwater samples included di-n-butyl phthalate and diethyl phthalate. The frequency of detection for each of these compounds was 1 detection in 7 samples and the maximum concentrations reported (2 µg/L) did not exceed Federal SDWA MCLs or the conservative USEPA Region 9 PRGs for tap water and Illinois EPA TACO Tier 1 GRO criteria.

2.5.3.5 Inorganics - Groundwater

Several metals (aluminum, arsenic, iron, manganese, mercury, and thallium) were detected in groundwater samples at concentrations exceeding USEPA Region 9 PRGs for tap water, Illinois EPA TACO Tier 1 GROs, and MCLs. Elevated concentrations do not appear related to identified source areas; the maximum arsenic, iron, manganese, and thallium concentrations were reported for the monitoring wells most distant from source areas. In addition, recent studies performed by USEPA Region 4 have indicated that there are detection limit problems associated with the method used for the analysis of thallium (Trace-ICP) and low-level detections of thallium may be false positives. Therefore, some of the positive results for thallium, the only metal detected above a primary (health-based) MCL, may be false positives. While three of the positive detections reported for arsenic exceeded the USEPA Region 9 PRGs for tap water, none exceeded the current SDWA MCL (10 µg/L). Of the iron and manganese

concentrations reported, only the maximum manganese concentration exceeded the USEPA Region 9 PRG for tap water (a strictly risk-based criterion), the Illinois EPA TACO Tier 1 GRO, and the Federal MCL. The IEPA TACO Tier 1 GROs and Federal MCL are evaluated for aesthetic reasons.

2.5.3.6 Surface Water

One or more analytical groundwater results reported for four metals (aluminum, iron, manganese, and mercury) exceeded the ecological screening levels for surface water. However, the comparison of groundwater concentrations to surface water criteria for the protection of ecological receptors is very conservative because ecological receptors are not directly exposed to groundwater at Site 7. Additionally, given the limited size of the source areas (approximately ¼ acre), any site-related contamination that may be present in groundwater would be significantly diluted prior to being discharged to a surface water body.

2.6 SUMMARY OF SITE RISKS

During the RI, a RA was conducted to determine the potential risks associated with soil and groundwater contamination at Site 7. Risks for soil were reevaluated after the hot spot removal action that was performed in the summer of 2002. Tables 2-1 through 2-3 summarize the selection of chemicals of potential concern (COPCs) for post-removal soil and groundwater for the Site 7 risk assessment. Figure 2-4 presents the Conceptual Site Model (CSM) for Site 7 that illustrates contaminant sources, release mechanisms, exposure pathways, migration routes, and potential receptors for the site that were evaluated in the RA. Table 2-4 presents the chemicals of concern (COCs) for Site 7 and exposure point concentrations for these COCs. COCs are a subset of the COPCs that were identified in the RI/RA as needing to be addressed in the Decision Document. Chemicals were identified as COCs if the risks for these chemicals exceeded the USEPA or Illinois Environmental Protection Agency (Illinois EPA) benchmarks described below. Table 2-5 presents the toxicity information used to evaluate risks for the COCs, and Tables 2-6 through 2-9 present the risks calculated for the COCs.

In determining the impact of potential contaminants on human health, the USEPA and Illinois EPA have developed mathematical models to determine the possibility of cancer risks or ecological threat. For human health, a cross-section of individuals who may come in contact with contaminants, including construction workers, on-site employees (e.g., maintenance workers), trespassers, and future military and civilian residents, were mathematically evaluated, and the probability of developing adverse health effects was calculated for each potential receptor. Lifetime cancer risks are expressed in the form of dimensionless probabilities referred to as incremental lifetime cancer risks (ILCRs). Noncarcinogenic risk

estimates are presented in the form of Hazard Indices (HIs) that are determined through a comparison of chemical intakes with published reference doses (RfDs).

The USEPA has defined the range of 1.0E-06 to 1.0E-04 as the ILCR "target range" for most sites addressed under CERCLA and the Resource Conservation and Recovery Act (RCRA). ILCRs of 1.0E-06 to 1.0E-04 indicate that the exposed receptor has a one-in-one million and one-in-ten thousand chance of developing cancer, respectively. Alternatively, a 1.0E-06 ILCR may be interpreted as representing one additional case of cancer in an exposed population of one million persons. Individual or cumulative ILCRs greater than 1.0E-04 are typically not considered as protective of human health, while ILCRs less than 1.0E-06 are generally regarded as protective. Risk management decisions are necessary when the ILCR is within the 1.0E-04 to 1.0E-06 cancer risk range. Illinois EPA, in TACO, states that the remediation objectives are an ILCR of 1.0E-06 for individual chemicals and that corrective action must be taken if the cumulative ILCR (the sum of individual chemical risks) is greater than 1.0E-04. It should be noted that the decision for No Further Action at Site 7 was based on the fact that risks values for the site were at the low end of the USEPA risk management range based on CERCLA authority and was not based on the Illinois EPA objective.

For noncarcinogenic health effects, an HI [the sum of Hazard Quotients (HQs) for different contaminants and exposure routes] less than unity (1.0) indicates that toxic noncarcinogenic effects from the contaminants are unlikely, and an HI exceeding unity indicates that there may be potential noncarcinogenic health risks associated with exposure.

The human health RA for Site 7 considered exposures to construction workers, maintenance workers, adolescent trespassers, hypothetical future civilian residents, and potential future military residents. For these receptors, potential exposure pathways for direct contact with soil included incidental ingestion of soil, dermal contact with soil, and a semi-quantitative evaluation of inhalation of fugitive dust and VOCs by a comparison with USEPA SSLs for inhalation. Dermal contact with groundwater was evaluated for construction workers. Residential exposure to groundwater (i.e., as drinking water) was not evaluated because groundwater at Site 7 is not used as a potable water source under current conditions and is not anticipated to be used for this purpose under projected future land uses. In addition, an abundant source of potable water (Lake Michigan) is immediately adjacent to the site and the COCs with concentrations greater than the PRGs in the groundwater samples were a few inorganic constituents that did not appear to be related to the identified sources of contamination at Site 7.

The cumulative ILCR for construction workers exposed to soil and groundwater (4.2E-07) was less than the USEPA target risk range. ILCRs for maintenance workers (5.8E-07) and adolescent trespassers

(5.1E-07) were also less than the USEPA target risk range. ILCRs for future civilian and military residents were within the target risk range. The ILCRs for exposure of future civilian residents to these COCs were 1.1E-05 and 7.9E-06 for exposure to surface soil and combined surface/subsurface soil, respectively. The ILCRs for future military residents were 8.1E-06 and 6.0E-06 for exposure to surface soil and combined surface/subsurface soil, respectively. As shown in Tables 2-6 through 2-9, the risk drivers were PAHs such as benzo(a)pyrene and dibenz(a,h)anthracene. The risks estimated for civilian and military residents reflect the removal action completed at the site. These risks may be somewhat overestimated because they do not account for the clean fill added to the excavated area after the hot spot removal, which acts as a dilution factor and protective layer.

Cumulative HIs for the receptors evaluated at Site 7 were less than unity indicating that toxic noncarcinogenic effects are unlikely for the exposure pathways evaluated.

A Screening Level Ecological Risk Assessment was performed for Site 7 RTC Silk Screening Shop. Organic and inorganic chemicals were detected in the groundwater at maximum concentrations that exceeded conservative screening levels and, therefore, they were selected as COPCs. These COPCs were assessed in a less conservative Step 3A evaluation.

