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NIROP FRIDLEY
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Community Involvement Plan

for

Naval Industrial Reserve Ordnance Plant

Fridley, Minnesota

NAVFAC
Naval Facilities Engineering Command

Southern Division
Naval Facilities Engineering Command

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ACRONYMS AND ABBREVIATIONS

ACP	Anoka County Regional Riverfront Community Park
AMR	annual monitoring report
AOC	Area of Concern
B&R Environmental	Brown & Root Environmental
bgs	below ground surface
CAH	chlorinated aliphatic hydrocarbons
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CIP	Community Involvement Plan
COC	contaminant of concern
COPC	contaminant of potential concern
cPAH	carcinogenic polycyclic aromatic hydrocarbons
CRP	Community Relations Plan
CTO	Contract Task Order
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
DOD	U.S. Department of Defense
DPT	direct-push technique
FFA	Federal Facility Agreement
FMC	FMC Corporation
FS	Feasibility Study
GOCO	Government-Owned Contractor-Operated
IAS	Initial Assessment Study
MCES	Metropolitan Council Environmental Services
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MDNR	Minnesota Department of Natural Resources
MK	Morrison Knudsen Corporation
MPCA	Minnesota Pollution Control Agency
MWW	Minneapolis Water Works
NACIP	Naval Assessment and Control of Institutional Pollutants
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
Navy	U.S. Department of the Navy

NIROP	Naval Industrial Ordnance Plant
NPL	National Priorities List
NOD	Northern Ordnance Division
OU1	Operable Unit 1
OU2	Operable Unit 2
OU3	Operable Unit 3
PAH	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCE	tetrachloroethene
PCJ	Prairie du Chien/Jordan
POTW	Publicly Owned Treatment Works
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RMT	RMT, Incorporated
TCA	1,1,1-trichloroethane
TCE	trichloroethene
TRC	Technical Review Committee
SVOC	semi-volatile organic compound
UDII	United Defense Industries, Inc.
UDLP	United Defense Limited Partnership
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VLS	Vertical Launching System
VOC	volatile organic compound

1.0 OVERVIEW OF COMMUNITY INVOLVEMENT PLAN

This updated Community Involvement Plan (CIP) was developed to identify community concerns and information needs that may arise during remedial activities at the Naval Industrial Reserve Ordnance Plant (NIROP) in Fridley, Minnesota. The United States Navy Southern Division, Naval Facilities Engineering Command (NAVFAC) is managing the remedial activities at the site, with regulatory oversight by the Minnesota Pollution Control Agency (MPCA) and the U.S. Environmental Protection Agency (USEPA), Region V.

The purpose of the CIP is to outline activities designed to inform the public of planned or ongoing field investigations undertaken and remedial actions occurring at the NIROP Fridley facility. The CIP also provides opportunities for the public to offer input. The primary objectives of this plan are to keep the residents of the NIROP Fridley area informed of the planned activities at the facility, to provide a means for citizens and agencies to interact with the Navy, and to assist in resolving issues of public interest and concern. The CIP encourages involvement of citizens from the NIROP Fridley area as well as representatives from Federal, state, and local agencies and interest groups that are active in policy and decision making processes. The Restoration Advisory Board (RAB) discussed in this report is a key vehicle for public participation.

The CIP objectives are to:

- Provide for the exchange of information.
- Solicit input, comments, and active involvement from the public, elected and civic leaders, and concerned agencies.
- Provide a centralized point of contact to address public concerns and distribute information regarding the NIROP Fridley activities.

This plan describes the site's conditions and historical background, identifies key parties and issues of concern to the affected community, and recommends activities and a schedule to provide information and encourage public involvement in the remedial process at the NIROP Fridley. The CIP is presented in the following sections:

- Site Description and Remediation Progress
- Community Background
- Elements of the CIP
- Appendices – RAB, Key Contacts, and Repository Locations

This plan was developed in accordance with the requirements for community involvement activities at this site contained in the (1) Federal Facility Agreement (FFA) under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 120 between the United States Environmental Protection Agency – Region V, the United States Department of the Navy (Navy), and the Minnesota Pollution Control Agency (USEPA et al, 1991), (2) Department of the Navy Installation Restoration Manual (Draft) (Navy, 2001) and (3) Superfund Community Involvement Toolkit (USEPA,2002).

The steps outlined in the CIP are designed to achieve effective communication and a timely exchange of information with the public. The NIROP Fridley Partnering Team will monitor community responses to environmental activities in order to update this document.

2.0 SITE DESCRIPTION AND REMEDIATION PROGRESS

2.1 LOCATION AND DESCRIPTION

The NIROP Fridley is located in the northern part of the Minneapolis/St. Paul metropolitan area within the city limits of Fridley, Minnesota, on the southernmost tip of Anoka County, Minnesota. The plant is situated approximately one-quarter mile east of the Mississippi River and less than 1 mile south of Interstate 694 (Figure 2-1).

The site is currently active and consists of 82.6 acres of formerly government-owned land, of which approximately 50 acres are paved or covered with buildings. Effective June 17, 2004, NIROP was conveyed to the site's operator, United Defense L.P. (UDLP). The plant is bordered on the east by the Burlington Northern rail yard, on the north by various industrial facilities, on the south by separate UDLP property, and on the west by East River Road. The 46-acre area adjacent to the southern border of the site is owned by UDLP, the NIROP Fridley government-owned contractor-operated (GOCO) company. The area encompassed within a 3-mile radius of the NIROP Fridley site includes parts of Minneapolis/ St. Paul, New Brighton, St. Anthony, and most of Fridley and Brooklyn Center.

2.2 NIROP FRIDLEY

In 1998 the Naval Sea Systems Command (NAVSEA) announced its intentions to dispose of the properties associated with the NIROP Fridley facility. As of 17 June 2004 NIROP was conveyed by sale to the current plant operator, UDLP. However, the Navy will continue to have responsibility for the continuing clean-up efforts.

Businesses in the area are mainly industrial. Several industrial parks with a variety of businesses border the NIROP Fridley facility to the north, south, and east. The area to the west of the facility is used as Anoka County Riverfront Regional Park (ACP). ACP borders the Mississippi River. The Summit Square Park, primarily a residential area, is located approximately 1 mile directly east of the NIROP Fridley facility. Figure 2-2 shows the relationship of the NIROP Fridley facility to the surrounding properties.

2.3 HISTORY AND CURRENT USAGE

2.3.1 Ownership and Operation

NIROP Fridley dates back to 1940 when Northern Pump Company negotiated with the Navy for the construction of a new manufacturing plant on approximately 80 acres of land situated in the northern portion of the Minneapolis/St. Paul metropolitan area. Northern Pump had been under contract to the Navy throughout the 1930s. These defense contracts eventually reached a level where Northern Pump's existing plant in Minneapolis was inadequate. When Northern Pump received a contract from the Navy to produce 100 five-inch gun mounts, the move to a new manufacturing plant was needed.

The site chosen for the plant was a cornfield just north of the Minneapolis City limits, within the City of Fridley. The new plant was completed in just 60 days with machinery, office equipment, and records moved intact by railroad flat car from the old plant. By January 1941, the plant was in full production.

In June of 1942, Northern Pump Company established Northern Ordnance Incorporated as an operating subsidiary to conduct the government portion of Northern Pump's business. Thereafter, the facility was often referred to as Northern Ordnance, Inc., and later as Northern Ordnance Division (NOD).

In 1947 the government acquired the majority of the manufacturing building and the property to the north while Northern Pump retained a portion of the manufacturing building and property to the south. This arrangement was unique in that the plant was partially owned by the government and partially owned by Northern Pump Company. NIROP Fridley was the first GOCO facility.

On January 31, 1964, Northern Ordnance was acquired from Northern Pump Company by FMC Corporation (FMC). Northern Ordnance was assigned divisional status within FMC's Ordnance Group. In 1994, FMC and Harsco Corporation formed United Defense Limited Partnership (UDLP). The Armament Systems Division of UDLP operated the facility.

In October 1997, the Carlyle Group acquired UDLP from FMC and Harsco Corporation and referred to the facility as UDII. The Carlyle Group, founded in 1987, is a global private investment firm based in Washington, D.C., which acts as lead equity investor in acquisitions within highly focused industry groups and is the leading private buyer of defense and aerospace businesses.

In June, 2004 ownership of the NIROP was conveyed to UDLP.

2.3.2 Production

Production at the NIROP Fridley facility began in January 1941. During World War II, the plant was operated in two 12-hour shifts, 365 days a year to produce gun mounts. A production level of about 150 single gun mounts and 20 twin gun mounts per month was eventually reached. During the height of the war, 11,400 people were employed at the plant. By the end of the war, more than 6,000 gun mounts had been produced, and the plant received awards annually from 1941 through 1946 from the Navy for meritorious production.

Following the end of the war, production of gun mounts dropped substantially, and the workforce at the plant was reduced to its pre-war level of less than 1,000 employees. The plant undertook various overhaul projects for the Navy and designed a new dual-purpose 5-inch 54-caliber single gun mount, the Mark 42. This was one of the first fully automated gun mounts in the world. Production of the Mark 42 commenced in 1948 and was the major production activity at the plant for the next 10 years.

During the 1950s, the Navy had demand for new and advanced missile launching systems. Northern Ordnance responded to this need by producing the first automatic guided missile launching system in the world in 1956, the Mark 4. Other missile launching systems – the Mark 7, Mark 10, Mark 13, Mark 22 and Mark 26 – were also produced at the plant. These were all highly reliable shipboard systems designed to store, transfer, warm up, position, and launch the missiles. All of these systems were designed for the "3-T Missiles": Talos, Terrier, and Tarter. During this same period, a series of torpedo launching tubes, the Mark 23, Mark 24, and Mark 25 were produced at the plant.

