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Date

12 Jun 98

TO: *(Name, office symbol, room number, building, Agency/Post)*	**Initials**	**Date**
1. U.S. Environmental Protection Agency, Region VII		
2. ATTN: Bob Koke SUPR|FFSE		
3. 726 Minnesota Avenue		
4. Kansas City, KS 66101		
5.		

	Action		File		Note and Return
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	Coordination		Justify		

REMARKS

Final ESD, dated February 7, 1997. No changes in text from final draft distributed in Feb 1997.

CF:
Nebraska Department of Environmental Quality, P.O. Box 98922, Suite 400 Atrium, Lincoln, NE 68509-8922

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FROM: *(Name, org. symbol, Agency/Post)*	Room No.—Bldg.
CHAAP TOM JAMIESON	Phone No. (308) 381-0313

Explanation of Significant Differences

CORNHUSKER ARMY AMMUNITION PLANT (CHAAP) OPERABLE UNIT ONE

Grand Island, Nebraska — February 7, 1997

INTRODUCTION

This Explanation of Significant Differences (ESD) is being issued for Operable Unit One (OU1) at Cornhusker Army Ammunition Plant (CHAAP) in Grand Island, Nebraska. This ESD represents the notice of a difference from the remedial action selected in the OU1 Record of Decision (ROD), which was changed by the previous ESD May 1996. The Army considers the difference is to be significant, but not fundamental to the remedy selected in the OU1 ROD. The ESD is issued by the U.S. Army (Army), the owner of the site, with the concurrence of the U.S. Environmental Protection Agency (EPA), the lead regulatory agency for site activities and the Nebraska Department of Environmental Quality (NDEQ), the support agency for site activities.

The Army is issuing this ESD as part of its public participation responsibilities under Section 117 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, commonly known as the "Superfund Program."

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This ESD will become a part of the Administrative Record for the site. The Administrative Record contains all information that has been used to select the response action as well as to decide upon this difference. The public is encouraged to review the other OU1 documents in the Administrative Record to gain a more comprehensive understanding of the site and the environmental activities that have been conducted there. The Administrative Record is available for public review at the following locations:

CORNHUSKER ARMY
AMMUNITION PLANT
102 North 60th Street
Grand Island, NE 68802
(308) 381-0313
Hours: Monday - Friday, 8 a.m.- 5 p.m.

GRAND ISLAND PUBLIC LIBRARY
211 N. Washington Street
Grand Island, NE 68801
(308) 381-5333
Hours: Monday-Wednesday, 10 a.m.- 9 p.m.