In the Step 3A evaluation, risks to aquatic receptors from chemicals in the groundwater are expected to be low or negligible, based on their relatively low concentrations as compared to the screening levels or alternate benchmarks. Groundwater modeling conducted for the RI/RA indicated considerable dilution of the groundwater is expected to occur before it discharges to the ditch or Pettibone Creek (TtNUS, 2003).

2.7 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for Site 7 was released for public comments on March 1, 2003. This Proposed Plan identified No Further Action as the preferred remedy based on the evaluation of findings from detailed environmental studies and the results of the RI/RA, including the hot spot removal. The RI/RA concludes that the site risks are within the acceptable range for protection of human health and the environment. The public was invited to comment during the 30-day period extending from March 1 to 31, 2003. No public comments were received. Therefore, no changes to the preferred remedy will be made, as originally identified in the Proposed Plan.

TABLE 2-1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
 POST-REMOVAL SURFACE SOIL
 SITE 7- RTC SILK SCREENING SHOP
 NAVAL TRAINING CENTER GREAT LAKES
 PAGE 1 OF 2

Scenario Timeframe: Current/Future
 Medium: Surface Soil
 Exposure Medium: Surface Soil
 Exposure Point: Site 7

CAS Number	Chemical	Detection Frequency	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Range of Detection Limits	Concentration Used For Screening ⁽¹⁾	Background Value ⁽²⁾	Region 9 PRG ⁽³⁾	TACO Tier 1 Ingestion SRO ⁽⁴⁾	Potential ARAR/TBC Inhalation ⁽⁵⁾	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁶⁾
Volatiles (mg/kg)																
78-93-3	2-Butanone	6/14	0.0026	J	0.0048	J	NTC07SS170001	0.017 - 0.02	0.0048	NA	730 N	NA	NA	NA	No	BSL
67-64-1	Acetone	13/14	0.0059	J	0.019	--	NTC07SS040001	0.009	0.019	NA	160 N	7800	100000	SSL, TACO	No	BSL
110-82-7	Cyclohexane	1/14	0.0013	J	0.0013	J	NTC07SS160001	0.0043 - 0.0056	0.0013	NA	14 N	NA	NA	NA	No	BSL
127-18-4	Tetrchloroethene	1/14	0.0012	J	0.0012	J	NTC07SS100001	0.0043 - 0.0056	0.0012	NA	5.7 C	12	11	SSL, TACO	No	BSL
79-01-6	Trichloroethene	1/14	0.0052	--	0.0052	--	NTC07SS100001	0.0043 - 0.0056	0.0052	NA	2.8 C	58	5	SSL, TACO	No	BSL
Semivolatiles (mg/kg)																
91-57-6	2-Methylnaphthalene ⁽⁷⁾	2/14	0.26	J	0.66	J	NTC07SS020001	0.36 - 2	0.66	NA	5.6 N	1600	NA	TACO	No	BSL
83-32-9	Acenaphthene	4/14	0.071	J	0.14	J	NTC07SS160001	0.36 - 2	0.14	NA	370 N	4700	NA	TACO	No	BSL
208-96-8	Acenaphthylene ⁽⁷⁾	2/14	0.048	J	0.11	J	NTC07SS020001	0.36 - 2	0.11	NA	370 N	4700	NA	TACO	No	BSL
120-12-7	Anthracene	8/14	0.096	J	0.57	J	NTC07SS150001	0.36 - 0.78	0.57	NA	2200 N	23000	NA	TACO	No	BSL
56-55-3	Benzo(a)anthracene	12/14	0.041	J	1.9	--	NTC07SS150001	0.38 - 0.78	1.9	NA	0.62 C	0.9	NA	TACO	Yes	ASL
50-32-8	Benzo(a)pyrene	12/14	0.043	J	1.7	J	NTC07SS050001	0.38 - 0.78	1.7	NA	0.062 C	0.09	NA	TACO	Yes	ASL
205-99-2	Benzo(b)fluoranthene	14/14	0.04	J	1.5	J	NTC07SS050001	---	1.5	NA	0.62 C	0.9	NA	TACO	Yes	ASL
191-24-2	Benzo(g,h,i)perylene ⁽⁷⁾	10/14	0.042	J	0.62	J	NTC07SS050001	0.37 - 0.78	0.62	NA	230 N	2300	NA	TACO	No	BSL
207-08-9	Benzo(k)fluoranthene	12/14	0.047	J	1.6	J	NTC07SS050001	0.38 - 0.78	1.6	NA	6.2 C	9	NA	TACO	No	BSL
86-74-8	Carbazole	3/14	0.054	J	0.24	J	NTC07SS150001	0.36 - 2	0.24	NA	24 C	32	NA	TACO	No	BSL
218-01-9	Chrysene	14/14	0.041	J	2	--	NTC07SS150001	---	2	NA	62 C	88	NA	TACO	No	BSL
84-74-2	Di-N-butyl phthalate	1/14	0.041	J	0.041	J	NTC07SS100001	0.36 - 2	0.041	NA	610 N	7800	2300	SSL, TACO	No	BSL
53-70-3	Dibenzo(a,h)anthracene	4/14	0.095	J	0.2	J	NTC07SS050001	0.36 - 0.78	0.2	NA	0.062 C	0.09	NA	TACO	Yes	ASL
132-64-9	Dibenzofuran	4/14	0.049	J	0.14	J	NTC07SS020001	0.36 - 2	0.14	NA	29 N	NA	NA	TACO	No	BSL
206-44-0	Fluoranthene	14/14	0.076	J	4.9	--	NTC07SS150001	---	4.9	NA	230 N	3100	NA	TACO	No	BSL
86-73-7	Fluorene	3/14	0.095	J	0.13	J	NTC07SS160001	0.36 - 2	0.13	NA	260 N	3100	NA	TACO	No	BSL
193-39-5	Indeno(1,2,3-cd)pyrene	10/14	0.038	J	0.71	J	NTC07SS050001	0.37 - 0.78	0.71	NA	0.62 C	0.9	NA	TACO	Yes	ASL
91-20-3	Naphthalene	3/14	0.057	J	0.47	J	NTC07SS020001	0.36 - 2	0.47	NA	5.6 N	1600	170	SSL, TACO	No	BSL
85-01-8	Phenanthrene ⁽⁷⁾	11/14	0.056	J	2.3	--	NTC07SS150001	0.37 - 0.78	2.3	NA	230 N	2300	NA	TACO	No	BSL
129-00-0	Pyrene	14/14	0.047	J	2.9	--	NTC07SS150001	---	2.9	NA	230 N	2300	NA	TACO	No	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	14/14	1820	--	10000	--	NTC07SS040001	---	10000	9500	7600 N	NA	NA	NA	Yes	ASL
7440-36-0	Antimony	2/14	2.8	--	4.1	--	NTC07SS080001	0.27 - 1.4	4.1	4	3.1	31	NA	TACO	Yes	ASL
7440-38-2	Arsenic	14/14	2.8	--	9.8	--	NTC07SS050001	---	9.8	13	0.39 C	0.4	750	SSL, TACO	No	BKG
7440-39-3	Barium	14/14	14.1	--	83.4	--	NTC07SS050001	---	83.4	110	540 N	5500	690000	SSL, TACO	No	BSL, BKG
7440-41-7	Beryllium	7/14	0.19	--	0.8	--	NTC07SS050001	0.11 - 0.44	0.8	0.59	15 N	160	1300	SSL, TACO	No	BSL
7440-43-9	Cadmium	11/14	0.098	--	2.2	--	NTC07SS110001	0.058 - 0.06	2.2	0.6	3.7 N	78	1800	SSL, TACO	No	BSL
7440-70-2	Calcium	14/14	27000	--	186000	--	NTC07SS010001	---	186000	9300	NA N	NA	NA	NA	No	NUT
7440-47-3	Chromium ⁽⁸⁾	14/14	4.5	--	41.5	--	NTC07SS100001	---	41.5	16.2	30 C	230	270	SSL, TACO	Yes	ASL
7440-48-4	Cobalt	14/14	2	--	11.6	--	NTC07SS040001	---	11.6	8.9	470 N	4700	NA	TACO	No	BSL
7440-50-8	Copper	14/14	16.6	--	890	--	NTC07SS080001	---	890	19.6	290 N	2900	NA	TACO	Yes	ASL
7439-89-6	Iron	14/14	5180	--	26400	--	NTC07SS050001	---	26400	15900	2300 N	NA	NA	TACO	Yes	ASL
7439-92-1	Lead	14/14	11.9	--	467	--	NTC07SS080001	---	467	36	400 N	400	NA	TACO	Yes	ASL
7439-95-4	Magnesium	14/14	15700	--	105000	--	NTC07SS010001	---	105000	4820	NA N	NA	NA	NA	No	NUT