After FMC's acquisition of Northern Ordnance in 1964, the plant continued to produce gun mounts and advanced missile-launching systems but shifted toward smaller, lighter systems. The plant produced a 5-inch, 54-caliber gun mount, the Mark 45, which was the smallest and lightest 5-inch gun mount in the world. This gun mount was used on the Navy's newest cruisers and destroyers. The Mark 75, which was a fast firing 76-millimeter 62-caliber gun mount, was also produced at the plant.

The guided missile launching systems that were produced at the plant in the 1970s and 1980s, the Mark 13, Mark 26, and the Mark 41 Vertical Launching Systems (VLS), were designed for the Navy's newer, smaller class ships. The MK41 VLS became the mainstay Navy launching platform.

Following the October 1997 acquisition by the Carlyle Group, the plant continued as the prime contractor and systems integrator for the Crusader, the U.S. Army's $20 billion next-generation artillery development system. Other major programs include the Bradley family of fighting vehicles, M109 field artillery vehicles,

M88 recovery vehicles, M1 Breacher, M9 Armored Combat Earthmover, and M113 armored personnel carriers. The plant also provides naval ordnance, and supplies naval missile launchers and guns.

The plant layout consists of 29 avenues that run west to east and north to south. Broadway, located in the center of the plant, is the main north-south avenue. East of Broadway, building columns are numbered from 1E to 21E; to the west, columns are numbered 1W to 29W. The Navy-owned portion of the plant extends from 5th Avenue to the north wall of the main building.

Except for materialization and relocation no major functional changes have occurred in the industrial operations at NIROP Fridley since the plant was constructed in 1941. The processing, assembly, and manufacturing operations associated with the facility were plating, welding, heat-treating, machining, and foundry. Some of the chemicals associated with these processes included: paints, solvents, machining oils, degreasers, cyanide plating waste, and fixer silver waste. Testing facilities at NIROP Fridley have included an electronics laboratory, a metallurgical laboratory, hydraulic test bays, and shock/vibration test equipment.

2.3.3 Waste Handling

Like private industrial facilities in operation since the 1940s, NIROP Fridley has previously stored and disposed of industrial wastes, scrap materials, drummed wastes, and chemicals at the facility. The following paragraphs summarize the former chemical and waste disposal, storage, and removal practices.

During the late 1960s or early 1970s, two disposal pits were used on a one-time basis for the disposal of drummed wastes on the northeast portion of the NIROP Fridley: one near the railroad gate, the other near the first railroad switch. Each of the pits was approximately 8 feet deep and irregularly shaped and contained about 25 drums containing waste oil, plating sludge, cleaning solvent, and degreasing solvent. In addition to the drums, the disposal pits contained miscellaneous construction debris, such as metal scraps, lumber, and concrete.

In 1972, two trenches were created at the NIROP Fridley for waste disposal purposes in the area north of the main plant building. The trenches were used on a one-time basis. Each trench was approximately 10 feet wide and 8 to 10 feet deep, with a combined length of 75 to 100 feet. Between 50 and 100 drums containing wastes were placed into the trenches on their sides, stacked two or three deep, and covered with excavated soils. Sampling results have indicated that materials disposed in the drums included the same types of wastes disposed in the disposal pits.

In 1975, an estimated 150 55-gallon drums of industrial waste were removed from NIROP Fridley. Prior to disposal, such waste material was collected and stored at a central waste storage area located outside near the northeastern corner of the NIROP Fridley. The area consisted of a 30-foot by 30-foot asphalt and concrete pad graded toward the middle, which drained to a dry well that could be pumped if a spill occurred.

Large quantities of sand have historically been consumed in the casting process at the NIROP Fridley. Foundry core butts contain mostly sand with minor amounts of metal and resin or binders. Most foundry core butt disposal operations occurred off Navy property. However, it was reported that core butts were disposed in the northern portion of the NIROP Fridley on a very limited basis. An analysis of the foundry sand, both before and after use, was performed in November 1978. This analysis indicated that the butts do not qualify as hazardous waste.

2.4 ENVIRONMENTAL SETTING

The NIROP Fridley comprises approximately 80 acres, most of which are covered with buildings or pavement. It is situated on a broad, flat plain next to and approximately 30 feet in elevation above the Mississippi River.

Natural resource use in the area is limited to recreational activities in the ACP, which is directly across East River Road from the NIROP Fridley, adjacent to the Mississippi River. Use of these resources does not result in access to the NIROP Fridley itself, which is highly restricted by the Department of Defense (DOD). No Federal or state freshwater wetlands are located within 1 mile of the site, and no critical habitats, endangered species, or national wildlife refuges have been identified in the vicinity of the site.

An aquifer within unconsolidated sediment overlies the Prairie du Chien/Jordan (PCJ) aquifer system in the vicinity of the NIROP Fridley. The natural groundwater flow in the unconsolidated sediments beneath the NIROP Fridley discharges into the Mississippi River, generally to the southwest of the plant. Because of the southwest groundwater flow to the river, groundwater contamination has been identified as the primary concern to public health, welfare, and the environment.

Groundwater use in the vicinity of the NIROP Fridley consists primarily of high-capacity industrial production wells, which draw water from the PCJ system. Reportedly, the City of Fridley and Brooklyn Center are the only communities which draw drinking water from the PCJ within a 1-mile radius of NIROP Fridley. The total population served by groundwater within a 3-mile radius is approximately 30,000 residents. No known groundwater production wells or users are situated downgradient of the NIROP

Fridley between the NIROP Fridley and the Mississippi River. The City of Fridley maintains a backup potable water supply well, which also draws water from the PCJ immediately north of the NIROP Fridley. During peak demand periods, Fridley Well 13 is used to supplement the current water supply system. In recent years, use of Fridley Well 13 has been reduced due to contamination. The source of this contamination has not been identified.

The Navy has collected and analyzed groundwater samples from Fridley Well 13 frequently since 1991. No volatile organic compounds (VOC) were detected in the most recent sample collected from Fridley Well 13 in March 2003. The source of the prior contamination occurrence still has not been determined.

The City of Minneapolis Water Treatment Plant withdraws water from the Mississippi River less than 1 mile downstream from the NIROP Fridley. The population served by the water treatment plant is approximately 500,000 people. The water treatment plant withdraws approximately one million gallons per day.

The NIROP Fridley is located immediately adjacent to several other industrial entities. See Figure 2-2. Many of these other industrial entities are themselves currently subject to regulatory driven environmental investigation or remediation for contamination in soil and groundwater. Contaminants from these neighboring sites could also be reaching the Mississippi River. Additionally, contamination from unidentified sites other than NIROP Fridley could also be reaching the river. Therefore, it is likely that contamination of the Mississippi River originating from NIROP Fridley reflects only a part of the total impact to the river.

2.5 SUMMARY OF SITE INVESTIGATIONS AND SELECTED REMEDIES

In December 1980, the MPCA discovered trichloroethene (TCE) in three NIROP Fridley supply wells drawing water from the PCJ. TCE is a common industrial solvent formerly used at the NIROP Fridley. Samples obtained at the same time from NIROP Fridley storm sewer outfalls at the Mississippi River also showed the presence of TCE and other VOCs. Subsequent sampling at the City of Minneapolis Water Treatment Plant intake on the Mississippi River also revealed measurable, but very low, concentrations of TCE.

An Initial Assessment Study (IAS) of the NIROP Fridley Site was completed by the Navy in June 1983. The IAS determined that drummed wastes had occasionally been buried in the northern portion of the NIROP Fridley. Burial was an accepted practice at many industrial facilities in the past. However, these wastes were potentially determined to contribute to groundwater contamination. As a result of IAS

recommendations, the Navy contracted the U.S. Army Corps of Engineers (USACE) to continue its investigations.

Through various geophysical and remote sensing techniques, nine areas in the northern portion of the property were selected for excavation based on their likelihood for containing buried drummed wastes. These areas were excavated in the fall of 1983 and the spring of 1984. Forty-three excavated drums and 1,200 cubic yards of underlying soil were found to contain VOCs (such as degreasers and solvents), polychlorinated biphenyls (PCBs - oil from transformers) oil and grease, pesticides, and metal-bearing wastes. The drums and contaminated soil were disposed at an off-site USEPA-permitted landfill.

During March 1991, a FFA between the Navy, USEPA, and MPCA was issued. The FFA establishes a regulatory framework for environmental investigation and remediation. The Navy is identified as the lead agency for environmental investigations and subsequent clean-up as required.

Three operable units (OUs) have been identified at NIROP Fridley. Groundwater is identified as OU 1. The land outside of the main NIROP Fridley manufacturing building but within the legal boundaries of the facility, from ground surface down to groundwater elevation, has been identified as OU2. The land underneath the main NIROP Fridley building, and soils at elevations below groundwater elevation (the saturated zone) either under the building or outside the building, but within the legal boundaries of the facility has been designated as OU3.

2.5.1 Summary of Site Investigations and Selected Remedy for OU1

Several phases of groundwater monitoring well installation began in June 1983. Monitoring wells are used for monitoring groundwater quality on and downgradient of the site. Wells have been drilled into the shallow, intermediate, and deep portions of the unconsolidated aquifer, as well as the PCJ aquifer in the bedrock. The monitoring well network was, and continues to be, used to determine physical and chemical characteristics of the unconsolidated aquifers underlying the NIROP Fridley and some adjacent areas. During 1998, the United States Geological Survey (USGS) installed additional wells. Although fewer wells have been drilled for the PCJ aquifer than for the unconsolidated aquifers, this same monitoring information is collected for the PCJ aquifer.