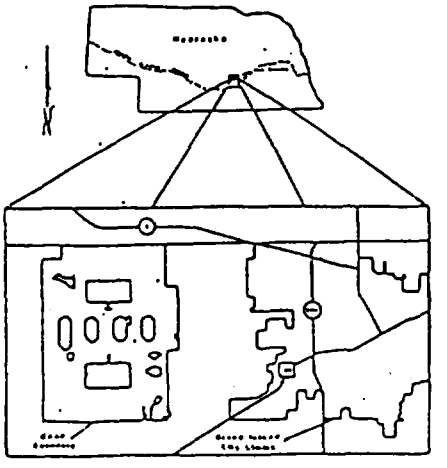
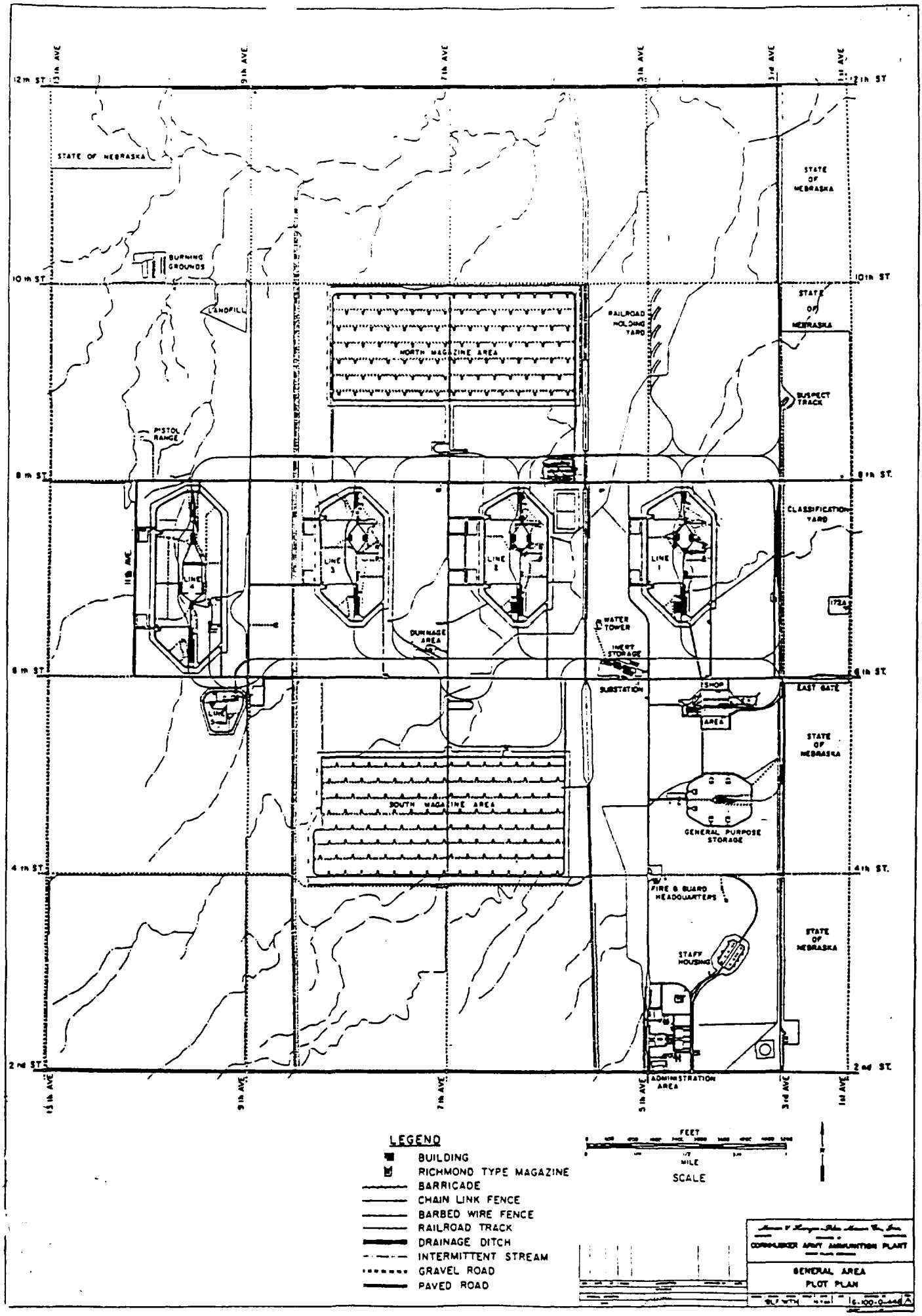


Figure 1. Location Map, Cornhusker Army Ammunition Plant and Vicinity (approximate scale, 1 in. = 5.6 miles).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3rd AVE
1st AVE
STATE OF NEBRASKA
BURNING GROUNDS
LANDFILL
NORTH MAGAZINE AREA
RAILROAD HOLDING YARD
SUSPECT TRACK
PISTOL RANGE
CLASSIFICATION YARD
11th AVE
LINE 1
LINE 2
LINE 3
LINE 4
LINE 5
DRAINAGE AREA
WATER TOWER
INERT STORAGE
SUBSTATION
SHOP AREA
EAST GATE
SOUTH MAGAZINE AREA
GENERAL PURPOSE STORAGE
FIRE & GUARD HEADQUARTERS
STAFF HOUSING
ADMINISTRATION AREA
LEGEND
BUILDING
RICHMOND TYPE MAGAZINE
BARRICADE
CHAIN LINK FENCE
BARBED WIRE FENCE
RAILROAD TRACK
DRAINAGE DITCH
INTERMITTENT STREAM
GRAVEL ROAD
PAVED ROAD
FEET
MILE
SCALE
CORNHUSKER ARMY AMMUNITION PLANT
GENERAL AREA
PLOT PLAN

SUMMARY OF SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

Cornhusker Army Ammunition Plant is located near Grand Island, Nebraska (Figure 1) on a 11,936 acre tract. The plant was constructed in 1942 by the Army for the production of artillery rounds, bombs, booster and supplementary charges. The plant was operated intermittently for 30 years, with operations ending in 1973.

