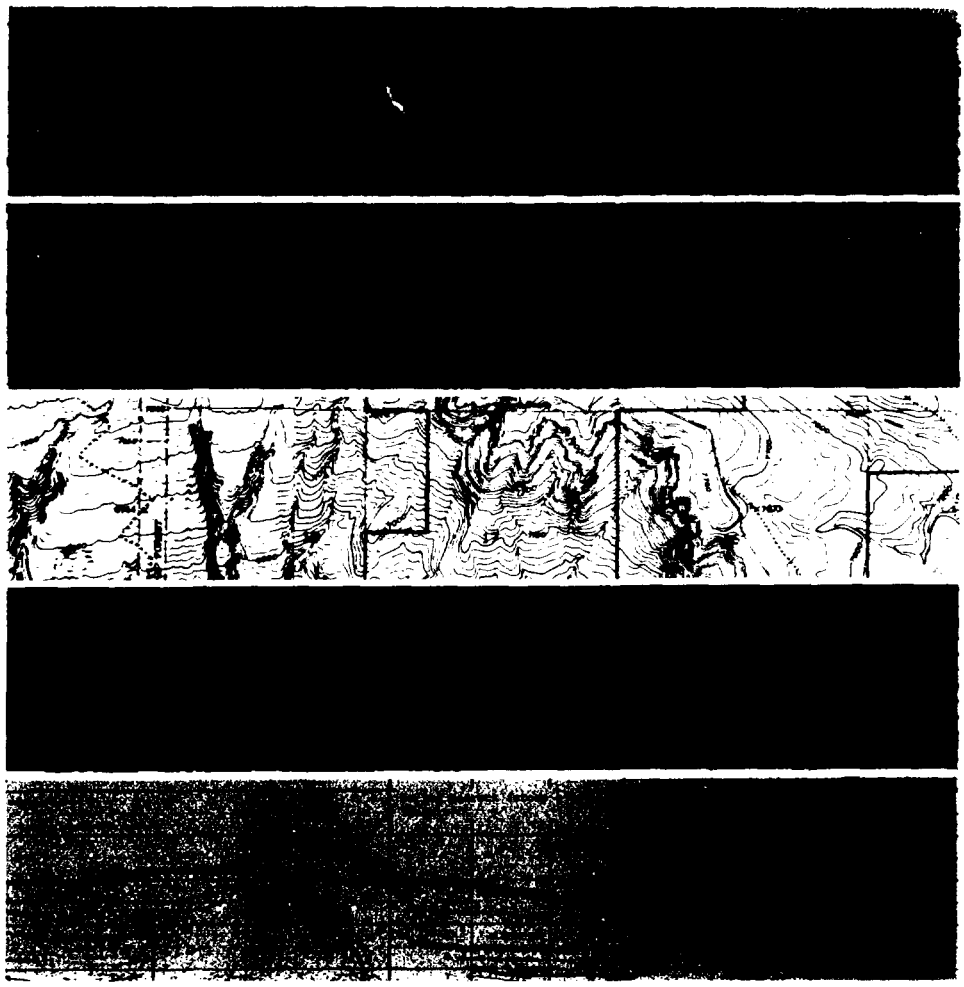

WORK PLAN FOR PHASE II
of the
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
at the
TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN
June 13, 1995

DAMES & MOORE

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DAMES & MOORE

Dames & Moore Proj. No. 27504-003

PHASE II
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

June 13, 1995

_____ _____

David P. Trainor — Date
Dames & Moore Project Director/Project Manager

_____ _____

Date
Dames & Moore QA Officer

_____ _____

Laboratory QA Manager — Date

_____ _____

Wendy Anderson — Date
State DNR Project Manager

_____ _____

Matthew Mankowski — Date
USEPA Remedial Project Manager

_____ _____

USEPA Central Regional Laboratory Director Date

_____ _____

USEPA Quality Assurance Manager Date

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APPENDICES

1.0 INTRODUCTION

1.1 Site Background

The City of Tomah owns and formerly operated a solid waste sanitary landfill in the SW 1/4 of the NE 1/4 of Section 32, Town 18 North, Range 1 West, Tomah, Wisconsin. The landfill occupies approximately 18 acres of a 40-acre parcel, bounded by residential property to the east and south, and rural property to the west and north, with wetlands adjacent to the landfill to the north. Refuse deposited in the landfill consisted of municipal, industrial, commercial and residential waste, ranging in thickness from 7 to 20 feet. Cover material ranges from poorly graded sand to silty sand.

Local subsurface conditions consist of thin sands overlying sandstone bedrock. The unconsolidated deposits in the immediate vicinity of the site range in thickness from less than 1 to approximately 20 feet. Groundwater flow at the site is primarily northeasterly; however, a slight southwest-to-northeast groundwater ridge is present, resulting in semi-radial flow from the northeastern portion of the site to the north, northeast and east. Vertical groundwater gradients are variable, likely due to the nearby surface water features.

This work plan has been developed as a supplement to the Phase I Work Plan, dated March 10, 1994, and the Phase I Work Plan Addendum, dated June 18, 1994. The components of those plans and the procedures described in them remain in effect for the Phase II Work Plan.

1.2 Results of the Phase I Remedial Investigation

The first phase of a remedial investigation (RI) was completed with the submittal of a draft report in February 1995 (Dames & Moore). The scope of this investigation included the installation and sampling of 12 groundwater monitor wells, including 7 water table wells and 5 piezometers, and the installation of 7 landfill gas probes. Additionally, several test pits were excavated and logged to determine the actual limits of waste. The new monitor wells were

sampled and analyzed for the approved list of analytes and compounds. Several surface water and sediment samples were also collected and analyzed from a nearby stream and wetland.

The sample analyses indicated the presence of several regulated compounds in the groundwater at the site. Wisconsin Administrative Code ch. NR 140 Enforcement Standards (ESs) were exceeded for benzene and vinyl chloride in samples north and east of the site; the ES for vinyl chloride was also exceeded in a sample collected from a well immediately southeast of the site. Landfill gas monitoring indicates that the landfill is generating gas.

1.3 Phase I Recommendations

Based upon the conclusions presented in the Phase I RI report, the following recommendations were made:

1. A Phase II groundwater investigation should be performed at the landfill. The purpose of the investigation will be to expand the understanding of groundwater flow conditions developed from the Phase I data and evaluate the nature and extent of potential groundwater impacts downgradient of the landfill.

2. The groundwater investigation should include the installation of additional monitoring well nests to determine contaminant concentration gradients with depth. The investigation should determine groundwater flow conditions northeast of the landfill and the potential for contaminant migration below the Creek.

3. Monthly water levels should be collected from the water table observation wells, piezometers, and gas probes. These data will be used to determine temporal and/or seasonal variation in groundwater flow conditions and evaluate groundwater levels relative to the landfill waste for purposes, among others, of determining the efficacy of a possible gravity drainage trench, which is proposed as a possible method to lower the water table below the waste.

4. A revised groundwater monitoring program should be developed using the analytical data obtained during the Phase I Investigation. This sampling program should include only the parameters of interest as defined during this investigation. As a result, pesticides, herbicides, dioxin and PCBs will be removed from the list of parameters.

5. Gas monitoring probes should be installed south of the landfill property to monitor potential off-site migration of combustible gas toward private residences. Private residences located adjacent to the south landfill property boundary should also be monitored for the presence of combustible gases. Gas concentrations should be measured monthly at the same time that water level measurements are collected.

6. Gas monitoring probes should also be installed outside the east property boundary to evaluate gas migration conditions in that direction.

7. Private water supply wells south and east of the landfill property should be evaluated for use in the groundwater investigation. Private wells determined not to be useful to the investigation (and are inactive) should be abandoned in accordance with NR 112 Wis. Adm. Code. Included are the wells in the Sunnyvale subdivision located south of the landfill, which are not being used for potable water following the extension of the municipal water system to this area.

8. The lack of detection of contaminants in surface water and sediments collected during the Phase I investigation indicate that surface water and sediment sampling should be eliminated from the Phase II investigation.

This document presents a work plan for the completion of the recommendations made above, as amended pursuant to the comments provided by the USEPA and the WDNR.

2.0 SCOPE OF WORK

Seven tasks are proposed to address the recommendations presented in Section 1. These tasks are proposed with the intent to obtain data which will more completely define the hydrogeologic conditions at the site, define the nature and extent of landfill gas, and enhance the monitoring network for the implementation of a remedial action. The 7 tasks proposed are as follows:

Task 1: ***Evaluation of Private Well Logs and Selection of Wells for Sampling***

Task 2: ***Installation of Additional Monitor Wells, Abandonment of DH Series Wells***

Task 3: ***Installation of Additional Landfill Gas Probes***

Task 4: ***Laboratory Analyses of Groundwater Samples - Reduced List of Parameters***

Task 5: ***Groundwater Level and Landfill Gas Monitoring***

Task 6: ***Groundwater Modeling***

Task 7: ***Phase II RI Report***

These tasks are summarized in the following sections.

2.1 Evaluation of Private Well Logs and Selection of Wells for Sampling

2.1.2 Evaluation of Private Wells

Dames & Moore has obtained copies of all private well logs on file with the Wisconsin Geologic and Natural History Survey, which are located within the quarter sections falling within the limits of the ½-mile radius circle, indicated on Figure 6.2 of the Phase I Remedial Investigation report. In this effort, a total of 56 well logs were obtained, including 5 of the 6 logs indicated on Ms. Wendy Anderson's April 26 fax to the Dames & Moore office. The logs are included in Appendix A of this document. The well depths are summarized in Table 1.

TABLE 1
SUMMARY OF PRIVATE WELL DEPTHS

RANGE OF DEPTHS	NUMBER OF WELLS
50 feet or less	0
51 to 60 feet	11
61 to 70 feet	6
71 to 80 feet	21
81 to 90 feet	12
91 to 100 feet	3
Greater than 100 feet	3
TOTAL NUMBER OF WELLS	**56**

Logs for whom current property owners could be identified include the following:

Thomas Schmidt;
Frank Bialek (currently the Nielsen residence);
John Pleuss;
Tom Pleuss; and
Jesse Schultz.

The locations of the five wells listed above are shown on Figure 1. A log for a well owned by "Henry" is also included; however, no first name is listed, and the site information is not such that a location can be determined.

The Bialek well is immediately upgradient from the southeastern portion of the landfill (see Figure 1). As such, its location makes it suitable for sampling. The depth of the well is 185 feet, with casing to 150 feet. Consequently, it would yield water quality data for a production zone much deeper than the current monitoring network; however, there is concern about the possibility of deep aquifer migration of contaminants to the south of the landfill. The water level

data to be obtained from this well would not be such that they could be correlated to other site data; therefore, water level data from this well would not provide significant information with respect to groundwater flow conditions.

The Thomas Schmidt well is located immediately southeast of the landfill. Its well depth is 55 feet. Consequently, this well is comparable in depth to the "B" wells (the existing piezometers) in the monitoring network. This well has an open hole interval of 27 feet. Although this is considerably more than the 5-foot screens in the "B" wells, it is typical for a water supply well to have a large open interval. As a result, the water quality and water level data to be obtained from this well would be comparable to a composite of the "A" and "B" wells.

Several of the wells are downgradient from the landfill, including the Pleuss wells and the Schultz well. The Schultz well is 80 feet deep, whereas the Pleuss wells are 65 feet (John Pleuss) and 60 feet (Tom Pleuss). Although the Schultz well is deeper than the wells in the monitoring system, the Pleuss wells are comparable in total depth to the "B" wells. Because the John Pleuss well is cased to 60 feet with a 5-foot open interval, it would not provide a composite type of a sample, as the Schmidt and the Tom Pleuss wells (20-foot open interval) would.

2.1.2 Recommendations

The well depth frequency analysis suggests that very few of the private wells can provide data comparable to the data within the existing monitoring network. As indicated above, the Bialek well could provide useful information pertaining to the potential of contaminant migration to the south of the landfill, at depth within the aquifer. It is therefore recommended that this well be sampled. Several of the wells can provide data which could be correlated to the "B" wells, or a composite of the "A" and "B" wells. We recommend that the Schmidt and Pleuss (both) wells be sampled. The open interval of the John Pleuss well is comparable to that of the "B" wells, in terms of both water quality and water level information. With respect to the existing monitoring network, however, it would not provide reliable water level data due to the existence

of a large discharge area (wetland) between the well and the existing monitoring network. The construction of the proposed three-well nest northeast of the landfill, however, may provide data which could be correlated to the John Pleuss well. It is therefore recommended that water level data be obtained from this well, provided that access can be obtained.

2.2 Installation of Additional Monitor Wells, Abandonment of DH Series Wells

2.2.1 Abandonment of DH Series Wells

Three existing monitor wells will be abandoned. DH-1, 2 and 3 were installed as part of the original site monitoring program in 1975 (see Figure 2). These wells were not constructed in accordance with Wisconsin Administrative Code ch. NR 141 requirements (see logs in Appendix B). A Dames & Moore hydrogeologist will supervise the abandonment of these wells, and will provide the appropriate documentation.

2.2.2 Installation of Additional Monitor Wells

Monitoring conducted during the Phase I RI provided significant information with respect to groundwater flow and quality at the Tomah Municipal Sanitary Landfill (TMSL). However, an analysis of the data also showed several areas requiring further resolution:

- Deep aquifer flow and quality;
- Groundwater flow and quality northeast of the landfill; and
- Groundwater flow conditions with respect to the wetlands north of the landfill.

As discussed in Section 2.2.1, three wells used for the Phase I RI will be abandoned. Well DH-3 is upgradient of the landfill, and is not in a location of strategic significance, and will not be replaced. DH-2 is located near the MW-1 well nest. Groundwater flow and quality data from the two locations indicate that DH-2 does not provide significant data to compliment the data collected from the MW-1 wells; consequently, this well will not be replaced.

Well DH-1, however, is immediately within the eastern boundary of the fill. Groundwater flow data indicate this to be a downgradient location. Flow data also show this to be an area of relatively steep and variable groundwater gradients, requiring an increased level of resolution. Consequently, a water table monitor well is recommended to replace well DH-1. For several reasons, it is recommended that this well be placed on the east site of Noth Avenue, shown as MW-8A on Figure 3. It is anticipated that a cap may be placed on the landfill as part of the ultimate remedy; this cap would require the abandonment of well DH-1, regardless. Additionally, the existing wells DH-1, MW-7 and MW-3 are positioned linearly along the eastern perimeter of the landfill. The placement of a well to the east of Noth Avenue will allow the triangulation of data, thereby providing better definition of groundwater flow conditions in this area where additional data are needed. With respect to groundwater quality, the new well will yield groundwater quality data at a location downgradient from the fill material, rather than within the boundary. Due to the proximity of well MW-8A to the MW-3 nest, a piezometer is not recommended in this location.

The relationship of the groundwater and the wetlands is a concern, in that the wetlands provide a downgradient discharge area; however, the extent of these discharge conditions are not well defined. At this time, data from within the wetland area are provided at a single location (MW-5). Wells are recommended at two locations to augment the understanding of the hydrogeologic conditions associated with the wetlands. MW-10A is a water table monitor well proposed at the western perimeter of the wetlands (see Figure 3). In the event of the installation of a gravity drainage trench to the west of the landfill, proposed as part of a potential remedy, this well will also provide information with respect to the impacts resulting from that installation. Because vertical gradient data are provided by the nearby MW-4 and MW-5 well nests, no piezometer is recommended for this location.

The second location for the augmentation of the understanding of conditions associated with the wetlands is to the northeast of the landfill, near staff gauge SG-3 (see Figure 3). As indicated above, the wetlands signify an area of groundwater discharge. Figures 4 through 9 show the areal distribution of vertical groundwater gradients for the time period from September 1994

through April 1995, as determined from well nests at five locations. The groundwater gradients adjacent to the wetlands are predominantly upward, as determined from the MW-4 and MW-5 wells. However, the upward gradient in those locations is not strong. Additionally, the MW-3 well nest, also located near the wetland area, displays relatively strong downward gradients. Consequently, there is concern that contaminants from the wetland may flow through the wetland area, at depth. A three-well nest is therefore recommended, indicated as MW-9A, 9B and 9C on Figure 3. Well MW-9A will be a water table monitor well; MW-9B will be installed in the same horizon as the existing "B" series wells; MW-9C will be installed at a depth of 20 feet below MW-9B. These wells will provide additional data with respect to vertical and horizontal groundwater gradients, as well as groundwater quality data at three depths within the aquifer, at locations which may be immediately upgradient from private drinking water supply wells (see Section 2.1). Additionally, well MW-9B can be used in conjunction with groundwater elevations in the Pleuss wells (if these data can be obtained), to provide a definition of horizontal groundwater flow conditions in that area.

Two additional "C" series wells are recommended, at locations MW-5 and MW-3 (see Figure 3). As indicated above, concern exists with respect to the significance of the vertical groundwater gradients in these areas. The addition of wells MW-3C and MW-5C will provide an increased understanding of vertical groundwater flow and quality conditions in this area. The data obtained from these wells can also be used in conjunction with data from proposed well MW-9C, to obtain a general understanding of horizontal groundwater flow.

2.2.3 Monitor Well Construction

Monitor wells will be drilled and constructed of 2-inch PVC in accordance with ch. NR 141, WAC, and in accordance with the procedures detailed in the Dames & Moore Standard Operating Procedure (SOP), included in the Phase I Work Plan.

2.2.4 Groundwater Sampling

Upon completion of the installation and development of the new monitor wells, all site monitor wells and the selected private wells to which access can be attained will be sampled. The monitor wells will be purged dry, or a minimum of three casing volumes will be removed prior to sampling, in accordance with the SOP presented in the Phase I Work Plan. Private wells will be purged for a minimum of 15 minutes, through each tap. A sample will then be drawn from the tap nearest the well. If any on-site treatment system is used (e.g., a water softener), the sample will be drawn at a location prior to the treatment unit.

2.3 Installation of Additional Landfill Gas Probes

Four landfill gas monitoring probes are proposed outside the waste limits on the south side of the landfill, as shown on Figure 3. These probes will be constructed of 1-inch PVC, and will be installed with 15-foot screens, which will intersect the water table, since it is relatively shallow at these locations (less than 20 feet). Additionally, two landfill gas monitoring locations are proposed outside the waste on the east side. One of these monitoring points, shown as GP-12 on Figure 3, will be constructed of 1-inch PVC, as described above. Proposed water table monitor well MW-8A will also be used as the second landfill gas probe on the east side of the landfill. This well will be constructed of 2-inch PVC, in accordance with ch. NR 141, W.A.C.; however, it will have a 15-foot screen. These sample locations will allow not only a determination of landfill gas concentrations and constituents, but also water levels.

Because the probes are proposed for installation on private property, access agreements with the property owners through the assistance of the WDNR may be required. All existing and proposed groundwater and landfill gas sample points are summarized in Table 2.

2.4 Laboratory Analyses of Groundwater Samples - Reduced List of Parameters

National Environmental Testing, Inc. (NET) of Bartlett, Illinois will conduct laboratory analyses

for Phase II of the RI. NET's Quality Assurance Plan/Statement of Qualifications is included as Appendix C of this work plan. In accordance with the requirements by the USEPA for this project, NET will provide levels of detection or quantitation which:

1. Has a limit of detection and limit of quantitation below the Preventive Action Limit (PAL); or
2. Produces the lowest available limit of detection and limit of quantitation if the limit of detection and limit of quantitation are above the PAL.

The list of analytes and compounds for this phase of the RI will be reduced, based upon the parameters detected in Phase I analyses. To summarize, the list will include volatile organic compounds, semi-volatile organic compounds, metals, and selected inorganics. Removed from the list are pesticides, herbicides, dioxins and PCBs. The recommended revised list is presented in Table 2, which also presents the State of Wisconsin ESs, PALs, State and Federal groundwater standards, State and Federal surface water standards, and contract required quantitation and detection limits, which indicates the levels of detect or quantitation which to which NET will adhere. All analytical data will be validated pursuant to the procedures followed during the Phase I RI.

2.5 Groundwater Level and Landfill Gas Monitoring

Between September 1994 and April 1995, six rounds of groundwater levels were measured. The Phase I RI report presented maps of the water table and the potentiometric surface from data collected on October 13, 1994, as representative of the flow conditions over the period of the investigation; the remaining data have been plotted, and are presented on Figures 10 through 22. Whereas these plots show the same general flow conditions, for both the water table and the "B" horizon, there is some localized variability. Additionally, most of the data presented on the plots are representative of times of typically low recharge conditions. Consequently, monthly water levels will be measured at all monitor wells and gas probes. To the extent possible, water levels will be measured at selected private wells, although access, in terms of owners'

permission and possible physical obstructions have yet to be gained for private wells.

Monthly water level maps will be generated for the water table and the potentiometric surface. These maps will be included in monthly updates, presented in the same format as Figures 10 through 22.

The Phase I probes installed within the landfill, as well as the Phase II probes to be installed outside the limits of waste, will be monitored for landfill gas on the same monthly schedule as the groundwater level monitoring. Specifically, concentrations of methane will be measured with a combustible gas indicator. Total ionizable compounds (VOCs, and to some degree, SVOCs), will also be measured with a photoionization detector (PID). Where PID levels exceed 50 total instrument units, a portable gas chromatograph (GC) will be used to determine specific compounds. Because vinyl chloride has been a compound prevalent in groundwater, this compound will also be measured by the GC, along with its predecessor compounds, TCE and PCE. A standard operating procedure for the field GC is included in Appendix D.

In addition to landfill gas monitoring at the probes, the basements of the residences adjacent to the southern perimeter of the landfill will be monitored, to the extent that access can be attained. At the time of each monthly monitoring event, landfill gas measurements will be collected at these locations. For basements which are open, measurements will be taken in the ambient air of the basement, as well as along floor and wall joints. For homes with finished basements, these measurements will be taken in each room to the extent possible.

2.6 Groundwater Modeling

The monitoring system as modified by the tasks presented above, will permit the accurate construction and calibration of a groundwater flow model. A three dimensional numerical groundwater model (U.S.G.S. modular model, MODFLOW) will be used to simulate groundwater flow conditions at the site. In conjunction with the flow model, a particle tracking program (PATH3D, S.S. Papadopulos & Associates, 1991) will be used to simulate potential

advective transport of contaminants. This model will be used as a tool to assess possible groundwater remediation methods and features, such as the implementation of a passive, gravity drainage trench. It can also be used to design and assess the efficiency of an active groundwater extraction system, as well as be used to assess the impacts of such a system on private water supply wells.

The model will consist of a minimum of two layers; however, should the "C" wells indicate the appropriateness, a third layer will be incorporated. The horizontal discritization will be variable, with smaller spacings in the vicinity of the landfill, for greater resolution. Hydraulic conductivity values determined during the Phase I and II investigations will be incorporated. Recharge will be determined through the process of calibration.

2.7 Phase II RI Report

Upon completion of Phase II tasks 1 through 7, the final RI report will be prepared and submitted for Agency review. This document will detail the field and analytical activities performed, and will present the results, and our conclusions and recommendations.

The final RI report will consist of the compilation of the draft Phase I report, as well as a summary of the results of the Phase II investigation. The Phase I discussion will incorporate the comments and responses to the draft report, requested by the USEPA and discussed at a meeting of the parties on April 24, 1995.

3.0 PROJECT SCHEDULE

A project schedule has been developed based upon past experience with projects with similar scopes of work. The schedule is presented on Figure 23. Brief monthly updates will be provided as during the Phase I effort; this report will include the plots of groundwater contours and landfill gas measurements (Task 5). Consequently, the schedule presented does not include provisions for any reviews prior to the submittal of the Phase II report.

4.0 PROJECT STAFF

The project staff for the second phase of the RI will be essentially the same as the first, with two primary exceptions. Dave Trainor, P.E., P.G., will assume the roles of both Project Director and Project Manager. Mr. Thomas Covilli, C.I.H., will assume the role of Health & Safety officer. Senior technical review will be provided by Mr. James Boddy. Resumes for Messrs. Covilli and Boddy are included in Appendix E.

