INCINERATION WORK PLAN
TASK 1A

- **EMERGENCY RESPONSE/CONTINGENCY PLAN**
- **SITE SECURITY PLAN**

Metamora Landfill Site
Lapeer County, Michigan

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Lapeer County, Michigan

OCTOBER 1991

REF. NO. 3298 (15)

CONESTOGA-ROVERS & ASSOCIATES

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PLANS

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 GENERAL

This report presents the Incineration Work Plan (IWP) for the implementation of the on-Site thermal destruction (i.e. incineration) of drummed waste and selected interstitial soil at the Metamora Landfill Site (Site). The Site is located approximately 4,000 feet east of the Village of Metamora in Lapeer County, Michigan. The Site location is presented on Figures 1.1 and 1.2. A Site plan is presented on Figure 1.3. An aerial photograph of the Site depicting existing conditions is presented as Plan 1. A topographic map and Site plan are respectively presented as Plans 2 and 3.

This IWP has been developed pursuant to the requirements of the Consent Decree in the matter of United States of America (USA) vs. BASF-Inmont et al. A Scope of Work (SOW) for the Remedial Design/Remedial Action (RD/RA) at the Site is incorporated into the Consent Decree by reference. The SOW outlines the methods to design and implement the individual remedy components of the Site wide remedy. The tasks required to implement the SOW are summarized on Table 1.1.

The major components of the remedy for the Site, as outlined in the SOW, include the following activities:

1) Installation of Site security fence;
2) Institutional controls;
3) Access and easement;

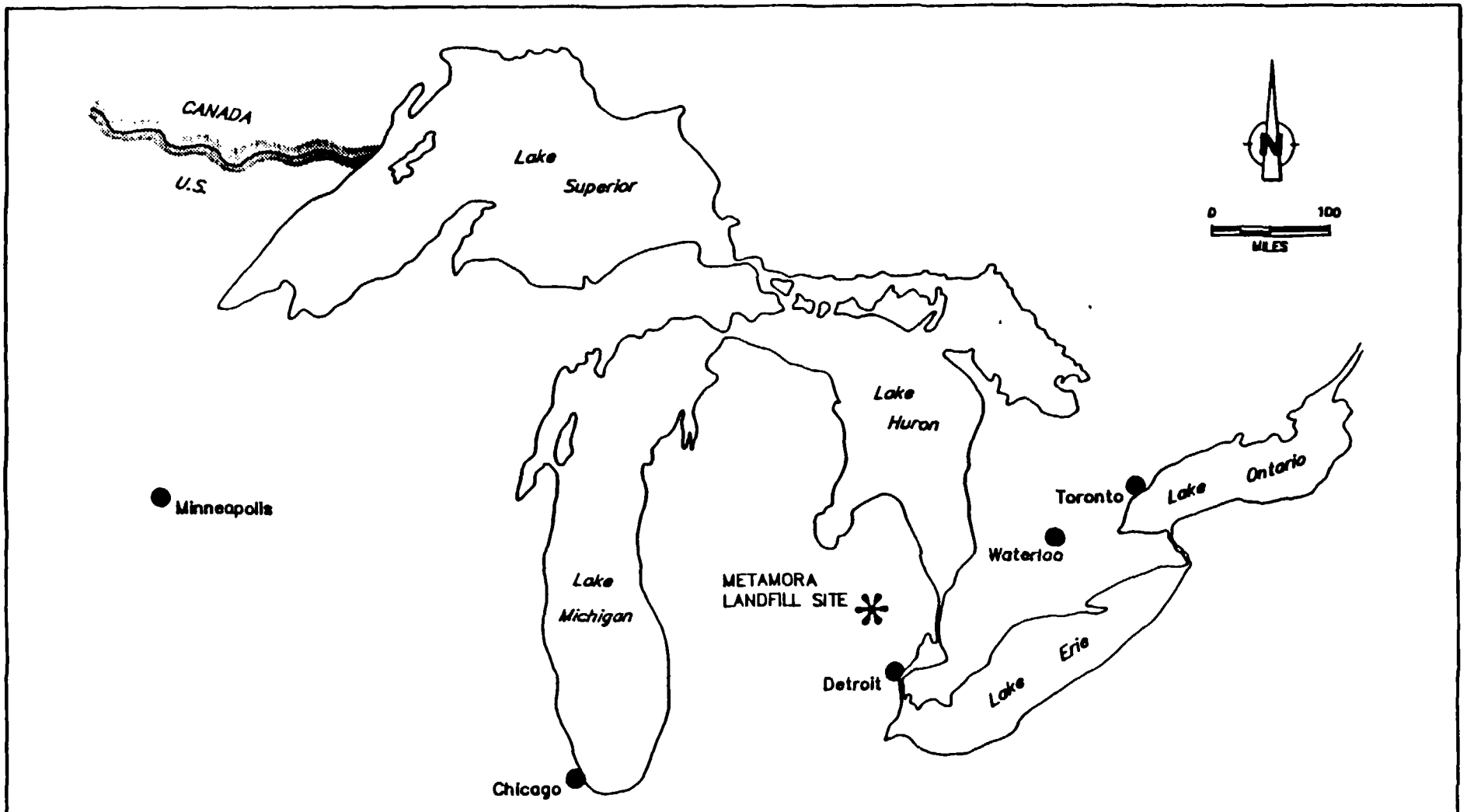

figure 1.1

SITE LOCATION
METAMORA LANDFILL SITE
Lapeer County, Michigan

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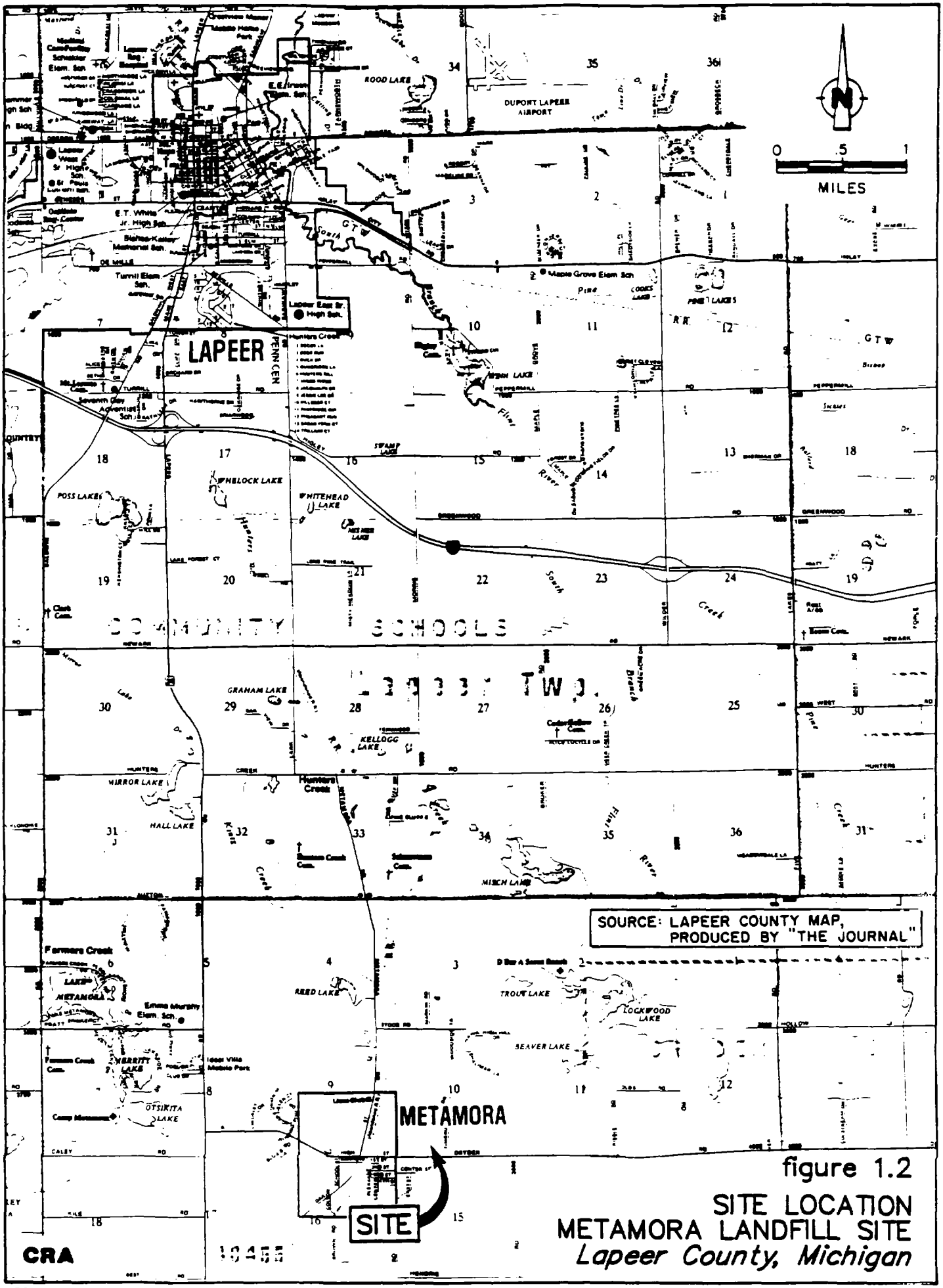

figure 1.2

SITE LOCATION
METAMORA LANDFILL SITE
Lapeer County, Michigan

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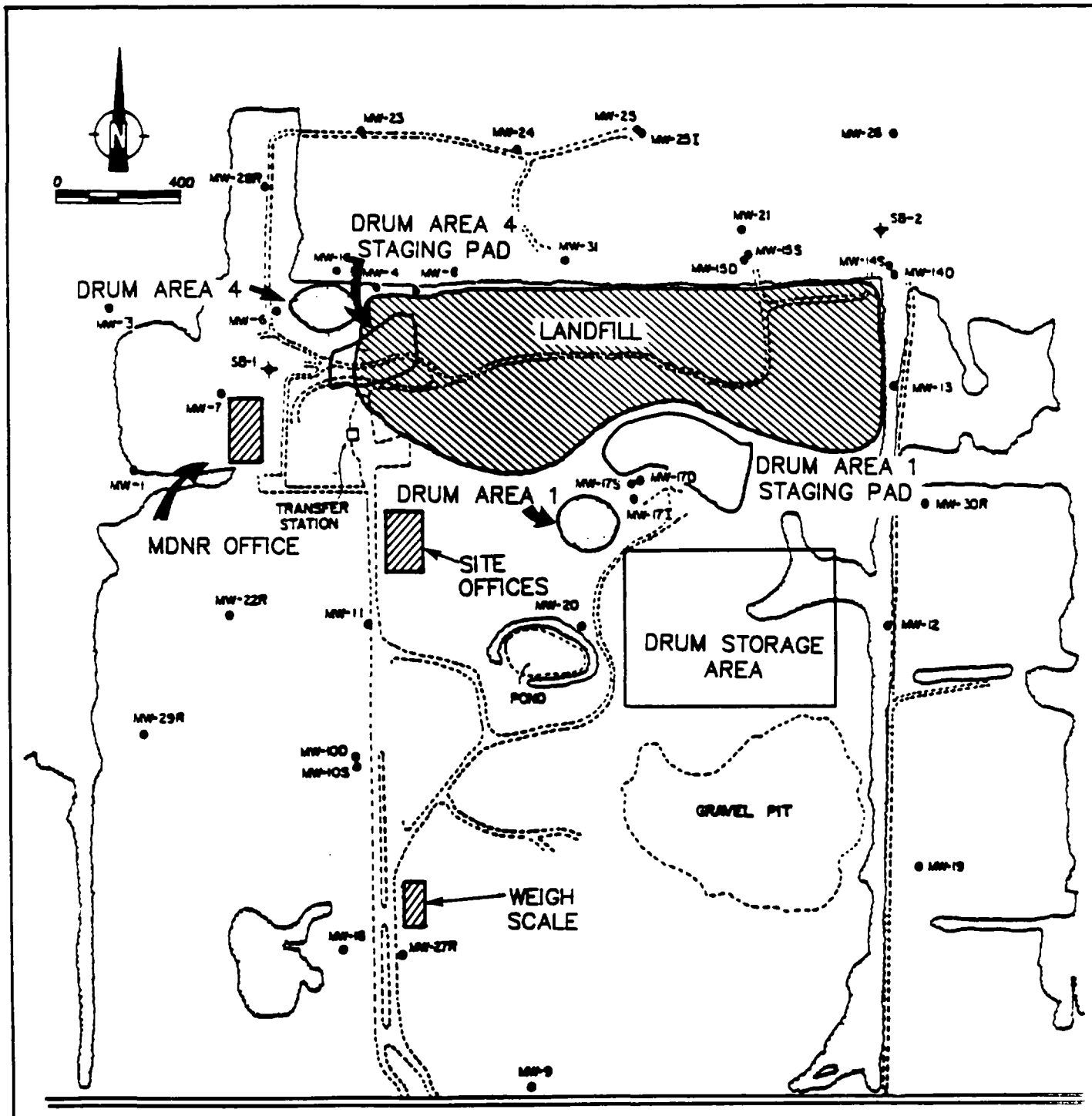

NOTE: EXISTING CONDITIONS,
DECEMBER 1990

figure 1.3

SITE PLAN
METAMORA LANDFILL SITE
Lapeer County, Michigan

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TABLE 1.1

SCOPE OF WORK SUMMARY
METAMORA LANDFILL SITE RD/RA
LAPEER COUNTY, MICHIGAN

TASK 1: SOLID WASTE REMEDIATION PLANS

A. Incineration Work Plan
B. Waste Excavation and Handling Plan
C. Soil Characterization Work Plan
D. Data Management Plan

TASK 2: RD/RA WORK PLAN/PROJECT PLANS

A. Description and Qualification of Personnel
B. Interim Groundwater Monitoring Plan
C. Pre-Design Hydrogeologic Investigation
D. Health and Safety Plan
E. Quality Assurance Project Plan
F. Monitoring/Sampling plan, addressing groundwater, air and effluent sampling
G. Project Schedule for Completion of Tasks

TASK 3: REMEDIAL DESIGN

A. Design Plans and Specifications
B. Operation and Maintenance Plan
C. Cost Estimate
D. Project Schedule
E. Construction Quality Assurance Objectives
F. Health and Safety Plan
G. Design Phases
H. Additional Studies
I. Community Relations Support

TASK 4: REMEDIAL ACTION CONSTRUCTION

A. Responsibility and Authority
B. Construction Quality Assurance Personnel Qualifications
C. Inspection Activities
D. Sampling Requirements
E. Documentation

TASK 5: REPORTS

A. Progress
B. Draft
C. Final

4) Excavation of buried drums and associated soils in Drum Area One;

5) Incineration of waste;

6) Installation and Implementation of a Groundwater Monitoring Program;

7) Installation and Operation of a Groundwater Extraction and Treatment System;

8) Construction of a Landfill Cover; and

9) Residual Soil Treatment and Disposal.

As part of Task 1 of the SOW (Solid Waste Remediation Plans), an Incineration Work Plan (IWP) (i.e. Task 1A) is required to address the following items and activities:

i) Program Administration;

ii) Site Security;

iii) Preliminary engineering plans for the on-Site incineration unit, ancilliary equipment and stockpiling areas;

iv) Specification for the incinerator operation;

v) A Trial Burn Plan;

vi) A sampling and analysis plan of incinerator ash for TCLP;

vii) Incinerator ash disposal plan;

viii) ARAR compliance monitoring plan;

ix) Operation and Maintenance Plan;

x) Bid Specification package; and

xi) Schedule.

The IWP presented herein has been prepared by Conestoga-Rovers & Associates (CRA) for the Metamora Landfill Site Settling Defendants (MLSSD). CRA will be responsible for the overall management of the IWP activities including:

i) predesign documentation;

ii) detailed design including contract specifications and drawings; and

iii) recommendation to MLSSD of the selection of contractor.

1.1.1 Waste Quantities

Anticipated waste quantities are summarized as follows:

A. Currently Staged/Stored Waste

- 11,000 drums
- 4,000 tons of soil

B. To be excavated

- 3,000 to 6,000 drums
- 1,000 to 4,000 tons of soil

1.1.2 Contractor Procurement

The selection of the waste and soil excavation and on-Site incineration contractor (Contractor) will be made in conformance with

accepted private sector procurement procedures. The selection of the Contractor will be conducted in accordance with Section 12 following the schedule presented in Section 13 of this IWP.

1.2 SITE BACKGROUND

The Site is situated on a 160 acre parcel of land and the landfill encompasses an area of approximately 25 acres (see Figure 1.3). The Site is located approximately 4,000 feet east of the Village of Metamora in Lapeer County, Michigan. The Site is situated on a local topographic high which is comprised of extensive sand and gravel deposits.

A number of environmental investigations have been completed at the Site. The Site was added to the National Priorities List (NPL) on October 15, 1984. The U.S. EPA subsequently issued a Phased Feasibility Study (PFS) in August, 1986; and a Record of Decision (ROD) in September 1986 calling for the excavation and off-Site incineration of buried drummed wastes and interstitial soils from Drum Areas 1 and 4. Incineration of buried drums and soils located in the two drum disposal areas was termed the Operable Unit Number 1 (OU1) RA.

The sand and gravel deposits at the Site are underlain by an upper till unit at a depth greater than 100 feet. The upper till unit has been described as being upwards of 40 feet thick and is underlain by a series of silts, tills, and sand and gravel. The bedrock directly underlying the Site is

sandstone and is encountered at a depth of approximately 250 feet below ground surface.

Groundwater exists at three horizons beneath the Site. The "shallow aquifer" is at a depth of approximately 60 to 150 feet and is characterized as a water table aquifer (unconfined). The "intermediate aquifer" exists in the lower sand and gravels directly beneath the upper till and is typically characterized as a confined aquifer. The third aquifer is the "bedrock aquifer" and is comprised of the Marshall Sandstone. The bedrock aquifer is approximately 100 feet thick. The bedrock aquifer serves as the potable groundwater supply to local residents.

The data base generated by Michigan Department of Natural Resources (MDNR) during the Remedial Investigation (RI) indicates that the shallow aquifer is impacted by Site-related activities. The data base further indicates that the intermediate and bedrock aquifers are not impacted by Site activities. Additional groundwater studies shall be completed pursuant to the Consent Decree.

In 1988, MDNR contracted with Chemical Waste Management, Inc. (CWM) to conduct the drum excavation, handling, transport and off-Site incineration of all excavated waste materials. CWM began excavation in 1989 and as of December 1990 a total of approximately 25,000 drums have been excavated. A total of approximately 11,000 drums and 9,000 tons of soil had been transported off-Site for incineration by CWM. Drum excavation activities were discontinued by MDNR in December 1990.

During the summer of 1990 a Feasibility Study (FS) for the associated landfill site (Operable Unit Number 2 (OU2)) was finalized by U.S. EPA. The OU2 FS remedy included provisions for a landfill cap and a groundwater extraction/treatment system. Subsequent negotiations resulted in the development of the Consent Decree and SOW which address all remaining remedial actions (i.e. OU1 and OU2) proposed for the Site.

1.3 IWP ORGANIZATION

The IWP has been prepared to present the technical approach which will be taken by the MLSSD to implement the on-Site thermal destruction of specified waste materials. More specifically, pursuant to the requirements of the SOW, the IWP shall include, but not be limited to:

> ***"preliminary engineering plans for the incineration unit, and stockpiling area; specification for the incinerator operation; a trial burn plan; a sampling and analysis plan of incinerator ash for TCLP; a disposal plan of incinerator ash; a plan for monitoring compliance with ARARs of the incinerator; an operation and maintenance plan; a bid specification package; and a schedule of project milestones." (SOW, Page 12).***

This IWP will to the maximum extent possible, conceptually outline the processes and requirements to successfully implement this portion of the remedy. However, various thermal destruction technologies are commercially available and some details normally included with a work plan cannot be refined and detailed until a

contractor is selected. Therefore, this IWP will not attempt to be so specific as to eliminate the potential applicability of any given technology or contractor to the Site. As such, this IWP has been prepared to conceptually outline the protocols, procedures and methodologies required pursuant to the SOW.

Consistent with the requirements of the SOW and this IWP, detailed project plans (e.g. Trial Burn Plan, Operation and Maintenance Plan, etc.) shall be developed by the selected contractor for the review and approval of U.S. EPA. The schedule for submission of additional required Project Plans is presented in this IWP.

This IWP is presented in the following sections:

Section 2	Project Organization
Section 3	Site Security
Section 4	Preconstruction Activities
Section 5	Waste Handling
Section 6	Incinerator Operation Specifications
Section 7	Trial Burn Plan
Section 8	Ash Sampling and Analysis Plan
Section 9	Ash Disposal Plan
Section 10	Compliance Monitoring Plan
Section 11	Operation and Maintenance Plan
Section 12	Selection of Contractor
Section 13	Incineration Work Plan Schedule
Section 14	Community Relations Plan
Section 15	Site Restoration and Project Closeout

Appendix A Emergency Response/Contingency Plan

Appendix B Site Security Plan

The Emergency Response/Contingency Plan (ERCP) presented as Appendix A provides the protocols and procedures to be followed during emergency situations.

The Site Security Plan (SSP) presented as Appendix B provides the routine security activities and procedures which shall be employed to secure the Site.

Additional details regarding the excavation and on-Site handling of drums and soils are discussed respectively in the Waste Excavation and Handling Plan (WEHP, Task 1B) and Soil Characterization Work Plan (SCWP, Task 1C). The IWP presented herein and the WEHP (and associated Project Plan) referenced above shall form the basis for the Project Specifications which shall be developed to both procure a Contractor and complete the Project. The WEHP and SCWP are provided under separate cover.

2.0 PROJECT ORGANIZATION

2.1 PROJECT OVERSIGHT

The MLSSD shall retain a Project Consultant (Engineer) to provide overall project management and field oversight services during the implementation of the Source Removal and Disposal Program. The Engineer will provide technical support and will oversee all construction activities associated with this project. Figure 2.1 presents a conceptualized project team structure and organization.

The Engineer will provide a qualified field engineer and additional field support personnel as required to oversee the required activities. The field engineer will report directly to the Project Coordinator and will oversee on-Site activities on a daily basis. The field engineer will function as the Project Coordinator's on-Site representative for day to day Site activities.

2.2 PROJECT ORGANIZATION AND RESPONSIBILITY

Metamora Landfill Site Settling Defendants (MLSSD)

The Metamora Landfill Site Settling Defendants (MLSSD) will coordinate the overall management of all technical activities relating to the implementation of the RD/RA.

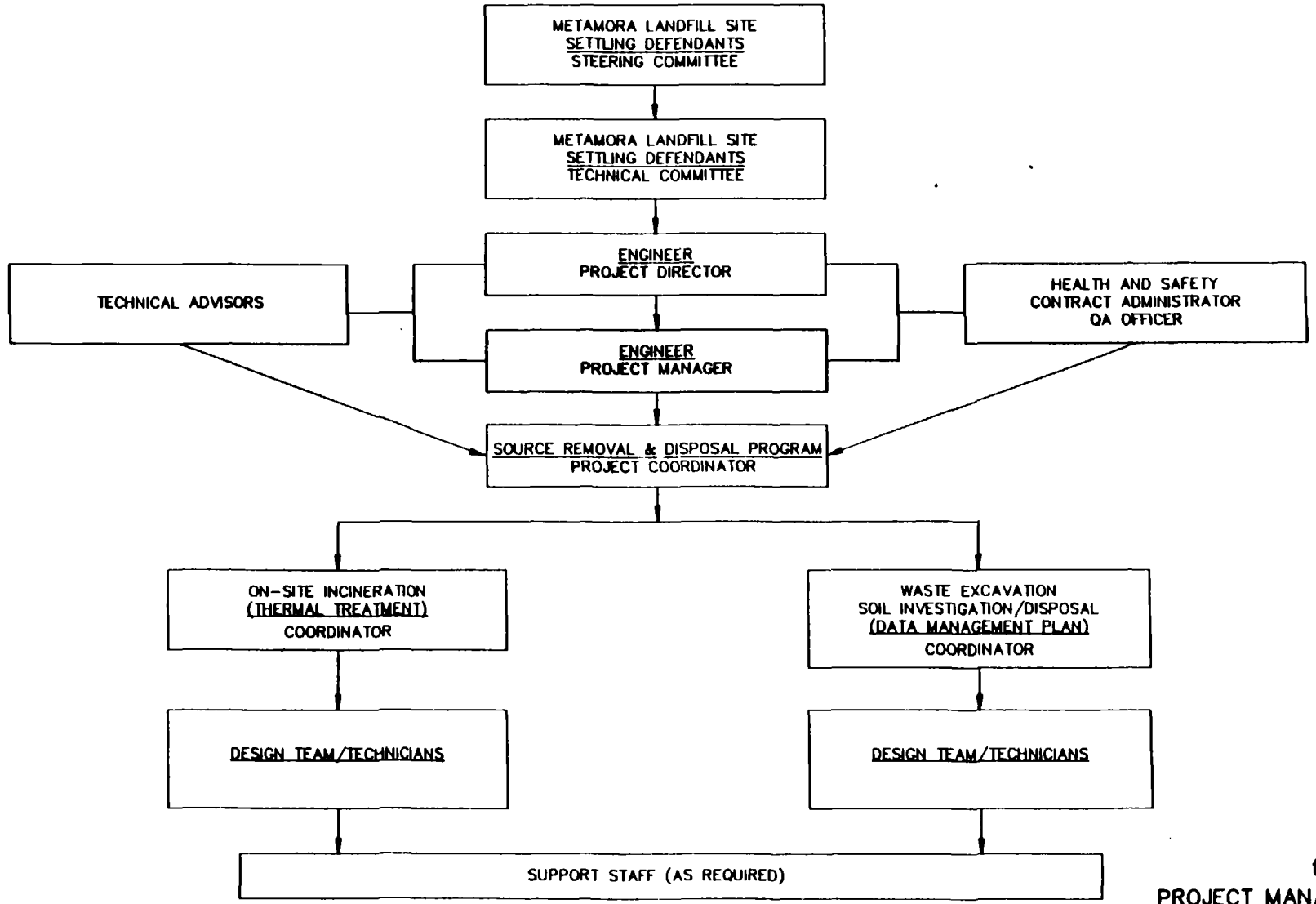

figure 2.1
PROJECT MANAGEMENT
RD/RA PROJECT TEAM
METAMORA LANDFILL SITE
Lapeer County, Michigan

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3298-16/07/91-15-0

Project Consultant - Mr. Frank Rovers, M.A.Sc. P.Eng., Project Director

The Project Director will oversee all aspects of the project, and will be actively involved in the direction of the project. The Project Director will attend technical meetings (as required) and ensure that high standards of technical merit, scheduling and budget control are maintained throughout all project activities. The Project Director will be briefed regularly during all activities by the other project team members.

Project Consultant - Mr. Glenn Turchan, M.A.Sc. P.Eng., Project Manager

The Project Manager's role is to direct the Project Team's efforts and focus them on the Scope of Work with due regard for technical considerations and schedule. The Project Manager will also participate in the definition of amendments to the Scope that may be appropriate and the resolution of problems that may develop as the project proceeds. In addition, the Project Manager will be Engineer's primary representative of the Project to the client, regulatory agencies and the Project Director.

Project Consultant - Mr. Walter vanVeen, M.A.Sc., P.Eng.,
Source Removal and Disposal Program Project Coordinator

The Source Removal and Disposal Program Project Coordinator will be responsible for all technical activities relating to the excavation and on-Site incineration of drummed waste and chemically saturated interstitial soils.

The Project Coordinator, as technical coordinator for all Site activities, will provide management and coordination to all project team personnel to ensure the successful completion of project tasks. These activities will include coordinating the bidding process, recommendation of selection of contractors and implementation of field activities. The Project Coordinator will also serve as the alternate in a Project Management capacity.

Project Consultant - Incineration Project Engineer

The Incineration Project Engineer is responsible for the day to day coordination of the project, successful completion of all field activities, compilation of collected data, accuracy of collected data, preliminary analysis of the data and the preparation of draft reports. The Project Engineer reports to the Source Removal and Disposal Program Project Coordinator.

Project Consultant - Waste Excavation Project Engineer

The Waste Excavation Project Engineer is responsible for the day to day activities associated with reviewing, finalizing and implementing the continued excavation of waste materials at the Site. The Project Engineer reports to the Source Removal and Disposal Project Coordinator.

2.3 RESPONSE CONTRACTOR

Prior to the initiation of work at the Site, the MLSSD will notify U.S. EPA of the name of the Response Contractor (Contractor) and major Subcontractors (as appropriate). The Contractor will implement the on-Site incineration and associated construction activities presented in this IWP. The Contractor will be responsible for completing the work on schedule and in accordance with the Contract Documents which will be issued by the MLSSD. The Bid Documents will include waste characterization and operational data developed by MDNR prior to 1991. The Contractor will coordinate the field activities of their personnel and those of the Subcontractor(s).

The Contractor will be responsible for providing an analytical laboratory to provide analytical support services associated with the response program (subject to the review and approval of MLSSD). The Contractor's analytical laboratory (either on or off-Site) will perform waste compatibility testing and analysis of consolidated waste samples for waste disposal characterization purposes as required for the disposal/treatment option. Incinerator ash as well as stack emissions shall be analyzed by the Contractor as part of the operational monitoring program.

The Contractor will be responsible for the implementation of all aspects of the Source Removal and Disposal Program. This will include completing the excavation of drummed waste and selected soils, (i.e. chemically saturated), re-packaging, as required, and characterizing the drummed waste as well as the incineration of all waste materials

(drummed waste and soil). The Contractor shall conduct the Source Removal and Disposal programs in accordance with the Project Specifications. The Project Specifications shall be performance based and developed consistent with the U.S. EPA approved IWP and WEHP during the design of the Source Removal and Disposal Program.

The IWP includes the following Project Plans which provide the necessary planning support for emergency situations and Site security:

Appendix A: Emergency Response/Contingency Plan (ERCP); and
Appendix B: Site Security Plan (SSP).

The WEHP includes the following Project Plans which formulate the necessary planning support for the project:

Appendix A: Sampling and Analysis Plan (SAP)
Appendix B: Quality Assurance Project Plan (QAPP)
Appendix C: Health and Safety Plan (HASP)
Appendix D: Spill Control Plan (SCP)
Appendix E: Erosion Control Plan (ECP)
Appendix F: Data Management Plan (DMP)
Appendix G: Air Monitoring Plan (AMP)

3.0 SITE SECURITY

Access onto the Site and into the active working areas shall be controlled by access gates and perimeter fencing (see Section 4.2.8). Access gate(s) will be kept closed and locked during inactive work periods to prevent uncontrolled and/or unauthorized access to the Site. During periods of activity, Site security personnel will be stationed at the work area access gate(s) to regulate entry into and exit from the work areas. In addition, Site security shall be maintained at the main entrance to the Site to control access of all persons, vehicles and shipments onto the Site. As a minimum, Site security duties will include the following:

i) Limit vehicular access to the Site to authorized vehicles and persons only (Main Gate and Work Areas).

ii) Provide initial screening of all Site personnel and visitors. A list of authorized persons and the name of their employer will be available at the Site office (Main Gate).

iii) Provide the Site Safety Officer with radio communication to the Site office (Main Gate and Work Areas).

iv) Maintain a daily Site security log in which documentation is provided of all Site personnel, visitors and deliveries and any security incidents. This log will include the date, name, address, company, time in and time out for each employee and visitor. If unauthorized personnel are observed on Site, the appropriate law enforcement officials will be

called upon for proper legal actions. The MLSSD will obtain the services of a security firm to maintain security logs for the Main Gate and Work Area Access Gates.

v) Maintain a visitor log at the Site. Visitors will not be allowed to enter the Site without the knowledge of the Contractor and the Engineer. Visitors will not be permitted to enter secured areas without the express permission of the Site Safety Officer (SSO)and the Engineer. All visitors will be required to complete training and medical surveillance in accordance with the Health and Safety Plan (HASP) prior to gaining access to the restricted areas (i.e. exclusion zones). The visitor log will be maintained at the Site security office. All visitors will be required to "sign in" and report to the SSO for a Site safety briefing (as required at the Main Gate). The HASP is provided as Appendix C of the WEHP.

vi) Check that the perimeter fencing and all warning signs are secure and intact on a daily basis. If deterioration of the Site security fence is observed, or if warning signs are found to be removed, the situation will be brought to the attention of the Engineer and will be rectified by the Contractor as a priority issue. The security personnel will also check waste storage areas for potential releases during periods of shut down.