As a result of disposal practices, common at threat time in both military and civilian sectors, the groundwater at CHAAP was found to contain explosive residue. Subsequently, the CHAAP was listed on the National Priorities List (NPL) on July 22, 1987. At this time it was apparent groundwater containing explosive residue had migrated beyond the CHAAP boundary, about 2 miles into the Grand Island City limits.

Investigations to date identified the explosive residue in groundwater migrated from the cesspools and leach pits located in the center of the plant. The affected groundwater encompasses a disjointed area 6 miles long and one-half mile wide. While the explosive residue in the groundwater originated from the CHAAP, the detected nitrates could have come from several other sources, including agricultural activities in the area.

As an interim action the Army has constructed a permanent water supply system to the affected households by extending the city water system. Approximately 800 residences were provided the opportunity to hook up to the Northwest Grand Island Water Supply Extension.

During 1987 and 1988, the Army excavated and incinerated explosive contaminated soils from the cesspools and leachpits. A second removal action was conducted in the summer of 1994 and focused on additional source areas .

On November 18, 1994, an Interim Record of Decision was signed for remediation of the groundwater plume containing explosive residues, primarily RDX. This Record of Decision requires the Army to build a groundwater extraction, treatment and discharge system that will capture the contaminated groundwater and treat the groundwater to remove explosive residues to levels that are safe for surface water discharge. The treated groundwater will then be pumped via underground pipeline to a surface water discharge.

Compliance monitoring will be performed with a groundwater monitoring system of the plume to verify protection of human health and the environment. This system will prevent further migration of the contaminants and will reduce the concentrations of explosive residues in the groundwater over time.

DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

In June 1996, the U.S. Army presented a plan to discharge treated water from the proposed groundwater treatment facility at CHAAP to Silver Creek at a location near the northwest corner of CHAAP. Previously, the discharge point was to be the Platte River at a location approximately 14 pipeline miles from the groundwater treatment plant on CHAAP. The proposed discharge location was changed because the design flow rate for the discharge was reduced during design evaluations from approximately 11 cubic feet per second (5000gallons per minute (gpm)) to approximately 5 cfs (2150 gallons per minute). An evaluation of the potential for increased flooding problems associated with the discharge to Silver Creek was prepared. The analysis determined if the discharge from the treatment plant stopped during periods of

high flow in Silver Creek, there would be insignificant increases to flooding problems (RUST, 1996). Rust also estimated the impact on groundwater elevation near the Creek and found that during periods of the year. The discharge to Silver Creek could result in increased pumping of sumps in basements located directly adjacent to the creek. The analysis was presented along with the proposed change at a June 5, 1996, public meeting. Public concerns were raised over discharging water to Silver Creek during the meeting and during the 45 day comment period. There was a concern the discharge would be burdensome to some residents and perhaps affect cropland.

The Army, EPA, and the NDEQ identified the need to eliminate the further migration of contaminants in the groundwater off-site. In order to accomplish this the Agencies want to proceed with a phased approach.

The Army therefore proposes installing the treatment facility and the extraction wells planned for the areas of remaining groundwater contamination on CHAAP. This action would provide important environmental improvement and could be completed at the same time that, an interlocal agreement which would formalize the evaluation process of the discharge as identified in the phased approach. The agreement will include representatives from local governments, the EPA, the NDEQ and the Army. Along with this agreement, discussions will continue for off-site piping and further evaluation of contingency alternatives (for example, the Prairie Bend Project). The phased approach will also provide an avenue to evaluate the most recent off-site data (Dec. 1996 and Feb. 1997) and the effect of natural attenuation on improving groundwater quality.

Under the phased approach, the Army proposes to begin on-site extraction and treatment as soon as possible. The treated water would be discharged to an existing drainage canal located on CHAAP. The water in the canal would discharge to Silver Creek after traveling through CHAAP for about two miles. This proposal differs significantly from the earlier Silver Creek discharge proposal in two ways:

1. The discharge flow is lower-only 1.7 cfs compared with 4.6 cfs. The initial period of lower flow would allow an opportunity to evaluated the modeled versus actual impacts from the discharge. This information would be used to evaluate the need to change discharge locations in the future. It will allow real time data to determine the capabilities of the Creek for any future off-post actions.