TABLE 2-1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
 POST-REMOVAL SURFACE SOIL
 SITE 7- RTC SILK SCREENING SHOP
 NAVAL TRAINING CENTER GREAT LAKES
 PAGE 2 OF 2

CAS Number	Chemical	Detection Frequency	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Range of Detection Limits	Concentration Used For Screening ⁽¹⁾	Background Value ⁽²⁾	Region 9 PRG ⁽³⁾	TACO Tier 1 Ingestion SRO ⁽⁴⁾	Potential ARAR/TBC Inhalation ⁽⁵⁾	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁶⁾	
7439-96-5	Manganese	14/14	195	--	676	--	NTC07SS140001	---	676	636	180	N	3700	69000	SSL, TACO	Yes	ASL
7439-97-6	Mercury	14/14	0.0094	--	3.8	--	NTC07SS150001	---	3.8	0.06	2.3	N	23	10	SSL, TACO	Yes	ASL
7440-02-0	Nickel	14/14	5.3	--	22.1	--	NTC07SS040001	---	22.1	18	160	N	1600	13000	SSL, TACO	No	BSL
7440-09-7	Potassium	14/14	400	--	1480	--	NTC07SS040001	---	1480	1268	NA	N	NA	NA	NA	No	NUT
7782-49-2	Selenium	1/14	0.53	--	0.53	--	NTC07SS160001	0.38 - 1.4	0.53	0.48	39	N	390	NA	TACO	No	BSL
7440-22-4	Silver	10/14	0.11	--	4.2	--	NTC07SS150001	0.089 - 0.095	4.2	0.55	39	N	390	NA	TACO	No	BSL
7440-23-5	Sodium	11/14	108	--	865	--	NTC07SS060001	281 - 307	865	130	NA	N	NA	NA	NA	No	NUT
7440-28-0	Thallium	1/14	1	--	1	--	NTC07SS100001	0.64 - 1.5	1	0.32	0.52	N	6.3	NA	TACO	Yes	ASL
7440-62-2	Vanadium	14/14	7.1	--	19.7	--	NTC07SS040001	---	19.7	25.2	55	N	550	NA	TACO	No	BSL, BKG
7440-66-6	Zinc	14/14	49.1	--	1750	--	NTC07SS110001	---	1750	95	2300	N	23000	NA	TACO	No	BSL
Miscellaneous Parameters (mg/kg)																	
7440-44-0	Total Organic Carbon	14/14	1430	--	18900	--	NTC07SS050001	---	18900	NA	NA	NA	NA	NA	NA	No	NTX

1 Maximum concentration used for screening.

2 The background screening value from TACO, metropolitan sites.

3 Based on Preliminary Remediation Goals, USEPA Region 9 (USEPA, 2000) for residential land use (cancer benchmark value = 1.0E-6, Hazard Quotient = 0.1).

4 Residential Soil Remediation Objective (SRO) for ingestion pathway (IEPA, 2002).

5 Screening level for inhalation pathway from USEPA *Soil Screening Guidance*, EPA/540/R-96/018, (1996) and/or IEPA (2002).

6 Rationale Codes

Selection Reason Above Screening Levels (ASL)

Deletion Reason Maximum detected concentration is below background screening level (BKG)
 Essential Nutrient (NUT)
 Below Screening Levels (BSL)
 No Toxicity Information (NTX)

7 Acenaphthylene evaluated as acenaphthalene, 2-methylnaphthalene evaluated as naphthalene, benzo(g,h,i)perylene and phenanthrene evaluated as pyrene.

8 Chromium evaluated as hexavalent chromium.

Shaded chemical name indicate that chemical was selected as a COPC.

Shaded value indicate that maximum concentration exceeded the specified criterion.

Definitions: ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered.

C = Carcinogen.

COPC = Chemical of Potential Concern.

J = Estimated value.

N = Noncarcinogen.

NA = Not applicable.

TACO = Tiered Approach to Corrective Action Objectives, Illinois Environmental Protection Agency (IEPA, 2002).

mg/kg = milligram per kilogram.

TABLE 2-2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
POST REMOVAL SURFACE AND SUBSURFACE SOILS
SITE 7- RTC SILK SCREENING SHOP
NAVAL TRAINING CENTER GREAT LAKES
PAGE 1 OF 2

Scenario Timeframe: Current/Future
Medium: Surface and Subsurface Soil
Exposure Medium: Surface and Subsurface Soil
Exposure Point: Site 7