TABLE 1
IS PRESENTED ON PAGE 5
OF THE DOCUMENT

TABLE 2
SUMMARY OF CONTRACT REQUIRED QUANTITATION AND DETECTION LIMITS
EXCEEDING NR140 WISCONSIN ADMINISTRATIVE CODE
PUBLIC HEALTH GROUNDWATER STANDARDS

Substance	State Groundwater Standards (NR 140)		State Surface Water Standards (NR 105)	Federal Groundwater Standards	Federal Surface Water Standards	Contract Required Quantitation and Detection Limits	
	Enforcement Standard (µg/L)	Preventive Action Limit (µg/L)	Human Cancer Criteria (µg/L)	SDWA Maximum Contaminant Level (µg/L)	SDWA Maximum Contaminant Level (µg/L)	CRQL (µg/L)	CRDL (µg/L)
Arsenic	50	5		50	50		10
Barium	1,000	200		2,000	2,000		200
Benzene	5	0.067	45	5	5	10	
Benzo(a)pyrene	0.003	0.0003	0.1	0.2	0.2	10	
Bromoform	4.4	0.44		< 100	< 100	10	
Cadmium	10	1	82[3]	10	5		5
Carbon Tetrachloride	5	0.5	10	5	5	10	
Chloroform	6	0.6		< 100	< 100	10	
Chromium	50	5	9500/9[4]	100	100		10
1,2-Dichloroethane	5	0.05	170	5	5	10	
1,1-Dichloroethene	7	0.024	15	7	7	10	
1,2-Dichloroethene (cis)	100	10	5,400[3]	70	70	10[1]	
1,2-Dichloropropane	5	0.5		5	5	10	
Di(2 ethylhexyl)phthalate[2]	3	0.3	8,900[3]	6	6	10	
2,4-Dinitrotoluene	0.05	0.005				10	
2,6-Dinitrotoluene	0.05	0.005				10	
Lead	15	1.5	50	50	50		3

TABLE 2
SUMMARY OF GROUNDWATER AND LANDFILL GAS SAMPLE LOCATIONS

MONITOR POINT	DESCRIPTION	LOCATION
Existing Sampling Points:		
MW-1A & B	Shallow & intermediate groundwater monitor well nest.	Southwest corner of landfill.
MW-2A & B	Shallow & intermediate groundwater monitor well nest.	Southeast corner of landfill.
MW-3A & B	Shallow & intermediate groundwater monitor well nest.	Northeast corner of landfill.
MW-4A & B	Shallow & intermediate groundwater monitor well nest.	Northern perimeter of landfill.
MW-5A & B	Shallow & intermediate groundwater monitor well nest.	Wetlands, north of MW-4 well nest.
MW-6A	Shallow groundwater monitor well.	Approximately 500 feet south of MW-2.
MW-7A	Shallow groundwater monitor well.	Eastern perimeter of landfill.
GP-1 through 7	Landfill gas probes.	Within perimeter of waste area.
Proposed Sampling Points:		
MW-3C	Deep groundwater monitor well.	Adjacent to existing MW-3 nest.
MW-5C	Deep groundwater monitor well.	Adjacent to existing MW-5 nest.
MW-8A	Water table monitor well/landfill gas probe.	East of existing well DH-1.
MW-9A, B & C	Three-well groundwater monitor well nest. Landfill gas probe. Landfill gas probes.	Northeast of landfill.
GP-8	Landfill gas probe.	Southwest corner of landfill.
GP-9, 10 & 11		Southern perimeter of landfill.
GP-12		East side of Noth Avenue.
Tentative Private Wells for Sampling:		
T. Pleuss	Private water supply well.	Northeast of landfill.
J. Pleuss	Private water supply well.	Northeast of landfill.
Bialek	Private water supply well.	South of landfill.
T. Schmidt	Private water supply well.	Southeast of landfill.

TABLE 3
SUMMARY OF CONTRACT REQUIRED QUANTITATION AND DETECTION LIMITS
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	Enforcement Standard (µg/L)	Preventive Action Limit (µg/L)	Human Cancer Criteria (µg/L)	SDWA Maximum Contaminant Level (µg/L)	SDWA Maximum Contaminant Level (µg/L)	CRQL (µg/L)	CRDL (µg/L)
Arsenic	50	5		50	50		10
Barium	1,000	200		2,000	2,000		200
Benzene	5	0.067	45	5	5	10	
Benzo(a)pyrene	0.003	0.0003	0.1	0.2	0.2	10	
Bromoform	4.4	0.44		<100	<100	10	
Cadmium	10	1	82[3]	10	5		5
Carbon Tetrachloride	5	0.5	10	5	5	10	
Chloroform	6	0.6		<100	<100	10	
Chromium	50	5	9500/9[4]	100	100		10
1,2-Dichloroethane	5	0.05	170	5	5	10	
1,1-Dichloroethene	7	0.024	15	7	7	10	
1,2-Dichloroethene (cis)	100	10	5,400[3]	70	70	10[1]	
1,2-Dichloropropane	5	0.5		5	5	10	
Di(2-ethylhexyl)phthalate[2]	3	0.3	8,900[3]	6	6	10	
2,4-Dinitrotoluene	0.05	0.005				10	
2,6-Dinitrotoluene	0.05	0.005				10	
Lead	15	1.5	50	50	50		3

TABLE 3
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Mercury	2	0.2	0.08[3]	2	2		0.2
Napthalene	40	8				10	
Selenium	10	1	170[3]	50	50		5
Silver	50	10	430[3]	100	100		10
Tetrachloroethene	1	0.1	15	5	5	10	
1,1,2-Trichloroethane	0.6	0.06	46	5	5	10	
Trichloroethene	5	0.18	110	5	5	10	
Vinyl Chloride	0.2	0.0015		2	2	10	

[1] This CRQL corresponds to total 1,2-Dichloroethene, both cis and trans.
[2] Also known as bis(2-ethylhexyl)phthalate.
[3] Human Threshold Criteria
[4] Trivalent/Hexavalent Chromium

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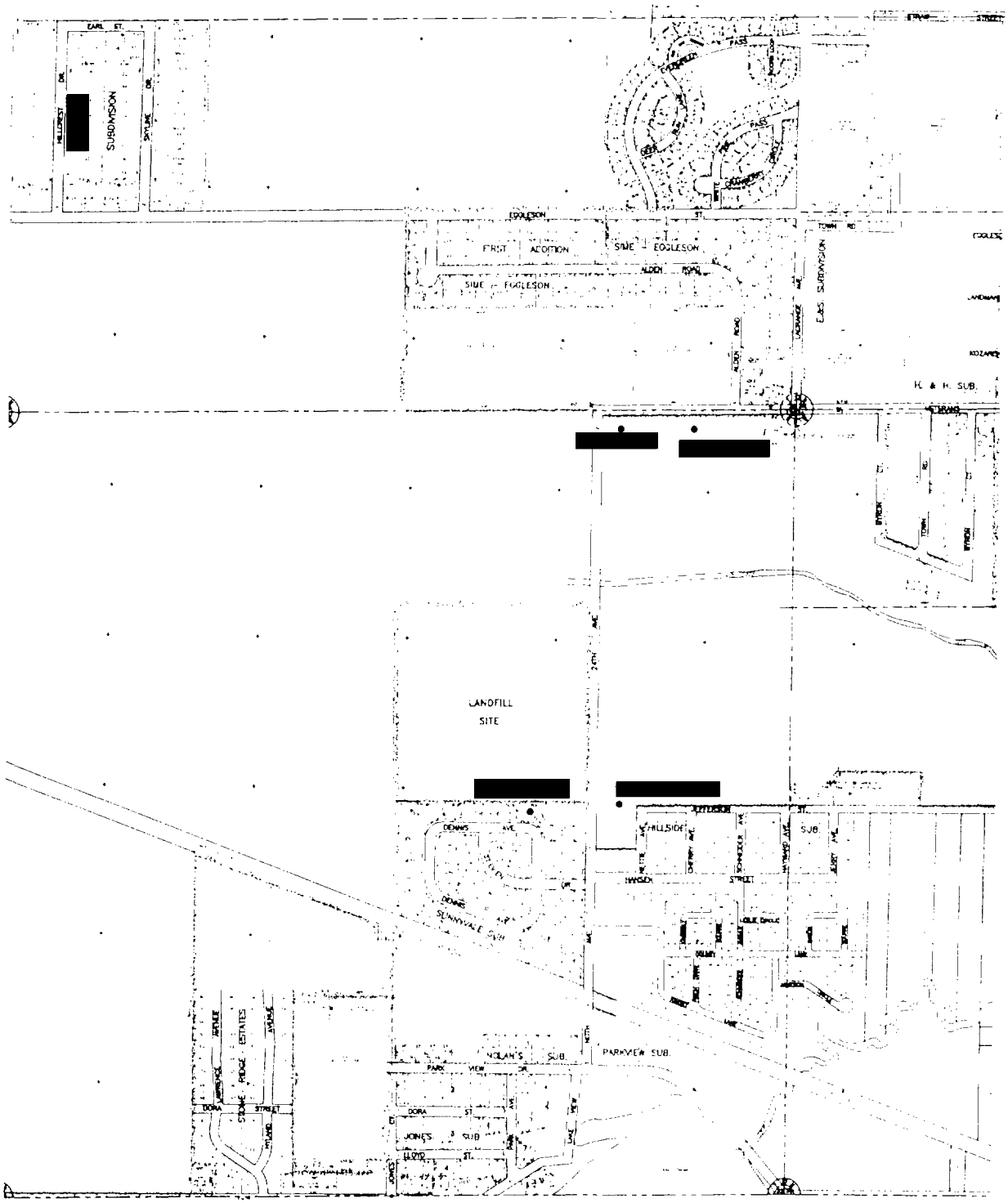


LEGEND:

● PRIVATE WELLS

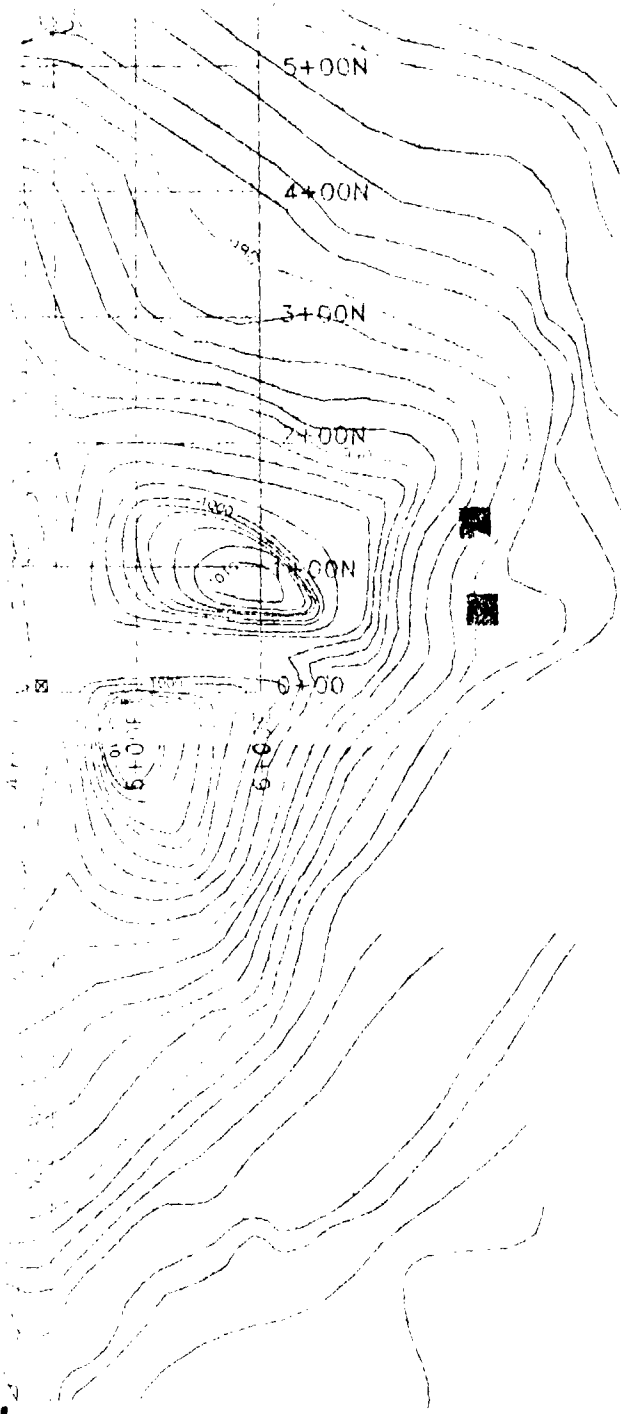
SOURCE: BASE MAP COMPILED FROM LAND USE PLANNING MAPS PREPARED BY MID-STATE ASSOCIATES.

NORTH

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 1
LOCATIONS AND OWNERS OF PRIVATE WELLS

DRN. BY J.V.	PROJ. NO. 27504-002
DATE 06/01/95	DAMES & MOORE



LIMITS WERE OBTAINED FROM AYERS ASSOCIATES MAP REFERENCED ABOVE.

3. MONITORING WELLS MW-1A/MW-1B THROUGH MW-7A INSTALLED BY DAMES & MOORE IN AUGUST 1994.
4. GAS PROBES GP-1 THROUGH GP-7 INSTALLED BY DAMES & MOORE IN AUGUST 1994.
5. MONITORING WELLS DH-1, DH-2 AND DH-3 INSTALLED BY AYERS ASSOCIATES IN DECEMBER 1975.

LEGEND

⊙ SG-2	STAFF GAUGE
● MW-5A / DH-1	WATER TABLE OBSERVATION WELL
⊕ MW-5B	PIEZOMETER
▲ GP-2	GAS PROBE
⊠	SECTION CORNER
— —	APPROXIMATE EDGE OF WASTE
—×—×—	FENCE
—Po—	OVERHEAD POWER LINE
= = =	EXISTING ROADS
[ ]	EXISTING BUILDINGS (LOCATED)
▩	EXISTING BUILDINGS (UNLOCATED)

0 100 200

SCALE: 1"=100'

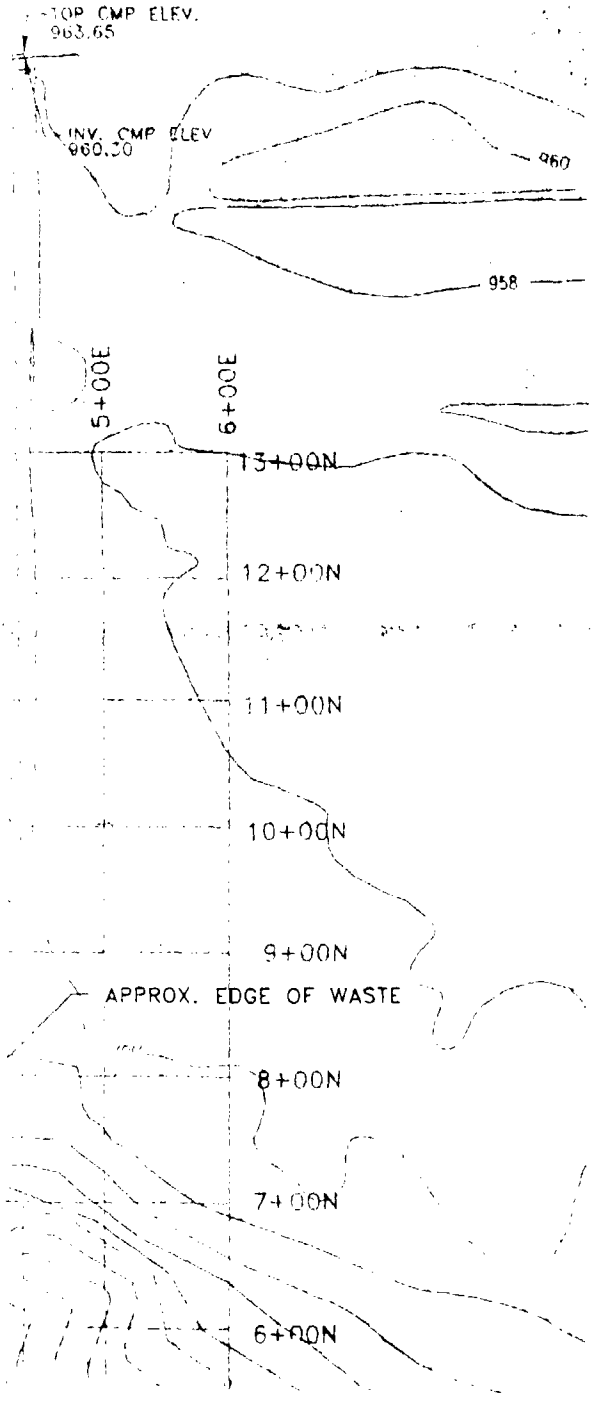
PROJECT: TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

TITLE: EXISTING SITE MONITORING FEATURES

DRAWN BY: IV CHECKED BY:	SCALE: SCALE	PROJ. NO. 23504-005 DRWG. NO.
APPROVED BY: DATE: JUNE 1995	DATE PRINTED: JUN. 01 1995	FIGURE 2

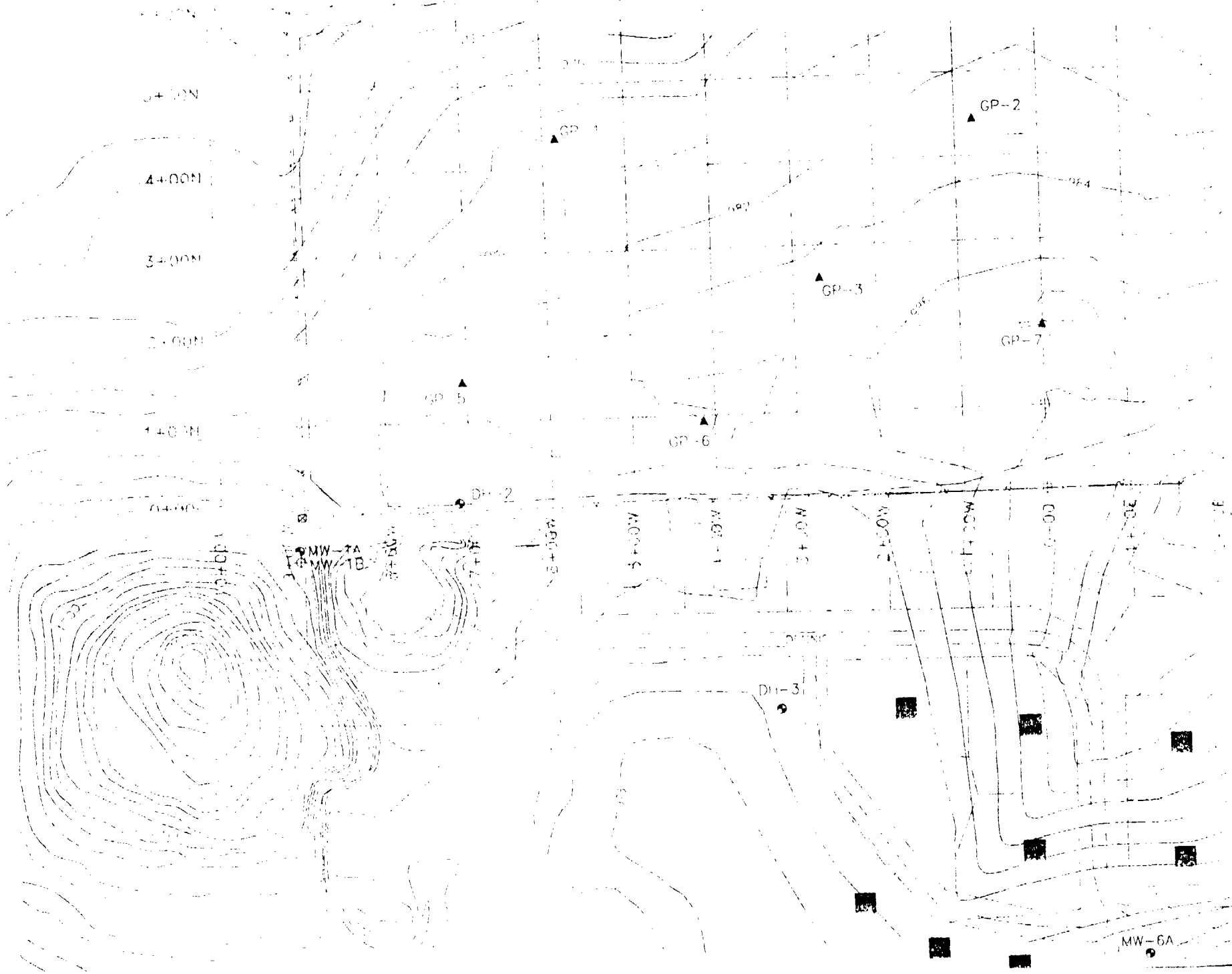
DAMES & MOORE

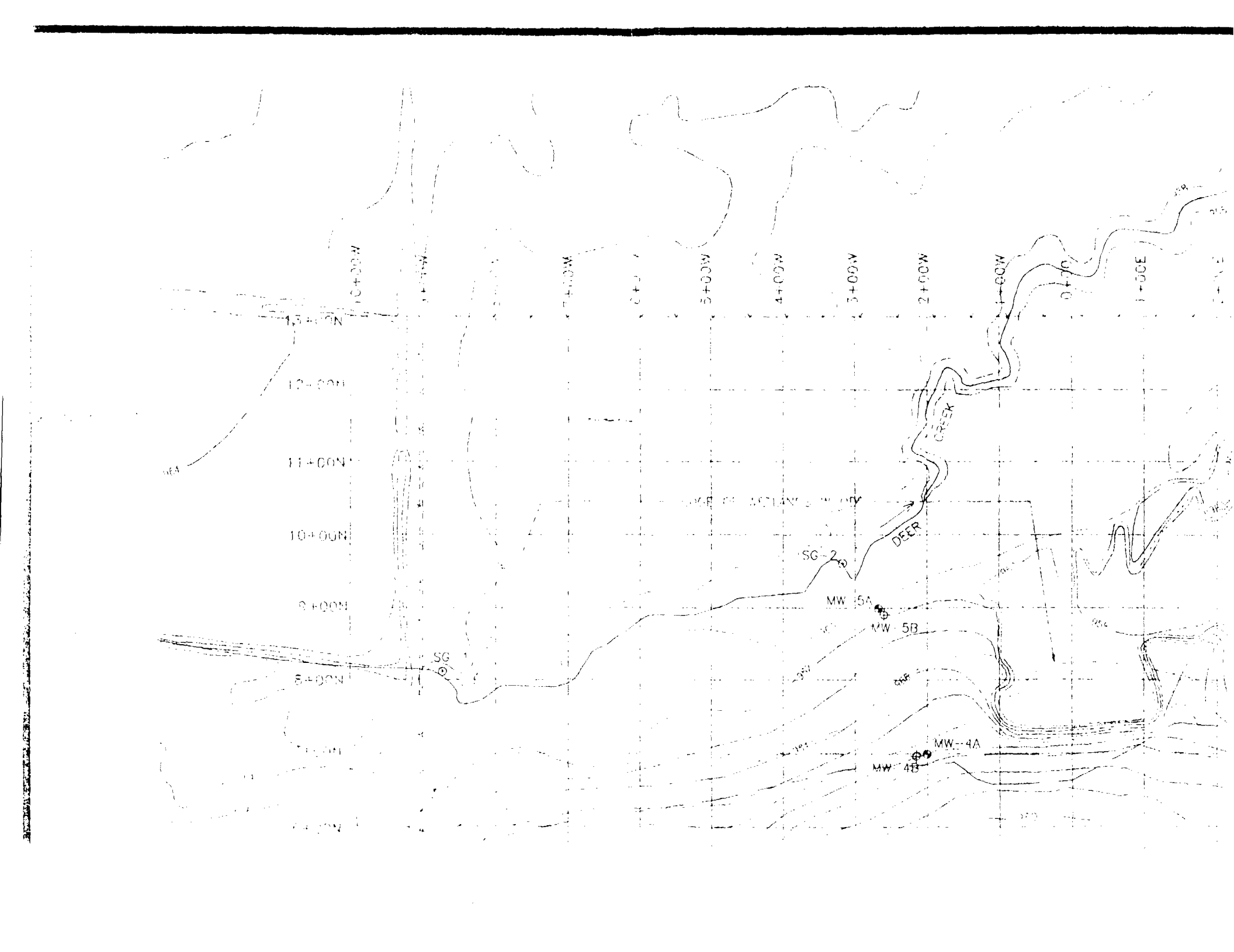
7530 INTERNATIONAL LANE, SUITE 210
MADISON, WISCONSIN 53704
(608) 244-1766