Emergency response and Site security activities are respectively presented in Appendix A and B.

4.0 PRECONSTRUCTION ACTIVITIES

4.1 SITE ACCESS AGREEMENT

The MLSSD will use best efforts (in accordance with the Consent Decree) to obtain Site access from the present property owner prior to commencing construction. If obtained, the agreement is expected to permit access for the MLSSD, MLSSD's representatives, MLSSD's Contractor and Subcontractor(s), and representatives of U.S. EPA and MDNR for the purpose of performing all activities as presented herein. If, despite use of their best efforts, the MLSSD cannot obtain access agreements, the MLSSD shall notify U.S. EPA. In such a case, U.S. EPA shall use their best efforts to otherwise secure access to the Site on behalf of the MLSSD. The Award of Contract (see Section 12.3) shall not be issued until Site access agreements have been secured.

MLSSD, in conjunction with U.S. EPA, shall determine what property leasing arrangements exist (i.e. waste transfer station and John R. Sand and Gravel) and their potential impact on Site RA activities.

The present location of the waste transfer station will interfere with the completion of a number of Site remedy components and Site security in general. As such, the waste transfer station will have to be moved to a suitable location either on or off-Site, which will not interfere with the Site RA.

Any existing leasing arrangement with the John R. Sand and Gravel Company will have to be terminated to ensure that gravel mining operations do not interfere with Site RA activities.

4.2 SITE PREPARATION

4.2.1 General

Site preparation will include all activities necessary to prepare the Site prior to commencing construction, excavation, sampling, waste consolidation operations and incineration.

Major tasks to be carried out as part of Site preparation include:

i) mobilization of personnel support facilities, hygiene facilities and on-Site laboratory;
ii) installation of Site utilities;
iii) construction of equipment decontamination facilities;
iv) construction of staging pads;
v) installation of weigh scale;
vi) tank(s) for wastewater containment;
vii) installation of wastewater treatment system (if required);
viii) construction of Site access roads; and
ix) installation of perimeter fence and access gates.

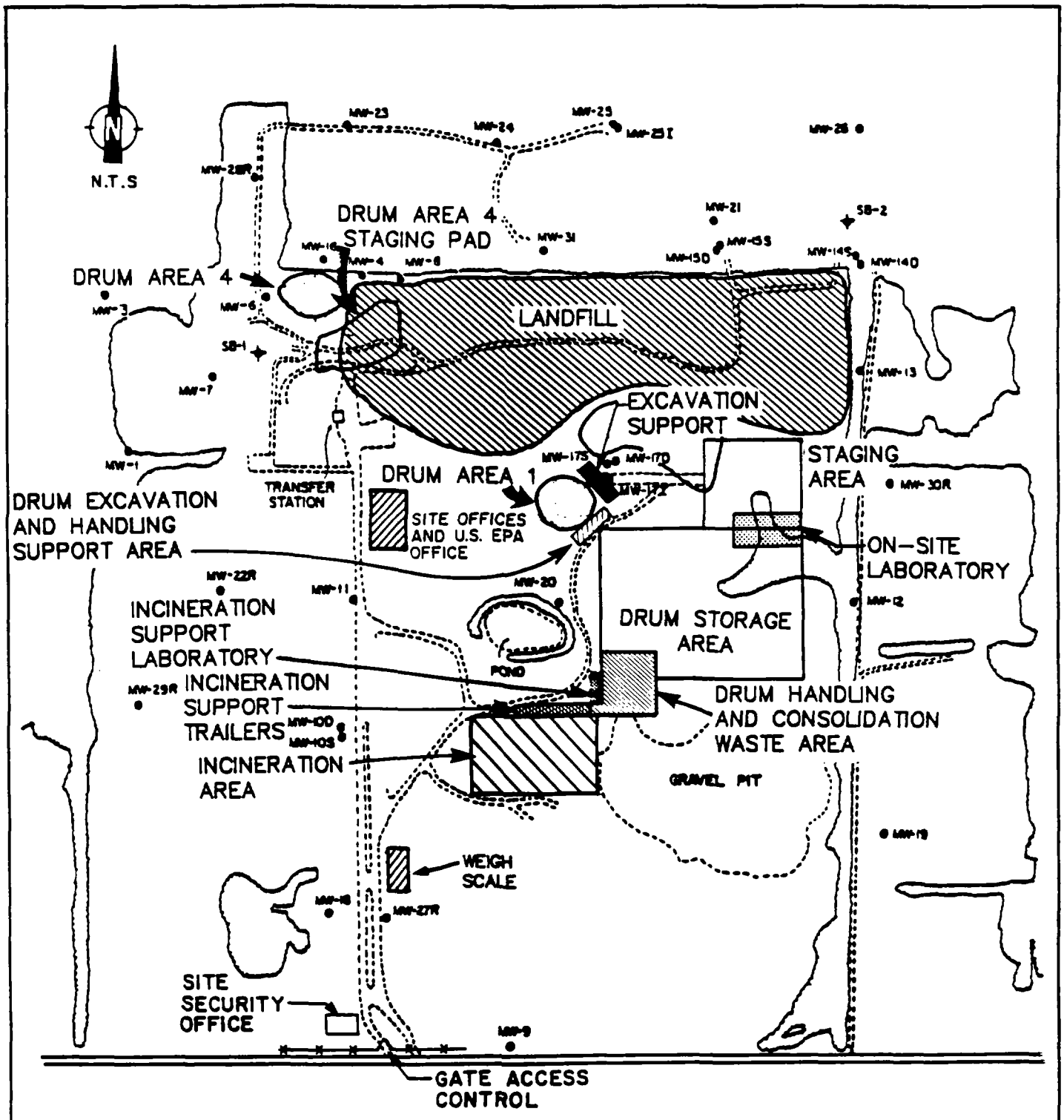
The approximate location of the Site facilities to be established on Site are shown on Figure 4.1 and are described in the following sections. The final configuration for the on-Site facilities layout will be determined by the MLSSD, the Engineer and the Contractor in consultation with U.S. EPA's Site Representative. Final arrangements of Site facilities shall take into account material handling requirements and meteorological conditions.

4.2.2 Personnel Support and Hygiene Facilities

At the commencement of Site work and prior to carrying out any work involving contact with the waste material, the Contractor will mobilize all appropriate personnel support and hygiene facilities as specified in the Project Specifications. Facilities to be established on Site will include:

i) personnel decontamination facility/emergency medical facility;
ii) Contractor's office trailer;
iii) Engineer's office trailer;
iv) office trailer for the use by U.S. EPA and their oversight consultant; and
v) security trailer.

The above facilities will be located in approved locations on-Site. The Contractor shall develop a proposed support facility Site plan which will show the layout of all personnel support and hygiene facilities. Upon approval of the Contractor's Site Plan by the MLSSD's representative the Site Plan will be submitted to U.S. EPA for approval.



SOURCE: E. C. JORDAN, 1986

NOTE: TO BE UPDATED AS NEW SURVEYS BECOME AVAILABLE.

figure 4.1

SOURCE REMOVAL AND DISPOSAL PROGRAM SITE LAYOUT
METAMORA LANDFILL SITE
Lapeer County, Michigan

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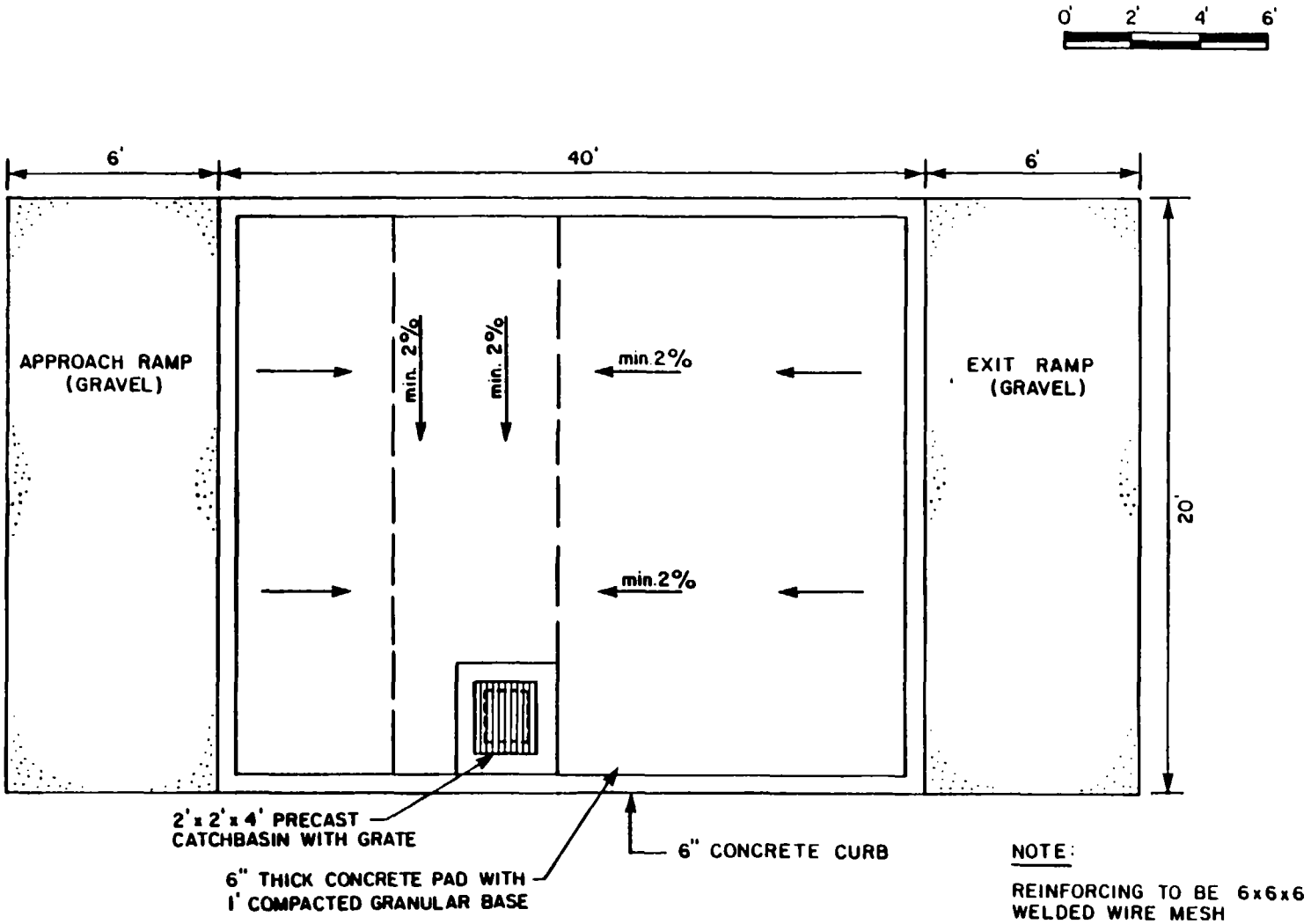
4.2.3 Construction/Incineration Utilities

Construction/incineration utilities will be routed to the personnel support area, incineration facilities and other associated areas, as required, from available utilities located on-Site. Utilities to be supplied to the support area may include electrical power, gas and telephone. Application will be made to the appropriate utility authorities prior to constructing the connecting lines (or additional service requirements). Construction standards will be in accordance with the requirements of the local utility authorities and all applicable utility and electrical codes. The name and phone number of a contact person at each of the specified utility companies shall be identified in the Project Specifications. The location of existing utilities shall be identified on a Site plan which is prepared as a Contract Drawing.

4.2.4 Equipment Decontamination Facility

An equipment decontamination facility will be constructed prior to initiating the handling of waste materials. The facility will be constructed at an approved appropriate location on-Site to the specifications shown on Figure 4.2 (or equivalent). The surface of the decontamination pad will be constructed of concrete and will be sloped to a wastewater collection sump. A pump and associated hosing will be available to remove decontamination washwaters and sediments to a portable



NOTE: EXACT DIMENSIONS TO BE DETERMINED AS THE PROJECT PROCEEDS TO CONSTRUCTION

figure 4.2

PLAN VIEW OF DECONTAMINATION FACILITY METAMORA LANDFILL SITE

Lapeer County, Michigan

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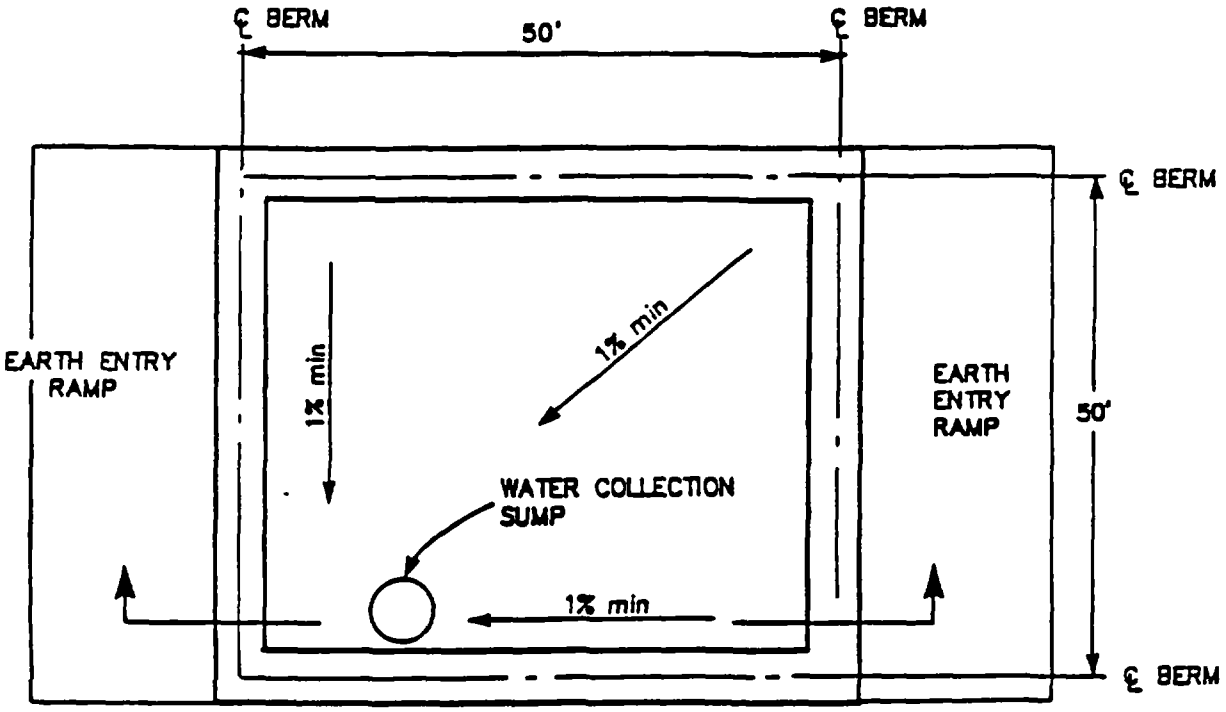
3298-03/05/91-15-0

washwater holding tank (as required). The tank contents may be transferred to liquid waste transportable tanks and disposed at an on-Site treatment plant (such as the incinerator wastewater treatment facility) or an appropriate off-Site facility. A high-pressure steam cleaner with self-contained tankage will be located on the decontamination pad for decontaminating equipment which has contacted waste material prior to leaving the Site or traveling onto clean areas. Work conducted within the decontamination facility shall be conducted to minimize volatile emissions. The decontamination facility shall be identified as an exclusion zone and shall be subject to the HASP and AMP presented as Appendix C and G of the WEHP.

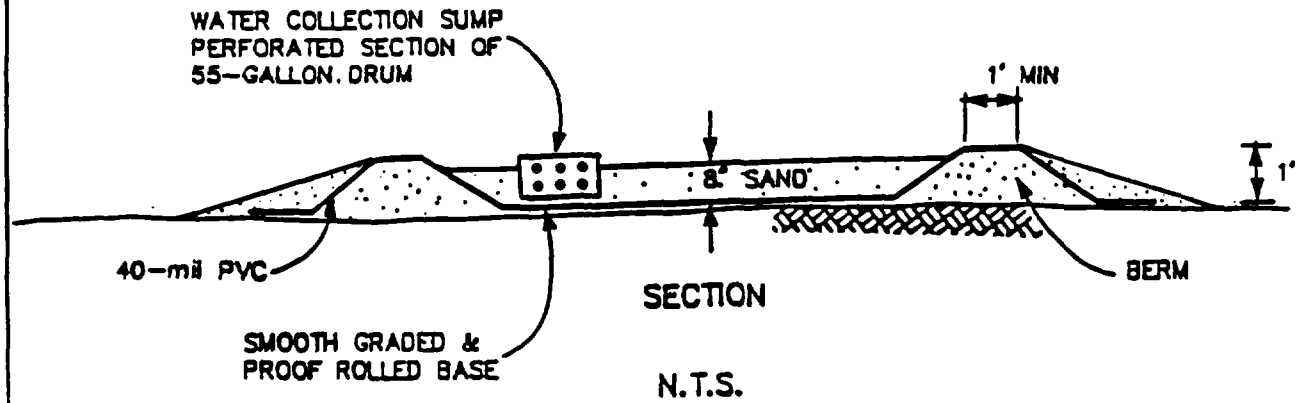
4.2.5 Staging/Excavation Pads

Staging pads will be constructed to support the excavation and sampling of drums. The staging pad will be constructed as typically shown on Figure 4.3. A synthetic liner will be installed under each pad for leak and spill protection. In addition, each pad will be constructed with an integral sump as shown to allow for the removal of collected waters. Alternatively, the staging areas will be constructed on an asphalt pad or equivalent perimeter containment system. The surface of the liner or asphalt will be sloped as shown to direct gravity drainage towards the sump. Liquids collected in the sump will be pumped out as necessary and transferred to a portable wastewater tank. The transfer of liquids from the sumps will be the responsibility of the Contractor. Sump liquids will be removed on an as-required or daily basis based on visual inspection of the sumps. Use of



PLAN VIEW

N.T.S.



SECTION

N.T.S.

NOTE: EXACT DIMENSIONS TO BE DETERMINED AS THE PROJECT PROCEEDS TO CONSTRUCTION

figure 4.3

TYPICAL STAGING PAD
METAMORA LANDFILL SITE
Lapeer County, Michigan

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3298-03/05/91-15-0

existing on-Site facilities will be maximized if possible. Collected wastewater will be disposed of at a treatment facility either on or off-Site.

The staging pads will be used for processing excavated drums requiring sampling/classification/segregation/consolidation/ characterization prior to storage for incineration. Soils shall be stockpiled as discussed in the WEHP.

Solids or liquids which are spilled onto the staging pad shall be shovelled up and placed within the overpack from which they originated. This practice along with daily cleaning of the sump will minimize the potential for non-compatible liquids to come in contact with one another in the staging pad sump.

The staging/storage pads will be routinely inspected and repaired as required.

The staging pads shall be considered exclusion zones and thus are subject to the requirements of the HASP and AMP. All activities *conducted within the staging area shall be completed in a manner which* **minimizes volatile air emissions.**

4.2.6 Weigh Scale

A weigh scale will be mobilized to the Site (if required) and installed for the weighing of waste materials. The weigh scale will be a

truck scale of sufficient capacity to weigh the waste materials. The Contractor will be responsible for the acquisition of a weigh scale and testing the weigh scale for calibration prior to initial use. Alternatively, an incinerator feed conveyor scale (or equivalent) may be utilized.

4.2.7 Wastewater Treatment System

A wastewater collection and treatment (if required) system shall be mobilized and constructed on-Site to collect and treat Site generated wastewaters. The exact requirements for any wastewater collection/treatment system are contractor specific. The selected Contractor shall utilize an appropriate system which conforms with all applicable regulations. The use of an on-Site system will be subject to the approval of U.S. EPA. The wastewater system shall be propertly insulated, agitated and/or heated for operation during freezing temperature.

4.2.8 Access Roads

Access roads will be improved and/or constructed (in accordance with the Project Specifications) on Site as required to allow for vehicular access to all of the various support and storage/staging areas, and to the incineration facilities on-Site. The access roads will be maintained throughout the construction program to ensure adequate access is maintained. To the maximum extent possible, general construction services will be completed by local contractors.

4.2.9 Perimeter Fence

A security fence and access gates will be installed at the main entrance to the Site and around the working area prior to initiating the handling of waste materials. The fence will be equipped with lockable gates.

The working area fence shall be located along an alignment which completely encircles the Drum Area 1 excavation, staging, storage and incineration areas.

The fence shall be completed as an 8 foot security fence topped with 3 strands of barb wire. Appropriate warning signs shall be placed along the perimeter of the fence at a spacing of 100 to 200 feet.

A Site perimeter fence is identified as part of the Remedial Action for the Site but will not be installed until the completion of the landfill cap.

It is anticipated that fencing requirements will be completed by a local fencing contractor.

5.0 WASTE HANDLING

The following section provides a summary of the logistical and sequencing considerations for the excavation, staging, stockpiling and incineration of excavated drummed waste and soil materials. The following briefly lists the planned sequence of activities:

A. Drummed Waste

1. excavate drum
2. visually inspect drum for labels, content information and structural integrity (develop drum log)
3. repack/overpack, if necessary
4. transport to staging/analytical area
5. sample drum within staging area
6. seal drum
7. transport to storage area following receipt of chemical compatibility and characterization data (e.g. bulking or consolidation, shredding, etc.)
8. drummed waste processing based on characterization data
9. on-Site incineration of all drummed waste materials
10. shred drum carcass, if required
11. incinerate empty drums, if required
12. recover/recycle overpack drums

The excavation, staging, storage and incineration areas shall be considered exclusion zones during all waste handling activities.

Health and safety requirements are presented in the HASP (see Appendix C of the WEHP).

B. Excavated Soil

1. excavate soil
2. visually classify soil material to determine requirements to incinerate or stockpile soil
3. place soil materials in 20 cy roll-off boxes
4. conduct PCB analysis on composite samples collected from each roll-off
5. incinerate soil containing mobile non-aqueous phase liquids or PCBs with concentrations greater than 500 ppm
6. stockpile soil which does not require immediate incineration for future characterization treatment and/or disposal (pursuant to SCWP)
7. soils which do not require incineration will be used to immediately backfill the excavation
8. other debris will be segregated and stockpiled for future disposal on or off Site (buried on Site pursuant to the Engineer's direction)

Adjustments to the above noted sequencing may be required to improve or enhance the drum and soil handling techniques.

Details regarding the drummed waste and soil excavation and handling procedures and protocols are provided in the WEHP and summarized in the following sections.

5.1 DRUMMED AND CONTAINERIZED WASTE HANDLING PROTOCOLS

5.1.1 General

During the excavation and consolidation of containerized waste, the protocols contained within the Occupational Safety and Health Administration (OSHA) Standards as presented in the Federal Register, Vol. 54, No. 42, Monday, March 6, 1989, Part-1910 - Hazardous Waste Operations and Emergency Response; Final Rule 1910 - 120(j), the approved HASP and this section will apply.

This section applies to all activities involved in the handling of drums or containers that may have contained, or do contain, potentially hazardous waste materials in both a solid and liquid state. The procedures described within this section specify the minimum requirements that will be implemented to maximize the protection of Site personnel and to minimize the potential for migration of waste constituents to the surrounding environment.

5.1.2 Equipment

a) Safety Equipment

During the handling of drums or containers, safety apparel and equipment as specified in the approved HASP, will be worn or used at all times. In particular, self contained breathing apparatus or breathing apparatus equipped with air lines will be worn at all times while handling drums or containers.

b) Handling Equipment

All handling, moving and transport of drums or containers will be completed with mechanical equipment whenever possible, unless it is for the installation of slings. Movement or handling by personnel may be required in the event that mechanical means cannot be properly or safely employed due to poor container integrity.

All OSHA safety standards will apply and will be strictly enforced. All handling and transport equipment will be equipped with Class ABC fire extinguishers, and self contained full air respiratory systems. Full air supply respiratory equipment will be used when handling containers of which the contents are unknown and as directed by the Contractor's Site Safety Officer (SSO).

All equipment used for the handling and transport of drums or containers will be regularly inspected and maintained. In

particular, the ignition, manifold and exhaust components will be maintained to prevent backfiring or the generation of sparks within the exhaust gases.

Prior to removal from the Site, equipment will be decontaminated within the equipment decontamination facility utilizing specified protocols outlined in the HASP.

5.1.3 Drum and Container Handling

a) Working Groups

During the handling of the waste, a team of personnel specifically trained in the handling of containerized waste will be designated to perform this task. The team will be located in the Exclusion Zone. The team may carry out other tasks but will be immediately available if a container is encountered. This team will consist of no fewer than two people. During the handling of containerized waste, visual contact will be maintained between members of the working team at all times. All team members will be able to communicate with ease between themselves via hand held radios or headsets.

b) Point-of-Excavation Handling

As containerized waste is encountered, and prior to physically handling a drum or container, a preliminary classification check

list will be completed. This list will include a screening of the container with an HNu or OVA and a visual description of the condition of the drum or container as it appears in the excavation. Evidence of any pertinent labels or warnings which may identify the contents of a container will be noted. The drum will be photographed and numbered. If, during this inspection, an open or leaking drum or container is identified to contain liquids, the liquids will be pumped into a repack drum prior to removing the drum or container from the excavation. If an open drum or container is identified to contain solids, the drum or container will be carefully removed from the excavation. If the container is neither opened nor leaking the structural integrity of the container will be evaluated. Deteriorated containers determined to have poor structural integrity will be immediately overpacked. Fully intact containers determined to have good structural integrity will be thoroughly inspected (as discussed above) prior to overpacking.

The potential for moving structurally intact drums directly to the staging area will be evaluated after the incinerator is fully operational and drum excavation is re-initiated. Drums may not require overpacking if incineration capacity is available and the wastes may be directly processed. This determination will be made based upon the structural integrity of the drums and the turn-a-round time for required analytical data. Any changes to the proposed drum handling procedures shall be communicated to U.S. EPA for their concurrence prior to implementation.

Following excavation and overpacking, if necessary, the drums or containers will be transported to the staging pad. Intact containers and repacked/overpacked containers will be opened and sampled at the

staging pad by the sampling team. The staging pad will be constructed as conceptually shown on Figure 4.3. Sampling activities shall be conducted on the staging pad in a manner which minimizes the spillage of waste materials. However, all liquids contained within the staging pad sump shall be collected and pumped to wastewater tanks pending characterization and disposal.

Following sampling and characterization of the drummed wastes, the drums will be transported to the existing storage area pending final processing and incineration.

Additional details regarding drum handling activities are presented in the WEHP, SAP and HASP.

c) Spill Prevention and Response

The handling and transport of drummed or containerized waste will be, at all times, conducted in a controlled and safe manner which will minimize damage to the containerized materials and spillage of waste material. Repack and overpack units will be provided in controlled quantity at the excavation area, staging pads and at strategic locations along access roads for use in the event of leakage or spillage. In general, spill prevention and response will be conducted in accordance with the requirements of the Spill Control Plan (SCP). The SCP is presented as Appendix D of the WEHP.

In the event that a container is spilled outside of the excavation area, the drum handling team will immediately respond to the area. If a spill involves liquids, the spilled liquids will be immediately

confined by diking (if necessary) around the spill with native material or with an inert absorbant and the liquids will be pumped (if possible), with the use of a portable hand pump or other appropriate means, into a repack drum. Any residual liquids which cannot be pumped will be absorbed with a sufficient quantity of native soil or an inert absorbant to ensure no free liquids remain. If the spill occurred on soil, the visibly affected soil will be excavated and disposed of with the other bulk materials designated for disposal.

Liquids spilled within excavations will be pumped, with the use of a portable hand pump or other appropriate means, into a repack drum. Soil/fill adjacent to the spill area or an inert absorbent will be placed over the spilled liquids to adsorb any residual liquid. Contaminated soil or absorbent will be placed in the overpack with the drum. Materials underlying the spill zone will be treated as bulked contaminated materials based on a visual determination.

d) Erosion Control

It is not anticipated that the excavation will require dewatering throughout the period of excavation. Stormwater management and erosion control shall be conducted in accordance with the Erosion Control Plan (ECP) provided as Appendix E of the *WEHP*.

5.1.4 Consolidation of Wastes

Prior to incineration, all types of wastes will be moved to the drum handling and waste consolidation area directly adjacent to the incinerator. This facility will consist of a building for handling, sorting and preparing drums and/or wastes for incineration. In conjunction with this building, facilities for transferring liquids from drums (i.e. pump room) to a bulk storage tank and sludges to a sludge hopper (via pumping) will be provided. These facilities will allow for safe controlled waste handling even in extreme weather conditions. Once drums of liquids or semi-liquids have been emptied they will either be directly fed into the incinerator or transferred to the shredding area with final disposition within the bulk debris area. Bulk debris will be stored on-Site pending the development of on-Site landfilling capacity. Bulk debris will include empty drum carcasses, emptied drums, metal debris, timbers, tires and scrap materials.

Bulk solids and debris designated for incineration and stored at the waste handling and consolidation area will be moved to the area where the material can be sized and sorted. Bulk solids and debris designated for incineration will include empty drums or other items which are grossly and visually contaminated with sludges, grease or resins, etc. This area will be near the incinerator and will consist of screening, shredding and possibly a crushing operation, if required. Once sizing and sorting is completed, the material will be transferred to the appropriate storage bay pending incineration. Excavated bulk or soil/debris which is stockpiled while awaiting incineration will be kept separate from all other materials.

Drummed wastes which are visually classified as solids or solidified sludges will be emptied from their containers and bulked with other dry wastes for appropriate disposal based on the compatibility/characterization testing results. The empty drums or containers will then be shredded or crushed and placed with the stockpiled bulk debris. The bulk debris will either be landfilled or incinerated dependent upon the nature of residual contamination associated with the bulk debris.

Excavated bulk wastes will be covered with an impermeable liner during periods of work stoppage and at the end of each working day if they are exposed to the weather. Consolidated bulk materials will be kept covered, as required, to control volatile air emissions.

A covered and contained structure will be constructed adjacent to the incinerator bulk feed conveyor to facilitate the handling of bulk soil, debris and waste materials. This facility will consist of a roof, walls on three sides and at least two waste containment bays constructed of concrete. The two bay construction will allow soils and shredded bulk debris to be segregated and fed to the incinerator separately and as needed. Bulk soils and debris will be transferred from this facility to the feed conveyor hopper by a front end loader. The Contractor shall identify the exact nature of all waste processing procedures and facilities.

Empty drums which are removed from the excavation will be crushed and/or shredded and placed with dry wastes/soil. Drums containing less than one inch of solidified residue will be considered empty (as per 40 CFR 261.7). New drums which were used for

repacking/overpacking may be reused for similar types of wastes. All used overpack drums will be emptied, cleaned and recycled at the completion of the response program (if possible).

The handling and packaging of all excavated wastes will be conducted in accordance with the requirements of the HASP and Project Specifications.

5.1.5 Sampling and Analysis

All sampling and analysis for waste characterization will be in accordance with the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) presented as Appendix A and B, respectively, of the Waste Excavation and Handling Plan (WEHP) as amended by the MLSSD.

5.1.5.1 Sampling of Existing Drum

Prior to commencing the Source Removal and Disposal Program the MLSSD shall verify the existing drum inventory and shall complete representative sampling of the existing inventory to verify that the individual samples currently maintained on Site are representative of the drum contents from which they were collected and to verify that the waste characterization analytical data is correct. It is anticipated that the reanalysis of the existing drums shall represent not more than 10 percent of the existing drummed waste currently stored on-Site. The need for additional sampling

and analysis requirements shall be evaluated based on the results of the verification sampling.

5.1.5.2 Sampling and Analysis of Drums After Excavation

All sampling and compatiblity analysis of excavated drums will be in accordance with the approved WEHP and associated Project Plans (i.e. SAP, QAPP).