An analysis of the information gathered during the remedial investigation (RI) was contained in a RI Report (RMT, 1987) and RI Addendum (RMT, 1988a). The data indicated the following:

- All use of TCE at the NIROP Fridley was discontinued by April 1, 1987. Plant operations that previously used TCE converted to 1,1,1-trichloroethane (TCA) until 1993. Currently, plant operations use aqueous cleaning solutions in place of TCA and TCE. A solvent management program is in-place at the NIROP Fridley, and the disposal of solvents is in accordance with Federal and state regulations.

- Elevated concentrations of TCE and 1,1-dichloroethene (1,1-DCE) were found in soil pore gas samples near the former disposal pit/trench area, near a concrete pad in the north storage yard area, and at several locations near the north property boundary.

- Groundwater in the unconsolidated aquifer generally flows from the northeast to the southwest across the NIROP Fridley. The aquifer discharges to the Mississippi River.

- Groundwater in the unconsolidated aquifer beneath the NIROP Fridley is contaminated with VOCs, including the following: TCE, TCA, 1,2-DCA, tetrachloroethene, 1,1-DCA, toluene, xylene, and ethylbenzene. TCE was found more frequently and at higher concentrations than any other VOC.

- TCE concentrations downgradient of the former disposal pit/trench area decreased substantially following the removal of drums and contaminated soil.

- Concentrations of TCE in groundwater reaching the Mississippi River were estimated to be on the order of 1 to 10 milligrams per liter (mg/L). This range of TCE concentrations was expected to continue until the groundwater remedial action was implemented, given the TCE levels detected at the southwestern corner of the NIROP Fridley. However, the concentration of TCE from the groundwater is rapidly reduced as the groundwater flows into the river due to dilution from the large volume of river flow compared to the groundwater flow. Annual monitoring of the City of Minneapolis Water Treatment Plant intake is currently conducted by UDLP.

- The investigations continued to show detectable concentrations of VOCs in the Prairie du Chien bedrock aquifer, but the concentrations were within the limits set by the Federal drinking water standards.

- One round of samples was collected in 1988 from storm sewers serving the NIROP Fridley. No VOCs were found.

- Because TCE is present in wells upgradient of known sources on the NIROP Fridley, the possibility exists of additional unidentified on-site sources as well as possible off-site sources of contamination.

On the basis of these findings, remedial alternatives were evaluated as part of a Feasibility Study (FS). An FS Report (RMT, 1988b) and FS Addendum (RMT, 1988c) were submitted to the MPCA and the USEPA. The FS concluded that a groundwater extraction and treatment alternative was the most appropriate response to site conditions identified during the RI. The proposed system would consist of at least five extraction wells pumping groundwater from both the identified source areas and from downgradient locations.

After discussions with, and a review by, the USEPA and the MPCA, this alternative was presented to the public in a "Proposed Plan for Groundwater Remediation" in May 1990 (RMT 1990). After a 30-day public comment period and subsequent refinements, this remedial plan was accepted in a Record of Decision signed by the USEPA, the MPCA, and the Navy on September 28, 1990 (USEPA, 1990).

2.5.2 Summary of Site Investigations and Selected Remedy for OU2 and OU3

Based on the results of a geophysical investigation conducted in 1995, a total of twenty-three 55-gallon drums and 12 smaller containers were found in the North 40 area. These drums and containers were excavated during a removal action conducted in April through June of 1996. Excavated materials were characterized and either disposed off-site at an USEPA permitted hazardous or non-hazardous waste disposal facility, or disposed as scrap metal by the UDLP metal recycling program.

In April 1995, soil and groundwater samples were collected from the east plating shop during renovations to accommodate an electrical assembly facility. TCE, TCA, and 1,2-dichloroethene (1,2-DCE) were present at elevated levels in soil and groundwater. Elevated metals concentrations were also identified in the vicinity of a former sump.

During a sampling event at OU2 in 1996 in the vicinity of a previously unexcavated area near the North 40, free liquids were encountered which resulted in a removal action. A total of 31 drums were sampled and removed in addition to several other empty and crushed drums which were removed with other debris. VOC contamination was reported in subsurface soils.

An initial risk assessment for OU2 was conducted in 1996, but following a 2002 update to the risk assessment it was determined that in one subarea of OU2 risk was inordinately influenced by a single data point. Therefore, during the summer of 2002, the Navy conducted a time-critical removal action to

remove approximately 35 cubic yards of soil around this location due to elevated carcinogenic PAH concentrations. This removal was completed in June 2002, and addressed the last known location where there were unacceptable risks in surface soils.

An analysis of the information gathered during the OU2 remedial investigation (RI) was contained in a RI Report (RMT, 1996) and RI Addendum (RMT, 1996). The data indicated the following:

The land outside of the main NIROP building, from ground surface down to the groundwater elevation, has been identified as OU2. This land has been further divided into 'subareas' to simplify the risk assessment process. As shown in Figure 2-3, risk was evaluated for Subareas A1, A2, A3, A4, B1, B2, D, E, and F. The following items summarize the nature and extent of contamination at OU2: See Figure 2-3 for identification of sub areas.

- Soils within Sub-Area A1 have not been impacted by site activities.

- Sub-Area A2 has been impacted by site activities. Analytical results indicate that elevated VOC concentrations in the shallow soils are present. Results indicate that the problem may be related to a surface spill rather than to buried wastes since concentrations are highest in the near surface (1' to 3') samples and decrease with depth.

- Anomalies were areas indicated by electronic instrumentation as areas possibly containing buried material. Investigation results indicate two major areas of concern in Sub-Area A3, which includes the area around unexcavated Anomalies #13 and #14. Elevated concentrations of contaminants, particularly VOCs, remain in soils in these areas as a result of wastes buried prior to 1983. The area delineated as containing VOCs at concentrations greater than 10 µg/kg included more than one-half of Sub-Area A3. Unexcavated Anomalies #12 and #15 do not have significantly impacted soils in Sub-Area A3.

- Much of Sub-Area A4 has been impacted by site activities with the greatest impacts being located at previously excavated Anomaly #3. Previously excavated Anomalies #3 and #6 and unexcavated Anomalies #2 and #4 appear to be the major sources of these impacts.

- Sub-Area B1 has been slightly impacted by site activities.

- Sub-Area B2 has not been significantly impacted by site activities.

- Area D is the site of a previously unidentified disposal trench. The reported impacts are considerably less than those observed in Sub-Areas A2, A3, and A4.

- Although Sub-Area E1 has been slightly impacted by site activities, this area does not appear to be the source of contamination reported in nearby monitoring wells.

- Sub-Area E2 has been slightly impacted by site activities. However, this sub-area is not the source of VOCs identified in nearby monitoring wells.

- Results of this investigation show that there have been slight or no impacts to the soils in Sub-Area F1.

- Residual hydrocarbon-impacted soils remain in Sub-Area F2.

An analysis of the information gathered during the OU3 remedial investigation (RI) was contained in a RI Report (TtNUS, 2003). The data indicated the following:

The land underneath the main NIROP building, and soil at elevations below the groundwater elevation (the saturated zone) either under the building or outside the building, has been designated OU3. The following summarize the nature and extent of contamination at OU3:

- Several VOCs (primarily chlorinated hydrocarbons and aromatic compounds) were detected in surface (0 to 4 feet bgs), shallow subsurface (4 to 12 feet bgs), and deep subsurface (>12 feet bgs) soil samples. Relative detection frequencies for VOCs were similar among surface, shallow subsurface, and deep subsurface soil samples. However, as illustrated in the following table for VOCs, no consistent pattern of concentrations was evident among the three categories of soil samples. Hence, these COCs do not seem to indicate wide spread soil contamination exceeding risk-based thresholds.

Analyte	Concentration Range (µg/kg)		
	Surface Soils	Shallow Subsurface Soils	Deep Subsurface Soils
1,1,1-Trichloroethane	1-56	1-2	4
1,1-Dichloroethane	2-9	1-11	1
1,2-Dichloroethene (total)	3-15	1-15000	1-290
Bromomethane	2	1-2	ND
Carbon disulfide	1-13	5-14	1-18
Ethylbenzene	1-10	4-720	9-34
Styrene	4-33	1-54	10-72
Tetrachloroethene	1-90	1-760	1-3800
Toluene	1-14	1-1000	1-24
Trichloroethene	1-640	1-1100	1-100000
Xylenes, Total	1-45	1-7300	1-120

ND - not detected

Maximum concentrations of TCE and tetrachloroethene in all three categories of soil samples were detected in samples collected from the East Plating Shop, indicating the possible presence of a "hot spot" of TCE and tetrachloroethene in this area and the likelihood that this area is the source area for TCE (and chromium).

- Several seimvolatile organic compounds (SVOCs), primarily polyaromatic hydrocarbons (PAHs), were sporadically detected in surface and shallow subsurface soil samples. With few exceptions, concentrations and detection frequencies of SVOCs in surface soil samples exceeded those reported for shallow subsurface soil samples. 4-Chloro-3-methylphenol was detected in a single shallow subsurface soil sample (collected from AOC32, the location of an oil/water separator sump) at a concentration of 11,000 µg/kg. Concentrations of PAHs in shallow subsurface soil samples ranged from 11 µg/kg to 2,300 µg/kg, while concentrations of PAHs in surface soil samples ranged from 10 µg/kg to 5,600 µg/kg.

- All twenty-two metals on the analyte list and cyanide were detected in surface soil samples, and cyanide and twenty of these metals were detected in the shallow subsurface soil samples in OU3 underneath the main NIROP building. Concentrations and detection frequencies of metals detected in surface and shallow subsurface samples were very similar. Concentrations of most metals and cyanide exceeded background concentrations in one or more soil samples.