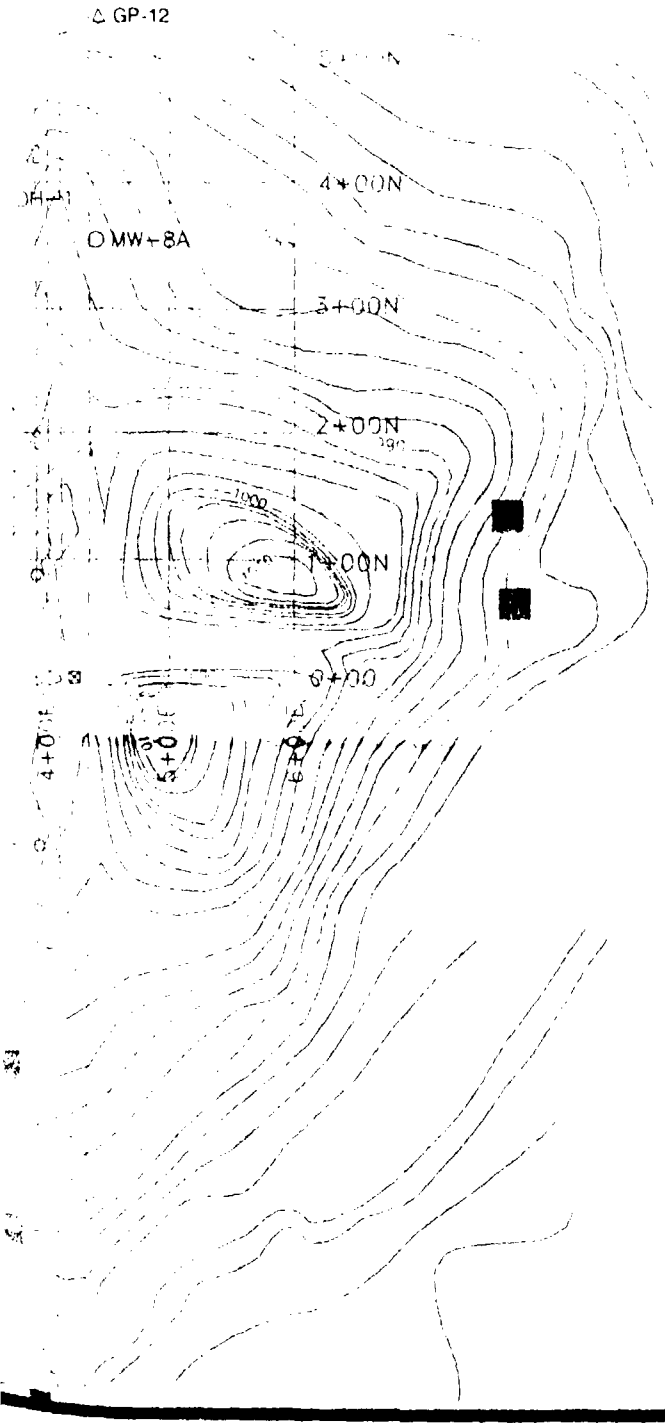


NOTES

1. BASE MAP DEVELOPED FROM AYERS ASSOCIATES MAP TITLED "TOMAH SANITARY LANDFILL ABANDONMENT, TOMAH, WI", FIGURE NO.1, 1976. ADDITIONAL SURVEY DATA PROVIDED BY LAND SURVEYS LIMITED.
2. LANDFILL SURFACE AND ADJACENT PROPERTIES WITHIN 200 FEET OF LANDFILL SURVEYED USING CONVENTIONAL SURVEYING METHODS BY LAND SURVEYS LIMITED IN AUGUST


GP-2
GP-3
GP-7
GP-6
DH-2
MW-7A
MW-7B
DH-3
MW-6A


5+00W
4+00W
3+00W
2+00W
1+00W
0+00
1+00E
11+00N
10+00N
9+00N
8+00N
DEER
CREEK
SG-2
SG-1
MW-5A
MW-5B
MW-4A
MW-4B



⊙ SG 2	STAFF GAUGE
◉ MW 5	WATER TABLE OBSERVATION WELL; A: WATER TABLE; B: INTERMEDIATE; C: DEEP.
● DH-1	OBSERVATION WELL TO BE ABANDONED
○ MW-10	PROPOSED OBSERVATION WELL; A: WATER TABLE; B: INTERMEDIATE; C: DEEP.
△ GP-13	PROPOSED GAS PROBE
⊕ MW-5B	PIEZOMETER
▲ GP-2	EXISTING GAS PROBE
⊠	SECTION CORNER
— — —	APPROXIMATE EDGE OF WASTE
—×—×—	FENCE
—Po—	OVERHEAD POWER LINE
	EXISTING ROADS
	EXISTING BUILDINGS (LOCATED)
	EXISTING BUILDINGS (UNLOCATED)

0 100 200

SCALE: 1"=100'

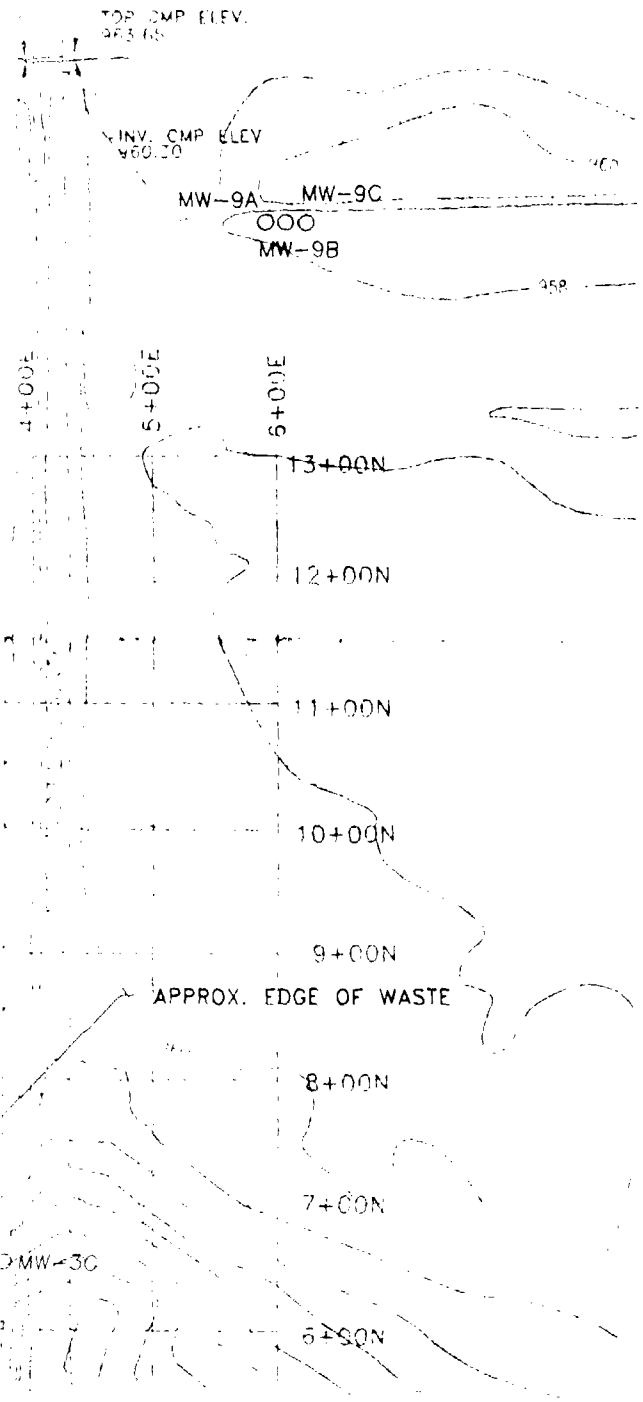
PROJECT: TOMAH MUNICIPAL SANITARY LANDFILL TOMAH, WISCONSIN

TITLE: PROPOSED SITE MONITORING FEATURES

DRAWN BY: JV	SCALE: SCALE	PROJ. NO. 21654-002
CHECKED BY:		DWG. NO.
APPROVED BY:	DATE PRINTED: JUN. 13 1995	FIGURE 2
DATE: JUNE 1995		

DAMES & MOORE

2701 INTERNATIONAL LANE, SUITE 200
MADISON, WISCONSIN 53704
(608) 244-1788

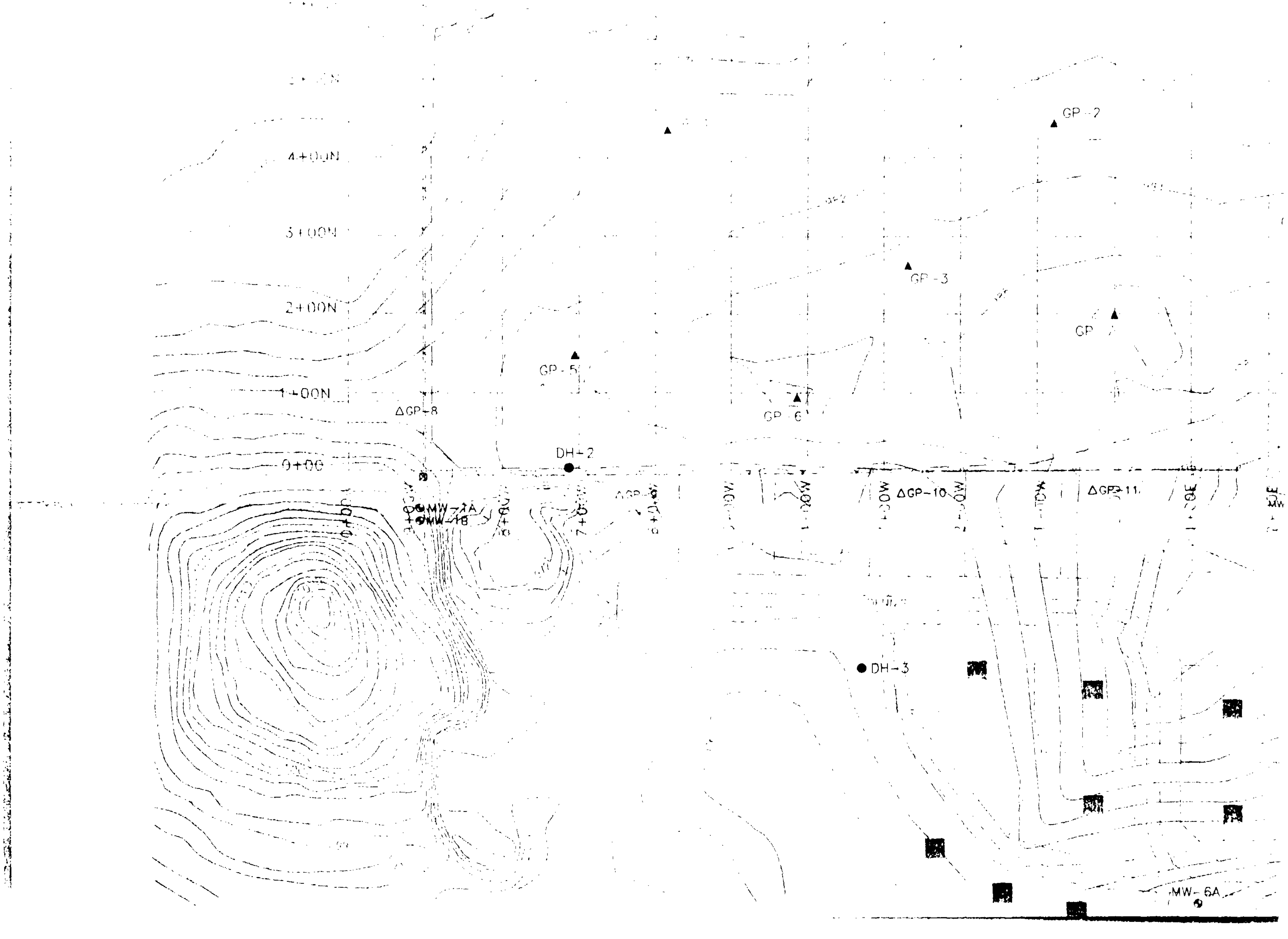


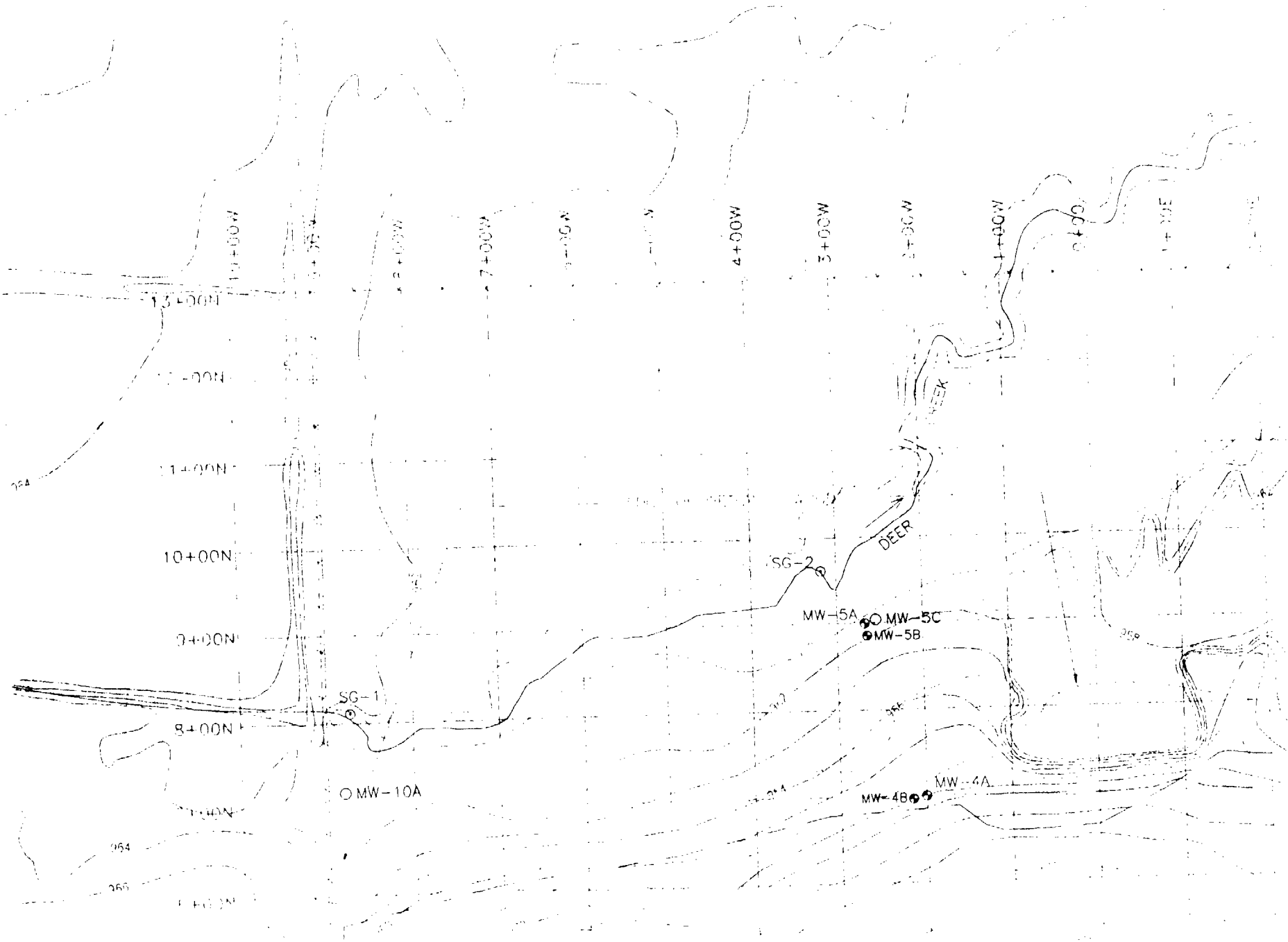
A GP-12

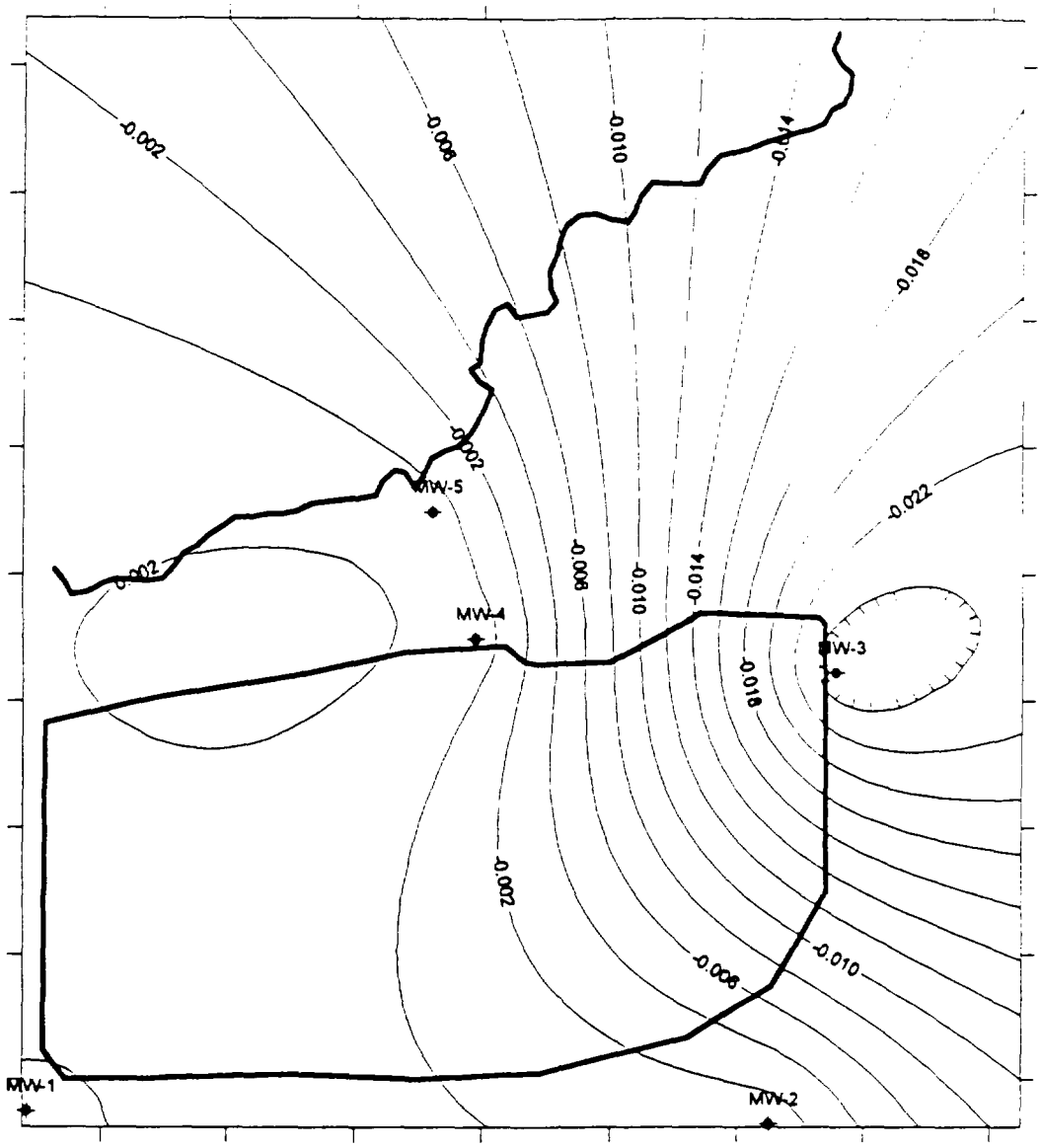
NOTES

1. BASE MAP DEVELOPED FROM AYERS ASSOCIATES MAP TITLED "TOMAH SANITARY LANDFILL ABANDONMENT, TOMAH, WI"; FIGURE NO.1, 1976. ADDITIONAL SURVEY DATA PROVIDED BY LAND SURVEYS LIMITED.
2. LANDFILL SURFACE AND ADJACENT PROPERTIES WITHIN 200 FEET OF LANDFILL SURVEYED USING CONVENTIONAL SURVEYING METHODS BY LAND SURVEYS LIMITED IN AUGUST AND DECEMBER 1994. TOPOGRAPHIC DATA OUTSIDE THESE LIMITS WERE OBTAINED FROM AYERS ASSOCIATES MAP REFERENCED ABOVE.
3. MONITORING WELLS MW-1A/MW-1B THROUGH MW-7A INSTALLED BY DAMES & MOORE IN AUGUST 1994.
4. GAS PROBES GP-1 THROUGH GP-7 INSTALLED BY DAMES & MOORE IN AUGUST 1994.
5. MONITORING WELLS DH-1, DH-2 AND DH-3 INSTALLED BY AYERS ASSOCIATES IN DECEMBER 1975.

LEGEND


4+00N
3+00N
2+00N
1+00N
0+00
ΔGP-8
GP-5
DH-2
GP-6
GP-3
GP-2
MW-1A
MW-1B
ΔGP-10
ΔGP-11
DH-3
MW-6A


4+00W
3+00W
13+00N
10+00N
8+00N
SG-1
SG-2
DEER
MW-5A
MW-5C
MW-5B
MW-10A
MW-4A
MW-4B



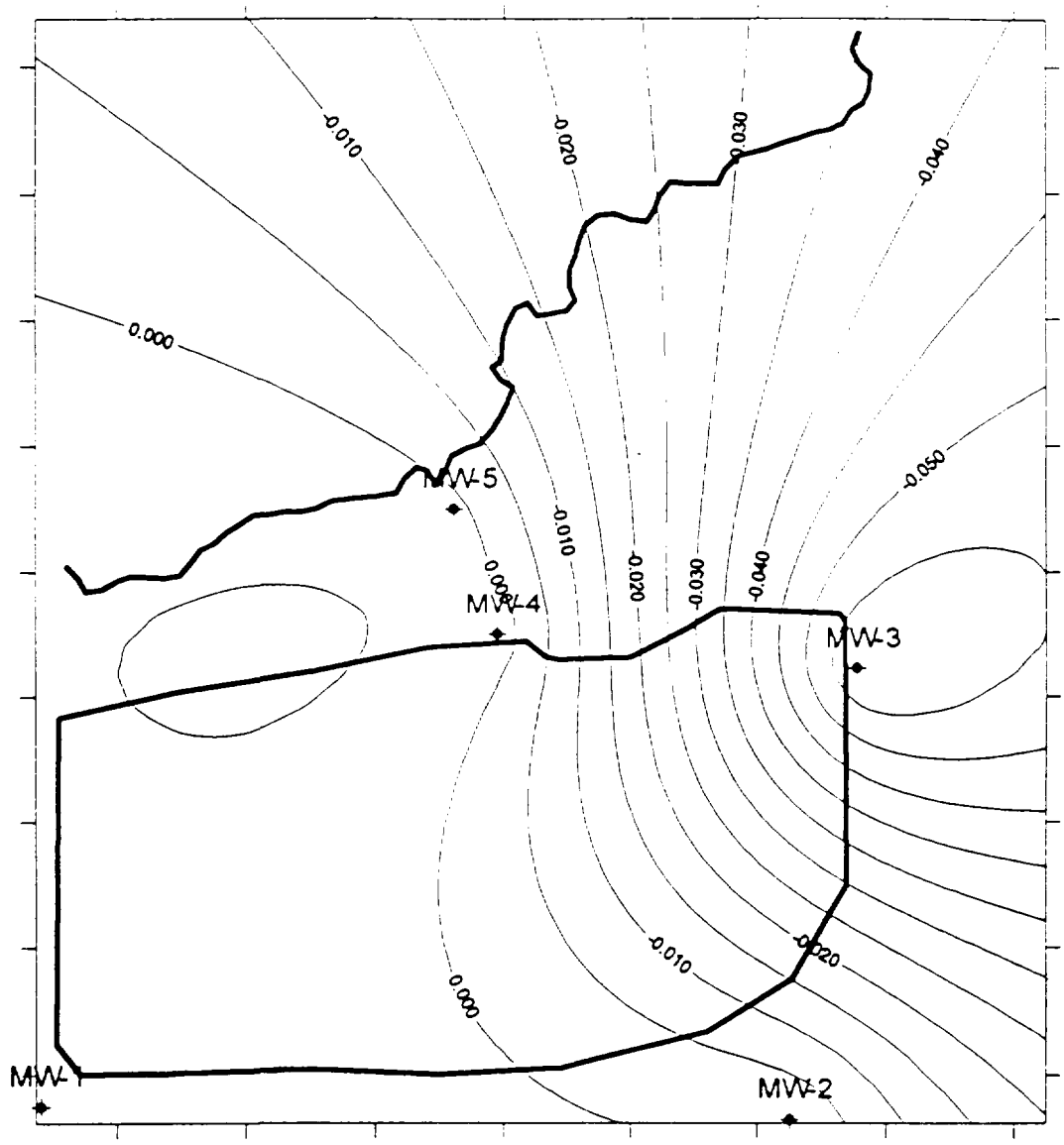
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 4
VERTICAL GROUNDWATER GRADIENTS
SEPTEMBER 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