CAS Number	Chemical	Detection Frequency	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Range of Detection Limits	Concentration Used For Screening ⁽¹⁾	Background Value ⁽²⁾	Region 9 PRG ⁽³⁾	TACO Tier 1 Ingestion SRO ⁽⁴⁾	Potential ARAR/TBC Inhalation ⁽⁵⁾	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁶⁾
Volatiles (mg/kg)																
78-93-3	2-Butanone	7/31	0.0026	J	0.0048	J	NTC07SS170001	17 - 20	0.0048	NA	730 N	NA	NA	NA	No	BSL
67-64-1	Acetone	27/31	0.0051	J	0.022	J	NTC07SS090001	7.6 - 23	0.022	NA	160 N	7800	100000	SSL, TACO	No	BSL
67-66-3	Chloroform	1/31	0.002	J	0.002	J	NTC07SB100108	4.2 - 5.6	0.002	NA	0.24 C	100	0.3	SSL	No	BSL
110-82-7	Cyclohexane	1/31	0.0013	J	0.0013	J	NTC07SS160001	4.2 - 5.6	0.0013	NA	14 N	NA	NA	NA	No	BSL
127-18-4	Tetrachloroethene	1/31	0.0012	J	0.0012	J	NTC07SS100001	4.2 - 5.6	0.0012	NA	5.7 C	12	11	SSL, TACO	No	BSL
79-01-6	Trichloroethene	2/31	0.0011	J	0.0052	---	NTC07SS100001	4.2 - 5.6	0.0052	NA	2.8 C	58	5	SSL, TACO	No	BSL
Semivolatiles (mg/kg)																
91-57-6	2-Methylnaphthalene ⁽⁷⁾	2/31	0.26	J	0.66	J	NTC07SS020001	350 - 2000	0.66	NA	5.6 N	1600	NA	TACO	No	BSL
83-32-9	Acenaphthene	4/37	0.071	J	0.14	J	NTC07SS160001	18 - 2000	0.14	NA	370 N	4700	NA	TACO	No	BSL
208-96-8	Acenaphthylene ⁽⁷⁾	6/37	0.039	J	0.18	J	NTC07CS0107	14 - 2000	0.18	NA	370 N	4700	NA	TACO	No	BSL
120-12-7	Anthracene	15/37	0.001	J	0.57	J	NTC07SS150001	0.2 - 780	0.57	NA	2200 N	23000	NA	TACO	No	BSL
100-52-7	Benzaldehyde	1/31	0.087	J	0.087	J	NTC07SS130001	350 - 2000	0.087	NA	610 N	NA	NA	TACO	No	BSL
56-55-3	Benzo(a)anthracene	21/37	0.0025	J	1.9	---	NTC07SS150001	0.41 - 780	1.9	NA	0.62 C	0.9	NA	TACO	Yes	ASL
50-32-8	Benzo(a)pyrene	20/37	0.0029	J	1.7	J	NTC07SS050001	0.7 - 780	1.7	NA	0.062 C	0.09	NA	TACO	Yes	ASL
205-99-2	Benzo(b)fluoranthene	27/37	0.0018	J	1.5	J	NTC07SS050001	370 - 710	1.5	NA	0.62 C	0.9	NA	TACO	Yes	ASL
191-24-2	Benzo(g,h)perylene ⁽⁷⁾	17/37	0.039	J	0.62	J	NTC07SS050001	3.1 - 780	0.62	NA	230 N	2300	NA	TACO	No	BSL
207-08-9	Benzo(k)fluoranthene	20/37	0.047	J	1.6	J	NTC07SS050001	0.47 - 780	1.6	NA	6.2 C	9	NA	TACO	No	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	2/31	0.04	J	0.08	J	NTC07SS090001	350 - 2000	0.08	NA	35 C	46	31000	SSL, TACO	No	BSL
86-74-8	Carbazole	4/31	0.049	J	0.24	J	NTC07SS150001	350 - 2000	0.24	NA	24 C	32	NA	TACO	No	BSL
218-01-9	Chrysene	26/37	0.0097	---	2	---	NTC07SS150001	350 - 710	2	NA	62 C	88	NA	TACO	No	BSL
84-74-2	Di-N-butyl phthalate	1/31	0.041	J	0.041	J	NTC07SS100001	350 - 2000	0.041	NA	610 N	7800	2300	SSL, TACO	No	BSL
53-70-3	Dibenzo(a,h)anthracene	6/37	0.077	J	0.2	J	NTC07SS050001	8.7 - 780	0.2	NA	0.062 C	0.09	NA	TACO	Yes	ASL
132-64-9	Dibenzofuran	5/31	0.037	---	0.14	J	NTC07SS020001	350 - 2000	0.14	NA	29 N	NA	NA	TACO	No	BSL
206-44-0	Fluoranthene	28/37	0.0078	---	4.9	---	NTC07SS150001	1.6 - 390	4.9	NA	230 N	3100	NA	TACO	No	BSL
86-73-7	Fluorene	4/37	0.069	J	0.19	J	NTC07SS160001	1.5 - 2000	0.19	NA	260 N	3100	NA	TACO	No	BSL
193-39-5	Indeno(1,2,3-cd)pyrene	19/37	0.023	---	0.71	J	NTC07SS050001	350 - 780	0.71	NA	0.62 C	0.9	NA	TACO	Yes	ASL
91-20-3	Naphthalene	7/37	0.057	J	0.47	J	NTC07SS020001	4.6 - 2000	0.47	NA	5.6 N	1600	170	SSL, TACO	No	BSL
85-01-8	Phenanthrene ⁽⁷⁾	21/37	0.0042	---	2.3	---	NTC07SS150001	350 - 780	2.3	NA	230 N	2300	NA	TACO	No	BSL
129-00-0	Pyrene	26/37	0.038	J	2.9	---	NTC07SS150001	4.4 - 390	2.9	NA	230 N	2300	NA	TACO	No	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	31/31	1820	---	10000	---	NTC07SS040001	---	10000	9500	7600 N	NA	NA	NA	Yes	ASL
7440-36-0	Antimony	4/31	2.8	---	4.5	---	NTC07SS090001	0.26 - 1.4	4.5	4	3.1 N	31	NA	TACO	Yes	ASL
7440-38-2	Arsenic	31/31	2.8	---	10.9	---	NTC07SS130001	---	10.9	13	0.39 C	0.4	750	SSL, TACO	No	BSL_BKG
7440-39-3	Barium	31/31	14.1	---	83.4	---	NTC07SS050001	---	83.4	110	540 N	5500	690000	SSL, TACO	No	BSL
7440-41-7	Beryllium	13/31	0.19	---	0.8	---	NTC07SS050001	0.11 - 0.44	0.8	0.59	15 N	160	1300	SSL, TACO	No	BSL
7440-43-9	Cadmium	16/31	0.098	---	2.5	---	NTC07SS090001	0.047 - 0.14	2.5	0.6	3.7 N	78	1800	SSL, TACO	No	BSL
7440-70-2	Calcium	31/31	21300	J	186000	---	NTC07SS010001	---	186000	9300	NA N	NA	NA	NA	No	NUT
7440-47-3	Chromium ⁽⁸⁾	31/31	4.5	---	41.5	---	NTC07SS100001	---	41.5	16.2	30 C	230	270	SSL, TACO	Yes	ASL
7440-48-4	Cobalt	31/31	2	---	11.6	---	NTC07SS040001	---	11.6	8.9	470 N	4700	NA	TACO	No	BSL
7440-50-8	Copper	31/31	15.5	J	1340	---	NTC07SS090001	---	1340	19.6	290 N	2900	NA	TACO	Yes	ASL
7439-89-6	Iron	31/31	5180	---	26400	---	NTC07SS050001	---	26400	15900	2300 N	NA	NA	NA	Yes	ASL
7439-92-1	Lead	31/31	7.1	---	595	---	NTC07SS090001	---	595	36	400 N	400	NA	TACO	Yes	ASL
7439-95-4	Magnesium	31/31	14000	J	105000	---	NTC07SS010001	---	105000	4820	NA N	NA	NA	NA	No	NUT
7439-96-5	Manganese	31/31	195	---	676	---	NTC07SS140001	---	676	636	180 N	3700	69000	SSL, TACO	Yes	ASL

TABLE 2-2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
 POST REMOVAL SURFACE AND SUBSURFACE SOILS
 SITE 7- RTC SILK SCREENING SHOP
 NAVAL TRAINING CENTER GREAT LAKES
 PAGE 2 OF 2