2. The revised model demonstrates the effects of 1.7 cfs discharge into the Eastern Drainage Canal. Under the most likely conditions, the model anticipates much of the water would infiltrate through the on-post canal bottom during transport to Silver Creek. Therefore the amount of water reaching Silver Creek would be even less than the amount of treated water discharged to the canal.

The design capacity of the system will allow for capture and treatment of the entire plume, as identified in the Cornhusker AAP OU1 Interim Record of Decision, Nov 1994. The treatment system will be constructed to treat up to 2150 gpm or 4.8 cu. ft/s.

Under the OU1 Record of Decision the discharge location is the Platte River. This would require the effluent to be piped thirteen and a half mile underground. Changing the discharge location to the Drainage Canal would require a maximum of a quarter mile of effluent pipeline. This change would save over 13 miles of underground pipeline, approximately four months of construction time and five to six million dollars. This figure does not include reduction in real estate acquisition procedures or maintenance costs, which will

be realized through the change in discharge location.

Several different scenarios were modeled to evaluate the potential impact to surrounding areas under a variety of conditions. The model estimated during periods of high groundwater (e.g., groundwater less than 5 feet below the ground surface and a flowing stream) the discharge would take approximately 8 to 10 miles to infiltrate. Model predictions were also made under drier conditions or when irrigation wells are pumping. Under these conditions the groundwater will be 5- 10 feet below the surface. In this case, the model simulations show the effluent infiltrating mostly on Cornhusker property (traveling al distance of 2 miles). This scenario assumes the Drainage Canal will be cleaned and maintained. The results from the modeling show the effect to Creek and surrounding area is very dependent on; 1) the water levels in the Creek, 2) the groundwater level, 3) the infiltration rate of the Creek/Canal bed and 4) the area of the Creek/Canal bed.

Studies have been conducted using the flood insurance modeling, 10, 50 and 100 year flood flows and information from past flooding occurrences. These reports demonstrate there will be no additional risk of flooding of Silver Creek by discharging 1.7 cfs or 4.8 cfs of treated water. To virtually eliminate the possibility the discharge from CHAAP could increase flooding problems along Silver Creek, the Army will stop discharging the treated water during times when the flow in Silver Creek is more than 250 cfs. This limitation has been included in other discharge permits for Silver Creek.

In addition to the modeling effort a monitoring program has been proposed to monitor the surface water flow in the creek, take visual observations and monitor groundwater levels along Silver Creek. Surface water flow measurements will be made twice per month for two years. Visual observations will be recorded to include documenting distance of observable flow in the canal and Creek. These observations will be made during periods of little or no precipitation (when there is no flow upstream at the point where the Canal discharges into the Creek). This will provide data on infiltration rates through the drainage canal and Creek bed that can be used to refine the model predictions. Any ice buildup conditions in the winter will also be documented. If ice buildup is excessive the system will be temporarily shut-down.

According to CERCLA Section 121(e)(1) the discharge will occur on-site and will not require a National Pollutant Discharge Elimination System (NPDES) permit. The Army will submit a letter request to allow discharge to Silver Creek. This letter will set effluent standards equivalent to those set in the NPDES permit, NE0131725 for Cornhusker Army Ammunition Plant Groundwater Remediation Project, dated October 18, 1995 (Table 1).

Effluent Parameters	Units	Daily Minimum
pH	S.U.	6.5
Nitrate as Nitrogen	mg/l	Report
Total Sulfate	mg/l	Report
Total HMX (1,3,5,7-Tetrazocine	mg/l	0.2
Total RDX	mg/l	0.05
2,4,6-Trinitrotoluene	mg/l	0.01
Combined Explosive	mg/l	0.1
Trichloroethylene	mg/l	0.005
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Table 1 Effluent Concentration Limits as Proposed in NPDES NE0131725

