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FIVE-YEAR REVIEW REPORT

NUTTING TRUCK AND CASTER SITE
FARIBAULT, MINNESOTA

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Date

I. PURPOSE

The United States Environmental Protection Agency (EPA) has conducted a Five-Year Review of the Remedial Action (RA) conducted at the Nutting Truck and Caster Site, Faribault, Minnesota. This review was intended to evaluate whether the RA remains protective of public health and the environment.

Section 121(c) of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substance Contingency Plan (NCP), require that periodic (no less often than five years) reviews are to be conducted for sites where hazardous substance, pollutants, or contaminants remain at the site above levels that will not allow for unlimited use or unrestricted exposure following the completion of all remedial actions for the site.

OSWER Directive 9355.7-02 (Structure and Components of Five-Year Reviews, May 23, 1991) provides that EPA will conduct five-year reviews as a matter of policy (Policy Review) at (1) sites where no hazardous substances will remain above levels that allow unlimited use and unrestricted exposure after completion of the RA, but the cleanup levels specified in the ROD will require five or more years to attain, or (2) sites addressed pre-SARA at which the remedy, upon attainment of the cleanup levels, will not allow unlimited use and unrestricted exposure. The five-year review of the Nutting Site RA was conducted in accordance with this policy.

EPA has established a three-tier approach to conducting five-year reviews, the most basic of which provides a minimum protectiveness evaluation (Level I review). EPA determines the level of the review based on site-specific considerations, including the nature of the response action, the status of on-site response activities, and proximity to populated areas and sensitive environmental areas. A Level I review was conducted at the Nutting Truck and Caster Site, and consisted of (1) a review of all documents associated with the RA and (2) a site visit.

The Nutting Company has performed the RA at the Nutting Site in accordance with a Response Order by Consent (Consent Order) signed on September 22, 1987 by the Minnesota Pollution Control Agency (MPCA). The U.S. EPA was not signatory to the order. A Remedial Action Plan (RAP) was attached as an appendix to the Consent Order. The major component of the selected remedial action was the installation of a groundwater extraction well system.

II. SUMMARY OF SITE CONDITIONS

A. Site Background

The Nutting Company is located at 1221 Division Street in the town of Faribault, Rice County, Minnesota (Figure 1). Between 1891 and 1984 the company manufactured and distributed casters, wheels, handtrucks and towline trucks at its Faribault facility. Adjacent land use consists of mixed residential, commercial, and light industrial.

Prior to 1970, foundry wastes were disposed of in an abandoned gravel pit on-site. Beginning in 1959, Nutting used a seepage pit in the northwest corner of the gravel pit for disposal of waste and sludges, including waste solvents. This operation continued until April 1979, when the Minnesota Pollution Control Agency (MPCA) issued a Notice of Noncompliance to the company regarding its disposal practices. In 1980, under the direction of MPCA, Nutting excavated all materials and contaminated soils associated with the disposal pit. The excavated area was backfilled and paved (Figure 2). The MPCA concluded that the excavation effectively removed all source materials associated with disposal practices in the former sludge pit.

From 1979 to 1983, Nutting installed six monitoring wells on its property, including one upgradient and one downgradient from the former disposal pit. Analysis of ground water samples showed that ground water beneath the pit was contaminated with cadmium, lead, cyanide, methylene chloride, trichloroethylene (TCE), and xylene. Of these, TCE was also detected in wells upgradient and at the boundary of the Nutting property.

The city of Faribault operates five municipal wells which are located approximately one-half mile downgradient of the Nutting facility. In October and November 1982, well water analysis showed that all five of Faribault's municipal wells were contaminated with TCE and 1,2-Dichloroethylene, a degradation product of TCE. On April 26, 1984, MPCA issued a Response Order by Consent (Consent Order) to the Nutting Company to conduct a Remedial Investigation (RI) to determine the extent of contamination at the site and the effect of contamination on the city's municipal wells.

The Nutting site was placed on the United States Environmental Protection Agency's (U.S. EPA) National Priorities List (NPL) of abandoned or uncontrolled hazardous waste sites, eligible for investigation and cleanup under Superfund, on September 8, 1983.