CAS Number	Chemical	Detection Frequency	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Range of Detection Limits	Concentration Used For Screening ⁽¹⁾	Background Value ⁽²⁾	Region 9 PRG ⁽³⁾	TACO Tier 1 Ingestion SRO ⁽⁴⁾	Potential ARAR/TBC Inhalation ⁽⁵⁾	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁶⁾
7439-97-6	Mercury	29/31	0.0094	---	3.8	---	NTC07SS150001	0.0089 - 0.0091	3.8	0.06	2.3 N	23	10	SSL, TACO	Yes	ASL
7440-02-0	Nickel	31/31	5.3	---	24.3	---	NTC07SB060113	---	24.3	18	160 N	1600	13000	SSL, TACO	No	BSL
7440-09-7	Potassium	31/31	400	---	2220	---	NTC07SB060113	---	2220	1268	NA N	NA	NA	NA	No	NUT
7782-49-2	Selenium	5/31	0.53	---	0.87	---	NTC07SS130001	0.37 - 1.4	0.87	0.48	39 N	390	NA	TACO	No	BSL
7440-22-4	Silver	14/31	0.11	---	4.2	---	NTC07SS150001	0.087 - 0.1	4.2	0.55	39 N	390	NA	TACO	No	BSL
7440-23-5	Sodium	23/31	108	---	865	---	NTC07SS060001	270 - 323	865	130	NA N	NA	NA	NA	No	NUT
7440-28-0	Thallium	1/31	1	---	1	---	NTC07SS100001	0.64 - 1.5	1	0.32	0.52 N	6.3	NA	TACO	Yes	ASL
7440-62-2	Vanadium	31/31	7.1	---	19.7	---	NTC07SS040001	---	19.7	25.2	55 N	550	NA	TACO	No	BSL, BKG
7440-66-6	Zinc	31/31	30.8	---	2080	---	NTC07SS090001	---	2080	95	2300 N	23000	NA	TACO	No	BSL
Miscellaneous Parameters (mg/kg)																
7440-44-0	Total Organic Carbon	31/31	1430	---	18900	---	NTC07SS050001	---	18900	NA	NA N	NA	NA	NA	No	NTX

- Maximum concentration used for screening.
 - The background screening value from TACO, metropolitan sites (IEPA, 2002).
 - Based on Preliminary Remediation Goals, USEPA Region 9 (USEPA, 2000) for residential land use (cancer benchmark value = 1.0E-6, Hazard Quotient = 0.1).
 - Residential Soil Remediation Objective (SRO) for ingestion pathway, (IEPA, 2002).
 - Screening level for inhalation pathway from USEPA *Soil Screening Guidance*, EPA/540/R-96/018, (1996) and/or IEPA (2002).
 - Rationale Codes
 - Selection Reason Above Screening Levels (ASL)
 - Deletion Reason Maximum detected concentration is below background screening level (BKG)
 - Essential Nutrient (NUT)
 - Below Screening Levels (BSL)
 - No Toxicity Information (NTX)
 - Acenaphthylene evaluated as acenaphthalene, 2-methylnaphthalene evaluated as naphthalene, benzo(g,h,i)pyrene and phenanthrene evaluated as pyrene.
 - Chromium evaluated as hexavalent chromium.
- Shaded chemical name indicate that chemical was selected as a COPC.
 Shaded value indicate that maximum concentration exceeded the specified criterion.

Definitions: ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered.
 C = Carcinogen.
 COPC = Chemical of Potential Concern.
 J = Estimated value.
 N = Noncarcinogen.
 NA = Not applicable.
 TACO = Tiered Approach to Corrective Action Objectives, Illinois Environmental Protection Agency (IEPA, 2002).
 mg/kg = milligram per kilogram.

TABLE 2-3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
GROUNDWATER
SITE 7 - RTC SILK SCREENING SHOP
NAVAL TRAINING CENTER GREAT LAKES

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Site 7

CAS Number	Chemical	Detection Frequency	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Range of Detection Limits	Concentration Used For Screening ⁽¹⁾	Background Value ⁽²⁾	Region 9 PRG ⁽³⁾	TACO Tier 1 Ingestion GRO ⁽⁴⁾	Federal MCL ⁽⁵⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁷⁾
Volatiles (ug/L)															
78-93-3	2-Butanone	1/7	1.3	J	1.3	J	GW0501	5	1.3	NA	190 N	NA	NA	No	BSL
67-64-1	Acetone	4/7	2.8	J	13	---	GW0701	10	13	NA	61 N	700	NA	No	BSL
75-15-0	Carbon Disulfide	1/7	0.7	J	0.7	J	GW0501	1	0.7	NA	100 N	700	NA	No	BSL
1634-04-4	Methyl Teri-Butyl Ether	1/7	0.56	J	0.56	J	GW0801	1	0.56	NA	20 C	NA	NA	No	BSL
127-18-4	Tetrachloroethene	1/7	0.53	J	0.53	J	GW0101	1	0.53	NA	1.1 C	5	5	No	BSL
Semivolatile (ug/L)															
84-74-2	Di-N-butyl phthalate	1/7	1.6	J	1.6	J	GW0701	10	1.6	NA	360 N	700	NA	No	BSL
84-66-2	Diethyl phthalate	1/7	1.1	J	1.1	J	GW0501	10	1.1	NA	2900 N	5600	NA	No	BSL
Metals (ug/L)															
7429-90-5	Aluminum	6/7	29.7	---	15400	---	GW0501	21.1	15400	NA	3600 N	NA	50 - 200 ⁽⁶⁾	Yes	ASL
7440-38-2	Arsenic	4/7	3.7	---	9.3	---	GW0701	3.2	9.3	NA	0.045 C	50	10	Yes	ASL
7440-39-3	Barium	7/7	43.4	---	466	---	GW0701	---	466	NA	260 N	2000	2000	Yes	ASL
7440-41-7	Beryllium	1/7	0.59	---	0.59	---	GW0501	0.17	0.59	NA	7.3 N	4	4	No	BSL
7440-43-9	Cadmium	1/7	0.8	---	0.8	---	GW0701	0.51	0.8	NA	1.8 N	5	5	No	BSL
7440-70-2	Calcium	7/7	84200	J	288000	---	GW0501	---	288000	NA	NA N	NA	NA	No	NUT
7440-47-3	Chromium ⁽⁸⁾	1/7	27	---	27	---	GW0501	1.1 - 1.7	27	NA	11 N	100	100	Yes	ASL
7440-48-4	Cobalt	2/7	3.7	---	12.7	---	GW0501	2.9	12.7	NA	220 N	1000	NA	No	BSL
7440-50-8	Copper	6/7	2.6	---	17.3	---	GW0501	2.4	17.3	NA	140 N	650	1300	No	BSL
7439-89-6	Iron	7/7	154	J	17800	---	GW0501	---	17800	NA	1100 N	5000	300 ⁽⁶⁾	Yes	ASL
7439-92-1	Lead	3/7	2.9	---	7.7	---	GW0501	2.5	7.7	NA	NA N	7.5	15	Yes	ASL
7439-95-4	Magnesium	7/7	23000	---	145000	---	GW0501	---	145000	NA	NA N	NA	NA	No	NUT
7439-96-5	Manganese	7/7	88.8	---	2360	---	GW0701	---	2360	NA	88 N	150	50 ⁽⁶⁾	Yes	ASL
7439-97-6	Mercury	2/7	0.05	---	0.05	---	GW0201	0.05	0.05	NA	1.1 N	2	2	No	BSL
7440-02-0	Nickel	1/7	29.6	---	29.6	---	GW0501	10.4	29.6	NA	73 N	100	NA	No	BSL
7440-09-7	Potassium	7/7	5750	---	62500	---	GW0301	---	62500	NA	NA N	NA	NA	No	NUT
7782-49-2	Selenium	1/7	4.1	---	4.1	---	GW0501	3.3	4.1	NA	18 N	50	50	No	BSL
7440-23-5	Sodium	7/7	121000	---	1280000	---	GW0701	---	1280000	NA	NA N	NA	NA	No	NUT
7440-28-0	Thallium	1/7	6.5	---	6.5	---	GW0701	5.7	6.5	NA	0.24 N	2	2	Yes	ASL
7440-62-2	Vanadium	5/7	2.6	---	31.7	---	GW0501	2.5	31.7	NA	26 N	49	NA	Yes	ASL
7440 66 6	Zinc	1/7	43.3	---	43.3	---	GW0501	2.4 - 16.4	43.3	NA	1100 N	5000	5000 ⁽⁶⁾	No	BSL
Miscellaneous Parameters (ug/L)															
7440-44-0	Total Organic Carbon	7/7	0.88	---	11.3	---	GW0701	---	11.3	NA	NA N	NA	NA	No	NTX

- Maximum concentration used for screening.
- No background values used for groundwater at Site 07.
- Based on Preliminary Remediation Goals, USEPA Region 9 (USEPA, 2000) for Tap Water (cancer benchmark value = 1.0E-6, Hazard Quotient = 0.1).
- TACO Class 1 Groundwater Remediation Objectives (IEPA, 2002).
- Federal Maximum Contaminant Levels (USEPA, 2000).
- Federal Secondary Maximum Contaminant Levels (USEPA 2000).
- Rationale Codes

Selection Reason Above Screening Levels (ASL)
Deletion Reason Maximum detected concentration is below background screening level (BKG)
Essential Nutrient (NUT)
Below Screening Levels (BSL)

- Chromium evaluated as hexavalent chromium.
- Shaded chemical name indicate that chemical was selected as a COPC.
Shaded value indicate that maximum concentration exceeded the specified criterion.