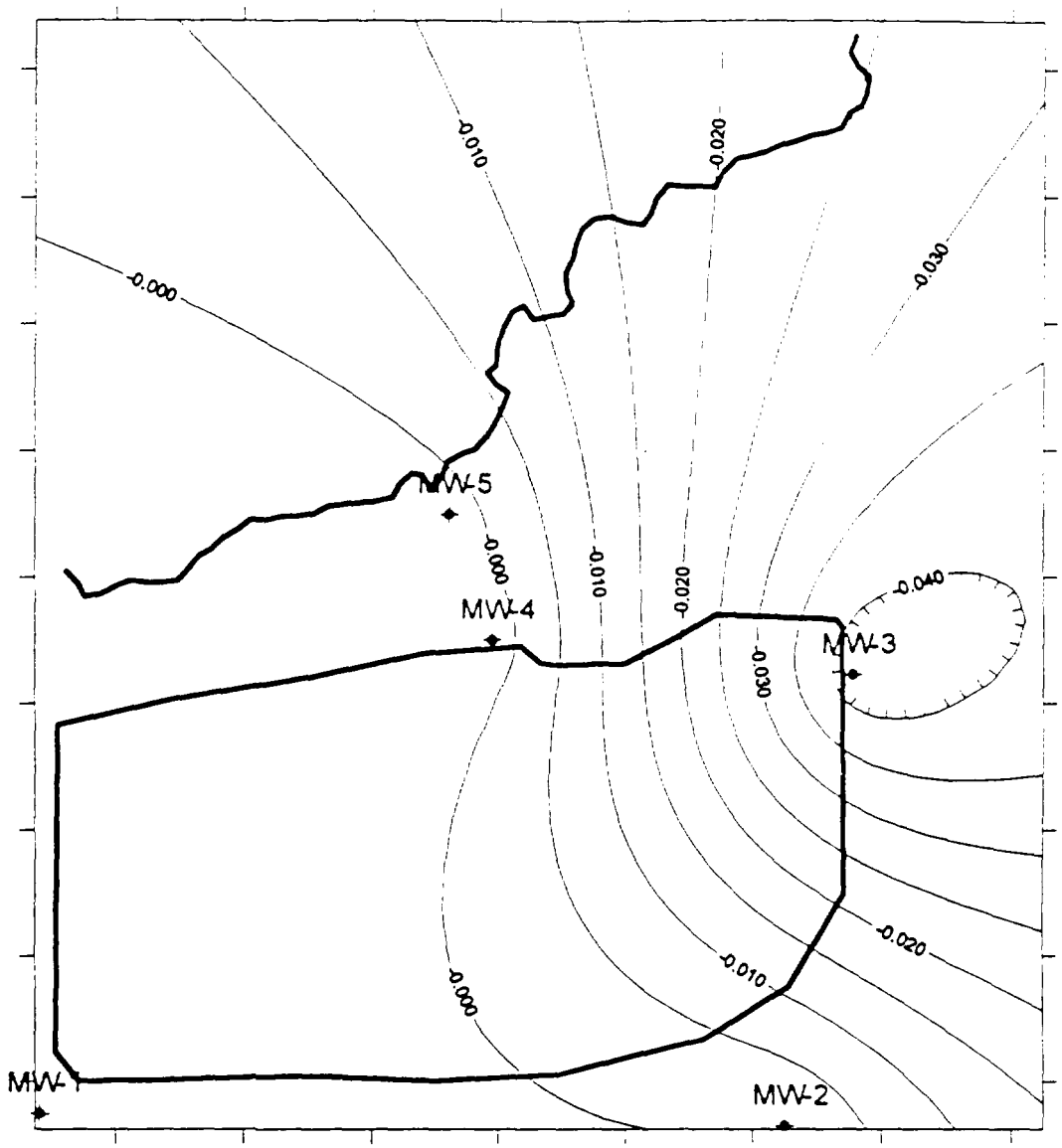
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 5
VERTICAL GROUNDWATER GRADIENTS
OCTOBER 1994

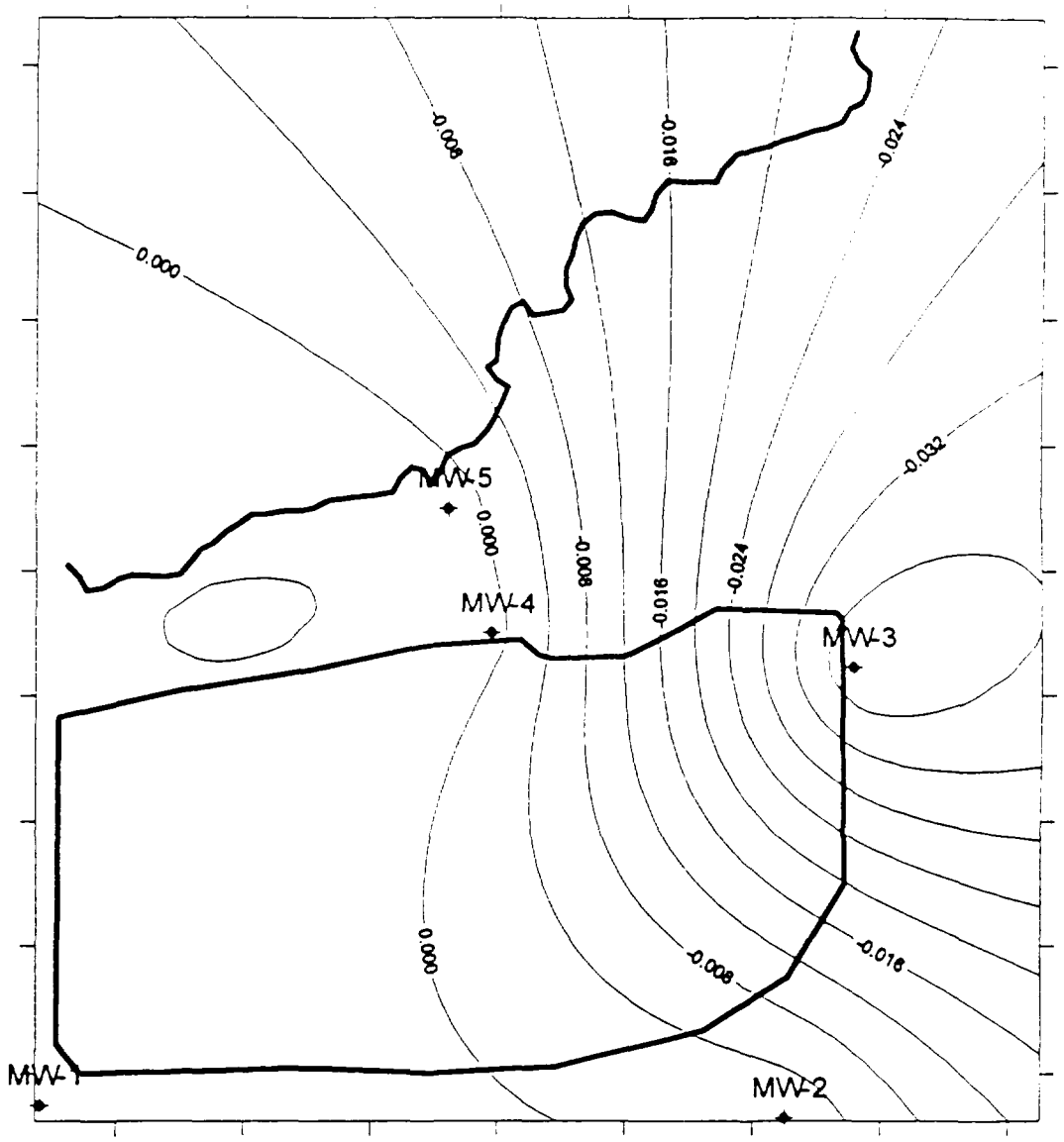
GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



NORTH

SCALE: 1" = 300'

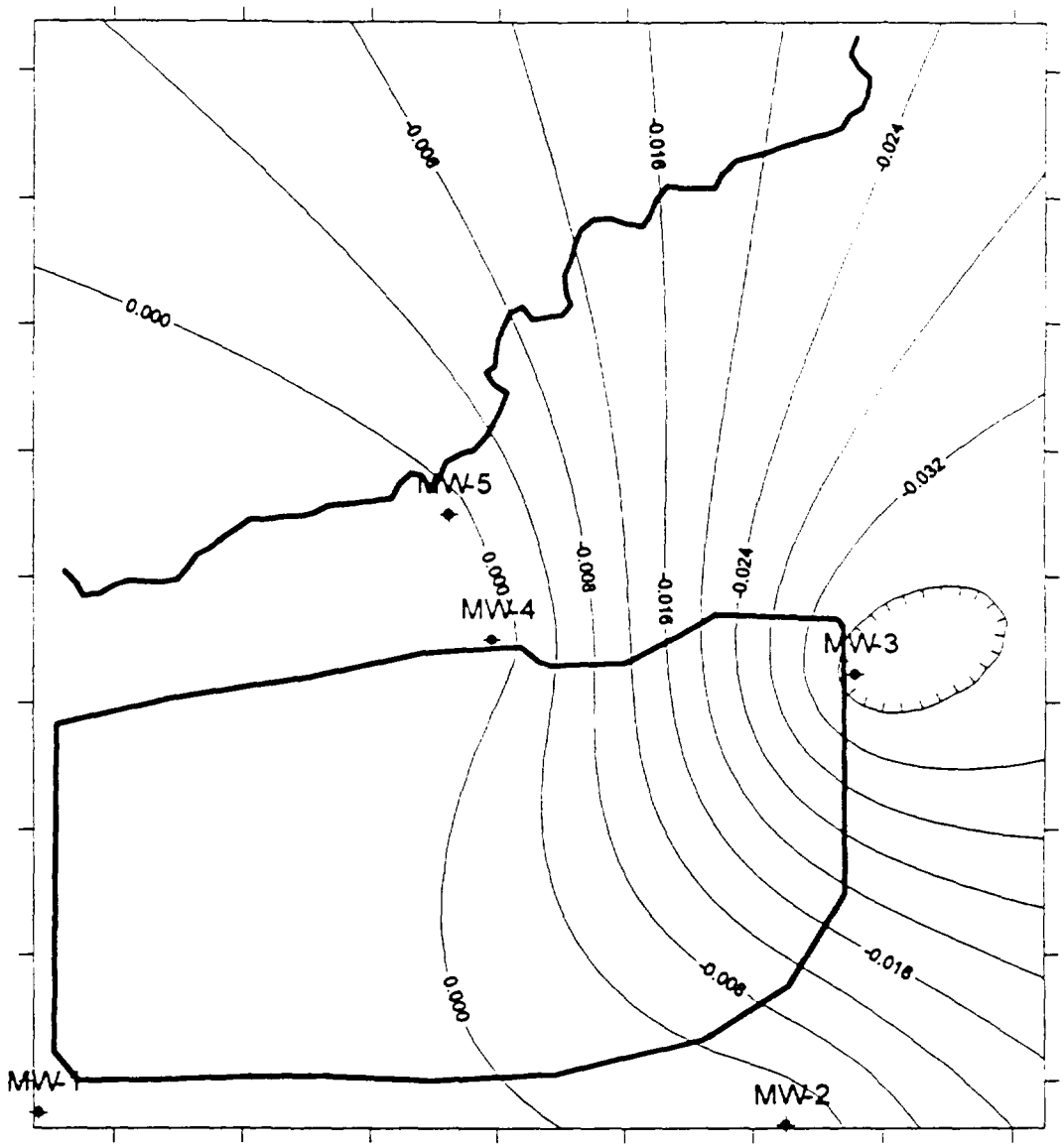
TOMAH MUNICIPAL SANITARY LANDFILL TOMAH, WISCONSIN	
FIGURE 6 VERTICAL GROUNDWATER GRADIENTS NOVEMBER 1994	
GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL TOMAH, WISCONSIN	
FIGURE 7 VERTICAL GROUNDWATER GRADIENTS DECEMBER 2, 1994	
GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



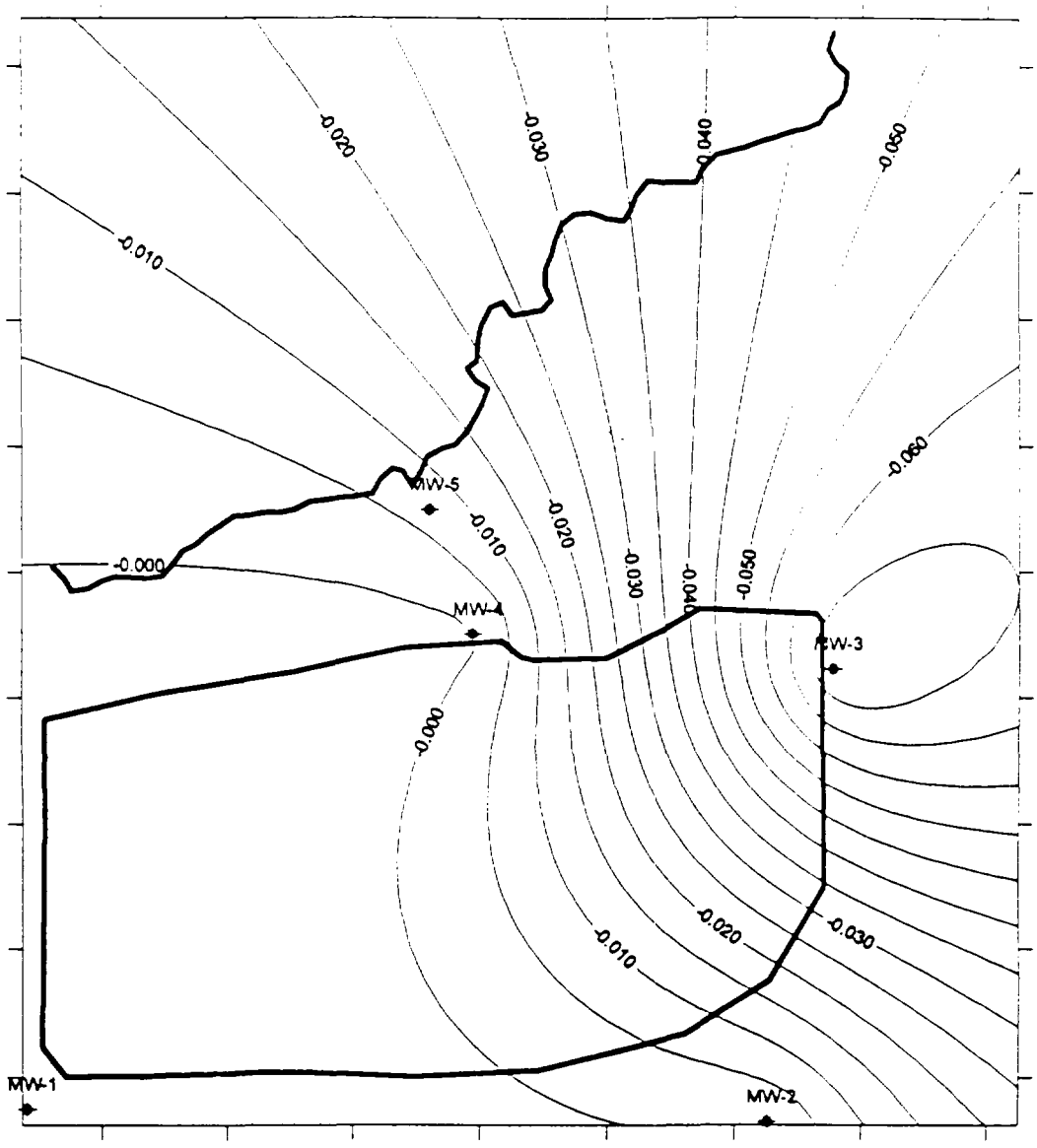
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 8
VERTICAL GROUNDWATER GRADIENTS
DECEMBER 29, 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



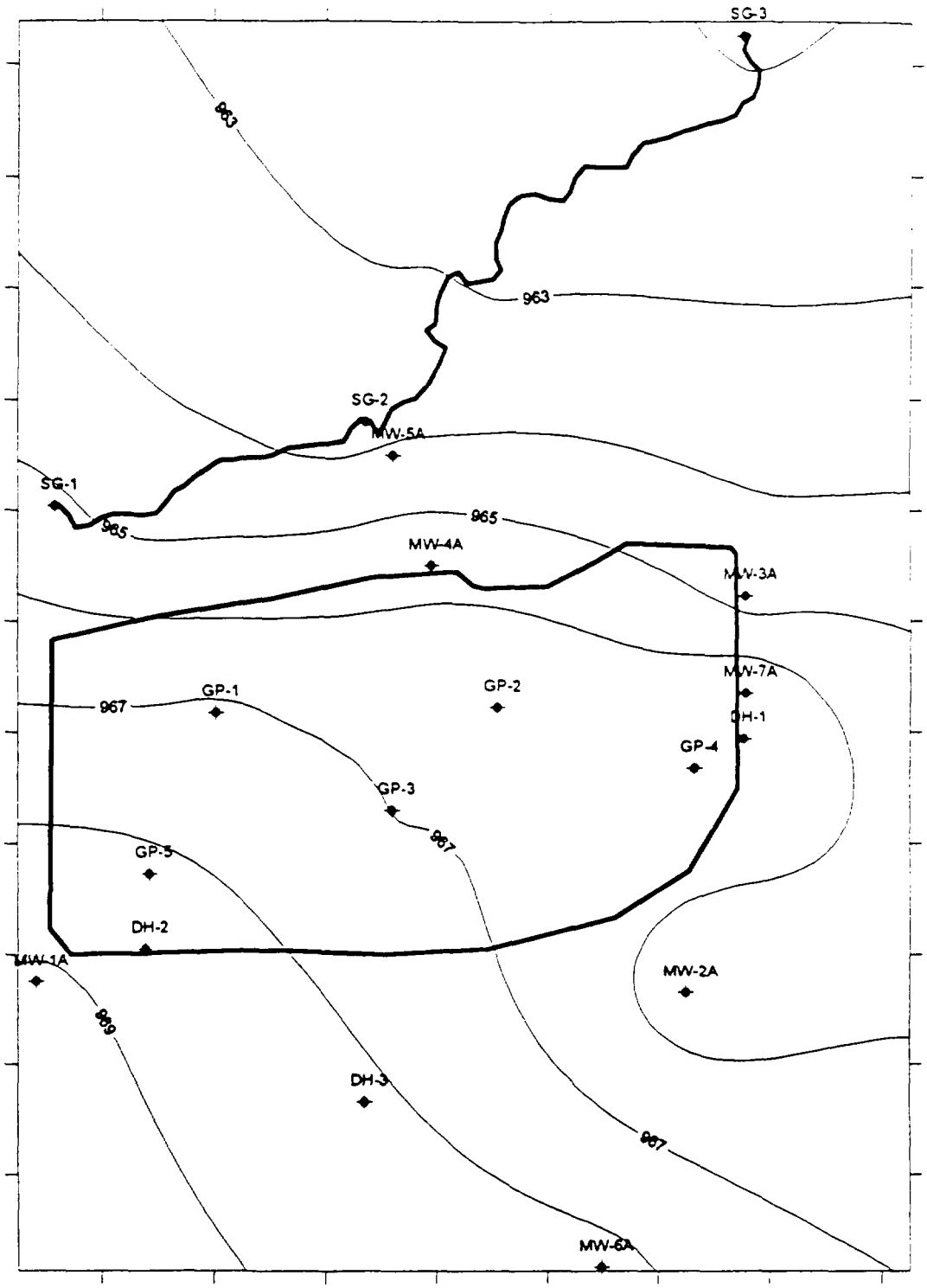
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 9
VERTICAL GROUNDWATER GRADIENTS
APRIL 1995

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



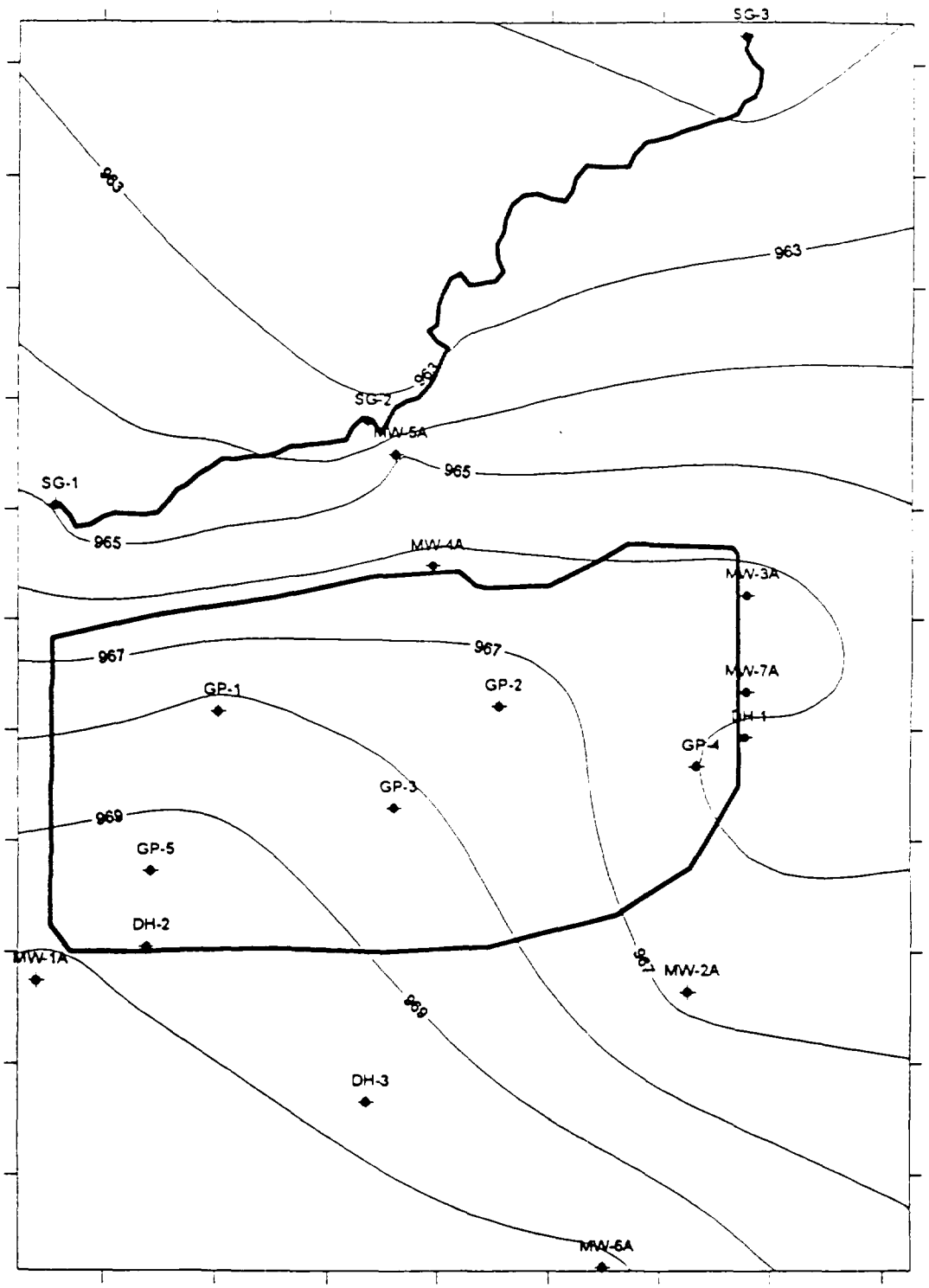
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 10
WATER TABLE - SEPTEMBER 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



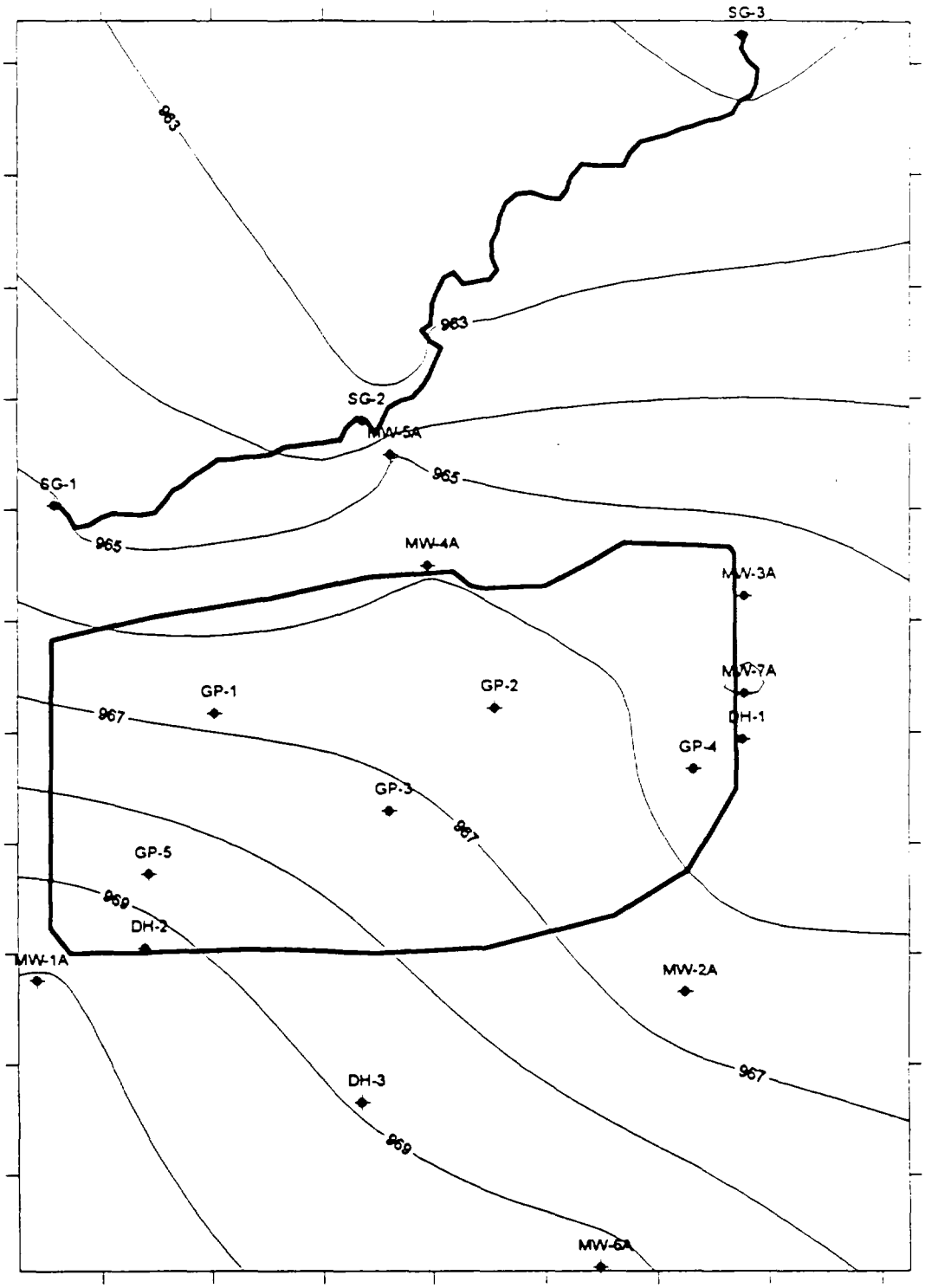
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 11
WATER TABLE - OCTOBER 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