B. Results of Site Investigations

1. Ground Water

RI water quality monitoring data indicated that TCE, at concentrations up to 570 ug/L, and 1,2-dichloroethylene were present in shallow ground water at the Nutting site and in wells both up and downgradient of the site. Ground water at the site is located in glacial outwash deposits consisting primarily of sand and gravel. This glacial drift is underlain by the St. Peter Sandstone, and together they comprise the upper aquifer. The base of the St. Peter is a clayey sandstone which was found to retard but not prevent vertical migration of ground water. The Prairie du Chien group (Oneota and Shakopee Dolomites and New Richmond Sandstone) underlies the St. Peter/Drift aquifer. An upward vertical gradient between the two aquifers was confirmed during investigations, indicating that the units are at least slightly hydraulically connected. TCE was detected in one on-site well within the Prairie du Chien formation.

Water level measurements in St. Peter/Drift wells and Prairie du Chien wells both indicate that the general ground water flow direction at the site is to the north-northeast, toward the Faribault wells.

2. Soil and Surface Contamination

Several soil borings were drilled on the southern portion of the Nutting site. The purpose of these borings was to determine if wastes other than foundry waste were disposed of in the old gravel pit area, and therefore represents a source of contaminants detected in the upgradient well.

Boring samples were analyzed by head space gas chromatography on-site. In general, contamination detected was limited to surface or near surface soils. This contamination was attributed to spillage occurring during drum handling in those area.

III. SUMMARY OF RESPONSE ACTIONS

The RA was completed by the Nutting Company in accordance with the September 22, 1987 Consent Order and Response Action Plan, and included the following actions:

A. Ground Water Remedial Action

The ground water remedial action includes an extraction well system and discharge to the storm sewer and to Crocker's Creek under a MPCA NPDES permit (Figure 4). Two shallow ground water pump out wells were installed just north of the Nutting property. One well is screened in the glacial drift alluvium and the other in the St. Peter sandstone formation. The system began operation

on November 25, 1987, and original response action levels for ground water have been achieved. The response level for TCE was set at 50 ug/L in the Consent Order. However, the Safe Drinking Water Act sets the Maximum Contaminant Level (MCL) for TCE in groundwater at 5 ug/L. A discussion of Applicable or Relevant and Appropriate Requirements (ARARs) for the groundwater remedial action are contained in the ARARs Review section of this report.

B. Monitoring Well Network

A groundwater monitoring program was established to assess the effectiveness of the groundwater pump-out system and to detect any future contamination migration from the Site. Currently, 10 wells (including the two pump out wells), the catch basin, and the outfall area at the discharge to Crocker's Creek are sampled semi-annually (Figure 3). The groundwater samples are analyzed for TCE, 1,1-dichloroethylene, and 1,2-dichloroethylene. Analysis for Oil and Grease, pH, and Total Organic Carbon (TOC) is also conducted on samples from the catch basin. The results are summarized and submitted to the MPCA. Groundwater will be extracted until the response level for TCE is achieved.

IV. REMEDIAL OBJECTIVES

A. Groundwater Extraction System

The groundwater extraction system was designed to remove and contain contaminated groundwater beneath the Nutting Site, preventing migration laterally and into deeper aquifers. Operational and analytical data from the system are summarized on an annual basis.

Monitoring of the extraction system indicates that hydraulic containment of the groundwater plume is being accomplished. Monitoring well and extraction well sampling data has shown a gradual decrease in contaminant levels in the groundwater (Table 1). Contaminant levels are approaching asymptotic conditions for extraction wells PW-17 at 20 to 30 ug/L, and PW-18 at about 10 to 15 ug/L, for TCE, respectively. However, as noted above, the MCL for TCE is 5 ug/L.

V. APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) REVIEW

Five-Year Review guidance established policy for EPA to review and analyze the remedial action at a site as it is affected by newly promulgated or modified Federal and State environmental laws. ARARs associated with the construction and long-term maintenance and monitoring of the remedial action at the Nutting Site were not addressed in the Consent Order because the April, 1984 Consent Order pre-dates establishment and use of ARARS. A clean-up standard of 50 ug/L was set for TCE, the main

contaminant of concern. The Consent Order mandates that "The purpose for implementing the selected RA is to abate or minimize the release or threatened release of hazardous substances associated with the Nutting Site". The remedial action must meet all identified applicable or relevant and appropriate Federal and more stringent State requirements. ARARs for the selected remedy are listed below.