Definitions: ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered.
C = Carcinogen.
COPC = Chemical of Potential Concern.
J = Estimated value.
MCL = Maximum Contaminant Level.
NA = Not applicable.
N = Noncarcinogen.
SMCL = Secondary Maximum Contaminant Level.
TACO = Tiered Approach to Corrective Action Objectives, Illinois Environmental Protection Agency (IEPA, 2002).
ug/l = microgram per liter.

TABLE 2-4

**SUMMARY OF CHEMICALS OF CONCERN AND
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATIONS
SITE 7 RTC SILK SCREENING SHOP
NAVAL TRAINING CENTER GREAT LAKES**

Exposure Point	Chemical of Concern	Units	Minimum Concentration	Maximum Concentration	Frequency of Detection	Exposure Point Concentration	Statistical Measure
Surface Soil Onsite - Direct Contact (Ingestion and Dermal)	Benzo(a)pyrene	mg/kg	0.043	1.7	12/14	0.463	95% UCL (1)
	Dibenz(a,h)anthracene	mg/kg	0.095	0.2	4/14	0.2	Maximum (2)
Surface/Subsurface Soil Onsite - Direct Contact (Ingestion and Dermal)	Benzo(a)pyrene	mg/kg	0.0029	1.7	20/37	0.307	95% UCL (1)
	Dibenz(a,h)anthracene	mg/kg	0.077	0.2	6/37	0.185	95% UCL (1)

1 - 95% Upper Confidence Limit (UCL) calculated by bootstrap methodology.

2 - Maximum concentration used because 95% UCL exceeded the maximum.

UCL - Upper Confidence Limit.

mg/kg - milligram per kilogram.

TABLE 2-5

**CANCER TOXICITY DATA SUMMARY- ORAL/DERMAL
SITE 7 - RTC SILK SCREENING SHOP
NAVAL TRAINING CENTER GREAT LAKES**

Chemical of Concern	Oral CSF	Oral to Dermal Adjustment Factor ⁽¹⁾	Adjusted Dermal CSF ⁽¹⁾	Units	Weight of Evidence/ Cancer Guideline Description
Benzo(a)pyrene	7.3	1	7.30	(mg/kg-day) ⁻¹	B2
Dibenzo(a,h)anthracene	7.3	1	7.30	(mg/kg-day) ⁻¹	B2

Source: IRIS = USEPA Integrated Risk Information System
(USEPA, online, October 2002)

1 $CSF_{dermal} = CSF_{oral} / (\text{Oral to Dermal Adjustment Factor})$

Source: RAGS E (USEPA, 2001)

EPA Group:

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans .

Notes:

CSF = Cancer Slope Factor

mg/kg-day = milligram per kilogram per day

TABLE 2-6

REASONABLE MAXIMUM EXPOSURE (RME) - POST-REMOVAL
 RISK ASSESSMENT SUMMARY - FUTURE CIVILIAN RESIDENTS - SURFACE SOIL
 SITE 7 - RTC SILK SCREENING SHOP
 NAVAL TRAINING CENTER GREAT LAKES

Scenario Timeframe: Future
 Receptor Population: Civilian Resident
 Receptor Age: Adult and Child Combined

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total		Primary Target Organ	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Surface Soil	Site 7	Benzo(a)pyrene	5.3E-06	2.2E-06	NA	7.5E-06	Benzo(a)pyrene	NA	NA	NA	NA	NA
			Dibenzo(a,h)anthracene	2.3E-06	9.4E-07	NA	3.2E-06	Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Total Risk Across Surface Soil							1.1E-05	Total Hazard Index Across All Media and All Exposure Routes					

Total Risk Across All Media and All Exposure Routes 1.1E-05

TABLE 2-7

REASONABLE MAXIMUM EXPOSURE (RME) - POST-REMOVAL
 RISK ASSESSMENT SUMMARY - MILITARY RESIDENTS - SURFACE SOIL
 SITE 7 - RTC SILK SCREENING SHOP
 NAVAL TRAINING CENTER GREAT LAKES

Scenario Timeframe: Future
 Receptor Population: Military Resident
 Receptor Age: Adult and Child Combined

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total		Primary Target Organ	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Surface Soil	Site 7	Benzo(a)pyrene	4.1E-06	1.6E-06	NA	5.7E-06	Benzo(a)pyrene	NA	NA	NA	NA	NA
			Dibenzo(a,h)anthracene	1.8E-06	6.7E-07	NA	2.4E-06	Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Total Risk Across Surface Soil							8.1E-06	Total Hazard Index Across All Media and All Exposure Routes					

Total Risk Across All Media and All Exposure Routes 8.1E-06

TABLE 2-8

REASONABLE MAXIMUM EXPOSURE (RME) - POST-REMOVAL
 RISK ASSESSMENT SUMMARY - FUTURE CIVILIAN RESIDENTS - SURFACE / SUBSURFACE SOIL
 SITE 7 - RTC SILK SCREENING SHOP
 NAVAL TRAINING CENTER GREAT LAKES

Scenario Timeframe: Future
 Receptor Population: Civilian Resident
 Receptor Age: Adult and Child Combined

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total		Primary Target Organ	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Surface/ Subsurface Soil	Site 7	Benzo(a)pyrene	3.5E-06	1.4E-06	NA	5.0E-06	Benzo(a)pyrene	NA	NA	NA	NA	NA
			Dibenzo(a,h)anthracene	2.1E-06	8.7E-07	NA	3.0E-06	Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Total Risk Across Surface Soil							7.9E-06	Total Hazard Index Across All Media and All Exposure Routes					

Total Risk Across All Media and All Exposure Routes 7.9E-06

TABLE 2-9

REASONABLE MAXIMUM EXPOSURE (RME) - POST-REMOVAL
 RISK ASSESSMENT SUMMARY - MILITARY RESIDENTS - SURFACE / SUBSURFACE SOIL
 SITE 7 - RTC SILK SCREENING SHOP
 NAVAL TRAINING CENTER GREAT LAKES

Scenario Timeframe: Future
 Receptor Population: Military Resident
 Receptor Age: Adult and Child Combined

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total		Primary Target Organ	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Surface/ Subsurface Soil	Site 7	Benzo(a)pyrene	2.7E-06	1.0E-06	NA	3.8E-06	Benzo(a)pyrene	NA	NA	NA	NA	NA
			Dibenzo(a,h)anthracene	1.6E-06	6.2E-07	NA	2.3E-06	Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Total Risk Across Surface Soil							6.0E-06	Total Hazard Index Across All Media and All Exposure Routes					