- The maximum concentrations of all detected chemicals in soil (0- to 12-feet in depth) were less than the MPCA soil reference values (SRVs) for industrial exposures with the exception of lead in one surface soil sample and chromium in one subsurface soil sample. Estimated cumulative excess cancer risks slightly exceed MPCA target risk levels.

On the basis of these OU2 and OU3 findings, remedial alternatives were evaluated. The ROD selected land use controls composed of engineering controls and institutional controls to address soil contamination at OU2 and OU3. As explained further in ROD Section 2.2, several remedial actions involving the cleanup of surface and subsurface source areas have already been implemented at OU2. No remedial actions to address the source of subsurface contamination at OU3 had previously been implemented. The land use control performance objectives for the selected remedy are:

To restrict the use of the property to industrial or restricted commercial use, until and unless USEPA and MPCA determine that concentrations of hazardous substances in the soils have been reduced to levels that allow for a less restrictive use.

To prohibit the disturbance of soils deeper than 3 feet below ground surface (bgs) in designated restricted areas or the removal of any soils excavated in those areas from the facility without the prior written approval of the USEPA and MPCA.

To prohibit the disturbance of soils beneath the designated restricted area known as the concrete pit foundations where metal-finishing operations previously occurred at the former plating shop within the main manufacturing building without the prior written approval of the USEPA and MPCA.

To ensure that the concrete pit floor (approximately 8 to 12 feet below grade floor) where metal finishing operations previously occurred at the former plating shop within the main manufacturing building is not removed without the prior written approval of USEPA and MPCA. That floor will serve as an engineering control.

2.6 CURRENT STATUS

2.6.1 OU1 Current Status

In response to the findings identified in the first five year review, an enhanced in-situ bioremediation pilot test was initiated in December 2001 by the Navy to remediate chlorinated aliphatic hydrocarbons (CAHs)

in groundwater originating from the NIROP Fridley. The pilot-scale test was conducted in ACP immediately downgradient of the NIROP and the extraction system. The objective of the pilot-scale test was to determine if reductive dechlorination of CAHs can be stimulated by addition of an organic substrate in the form of vegetable oil. Emulsified food-grade soybean oil was injected into the aquifer via three injection wells during December 2001. Groundwater monitoring was conducted for one year subsequent to the injection and the results of the monitoring indicated that the test was somewhat successful in accelerating biologically mediated reductive dechlorination of chlorinated ethenes. Periodic groundwater monitoring at the site is continuing.

Groundwater monitoring has been performed since startup according to the procedures defined in a Remedial Action Workplan for Groundwater Remediation (RAWP), which has been approved by the MPCA and the USEPA. The RAWP has been subsequently revised, most recently in March 2003. Significant improvements in groundwater quality at the site have been observed since startup of the original groundwater extraction system in 1992. Through the end of 2003 an estimated total of 30,665 pounds of VOCs has been removed with the extracted groundwater, resulting in significant reductions in concentrations at many site monitoring wells. This estimate includes 29,137 pounds of TCE.

2.6.2 OU2 and OU3 Current Status

USEPA determined that Navy could proceed directly to a Proposed Plan for this site (since groundwater issues identified during the OU3 investigation can be addressed in OU1), resulting in a ROD being signed in September 2003 for OU2 and OU3 requiring land use restrictions and ensuring the concrete pit floor located in the former plating shop is not removed without prior regulatory approval to prevent unacceptable exposures in the future.

2.7 5-YEAR REVIEWS

Remedial actions that result in hazardous substances remaining onsite are required by Federal and state regulation to be reviewed no less often than every 5 years. The reviews should ensure that human health and the environment are being protected by the remedial action specified. The 1998 5-year review was conducted prior to selection of an OU2 and OU3 remedy, and so exclusively addressed the OU1 remedy. Similarly, since the second 5-year review was conducted in October, 2003 following the September 2003 remedy selection for OU2 and OU3, the second 5-year review exclusively addresses the OU1 remedy. The Navy anticipates that the third 5-year review will address the entire site (OU1, OU2, and OU3).

2.7.1 OU1 5-Year Reviews

For NIROP Fridley, the Navy, as the lead agency under CERCLA, serves as signatory for the 5-year reviews.

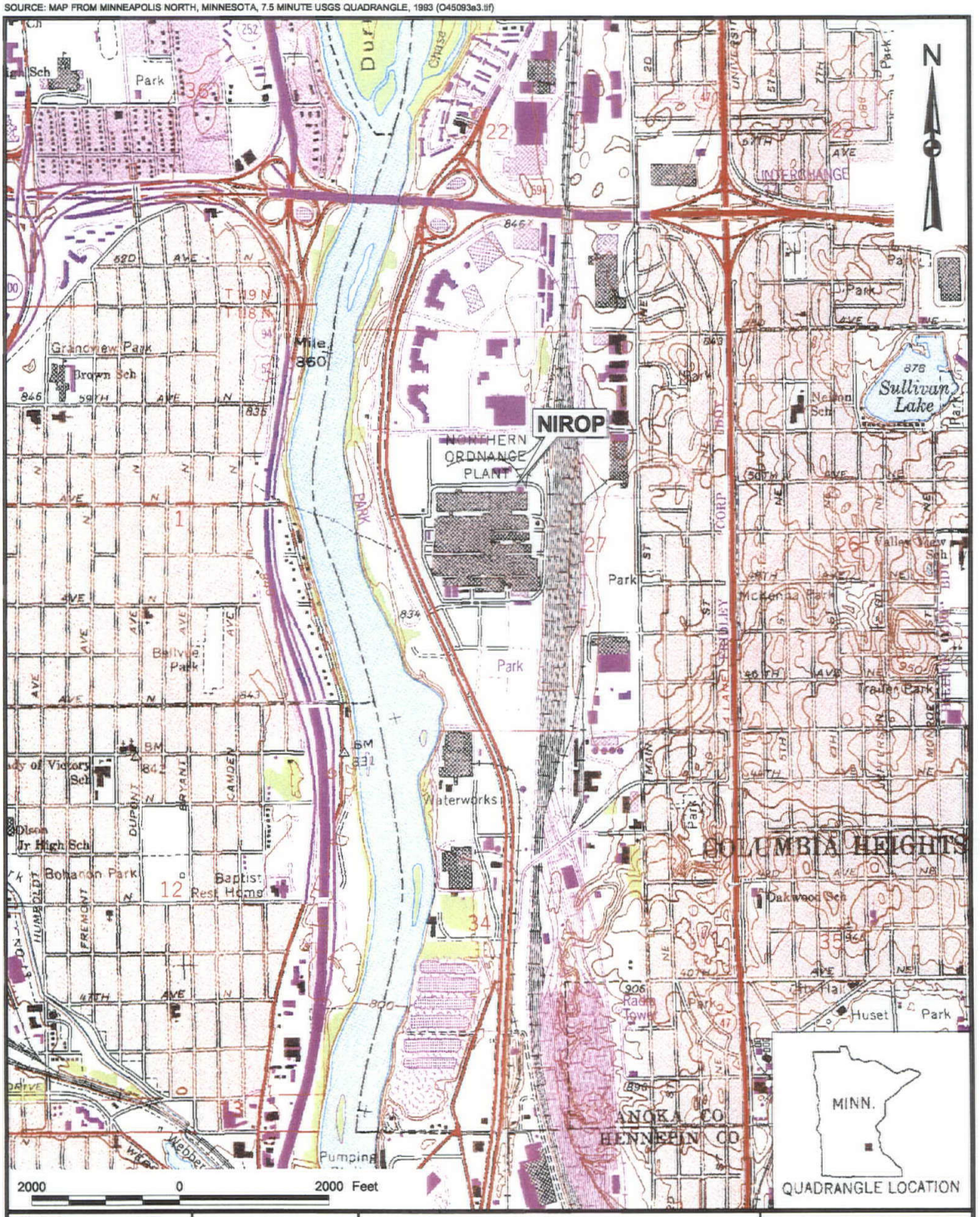
The first and second 5-year reviews completed in September 1998 and 2003, respectively certified that the remedial action for OU1 continued to be protective of human health and the environment as it relates to the remedy selected in the Record of Decision. The residual groundwater contamination in ACP was further evaluated by the implementation of a series of recommendations contained in the first Five Year Review Report. These recommendations included the installation of additional groundwater monitoring wells in ACP.

The first 5-year review report identified contaminated groundwater conditions in ACP that were not dissipating as anticipated in the ROD which may allow for the continual migration of these contaminants into the Mississippi River. To address this concern, the Navy developed a pilot study that involved localized injection of vegetable oil into the groundwater within the ACP in an attempt to enhance the effectiveness of the OU1 remedy. This study is currently ongoing. If the results of the pilot study are successful, the Navy will seek to implement this effort on a full-scale basis. In addition, the effectiveness of the groundwater capture system will continually be evaluated and upgraded as necessary.

2.7.2 OU2 and OU3 5-Year Review

The ROD for OU2 and OU3 was signed in September 2003. The evaluation of protectiveness of the OU2 and OU3 remedy will be included in the next five year review which will be completed by September 2008, five years from the date of the last five year review.