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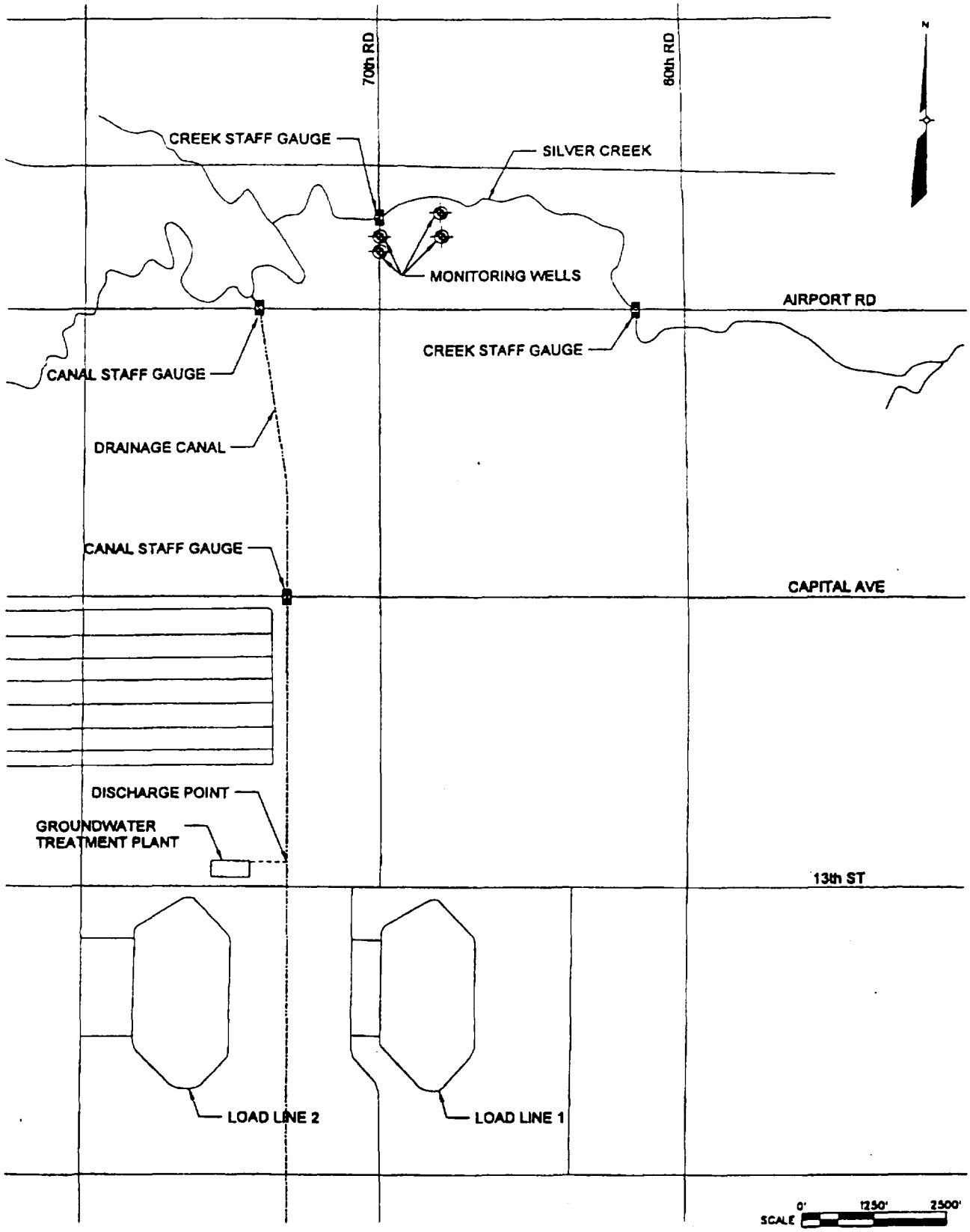

RUST

Rust Environment & Infrastructure Inc.

LOCATION OF MONITORING POINTS DRAINAGE CANAL/SILVER CREEK

CORNHUSKER AAP INTERIM GROUNDWATER REMEDY

JAN. 1997

72628

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Grand Island, Nebraska February 7, 1997

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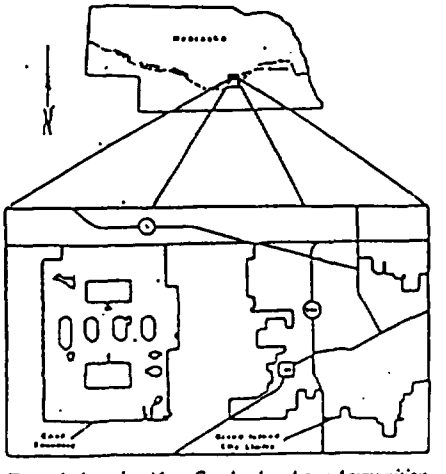