Drummed waste will be consolidated based on the waste characterization and compatibility testing results (based on fingerprint classes provided in Section B.4.4.1 of the WEHP). Compatible solids will be consolidated and sized as required for feed to the incineration unit. Compatible liquids will be consolidated in waste tanks for injection into the incineration unit. Waste sludge materials will be mixed with solid waste or batched with compatible material and fed to the incineration unit.

Any waste which has PCB concentrations greater than or equal to 50 ppm will be segregated from waste with PCB concentrations less than 50 ppm (if required). This will allow PCB wastes (i.e. ≥50 ppm PCB) to be processed in a separate batch process (if required).

All sampling and analysis requirements for excavated drummed waste will be the responsibility of the Contractor. The Contractor will be required to maintain an on-Site laboratory for completing the waste characterization analysis.

5.2 ENVIRONMENTAL CONTROL

5.2.1 Surface Water Control

All excavation, backfilling and staging operations will be carried out under dry conditions. Surface water runoff will be controlled from entering the drum excavations using dikes, sandbags, ditching, grading or other appropriate means. The methods used will be subject to the approval of the Engineer. Surface water runoff which contacts waste material will not be discharged to water courses. All such surface runoff will be contained and stored in the wastewater storage tanks pending sampling, characterization and disposal. Collected surface water which requires treatment shall be disposed either on or off-Site with other Site generated wastewaters.

Water collected from excavations will be transferred to the wastewater storage tanks. Sufficient pumping equipment, machinery and tankage in good working condition for all emergencies, such as power outage, will be maintained adjacent to all excavations. Personnel familiar with the operation of the pumping equipment will be available to operate the pumping equipment on an as required basis.

Precipitation will be prevented from infiltrating or from directly running off stockpiled excavated waste materials placed on the staging pads. Excavated materials will be covered with an impermeable liner

during periods of work stoppage and at the end of each working day. Any liquids collected in the staging pad sumps will be collected and transferred to the wastewater storage tanks.

5.2.2 Dust Control

Dust control measures will be implemented as required to minimize the generation of dust during construction excavation and waste handling operations. The water to be used for dust control will be obtained on-Site. The water will be obtained either from the existing pond or from a groundwater production well. The production well location (if needed) would be situated upgradient of the drum disposal area. The design and location shall be subject to the approval of the Engineer and U.S. EPA prior to its construction.

If approved by the field engineer, any other suitable method may be used for dust control as an alternate to water.

Air monitoring for dust shall be conducted at the direction of the SSO as discussed in the HASP (see WEHP, Appendix C).

5.2.3 Snow and Ice Control

Snow and ice which accumulates within excavation areas will be removed and staged in an on-Site snow corral. Solids which

accumulate within the snow corral shall be removed and staged for disposal as the snow melts.

5.2.4 Sediment Control

Sediment migration will be controlled, as necessary, around active excavations using shallow ditches in combination with silt fencing. The sediment control structures will be placed in downslope positions from the active working areas. Collected sediment will be removed when necessary for disposal.

5.2.5 General Housekeeping

Daily accumulations of solid waste material such as discarded safety equipment, debris and rubbish will be collected in garbage bags and disposed of in accordance with Federal and State regulations.

Solid waste materials will be contained in a designated area in the general office and support area. Trash removal services will be provided on a weekly basis for uncontaminated solid waste.

The Site will not be allowed to become littered with trash and/or waste materials from the working areas and will be maintained in a neat and orderly condition throughout the construction period.

5.2.6 Air Emissions

All Site waste handling activities shall be conducted in a manner which minimizes the generation of volatile air emissions. These procedures include:

1. carefully removing excavated drums from the excavation to minimize rupture and potential spillage of waste materials;
2. minimizing disturbance of soil materials during excavation;
3. using absorbents to immediately contain and immobilize spills;
4. immediately placing used absorbents in overpacks or roll-offs;
5. closing or covering overpacks and roll-offs when filled and during work stoppages;
6. immediately covering roll-offs containing soils with mobile non-aqueous phase liquids; and
7. containing other materials determined to be off-gassing if found to be necessary based on air monitoring.

All Site activities shall be monitored in accordance with the AMP presented as Appendix G of the WEHP. Appropriate measures shall be taken when air monitoring data indicate unacceptable VOC emission from the Site. Mitigation methods may include conducting work within enclosed structures using tarps, spray-on foams, soil covers or carbon adsorption hoods (or equivalents).

6.0 INCINERATOR OPERATION SPECIFICATIONS

Detailed specifications for the incineration of waste on Site will be contractor specific depending on the technology proposed by the selected incineration Contractor. Therefore, the final Project Specifications will be developed based on Site-specific and Regulatory-specific performance criteria. As a minimum, the performance criteria and operating requirement described in the following sections will be incorporated into the Project Specifications.

6.1 PERFORMANCE CRITERIA

The incineration facility shall be capable of meeting the performance criteria in 40 CFR 761.70(e), 40 CFR 270.19, 40 CFR 270.62, 40 CFR 264.340 to 264.351, 40 CFR 61.3, 61.5, 61.6 and 61.7, 40 CFR 50.4 to 50.12 which include:

a) the incineration of PCB wastes must meet a Destruction Removal Efficiency (DRE) of at least 99.9999% as per 40 CFR 264.343 (a) (2);

b) RCRA Principal Organic Hazardous Constituents (POHCs) must meet a DRE of at least 99.99% as per 40 CFR 264.34(a)(1);

c) stack particulate emissions shall be less than 180 mg/dscm (0.08 gc/dscf) when corrected for the amount of oxygen in the stack gas as described as per 40 CFR 264.343(2)(c);

d) combustion efficiency shall be at least 99.9% as per 40 CFR 761.70(a)(2);

e) stack emissions of more than 1.8 kg/hr (4 lb/hr) of hydrogen chloride (HCl) shall be controlled such that the HCl emission rate is not greater than the larger of either 1.8 kg/hr or 1% of the HCl in the stack gas prior to entering any pollution control equipment (99% removal efficiency) as per 40 CFR 264.343(b); and

f) PCB contaminated liquid shall be incinerated using either a 2-sec dwell time at greater than 1200°C and greater than 3% excess oxygen or a 1.5-sec dwell time at greater than 1600°C and greater than 2% excess oxygen in the stack gas as per 40 CFR 761.7.

Performance of the incinerator shall be demonstrated by the Contractor initially during the trial burn and on a regular basis during the incineration of waste material. Performance criteria including air emission criteria shall be specified in the Project Specification.

6.2 OPERATING REQUIREMENTS

The incineration facility will be capable of meeting the following general operating conditions:

1. minimum solids throughput capacity of 4 tons per hour[1];

[1] Alternate incineration capacity requirements will be evaluated on an incinerator specific basis.

2. on-line status 80 percent of the time; and

3. year round operation.

In addition, the incinerator shall be capable of operation within the parameters established during the trial burn. Operating requirements shall be specified in the Project Specifications.

6.3 SYSTEM COMPONENT DESIGN REQUIREMENTS

a) Waste Feed System

A waste feed system shall be provided which is capable of conveying solids and liquids separately or in combination (e.g. mixing supplementary fuels with solids to enhance their handling characteristics) to the incineration facility. Additionally, the waste feed system shall be capable of mixing excavated soils with higher BTU drummed waste materials. The mixing of lower BTU soils and higher BTU wastes may provide a more consistent waste feed which is more efficiently incinerated. If clean materials are utilized for dilution of high BTU waste materials the Contractor shall not be entitled for payment for incinerating the clean portion of the waste.

The feed system capacity shall be consistent with the incinerator capacity and the specified production burn schedule. The feed

system shall include any waste preparation equipment (i.e drum shredder, sludge pump, size reduction) as required.

The incinerator shall also be equipped with a system for injecting liquid wastes for incineration either separately or concurrently with the solid waste feed.

The feed system shall include the provision for the collection of samples for feed composition and feed rate determination.

b) Ash Removal System

An ash removal system shall be provided which is capable of removing ash residues resulting from thermal destruction of the wastes specified. The ash removal and handling system capacity shall be consistent with incineration facility capacity and the specified schedule.

The ash removal and handling system shall consist of a pre-quench, ash crushing and shredding (if required), magnetic separation provisions, final quench and final deposition into transport hoppers. The metallic material will be reclaimed by a reclamation facility and the remaining ash transferred to the ash storage area.

The quench water will be transferred to the wastewater treatment system.

The ash removal system shall include the provision for the collection of samples for ascertaining compliance with the ash performance criteria.

The ash removal system shall be designed to prevent the mixing of any fly ash with the bottom ash until the flyash and bottom ash have been analyzed with respect to TCLP criteria. The blending of ash to meet the criteria is not permitted.

Ash shall be sampled using a device which diverts the flow of ash into a sample container at regular intervals.

c) Control Room

A control room shall be provided in an enclosure separate from the process equipment. Equipment in the control room shall include process controls and continuous data recording devices for monitoring process performance. Monitoring shall be conducted such that compliance with the performance criteria can be demonstrated. At a minimum, the performance monitoring shall include the following process parameters and such others as may be required in accordance with Federal standards and good engineering practices.

1. primary and secondary chamber temperatures and pressures;
2. stack gas and/or scrubber entry gas concentrations of:
    a) oxygen (continuous);
    b) carbon dioxide (continuous);

c) carbon monoxide (continuous);

d) total hydrocarbons (continuous);

e) hydrogen chloride (continuous), if required by trial burn results; and

f) backup monitoring for items a), b), and c) above.

3) combustion gas velocity.

The control room must have an automatic control system which:

1. maintains the operating conditions within acceptable process ranges for:

   a) primary and secondary combustion chamber temperatures;

   b) waste feed rates;

   c) emission gas concentrations for oxygen, carbon monoxide, and total hydrocarbon; and

   d) negative pressure within the combustion zone components;

2. stops waste feed to the system when control limits are exceeded;

3. activates combustion gas by-pass if required; and

4. shuts down the incinerator system automatically during emergency situations.

d) Air Pollution Control System

The air pollution control system shall be capable of controlling gaseous, particulate, and aerosol type emissions from the incineration facility as required by the performance criteria (see Section 6.1).

The air pollution control system shall include an exhaust stack and fan system which meets standards for sound engineering practice. It is anticipated that the emission control system shall be comprised of a wet scrubber and cyclone.

The air pollution control system shall be designed to comply with all on-Site health and safety requirements as presented in the approved HASP and Air Monitoring Plan (AMP). The HASP and AMP are presented in the WEHP respectively as Appendices C and G.

The air pollution system may include wet scrubbers and cyclones, or any other suitable removal system, as required to meet air emission criteria.

e) Wastewater Treatment System

The wastewater treatment system, if required for the selected incinerator, shall be capable of treating generated scrubber and quench wastewaters from the incinerator to a quality which can be recycled. Alternatively, wastewater may be incinerated on-Site or accumulated for off-Site treatment and disposal at an appropriately licensed facility (see

Section 15.4). The ultimate disposal of any accumulated wastewater shall be completed in a manner consistent with all regulations.

If required, the selected Contractor shall design and construct an appropriate wastewater collection and treatment system. The system will be designed suitable to the Contractor's equipment and shall be subject to the approval of the U.S. EPA. Additionally, the system must be capable of operation during freezing weather conditions.

f) Auxiliary Fuel Systems

An auxiliary fuel system shall provide storage capacity and feed capacity as required by the incineration facility. The auxiliary fuel system shall have the following minimum design features:

1. auxiliary fuel blending with contaminated soils;
2. direct feed to thermal destruction system burners; or
3. any of the above combination.

g) Ambient Air Quality Monitoring Systems

Ambient air monitoring for constituents listed in 40 CFR 50 is to be performed on a regular basis. Details of the monitoring program will be included in the Contractor Work Plan for the project.

h) Mobility of Thermal Destruction System

The incinerator shall be comprised of a system which is mobile (components which are trailer mounted) or transportable (components which can be easily shipped and assembled at the Site) or combination thereof and require a minimum of set-up at the Site.

7.0 TRIAL BURN PLAN

A Trial Burn Plan will be prepared as per 40 CFR 270.19 and 40 CFR 270.62 by the selected Contractor for the review and approval of U.S. EPA. The Trial Burn Plan will include the following:

A. Waste Analysis Data

1) Heating value of the waste (i.e. BTU);
2) Viscosity (if applicable);
3) Identification and quantification of hazardous constituents (POHCs) listed in 40 CFR 261, Appendix VIII expected to be present in the waste as well as over all waste composition;
4) Organically bound chlorine content (if required);
5) Ash content (if required); and
6) Measurement of carbon hydrogen, sulfur, nitrogen, phosphorous, oxygen and water contents to evaluate air requirements.

B. Incinerator Design Information

1) Manufacturer's name and model number of major incinerator components;
2) Type of incinerator (rotary kiln, fluidized bed, etc.);
3) Linear dimensions of major incinerator components and cross-sectional area of the combustion chamber(s);
4) Description of auxiliary fuel system;

5) Capacities of prime movers;

6) Description of automatic waste feed cutoff system(s);

7) Stack gas monitoring and pollution control monitoring systems;

8) Nozzle and burner design;

9) Construction materials; and

10) Location and description of temperature, pressure and flow indicating and control devices.

C. Sampling and Monitoring

1) Locations;

2) Frequency;

3) Analysis; and

4) Equipment.

D. Test Schedule and Protocol

1) Date;

2) Duration;

3) Quantity of Waste;

4) Ranges of Temperature;

5) Waste Feed Rates;

6) Combustion Gas Velocity; and

7) Fuel Rates.

E) Emission Control Equipment

1) Description of and planned operating conditions of emission control equipment.

F. Control Information

1) Emergency procedures; and

2) Feed cut-off levels.

G. Design Calculations

1) The Trial Burn Plan will include all necessary design calculations required to review the proposed Trial Burn.

After successful commissioning of the incineration facility and upon approval of the Contractor's Trial Burn Plan and selection of the Principal Organic Hazardous Constituent (POHC) by the U.S. EPA, the Contractor shall perform a demonstration trial burn in accordance with the approved Trial Burn Plan.

The Contractor shall submit results of the Trial Burn including sample analysis, calculations, and conclusions to the Engineer for review. The Engineer shall review the Trial Burn data and determine if acceptable DREs were achieved. The Trial Burn results and evaluation shall be submitted to U.S. EPA for review and comment.

The following actions will be taken based on the results of the Trial Burn:

1. if acceptable DREs and operating parameters were achieved, the Engineer and the U.S. EPA will approve full-scale operation contingent

on the specified operating conditions as developed from the Trial Burn and approved by U.S. EPA;

2. if acceptable DREs and operating parameters were not achieved, the Engineer will not approve the incineration facility for full-scale operation. The results of the Trial Burn shall be analyzed and causes of deficiencies evaluated. The Contractor shall make the required changes to the incineration facility or operational procedures to bring the incineration facility in compliance with the specified operating parameters and DREs. A second Trial Burn shall then be performed by the Contractor. Upon successful completion, the Engineer will approve full-scale (pursuant to the review and approval of U.S. EPA) operation contingent on the specified operating conditions as developed from the second Trial Burn and approved by U.S. EPA.

The Project Specifications shall identify that the Contractor will only be allowed three Trial Burn runs (if needed). Additionally, the Project Specifications shall identify the period of time allowed for each Trial Burn run and evaluation.

The Contractor will be allowed to operate during the interim period between the completion of the Trial Burn and the U.S. EPA approval of the results. This interim operation shall be contingent upon the Trial Burn performance and U.S. EPA's approval. The production rate during the interim period shall be proposed to and approved by U.S. EPA prior to interim incinerator operation.

8.0 ASH SAMPLING AND ANALYSIS PLAN

As part of the approval for the Contractor's incinerator, the Contractor shall be required to develop an Ash Sampling and Analysis Plan for approval by U.S. EPA. In addition to identifying the method of sampling, the sampling frequency, the analytical parameters to be analyzed and the analytical methods, the Ash Sampling and Analysis Plan shall identify how the Contractor proposes to segregate the bottom ash and flyash prior to ash sampling and characterization. Once characterized, similar materials may be combined for disposal.

Ash shall be analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals in accordance with 40 CFR 264. Sampling and analysis shall be in accordance with the Contractor's QAPP which shall be developed by the Contractor for approval by the MLSSD and U.S. EPA.

Ash will be stored in roll-off boxes (or similar containers) on an interim basis pending characterization and on-Site disposal.

9.0 ASH DISPOSAL PLAN

9.1 GENERAL

Ash which fails the TCLP metals test shall be disposed on-Site following further treatment (i.e. solidification). On-Site landfilling of the solidified ash will be contingent upon the development of on-Site landfill capacity.

Ash which passes the TCLP metals test and satisfies the ash PCB criteria of less than 500 ppm shall be classified as solid waste and therefore may be directly landfilled on-Site as capacity becomes available.

All ash shall be disposed of subject to the following criteria:

1. the disposal location in or adjacent to the landfill shall be documented referencing the location in plan and elevation to locally established permanent reference marks;

2. the material shall be placed on-Site without mixing with other items to be placed in the landfill;

3. hazardous ash will be solidified;

4. non-hazardous ash will not be solidified; and

5. landfilling will commence as capacity becomes available.

Solidification will be conducted utilizing cementitious/alkaline materials such that the solidified material will permanently meet the requirements of the TCLP metals test.

9.2 INTERIM STORAGE

Ash residue generated by the thermal destruction process which fails the TCLP metals test will be stored on an interim basis pending solidification and on-Site disposal. Ash passing the TCLP test may be stored on an interim basis or directly landfilled at the direction of the Engineer (pending U.S. EPA approval).

All disposal locations shall be subject to the MLSSD's and U.S. EPA's approval prior to placement of the material at such locations.

Magnetically separated material shall be stockpiled outside of the Exclusion Zone pending removal from the Site by a scrap dealer (if possible). Scrap metal may require decontamination prior to off-Site reclamation.

9.2.1 Operation of Temporary Ash Storage Areas

Roll-off boxes containing ash shall be stored on an interim basis at a designated location on-Site. The roll-off boxes will be securely covered with tarps to mitigate the generation of airborne dust.

After the ash has been disposed on-Site, the roll off boxes shall be recycled to the incinerator area.

9.3 SOLIDIFICATION

Ash which fails the TCLP metals test shall be solidified with alkaline cementitious materials such that the solidified ash will permanently meet the requirements of the TCLP metals test.

The Contractor shall complete all solidification activities on-Site. The solidified material shall be tested to ensure compliance prior to on-Site landfilling.

9.4 ON-SITE ASH DISPOSAL

A disposal area shall be designated by the Engineer (subject to the approval of U.S. EPA) adjacent to the southern side of the landfill. The Contractor will excavate a pit of sufficient size to dispose of all Site-generated ash materials.

During operation of the on-Site disposal area wind and water erosion will be mitigated by covering the ash materials (after placement) with cover soils.

At the completion of the on-Site incineration activities any remaining space in the disposal area will be filled with soil materials obtained on-Site.

10.0 COMPLIANCE MONITORING PLAN

Since a contractor has not been selected, a Compliance Monitoring Plan (CMP) cannot be prepared. The CMP is dependent upon the type of equipment, trial burn plan and any existing national permit requirements of the Contractor.

A complete CMP will be prepared by the selected Contractor based upon the Contractor's equipment and the approved incineration permit. The CMP will delineate the procedures that will be utilized during the incineration program to ensure compliance with all applicable Federal, State and local regulations. The CMP will be subjected to the trial burn and permits and will address at a minimum:

1) Waste Feed Restrictions

Any restrictions in the waste feed type shall be specified and the appropriate monitoring plan implemented to ensure compliance with the restriction.

2) Sampling Program

A sampling program will be implemented which will ensure compliance with all applicable air, water and waste type restrictions and regulations as specified in the operating permit.

3) Process Restriction

All process restrictions will be specified and shall include, at a minimum, the minimum residence time, minimum operating temperatures, waste feed rates, etc.

4) Feed/Process Interlock

A detailed description of the system shutdown process shall be provided. If the incinerator is required to shut down an automatic stop to the waste feed system will be initiated.

5) Process Waste Restrictions

Waste derived from the thermal destruction process must meet specific Federal, State and local requirements in order to be disposed. Restrictions will apply to ash, scrubber water, fly ash and any other process-derived waste. These restrictions will be identified and monitored to ensure compliance.

6) Monitoring and Recording

All items specified with specific restrictions will be monitored and recorded on a timely basis as deemed necessary or as specified in the permit.

7) Record Keeping

All records will be maintained on a computer database which will provide hard copies of the data in a neat and presentable format. Copies of the data will be provided to the U.S. EPA, the MLSSD's Site Representative and MLSSD at a minimum. All data will be maintained in conformance with the Data Management Plan (DMP) as presented in Appendix F of the WEHP.

11.0 OPERATION AND MAINTENANCE PLAN

The Contractor shall submit an Operation and Maintenance Plan (OMP). The OMP will address at a minimum:

A. System Operation

1) Incineration Failure
2) Releases
3) Spills
4) Health and Safety
5) Facility Security
6) Reporting
7) Personnel Training
8) Agency Approvals/Permits
9) Equipment Transport
10) Financial Assurance
11) Record Keeping
12) Process Equipment Modifications
13) Start up/Shut down
14) Emergency Procedures

B. System Maintenance

1) Daily Maintenance
2) Weekly Maintenance
3) Preventive Maintenance Program
4) Spare Parts[1]

[1] Certain "key" spare parts will be maintained on-Site.

12.0 SELECTION OF CONTRACTOR

12.1 PREPARATION OF BID DOCUMENTS

The Bid Documents and Specifications for the Source Removal and Disposal Program were prepared by CRA under the direction of the MLSSD. The Bid Documents will consist of: the Instructions to Bidders, Form of Agreement, General Conditions, Special Conditions, Project Specifications including Drawings and the Form of Bid. The Bid Documents shall also include attachments which will provide the potential contractors with existing characterization and operating data developed prior to 1991.

The Project Specifications which shall be released for bid, shall be performanced based and include all requirements for both the excavation and incineration of waste materials and the stabilization of ash. The Project Specifications will be finalized in accordance with the approved IWP and WEHP (and associated Project Plans). The Project Specifications will be released to U.S. EPA after receiving approval of this IWP and the WEHP.

The Bid Documents shall be prepared in a manner which promotes completeness and comparability. The Bid Document shall present a detailed Form of Bid which will specify quantities and associated bid price for all Site RA activities.

12.2 BID INVITATION

Following the MLSSD's approval of the Bid Documents, the bid invitation will be issued to each of the pre-qualified contractors. The prequalified contractors will be selected from the list of contractors previously requested to submit Statements of Interest (SOI) and Qualifications. The Contractors which have submitted SOI are listed as follows:

1. OHM Corporation
   2615 Taylor Street
   Lansing, Michigan
   U.S.A. 48906

2. Halliburton Environmental Technologies/Vesta Technology Ltd.
   1670 West McNab Road
   Ft. Lauderdale, Florida
   U.S.A. 33309

3. Rollins Environmental Services Inc.
   One Rollins Plaza
   P.O. Box 2349
   Wilmington, DE
   U.S.A. 19899

4. Weston Services, Inc.
   Weston Way
   West Chester, Pennsylvania
   U.S.A. 19380

5. Ogden Environmental Services, Inc.
   3550 General Atomics Court
   San Diego, California
   U.S.A. 92121

6. DRE Technologies, Inc.
   133 Holiday Court, Suite 200
   Franklin, Tennessee
   U.S.A. 37064

7. Canonie Environmental
800 Canonie Drive
Porter, Indiana
U.S.A. 46304

8. Sevenson Containment Corporation
P.O. Box 396
2749 Lockport Road
Niagara Falls, New York
U.S.A. 143045

9. IT Corporation
23456 Hawthorne Blvd.
Torrance, California
U.S.A. 90505

10. Thermocor (Kimmins Environmental)
256 Third Street
Niagara Falls, New York
U.S.A. 14303

11. U.S. Pollution Control, Inc.
5665 Flatiron Parkway
Boulder, Colorado, 80301

12. AWD Technologies, Inc.
15204 Omega Drive Suite 200
Rockville, Maryland 20850

13. Associated Chemical and Environmental Services
660 Sentry Parkway
Blue Bell, Pennsylvania, 19422

14. Laidlaw Environmental Services
1415 Woodside Drive
P.O. Box 14964
Greensboro, North Carolina 27415.4964

15. Westinghouse Remediation Services
323 Norristown Road, Suite 200
Ambler, Pennsylvania 19002

As more information is collected, additional Contractors may be invited to submit SOI.

Prior to submission of bids, each of the invited bidders will be required to attend a mandatory pre-bid conference at the Site . The pre-bid meeting will serve as an opportunity to examine the Site and to receive any additional bidding instructions or further explanations to the requirements of the bid documents and the proposed scope of work (as defined in the Project Specifications).

12.3 BID EVALUATION AND AWARD OF CONTRACT

Within 45 calendar days of the date the bid documents are issued, bids will be due at the offices of CRA. Each of the bids received will be checked, evaluated and compared for completeness and responsiveness to ensure compliance with the specified requirements of the bid document.

Bids will be evaluated based upon technical approach, project experience, management and associated costs (as well as other criteria). The key criteria for bid evaluation will involve identifying the proven effectiveness of the incineration technologies proposed.

Following completion of the bid review process, including resolution of all bid inconsistencies, if any, a recommendation for Award of Contract will be prepared and issued to the MLSSD for approval. The recommendation will include a comparison of the bids, resolution of all bid

informalities, evaluation of the technical/commercial aspects of each bid, and discussions in support of the recommended final selection of the Contractor. Consistent with Section IV, paragraph 10b of the Consent Decree, the selected Contractor shall be approved by U.S. EPA prior to mobilization.

Based on the discretion of MLSSD, a Notice of Contract Award will be issued to the successful bidder along with Contract Documents for execution (contingent upon U.S. EPA's approval). The Contract Documents provided to the successful bidder for execution will be conformed to reflect all terms and conditions on which the bid was accepted and the contract is based.

12.4 CONTRACT EXECUTION

The award of contract will obligate the successful bidder to sign and return the contract within seven calendar days to the MLSSD for their signature, along with contract bonds and evidence of insurance.

12.5 NOTICE TO PROCEED

Subject to the successful bidder having signed the contract and submitted bonds and insurance acceptable to the MLSSD, within fifteen calendar days of Notice of Award, a Notice to Proceed will be issued to the Contractor authorizing the Contractor to commence the work within fifteen calendar days of the date of Notice to Proceed.

12.6 MOBILIZATION AND PROJECT STARTUP

The Notice to Proceed will obligate the Contractor to commence mobilization activities to the Site and commence preparation of all technical documentation, plans and schedules. The plans will include but not be limited to a Trial Burn Plan, Quality Assurance Project Plan (QAPP) Compliance Monitoring Plan, Ash Sampling and Analysis Plan, Operation and Maintenance Plan, construction schedules and Health and Safety Plan. The Notice to Proceed will also obligate the Contractor to implement pre-construction activities and waste handling and incineration activities as described in the Work Plans.

13.0 INCINERATION WORK PLAN SCHEDULE

Figure 13.1 presents the proposed schedule of activities required to complete the Solid Waste Remediation Plans as identified in the SOW.

The Incineration Work Plan (IWP), as presented herein, was originally submitted 45 days after the execution of the Consent Decree.

The Waste Excavation and Handling Plan (WEHP) and the Data Management Plan (DMP) were submitted 75 days after the Consent Decree execution.

The Soil Characterization Work Plan was submitted 105 days following the Consent Decree execution.

The Project Specifications, constituting a 100 percent final design, will be submitted concurrently with the final Soil Characterization Work Plan. The Project Specifications will reflect all changes within all the submitted and approved Work Plans.

A 30-day U.S. EPA review period will follow for the review and approval of the Project Specifications. Following the U.S. EPA's approval, the contract will be issued to the prequalified Contractor's to commence the period for selection of a Contractor.

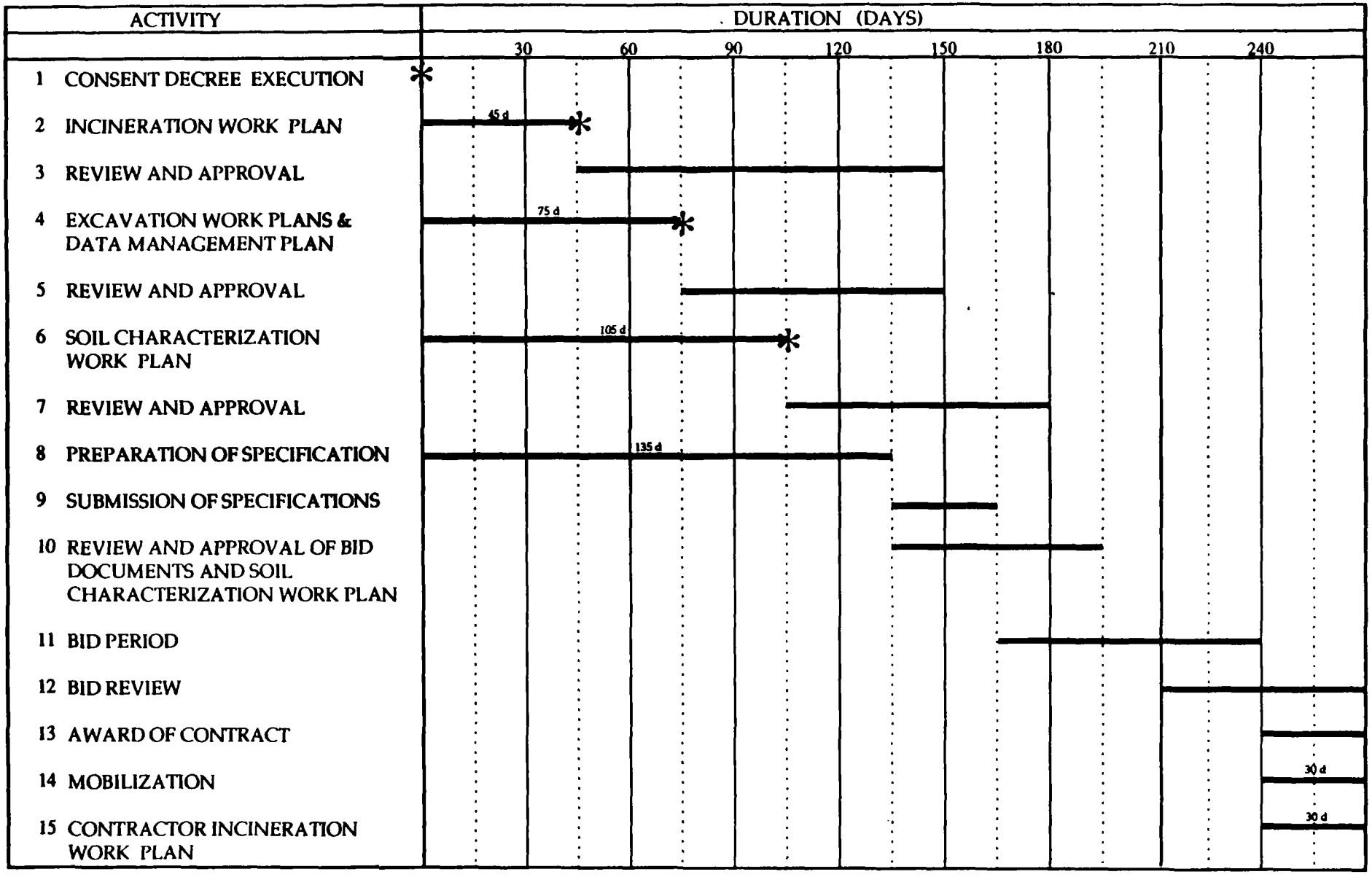


figure 13.1
SCHEDULE
TASK 1: SOLID WASTE REMEDIATION PLANS
METAMORA LANDFILL SITE
Lapeer County, Michigan

CRA
3296-15-9/30/91-TPC

The bids will be due 45 days after the start of the bid period.

Within 30 days of awarding the contract, the Contractor will be required to submit the required Work Plans (i.e. submittals) and implementation schedule. Within seven calendar days following approval of the Contractor's Work Plans and implementation schedule by the MLSSD and U.S. EPA, the Contractor shall commence mobilization activities and Site preparation activities.

Any changes to the schedule will be made with the written approval of the U.S. EPA.

The schedule is necessarily dependant upon U.S. EPA's review and approval of this and subsequent Work Plans and Project Plans. It will be updated, as necessary, to reflect the current status of project activities.