1. Safe Drinking Water Act (SDWA), 40 CFR Parts 141-143. Establishes MCLs for groundwater remediation.

2. National Pollution Discharge Elimination Permit. Permit Number 0057541.

3. Minnesota Rule 4717.7100 to 4717.7800. Health Risk Limits (HRLs) for groundwater contaminants.

4. Minnesota Rules Ch. 7050 for discharge to a surface water body.

5. Minnesota Rule 7060. Establishes uses and nondegradation goal for groundwater.

6. Minnesota Rule 4725. Water well code. Establishes standards for the construction, maintenance and sealing of wells.

To-Be-Considered (TBC) Criteria

1. Minnesota Department of Health (MDH) Recommended Allowable Limits (RALs), Release No. 3 Establishes contaminant specific performance standards for groundwater remediation.

The remedial action performance standards for groundwater are the SDWA MCLs for public water supplies and the Minnesota HCLs and RALs. HCLs are used in place of RALs where both exist for a contaminant. Table 2 identifies the MCLs, HCLs, RALs and selected cleanup goals for contaminants in groundwater at the Nutting Site, along with recent maximum concentrations of VOCs from pump-out well samples collected in 1993.

Contaminated groundwater is extracted by pumping, prior to discharge to the storm sewer and, eventually, Crocker's Creek. This activity is regulated by the requirements of the NPDES permit issued for discharge. The NPDES permit establishes site discharge limits for VOCs, which are monitored in accordance with the requirements of the permit, and reported to MPCA.

VI. SUMMARY OF SITE VISIT

The Nutting Site was visited on November 5, 1992, by EPA's Remedial Project Manager. The purpose of the site visit was to determine the current status of the Site and the adequacy of the site cleanup. The MPCA project manager and a representative from the Nutting Truck and Caster Company accompanied EPA on the tour. Site background was discussed and information on Operation and Maintenance (O&M) was obtained.

A. Site Use

The Nutting Company has moved its operations to South Dakota. The various buildings on site are being rented to local agencies and business for office and warehouse space, or are vacant. The area of the old disposal pit remains covered by a concrete pad, which is intact and in good condition.

B. Groundwater Extraction and Monitoring Wells

The two extraction wells were observed in operation. The Nutting representative indicated that the wells are inspected once every two weeks. Groundwater monitoring wells were capped and locked and appeared intact. No damaged well casings were noted.

VI. RECOMMENDATIONS

Based on the November 5, 1992 inspection, it appears that the groundwater remedy remains operational and functional. Review of groundwater monitoring data indicates that the levels of TCE in the pump-out wells has been relatively consistent, or decreasing, and are below the cleanup standard of 50 ug/L set in the Consent Order. However, the MCL for TCE is 5 ug/L. TCE in groundwater above the MCL still represents a risk to human health, from ingestion of contaminated groundwater above this health based standard.

It is clear from the data that the remedial action may never achieve a goal of 5 ug/L TCE in groundwater using the current pump out system. Other available technologies may be implemented which could potentially speed up the groundwater remediation. EPA recommends that Nutting continue with O&M and monitoring of the groundwater extraction system. In addition, available technologies such as in-situ bioremediation, air sparging, or vacuum extraction should be explored.

As long as the Nutting Company continues extraction system operation, the system should continue to contain the contaminant plume, and prevent migration of site related contaminants to the City of Faribault well field.

VII. STATEMENT OF PROTECTIVENESS

The groundwater extraction system is both operational and functional, and continues to provide adequate protection of human health and the environment.

VIII. NEXT REVIEW

It is probable that hazardous substances, pollutants or contaminants will remain at the Nutting Truck and Caster Site which will not allow for unlimited use or unrestricted exposure. EPA will conduct another Five-Year Review by March 31, 1999. This review will be a Level I Review, consisting of review of all recent groundwater monitoring data and newly promulgated environmental laws.