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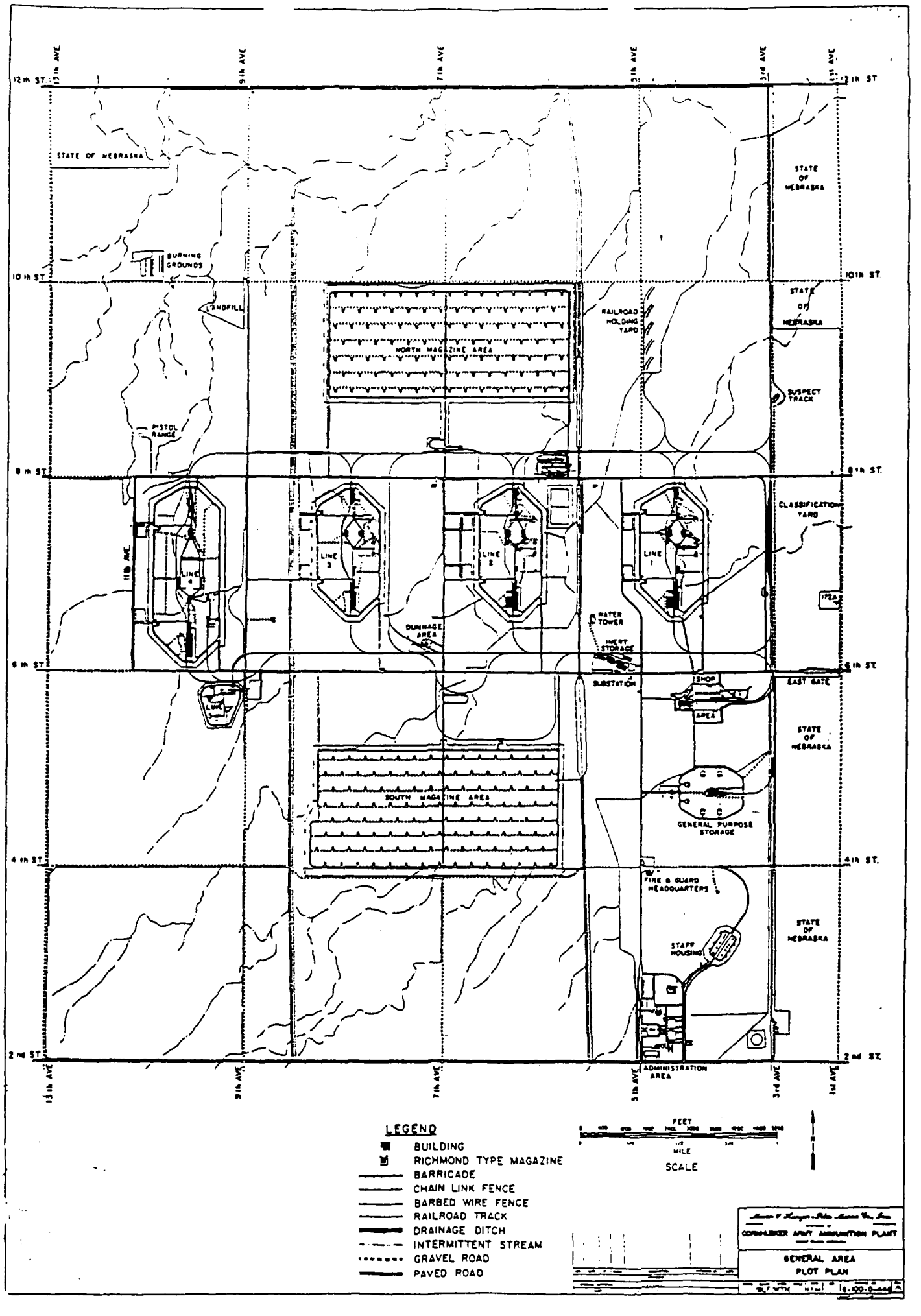
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STATE OF NEBRASKA
BURNING GROUNDS
SANITARY LANDFILL
NORTH MAGAZINE AREA
RAILROAD HOLDING YARD
SUSPECT TRACK
PISTOL RANGE
CLASSIFICATION YARD
11B AVE
LINE 1
LINE 2
LINE 3
LINE 4
DUNNAGE AREA
WATER TOWER
INERT STORAGE
SUBSTATION
I SHOP
EAST GATE
AREA
SOUTH MAGAZINE AREA