14.0 COMMUNITY RELATIONS PLAN

The U.S. EPA shall prepare a Community Relations Plan (CRP) for this project. The CRP is expected to include the following information:

- Site description,
- Site history,
- Community profile,
- Community relations objectives,
- Community relations activities, and
- Scheduling.

The MLSSD, Engineer and Contractor shall cooperate fully with U.S. EPA to satisfy the informational requirements of all community members. Community involvement in this RD/RA at this Site will be beneficial to the successful completion of the project. Community relations activities may include:

- information meetings,
- newsletters, and
- Site visits and tours.

15.0 SITE RESTORATION AND PROJECT CLOSEOUT

15.1 GENERAL

All project closeout activities will be coordinated and performed in such a manner that no waste materials scheduled for disposal or mobilized facilities remain at the Site upon completion of the response program. Constructed facilities including decontamination pads and staging pads will be left in place for potential use during any subsequent remedial actions at the Site.

15.2 EXCLUSION ZONE SURFICIAL CLEANUP

Surficial soil, located outside of the limits of the excavated area which may have been contacted by tracking of waste materials, will be removed and placed in the excavated area. The surficial cleanup will be performed after all excavated waste materials have been removed from the area and the backfilling of reusable backfill has been completed. A decontaminated front end loader or other approved machine will be used to strip a nominal layer of three inches of surficial soil from potentially impacted working areas outside of the excavation area limits working from the furthest area back. The stripped soil will be placed within the excavation area.

15.3 FINAL EQUIPMENT DECONTAMINATION

A final decontamination of all equipment will be performed on the equipment decontamination pad. Decontamination of equipment will consist of the following sequence: brushing and wire brushing to remove loose dirt and debris and adhered residues, pressurized hot water wash with detergent, and final pressurized wash. Particular attention will be paid to joints, sprockets, and undercarriages. Each piece of equipment will be inspected after decontamination prior to removal from site. An inspection record will be maintained on site. Each decontaminated piece of equipment leaving the site will be recorded on the inspection record along with the name of the inspector.

15.4 STORED WASTEWATER REMOVAL

The tank contents may be transferred to liquid waste transportable tankers as necessary and disposed of at an appropriate facility either on or off-Site. The treatment and disposal of all wastewater shall be conducted in conformance with all necessary regulations.

Following emptying of the wastewater tanks, the tank interiors will be decontaminated with a high pressure water wash supplemented by detergent (Alconox). The generated decontamination wastewater will be collected and disposed of appropriately.

15.5 FINAL CLEANUP

Final cleanup will involve cleaning the Site of litter and trash resulting from the work and leaving the Site in a neat and orderly condition. Litter and trash resulting from the work will be disposed of at a sanitary landfill.

15.6 FINAL GRADING

The central office and support area will be graded to remove surface irregularities. The existing cap material which was stripped off prior to excavation activities (see Section 5.2.1) will be placed over the excavated area and graded to ensure that no low areas remain which promote surface water ponding.

15.7 DEMOBILIZATION

Unless otherwise noted, all equipment, materials, and facilities brought to site will be removed at the completion of the project. Construction utilities may be disconnected during demobilization.


A

APPENDIX A

EMERGENCY RESPONSE/CONTINGENCY PLAN (ERCP)

METAMORA LANDFILL SITE

LAPEER COUNTY, MICHIGAN

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

A.1.0 INTRODUCTION

The Emergency Response/Contingency Plan (ERCP) has been prepared to present protocols and procedures that shall be followed to provide a safe and immediate response to an on-Site emergency situation. Additionally, an air monitoring plan is provided to help ensure the protection of the Site personnel, the surrounding community and the environment.

The procedures and protocols presented in this ERCP have been assembled from information presented within the Health and Safety Plan (HASP) and Air Monitoring Plan (AMP) which are respectively presented as Appendix C and G of the Waste Excavation and Handling Plan (WEHP). Additional information has been assembled from local, county and national sources.

A.1.1 ORGANIZATION

This ERCP is organized in the following manner:

A.2.0 OFF-SITE CONTINGENCY PLAN

A.3.0 ON-SITE CONTINGENCY PLAN

A.4.0 AIR MONITORING

A.2.0 OFF SITE CONTINGENCY PLAN

Prior to commencing work activities involving the handling of potentially hazardous material, a coordination meeting will be held with the appropriate authorities to refine the off-Site contingency plan. This plan is intended to provide a safe and immediate response to an emergency situation.

On and off-Site Emergency Response Coordinators, will be identified, through whom all information and coordination of efforts will occur in the event of a release requiring off-Site notification. Plans will be finalized for:

(1) evacuation of adjacent areas
(2) fire fighting procedures
(3) priority transportation routes
(4) designation of emergency medical facilities
(5) coordination of traffic control
(6) immediate first aid procedures
(7) Site security

These plans will be maintained both on-Site and off-Site and by the Emergency Response Coordinators. Copies will also be maintained by the local police, fire and ambulance services, as well as in the repository for local citizens review.

Prior to the initiation of site activities a coordination meeting will be held to discuss the Emergency Response/Contingency Plan. The meeting will address emergency response procedures, equipment, personnel protection gear and general training of fire department personnel required at the Site.

Daily weather reports will be available for the determination of wind direction, weather fronts, etc. This information will support the decision making process during emergency situations.

The following provides a summary of local organizations and information sources which may be utilized during emergency response activities:

1. Ambulance:

Lapeer County Ambulance Service
106 Calhoun Street
Lapeer, Michigan 48446
Telephone (313) 664-1801 Emergency only
(313) 664-2927 Business

2. Police and Fire:

Lapeer County Sheriffs Department
2408 W. Genesee Street
Lapeer, Michigan 48446
Telephone (313) 664-1801 (Emergency)

Michigan State Police
Lapeer Post
Telephone (313) 664-2905

3. Lapeer Fire Department

2300 West Genesee Street
Lapeer, Michigan 48446
Telephone (313) 664-2111
Dispatch (313) 664-1801 (Emergency)

	Metamora Fire Department	Metamora Township Hall 730 West Dryden Road Metamora, Michigan Fire Chief (home) (313) 678-2908 Fire Chief (work) (313) 678-2577 Dispatched through Lapeer Fire Department @ (313) 664-1801
4.	Local Hospitals:	Lapeer County General Hospital 1375 North Main Street Lapeer, Michigan 48846 Telephone (313) 664-8511
		St. Joseph Mercy North 80650 Van Dyke Almont, Michigan 48003 Telephone (313) 798-8551
5.	Lapeer County Emergency Coordinator	John Biscoe Telephone (313) 667-0366 1-800- 572-1655
6.	Poison Control Information	Southeast Regional Poison Center Children's Hospital 3901 Beaubien Detroit, Michigan 48003 Telephone (313) 257-9111 1-800-572-1655
		Hurley Poison Center 1 Hurley Plaza Flint, Michigan 48503 Telephone (313) 257-9111
7.	Lapeer County Health Department	Ray Gaynier, Director Environmental Health Division Lapeer, Michigan 48446 Telephone (313) 667-0392
8.	U.S. EPA	Linda Nachowicz Telephone (312) 886-6337 Emergency Response Telephone (312) 353-2318 (Emergency)

9.	MDNR	Emergency Number Telephone	1-800-292-4706 1-800-292-0248 (24 hour)
10.	Chemtrec	Spill Response Information Telephone	1-800-424-9300 (24 hour)
11.	Poison Control	Telephone	313-257-9111 1-800-572-1655
12.	National Response Center	Telephone	800-424-8802 (24 hour)

Routine Site security procedures are provided in the Site Security Plan (SSP) provided as Appendix B.

A.2.1 HOSPITAL ROUTES

The purpose of this subsection is to provide detailed directions to each of the following hospitals:

1. Lapeer County General Hospital
2. St. Joseph Mercy North

A hospital route map to each of these hospitals is respectively presented on Figures A.1 and A.2. Direction to each hospital (from the Site) are presented below:

1. Lapeer County General Hospital
   - exit right from Site on Dryden Road
   - travel 2 miles west on Dryden Road
   - turn right on M-24 to Lapeer
   - travel 8 miles north on M-24 through Lapeer
   - Lapeer County General Hospital @ 1375 North Main Street (M-24) on left

2. St. Joseph Mercy North
   - exit left from Site on Dryden Road
   - travel 11 miles east on Dryden Road
   - turn right on VanDyke to Almont
   - travel 4.5 miles south on VanDyke through Almont
   - St. Joseph Mercy North @ 80650 VanDyke

Each of these routes will be tested prior to initiating Site activities. The route will be tested routinely during the project to determine if there are construction zones requiring detours.

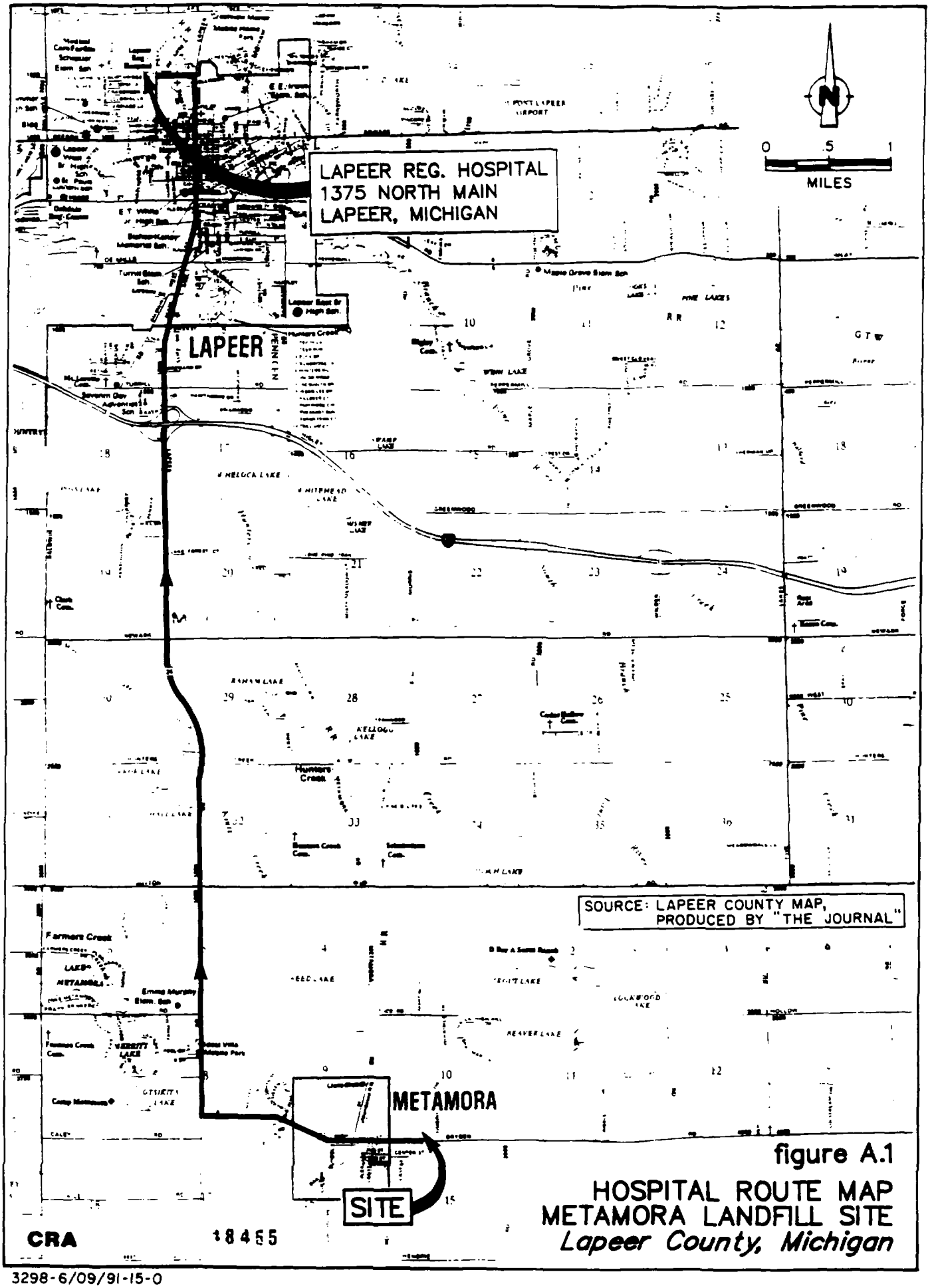
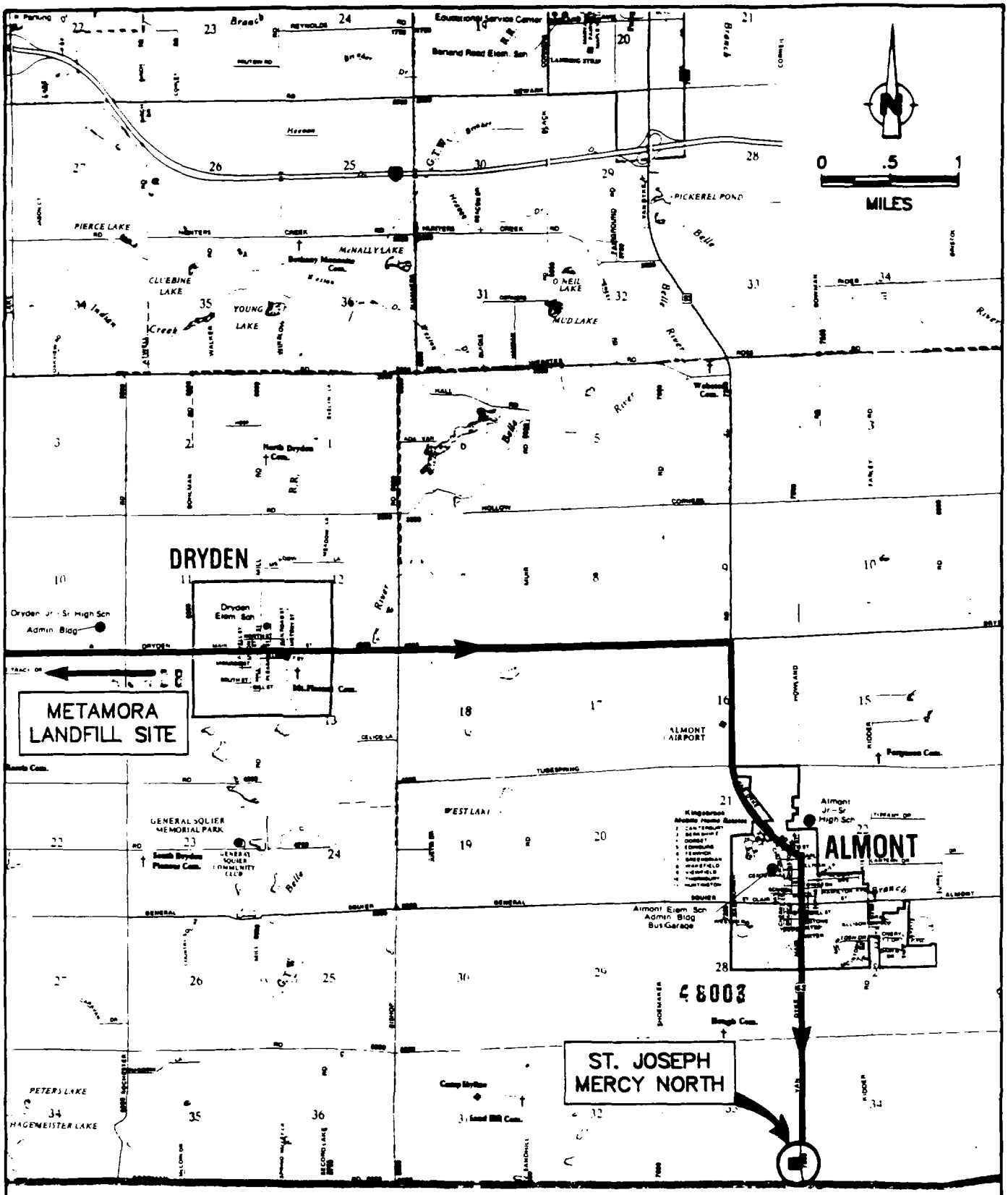


figure A.1

HOSPITAL ROUTE MAP
METAMORA LANDFILL SITE
Lapeer County, Michigan

CRA 18455

3298-6/09/91-15-0



SOURCE: LAPEER COUNTY MAP
PRODUCED BY "THE JOURNAL"

figure A.2
HOSPITAL MAP
METAMORA LANDFILL SITE
Lapeer County, Michigan

CRA

A.3.0 ON-SITE CONTINGENCY PLAN

Potential on-Site emergency situations are summarized as follows:

1. storms
   - blizzard
   - ice storm
   - tornado
   - wind
   - lightning

2. fire
3. explosion
4. spill
5. vehicle accident
6. personal injury

In the event that an emergency situation develops on-Site during work activities the on-Site emergency warning system will be engaged and appropriate actions taken. The magnitude of the emergency situation will dictate the requirement to notify off-Site response resources (i.e. ambulance, hospital, police, fire).

Off-Site notification will be coordinated through the on-Site Emergency Response Coordinator to the off-Site Emergency Response Coordinator (if required) (see Section A2.0).

Additional emergency procedures and protocols are discussed in the following subsections:

A.3.1 Site Emergency Warning System

A.3.2 Emergency Equipment

A.3.3 Emergency Procedures

A.3.4 Personal Injury

A.3.5 Ambient Monitoring Contingencies

In the event of serious injury to on-Site personnel or contact with a hazardous material, the following protocol will be followed:

(1) Activate Site alarm (three short blasts on air horn);

(2) Immediate notification of Safety Officer (SSO) or project manager (PM);

(3) Contact the identified medical center (as required);

(4) Decontaminate the person and administer proper emergency first aid; and

(5) Move the person from the hotline to the Personnel Decontamination Trailer (PDT); and

(6) Transport to the medical facility along pre-defined route (see Figure A.1).

In the event of a significant release of toxic or hazardous vapors, the source of such vapors shall be immediately isolated and the material identified. The off-Site Emergency Response Coordinator and the U.S. EPA Representative will then be notified. If possible, the source of the vapors shall be controlled. All personnel shall utilize self-contained

breathing apparatus during such operations. Continuous air monitoring of the area shall commence. Appropriate regulatory and emergency agencies will be notified of the situation. A list of the phone numbers for each agency will be prominently posted near each telephone.

These numbers are summarized as follows:

Agency/Facility	Phone	Contact
Police	(313) 664-1801	Lapeer Co. Sheriff
Fire	(313) 664-1801	Lapeer Co. Fire Dept.
Ambulance	(313) 664-1801	Lapeer Co. Ambulance Service
Hospital	(313) 664-8511	Lapeer Reg. Hospital
Emergency Coordinator	(313) 667-0366	John Biscoe
U.S. EPA	(312) 886-6337	Linda Nachowicz

A.3.1 SITE EMERGENCY WARNING SYSTEM

Several warning systems may be utilized depending on the work Site conditions or emergency involved:

- Verbal communications
- Verbal communications assisted with a bull horn
- Radio communications
- Vehicle horns
- Portable hand-held compressed gas horns

Verbal instructions with or without assistance are used to deal with specific incidents.

Radio communications are used on Site to give instructions and directions. Emergency radio communications are prefixed as such and have priority over operations communications.

. Horn signals are used to signify an emergency warning. Continuous repeated short blasts are used on Site or from off Site to signify evacuation of all personnel from the Site to the Contaminant Reduction Zone (CRZ) or Support Zone (SZ) where further instructions will be given after a head count is taken.

A.3.2 EMERGENCY EQUIPMENT

The following equipment shall be available at the work Site depending on the nature of the remedial activities to be performed:

- Fire extinguishers - dry chemical
- First-aid kits (including chemical burn kit)
- Emergency oxygen kit
- Emergency shower kit (pressurized)
- PDT (personnel decontamination trailer)
- Fire blankets
- Portable two-way radio equipment
- Hand-held compressed gas horns

- Bull horns
- Appropriate spill cleanup supplies and equipment (see Spill Control Plan)

Emergency equipment (eg. fire extinguisher, first aid kit) shall be staged in the CRZ for both the excavation, staging and incinerator areas. Additional emergency support equipment will be staged in the office area (eg. PDT).

A.3.3 EMERGENCY PROCEDURES

In case of an emergency or hazardous situation, the team member that observes this condition shall immediately give the alarm.

1. Upon hearing the alarm, all non-emergency communications will cease and the member giving the alarm will proceed to give the on-Site Emergency Response Coordinator all pertinent information.
2. Actions to be taken will be dictated by the emergency.
3. Power equipment will be shut down and operators will stand by for instructions.
4. Injured personnel will be transported to the hotline where appropriate first aid treatment can begin.
5. Injured personnel will then be transported to the Personnel Decontamination Trailer (PDT).
6. Contractor's Command Post (CP) will be notified immediately.
7. In case of a fire, explosion or hazard alarm, individuals will proceed immediately to assigned pre-located safe sites.

8. Upon arrival at the safe sites, a complete head count will be given to Project Manager and individuals will stay at the safe site until the area is secured.

Off-site emergency response will be coordinated through the emergency dispatch at (313) 664-1801 (see Section A3.0), which coordinates the efforts of local response teams such as police, fire, and ambulance. The Lapeer Fire Department is dispatched through (313) 664-1801. The utilization of the Metamora Fire Department will be coordinated by the Lapeer Fire Department.

The local hospitals will be notified of the nature and extent of any situation which may require medical attention in order to have proper preparation for an emergency response.

During emergency situations the security force will immediately take measures to secure the Site. This will include ensuring that all unauthorized personnel are kept off Site and out of the line of priority transportation corridors (i.e. main access road and gate).

Off-Site evacuation of residents (if required) will be coordinated by the local police authorities as dictated by the off-Site Contingency Plan (see Section A.2.0).

The exact procedures and responsibilities of each of the identified organizations shall be discussed and finalized during the planned Emergency Response coordination meeting.

A.3.4 PERSONAL INJURY

If an injury occurs due to an accident or exposure to a hazardous substance, the Contractor's Command Post (CP) will be immediately notified by radio. The SSO will be given all appropriate information concerning the nature and cause of the injury so that treatment preparations can be initiated. The injured person will be transported to the hotline where appropriate first-aid treatment can begin. The injured person will then be transported to the PDT where additional first aid can be administered (as required). The injured person will then be transported to the hospital via ambulance.

The Project Manager will be informed and will investigate the cause of the injury and make any necessary changes in work procedures.

Figure A.1 and A.2 present maps showing the directions to the emergency medical facilities (from the Site).

A.3.5 AMBIENT MONITORING CONTINGENCIES

When ambient monitoring on the downwind side of the Site indicates higher than background levels of any contaminant, the SSO and the PM will immediately determine the cause, make changes to work practices or procedures, and if necessary, make changes in Site layout (i.e.,

change the location of CP, CRZ, or Exclusion Zone). Additionally, the SSO or PM will warn unprotected personnel to evacuate or don protective equipment or shut down all activities (as required). The SSO or PM will also determine the necessity (in consultation with the U.S. EPA on-Site representative) to contact local authorities to effect off-Site evacuation (if required). Air monitoring activities are discussed in the AMP and summarized in the following section.

A.4.0 AIR MONITORING

Air monitoring will be based on the Air Monitoring Plan (AMP) contained as Appendix G of the Waste Excavation and Handling Plan (WEHP).

Daily supervision of air monitoring will be the responsibility of the Contractor's SSO.

A.4.1 GENERAL STRATEGY

In order to ensure the protection of Site personnel, the surrounding community and the environment, the following four types of air monitoring will be performed (as necessary):

1. Work Area Monitoring;
2. Exclusion Zone Perimeter Monitoring;
3. Site Property Line Monitoring; and
4. Meteorological Monitoring.

The air monitoring program will be generally concerned with volatile organic compound (VOC) emissions from the excavation. Decisions regarding air monitoring for particulate and/or PCBs shall be made by the SSO during RA implementation. The decisions will be based upon the Site-specific incidence and magnitude of dust generation during the RA (in concurrence with the U.S. EPA on-Site representative).

A.4.2 WORK AREA MONITORING

A. SAMPLING LOCATIONS

Monitoring for VOCs will be performed immediately adjacent to the waste excavation, the incineration equipment, decontamination and staging areas.

Area monitoring will be performed using a fixed station at the breathing zone height. This station will be located at a downwind position that is as close as possible to the work area without causing interference to actual Site activities. Sampling will be performed by Air Monitoring Technicians, as necessary, to ensure that any vapor emissions are detected as soon as possible.

Special attention will be given to wind-shielded locations on-Site to ensure that any accumulation of airborne contaminants and/or explosive vapors is detected.

B. SAMPLING METHOD

Sampling will be performed using the following instrumentation:

1. Total VOC monitor sensitive to 1.0 ppm, such as the Foxboro Organic Vapor Analyzer (OVA) or the HNU Photoionizer (PID).

2. Explosion Meter

Real-time instrumentation for monitoring total dust may also be used periodically if deemed necessary by the SSO.

All instrumentation will be calibrated according to the manufacturers specifications.

C. SAMPLING FREQUENCY

Real-time air monitoring will be performed daily using both the explosimeter and the total VOC instrument. Monitoring will continue throughout active Site operation periods until activity involving hazardous material has ceased.

Real-time monitoring will be conducted in the equipment decontamination and staging area as deemed necessary to assess the release of VOC during associated activities.

Sampling for airborne contaminants will be performed during excavation and waste staging activities. Daily work will not begin until all required air monitoring instrumentation is in place and operating.

Details regarding the frequency of air monitoring are provided in the AMP presented as Appendix G of the WEHP.

Action Level	Response
Organic Vapors 5 ppm to 50 ppm for 15 minutes	Contact Site Safety Officer, determine source of emissions and take corrective actions, if required.
Organic Vapors over 50 ppm for 15 minutes	Stop work, take corrective action, perform continuous monitoring at the Site perimeter to assess potential for migration of vapors off Site. Notify U.S. EPA on-Site representative.

D. ACTION LEVELS/NOTIFICATION

The following Site action levels and response actions for Site operations will be used:

Action Level	Response
10% LEL	Contact SSO, investigate cause while remedial activities continue.
20% LEL	Stop work, remove personnel, institute corrective actions as needed to control emissions. Work may resume when levels return to 10% LEL for 15 minutes.

A.4.3 EXCLUSION ZONE PERIMETER MONITORING

Ambient air monitoring for total VOC at the exclusion zone perimeter will be performed using real-time instrumentation sampling methods during on-Site activities.

A. REAL-TIME SAMPLING LOCATIONS

Ambient air will be monitored for total VOC at eight specific stations located along the perimeter of the Exclusion Zone. The eight locations will be chosen so as to encircle the exclusion zone as indicated on a Site map. Exact locations will be determined in the field.

B. SAMPLING METHOD

Sampling for total VOC will be performed using a real-time total VOC monitor such as the Foxboro OVA or HNU PID.

C. SAMPLING DOCUMENTATION

Real-time measurements both along the exclusion zone perimeter and in the active work area will be recorded in a permanent log.

D. ACTION LEVELS/NOTIFICATION

If a total VOC reading at the exclusion zone perimeter line is more than 10.0 ppm above the most recent upwind reading, additional

upwind readings will be taken to confirm the situation. If it is verified that emissions are due to remedial activity, the U.S. EPA representative will be notified immediately. Measurements will then be taken. If concentrations at the Site property line exceed 1 ppm for a 15 minute period remedial action will cease and the U.S. EPA representative will be contacted.

E. SAMPLING FREQUENCY

Real-time sampling will be performed every three hours at the exclusion zone perimeter stations during active excavation and/or staging operations.

If actual field operations indicate that sampling of all eight exclusion zone perimeter locations every three hours is not practical or necessary, adjustments to the sampling frequency and/or locations may be proposed to the U.S. EPA representative for review and approval.

A.4.4 SITE PROPERTY LINE MONITORING

A. SAMPLING METHOD

Sampling for the VOC parameters specified on Table A.1 will be performed using U.S. EPA Method T-01 during on-Site activities.

The SSO will be responsible for the daily selection of property line station locations.

TABLE A.1

PROPERTY LINE AIR MONITORING

Compound	*Analytical Method*
benzene	T-01
trichloroethene	T-01
tetrachloroethene	T-01
1,2-dichloroethane	T-01

B. SAMPLING FREQUENCY

During the first four weeks of the incineration and excavation activities, the sample sets will be collected daily and analyzed in accordance with U.S. EPA Method T-01. Following completion of the first two weeks of excavation activities, all Site air data, consisting of real-time HNU/OVA readings and compound-specific air sample results, and the nature of the RA activities to be performed in the following periods of time, will be evaluated.

Following this review and evaluation, and after consultation with U.S. EPA, the frequency of analysis of the sample sets may be reduced if approved by U.S. EPA. The proposal to U.S. EPA to reduce the frequency of property line air sampling shall include the rationale for the reduced sampling frequency and a contingency plan for increasing the frequency as deemed warranted based upon Site RA activities.

C. SAMPLE ANALYSIS

Perimeter samples, collected as described above, will be analyzed by a laboratory approved by U.S. EPA. Samples will be shipped the same day, if possible, using overnight mail services, or transported directly to the laboratory, if possible. The analytical data will be made available verbally from the laboratory for evaluation by the Engineer, the Contractor and U.S. EPA within 48 to 72 hours from receipt of the samples at the laboratory (if possible).

D. QUALITY CONTROL

To ensure that unpredictable sampling errors are controlled and that the data are accurate and precise, the following measures will be implemented:

1. Blind field blanks will be submitted for analysis with each sample set.
2. Duplicate samples will be submitted at a rate of once per day.
3. Spiked tenax tubes will be routinely analyzed.

E. ACTION LEVELS/NOTIFICATION

If the analytical results indicate higher airborne contaminant concentrations at the downwind stations than upwind stations, the Contractor and Engineer will investigate mitigation methods and work practices available to determine if emissions from the Site can be reduced.

The data generated from the property line sampling shall be submitted to U.S. EPA for review.

F. DATA REPORTING

The results of the real-time work area and perimeter monitoring will be transmitted to U.S. EPA in a timely fashion. The U.S. EPA will immediately be given verbal notification of any operational problems, or detected concentrations of airborne contaminants in excess of background.

G. SAMPLE DOCUMENTATION

A summary of all air monitoring, along with the appropriate written documentation, will be kept on file at the Site.

A.4.5 METEOROLOGICAL MONITORING

Meteorological monitoring will be performed during the on-Site activities. The following data will be monitored and recorded:

1. Wind speed;
2. Wind direction;
3. Temperature; and
4. General weather conditions.

In addition, at least four wind socks (if required) will be positioned such that the wind direction can be determined from all appropriate areas of the Site.

Meteorological monitoring shall be completed in accordance with U.S. EPA standard methods in conformance with accepted scientific principles.

Meteorological data will be used to determine Site perimeter air monitoring stations.

B

APPENDIX B

SITE SECURITY PLAN

METAMORA LANDFILL SITE
LAPEER COUNTY, MICHIGAN

TABLE OF CONTENTS

B.1.0 INTRODUCTION

This Site Security Plan (SSP) has been prepared to outline the routine security procedures and protocols for the Metamora Landfill Site (Site).

Site Security will consist of monitoring and access control by a security company. Site Security will be used to:

- Prevent trespassing by unauthorized individuals,
- Prevent interference with any activities, personnel, equipment or materials on Site,
- Prevent interference with safe working procedures,
- Prevent exposure of unauthorized personnel to Site waste materials, and
- Provide a "first line" indication of on-Site emergencies.

Additional Site specific information relating to emergency procedures is provided in the Emergency Response Contingency Plan (ERCP) presented as Appendix A of the Incineration Work Plan (IWP).

Site safety procedures are presented in the Health and Safety Plan (HASP) presented as Appendix C of the Waste Excavation and Handling Plan (WEHP).

The Site Security Officers will maintain a copy of the Site Security Plan (SSP), ERCP and HASP in the Site security office at all times.

The remainder of the SSP is presented as follows:

B.2.0 Security Personnel

B.3.0 Scope of Security Activities

B.4.0 Communications

B.5.0 Emergency Response

B.2.0 SECURITY PERSONNEL

On-Site Security will be maintained by Burns International Security Services (Burns) located in Flint, Michigan. Burns will be responsible for providing Site security surveillance.