TABLE 1
NUTTING MONITORING WELL DATA

Concentration of TCE in ug/L

SAMPLE EVENT	Well No.								
	B-4	B-5	B-8	B-12	W-13	W-14	B-15	PW-17	PW-18
11-25-87	*						82	59	36
12-11-87							80	37	6.9
12-21-87								42	22
1-13-88								50	21
2-4-88							28	27	18
3-21-88								53	27
5-18-88								21	27
7-27-88							28	33	30
9-1-88							14	83	25
4-7-89							6.7	54	16
5-15-89	140		ND	ND	9.1	ND	8.3	36	16
8-16-89					21		3.7	32	16
10-23-89	47		ND	ND	9.6	ND	6.8	46	16
1-2-90					8.7		5.5	40	15
5-8-90	26		ND	ND	33	ND	5.5	29	15
8-20-90							6.7	27	12
12-11-90	73		ND	ND	9.4	ND	5.5	28	11
3-11-91					14		4.8	20	10
6-18-91	62		ND	ND	7.9	ND	5.5	19	10
9-10-91							4.4	31	13
6-11-92	44	12	ND	ND	ND	ND	4.1	29	9.9
11-24-92	37				22		5.3	8.9	16
7-14-93	28		ND	ND	31	ND	4.0	5.2	13
11-11-93	20				9.5		12	6.2	13

TABLE 2
GROUNDWATER CLEANUP STANDARDS

Chemical Parameter	1993 Max. Pump Wells Conc. - ug/L	MCL ug/L	HCL ug/L	RAL ug/L	Cleanup Goal ug/L
Trichloroethene	13	5	None	30	5
1,1-Dichloroethene	ND	7	6	6	6
1,2-Dichloroethene (cis)	ND	70	None	70	70
1,2-Dichloroethene (trans)	ND	100	100	100	100
1,2-Dichloroethene, total	ND	NA	None	NA	NA