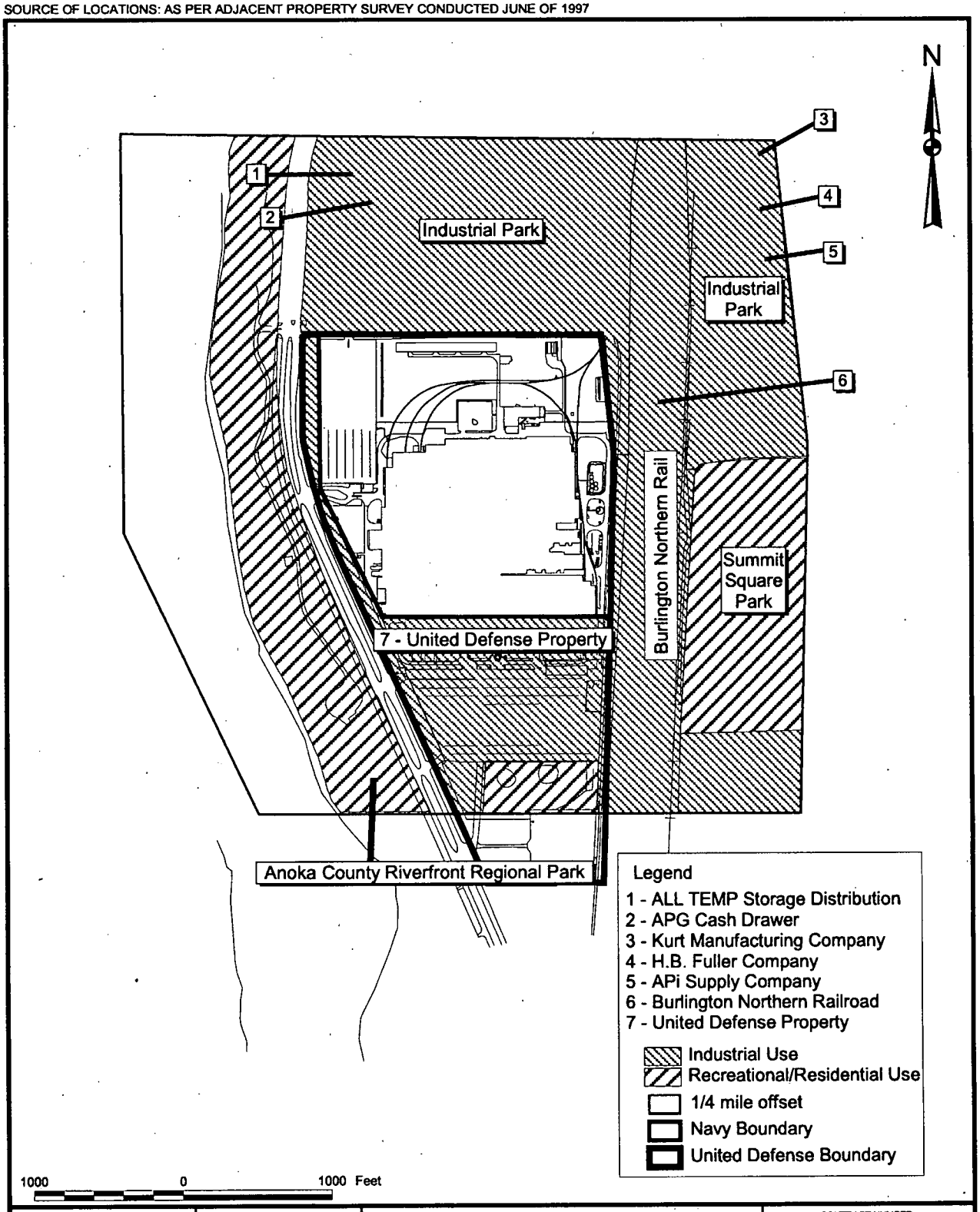
SOURCE: MAP FROM MINNEAPOLIS NORTH, MINNESOTA, 7.5 MINUTE USGS QUADRANGLE, 1993 (O45093a3.tif)



DRAWN BY D. PERRY	DATE 12-AUG-98	SITE LOCATION MAP NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT FRIDLEY, MINNESOTA	CONTRACT NUMBER —
CHECKED BY	DATE		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 2-1 REV 0

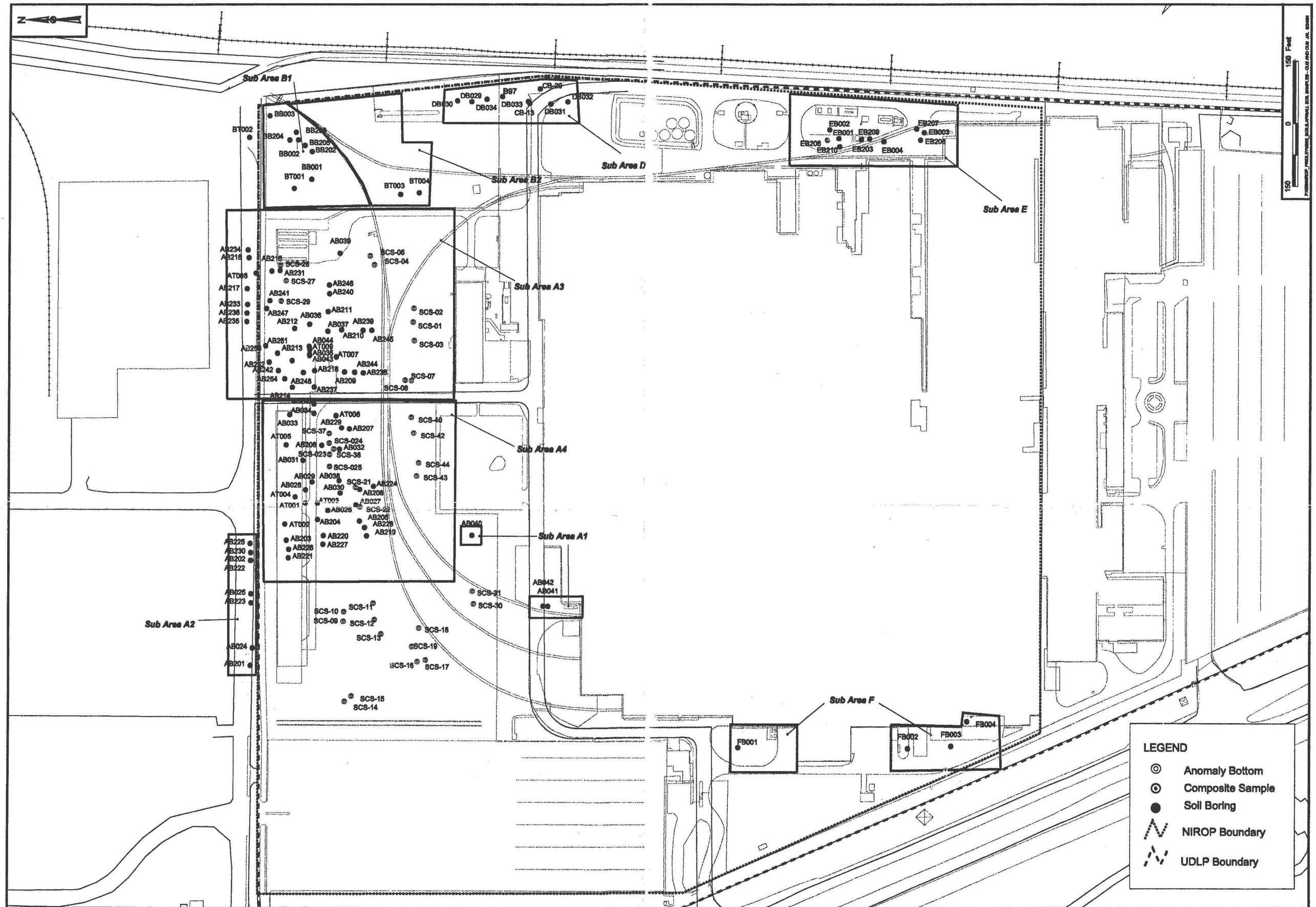
P:\GIS\FRIDLEY\6966_SITE_ASSESSMENT.APR 12-AUG-98 DNP LOCATION MAP LAYOUT

SOURCE OF LOCATIONS: AS PER ADJACENT PROPERTY SURVEY CONDUCTED JUNE OF 1997



DRAWN BY D. PERRY	DATE 9-OCT-98	SURROUNDING LAND USE NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT FRIDLEY, MINNESOTA	CONTRACT NUMBER N62467-94-D-0888
CHECKED BY	DATE		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 2-2 REV 0

P:\GIS\FRIDLEY\FRDLYEBS.APR 9-OCT-98 DNP CADD MAP PROPERTY LINES LAYOUT



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	NO.	RELEASED FOR	BY	DATE

DRAWN BY: J. BELLONE — DATE: 9/18/01
CHECKED BY — DATE
COST/SCHEDULE-AREA
SCALE: AS NOTED

Tetra Tech NUS, Inc.

SOIL SAMPLE LOCATION MAP
OU2
NIROP FRIDLEY, MINNESOTA

CONTRACT NO. — OWNER NO.
APPROVED BY — DATE 10-10-01
APPROVED BY — DATE
DRAWING NO. FIGURE 2-3 — REV. 0

3.0 COMMUNITY BACKGROUND

3.1 COMMUNITY PROFILE

The City of Fridley covers an area of approximately 15 square miles on the east bank of the Mississippi River in Anoka County, Minnesota. The city has an estimated population of 30,000, which has remained fairly stable since the 1970 census. Fridley is located approximately 8 miles north of downtown Minneapolis and is served by Interstate 694 and state highways 47 and 65.

Fridley's economic base is comprised largely of manufacturing and service industries, employing approximately 27,500 people. With employment exceeding its workforce, the city is a net importer of employees from the surrounding communities. The largest employer in Fridley is UDLP, Armament Systems Division (operator and now owner of both the UDLP facility and the NIROP Fridley), with approximately 2,800 employees. In 2004, other major employers included the following (in descending order): Medtronic Inc., a medical technology company; Onan Corporation, a fully owned subsidiary of Cummins, Inc., manufacturer of power generation equipment; Minco Products, Inc., manufacturer of temperature instrumentation; Kurt Manufacturing Company, manufacturer of equipment; Burlington Northern [Santa Fe] Railroad; Target Stores, Inc.; the Unity Medical Center; McGlynn Bakeries, LLC Inc., producer of frozen baked products; and Park Construction Company.