Pertinent address information for Burns is provided as follows:

Branch Office

Burns International Security Services
352 S. Saginaw
Suite 501
Flint, Michigan
U.S.A. 48502
Phone: (313) 233-3450
Pager (on-Site): (313) 610-1328
Contact: Mr. Peter Salamon
Pager: (800) 312-1076

The above referenced office location is a branch of the following district office:

District Office

Burns International Security Services
22150 Greenfield
Oak Park, Michigan
U.S.A.
Telephone (313) 968-2600

The Burns regional dispatch is maintained at a 24 hour

command post located in Pontiac, Michigan. The Command Post is reached automatically by dialing Burns Flint number after 5:00 p.m.

24 Hour Command Post

Telephone (313) 233-3450 (after 5:00 p.m.)

B.3.0 SCOPE OF SITE SECURITY

A trailer will be provided to be used as a Site security office. The trailer shall be equipped with power and a telephone. The Site security office will be established in an area which allows the monitoring of personnel and activities within the drum excavation and storage areas.

. The Site security will consist of a minimum of one Burns Security Officer on Site on a 24 hour basis. The responsibilities of the Site Security Officer includes the monitoring of the drum excavation and storage area and regular reconnaissance of other on-Site areas. The requirement for utilizing a second Security Officer will be assessed on an as needed basis.

A Security log will be maintained at all times. All personnel or visitors entering or leaving the Site will be logged in and out by the Site Security Officer.

Site security will be maintained on a 24-hour basis. After hours, Site Security will consist of at least one Security Officer.

After regular work hours no individuals will be allowed on Site except:

1. Conestoga-Rovers & Associates (CRA) personnel, or

2. Personnel or organizations designated to be allowed on Site after working hours by CRA.

After-hours phone numbers for CRA, U.S. EPA and other emergency personnel will be posted in the Site Security office and on bulletin boards in the office and break trailers.

The security force will be briefed on Site conditions and their responsibilities in the event of unauthorized intrusion or an emergency situation. The briefing will include the following:

1. review of Site history,
2. review of Site conditions and chemical which are present,
3. review of the HASP,
4. review of Site operations,
5. review of Site equipment,
6. meetings (as required) to discuss changes to Site conditions and security requirements,
7. review of emergency contacts and procedures, and
8. review of procedure to secure Site during emergency situations.

Additional security will be provided by the Contractor during active work periods.

B.4.0 COMMUNICATIONS

The Site Security Officer shall be equipped with a radio for internal on-Site communication between the office and the field to alert on-Site personnel in the event of an accident or incident.

The Site security office shall be equipped with a telephone (or other appropriate communication equipment) to communicate with off-Site agencies (fire department, police department, etc.).

Emergency telephone numbers will be posted throughout the Site at appropriate locations (i.e. all telephones). The emergency telephone numbers for the Site are summarized as follows:

Agency/Facility	Phone	Contact
Police	(313) 664-1801	Lapeer Co. Sheriff
Fire	(313) 664-1801	Lapeer Co. Fire Dept.
Ambulance	(313) 664-1801	Lapeer Co. Ambulance Service
Hospital	(313) 664-1801	Lapeer Reg. Hospital
Emergency Coordinator	(313) 667-0366	John Biscoe
U.S. EPA	(312) 886-6337	Linda Nachowicz

The following provides a summary of local organizations and information sources which may be utilized during emergency response activities (as presented in the HASP/ERCP):

1. Ambulance: Lapeer County Ambulance Service
   106 Calhoun Street
   Lapeer, Michigan 48446
   Telephone (313) 664-1801 Emergency only
   (313) 664-2927 Business

2.	Police:	Lapeer County Sheriffs Department 2408 W. Genesee Street Lapeer, Michigan 48446 Telephone (313) 664-1801 (Emergency) Michigan State Police Lapeer Post Telephone (313) 664-2905
3.	Lapeer Fire Department	2300 West Genesee Street Lapeer, Michigan 48446 Telephone (313) 664-2111 Dispatch: (313) 664-1801 (Emergency)
	Metamora Fire Department	Metamora Township Hall 730 West Dryden Road Metamora, Michigan Fire Chief (home) (313) 678-2908 Fire Chief (work) (313) 678-2577 * Dispatched through Lapeer Fire Department @ (313) 664-1801 (Emergency)
4.	Local Hospitals:	Lapeer County General Hospital 1375 North Main Street Lapeer, Michigan 48846 Telephone (313) 664-8511 Almont Community Hospital 80650 Van Dyke Almont, Michigan 48003 Telephone (313) 798-8551
5.	Lapeer County Emergency Coordinator	John Biscoe Telephone (313) 667-0366 1-800- 572-1655

6.	Poison Control Information	Southeast Regional Poison Center Children's Hospital 3901 Beaubien Detroit, Michigan 48003 Telephone (313) 257-9111 1-800-572-1655 Hurley Poison Center 1 Hurley Plaza Flint, Michigan 48503 Telephone (313) 257-9111
7.	Lapeer County Health Department	Ray Gaynier, Director Environmental Health Division Lapeer, Michigan 48446 Telephone (313) 667-0392
8.	U.S. EPA	Linda Nachowicz Telephone (312) 886-6337 Emergency Response Telephone (312) 353-2318 (Emergency)
9.	MDNR	Emergency Number Telephone 1-800-292-4706 1-800-292-0248 (24 hour)
10.	Chemtrec	Spill Response Information Telephone 1-800-424-9300 (24 hour)
11.	Poison Control	Telephone 313-257-9111 1-800-572-1655
12.	National Response Center	Telephone 800-424-8802 (24 hour)
13.	Burns International Security Services	352 S. Saginaw, Suite 501 Flint, Michigan 48502 Telephone (313) 233-3450

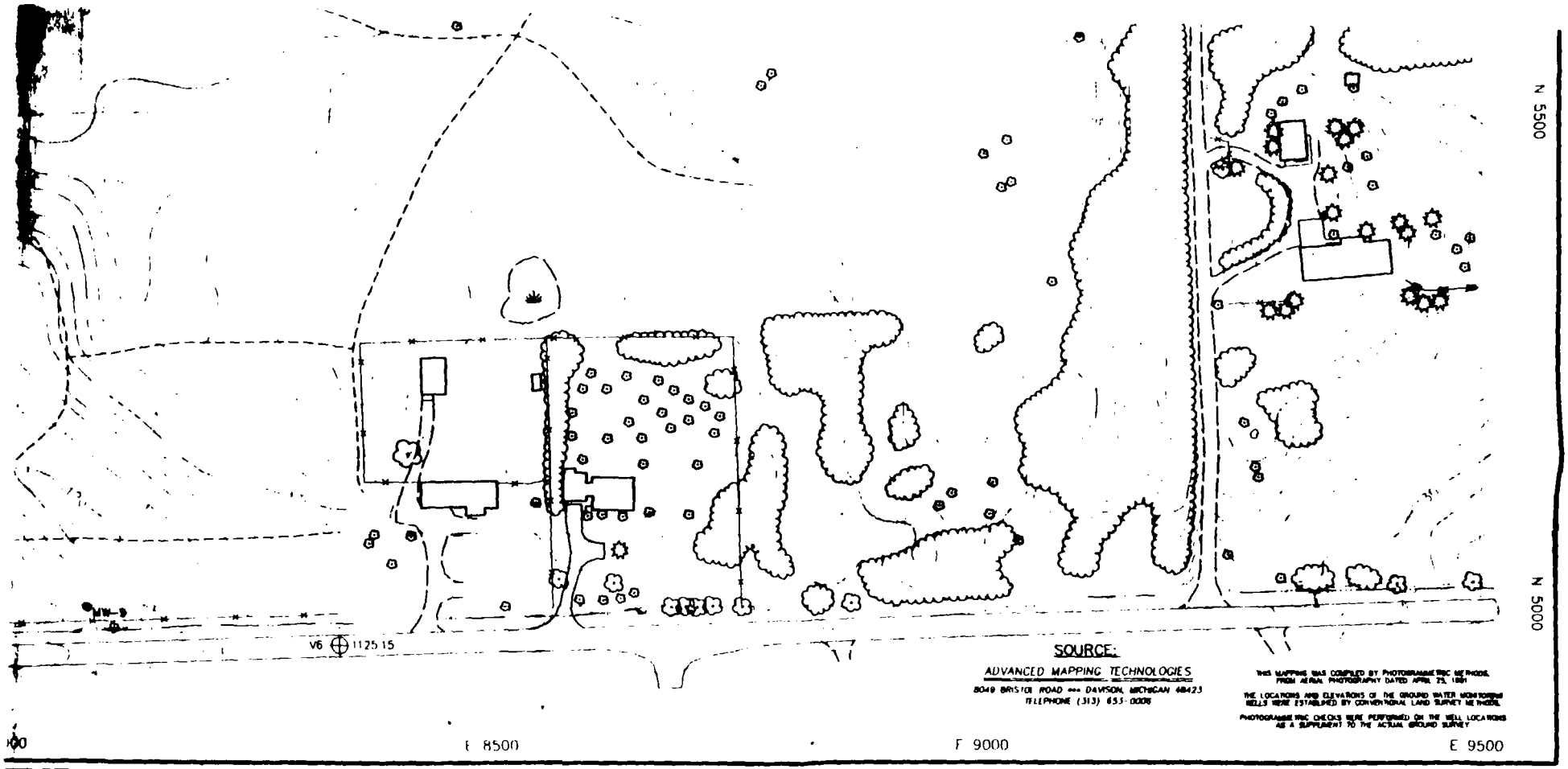
14. Conestoga-Rovers & Associates

11677 South Wayne Road
Suite 102
Romulus, Michigan
U.S.A. 48174
Telephone (313) 942-0909
Fax (313) 942-1858

B.5.0 EMERGENCY RESPONSE

Emergency response procedures are presented in the Emergency Response Contingency Plan (ERCP) presented as Appendix A of the Incineration Work Plan (IWP).

During emergency situations the security force will immediately take measures to secure the Site. This will include ensuring that all unauthorized personnel are kept off Site and out of the line of priority transportation corridors. (i.e. main access road and gate)



Approved

Initial

METAMORA LANDFILL SITE
METAMORA, MICHIGAN

INCINERATION WORK PLAN

CONTOUR PLAN

CRA Consulting Engineers
CONESTOGA-ROVERS & ASSOCIATES
651 Colby Drive, Waterloo, Ontario Canada N2V 1C2

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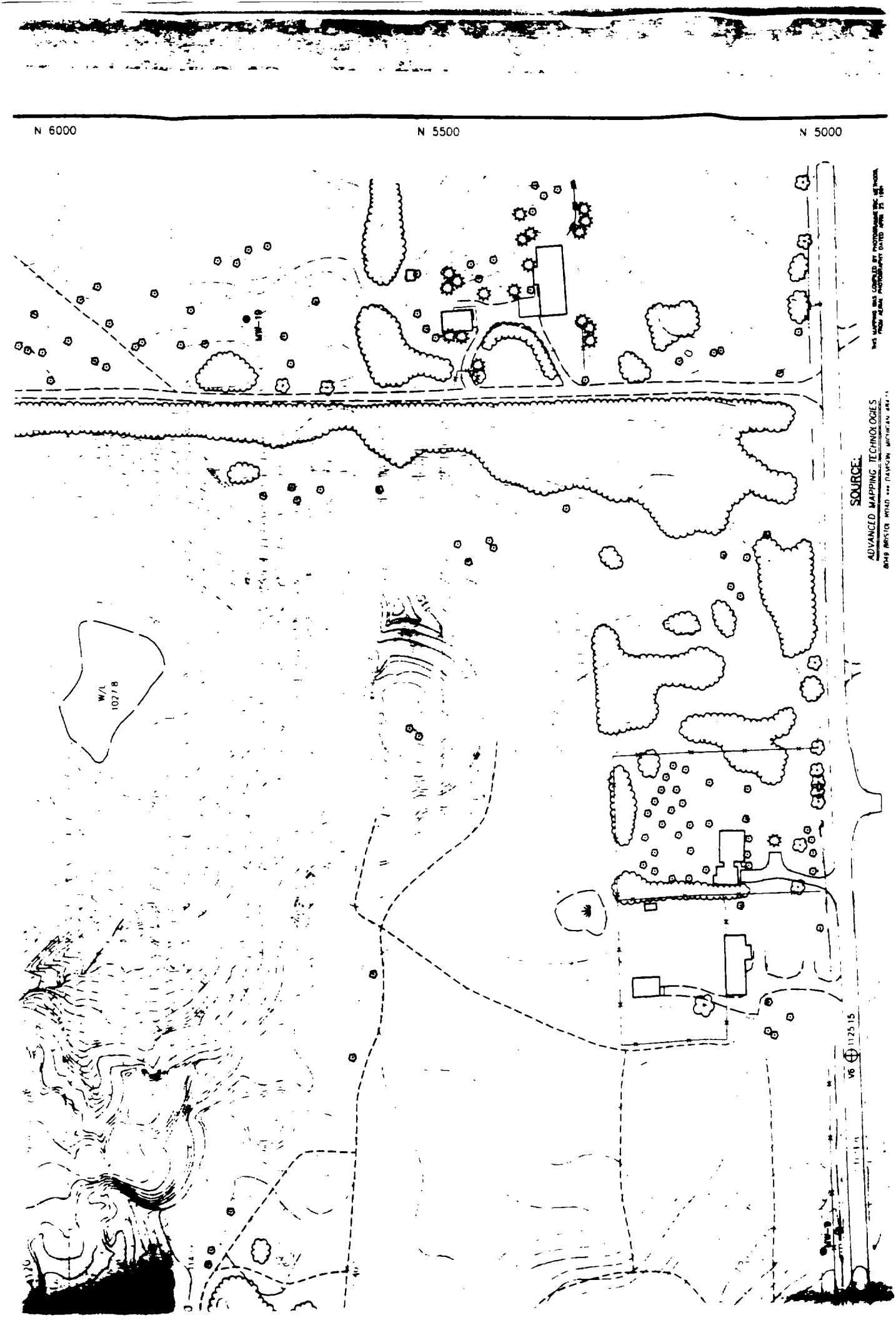
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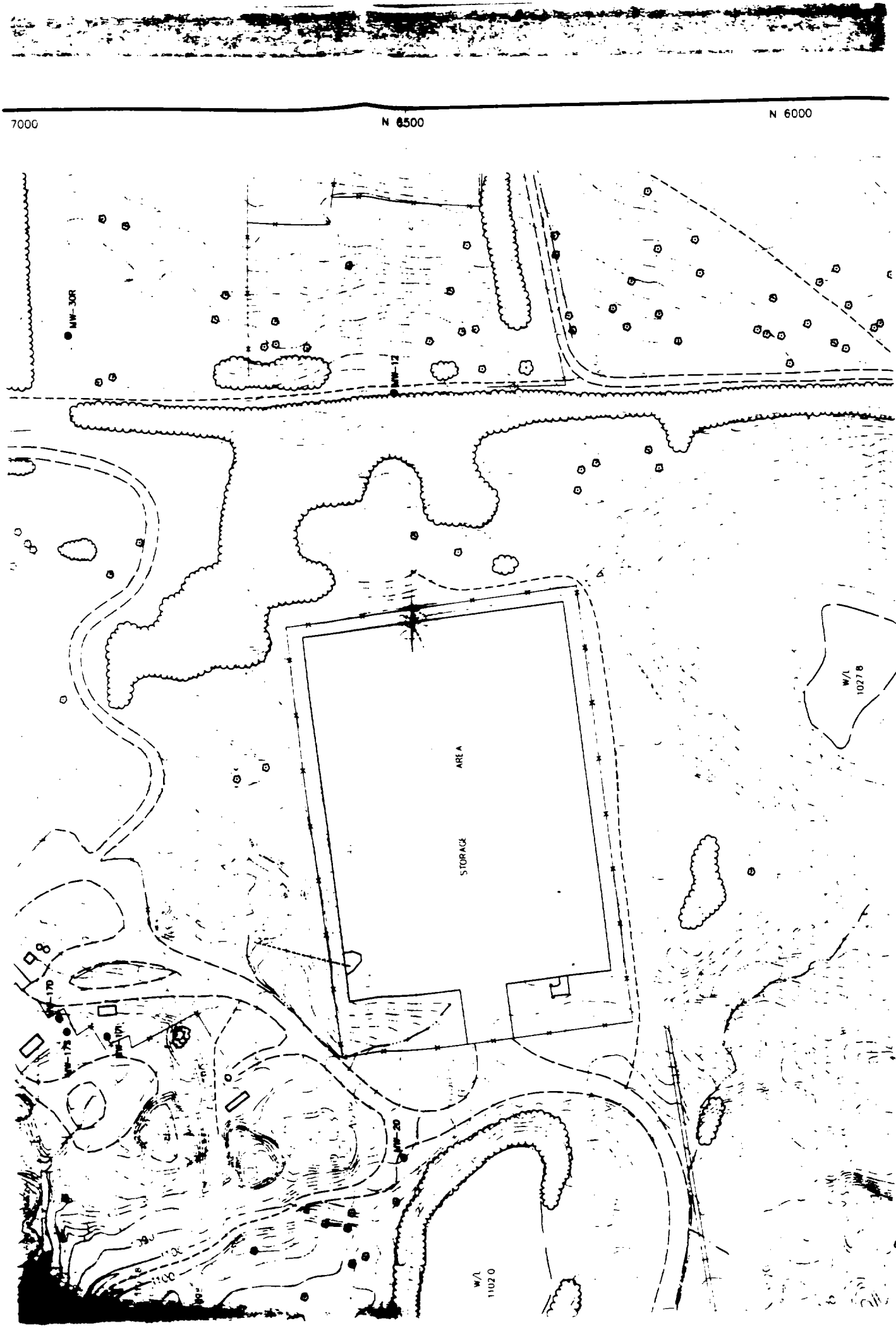
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MW-736