NORTH

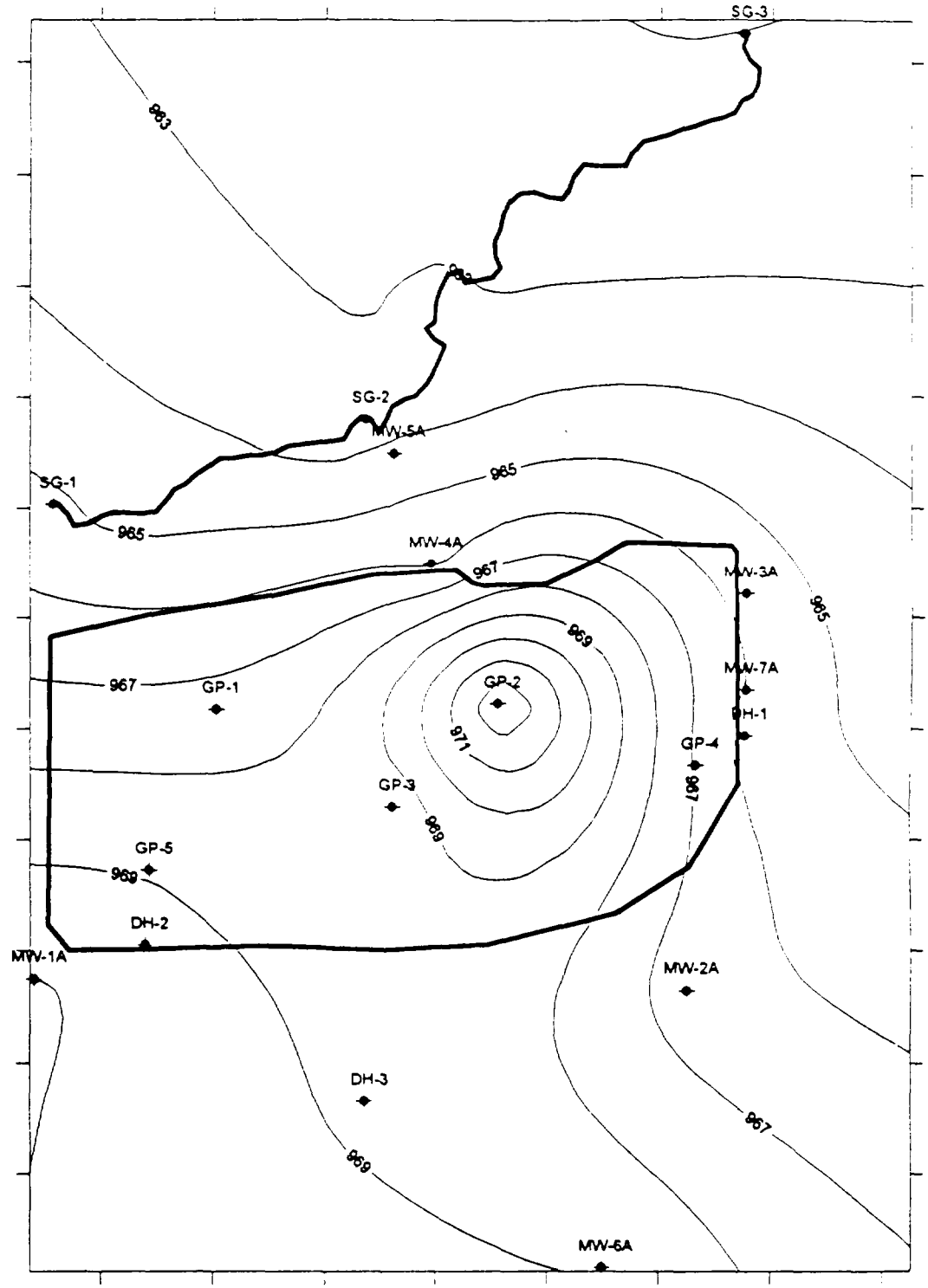
SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 12

WATER TABLE - NOVEMBER 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



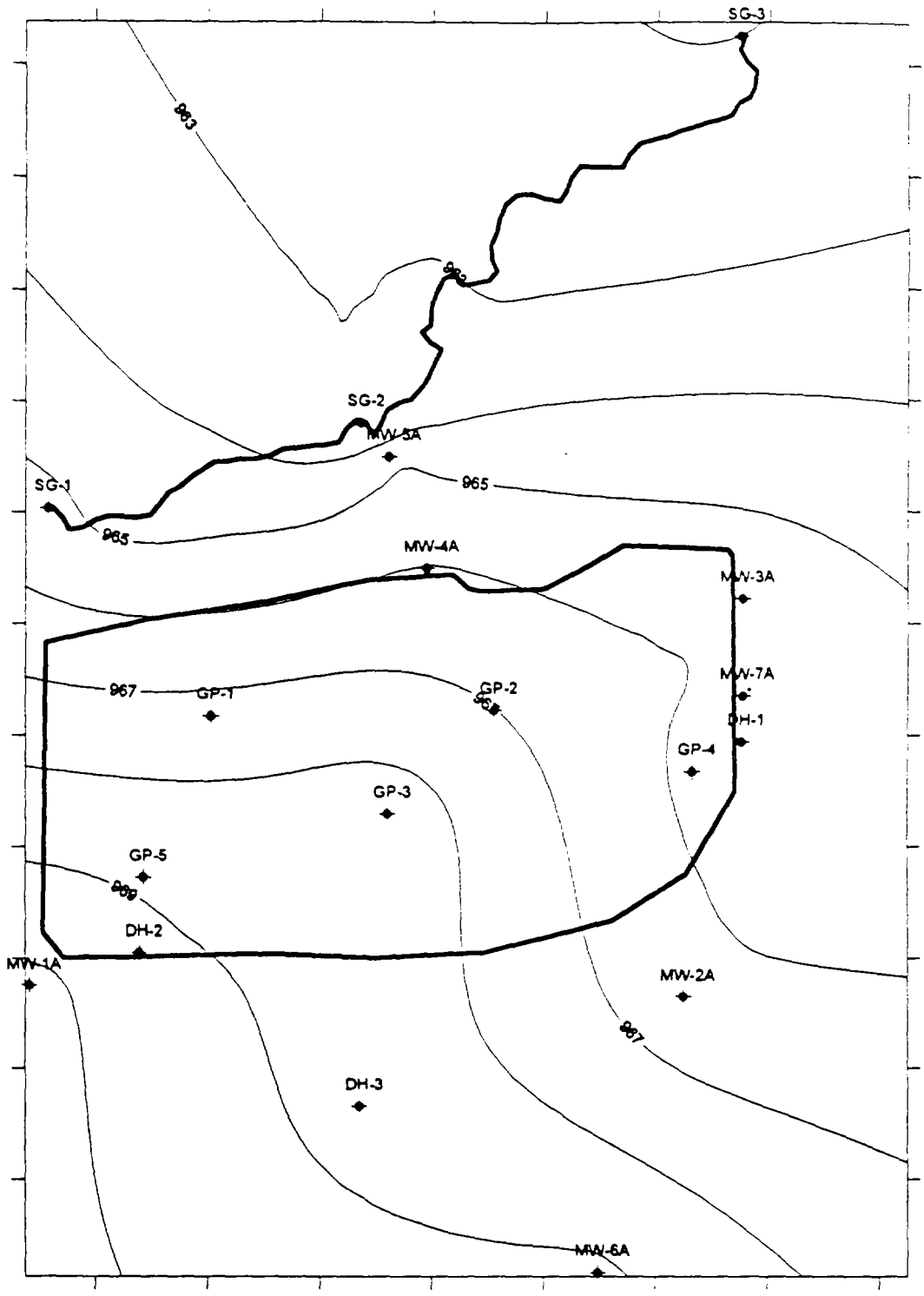
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 13
WATER TABLE - DECEMBER 2, 1994
(INCLUDES GP-2)

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



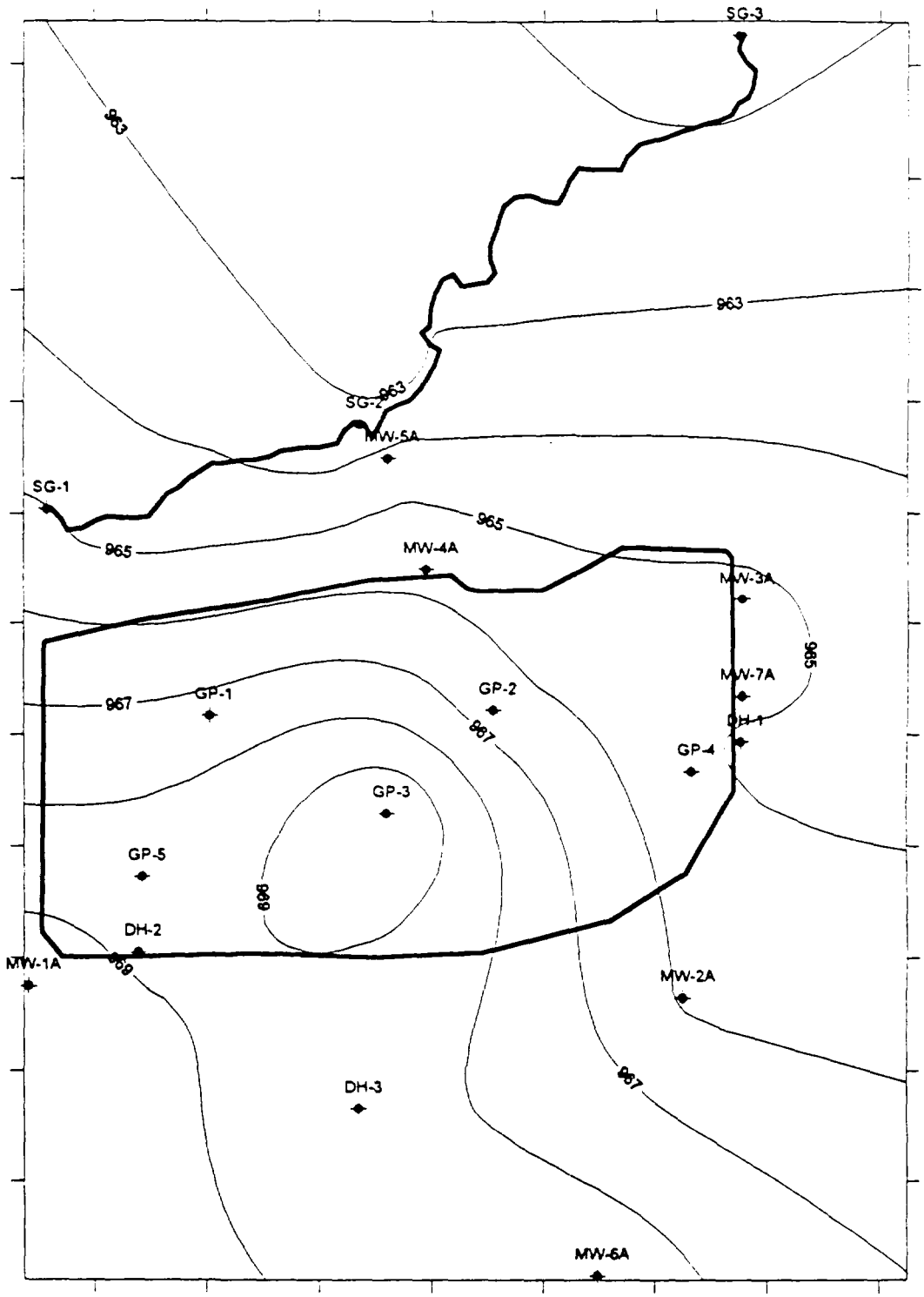
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 14
WATER TABLE - DECEMBER 2, 1994
(NOT INCLUDING GP-2)

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



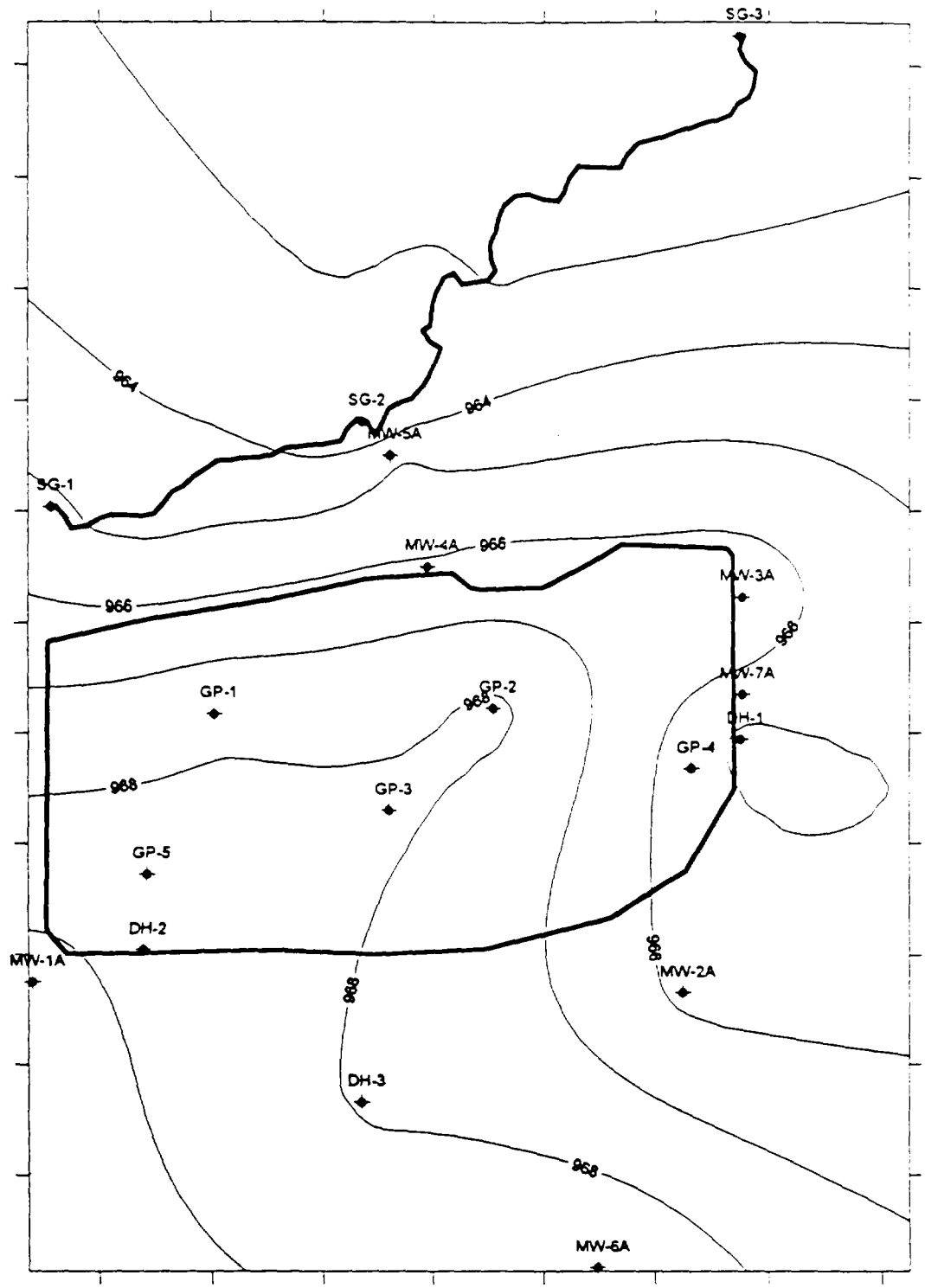
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 15
WATER TABLE - DECEMBER 29, 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



NORTH

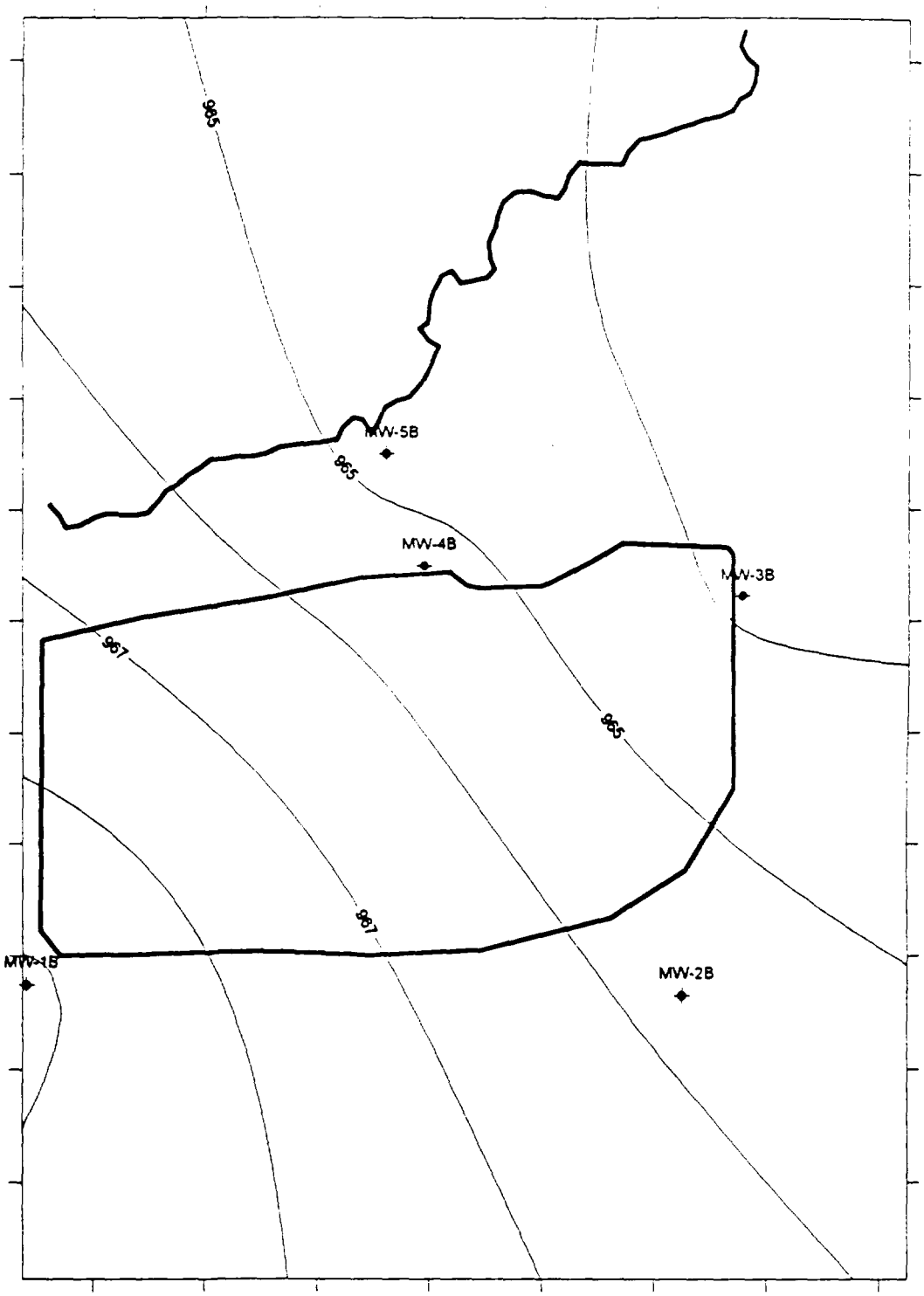
SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 16

WATER TABLE - APRIL 1995

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



NORTH

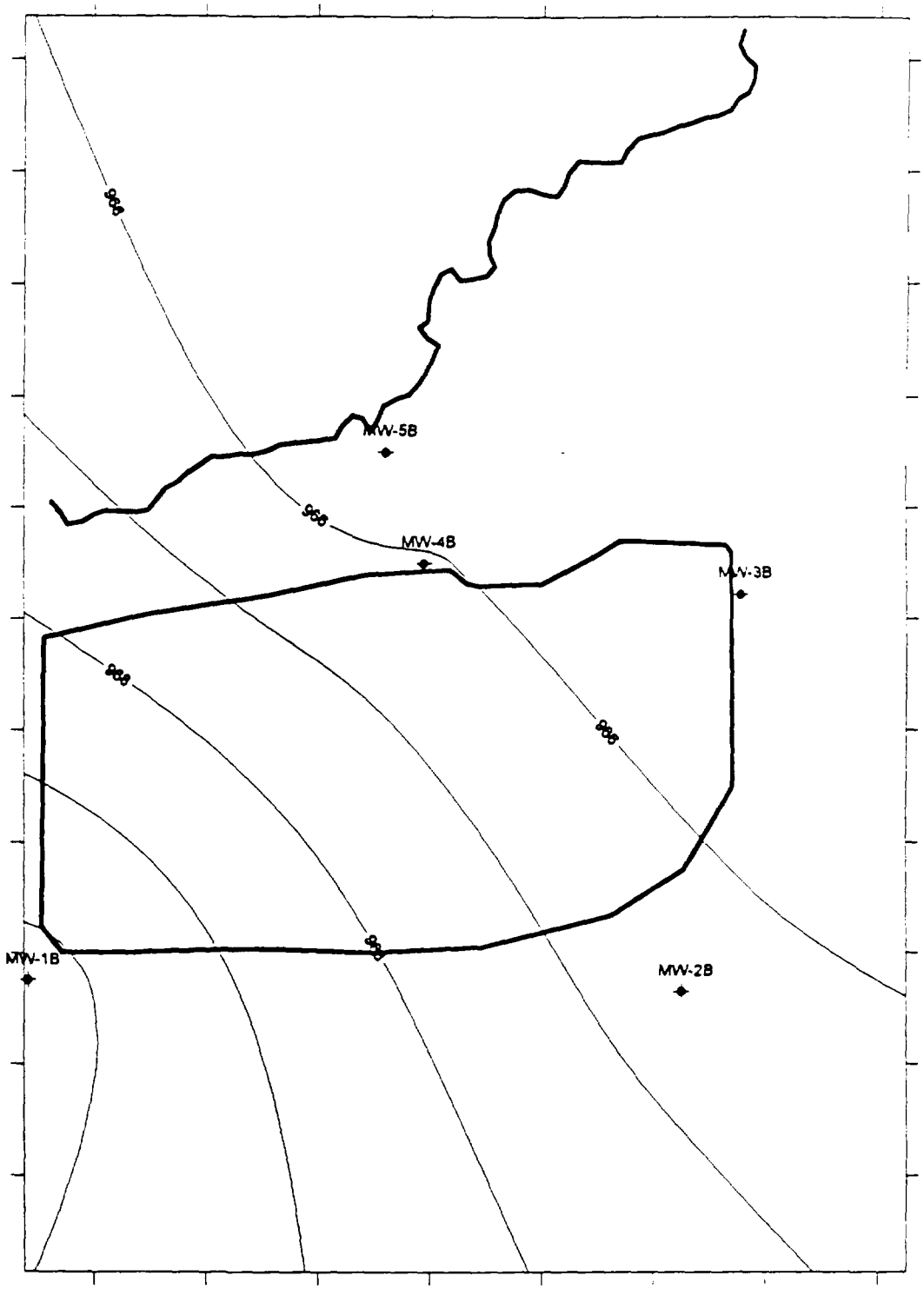
SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 17

POTENTIOMETRIC SURFACE - SEPTEMBER 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