Total Risk Across All Media and All Exposure Routes 6.0E-06



Site 7 - RTC Silk Screening Shop

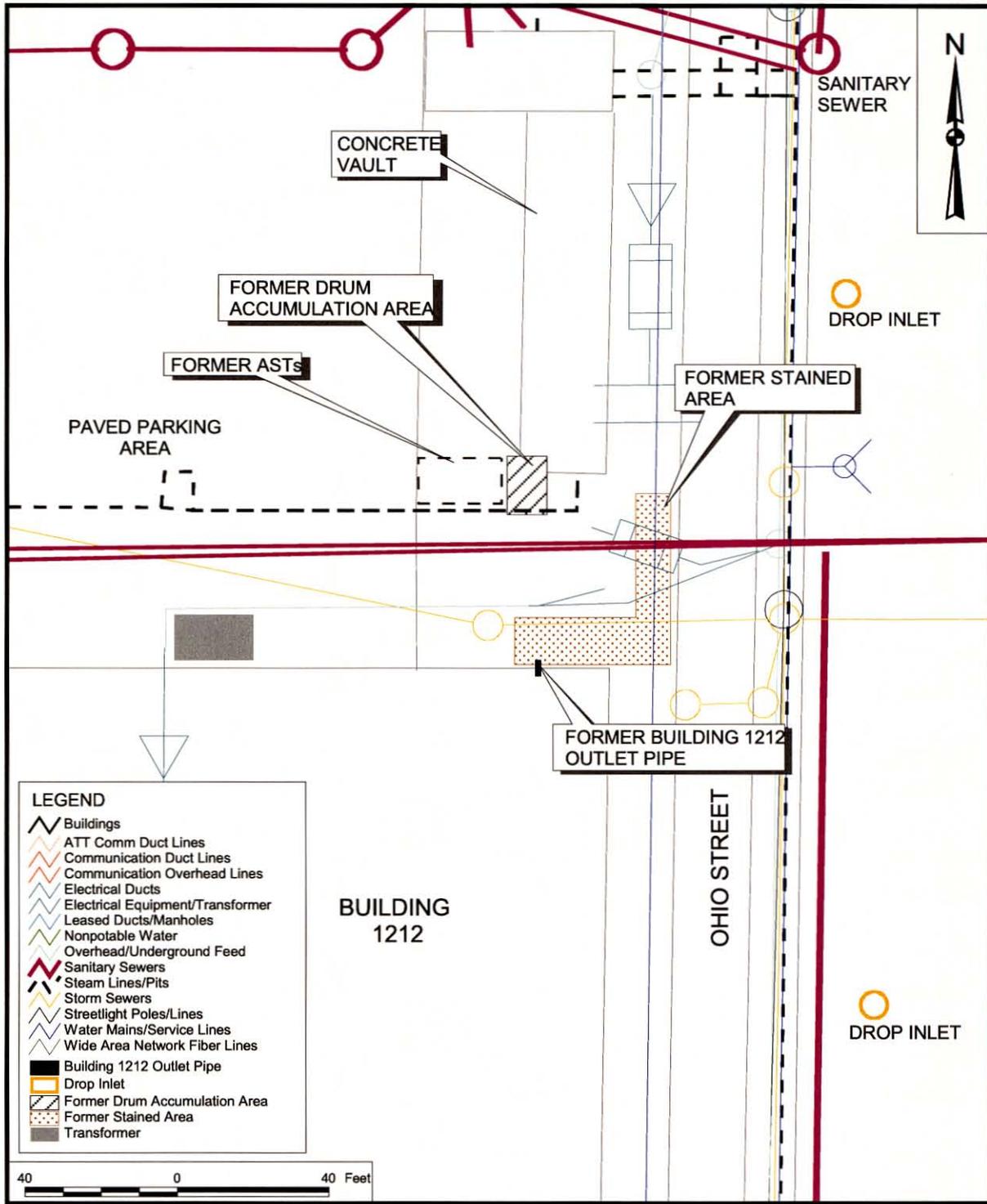
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DRAWN BY K. PEILA	DATE 9/3/02
CHECKED BY A. SCHEETZ	DATE 9/3/02
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SITE LOCATION MAP
SITE 7
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

CONTRACT NUMBER N3939	
APPROVED BY RFD	DATE 9/3/02
APPROVED BY	DATE
DRAWING NO. FIGURE 2-1	REV 0



LEGEND

- Buildings
- ATT Comm Duct Lines
- Communication Duct Lines
- Communication Overhead Lines
- Electrical Ducts
- Electrical Equipment/Transformer
- Leased Ducts/Manholes
- Nonpotable Water
- Overhead/Underground Feed
- Sanitary Sewers
- Steam Lines/Pits
- Storm Sewers
- Streetlight Poles/Lines
- Water Mains/Service Lines
- Wide Area Network Fiber Lines
- Building 1212 Outlet Pipe
- Drop Inlet
- Former Drum Accumulation Area
- Former Stained Area
- Transformer



DRAWN BY	DATE
J. BELLONE	4/10/01
CHECKED BY	DATE
GP	4/18/01
COST/SCHEDULE-AREA	
SCALE AS NOTED	

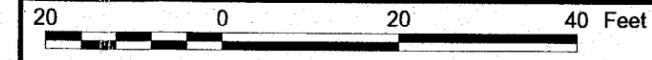
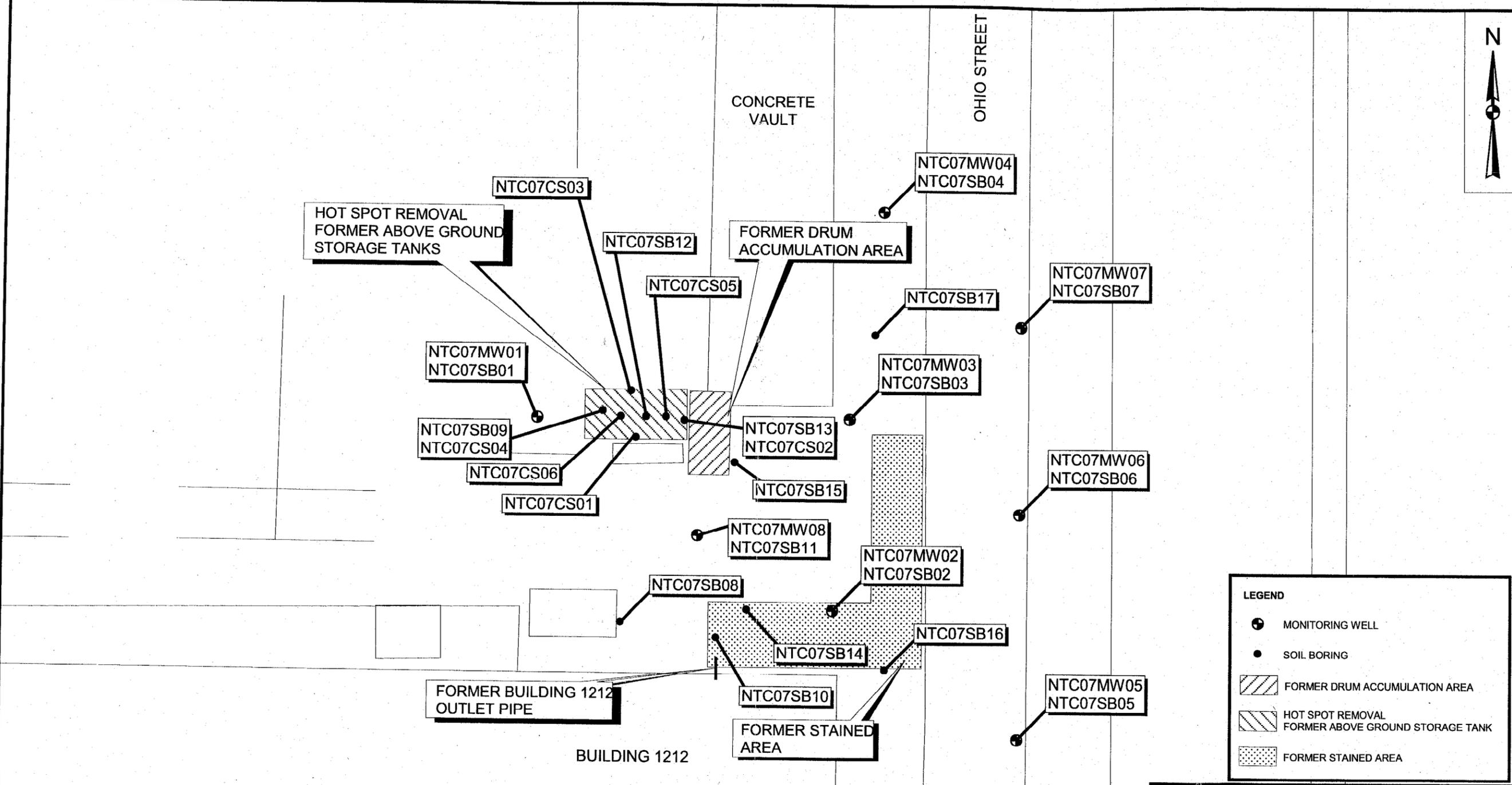