MW-737

MW-738

MW-739

MW-740

MW-741

MW-742

MW-743

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MW-748

MW-749

MW-750

MW-751

MW-752

MW-753

MW-754

MW-755

MW-756

MW-757

MW-758

MW-759

MW-760

MW-761

MW-762

MW-763

MW-764

MW-765

MW-766

MW-767

MW-768

MW-769

MW-770

MW-771

MW-772

MW-773

MW-774

MW-775

MW-776

MW-777

MW-778

MW-779

MW-780

MW-781

MW-782

MW-783

MW-784

MW-785

MW-786

MW-787

MW-788

MW-789

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MW-798

MW-799

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MW-805

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MW-809

MW-810

MW-811

MW-812

MW-813

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MW-984

MW-985

MW-986

MW-987

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MW-995

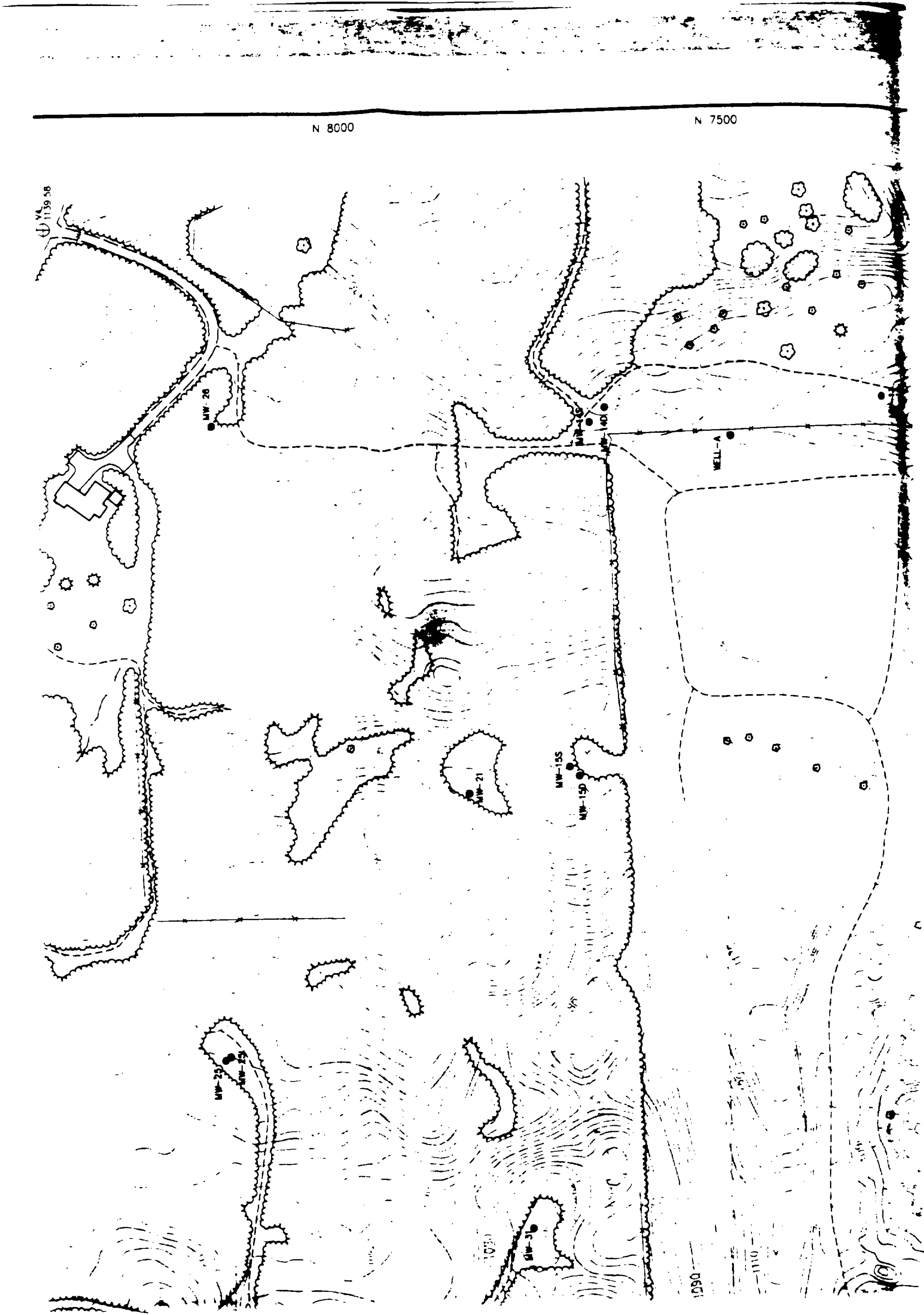
MW-996

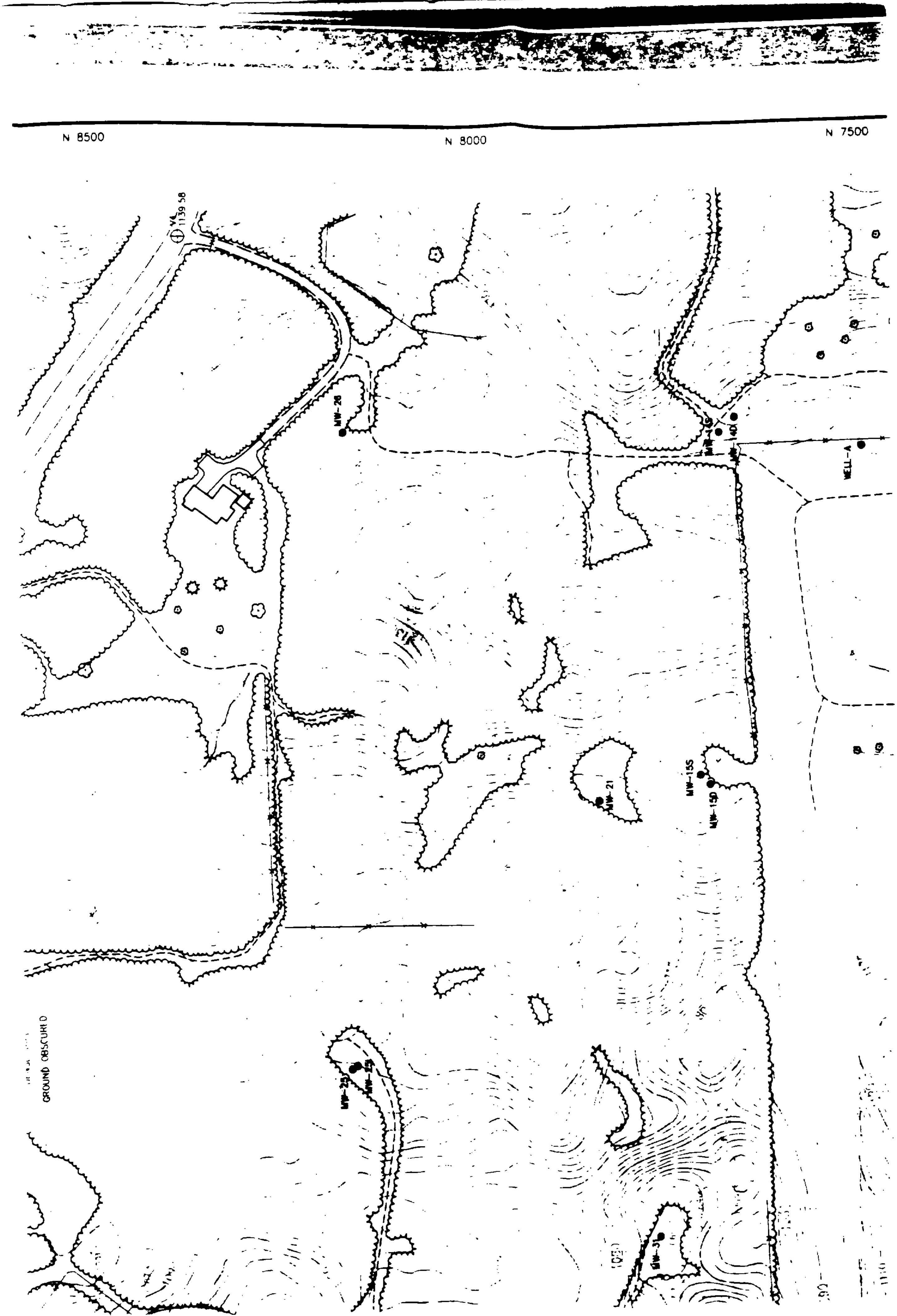
MW-997

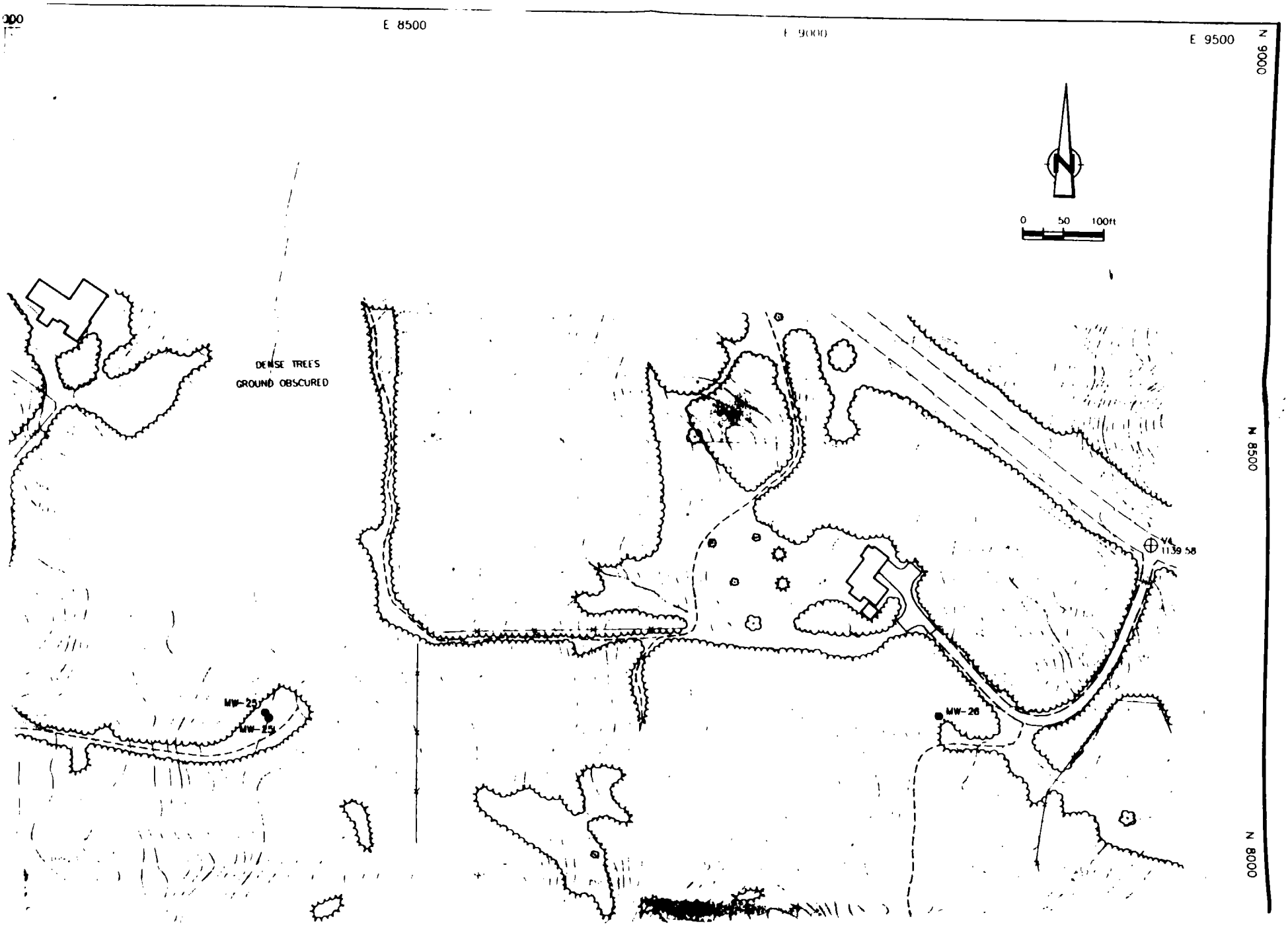
MW-998

MW-999

MW-1000


N 8000
N 7500
MW-28
WELL-A
MW-15S
MW-15D
MW-21
1090
1110


N 8500
N 8000
N 7500
GROUND OBSCURED
MW-20
MW-21
MW-15S
MW-15D
WELL-A


E 8500
E 9000
E 9500
N 9000
N 8500
N 8000
0 50 100ft
DENSE TREES
GROUND OBSCURED
MW-25
MW-26
YA
1139.58

N 9000

E 6500

E 7000

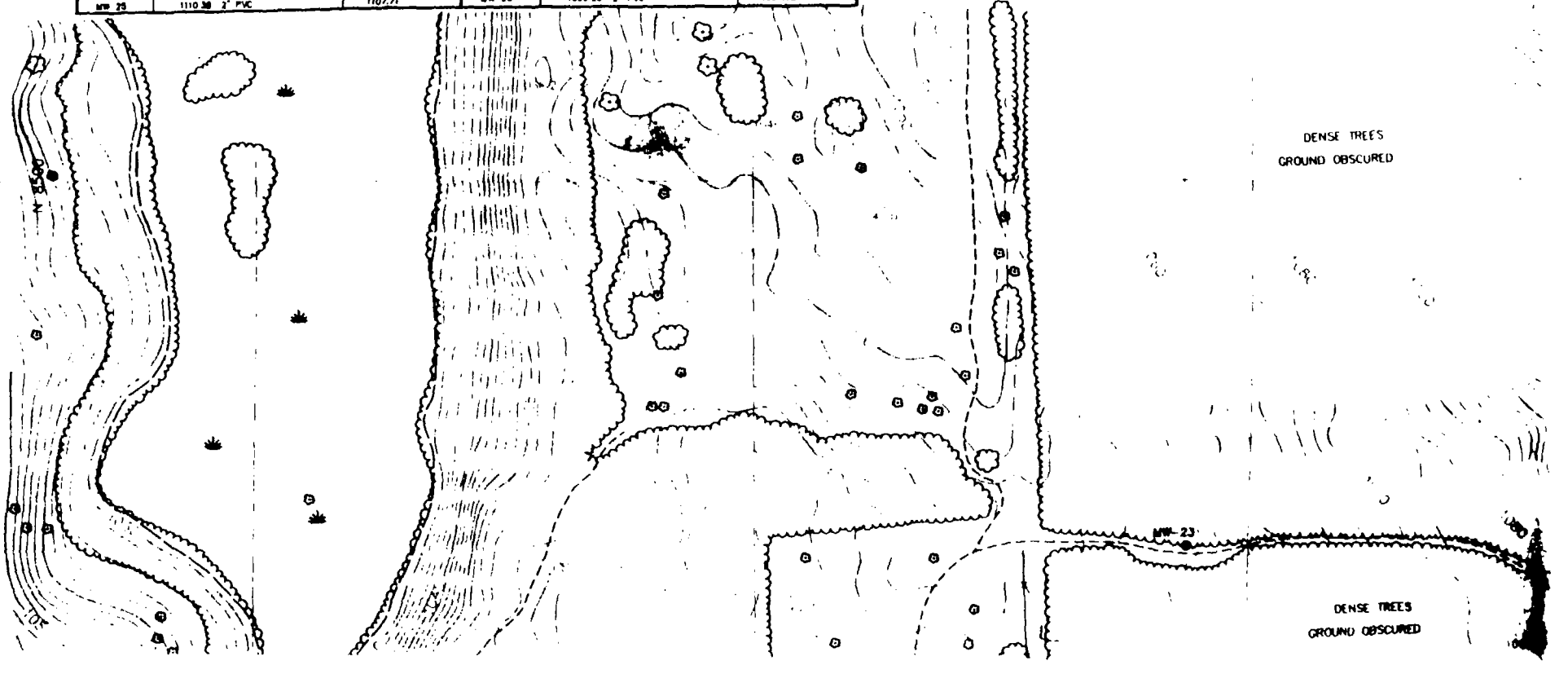
E 7500

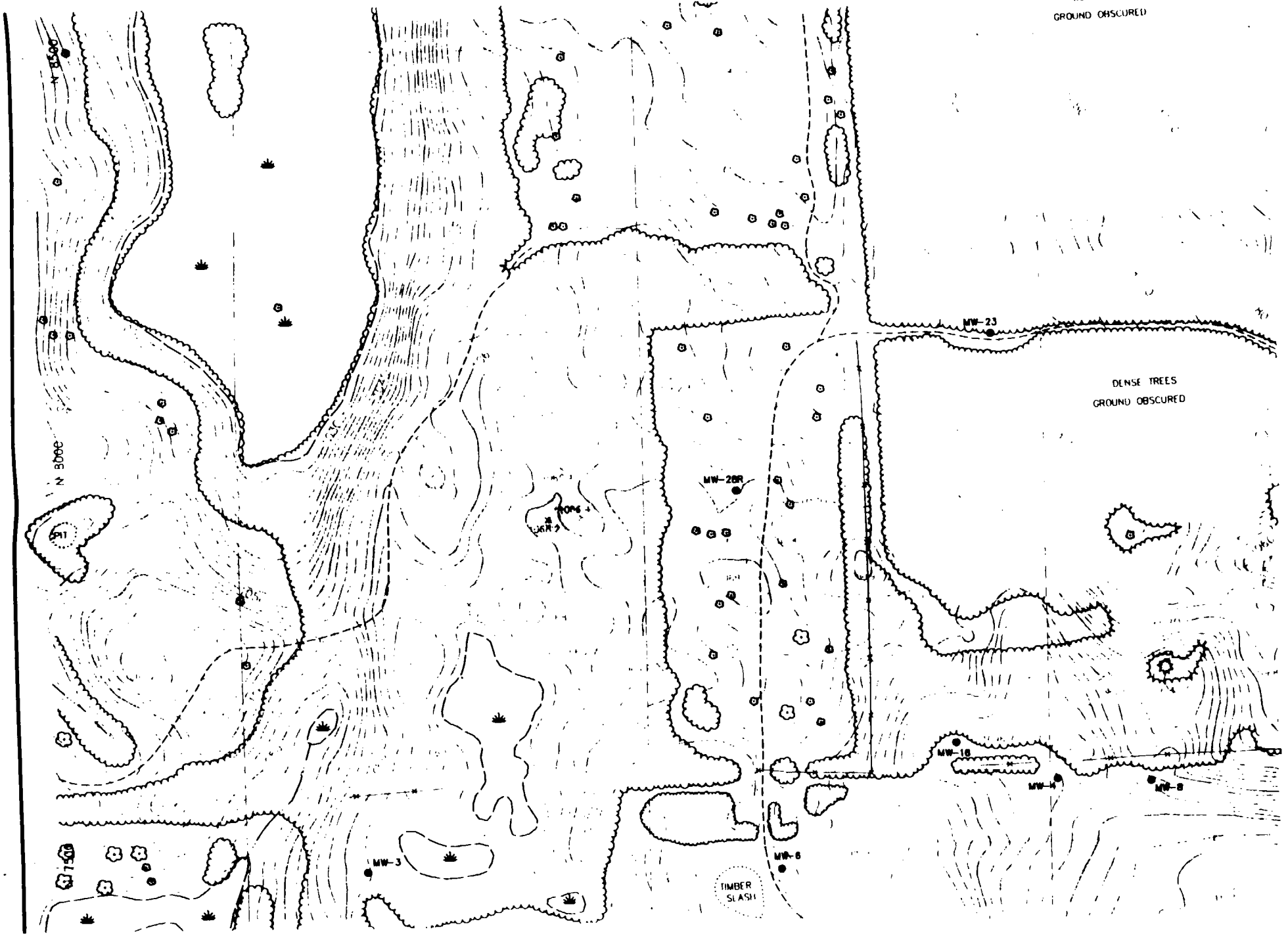
GROUND WATER MONITORING WELL DATA

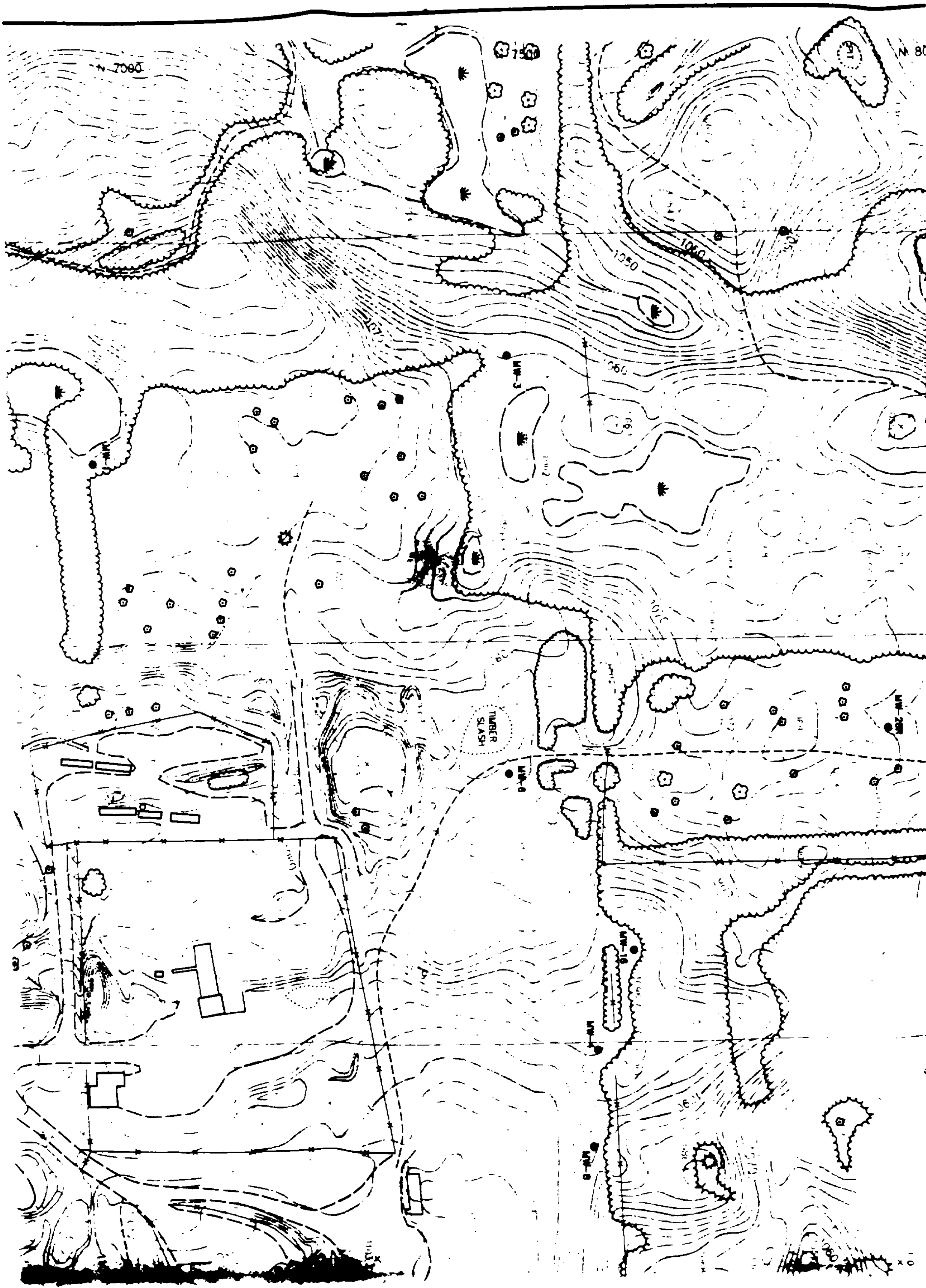
WELL NO.	TOP OF PIPE ELEV.	GROUND ELEV.	WELL NO.	TOP OF PIPE ELEV.	GROUND ELEV.
MW-16	1100.63 2" STEEL	1097.83	MW-28	1110.41 2" PVC	1107.66
MW-4	1088.88 2" STEEL	1085.39	MW-31	1088.68 2" PVC	1086.29
MW-6	1093.81 2" STEEL	1092.17	MW-180	1123.68 2" STEEL	1120.68
MW-26	1145.78 2" PVC	1143.38	MW-155	1122.04 2" STEEL	1118.81
MW-27R	1130.24 2" PVC	1127.78	MW-21	1118.98 2" PVC	1117.17
MW-18	1132.61 2" PVC	1130.10	MW-140	1144.17 2" STEEL	1141.32
MW-100	1115.38 2" PVC	1112.83	MW-145	1142.10 2" STEEL	1138.37
MW-106	1116.66 2" PVC	1113.87	WELL-A	1143.87 2" STEEL	1141.70
MW-11	1110.68 2" PVC	1108.15	MW-13	1138.44 2" STEEL	1134.84
MW-29R	1113.75 2" PVC	1111.84	MW-30R	1127.88 2" PVC	1121.03
MW-1	1073.10 TOP CAP 2" STEEL	1078.31	MW-12	1110.81 2" STEEL	1108.03
MW-3	1088.08 LOWER NOTCH 2" STL	1081.77	MW-18	1145.42 2" PVC	1142.77
MW-8	1084.91 4" STEEL	1083.18	MW-9	1127.53 2" STEEL	1125.63
MW-28R	1072.38 2" PVC	1089.71	MW-17	1088.22 2" PVC	1085.65
MW-23	1081.81 2" PVC	1086.91	MW-175	1088.54 2" PVC	1088.58
MW-24	1085.66 2" PVC	1083.26	MW-170	1088.82 2" PVC	1088.82
MW-25	1110.38 2" PVC	1107.71	MW-20	1089.28 2" PVC	1087.78

ADDITIONAL NOTES

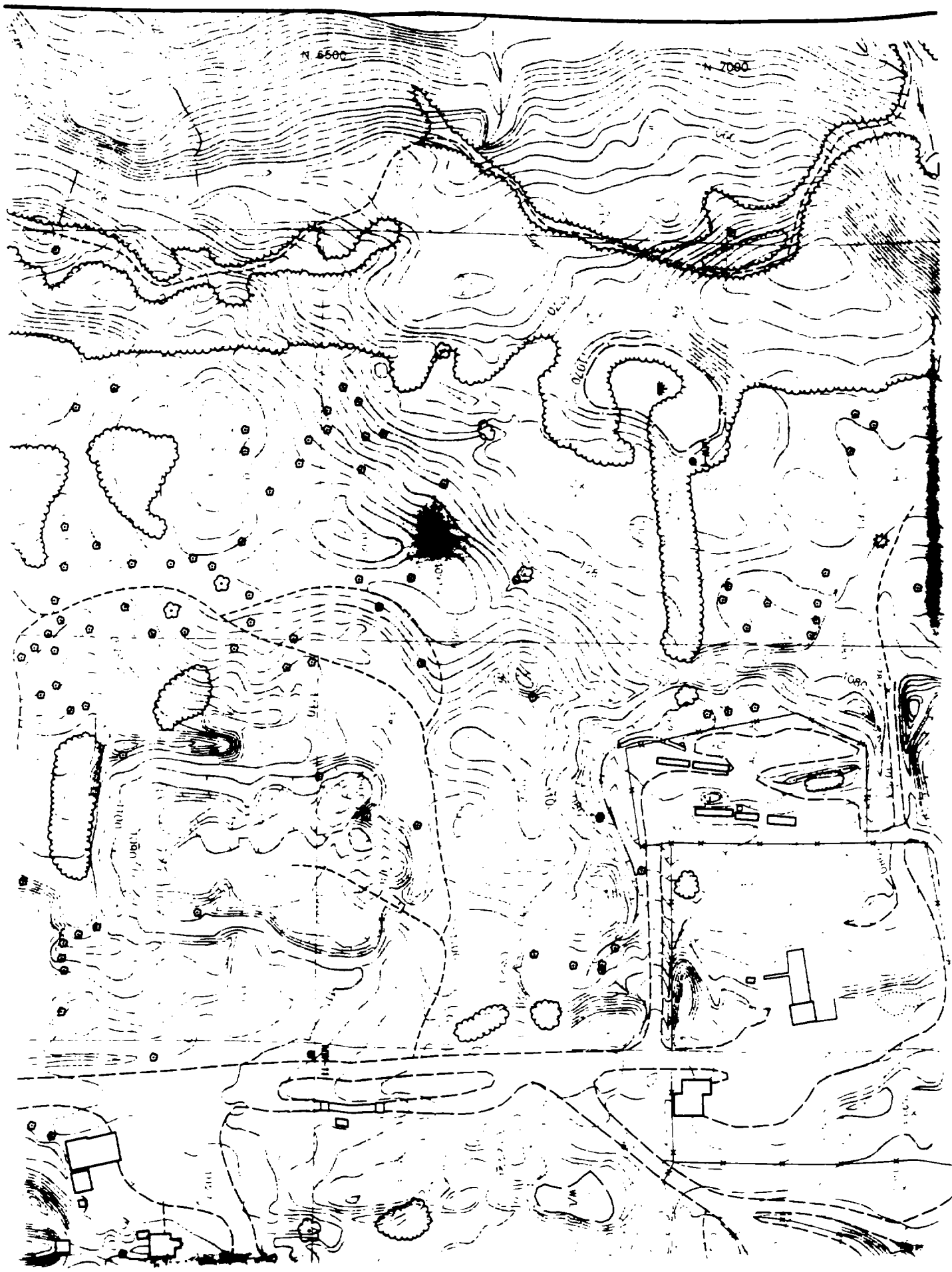
1. MASTER BENCH MARK FOR SITE, NATIONAL GEODETIC SURVEY BRASS TABLET, SET IN CONCRETE AT N.E. CORNER OF ENTRANCE RD. AND DRYDEN RD. AT FENCE LINE. TABLET IS STAMPED "METAMORA 1943 NO. 2 1977 AZIMUTH MARK" ELEVATION: 1130.78 FEET, LOCAL COORDINATE 4999.178 N & 7165.296 E
2. BEARING REFERENCE: THE BEARING SYSTEM WAS ROTATED TO MATCH THE BEARINGS IN A CERTIFIED LAND SURVEY PERFORMED BY RAYMOND J. DONNELLY & ASSOC. INC., OF TROY, MICHIGAN JOB NO. 88232, DATED JANUARY 1989. SAID BEARINGS ARE RELATED TO TRUE NORTH, AS DEFINED BY A SOLAR OBSERVATION ON 01-09-1989
3. ERROR OF CLOSURE ON THE UNADJUSTED FIELD OBSERVATIONS FOR THE MONITORING WELL LOCATION TRAVERSE LOOP WAS 1 PART IN 70,048
4. ERROR OF CLOSURE ON THE AERIAL VERTICAL CONTROL LEVEL LOOP WAS - 036 FT
5. ERROR OF CLOSURE ON THE WELL ELEVATION LEVEL LOOP WAS + 008 FT



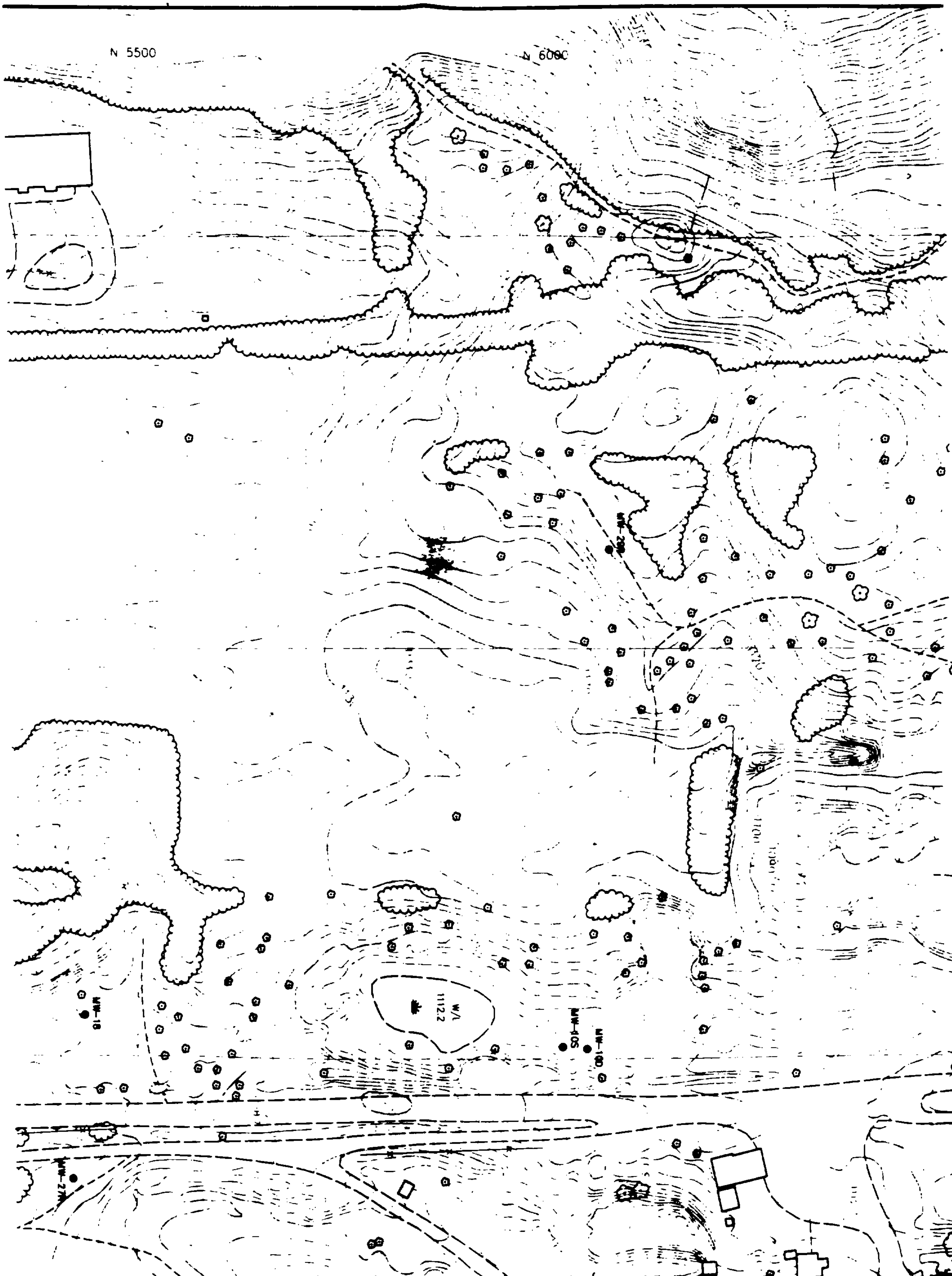

GROUND OBSCURED
N 8500
MW-23
DENSE TREES
GROUND OBSCURED
N 8000
MW-26R
PIT
MW-18
MW-4
MW-8
MW-3
MW-6
TIMBER
SLASH

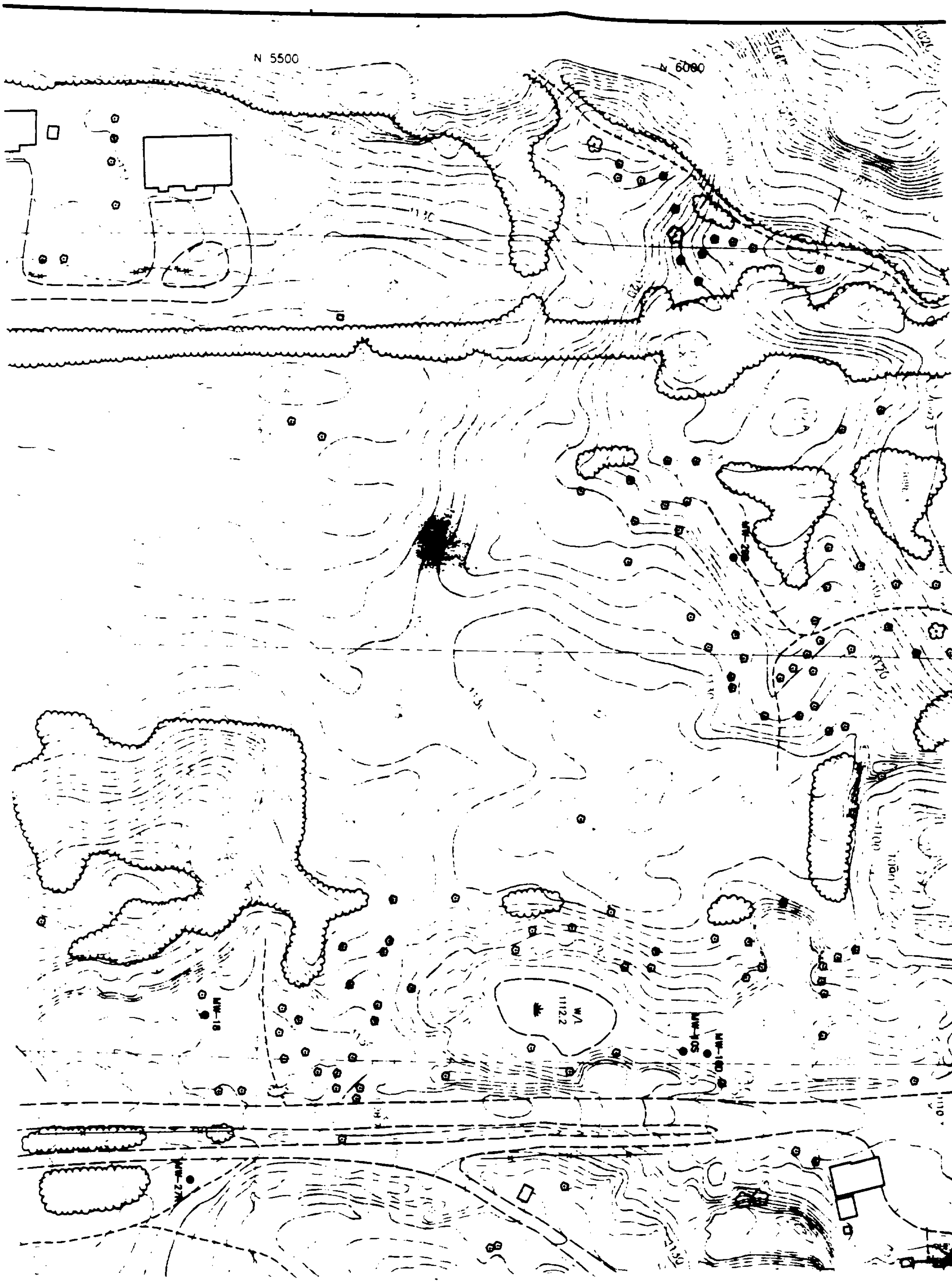

N 7000
1050
1060
MW-3
TIMBER SLASH


N 7000
7500
MW-3
MW-6
MW-10
MW-7
MW-8
TIMBER SLASH


N 6500
N 7000
1070
1080


N 6000
N 6500


N 5500
N 6000
MW-18
W/L
1112.2
MW-10S
MW-10D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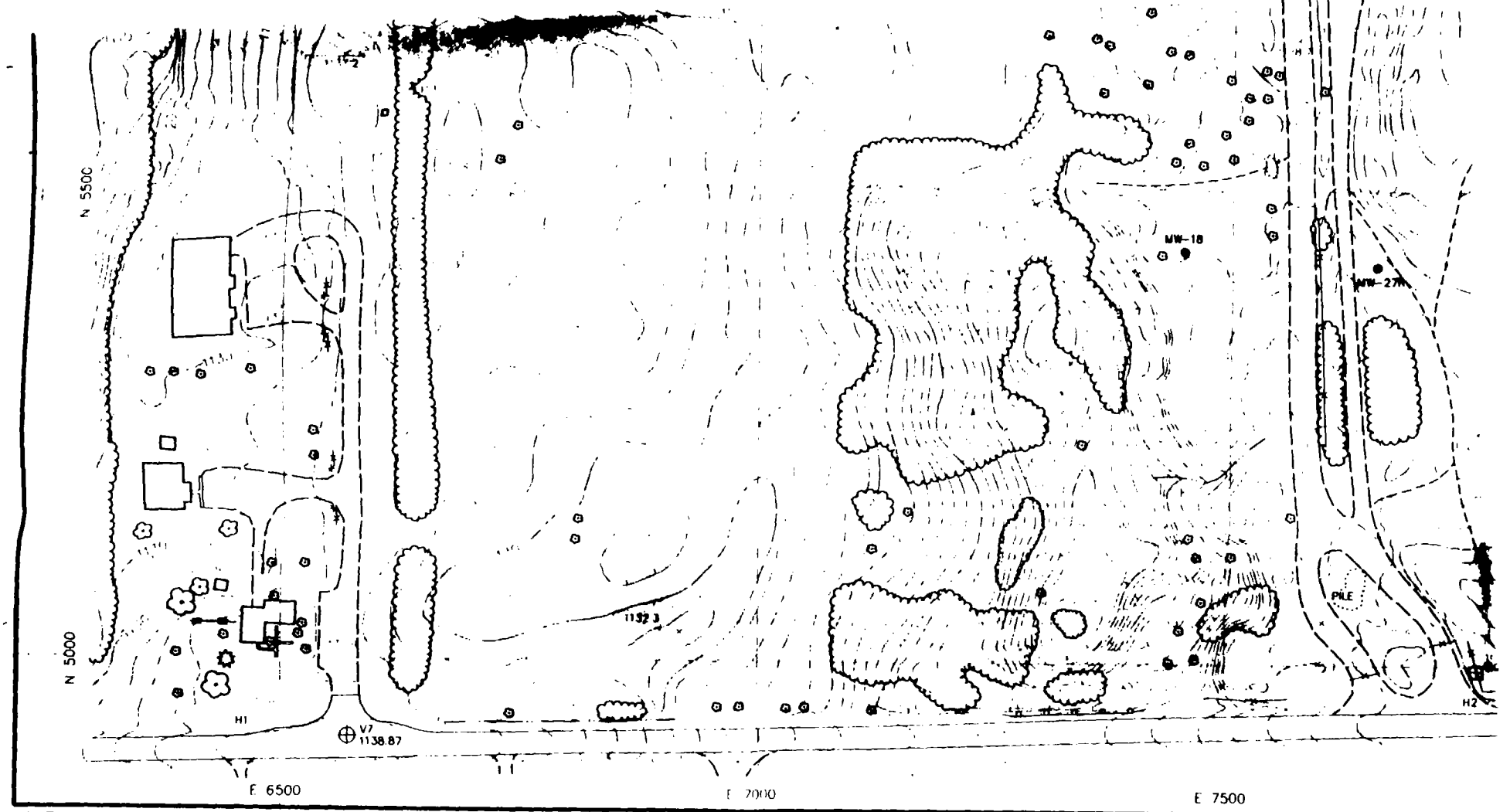
N 6000


N 5500
N 5000
MW-18
MW-27
PILE
H1
H2
V7
1138.87
1132.3
E 6500
E 7000
E 7500

Nº	Revision

Date	Initial

Approved

NORTH

METAMORA LANDFILL SITE
Lapeer County, Michigan

INCINERATION WORK PLAN

EXISTING CONDITIONS
MAY 1991

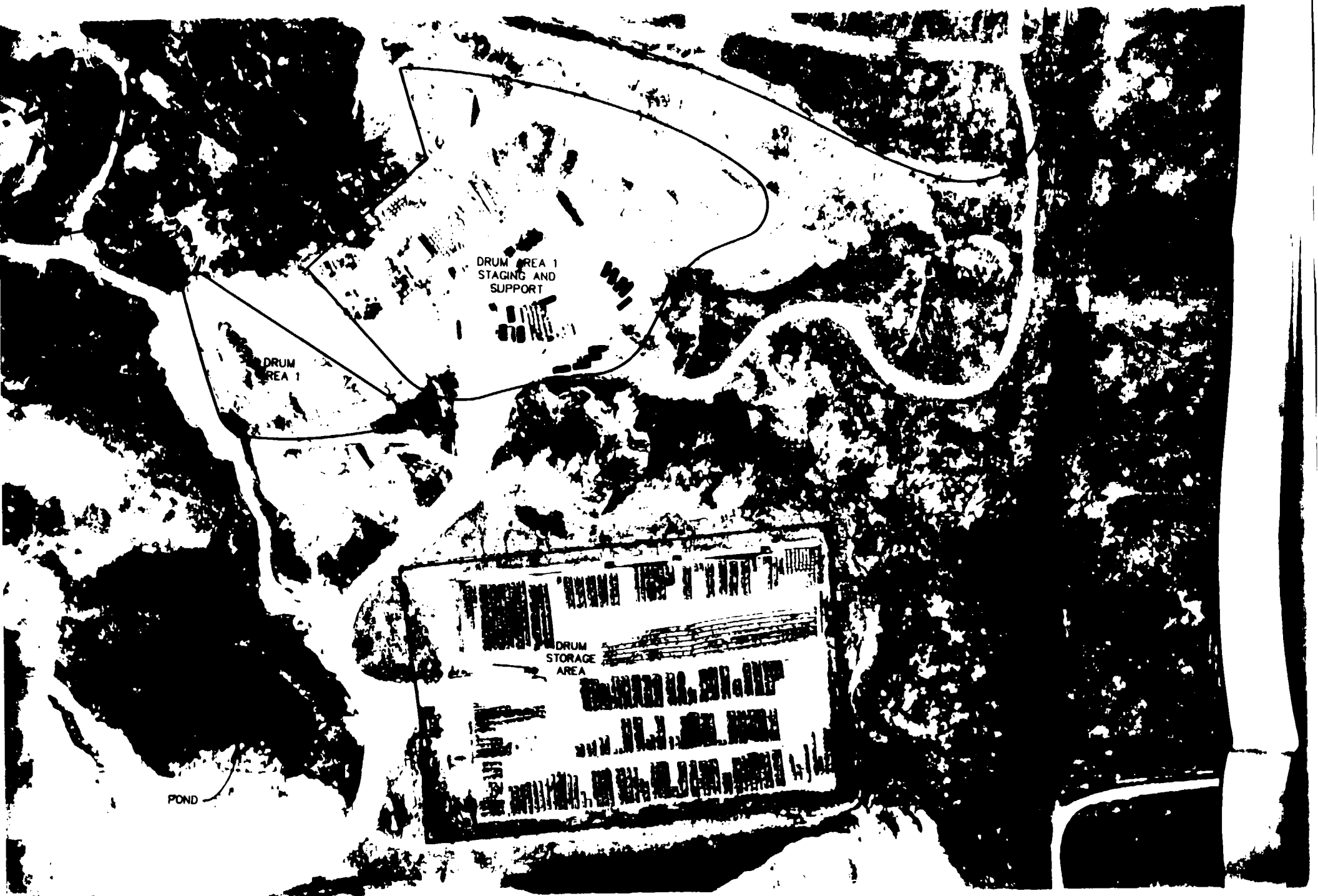
CRA
CONESTOGA-ROVERS & ASSOCIATES

Drawn by: BYO	Scale: 1" = 60' APPROX	Date: JUNE 1991	File No: 06	Rev. No:
Designed by: GTT	Field book	Project No: 3298	Drawing No: 1	
Checked by: GTT				