Based on the 2000 U.S. Census data, the population profile of the persons living within Anoka County revealed a population cross-section that was approximately 91.9 percent White; 2.0 percent Black or African American; 2.5 percent Asian; and 1.3 percent other. Also, approximately 0.7 percent of the population is American Indian or Alaska Native origin.

The average number of persons per household in the area of influence (i.e., Anoka County, Minnesota) is 2.7 persons. The estimated average median household income in the region of influence is $62,807, with an estimated average per capita income of $24,944. An estimated 17,483 people living within the region are at or below poverty level. This data was obtained from the U.S. Census Bureau based on 2000 statistics. The U.S. Census Bureau conducts new surveys every 10 years with the next survey scheduled for the year 2010.

The City of Fridley has a council-manager form of government, with a mayor and four council members elected by city voters. The council sets city policy, which is implemented by an appointed city manager through the city's departmental structure. The city provides municipal services, including public works;

police and fire protection; parks and recreation; and water supply, treatment, and distribution. Wastewater service is provided by the MCES, electric power is supplied by Xcel Energy (formerly Northern States Power Company), and solid waste service is privately contracted.

3.2 CHRONOLOGY OF COMMUNITY INVOLVEMENT

In May 1989, several radio stations and one TV station made spot reports reflecting renewed USEPA interest in adding Federal facilities with hazardous waste problems to the National Priorities ("Superfund") List (NPL). The NIROP at Fridley was mentioned in these broadcasts. KMSP-TV broadcasted 20 seconds of footage of the plant, including the sign indicating the facility is owned by the Naval Sea Systems Command. No public inquiries were made as a result of this coverage. A Public Repository of site-related documents was established at an Anoka County Public Branch Library in Fridley on July 31, 1989. After the NIROP Fridley was added to the NPL in November 1989, several articles appeared in the local newspapers.

The Navy placed newspaper announcements and mailed fact sheets to announce the public comment period for the proposed NIROP Fridley groundwater remedy in May 1990. Approximately 15 community members and local officials attended the public meeting held on May 9, 1990. Several questions and comments were raised relating to both the protectiveness of the proposed remedial action and to possible effects on the local and regional aquifer system. Two letters containing comments were also received during the public comment period. Verbal responses were provided at the public meeting, and written responses were provided in the Record of Decision. On May 16, 1990, a front-page article appeared in the Fridley *Focus*, in which a local Navy representative provided an overview of the site's status.

Local input to the selection of the preferred remedy for OU1 was also provided through a Technical Review Committee (TRC), established by the Navy. The TRC eventually evolved into the RAB.

The Navy published a notice of availability of the Proposed Plan in the *Fridley Sun Focus* to announce the public comment period for the proposed NIROP Fridley OU2 and OU3 remedy on August 8, 2002. Community members and local officials attended the public meeting held on August 22, 2002. No written or verbal comments were submitted during the public comment period except those discussed at the public meeting on August 22, 2002.

Meetings, which have been held approximately quarterly since early 1989, bring together local representatives of the water and wastewater utilities, local governments, and Federal and state

representatives. This involvement facilitated remedial planning by the Navy and alerted interested local groups to the proposed activities.

A chronology of selected milestone events is presented below:

Early 1970s	Limited disposal at NIROP Fridley of paint sludge and chlorinated solvents in pits and trenches was performed.
September 1980	Navy implements the Naval Assessment and Control of Institutional Pollutants (NACIP) program to identify and control environmental contamination from past use and disposal practices.
February 8, 1989	Navy establishes the TRC for the project and convenes the first meeting. TRC meetings were held every 3 months until the beginning of the RAB.
May 22,1989	Public meeting to present the RI/FS is held in Fridley, Minnesota.
July 14, 1989	NIROP Fridley is listed as a proposed site on the NPL by the USEPA.
July 31, 1989	Public Repository is established at Anoka County Branch Library, 410 N.E. Mississippi St., Fridley, MN. (Public Repository since relocated to MPCA).
November 21, 1989	NIROP Fridley is listed as a final site on the NPL by the USEPA.
May 1, 1990	Navy issues final Proposed Plan for groundwater remediation after review by the MPCA and the USEPA.
May 9, 1990	Public meeting to present the Proposed Plan for groundwater remediation is held in Fridley, Minnesota.
May 1,1990 – May 30, 1990	Public comment period for the proposed groundwater remedial action.
September 28, 1990	ROD for groundwater remedial action is signed by the Navy, the MPCA, and the USEPA.
March 28, 1991	Final FFA is signed by the Navy, the MPCA, and the USEPA.

May 1991	CRP issued.
December 1991	Review of the aerial photographs, including additional photographs, was performed jointly by representatives of the Navy, the USEPA, the MPCA, FMC, and RMT. As a result of the review and subsequent discussions, additional areas of investigation were included as part of the OU2 RI.
January 1992	A RI Work Plan issued for OU2. The RI of the soils OU addresses soil contamination in the unsaturated zone (i.e., above the water table) in areas of the NIROP Fridley that are not covered by buildings or other surface structures. The scope of the soil RI was intended to investigate potential outdoor sources that may contribute to groundwater contamination.
August 20, 1992	Emergency Removal Operation North 40 Area. A total of 31 drums were excavated, sampled and overpacked drums, along with approximately 900 cubic yards of soil and debris, were removed from the excavation. Excavated drums were disposed of via incineration at USEPA Superfund Resource Conservation and Recovery Act (RCRA)-licensed facility. Associated debris (screened material) was disposed at a sanitary landfill or a RCRA-secure landfill according based on analytical results.
September 1992	Startup of original groundwater extraction well and pretreatment system (4 wells).
September 1993	OU2 RI report results indicated that VOCs, SVOCs, pesticide, hydrocarbon, and metal contamination was present in the soils at several locations.
September 1994	Results of east plating shop soil sampling. Two soil borings were completed, and several metals and cyanide were identified at concentrations greater than background levels determined during the OU2 RI.
March 1995	Work Plan was issued for the east plating shop. Proposed field activities for the soil and groundwater investigation included the installation of six soil borings and three temporary monitoring wells.
April 6,1995	Navy establishes the RAB to replace the TRC.

May 1995	East plating shop soil and groundwater investigation identified soil and groundwater contamination under the east plating shop. TCE was the primary contaminant found. Other VOCs, including TCA, acetone, styrene, and metals such as chromium, lead, and cyanide, were detected at concentrations greater than background levels determined during the OU2 RI.
June 29, 1995	Startup of 2 additional groundwater extraction wells.
September 1995	Results of a site evaluation conducted at the NIROP Fridley facility in August 1995 were presented in the Site Evaluation Report. Fifty-nine AOCs, the sanitary sewer system, and the storm sewer system were identified as potential areas requiring further investigation.
February 1996	Revisions to the Final Site Evaluation Report identified nine additional potential AOCs (AOCs 60-68) which were identified but not previously reported because they were not suspected sources of TCE contamination.
April – June 1996	North 40 drum removal action conducted. 23 drums and 12 smaller containers were removed as well as 100 cy of soil.
February 1997	Updated and issued CRP.
June 1997	The Final Field Sampling Plan for OU3 RI/FS was issued.
June 25, 1997 – March 25, 1998	Phases I and II of the field investigation for OU3 as part of the RI/FS activities were completed.
August 1998	The OU3 RI Report, Rev. 0 issued.
November 1998	CRP updated and issued.
September 1998	First Five Year Review Report issued.
August 1999	The OU3 RI Report, Rev. 1 issued.
September 1999	CRP updated and issued.

February 2000	OU2/OU3 FS issued. Upon review, Partnering Team subsequently requests Focused FS for groundwater instead.
March 2000	Rev 6 Remedial Action Work Plan (RAWP) issued (TtNUS, 2000).
April 2000	ACP Groundwater Investigation Report issued.
May 2000	Basewide Work Plan issued.
June 2000	Focused FS issued. Partnering Team subsequently shelves the FS because USEPA determines that says Navy can go directly to a Proposed Plan for this site since groundwater issues identified during the OU3 investigation can be addressed in OU1.
August 2000	Final Work Plan Addendum 1 – Modification to the Extraction System and Abandonment of Production Wells issued.
December 2000	Installation of extraction wells (AT-7, AT-8, AT-9, and AT-10); abandoned AT-2; and abandoned production wells nos. 2 and 3 completed.
March 2001	Minor Modification to OU1 Remedy Fact Sheet issued.
April 2001	Technical Memo finalizing the 1999 AMR and ACP Investigation Report issued.
May 2001	Final Work Plan - Field Application to Enhance In-situ Bioremediation of Chlorinated Solvents Via Vegetable Oil Injection issued.
May and June 2001	Abandonment of extraction wells AT-1A and AT-4; installed packer at extraction well AT-3A; and upgraded software/hardware for the GWTF system completed. Start-up of the GWTF system with new extraction wells.
September 2001	Vegetable Oil Pilot Study Workplan finalized.
December 2001	ACP Vegetable Oil Pilot Study – oil injected.
March 2002	2001 AMR issued.