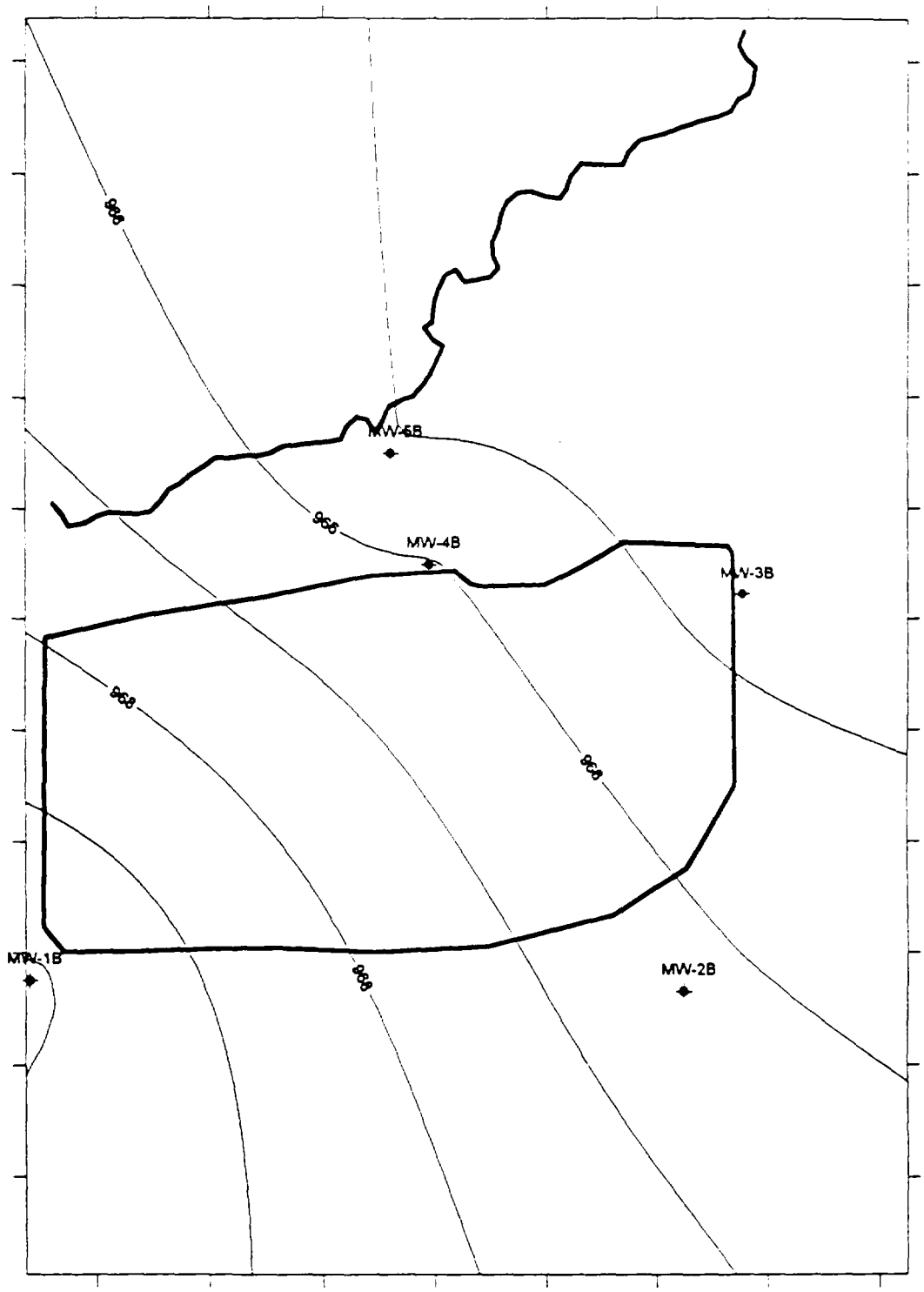
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 18
POTENTIOMETRIC SURFACE - OCTOBER 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



NORTH

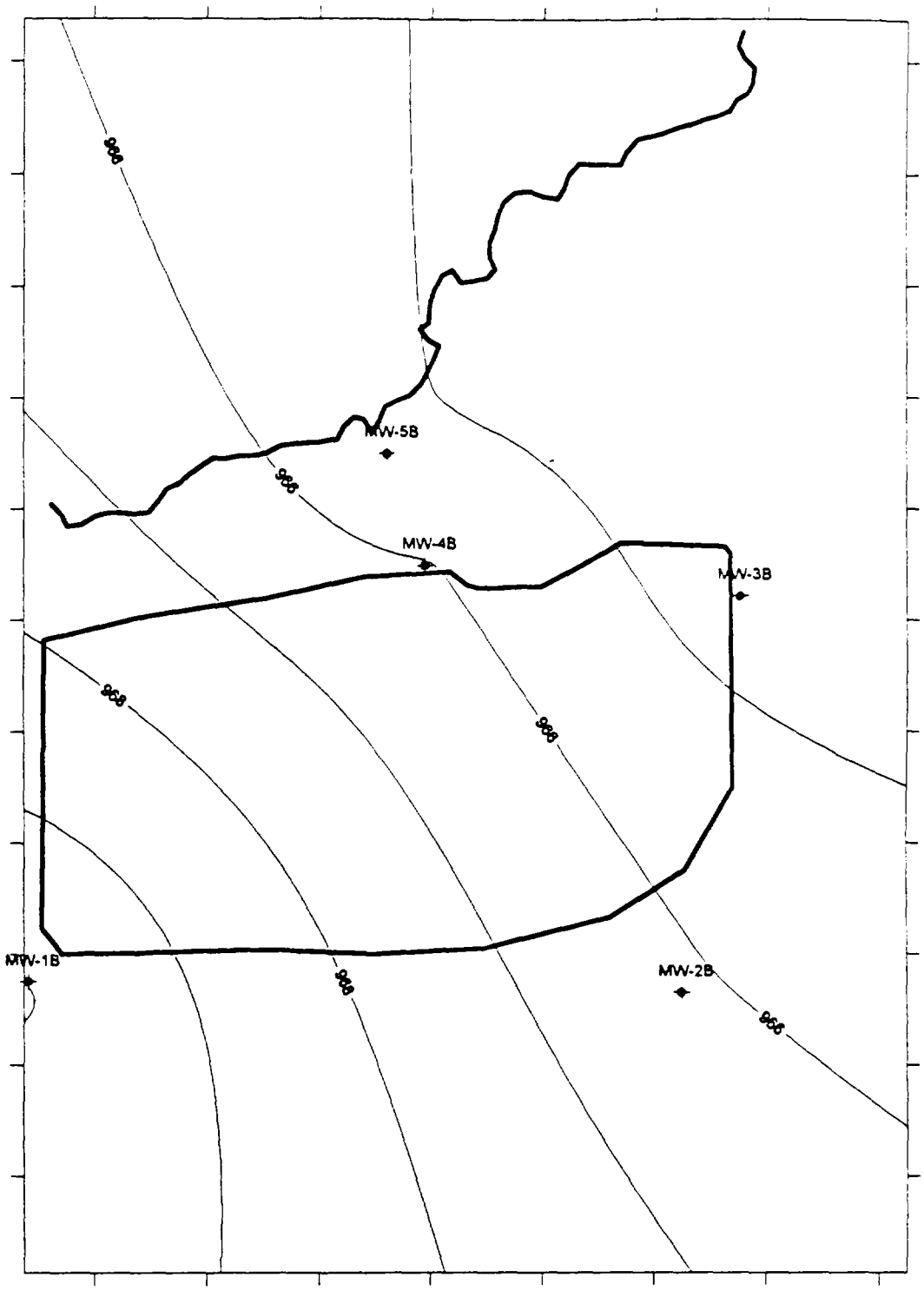
SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 19

POTENTIOMETRIC SURFACE - NOVEMBER 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



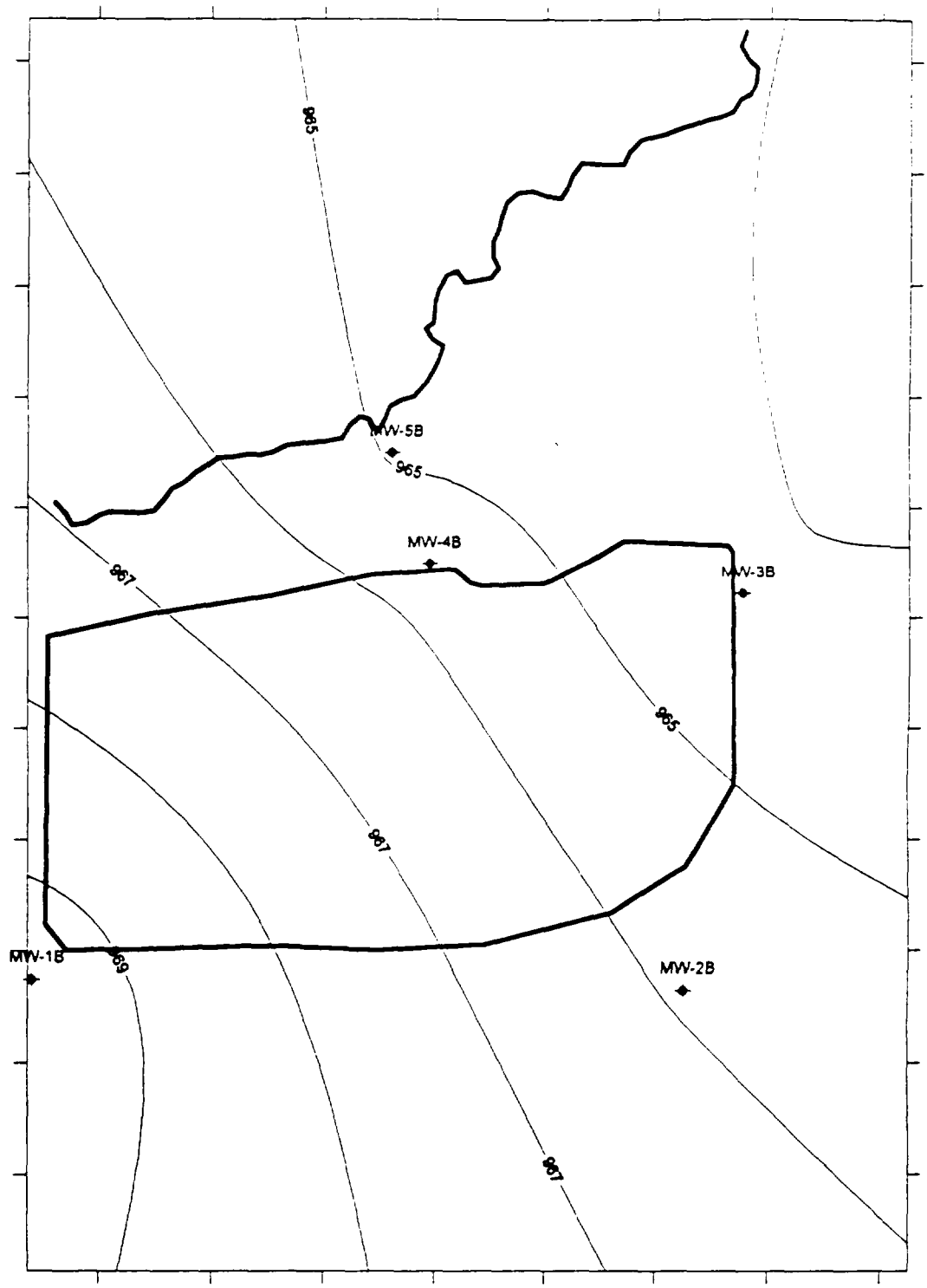
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 20
POTENTIOMETRIC SURFACE -
DECEMBER 2, 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



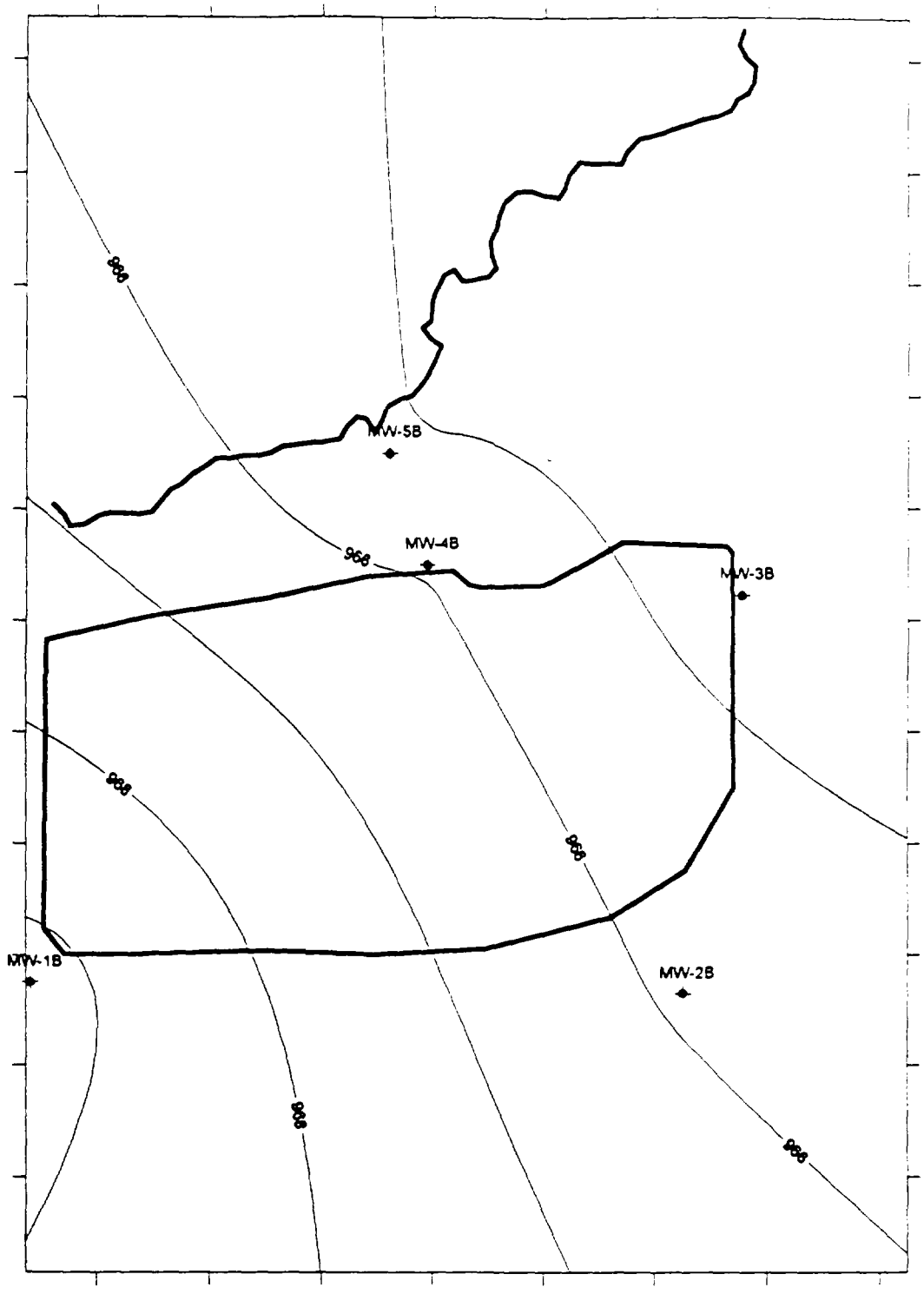
NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

FIGURE 21
POTENTIOMETRIC SURFACE -
DECEMBER 29, 1994

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003



NORTH

SCALE: 1" = 300'

TOMAH MUNICIPAL SANITARY LANDFILL
TOMAH, WISCONSIN

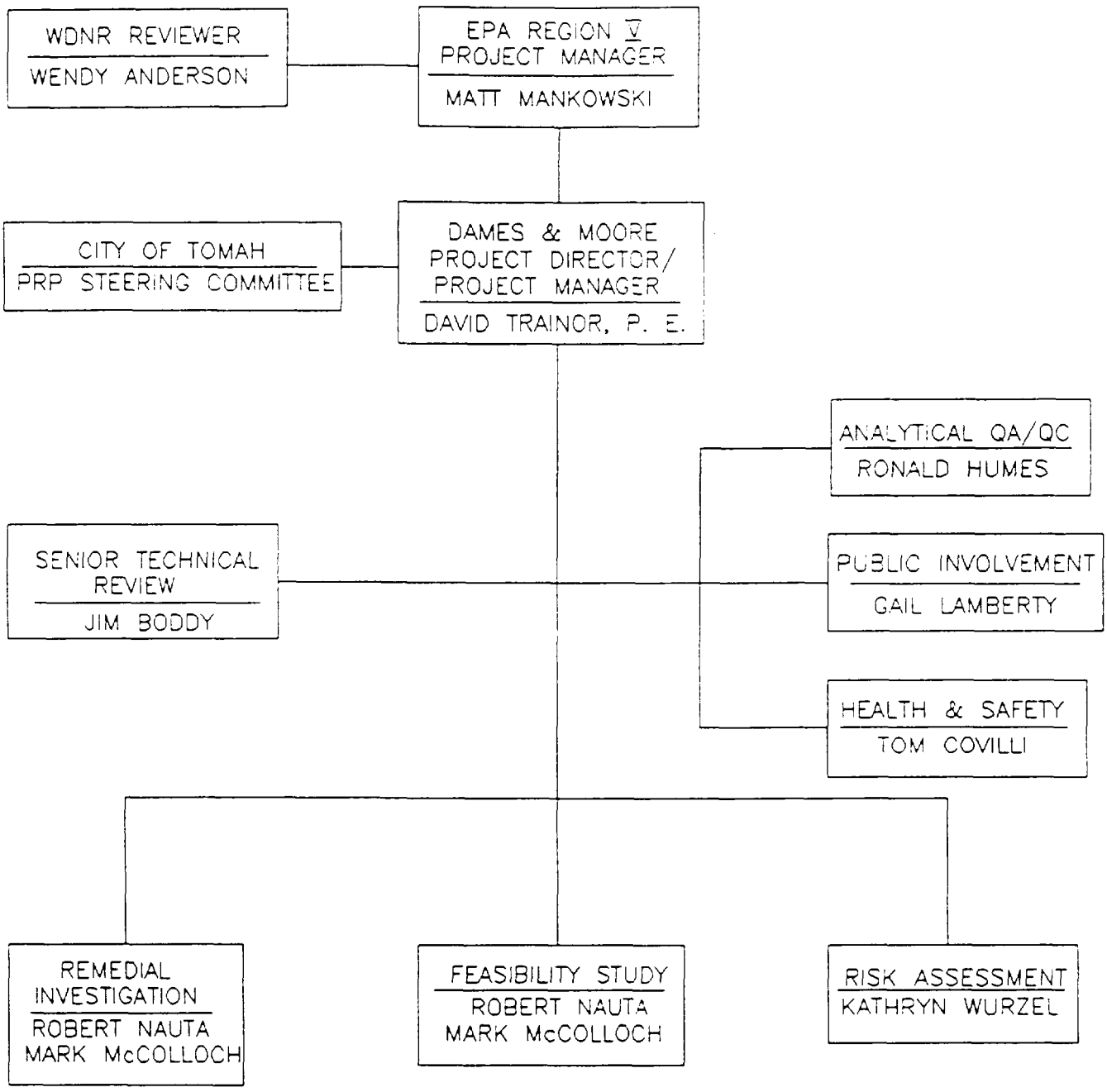
FIGURE 22
POTENTIOMETRIC SURFACE - APRIL 1995

GENERATED BY: RN	DATE: MAY 1995
DAMES & MOORE	JOB NO.: 27504-003

FIGURE 23
ANTICIPATED PROJECT SCHEDULE

TASK	MONTHS AFTER WORK PLAN APPROVAL							
	1	2	3	4	5	6	7	8
Task 1: Evaluation of Private Well Logs and Sellection of Wells for Sampling								
Task 2: Installation of Monitor Wells; Abandonment of DH Series Wells								
Task 3: Installation of Additional Landfill Gas Probes								
Task 4: Laboratory Analyses of Groundwater Samples								
Task 5: Groundwater Level and Landfill Gas Monitoring	X	X	X	X	X	X	X	X
Task 6: Groundwater Modeling								
Task 7: Phase II RI Report								

PHASE II R/FS - TOMAH MUNICIPAL LANDFILL
ORGANIZATIONAL CHART



TOMAH MUNICIPAL SANITARY LANDFILL TOMAH, WISCONSIN	
FIGURE 24 ORGANIZATIONAL CHART	
DRN. BY IV	PROJ. NO. 27504-002
DATE JUNE 1995	DAMES & MOORE

FILE: C:\DWG\TOMAH\27504002\CHART

APPENDIX A

PRIVATE WELL LOGS

WELL CONSTRUCTOR'S REPORT

WISCONSIN STATE BOARD OF HEALTH

Wel

1. COUNTY: Monroe | CHECK ONE: ☑ Town ☐ Village ☐ City | NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.): S.W¼ of S.W¼ Sec 28 T18N R1W

RECEIVED DEC 22 1965

3. OWNER AT TIME OF DRILLING: Carl Coleman

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis R.1.

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
5	12	-	20	—	—	-	—	—

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	37	-	44	-	-	-	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	70			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	Surface	33

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
None	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	2
Sand rock	28	70

Well construction completed on Dec 15 1965

11. MISCELLANEOUS DATA

Yield test: 4 Hrs. at 12 GPM

Depth from surface to normal water level 34 ft.

Depth to water level when pumping 43 ft.

Well is terminated 9 inches ☑ above ☐ below final grade

Well disinfected upon completion ☑ Yes ☐ No

Well sealed watertight upon completion ☑ Yes ☐ No

Water sample sent to Madison laboratory on: Dec 21 1965

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy G Rusk Registered Well Driller

COMPLETE MAIL ADDRESS: R.2. Elk River Falls Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT

DEPARTMENT OF RESOURCE DEVELOPMENT

We

1. COUNTY: Monroe | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.): Section 28 T. 19 N. - R. 1 W. S. W ¼

3. OWNER AT TIME OF DRILLING: Eldon Flannigan

4. OWNER'S COMPLETE MAIL ADDRESS: R R 1 Tomah Wisconsin

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAI C. I.	WASTE WATER DRAI TILE
5								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		50						/	

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.):

6. Well is intended to supply water for: Farm

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	33	6	33	78

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	New Iron 19.45	Surface	33
	T.C.		

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	33

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay & Rocks	Surface	9
Sort Sand Rock	9	15
Sand Rock	15	78

Well construction completed on: July 16 19 6

Well is terminated 9 inches ☒ above ☐ below final grad

Well disinfected upon completion ☒ Yes ☐ N

Well sealed watertight upon completion ☒ Yes ☐ N

11. MISCELLANEOUS DATA

Yield test: ½ Hrs. at 8 GPM

Depth from surface to normal water level 46 ft.

Depth to water level when pumping 54 ft.

Water sample sent to Madison Wis laboratory on: Sept 3 19 6

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to near wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, su surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Jim Packhurst Jr. Registered Well Driller

COMPLETE MAIL ADDRESS: Eleva Wisconsin

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT

Wel–6

SEP 14 1970

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: Monroe

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
Section 28 T. 18 N. – R. 1 W. S.W. ¼

3. OWNER AT TIME OF DRILLING
Midland Cooperative

4. OWNER'S COMPLETE MAIL ADDRESS
Tomah Wisconsin

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
100								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		100							

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)
100 ft to burried Gas tank

6. Well is intended to supply water for: Oil Service Station

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	37	6	37	110

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	New Steel 5 lb.	Surface	37

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	37

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	9
Sand rock	9	110

Well construction completed on July 1 19 6?

Well is terminated 1½ inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ N

Well sealed watertight upon completion ☒ Yes ☐ N

11. MISCELLANEOUS DATA

Yield test: 1 Hrs. at 8 GPM

Depth from surface to normal water level 30 ft.

Depth to water level when pumping 48 ft.

Water sample sent to Madison Wis. laboratory on: Oct 6 19 6

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to neart wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, su surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Jim Parkhurst Jr. Registered Well Driller

COMPLETE MAIL ADDRESS: E Troy Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

REV. 11–68

WELL CONSTRUCTOR'S REPORT — WISCONSIN STATE BOARD OF HEALTH — Wel

1. COUNTY: Monroe — CHECK ONE: ☑ Town ☐ Village ☐ City — NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when [illegible]): S. W ¼ of S. W ¼ Sec 28 118N R1W

RECEIVED MAR 17 1966 SANITARY ENGINEER

3. OWNER AT TIME OF DRILLING: Carl Coleman

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis R.1.

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
5	20	—	20	—	—	—	—	—

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	44	—	65	—	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	65			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	Surface	31

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
None	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	28
Sand rock-firm	28	65

Well construction completed on March 8 19 66

11. MISCELLANEOUS DATA

Yield test: 3 Hrs. at 10 GPM

Depth from surface to normal water level 28 ft.

Depth to water level when pumping 43 ft.

Well is terminated 10 inches ☑ above ☐ below final grade

Well disinfected upon completion ☑ Yes ☐ No

Well sealed watertight upon completion ☑ Yes ☐ No

Water sample sent to Madison laboratory on: March 16 1966

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearb wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sul surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk — Registered Well Driller

COMPLETE MAIL ADDRESS: R 2, Elk River Falls Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 12-76

OCT 19 1978

1. COUNTY: Monroe
CHECK (✓) ONE: ☒ Town ☐ Village ☐ City
Name: La Grange

2. LOCATION: ¼ Section: SE-SE; Section: 29; Township: 18N; Range: 1W
OR – Grid or Street No. Street Name:
AND – If available subdivision name, lot & block No.:

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓ ONE): Carl Coleman
ADDRESS: R. #2
POST OFFICE: Tomah Wis

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
15'			5-4							

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Foundation Drain Connected to: Clearwater Or.	Foundation Drain Connected to: Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit	Seepage Bed	Seepage Trench
											72			88	

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well	Pump	Tank	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	70			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	Blk Steel 18# Welded ASTM A-53 Interlake Inc	Surface	33

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	30
Sandrock	30	70

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Rotary-air w/drilling mud ☐ Rotary-w/drilling mud ☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary ☐ Jetting with ☐ Air ☐ Water

Well construction completed on: Oct 5 19 78

11. MISCELLANEOUS DATA
Yield Test: 6 Hrs. at 12 GPM
Depth from surface to normal water level: 34 Ft.
Depth of water level when pumping: 42 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 8 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on Oct 18 19 78

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Roy Rusk
Registered Well Driller

Complete Mail Address: Black River Falls Wis R. 5 5-4615

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

FEB 7 1974

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY Monroe | CHECK ONE ☒ Town ☐ Village ☐ City | NAME La Grange

2. LOCATION – ¼ Section: S.E. ¼ S.E. ¼ | Section: 29 | Township: 18N | Range: 1W
R – Grid or street no. | Street name
AND – If available subdivision name, lot & block no.