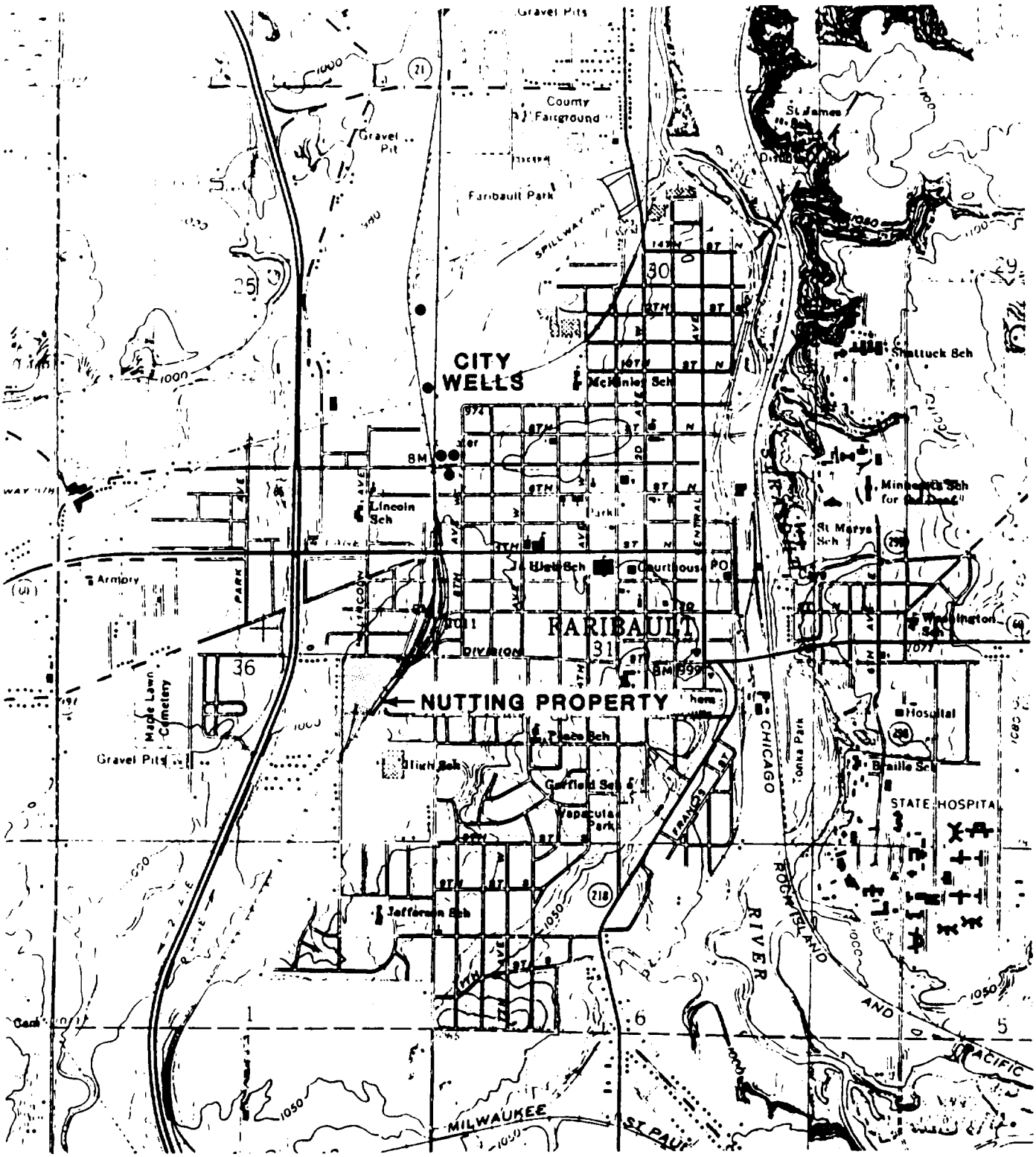
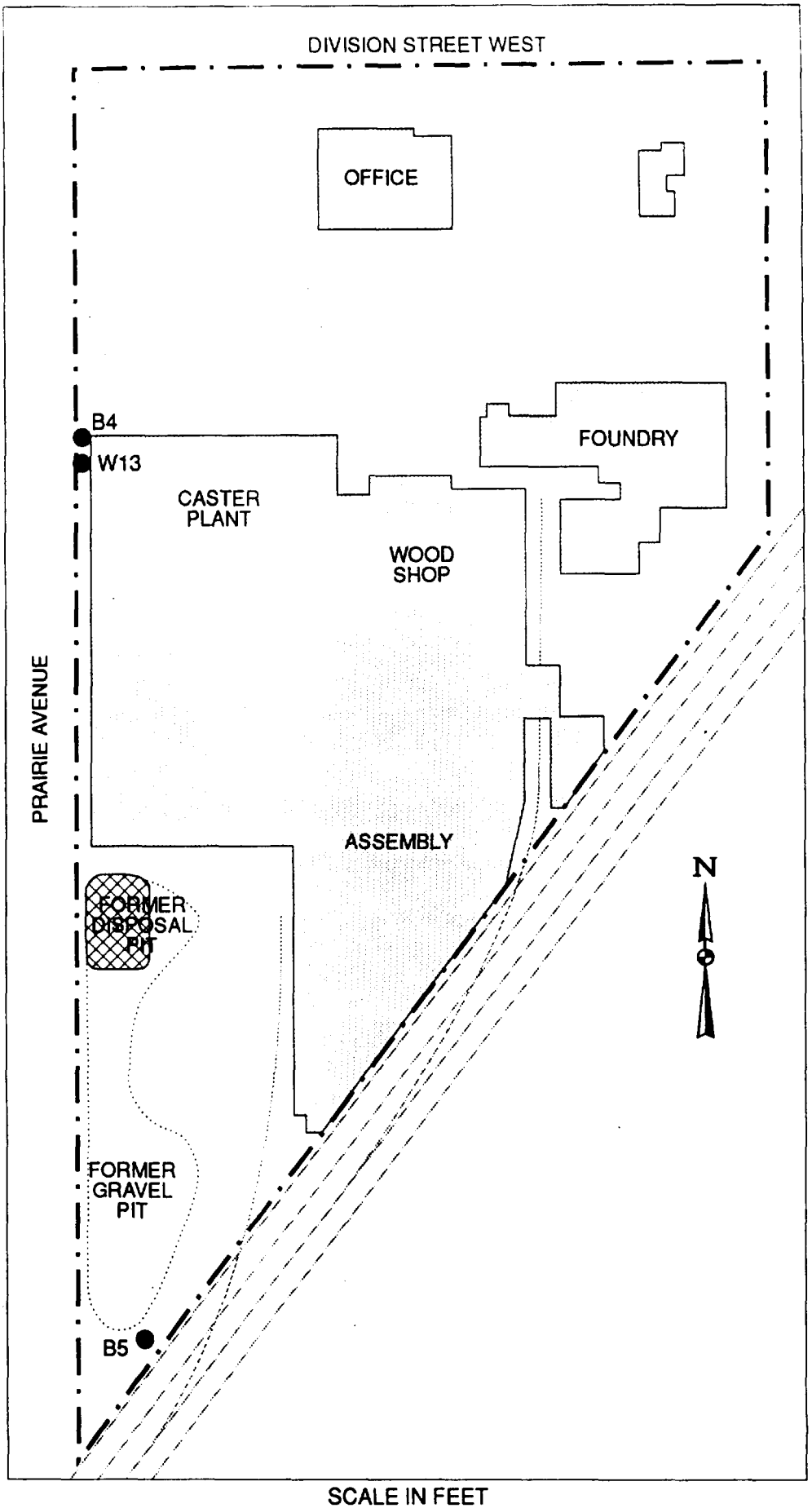