SITE MAP
SITE 7 - RTC
SILK SCREENING SHOP
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

CONTRACT NUMBER N3939	
APPROVED BY RFD	DATE 4/20/01
APPROVED BY	DATE
---	---
DRAWING NO. FIGURE 2-2	REV 0

P:\GIS\GREAT_LAKES_NTC\QAPP_2001.APR\SITE 7 - SITE MAP 9/3/02 KMP

0001440014

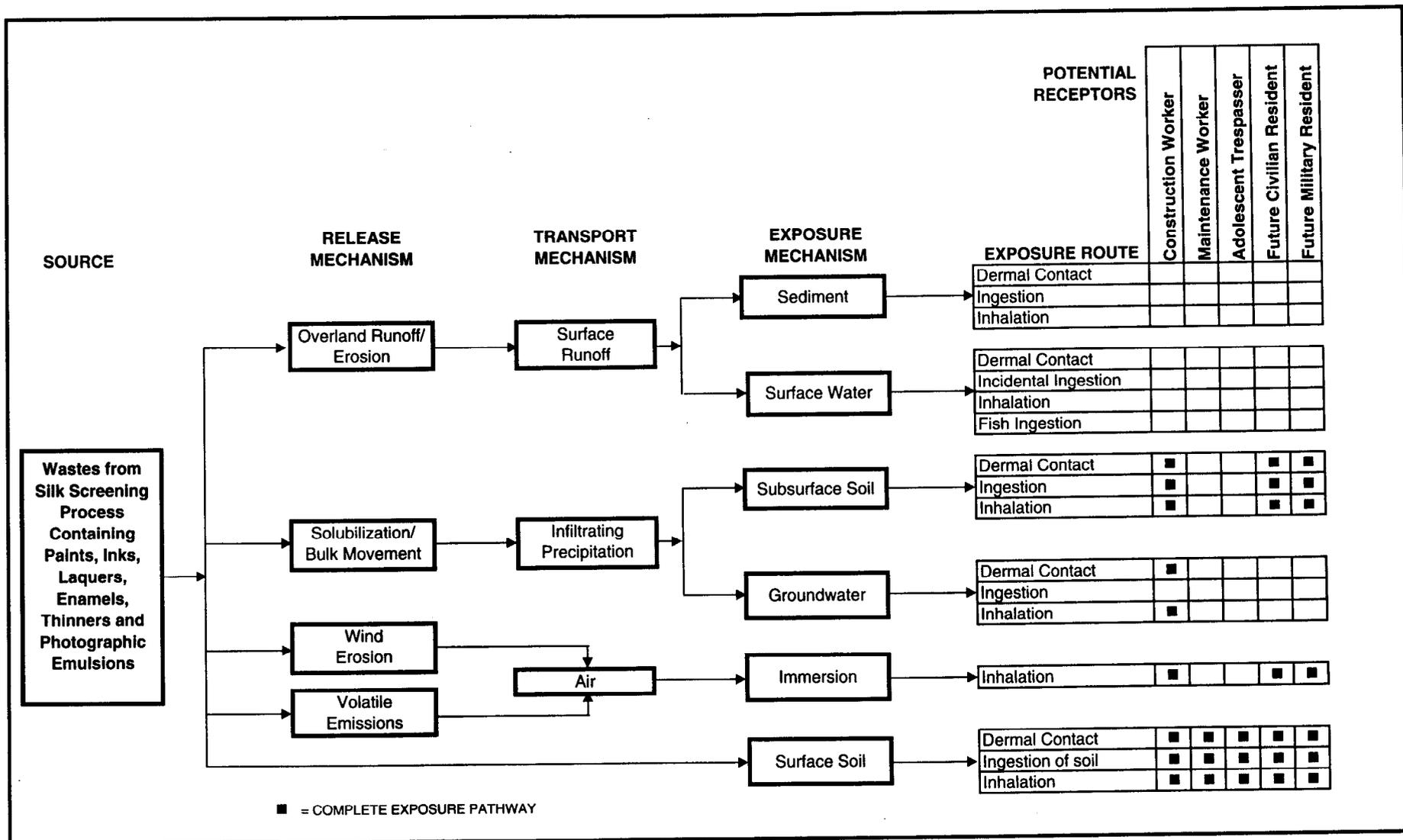


NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY K. PEILA DATE 12/19/01	Tetra Tech NUS, Inc. SAMPLE LOCATIONS SITE 7 - RTC SILK SCREENING SHOP NAVAL TRAINING CENTER GREAT LAKES, ILLINOIS	CONTRACT NUMBER N4278	OWNER NUMBER
CHECKED BY B. BALKOVEC DATE 3/12/02		APPROVED BY RFD	DATE 3/12/02
COST/SCHEDULE-AREA		APPROVED BY	DATE
SCALE AS NOTED		DRAWING NO. FIGURE 2-3	REV 0

FIGURE 2-4

HUMAN HEALTH CONCEPTUAL SITE MODEL
 SITE 7 - FORMER SILK SCREENING SHOP
 NAVAL TRAINING CENTER, GREAT LAKES



Blank space indicates incomplete exposure pathway or relatively insignificant, or not applicable potential exposure.

3.0 RESPONSIVENESS SUMMARY

A Proposed Plan for Site 7 was released for public comment on March 1, 2003. The Navy solicited input from the public during the public comment period of March 1 to 31, 2003 to encourage public participation in the selection process.

3.1 COMMUNITY PREFERENCES

No public comments were received during the public comment period. However, regulatory comments were received from Illinois EPA.

3.2 INTEGRATION OF COMMENTS

The Navy concurs with the regulatory comments received and has incorporated these comments into this Decision Document.

3.3 COMMENT RESOLUTION

The administrative record contains a record of the Illinois EPA comments. The comments have been incorporated into the Decision Document.

REFERENCES

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