3. OWNER AT TIME OF DRILLING: Tomah Elec. Light & Fuel Co.
ADDRESS: 111 N. Superior Ave
POST OFFICE: Tomah Wis

4. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
5	32							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		51			77				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Home

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	90			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black steel 19 # Threaded new	Surface	86

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	81
Sandrock	81	90

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on January 31 19 74

11. MISCELLANEOUS DATA
Yield test: 6 Hrs. at 1 GPM
Depth from surface to normal water level 31 ft.
Depth to water level when pumping 41 ft.

Well is terminated 5 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on: February 6 19 74

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk Registered Well Driller

COMPLETE MAIL ADDRESS: Black River Falls Wis R. 2 54615

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

REV. 3-71

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

APR 19 1974

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY Monroe | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME La Grange

2. LOCATION – ¼ Section: SE of SE | Section: 29 | Township: 18N | Range: 1W

OR – Grid or street no. | Street name

AND – If available subdivision name, lot & block no.

3. OWNER AT TIME OF DRILLING: North Tomah Ltr. Co

ADDRESS: 111 N Superior Ave

POST OFFICE: Tomah Wis

4. Distance in feet from well to nearest:

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
4	52							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		60			75				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	90			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black steel 19# Threaded new	Surface	85

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	80
Sand rock	80	90

10. TYPE OF DRILLING MACHINE USED

☒ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on April 9 1977

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 6 Hrs. at 12 GPM

Depth from surface to normal water level 35 ft.

Depth to water level when pumping 44 ft.

Water sample sent to Madison laboratory on: April 17 1974

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, sea type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk Registered Well Driller

COMPLETE MAIL ADDRESS: Black River Falls Wis R. 2 54615

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

REV 3-71

State of Wisconsin
Department of Natural Resources
Box 450
Madison, Wisconsin 53701

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15
Rev. 10-75

SEP 15 1978

1. COUNTY: Monroe — CHECK (✓) ONE: ☒ Town ☐ Village ☐ City — Name: [illegible]

2. LOCATION: ¼ Section: SE — Section: 29 — Township: 18N — Range: 1W
OR – Grid or Street No. Street Name:
AND – If available subdivision name, lot & block No.:

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: STEVE WITSETT
ADDRESS:
POST OFFICE: TOMAH WI

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
10'	~~20~~				20					

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Foundation Drain Connected to: Clearwater Dr.	Foundation Drain Connected to: Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit
											50		Seepage Pit
													Seepage Bed 60
													Seepage Trench

Privy	Pet Waste Pit	Pit: Nonconforming Existing	Subsurface Pumproom	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well	Nonconforming Existing							
		Pump								
		Tank								

Temporary Manure Pack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	40			
6	40	85			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	Youngstown Ren 8.47 Weld 453-43	Surface	40

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
DRILL CUTTINGS	Surface	8
NEAT CEMENT	8	40

9. FORMATIONS

Kind	From (ft.)	To (ft.)
SAND	Surface	17
SAND STONE	17	85

10. TYPE OF DRILLING MACHINE USED
☐ Cable Tool ☒ Rotary-air w/drilling mud ☐ Rotary-w/drilling mud ☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary ☐ Jetting with Air ☐ Jetting with Water

Well construction completed on 5-3 19 78

11. MISCELLANEOUS DATA
Yield Test: 2 Hrs. at 10 GPM
Depth from surface to normal water level 30 Ft.
Depth of water level when pumping 32 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to MADISON laboratory on SEPT 13 19 78

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: [signature] Registered Well Driller

Complete Mail Address: 577 Watson Hollow Rd

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

MAR 13 1975 MAR 19 1975

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: MONROE | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME: LAGRANGE

2. LOCATION – ¼ Section: SE¼ | Section: 29 | Township: 17N | Range: R-1W
OR – Street or street no.: | Street name: (T17N)
AND – If available subdivision name, lot & block no.:

3. OWNER AT TIME OF DRILLING: AL STEVENS
ADDRESS: TOMAH, WISC.
POST OFFICE: TOMAH WISC.

4. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
12	25	—	—	—	—	—	—	—

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	30	-	—	60	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.):

5. Well is intended to supply water for: HOME

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	42			
6	42	95			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	NEW PLAIN END STANDARD STEEL 18#97	Surface	42

8" surface pipe used 51" installed by pushing, adapter used

9. FORMATIONS

Kind	From (ft.)	To (ft.)
SAND	Surface	21
SANDSTONE	21	95

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
DRILL CUTTINGS	Surface	8
NEAT CEMENT	8	42

10. TYPE OF DRILLING MACHINE USED
☐ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☒ Rotary – air ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on APRIL 25 19 74

11. MISCELLANEOUS DATA
Yield test: 2 Hrs. at 12 GPM
Depth from surface to normal water level: 35 ft.
Depth to water level when pumping: 42 ft.

Well is terminated 10 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐
Well sealed watertight upon completion ☒ Yes ☐

Water sample sent to MADISON, WISC. laboratory on: 2/11/ 19 7.

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seal type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: L. Lammers Registered Well Driller
COMPLETE MAIL ADDRESS: 578 WATER AVE, HILLSBORO, WISC. 54634

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

REV. 3-71

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

MAR 13 1975
NOTE

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

~~Monroe~~

1 COUNTY: MONROE | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME: LA GRANGE

2. LOCATION – ¼ Section: SE 1/4 | Section: 29 | Township: 17N | Range: R-1W
OR – Grid or street no. | Street name: T18N
AND – If available subdivision name, lot & block no: LOT – 10

3. OWNER AT TIME OF DRILLING: POULIOT REF. TOMAH LUMBER & FUEL
ADDRESS: TOMAH, WISC.
POST OFFICE: TOMAH, WISC.

4. Distance in feet from well to nearest: (Record answer in appropriate b ock)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
10	25	—	—	—	—	—	—	—

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	30	—	—	65	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: HOME

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	46			
6	46	95			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	NEW PLAIN AND STANDARD STEEL 18.97	Surface	46
	8" surface pipe used to 15'		

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
DRILL CUTTINGS	Surface	14
NEAT CEMENT	14	46

9. FORMATIONS

Kind	From (ft.)	To (ft.)
SAND	Surface	15
SAND STONE	15	95

10. TYPE OF DRILLING MACHINE USED
☐ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☒ Rotary – air w/~~drilling mud~~ ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Wate

Well construction completed on JULY 11 19 74

11. MISCELLANEOUS DATA
Yield test: 2 Hrs. at 12 GPM
Depth from surface to normal water level 40 ft.
Depth to water level when pumping 48 ft.

Well is terminated 10 inches ☒ above ☐ below final grad
Well disinfected upon completion ☒ Yes ☐ N
Well sealed watertight upon completion ☒ Yes ☐ N

Water sample sent to MADISON, WISC. laboratory on: 2/11/ 19 75

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, sea type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE
Registered Well Driller

COMPLETE MAIL ADDRESS
578 WATER AVE. HILLSBORO, WISC. 54634

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

REV. 3-71

State of Wisconsin
Department of Natural Resources
Box 450
Madison, Wisconsin 53701

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT

Form 3300-15
Rev. 10-75

SEP 15 1978

1. COUNTY: MONROE
CHECK (✓) ONE: ☒ Town ☐ Village ☐ City
Name: LA GRANGE

2. LOCATION: ¼ Section: SE¼ | Section: 29 | Township: 18N | Range: 1W
OR – Grid or Street No. | Street Name:
AND – If available subdivision name, lot & block No.: Lot 23

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: MARY LEMKE
ADDRESS:
POST OFFICE: TOMAH WI.

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
8										

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Foundation Drain Connected to: Clearwater Dr.	Foundation Drain Connected to: Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit	Seepage Bed	Seepage Trench
											40			60	

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well	Pump	Tank	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit

Temporary Manure Stack | Watertight Liquid Manure Tank | Solid Manure Storage Structure | Subsurface Gasoline or Oil Tank | Waste Pond or Land Disposal Unit (Specify Type) | Other (Give Description)

5. Well is intended to supply water for: HOME

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	40			
6	40	85			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	STEEL 18.97 #53-B WELDED	Surface	40

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Drill Cuttings	Surface	8
Neat Cement	8	40

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	15
Limestone	15	85

10. TYPE OF DRILLING MACHINE USED
☐ Cable Tool ☒ Rotary-air w/drilling mud ☐ Rotary-w/drilling mud ☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary ☐ Jetting with: ☐ Air ☐ Water

Well construction completed on: 5-5 19 78

11. MISCELLANEOUS DATA
Yield Test: 2 Hrs. at 10 GPM
Depth from surface to normal water level: 25 Ft.
Depth of water level when pumping: 28 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 10 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to: Madison laboratory on: 9-13 1978

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: [signature] Registered Well Driller
Complete Mail Address: 579 Water Hillsboro Wis. 54634

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy - Division's Copy
Green Copy - Driller's Copy
Yellow Copy - Owner's Copy

WELL CONSTRUCTOR'S REPORT

Form 3300-15 Rev 2-79

1. COUNTY: Monroe — CHECK (✓) ONE: ☒ Town ☐ Village ☐ City — Name: LaGrange

2. LOCATION: SE¼ — Section or Govt. Lot: — Section: 21 — Township: 13N — Range: 1W

OR – Grid or Street No. — Street or Road Name:

AND – If available subdivision name, lot & block No.:

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Arthur Hinde

ADDRESS: Route 1

POST OFFICE: Tomah WI — ZIP CODE: 54660

4. Distance in feet from well to nearest: (Record answer in appropriate blank)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
15										

Street Sewer: San.	Storm	Other Sewers: C.I.	Other	Foundation Drain Connected to: Sewage Sump: Sewer	Sewage Sump	C.I.	Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit	Seepage Bed	Seepage Trench	Manure Hopper Retention or Pneumatic Tank
				Clearwater Dr.	Clearwater Sump				75			75		

Privy	Pet Waste Pit	Pits: Nonconforming Existing: Well	Pump	Tank	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Storage Or Pit	Earthen Silage Trench	Manure Bas

Temporary Manure Stack or Platform | Watertight Liquid Manure Tank or Basin | Manure Pressure Pipe | Subsurface Gasoline or Oil Tank | Waste Pond or Land Disposal Unit (Specify Type) | Manure Storage Basin: Concrete Floor Only | Concrete Floor and Partial Concrete Walls | Other (Describe)

5. Well is intended to supply water for: home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	42			
6	42	75			

7. CASING, LINER, CURBING AND SCREEN — Material, Weight, Specification Mfg. & Method of Assembly

Dia. (in.)	Material, Weight, Specification Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	new Plena A-53 wt 285 Stainless steel 1877	Surface	42

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
drill cuttings	Surface	7
neat cement	7	42

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	18
Sandstone	18	75

10. TYPE OF DRILLING MACHINE USED

☐ Cable Tool ☐ Rotary-hammer w/drilling mud & air ☐ Jetting with ☐ Air ☐ Water
☐ Rotary-air w/drilling mud ☐ Rotary-hammer & air
☐ Rotary-w/drilling mud ☐ Reverse Rotary

Well construction completed on June 30, 19 77

11. MISCELLANEOUS DATA

Yield Test: 2 Hrs. at 10 GPM

Depth from surface to normal water level 34 Ft.

Depth of water level when pumping 40 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on August 3, 19 77

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Louis Kouba, sec. — Registered Well Driller

Business Name and Complete Mailing Address: Kouba Well Drilling, Inc. 578 Water Ave Hillsboro, WI.

FEB 20 1979

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy - Division's Copy
Green Copy - Driller's Copy
Yellow Copy - Owner's Copy

WELL CONSTRUCTOR'S REPORT

Form 3300-15 Rev. 12-76

1. COUNTY: Monroe
CHECK (✓) ONE: ☒ Town ☐ Village ☐ City
Name: La Grange

2. LOCATION: ¼ Section: SW. Section: 29 Township: 19N Range: 1E
OR – Grid or Street No. Street Name: R1W
AND – If available subdivision name, lot & block No.

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE
John Dwyer
ADDRESS RR
POST OFFICE Tomah wis

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit
									28		Seepage Pit
				Clearwater Dr.	Clearwater Sump						Seepage Bed 50
											Seepage Trench

Privy	Pet Waste Pit	Pit: Nonconforming Existing	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well								
		Pump								
		Tank								

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	60			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	New Steel 19# T&C	Surface	40
United Steel ASTM A-53			

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Casing formation	Surface	40

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand and Gravel	Surface	40
Sand Rock	40	60

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Rotary-air w/drilling mud ☐ Rotary-w/drilling mud ☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary ☐ Jetting with Air ☐ Water

Well construction completed on July 28 19 77

11. MISCELLANEOUS DATA
Yield Test: 1 Hrs. at 8 GPM
Depth from surface to normal water level 30 Ft.
Depth of water level when pumping 31 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 8 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on July 30 19 77

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Jim Parkhurst Registered Well Driller

Complete Mail Address: Elroy wis

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy - Division's Copy
Green Copy - Driller's Copy
Yellow Copy - Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 2-79

MAY 15 1984

1. COUNTY: Monroe — CHECK (✓) ONE: ☒ Town ☐ Village ☐ City — Name: LaGrange

2. LOCATION: ¼ Section or Gov't. Lot: SW — Section: 29 — Township: 18N — Range: 1W

OR – Grid or Street No. Street or Road Name:

AND – If available subdivision name, lot & block No.:

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Henry Betthauser

ADDRESS: R. 1

POST OFFICE: Tomah, WI — ZIP CODE: 54660

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
15										

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit	Manure Hopper Retention or Pneumatic Tank
				Clearwater Dr.	Clearwater Sump				60		Seepage Pit Seepage Bed 82 Seepage Trench	

Privy	Pet Waste Pit	Pit: Nonconforming Existing	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Storage Or Pit	Earthen Silage Trench	Earthen Manure Basin
		Well Pump Tank										

Temporary Manure Stack or Platform	Watertight Liquid Manure Tank or Basin	Manure Pressure Pipe	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Manure Storage Basin Concrete Floor Only Concrete Floor and Partial Concrete Walls	Other (Describe)

5. Well is intended to supply water for: home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	45			
6	45	75			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	New Standard Steel pl. end. 18.97 lbs A53 Welded	Surface	45

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
drill cuttings	Surface	7
neat cement	7	45

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	25
Sandstone	25	75

10. TYPE OF DRILLING MACHINE USED

☐ Cable Tool ☐ Rotary-hammer w/drilling mud & air ☐ Jetting with
☐ Rotary-air w/drilling mud ☒ Rotary-hammer & air ☐ Air ☐ Water
☐ Rotary-w/drilling mud ☐ Reverse Rotary

11. MISCELLANEOUS DATA

Yield Test: 2 Hrs. at 12 GPM

Depth from surface to normal water level 23 Ft.

Depth of water level when pumping 28 Ft. Stabilized ☒ Yes ☐ No

Well construction completed on October 23, 19 78

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on December 21, 19 78

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Lois Kouba, secretary

Kouba Well Drilling, Inc. Registered Well Driller

Business Name and Complete Mailing Address: 578 Water Ave. Nisboro, WI

WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

JUN 11 1942

Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Michael Linehan Driller [illegible]

Street or RFD Route 4 Post Office [illegible]

Post Office Tomah Wis. Date June 10 Permit No.

LOCATION OF PREMISES

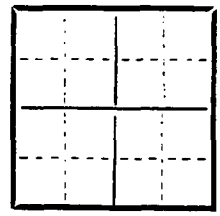
Monroe County Tomah Town LA GRANGE

Describe further by subdivision, plat, district, lake, lot.

Grindle Ave.

block, nearest principal highway, etc., whichever apply.

The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section.



Sec. No. 29

Twp. No. 18N

Range 1W E

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

House
Well
Less Pool

Barn

Additional copies of this form may be obtained in lots of 12 for 25c. Send remittance with order to State Board of Health, Well Construction Division, Madison, Wis.

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT

DEPARTMENT OF RESOURCE DEVELOPMENT

Wel

1. COUNTY: Monroe | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
Section 29 T. 17 N - R 1 W S. W ¼

3. OWNER AT TIME OF DRILLING: Drahmer Well Schaveder well

4. OWNER'S COMPLETE MAIL ADDRESS

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN: SEWER CONNECTED	FOUNDATION DRAIN: INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
8								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		50							

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	35	6	35	77

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	New Clow 19.45 T.C.	Surface	35

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	35

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sandy Clay	Surface	15
Sand Rock	15	77

Well construction completed on May 21 19 6

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ N

Well sealed watertight upon completion ☒ Yes ☐ N

11. MISCELLANEOUS DATA

Yield test: ½ Hrs. at 8 GPM

Depth from surface to normal water level 47 ft.

Depth to water level when pumping 56 ft.

Water sample sent to Madison Wis. laboratory on: June 5 19 6

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to near wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sul surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Jim Parkhurst Jr. Registered Well Driller

COMPLETE MAIL ADDRESS: Elroy Wis.

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

MAR 13 1975

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: MONROE
CHECK ONE: [X] Town [ ] Village [ ] City — NAME: LA GRANGE

2. LOCATION – ¼ Section: SE¼ Section: 29 Township: ~~17N~~ T18N Range: R-1W

OR Grid or street no. — Street name

AND If available subdivision name, lot & block no.: LOT 9

3. OWNER AT TIME OF DRILLING: D. CHU
ADDRESS: TOMAH, WISC.
POST OFFICE: TOMAH, WISC.

4. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
10	35	–	–	–	–	–	–	–

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
–	–	40	–	–	65	–	–	–	–

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	43			
6	43	95			

9. FORMATIONS

Kind	From (ft.)	To (ft.)
SAND	Surface	15
SANDSTONE	15	95

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	NEW PLAIN END STANDARD STEEL 18.97	Surface	43

8" surface pipe used to 15'

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
DRILL CUTTINGS	Surface	12
NEAT CEMENT	12	43

10. TYPE OF DRILLING MACHINE USED

[ ] Cable Tool [ ] Direct Rotary [ ] Reverse Rotary
[X] Rotary – air w/ ~~drilling mud~~ [ ] Rotary – hammer with drilling mud & air [ ] Jetting with [ ] Air [ ] Water

Well construction completed on JUNE 17, 1974

11. MISCELLANEOUS DATA

Yield test: 2 Hrs. at 12 GPM

Depth from surface to normal water level 38 ft.

Depth to water level when pumping 47 ft.

Well is terminated 12 inches [X] above [ ] below final grade

Well disinfected upon completion [X] Yes [ ] No

Well sealed watertight upon completion [X] Yes [ ] No

Water sample sent to MADISON, WISC. laboratory on: 2/11/ 1973

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seal type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: [signature] Registered Well Driller

COMPLETE MAIL ADDRESS: 578 WATER AVE. HILLSBORO, WISC 54634

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

REV. 3-71

WELL CONSTRUCTOR'S REPORT

WISCONSIN STATE BOARD OF HEALTH

Wel 6

1. COUNTY: Monroe

CHECK ONE: ☑ Town ☐ Village ☐ City

NAME: Ft. Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available): SE ¼ of S.W ¼ Sec 29 T16N R1W

RECEIVED
OCT 28 1965
SANITARY

3. OWNER AT TIME OF DRILLING: Robert Boehm

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis R. 1

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE-WATER DRAIN C. I.	WASTE-WATER DRAIN TILE
4	25	—	—	—	—	—	—	—

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	60	—	85	—	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	28			
6	28	60			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	Surface	31

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Clay Slurry	Surface	28

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	11
Clay	11	17
Sandrock & Clay	17	29
Rock-Water bearing	29	60

11. MISCELLANEOUS DATA

Yield test: 4 Hrs. at 9 GPM

Depth from surface to normal water level 26 ft.

Depth to water level when pumping 39 ft.

Well construction completed on Oct 20 1965

Well is terminated 8 inches ☑ above ☐ below final grade

Well disinfected upon completion ☑ Yes ☐ No

Well sealed watertight upon completion ☑ Yes ☐ No

Water sample sent to Madison laboratory on: Oct 26 1965

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearb wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk Registered Well Driller

COMPLETE MAIL ADDRESS: Elk River Falls Wis.

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

Vol 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Monroe (Town ☒ Village ☐ City ☐) La Grange — Check one and give name

2. Location Sec 32 - Town of La Grange R. 1 W - N½ of N.E¼ of S.E¼
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ LeRoy Bjerke
Name of individual, partnership or firm

4. Mail Address Tomah Wis
Complete address required

RECEIVED
SEP 18 1963
SANITARY ENGINEER

5. From well to nearest: Building 8' ft; sewer 25 ft; drain 15 ft; septic tank 5 ft;
dry well or filter bed 50 ft; abandoned well None ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	60			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6"	steel	0	25

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	26
Water bearing sand rock	26	60

Construction of the well was completed on:
Aug 14 1963

The well is terminated 10" inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?
Yes X No

Was the well sealed watertight upon completion?
Yes X No

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 7 GPM.

Depth from surface to water-level: 20 ft.

Water-level when pumping: 30 ft.

Water sample was sent to the state laboratory at:
Madison (City) on Sept 11 1963

Signature Rusk Bros — Registered Well Driller

Merrillan Wis — Complete Mail Address

Please do not write in space below

Rec'd SEP 12 1963 No 4032

Ans'd

Interpretation SAFE—BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

SEP 16 1971

WELL CONSTRUCTOR'S REPORT

Wel-6

WHITE COPY - DIVISION'S COPY
GREEN COPY - DRILLER'S COPY
YELLOW COPY - OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

COUNTY: Monroe

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: La Grange

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
NE ¼ of SE ¼ sec 32, T. 18N. - R 1W

OWNER AT TIME OF DRILLING: Thomas Schmidt

OWNER'S COMPLETE MAIL ADDRESS: R.2 Tomah Wis

2. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
4	28							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		49		105					

3. OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

4. Well is intended to supply water for: Home

5. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10"	Surface	26			
6	26	55'			

6. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black steel 19# Threaded new	Surface	28

7. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	26

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	9
Sandrock	9	55'

SEP 16 1971

Well construction completed on: Sept 7 1971

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA
Yield test: 9 Hrs. at 12 GPM

Depth from surface to normal water level 24 ft.

Depth to water level when pumping 31 ft.

Water sample sent to Madison laboratory on: Sept 15 1971

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rush Registered Well Driller

COMPLETE MAIL ADDRESS: Black River Falls Wis R2 54615

Please do not write in space below

UNIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

BL-041

NOTE:
White Copy - Division's Copy
Green Copy - Driller's Copy
Yellow Copy - Owner's Copy

WELL CONSTRUCTOR'S REPORT

Form 3300-15 Rev. 2-79

OCT 15 1986

1. COUNTY: Monroe

CHECK (✓) ONE: ☒ Town ☐ Village ☐ City

Name: LaGrange

2. LOCATION: ¼ Section or Gov't. Lot: ~~SE~~ | Section: ~~31~~ | Township: 15N | Range: 1W

OR - Grid or Street No.: NW SE, Sec. 32 | Street or Road Name: DENNIS AVE

AND - If available subdivision name, lot & block No.: per DNR address in 1995

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓ ONE): Frank Bialek

ADDRESS: Tomah, WI 54660

POST OFFICE ZIP CODE

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg. Sewer		Floor Drain Connected To:		Storm Bldg. Drain		Storm Bldg. Sewer	
	C.I.	Other	C.I.	Other	C.I. Sewer	Other Sewer	C.I.	Other	C.I.	Other
30										

Street Sewer		Other Sewers		Foundation Drain Connected to:		Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit	Manure Hopper or Retention or Pneumatic Tank
San.	Storm	C.I.	Other	Sewer	Sewage Sump	C.I.	Other				Seepage Pit	
				Clearwater Dr.	Clearwater Sump				100		Seepage Bed 100	
											Seepage Trench	

Privy	Pet Waste Pit	Pit: Nonconforming Existing	Subsurface Pumproom	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit	Earthen Manure Basin
		Well	Nonconforming Existing								
		Pump									
		Tank									

Temporary Manure Stack or Platform	Watertight Liquid Manure Tank or Basin	Manure Pressure Pipe	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit: (Specify Type)	Manure Storage Basin	Other (Describe)
					Concrete Floor Only	
					Concrete Floor and Partial Concrete Walls	

5. Well is intended to supply water for: home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	150			
6	150	185			

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification

Dia. (in.)	Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	New Standard Steel 4.53 Pl. end welded 18.97	Surface	150

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
neat cement	Surface	150

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	11
Sandstone	11	185
Sand pocket (135-138)		

10. TYPE OF DRILLING MACHINE USED

☐ Cable Tool ☐ Rotary-hammer w/drilling mud & air ☐ Jetting with
☒ Rotary-air w/drilling mud ☐ Rotary-hammer & air ☐ Air ☐ Water
☐ Rotary-w/drilling mud ☐ Reverse Rotary

Well construction completed on August 15, 1986

11. MISCELLANEOUS DATA

Yield Test: 2 Hrs. at 12 GPM

Depth from surface to normal water level 28 Ft.