April 2002	RI for OU3 and Supplemental RI Information Report (OU2) finalized.
June 2002	Action Memorandum for Excavation of PAH Contaminated Soil in Area A4 of the North 40 was finalized. Excavation was completed.
August 2002	Proposed Plan for OU2 and OU3 finalized.
August 12, 2002 – September 12, 2002	Public comment period for the proposed OU2 and OU3 remedial action.
August 22, 2002	Public meeting to present the Proposed Plan is held in Fridley, Minnesota.
March 2003	Revised OU1 RAWP finalized.
September 2003	Draft workplan for installation of new wells to confirm groundwater capture was provided to support ongoing capture analysis.
September 28, 2003	ROD for OU2 and OU3 remedial action finalized and signed by the Navy, the MPCA, and the USEPA.
October 31, 2003	Second Five Year Review Report issued.
March, 2004	LUC RD issued.
August, 2004	CRP updated and issued as CIP.

RAB meetings are held on an as-necessary basis to provide updates on site investigations and the remedial actions.

3.3 KEY COMMUNITY CONCERNS

Community interviews were conducted in the Minneapolis area in August 1990 with 20 individuals, representing both public and private interests. Representation included the following:

- Community residents
- City of Fridley: elected officials and city staff
- City of Minneapolis: elected officials and city staff
- Anoka County staff

- State and regional agencies: MPCA, MCES, Department of Natural Resources
- Local news media

The following discussion of issues related to NIROP Fridley site activities is based on the interviews and on comments received during the May 1990 public comment period. The issues and concerns are grouped by general category. Specific issues voiced during the interviews were (1) a suggestion not to treat the groundwater recovered from the site to meet standards contained in a state-approved permit and (2) a suggestion to discharge groundwater to the river. The City of Fridley had concerns about discharging the treated groundwater to the river, even if the discharge complied with drinking water standards, and raised a question about the total amount, or mass loading, of TCE that may be discharged to the river.

At the 1990 public meeting held in May 1990, questions were raised about the fate of TCE under various proposed treatment and discharge scenarios. Concern was voiced about whether TCE could possibly leak from the sanitary sewer system and if it would be effectively removed at the Pig's Eye Wastewater Treatment Plant (under Phase I discharge of extracted groundwater to the sanitary sewer system) or would still be present in the wastewater treatment plan effluent that is discharged to the river. Although apparently not a major concern, questions were also raised about the use of air stripping or other treatment technologies to remove VOCs and the resulting environmental effects.

Disposition of Extracted Groundwater

At the 1990 public meeting and during several of the interviews, community members and local officials raised various issues related to the ultimate disposition of the groundwater that would be extracted at the site. Because the estimated volume of extracted groundwater was as much as 1 million gallons per day, several people advocated further consideration of the alternatives for discharging the water, both before and after it is treated.

Concern was expressed about the effect on the capacity of the MCES sanitary sewer system if a large volume of groundwater was discharged during Phase I. Local officials questioned whether new developments might be restricted if the groundwater volume reached the maximum estimated levels during the Phase I period. Some people were concerned about discharging water that contained residual contaminants into the river.

Fridley residents and officials requested that the Navy evaluate alternatives for the reuse of the groundwater that would be treated during Phase II. Instead of discharging the treated water to the river,

as identified in the OU1 ROD, they expressed a preference for reuse of the water on the site, possibly for plant processes or cooling, or for use in irrigating parkland or for some other purpose within Fridley. The Minnesota Department of Natural Resources (MDNR) and the MPCA also supported beneficial reuse of the treated groundwater.

To address these concerns, the Navy completed a study of several options for reuse of the treated groundwater. The results of this study were presented in a report issued in December 1991, and included a recommendation for reuse of the water at the NIROP Fridley to supply the major nonpotable water uses at the facility. However, modifications to the plant's cooling water system that were made subsequent to this recommendation have made reuse of the groundwater within the plant impractical. Although feasible options for groundwater reuse do not currently exist, the Navy will continue to identify and assess any new options that may develop in the future.

The MPCA addressed the concern regarding the discharge of residual contaminants to the river from groundwater during preparation of the permit for the discharge of the treated groundwater under the National Pollutant Discharge Elimination System program. A final permit for the discharge was issued by the MPCA. The discharge limits in the permit were established by the MPCA to ensure that the discharge would be protective of human health and the environment.

Effect on Water Resources

City of Fridley officials expressed concern about the potential effect of pumping groundwater from the site on the aquifer system and nearby wells and on the moisture content of soil layers in the area. The question was whether the pumping would deplete the unconfined aquifer faster than it would recharge, and whether soil moisture content would decrease to a point where subsidence or instability could result. The City of Fridley transmitted written comments and questions on these issues during the comment period on the proposed remedy, and responses were provided in the OU1 ROD.

Other individuals expressed concerns about the overall effect on water resources. Drought conditions in recent years had resulted in increased reliance on groundwater supplies, and some individuals were concerned about drawing down the supply. Although it was recognized that the groundwater beneath the NIROP Fridley was not used as a water supply, people asked whether pumping at the site would affect groundwater availability in other areas. Representatives of the City of Minneapolis raised the question of what potential effects the pumping from the unconfined aquifer would have on Mississippi River flow volume.

Institutional Issues Related to Remedial Action

The selected remedial action for groundwater requires the involvement of several government entities. Groundwater was discharged to the sanitary sewer system during Phase I under a permit from the MCES, which also collects user fees based on the volume of discharge. Because the MCES provides service on a contract basis to the City of Fridley rather than to individual customers, the City is billed for the NIROP Fridley discharge. The City, in turn, collects the appropriate fees from the Navy. Prior to design of the extraction well system, the City was concerned about accurately measuring the volume of groundwater pumped into the sewer so that the Navy could be charged for its usage. Flow meters have been provided with the groundwater extraction system to record the total flow volume discharged to the sewer.

Other individuals requested information about the institutional relationships, permitting requirements, and regulatory responsibilities related to remedial site activities. Several people asked for clarification of the roles of the Navy, the MPCA, the USEPA, the MCES, and local entities, both in implementing the remedy and in monitoring compliance during ongoing cleanup activities.

Investigation Issues

As part of the RI field efforts of OU2 and OU3, additional questions were asked. These questions required explanations of specific activities, such as installation of temporary wells. Questions were also raised concerning the preliminary analytical results and geological conditions. Remedial options for OU2 were also discussed.

3.4 OTHER CONCERNS

Since the original public meeting in 1990, the Minneapolis Water Works (MWW) has become active in the NIROP Fridley RAB. The MWW has stated that they are completely dependent on the Mississippi River to provide a daily drinking water supply to approximately one-half million people. The MWW system doesn't have any significant storage capacity except for the water currently in the system. Therefore, the MWW is very sensitive to any Mississippi River condition that would impact their ability to provide safe water. The MWW does perform pretreatment steps, but these are mostly limited to filtration and treatment to ensure against undesirable taste and odor. These treatment steps are not designed to remove large quantities of industrial contamination from the river water. NIROP Fridley attempts to be very responsive to all MWW concerns and considers that MWW and NIROP Fridley have a good working relationship.

The MWW also expressed concern with the discharge of treated groundwater to the Mississippi River. At NIROP Fridley, groundwater collected by the containment system is directed to the onsite treatment plant where the VOCs are removed. In order to protect this treatment equipment, chemical agents are added to the wastewater in the treatment plant to prevent mineral hardness scaling deposits. The MWW was concerned that this same chemical, which prevents settling in the NIROP Fridley treatment process, would hinder the MWW treatment processes for drinking water. The chemical manufacturer has stated that the residual of the small concentration of chemical added in the NIROP Fridley plant would not disrupt the MWW processes.

4.0 ELEMENTS OF COMMUNITY INVOLVEMENT PLAN

4.1 RESTORATION ADVISORY BOARD

In April 1995, the Navy established the RAB for the NIROP Fridley. The purpose of the RAB is to establish and maintain a forum for the open exchange of information between Federal and state agencies and the community concerning restoration activities at the NIROP Fridley, and to receive advice and comments on such activities. The RAB replaced the TRC, which had served as the primary forum for community members, regulatory agencies, and other government groups to provide comments prior to creation of the RAB. The RAB provides an opportunity for direct input by members of the community into the environmental restoration plans for the site, through the Community co-chair or community RAB member representing the affected stakeholder.

4.2 OBJECTIVES AND HIGHLIGHTS

In order to ensure opportunities for community participation, the Navy has developed the NIROP Fridley Community Involvement Plan. Informational activities will be conducted during investigations and the remedial action phase for the three OUs identified at the facility. This CIP will give citizens the opportunity to comment throughout the investigative and decision-making process. Citizens are encouraged to participate in the process to help determine how local concerns may impact long-term decisions. The following methods will be used throughout the CIP process to accomplish the established objective.

Citizen Involvement

- Develop two-way communication between the community and decision makers through methods such as the RAB. Where warranted, the Navy will utilize local-access cable TV networks or print media to augment the RAB.

- Provide opportunities for formal and informal comments on documents and plans. Hold meetings with individual citizens, area clubs, and groups when needed or requested. Include the name and telephone number of the program contact person in all correspondence concerning the project.

- Hold both formal and informal public meeting(s) and public availability sessions to discuss RI results and suggested cleanup alternatives. Provide information through updates to the CIP, periodic fact sheets, and press releases to the local media.

Inform the Public

The CIP will inform the public of the nature of the environmental problems, threats it may pose, environmental and health risks involved, the responses under consideration, and the progress of the RI/FS and remedial action work. The following methods will be used throughout the CIP process.

- Provide information, including studies and reports, in an Information Repository for public access and use.
- Create a mailing list of concerned citizens (RAB members – Appendix A).
- Establish a point of contact and address to receive input from the public (Appendix B).

Conflict Resolution

The third objective is to focus and resolve conflicts that may arise. The following methods will be used throughout the CIP process:

- Identify conflict and develop a forum for resolution, if doing so appears to serve a useful purpose for both the Navy and the community.
- Provide experts to address questions about RI results and alternatives.