POND
SAND AND
GRAVEL PIT


DRUM
STORAGE
AREA
POND
SAND AND
GRAVEL PIT


DRUM AREA I
STAGING AND
SUPPORT
DRUM
STORAGE
AREA
POND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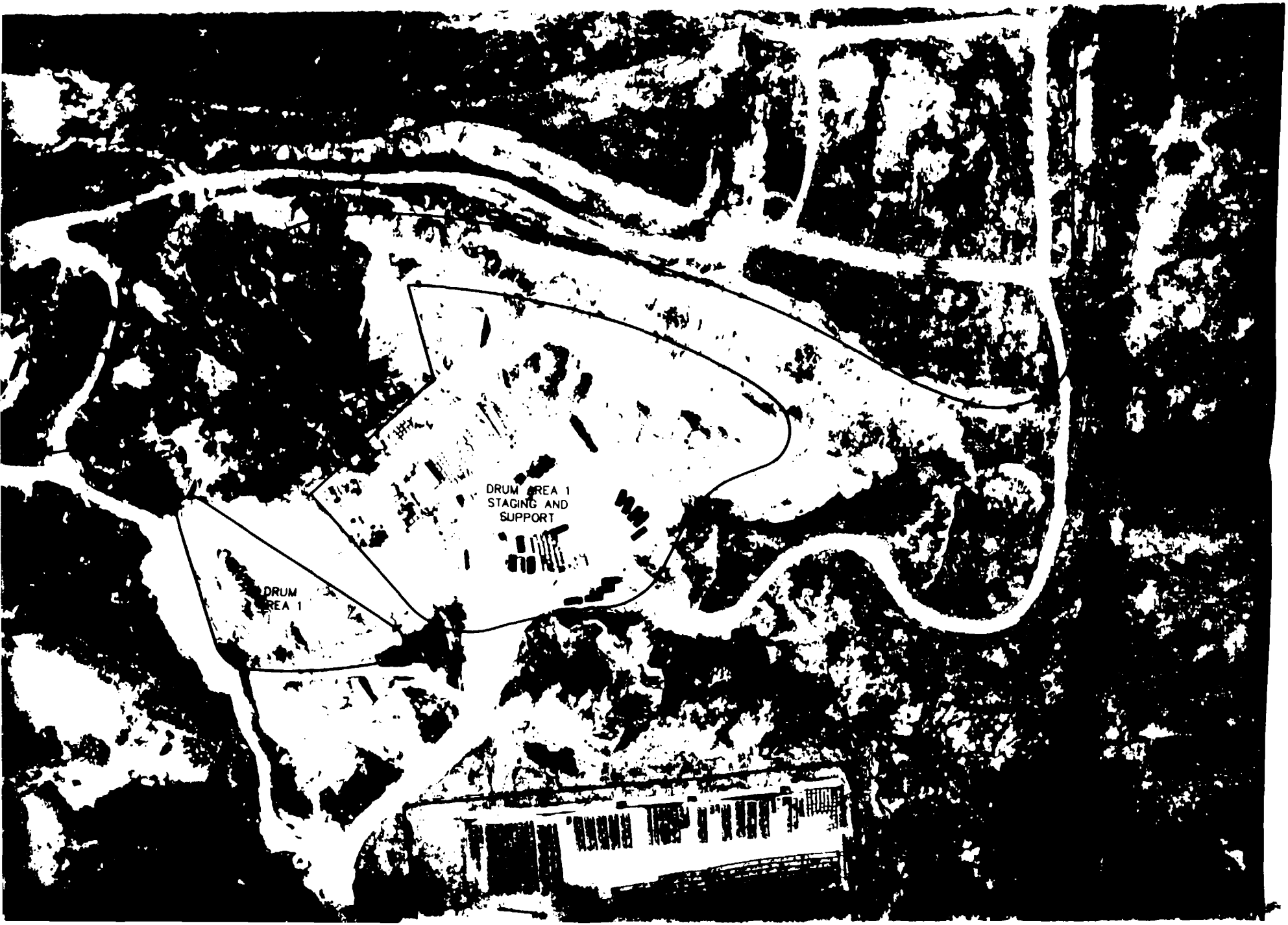
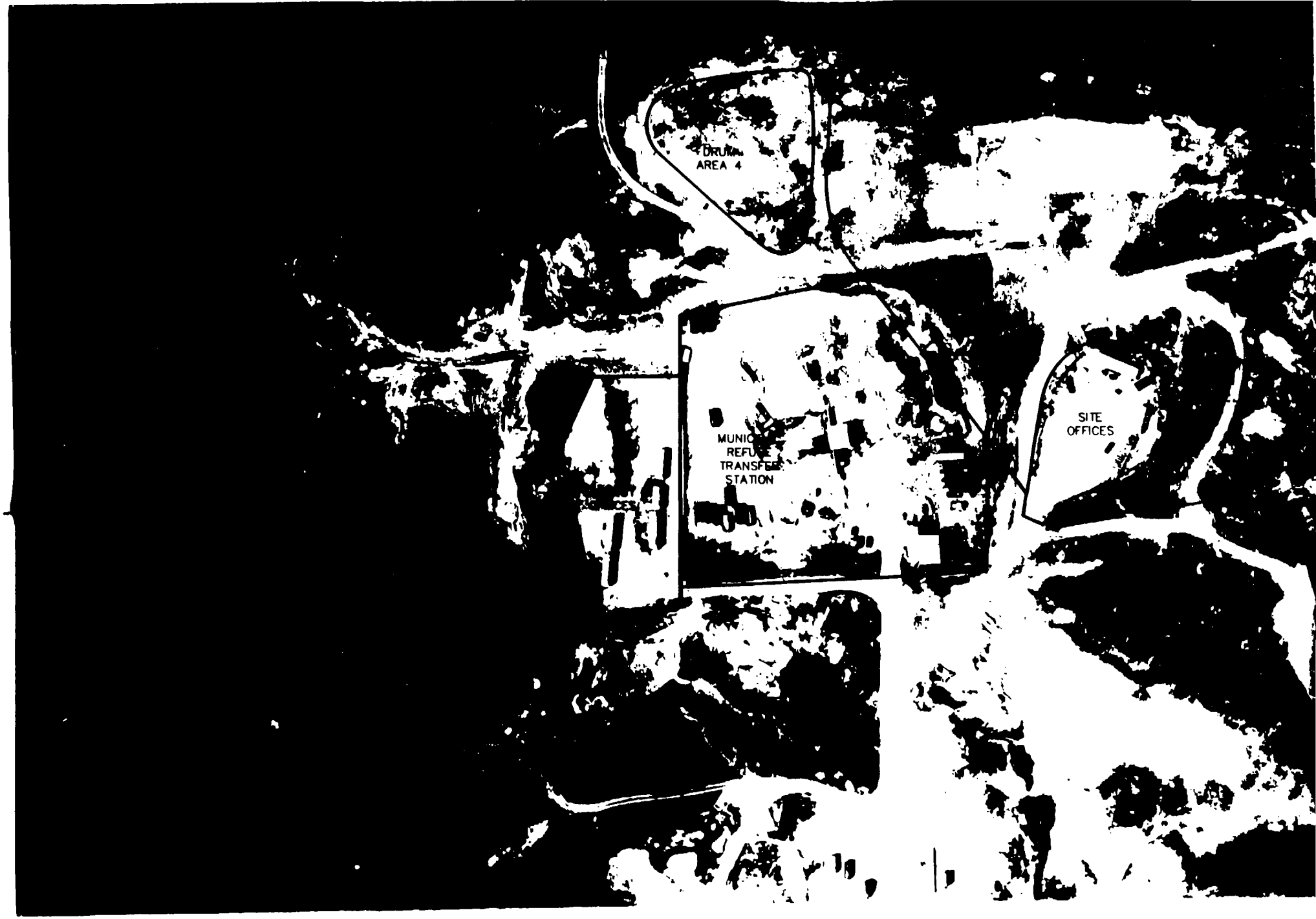
STAGING AND
SUPPORT
DRUM
REA 1
DRUM
STORAGE
AREA
POND

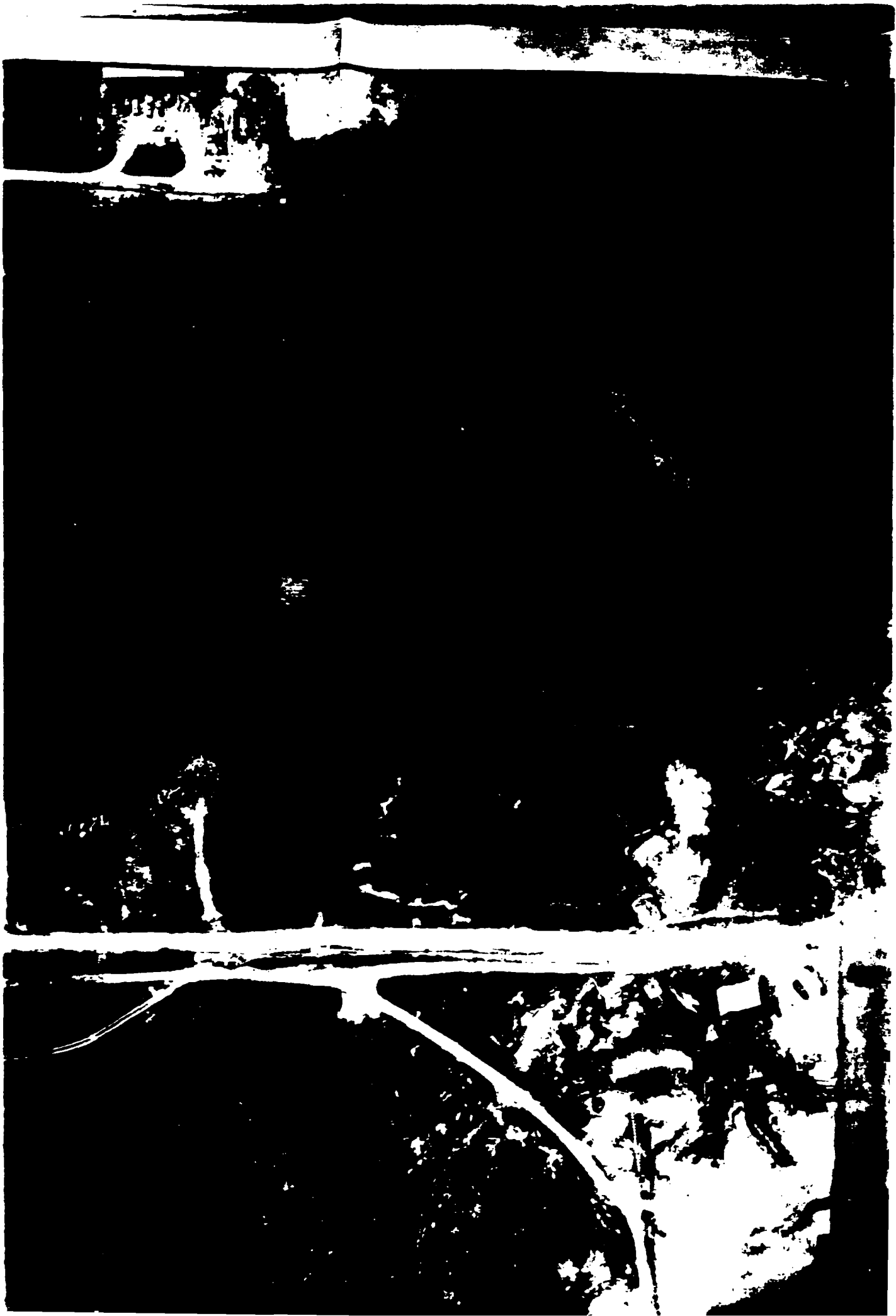

DRUM AREA 1
STAGING AND
SUPPORT
DRUM
REA 1

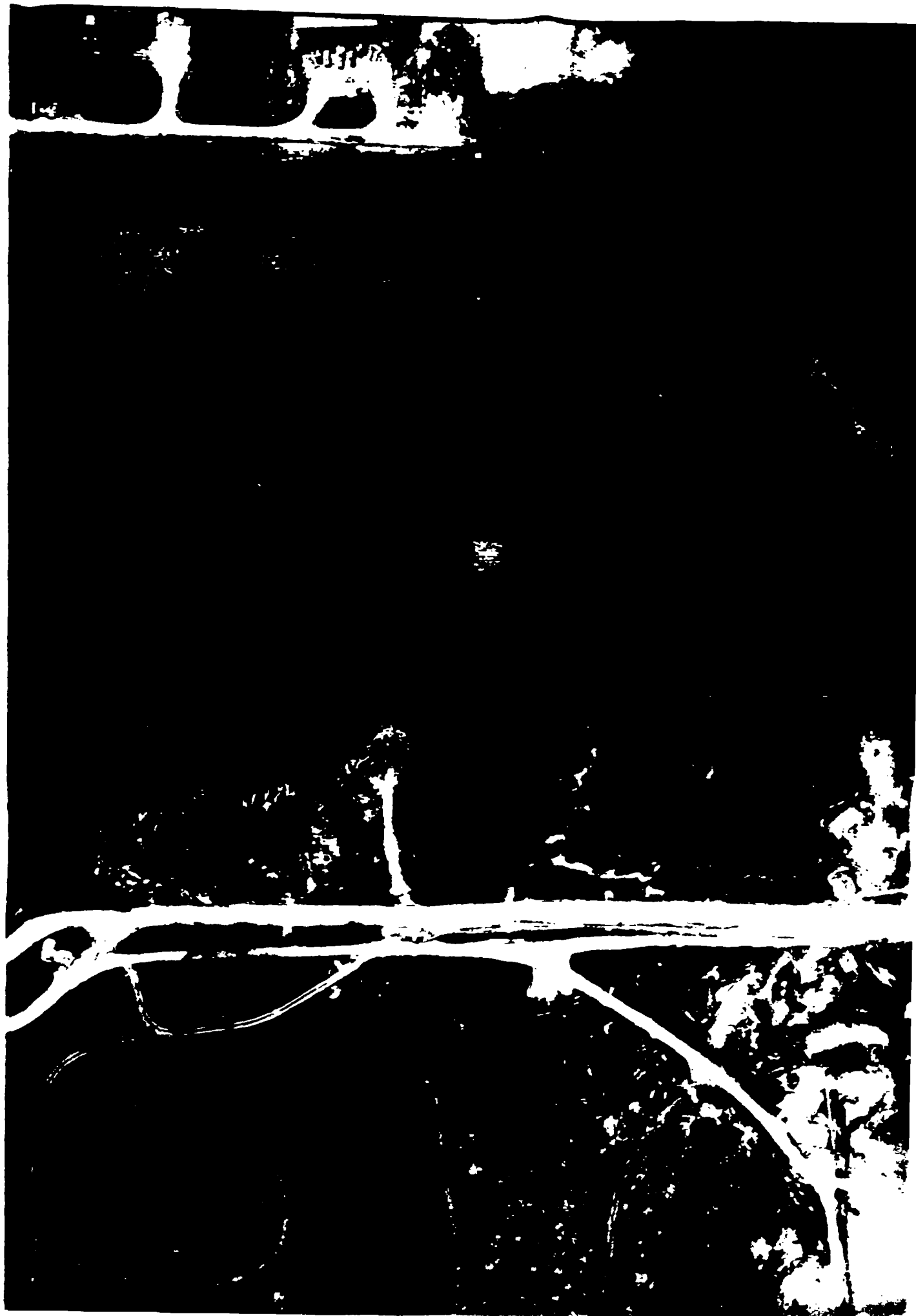

DRUM
REA 1
DRUM REA 1
STAGING AND
SUPPORT

DRUM
AREA 4

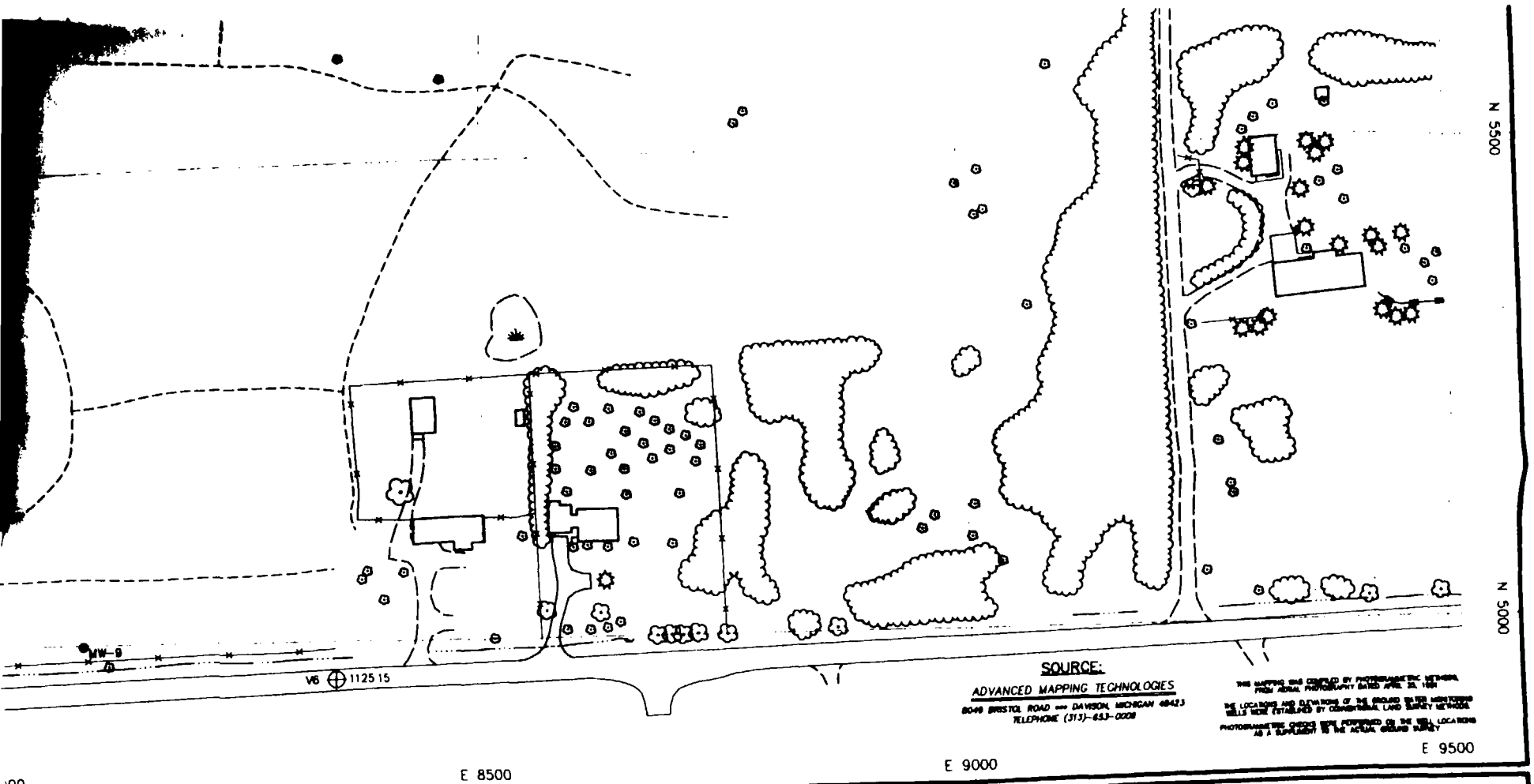

AREA 4
SITE
OFFICES
STATION


AGENCY
OFFICES
SITE
OFFICES

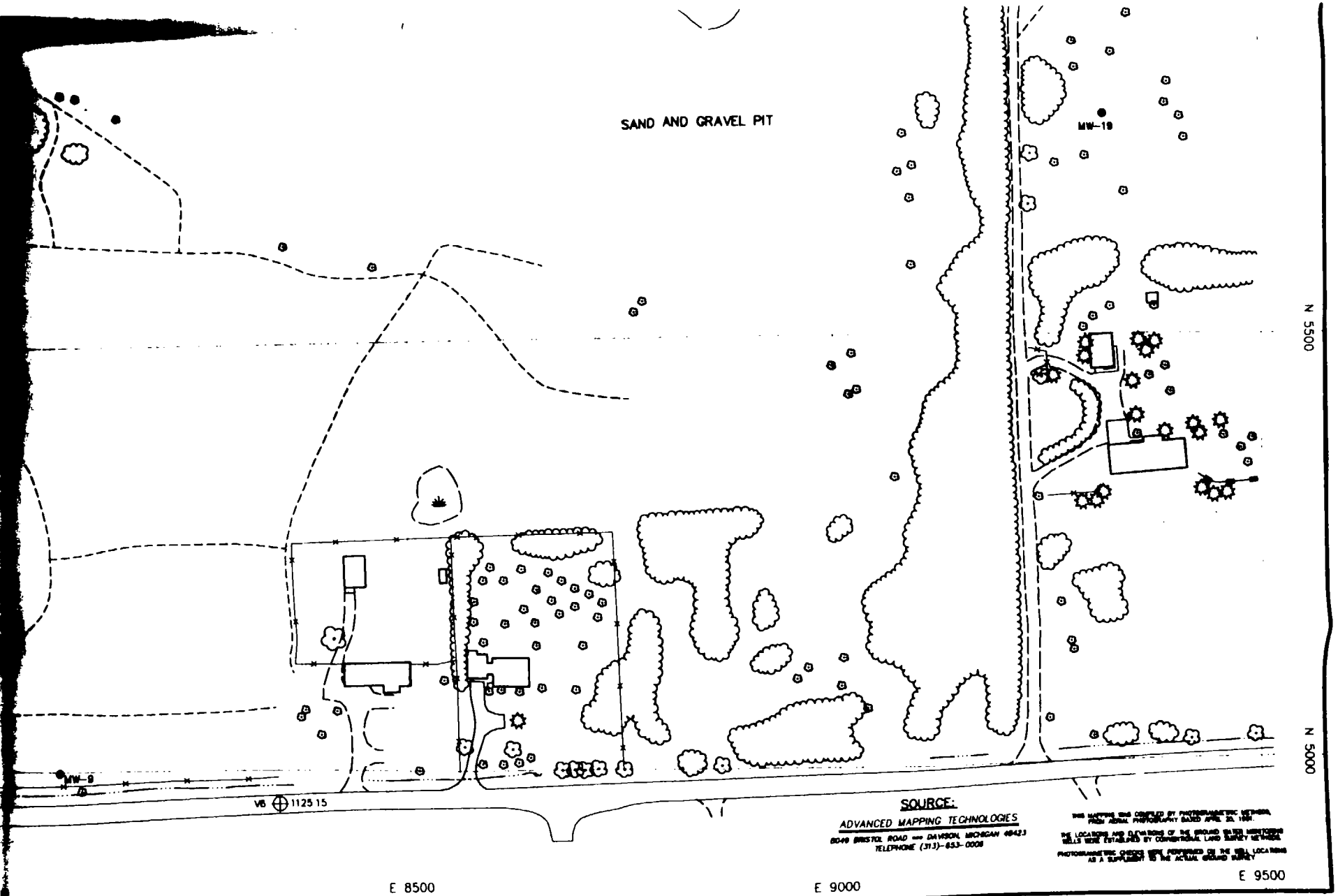




SITE
Approved



Approved	METAMORA LANDFILL SITE METAMORA, MICHIGAN	**CRA** Consulting Engineers CONESTOGA-ROVERS & ASSOCIATES 651 Colby Drive, Waterloo, Ontario Canada N2V 1C2
	INCINERATION WORK PLAN	Drawn by: RBB; Designed by: BM; Checked by: GT; Scale: 1"=100'; Date: JUNE 1991; File No: 04 (P-02); Rev. No: -
	SITE PLAN	Field book: ; Project No: 3298; Drawing No: 3
Initial		



Approved

METAMORA LANDFILL SITE
METAMORA, MIGHIGAN

CRA Consulting Engineers
CONESTOGA-ROVERS & ASSOCIATES
651 Colby Drive, Waterloo, Ontario Canada N2V 1C2

Drawn by | Scale | Date | File No. | Rev. No.