Figure 1

LOCATION MAP

The Nutting Company
Faribault, Minnesota



SCALE IN FEET

0 100 200 300 400 500

FIGURE 2
PROPERTY MAP
THE NUTTING COMPANY

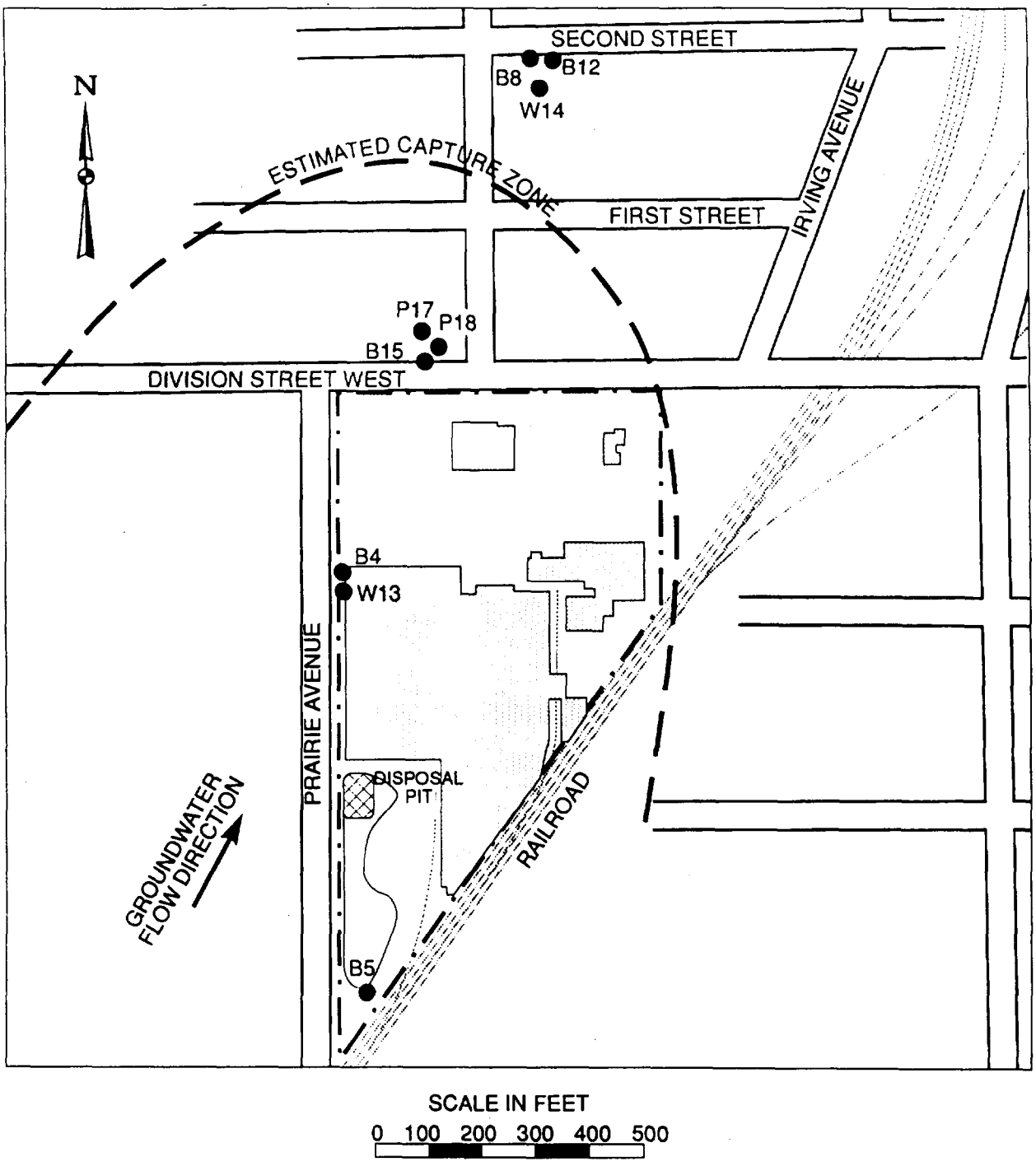