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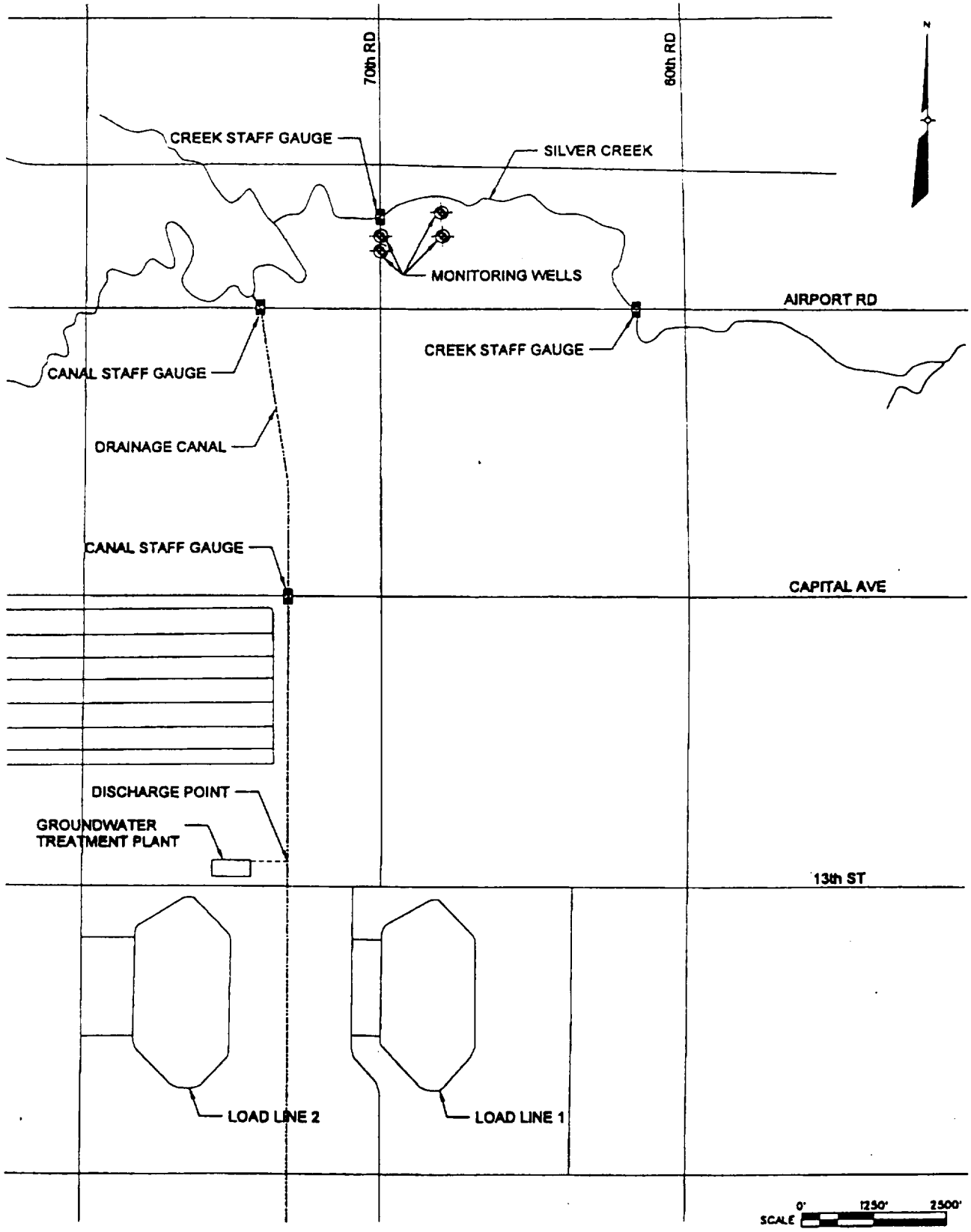
Trichloroethylene	mg/l	0.005
Trichlorotrifluoroethane	mg/l	0.5

Table 1 Effluent Concentration Limits as Proposed in NPDES NE0131725



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LOCATION OF MONITORING POINTS DRAINAGE CANAL/SILVER CREEK

CORNHUSKER AAP INTERIM GROUNDWATER REMEDY

JAN. 1997

72628