N 6500
N 6000
N 5500
MW-19
MW-12
W/L
1027.8
SAND AND GRAVEL PIT
STORAGE AREA
MW-20
W/L
1028.0
POND

N 7000
N 6500
MW-30R
MW-12
PILES
PILES
STORAGE AREA
MW-17D
MW-17S
MW-17
MW-20
W/L
1102.0
POND

N 7000

N 6500

MW-30R

MW-12

MW-13

PILES

PILES

STORAGE AREA

MW-17D

MW-17S

MW-20

W/L
1102.0

POND

N 7500

N 7000

MW-30R

MW-1

MW-14D

MW-14S

WELL-A

MW-15S

MW-15D

PILES

PILES

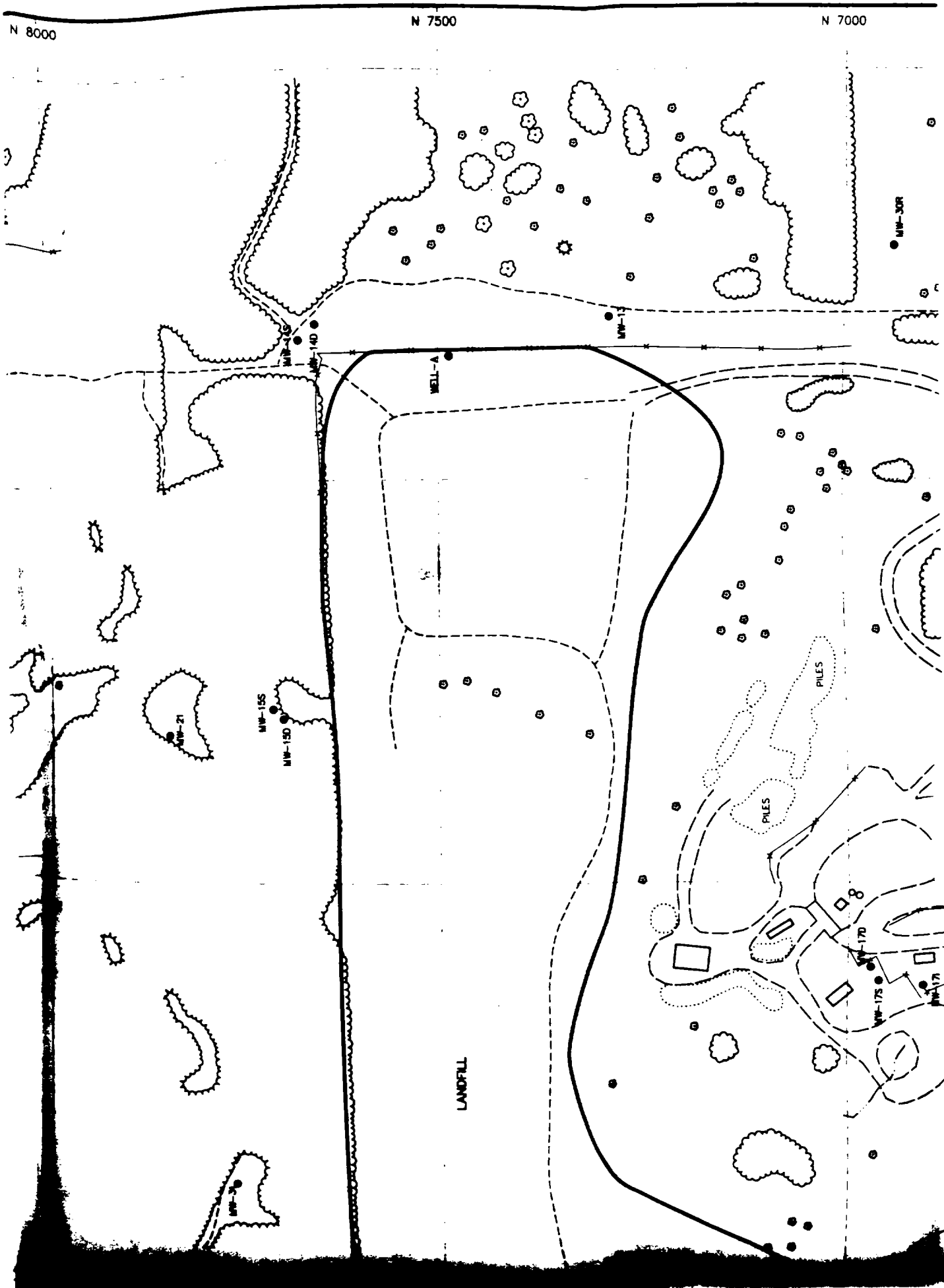
MW-17D

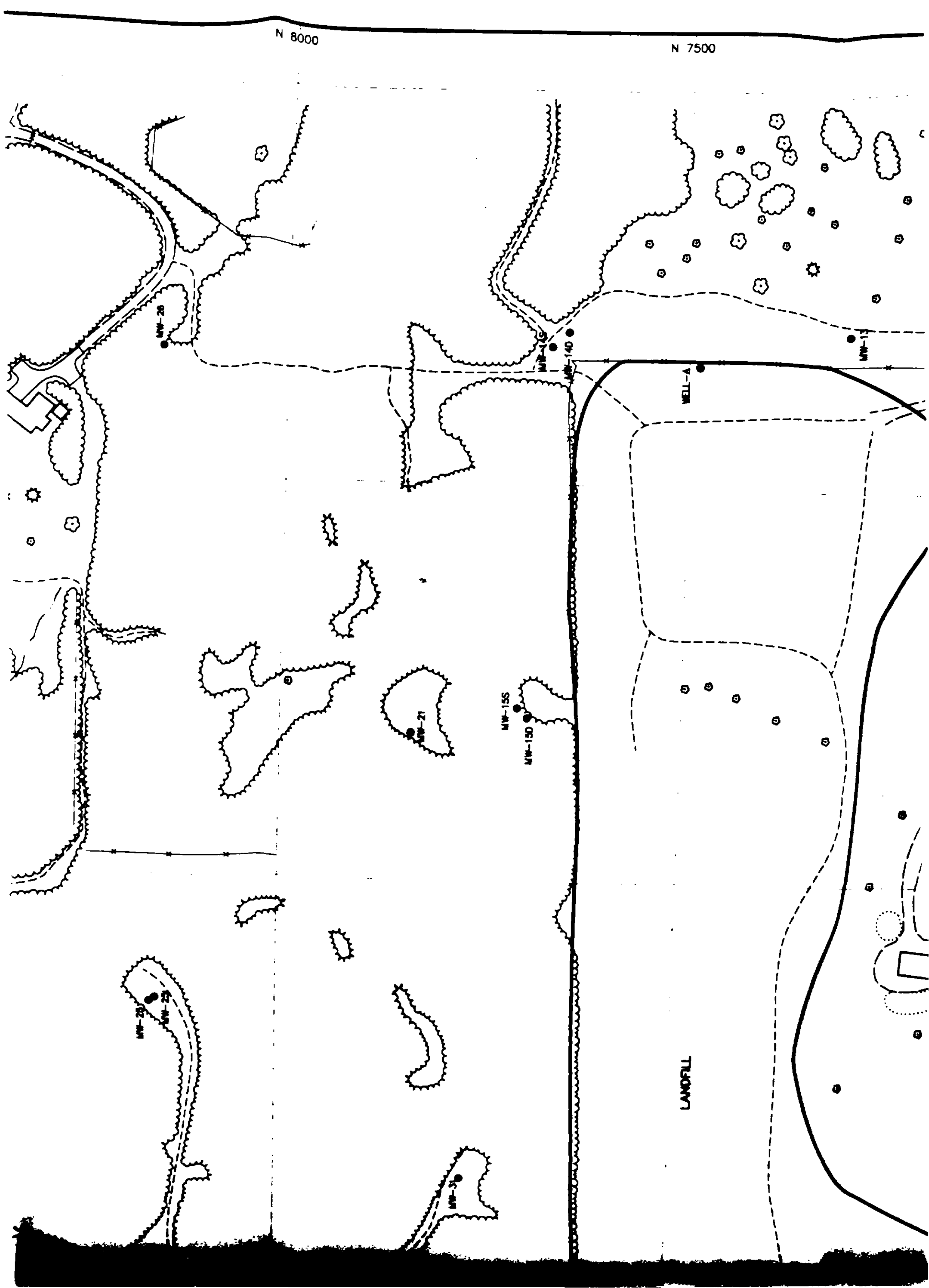
MW-17S

MW-17

LANDFILL

MW-3b


N 8000
N 7500
N 7000
MW-30R
MW-13
MW-14D
MW-14S
WELL-A
MW-15S
MW-15D
MW-21
MW-3
LANDFILL
PILES
PILES
MW-17D
MW-17S
MW-17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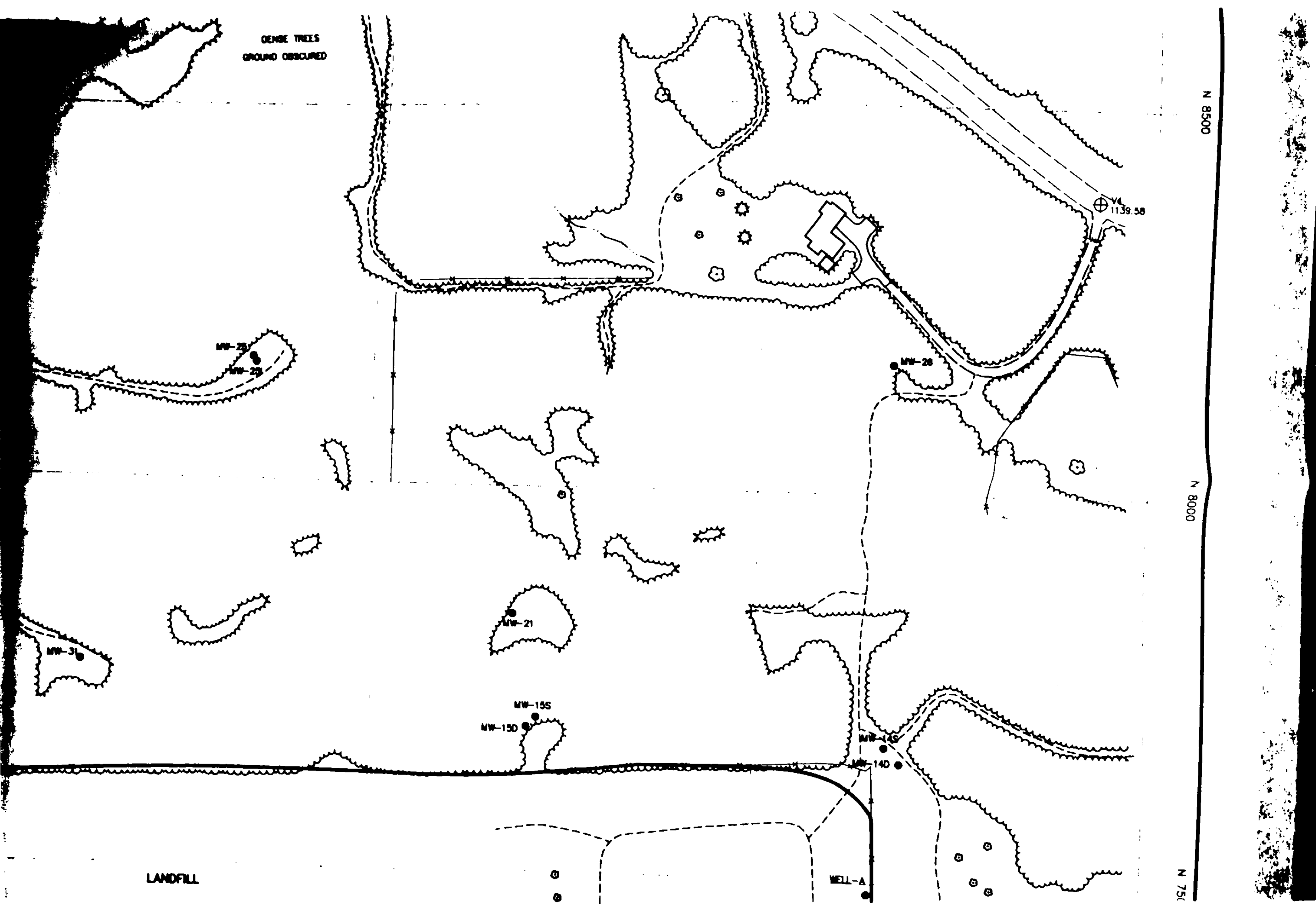
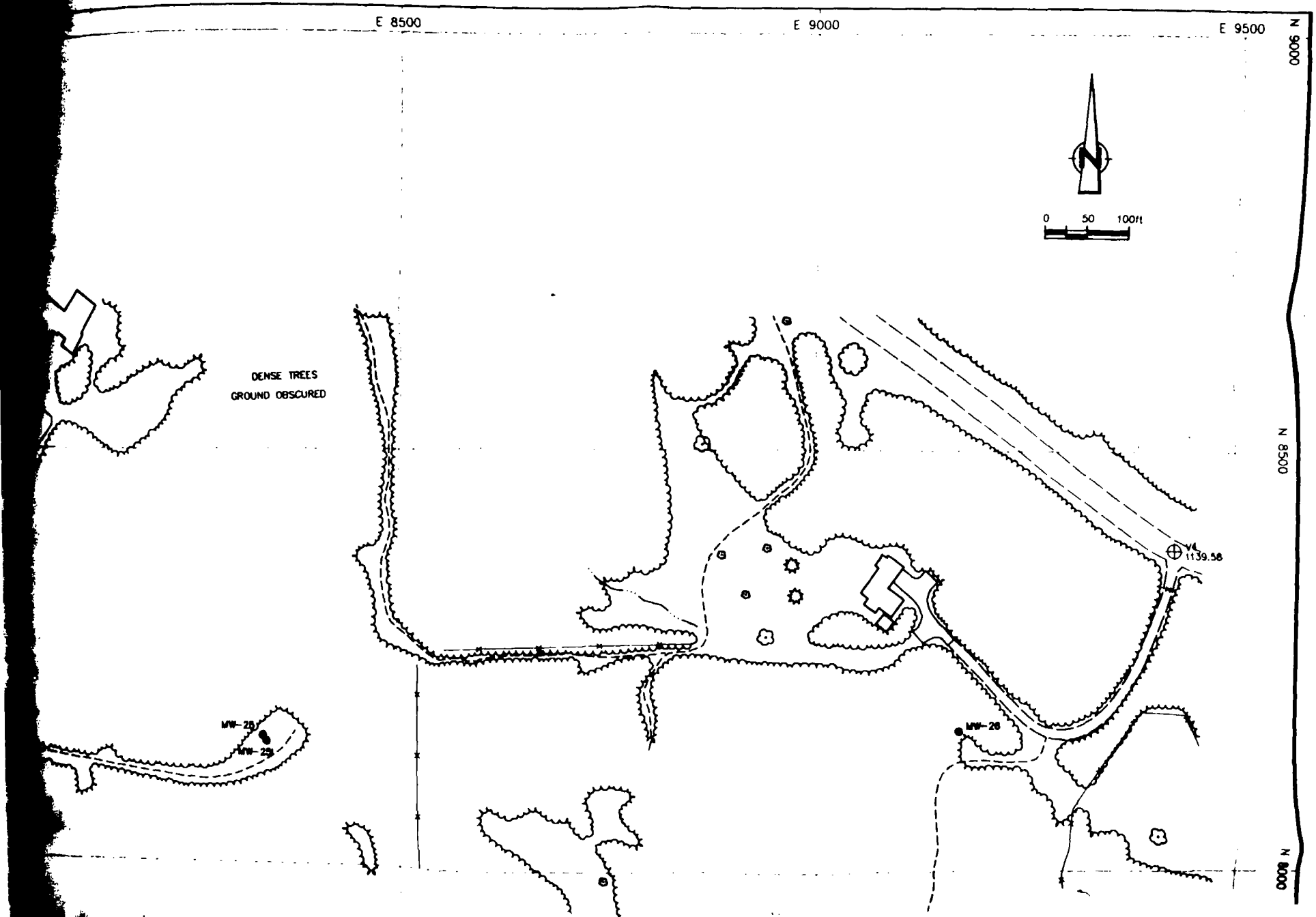
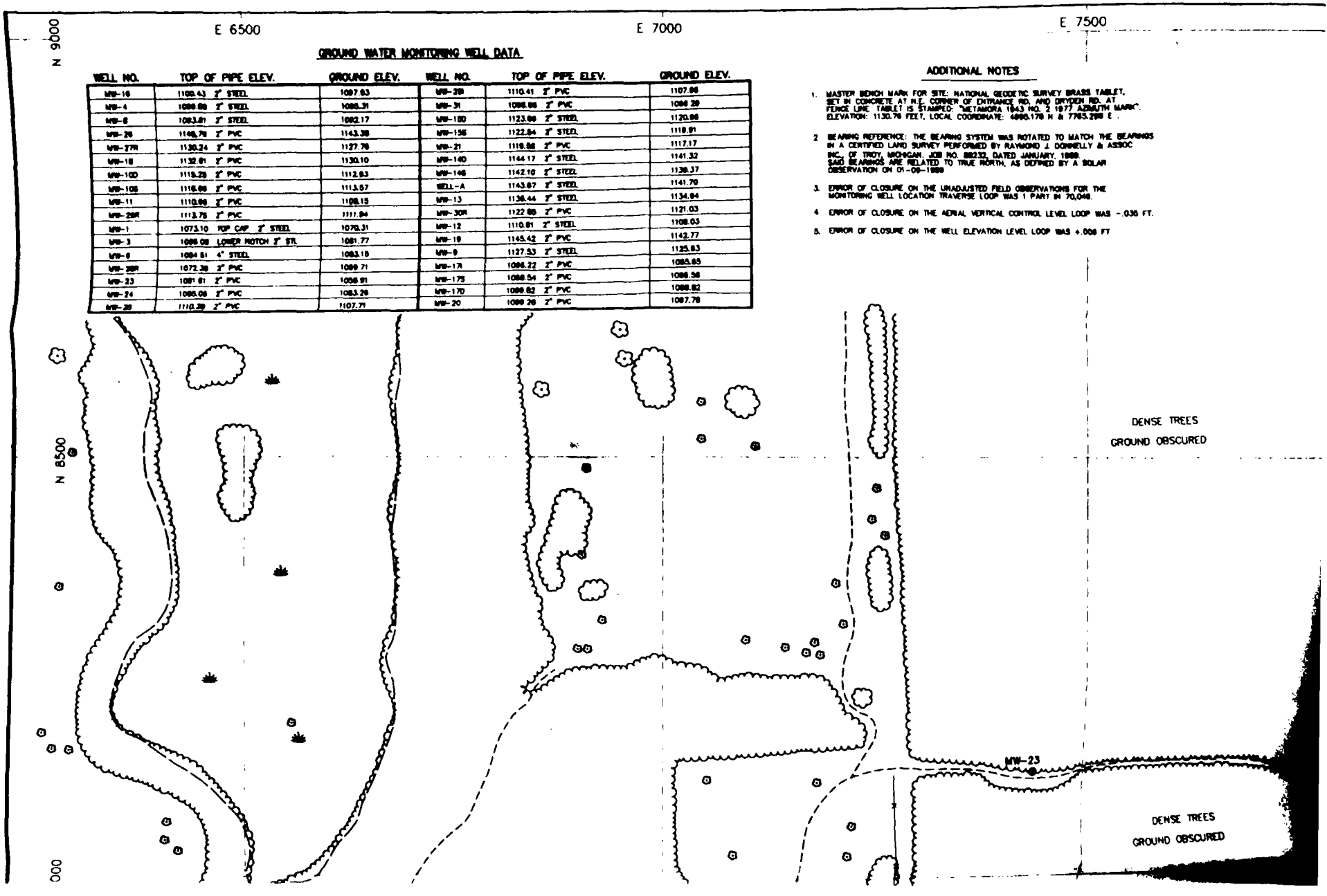
N 7500
MW-26
MW-14D
WELL-A
MW-15S
MW-15D
MW-21
LANDFILL


DENSE TREES
GROUND OBSCURED
V4
1139.58
MW-28
MW-21
MW-31
MW-15S
MW-15D
MW-14D
WELL-A
LANDFILL
N 8500
N 8000


E 8500
E 9000
E 9500
N 9000
N 8500
N 8000
0 50 100ft
DENSE TREES
GROUND OBSCURED
VL
1139.58
MW-25
MW-26

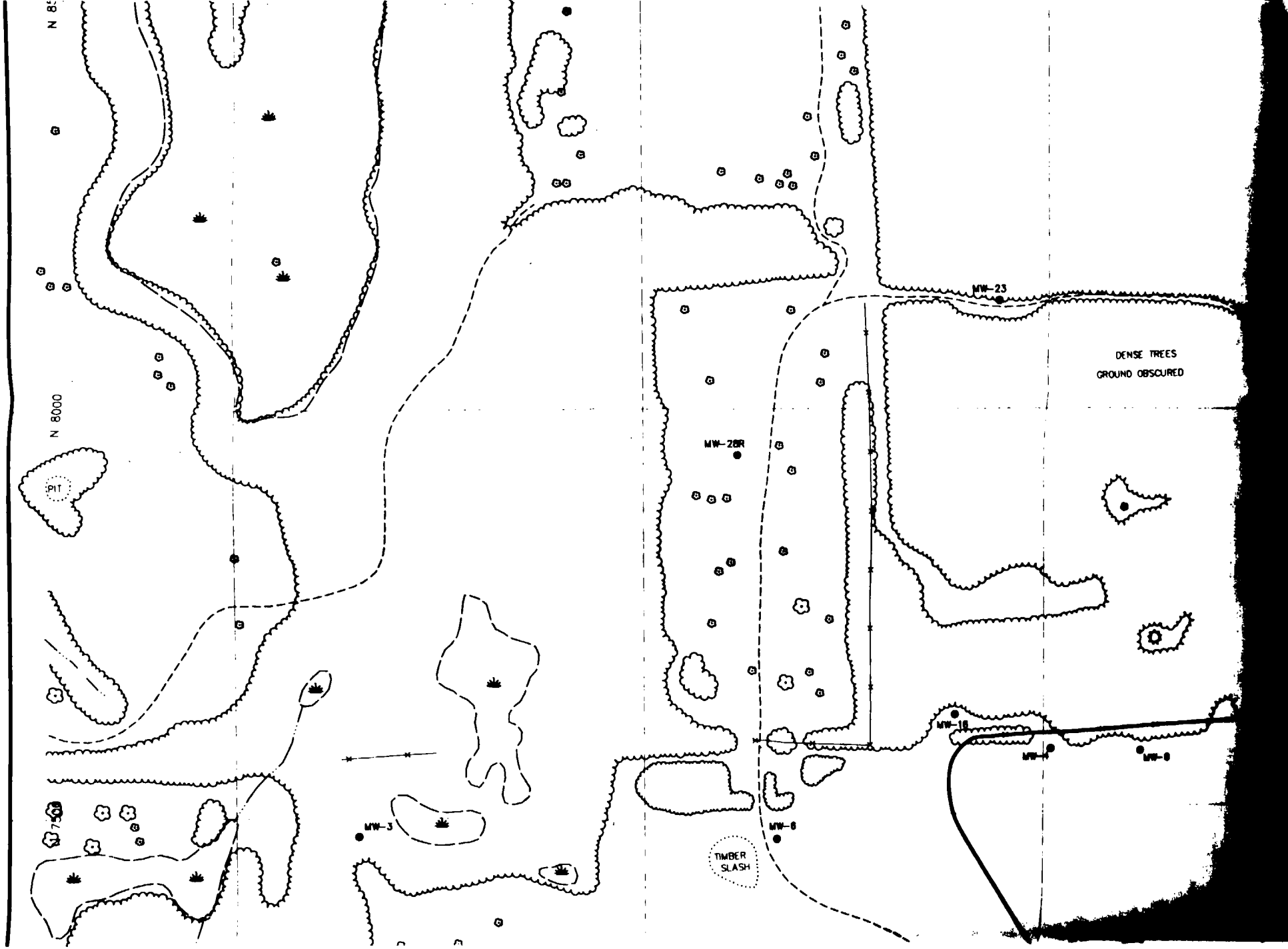


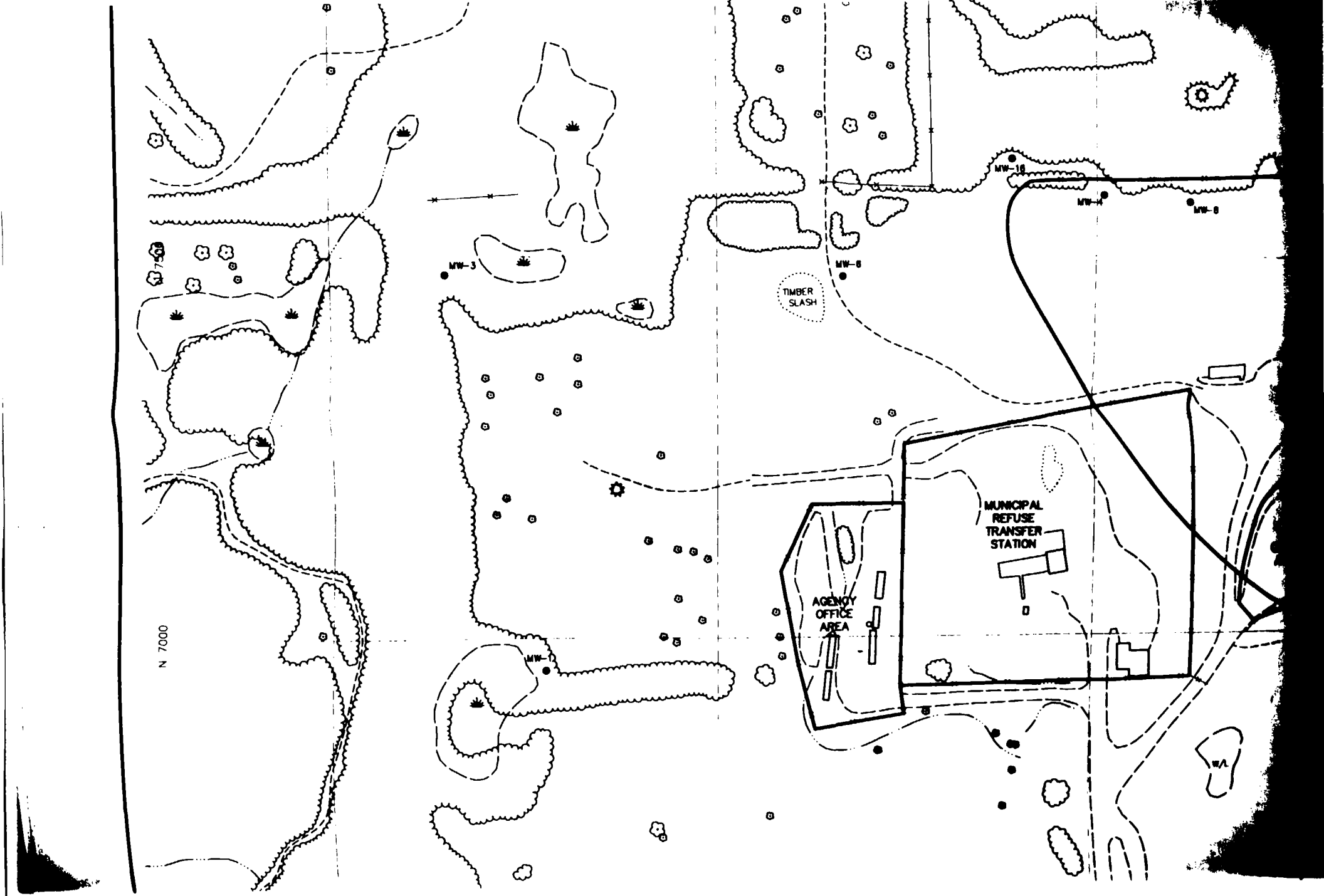
GROUND WATER MONITORING WELL DATA

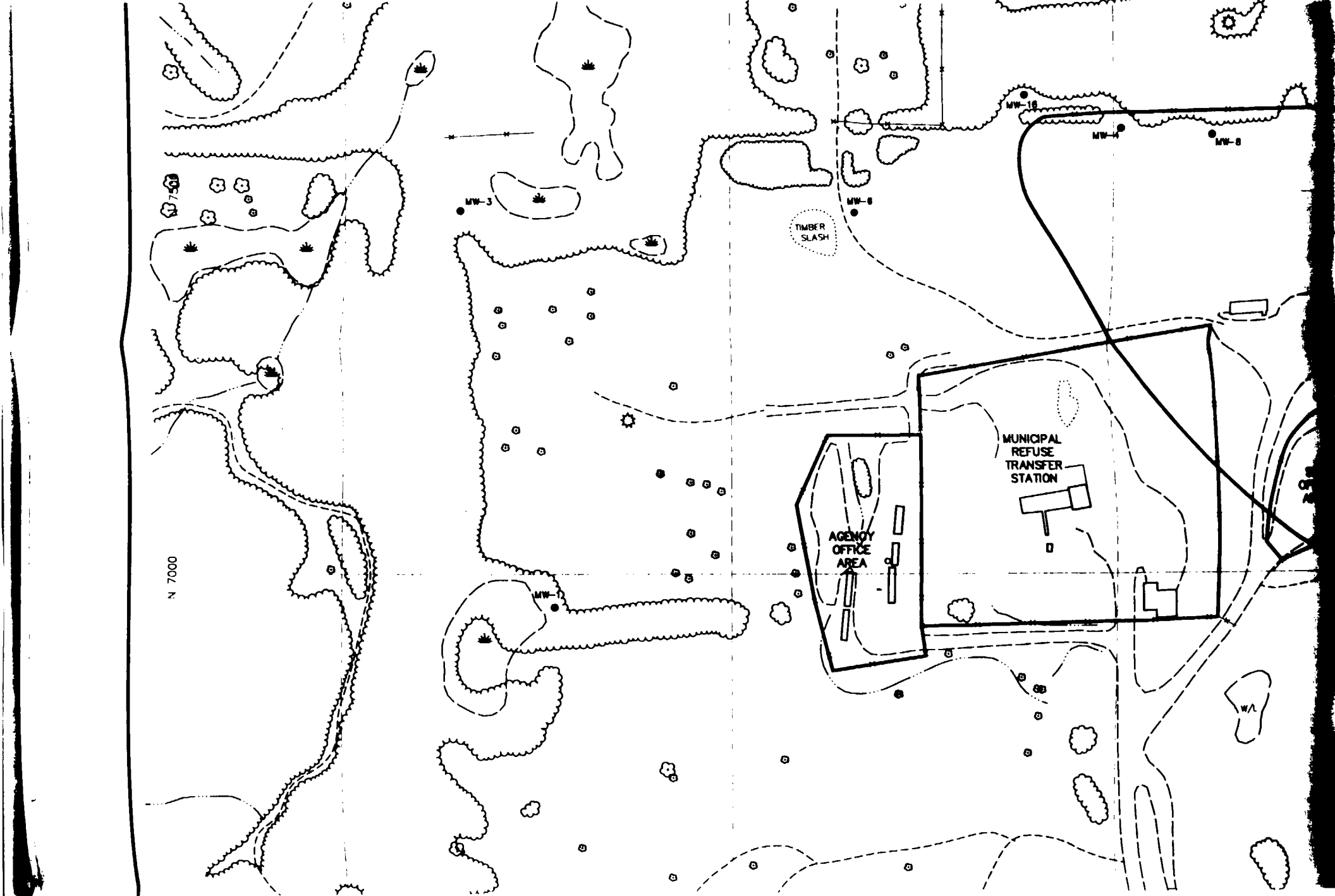
WELL NO.	TOP OF PIPE ELEV.	GROUND ELEV.	WELL NO.	TOP OF PIPE ELEV.	GROUND ELEV.
MW-16	1100.43 2" STEEL	1097.83	MW-29	1110.41 2" PVC	1107.66
MW-4	1089.89 2" STEEL	1086.31	MW-31	1088.86 2" PVC	1086.29
MW-6	1093.81 2" STEEL	1092.17	MW-180	1123.86 2" STEEL	1120.66
MW-26	1146.76 2" PVC	1143.38	MW-156	1122.84 2" STEEL	1118.91
MW-27R	1130.24 2" PVC	1127.76	MW-21	1119.88 2" PVC	1117.17
MW-18	1132.61 2" PVC	1130.10	MW-140	1144.17 2" STEEL	1141.32
MW-10D	1115.29 2" PVC	1112.83	MW-146	1142.10 2" STEEL	1138.37
MW-10S	1116.66 2" PVC	1113.57	WELL-A	1143.67 2" STEEL	1141.70
MW-11	1110.66 2" PVC	1108.15	MW-13	1136.44 2" STEEL	1134.84
MW-25R	1113.76 2" PVC	1111.84	MW-30R	1122.66 2" PVC	1121.03
MW-1	1073.10 TOP CAP 2" STEEL	1070.31	MW-12	1110.91 2" STEEL	1108.03
MW-3	1089.08 LOWER NOTCH 2" STL	1081.77	MW-19	1145.42 2" PVC	1142.77
MW-8	1084.81 4" STEEL	1083.18	MW-9	1127.53 2" STEEL	1125.83
MW-28R	1072.36 2" PVC	1069.71	MW-17	1088.22 2" PVC	1085.65
MW-23	1091.91 2" PVC	1088.91	MW-17S	1088.54 2" PVC	1086.56
MW-24	1088.06 2" PVC	1083.26	MW-17D	1089.82 2" PVC	1088.82
MW-25	1110.39 2" PVC	1107.71	MW-20	1089.26 2" PVC	1087.78

ADDITIONAL NOTES

1. MASTER BENCH MARK FOR SITE: NATIONAL GEODETIC SURVEY BRASS TABLET, SET IN CONCRETE AT N.E. CORNER OF ENTRANCE RD. AND DRYDEN RD. AT FENCE LINE. TABLET IS STAMPED: "METAMORA 1843 NO. 2 1977 AZIMUTH MARK". ELEVATION: 1130.76 FEET, LOCAL COORDINATE: 4990.178 N & 7765.298 E .
2. BEARING REFERENCE: THE BEARING SYSTEM WAS ROTATED TO MATCH THE BEARINGS IN A CERTIFIED LAND SURVEY PERFORMED BY RAYMOND J. DONNELLY & ASSOC INC., OF TROY, MICHIGAN, JOB NO. 882132, DATED JANUARY, 1989. SAID BEARINGS ARE RELATED TO TRUE NORTH, AS DEFINED BY A SOLAR OBSERVATION ON 01-08-1989
3. ERROR OF CLOSURE ON THE UNADJUSTED FIELD OBSERVATIONS FOR THE MONITORING WELL LOCATION TRAVERSE LOOP WAS 1 PART IN 70,048.
4. ERROR OF CLOSURE ON THE AERIAL VERTICAL CONTROL LEVEL LOOP WAS -.035 FT.
5. ERROR OF CLOSURE ON THE WELL ELEVATION LEVEL LOOP WAS +.008 FT


N 8000
PIT
MW-23
DENSE TREES
GROUND OBSCURED
MW-28R
MW-18
MW-3
MW-6
TIMBER
SLASH


MW-3
MW-6
MW-10
MW-4
MW-8
TIMBER SLASH
MUNICIPAL REFUSE TRANSFER STATION
AGENCY OFFICE AREA
MW-1
N 7000

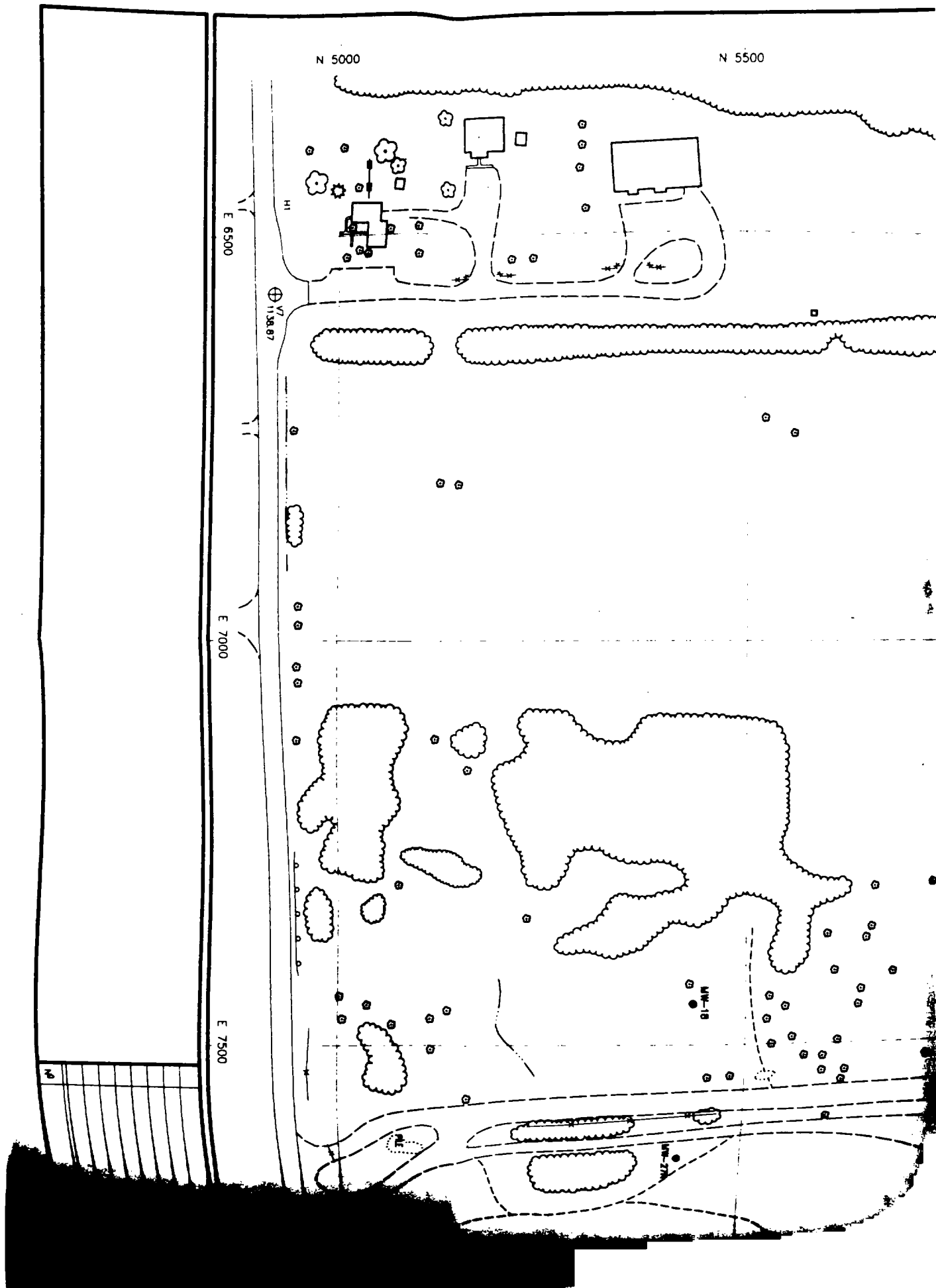

MW-10
MW-4
MW-8
MW-3
MW-6
TIMBER SLASH
MUNICIPAL REFUSE TRANSFER STATION
AGENCY OFFICE AREA
MW-1
N 7000


N 6000
N 6500
N 7000
MW-28D
MW-10S
MW-10D
MW-11
AGENCY OFFICE AREA
REFUSE TRANSFER STATION


N 6000
N 6500
MW-103
MW-104
MW-11


N 5500
N 6000
MW-28S
MW-18
W/L
11122
MW-10S
MW-10D
MW-27


N 5500
N 6000
MW-28R
MW-10
W/A
1112.2
MW-10S
MW-10D
MW-27R


N 5000
N 5500
E 6500
E 7000
E 7500
H1
V7
1138.87
MW-18
MW-2