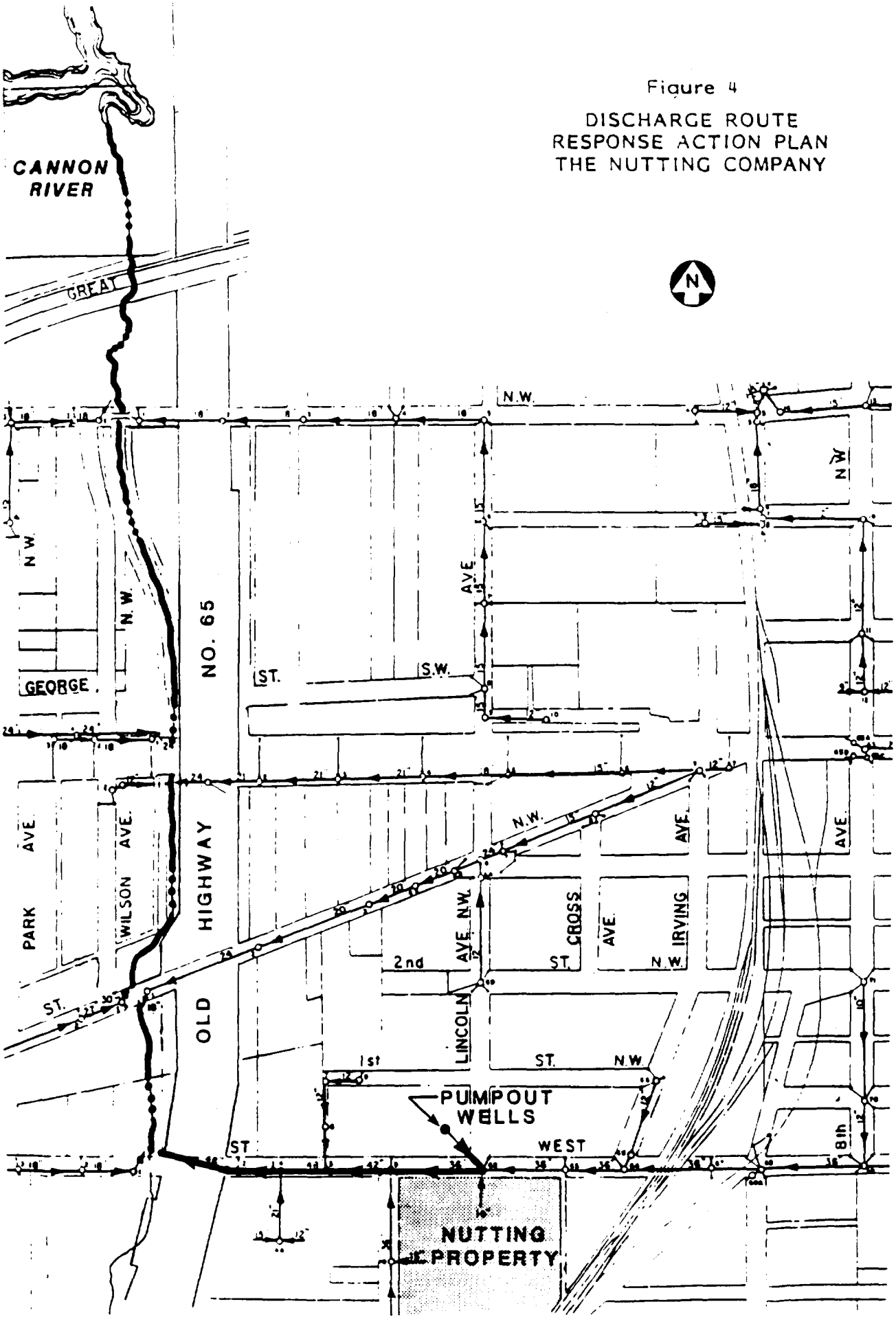


FIGURE 3
MONITORING WELLS AND REMEDIAL ACTIONS

THE NUTTING COMPANY

Figure 4

DISCHARGE ROUTE
RESPONSE ACTION PLAN
THE NUTTING COMPANY