The signing of the Record of Decision on September 28, 1990, initiated Phase I of the remedial action, including the construction of the groundwater extraction system and the discharge of groundwater to the sanitary sewer. The onset of construction activity associated with remedial action sometimes generates heightened public awareness or concern. However, no inquiries or concerns were expressed by persons from the community during construction of the OU1 remediation facilities that are currently in use at the Fridley NIROP.

4.3 COMMUNITY INVOLVEMENT ACTIVITIES

Community involvement activities planned by the Navy include the following:

1. Maintenance of Information Repositories and Administrative Record

   The Navy has established information repositories at the MPCA office in St. Paul (see Appendix B for locations and telephone numbers). Documents and reports of interest to the public, such as

the RI, FS, ROD and this CIP, and fact sheets prepared during the course of the investigation and remedial processes, will be placed in the repositories. Availability of the Information Repository will be announced in all public notices and news releases issued by the Navy. The Navy will also maintain and announce access to the Administrative Record for the site, which contains all data and documentation supporting site decisions.

2. Restoration Advisory Board

The Navy will continue holding meetings of the RAB as warranted to discuss key environmental activities, or as general update meetings. Representation on the RAB includes local, state, and Federal officials, and other groups representing the public interest (see Appendix A).

3. Direct Contact with Key Local Officials and RAB Members

The Navy will contact local representatives on the RAB prior to releasing information to the media concerning site decisions, major findings, or technical milestones. Follow-up briefings or meetings will be held if necessary.

4. Fact Sheets and News Releases

In addition to the required notices, the Navy will continue to prepare fact sheets and news releases periodically to keep the public informed of site activities and progress. These will be keyed to technical milestones, such as completion of the groundwater treatment facility design. Fact sheets and/or copies of the news releases will be sent to the parties on the full NIROP Fridley mailing list and placed in the information repositories for public availability.

5. Additional Informal Public Meetings

With exception of the RAB meetings, the Navy does not expect to hold any informal public meetings. This is based on the fairly advanced status of the overall remedial activity. If local interest appears to be sufficient, the Navy may revisit this issue. The timing would depend on the level of interest but could be planned to present topics such as the recommended design of auxiliary groundwater remedy.

6. Local Information Contact

The Navy has designated a local contact person (Mr. Wayne Hanson, 763/572-6360) to respond to public inquiries about site activities. Mr. Morrow will be informed about the general background and technical aspects of the work but may refer highly technical questions to a technical expert on the project.

7. Review and Update Community Involvement Plan

The Navy will review/modify this CIP whenever necessary to ensure its effectiveness in keeping both local officials and the general public informed about the NIROP Fridley site.

4.4 DRINKING WATER SUPPLIER REPORTS

Starting in 1999, and continuing annually thereafter, all drinking water suppliers are required by Federal regulation to notify their customers about compounds in their drinking water. These Consumer Confidence Reports are required under the Safe Drinking Water Act. Reporting requirements vary by size of the community or suppliers, but all suppliers must make the information available upon request, and most will be required to mail information directly to customer's residences without request. For the MWW, this report will identify concentrations of all chemicals detected in the Mississippi River intake. Chemicals in the Mississippi River could be the result of many source areas including industrial facilities, including NIROP Fridley, agricultural fertilizer runoff, and other sources. Some sources of contamination into the Mississippi River may not have been identified to date. Residents should contact their water supplier with any questions or to obtain copies of these reports. The Minnesota Department of Health can also assist with questions about drinking water quality.

REFERENCES

Most of the following documents were referenced in this CIP. However, all documents following are part of the Administrative Record and together provide the record of site remedial activity.

Bay West, 1992. emergency removal operation, August.

Bay West, 1994. results of East Plating Shop soil sampling, September.

Brown & Root Environmental (B&R Environmental), 1995. Site Evaluation Report, September.

CH2MHill, 2001. Modification to the Groundwater Extraction System and Abandonment of Production Wells, Fridley, Minnesota, October.

Halliburton NUS, 1995. Draft Field Investigation Summary Report, East Plating Shop Soil and Groundwater Investigation for Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Prepared for the Department of the Navy, Pittsburgh, Pennsylvania, May.

Morrison Knudsen Corporation, 1996. Completion Report for Removal Action at North 40, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, Revision 1, December.

Parsons Engineering Science, Inc., 2001. Final Work Plan - Field Application to Enhance In-situ Bioremediation of Chlorinated Solvents Via Vegetable Oil Injection, May.

RMT (RMT, Inc.), 1987. Remedial Investigation Report for Remedial Investigation/Feasibility Study at Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, June.

RMT, 1988b. Feasibility Study Report for Remedial Investigation/Feasibility Study at the Naval Reserve Ordnance Plant, Fridley, Minnesota, July.

RMT, 1988c. Addendum to the Feasibility Study Report for Remedial Investigation/Feasibility Study at the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, August.

RMT, 1992a. Remedial Investigation Work Plan for the Soil Operable Unit at the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, January.

RMT, 1992b. Determination of Groundwater Containment System Effectiveness for the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, Revision 0, December.

RMT, 1993. Remedial Investigation Report for the Soils Operable Unit at the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, September.

RMT, 1995a. Final Work Plan for Improvement of Groundwater Containment System Effectiveness for the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, January.

TtNUS, 2000?. Feasibility Study Report for Operable Units 2 and 3, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, February.

TtNUS, 2000. Minor Change, Groundwater Recovery and Treatment System, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Factsheet. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, May.

TtNUS, 2004. Land Use Control Remedial Design, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, March.

TtNUS, 2002. Remedial Investigation for Operable Unit 3, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, April.

TtNUS, 2002. Supplemental Remedial Investigation Information Report, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, April.

TtNUS, 2002. Action Memorandum for Excavation of PAH Contaminated Soil in Area A4 of the North 40, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, June.

TtNUS, 2003. Proposed Plan for Operable Unit (OU) 2 and Operable Unit (OU) 3, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, August.

TtNUS, 2003. Remedial Action Monitoring Plan, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, January.

TtNUS, 2003. Five Year Review, Operable Unit (OU) 1, Naval Industrial Reserve, Ordnance Plant, Fridley, Minnesota. Prepared for Southern Division, Naval Facilities Engineering Command. Pittsburgh, Pennsylvania, October.

USEPA (U.S. Environmental Protection Agency), 1990. Record of Decision for Groundwater Remediation at the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, September 28.

USEPA et al, 1991. Federal Facility Agreement Under CERCLA Section 120 Between the United States Environmental Protection Agency - Region V and the United States Department of the Navy and the Minnesota Pollution Control Agency, March.

USEPA, 1998. Five-Year Review Report, Naval Industrial Reserve Ordnance Plant Site, Fridley, Minnesota, Pursuant to CERCLA. Region 5, Chicago, Illinois, September.

USEPA, 2002. Superfund Community Involvement Toolkit, (EPA 540-K-01-004), September.

APPENDIX A

RESTORATION ADVISORY BOARD MEMBERS

Mr. Richard Harris
Community Co-Chair, Citizen of Fridley
6200 Riverview Terrace
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Mr. Wayne Hanson
Navy Co-Chair, Site Technical Representative (NAVSEA Technical Representative)
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e-mail: Hansonwayned@aol.com

Mr. David Douglas
Project Manager
Minnesota Pollution Control Agency
Site Response Section
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Mr. Tom Smith
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U.S. Environmental Protection Agency
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Mr. Dan Owens
Navy Project Manager
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Mr. Jon Haukaas
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APPENDIX A

RESTORATION ADVISORY BOARD MEMBERS

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Mears Park Centre
230 East 5th Street
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Mr. Yasser Abouaish
Minneapolis Water Works, City of Minneapolis
4300 Marshall Street
Minneapolis, MN 55421

Ms. Laura Graves
Anoka County Environmental Department, Anoka County
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Mr. Doug Hildre
UDII Environmental Manager
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APPENDIX B

EPA REGIONAL CONTACTS

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Smith.Thomasl@epamail.epa.gov (email)

APPENDIX C

LOCAL OFFICIALS

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APPENDIX D

STATE OFFICIALS

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Minnesota Pollution Control Agency
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(651) 296-9707 (FAX)
david.douglas@pca.state.mn.us (email)

APPENDIX E

FEDERAL ELECTED OFFICIALS

See State/Regional telephone directory.

APPENDIX F

ENVIRONMENTAL AND ACTIVE CITIZENS GROUPS

None known.

APPENDIX G

MEDIA CONTACTS

For placement of legal notices and RAB meeting notifications in the Fridley Sun newspaper, the Navy establishes contact via the following email link:

info@focusnews.com

The Navy does not otherwise routinely utilize media contacts.

APPENDIX H

MEETING LOCATIONS

The RAB meetings have historically been held at NIROP Fridley. However, as of the June 2004 sale of the plant, future meeting locations have not been determined. It is uncertain at this time facilities for meetings will be available at NIROP. RAB Meeting Location and Schedule – TBD.

All persons on the RAB mailing list will be advised by US Mail of the next RAB meeting date and location.

APPENDIX I

REPOSITORY / ADMINISTRATIVE RECORD LOCATIONS

Project Manager
Minnesota Pollution Control Agency
Site Response Section
Groundwater and Solid Waste Division
520 Lafayette Road
St. Paul, MN 55155

ADDITIONAL LOCATIONS AND CONTACTS

Project Manager
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Remedial & Enforcement Response Branch
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Chicago, IL 60604-3590

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Naval Facilities Engineering Command
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APPENDIX J

OTHER LOCAL RESOURCES

None.