Depth of water level when pumping 31 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Laboratory 207 laboratory on August 25, 1986

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Kouba Well Drilling, Inc.
Lisa Kouba, Sec. Registered Well Driller

Business Name and Complete Mailing Address: 578 Water Ave. Hillsboro, WI 54634

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH
See Instructions on Reverse Side

Vol 6

RECEIVED
JAN 1964
SANITARY ENGINEERING

1. County Monroe (R1W) Town ☑ La Grange Village ☐ City ☐ Check one and give name

2. Location Sec 32 T18N R1W S ½ of SW ¼
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☑ or Agent ☐ LeRoy Bjerke
Name of individual, partnership or firm

4. Mail Address Tomah Wis
Complete address required

5. From well to nearest: Building 5 ft; sewer 25 ft; drain 15 ft; septic tank 15 ft; dry well or filter bed 75 ft; abandoned well None ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	60			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	29

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	26
Sand Rock-firm	34	60

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 7 GPM.

Depth from surface to water-level: 20 ft.

Water-level when pumping: 30 ft.

Water sample was sent to the state laboratory at: _____ City on _____ 19____

Construction of the well was completed on: Aug 14 1963

The well is terminated 10 inches ☑ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No _____

Was the well sealed watertight upon completion? Yes ✓ No _____

Signature Rusk Bros Registered Well Driller

Merrillan Wis Complete Mail Address

Please do not write in space below

Rec'd _____ No _____

Ans'd _____

Interpretation _____

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner _____

State of Wisconsin
Department of Natural Resources
Box 450
Madison, Wisconsin 53701

MAY 4 1977

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15
Rev. 10-75

1. COUNTY Monroe — CHECK (✓) ONE: ☒ Town ☐ Village ☐ City — Name La Grange

2. LOCATION ¼ Section NE ¼ Section 32 Township 18N Range 1W
OR – Grid or Street No. Street Name
AND – If available subdivision name, lot & block No.

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE
Al. Simonson
ADDRESS R. 2
POST OFFICE Tomah Wis

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
6			36							

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Foundation Drain Connected to: Clearwater Dr.	Foundation Drain Connected to: Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit	Seepage Bed	Seepage Trench
											45			81	

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well	Pump	Tank	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit

Temporary Manure Stack | Watertight Liquid Manure Tank | Solid Manure Storage Structure | Subsurface Gasoline or Oil Tank | Waste Pond or Land Disposal Unit (Specify Type) | Other (Give Description)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	45			
6	45	60			

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification & Method of Assembly

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	Bekuted 18# Welded ASTM A-53	Surface	48

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	45

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	15
Limestone rock	15	60

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Rotary-hammer w/drilling mud & air ☐ Jetting with ☐ Air ☐ Water
☐ Rotary-air w/drilling mud ☐ Rotary-hammer & air
☐ Rotary-w/drilling mud ☐ Reverse Rotary

Well construction completed on April 22 19 77

11. MISCELLANEOUS DATA
Yield Test: 5 Hrs. at 12 GPM
Depth from surface to normal water level 29 Ft.
Depth of water level when pumping 39 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 8 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on May 3 19 77

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Roy Rusk — Registered Well Driller

Complete Mail Address: Black River Falls Wis R.5 54615

'ELL CONSTRUCTOR'S REPORT — WISCONSIN STATE BOARD OF HEALTH — Wel 6

RECEIVED OCT 1 1965 SANITARY ENGINEERING

COUNTY: Monroe | CHECK ONE: ☐ Town ☒ Village ☐ City | NAME: La Grange

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available): T.18N-R.1W. NW Shore of Lake Tomah Section 32

OWNER AT TIME OF DRILLING: Tony J Brdar

OWNER'S COMPLETE MAIL ADDRESS: Box 28 Tomah Wisconsin

3. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
8ft								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		85ft		200ft					

4. OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Resort

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	85			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	19.45 Iron	Surface	77

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Casing Formation	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	6
Sand & Gravel	6	70
White Sand Rock	70	85

Well construction completed on: May 20 1965

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 4 Hrs. at 8 GPM

Depth from surface to normal water level 8 ft.

Depth to water level when pumping 20 ft.

Water sample sent to Madison Wisconsin laboratory on: May 24 1965

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Jim Parkhurst Jr Registered Well Driller

COMPLETE MAIL ADDRESS: RR1 Box 159 Elroy Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Monroe — Town ☒ / Village ☐ / City ☐ La Grange (Check one and give name)

2. Location SW¼ of SE¼ Sec. 32 T 18 N R 1 W - Lot 3
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Floyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah Wis R 2
Complete address required

5. From well to nearest: Building 4 ft; sewer 30 ft; drain — ft; septic tank 50 ft; dry well or filter bed ~~75~~ 75 ft; abandoned well — ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	90			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	76

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	71
Sand Rock	19	90

RECEIVED
NOV 17 1960
SANITARY ENGINEERING

11. MISCELLANEOUS DATA:

Yield test: 8 Hrs. at 10 GPM.

Depth from surface to water-level: 16 ft.

Water-level when pumping: 28 ft.

Water sample was sent to the state laboratory at: Madison (City) on Nov 7 1960

Construction of the well was completed on: Nov 4 1960

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No

Was the well sealed watertight upon completion? Yes X No

Signature Rusk Bros Registered Well Driller — Merrillan Wis Complete Mail Address

Please do not write in space below

Rec'd NOV 8 1960 No 4110

Ans'd

Interpretation SAFE—BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli	-				

Examiner

WELL CONSTRUCTOR'S REPORT

Wel–6

JUL 15 1970

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: Monroe — CHECK ONE: ☒ Town ☐ Village ☐ City — NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers where available.)
Lot 9 Block 4 S.W. ¼ of S.E. ¼ Sec 32 T. 18N. R. 1W. Jones Add.

3. OWNER AT TIME OF DRILLING: Lloyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
6	37							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		57		94					

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	85			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black steel 19# Threaded mus	Surface	73

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	70
Sand rock	70	85

Well construction completed on July 6 1970

Well is terminated 10 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 12 Hrs. at 9 GPM

Depth from surface to normal water level 19 ft.

Depth to water level when pumping 23 ft.

Water sample sent to Madison laboratory on: July 14 1970

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk — Registered Well Driller

COMPLETE MAIL ADDRESS: Black River Falls Wis R. 2 54615

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT

Wel–6

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: Monroe | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available): Lot 3 - Blk 14 - S.W. ¼ of S.E. ¼ Sec 32 - T. 18N. - R 1 W. Jones Add.

3. OWNER AT TIME OF DRILLING: Lloyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
5'	31							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	83'			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black Steel 14 ga Threaded one	Surface	79

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	74
Sandrock	74	83'

Well construction completed on: Oct 26 1969

Well is terminated 10 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 14 Hrs. at 9 GPM

Depth from surface to normal water level 18 ft.

Depth to water level when pumping 21 ft.

Water sample sent to Madison laboratory on: Nov 4 1969

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk — Registered Well Driller

COMPLETE MAIL ADDRESS: Black River Falls Wis R 2 54615

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

JAN - 5 1973

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: Monroe | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME: La Grange

2. LOCATION – ¼ Section: NE ¼ NE | Section: 32 | Township: 18N | Range: 1W

3. OWNER AT TIME OF DRILLING: John Pleuss

ADDRESS: Tomah

POST OFFICE: Tomah Wis

ER – Grid or street no. | Street name

AND – If available subdivision name, lot & block no.

4. Distance in feet from well to nearest:

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
9	33							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		51			81				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Home

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	65			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black steel 19# Threaded new	Surface	60

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	55
Sand rock	55	65

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

10. TYPE OF DRILLING MACHINE USED

☒ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on: Dec 27 1972

11. MISCELLANEOUS DATA

Yield test: 6 Hrs. at 12 GPM

Depth from surface to normal water level: 22 ft.

Depth to water level when pumping: 31 ft.

Well is terminated 10 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on: January 3 1973

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk Registered Well Driller

COMPLETE MAIL ADDRESS: 54615 Black River Falls Wis Rt. 2

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

REV. 3-71

2

WELL CONSTRUCTOR'S REPORT — WISCONSIN STATE BOARD OF HEALTH — Wel

1. COUNTY: Monroe — CHECK ONE: ☑ Town ☐ Village ☐ City — NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.): Lot 11 B 2 S W ¼ of S E ¼ Sec 32 T 18 N R 1 W

3. OWNER AT TIME OF DRILLING: Lloyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis R. 2,

RECEIVED SEP 28 1956 DEPARTMENT OF RESOURCE DEVELOPMENT

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
4	36	–	–	–	–	–	–	–

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
–	–	50	–	75	–	–	–	–	–

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	85			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	Surface	78

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
None	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	68
Rock	68	85

Well construction completed on Sept 24 19 56.

Well is terminated 8 inches ☑ above ☐ below final grade

Well disinfected upon completion ☑ Yes ☐ N

Well sealed watertight upon completion ☑ Yes ☐ N

11. MISCELLANEOUS DATA

Yield test: 5 Hrs. at 10 GPM

Depth from surface to normal water level 31 ft.

Depth to water level when pumping 47 ft.

Water sample sent to Madison laboratory on: Sept 27 19 56.

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to near wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, su surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rush Registered Well Driller — COMPLETE MAIL ADDRESS: R 2 Blk River Falls Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT — **WISCONSIN STATE BOARD OF HEALTH** — Wel 6

1. COUNTY: Monroe | CHECK ONE: ☑ Town ☐ Village ☐ City | NAME: La Grange

2. LOCATION (Number and street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.) Lot 4 Block 3 Jones Subdivision SW¼ of SE¼ Sec 32 T16N R1W

RECEIVED OCT 28 1965

3. OWNER AT TIME OF DRILLING: Lloyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis R.R.

SANITARY ENGINEERING

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
4	—	—	—	—	—	—	—	—

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	—	—	—	—	—	—	—	—

RECEIVED NOV 4 1965

SANITARY ENGINEERING

6. OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

7. Well is intended to supply water for: New Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	80			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	Surface	72

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
None	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	69
Sand rock. form	69	72
Sand rock	72	80

Well construction completed on Oct 19 1965

Well is terminated 8 inches ☑ above ☐ below final grade

Well disinfected upon completion ☑ Yes ☐ No

Well sealed watertight upon completion ☑ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 3 Hrs. at 11 GPM

Depth from surface to normal water level 19 ft.

Depth to water level when pumping 28 ft.

Water sample sent to Madison laboratory on: Oct 26 1965

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy G Rusk Registered Well Driller

COMPLETE MAIL ADDRESS: Elk River Falls Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT — **WISCONSIN STATE BOARD OF HEALTH** — Wel 6

1. COUNTY: Monroe — CHECK ONE: ☑ Town ☐ Village ☐ City — NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
S. W ¼ of S. E ¼ Sec 32 T 18 N R 1 W

3. OWNER AT TIME OF DRILLING: Lloyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis R. 2.

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JUL 22 1965
WISCONSIN STATE BOARD OF HEALTH
SANITARY ENGINEERING

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE AWAY DRAIN C. I.	WASTE AWAY DRAIN TILE
4	—	—	—	—	—	—	—	—

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SPRING
—	—	—	—	—	—	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: New Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	80			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	Surface	75'

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
None	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	69
Sand Rock	69	80

Well construction completed on July 14 1965

Well is terminated 8 inches ☑ above ☐ below final grade

Well disinfected upon completion ☑ Yes ☐ No

Well sealed watertight upon completion ☑ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 4 Hrs. at 12 GPM

Depth from surface to normal water level 18 ft.

Depth to water level when pumping 29 ft.

Water sample sent to Madison laboratory on: July 21 1965

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearb wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk — Registered Well Driller — COMPLETE MAIL ADDRESS: Blk River Falls Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT

DEPARTMENT OF RESOURCE DEVELOPMENT

Well

1. COUNTY: Monroe | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available): Lot 7 - Block 4 SW ¼ of SE ¼ Sec 32 T 18N - R 1 W Jones Subdivision

3. OWNER AT TIME OF DRILLING: Floyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
5'	31							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	80			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black Steel 19# Threaded new	Surface	73

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	69
Sandrock	69	80

Well construction completed on: May 23 1969

Well is terminated 10 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 16 Hrs. at 8 GPM

Depth from surface to normal water level 14 ft.

Depth to water level when pumping 21 ft.

Water sample sent to Madison laboratory on: June 2 1969

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy G Rush Registered Well Driller

COMPLETE MAIL ADDRESS: Black River Falls Wis R 3 54615

Please do not write in space below

JUN 3 1969

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT

DEPARTMENT OF RESOURCE DEVELOPMENT

Wel

1. COUNTY: Monroe

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

SW¼ of SE¼ Sec 32 - T 13N - R 1W LOT 12 - BLOCK 2 Jones Addn

3. OWNER AT TIME OF DRILLING: Floyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
6	31		30					

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		50		75					

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	80			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black steel 19# Threaded new	Surface	75

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	7
Sand rock	71	80

Well construction completed on: Sept 7 19 60

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 14 Hrs. at 8 GPM

Depth from surface to normal water level 14 ft.

Depth to water level when pumping 23 ft.

Water sample sent to Madison laboratory on: Sept 16 19 60

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearb wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk & Son Registered Well Driller

COMPLETE MAIL ADDRESS: Black River Falls Wis 54615

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

Vol 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

OCT 22 1963

1. County Monroe (Town ☒ / Village ☐ / City ☐) La Grange — Check one and give name

2. Location SW. ¼ of S.E. ¼ Sec. 32 T 18 N R 1W Lot 7 Block 2
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Lloyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah, Wisc.
Complete address required

5. From well to nearest: Building 4 ft; sewer — ft; drain — ft; septic tank — ft; dry well or filter bed — ft; abandoned well — ft.

6. Well is intended to supply water for: Dew Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	75			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	69

9. GROUT:

Kind	From (ft.)	To (ft.)
Done		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	67
Sand Rock	8	75

Construction of the well was completed on: Oct. 8 19 63

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No —

Was the well sealed watertight upon completion? Yes X No —

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 9 GPM.

Depth from surface to water-level: 24 ft.

Water-level when pumping: 33 ft.

Water sample was sent to the state laboratory at: Madison (City) on Oct. 14 19 63

Signature Rusk Bros. (Registered Well Driller) Merrillan, Wis. (Complete Mail Address)

Please do not write in space below

Rec'd OCT 15 1963 No. 45487

Ans'd —

Interpretation —

UNSAFE—BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.	+	+			
48 hrs.			+	+	+
Confirm	+	+	+		
B. Coli	3/5				

Examiner —

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH
See Instructions on Reverse Side

1. County Monroe (Town ☒ Village ☐ City ☐) La Grange — Check one and give name

2. Location SW¼-SE¼ Sec 32 T 18 N R 1 W Lot 6 Blk 2 Jones subdivision
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Lloyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah Wis R 2
Complete address required

5. From well to nearest: Building 4 ft; sewer — ft; drain — ft; septic tank — ft; dry well or filter bed — ft; abandoned well 5 ft.

6. Well is intended to supply water for: new home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	75			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	70

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	68
Sand Rock	7	75

RECEIVED
SEP 4 - 1963

Construction of the well was completed on: Aug 21 1963

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No

Was the well sealed watertight upon completion? Yes X No

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 8 GPM.

Depth from surface to water-level: 24 ft.

Water-level when pumping: 33 ft.

Water sample was sent to the state laboratory at: Madison (City) on Aug 27 1963

Signature Rusk Bros (Registered Well Driller) Merrillan Wis (Complete Mail Address)

Please do not write in space below

Rec'd AUG 28 1963 No. 37147

Ans'd

Interpretation

SAFE BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli	0				

Examiner

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH Vol 5
See Instructions on Reverse Side Well no. 6

RECEIVED
JUL 1 1963
SANITARY ENGINEERIN

1. County Monroe Town ☒ Village ☐ City ☐ La Grange Check one and give name

2. Location SW ¼ of SE ¼ Sec 32 T 18 N R 1 W
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Floyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah Wisc R 2
Complete address required

5. From well to nearest: Building 4 ft; sewer — ft; drain — ft; septic tank — ft; dry well or filter bed — ft; abandoned well — ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
4	0	76			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
4	Steel	0	73

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	67
Sand Rock	9	76

Construction of the well was completed on: May 20 19 63

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No —

Was the well sealed watertight upon completion? Yes X No —

11. MISCELLANEOUS DATA:

Yield test: 6 Hrs. at 8 GPM.

Depth from surface to water-level: 25 ft.

Water-level when pumping: 34 ft.

Water sample was sent to the state laboratory at: Madison (City) on June 25 19 63

Signature Rusk Bros. (Registered Well Driller) Merrillan, Wisc. (Complete Mail Address)

Please do not write in space below

Rec'd JUN 26 1963 No. 24106

Ans'd —

Interpretation —

SAFE—BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli	0				

0/5

Examiner —

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Wel 6

See Instructions on Reverse Side

1. County Monroe (Town ☒ Village ☐ City ☐) La Grange — Check one and give name

2. Location S.W. ¼ of S.E. ¼ Sec 32 T-18-N R 1W
Name of street and number of premise or Section, Town and Range numbers

RECEIVED
AUG 22 1962
STATE BOARD OF HEALTH
ENGINEER

3. Owner ☒ or Agent ☐ Floyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah Wis R 2
Complete address required

5. From well to nearest: Building 4 ft; sewer — ft; drain — ft; septic tank — ft; dry well or filter bed — ft; abandoned well — ft.

6. Well is intended to supply water for: New Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	80			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	72

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	66
Sand rock	14	80

Construction of the well was completed on: August 17 1962

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No —

Was the well sealed watertight upon completion? Yes X No —

11. MISCELLANEOUS DATA:

Yield test: 1 Hrs. at 9 GPM.

Depth from surface to water-level: 26 ft.

Water-level when pumping: 33 ft.

Water sample was sent to the state laboratory at: Madison (City) on Aug 21, 1962

Signature Rush Bros. (Registered Well Driller)

Merrillan Wisc. Box 82 (Complete Mail Address)

Please do not write in space below

Rec'd AUG 22 1962 No 31598

Ans'd —

Interpretation —

SAFE—BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner —

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH Wel 6

See Instructions on Reverse Side

N04

1. County Monroe — Town ☒ / Village ☐ / City ☐ La Grange — Check one and give name

2. Location S. W¼ of S.E¼ Sec 32 T18N R1W
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Floyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah Wis R. 2
Complete address required

5. From well to nearest: Building 4 ft; sewer — ft; drain — ft; septic tank — ft; dry well or filter bed — ft; abandoned well — ft.

6. Well is intended to supply water for: New home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	85			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	77

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	71
Sand rock	6	77

RECEIVED JUN 12 1962 SANITARY ENGINEERING

Construction of the well was completed on: May 28 1962

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No

Was the well sealed watertight upon completion? Yes X No

11. MISCELLANEOUS DATA:

Yield test: 5 Hrs. at 11 GPM.

Depth from surface to water-level: 28 ft.

Water-level when pumping: 36 ft.

Water sample was sent to the state laboratory at: Madison City on June 5 1962

Signature Rush Bros Registered Well Driller — Morrillon Wis Complete Mail Address

Please do not write in space below

Rec'd JUN 6 1962 No. [illegible]

Ans'd

Interpretation UNSAFE—BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.	+				
48 hrs.		+	+	+	+
Confirm	+	+	+	+	+
B. Coli	5				
	5				

Examiner

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Wel 5

See Instructions on Reverse Side

1. County Monroe (Town ☒ Village ☐ City ☐) La Grange — Check one and give name

2. Location S.W ¼ of S.E ¼ Sec 32 T 18 N R 1 W
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Lloyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah Wis R 2
Complete address required

5. From well to nearest: Building 4 ft; sewer — ft; drain — ft; septic tank — ft; dry well or filter bed — ft; abandoned well — ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	80			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	75

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	69
Sand stone firm	11	80

RECEIVED
JUL 21 1961
SANITARY ENGINEERING

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 5 GPM.

Depth from surface to water-level: 27 ft.

Water-level when pumping: 34 ft.

Water sample was sent to the state laboratory at: Madison City on July 10 1961

Construction of the well was completed on: July 3 1961

The well is terminated 6 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No —

Was the well sealed watertight upon completion? Yes X No —

Signature Rush Bros Registered Well Driller

Merrillan Wis Complete Mail Address

Please do not write in space below

Rec'd JUL 12 1961 No 25411

Ans'd —

Interpretation UNSAFE—BACTERIOLOGICALLY Because of the presence of B. Coli in one of the 10 cc. portions of this sample another examination is advisable

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.	+	0	0	0	0
Confirm	+				
B. Coli	+	0	0	0	0

Examiner —

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT

DEPARTMENT OF RESOURCE DEVELOPMENT

Wel

1. COUNTY: Monroe — CHECK ONE: ☒ Town ☐ Village ☐ City — NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
NW ¼ of SE ¼ Sec 32 - T 18 N R 1 W Lot 6 Block 3 Jones Addition

3. OWNER AT TIME OF DRILLING: Floyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis R 2

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
5	21							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		35	L	60	L	L	L	L	L

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	75			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6"	Steel 19.45	Surface	72

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
None	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	68
Sandrock	68	75

Well construction completed on June 29 19 6

Well is terminated 10 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 18 Hrs. at 8 GPM

Depth from surface to normal water level 15 ft.

Depth to water level when pumping 21 ft.

Water sample sent to Madison laboratory on: July 5 19 6

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearb wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk & Son Registered Well Driller

COMPLETE MAIL ADDRESS: Blk River Falls Wis R 2 54615

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT — WISCONSIN STATE BOARD OF HEALTH — Well 6

1. COUNTY: Monroe — CHECK ONE: ☒ Town ☐ Village ☐ City — NAME: La Grange — MAY 20 1965 — SANITARY ENGINEERING

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.): S.W ¼ of S.E ¼ Sec 32 T 18N R 1W

3. OWNER AT TIME OF DRILLING: Floyd Jones

4. OWNER'S COMPLETE MAIL ADDRESS: Tomah Wis R. 2

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
4	30	-	—	—	—	—	22	

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	65	—	90	—	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	80			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	Surface	75

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
None	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	69
Sand rock-firm	69	80

Well construction completed on: May 15 1965

Well is terminated 8 inches ☐ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 6 Hrs. at 9 GPM

Depth from surface to normal water level 17 ft.

Depth to water level when pumping 26 ft.

Water sample sent to Madison laboratory on: May 17 1965

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rusk — Registered Well Driller — COMPLETE MAIL ADDRESS: Black River Falls Wis R2

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT

WISCONSIN STATE BOARD OF HEALTH

Wel

1. COUNTY: Monroe

CHECK ONE: ☑ Town ☐ Village ☐ City

NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

Lot 2 Block 3 Sec 32 T 18 R 1 W Jones Sub Div

3. OWNER AT TIME OF DRILLING: Lloyd Jones R 2

4. OWNER'S COMPLETE MAIL ADDRESS: Lamak Wis

RECEIVED JUL 19 1966 SANITARY ENGINEERING

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN TILE
5	44	—	99	—	—	—	—

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	—	40	—	60	—	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

6. Well is intended to supply water for: Home

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	85			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	Surface	76

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
None	Surface	

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	71
Sandrock	71	85

Well construction completed on July 11 1966

Well is terminated 9 inches ☑ above ☐ below final grade

Well disinfected upon completion ☑ Yes ☐ No

Well sealed watertight upon completion ☑ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 3 Hrs. at 9 GPM

Depth from surface to normal water level 18 ft.

Depth to water level when pumping 27 ft.

Water sample sent to Madison, Wis laboratory on: July 18 1966

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rush Registered Well Driller

COMPLETE MAIL ADDRESS: R 2 Blk River Falls Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Vol. 6

See Instructions on Reverse Side

1. County Monroe (Town ☑ / Village ☐ / City ☐) La Grange — Check one and give name — RECEIVED JUL 10 1964 SANITARY ENGINEERING

2. Location Lot 10 Block 2 Jones Subdivison — Name of street and number of premise or Section, Town and Range numbers — S 32 T 18N R 1 W

3. Owner ☑ or Agent ☐ Lloyd Jones Rt. 2. — Name of individual, partnership or firm

4. Mail Address Tomah Wis — Complete address required

5. From well to nearest: Building 4 ft; sewer 70 ft; drain —— ft; septic tank 65 ft; dry well or filter bed 90 ft; abandoned well —— ft.

6. Well is intended to supply water for: New Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	80			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	73

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	66
Sand Rock-firm	14	80

11. MISCELLANEOUS DATA:

Yield test: 5 Hrs. at 11 GPM.

Depth from surface to water-level: 18 ft.

Water-level when pumping: 24 ft.

Water sample was sent to the state laboratory at: Madison City on July 6 1964

Construction of the well was completed on: July 1 1964

The well is terminated 8 inches ☑ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No ——

Was the well sealed watertight upon completion? Yes ✓ No ——

Signature Roy Rush & Son — Registered Well Driller

Black River Falls Wis — Complete Mail Address

Please do not write in space below

Rec'd —— No ——

Ans'd ——

Interpretation ——

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ——

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH Wel 5
See Instructions on Reverse Side

1. County Monroe — Town ☑ La Grange / Village ☐ / City ☐ — Check one and give name

2. Location Lot 4 Block 2 Jones Subdivision Sec 32 T 18 R 1W
Name of street and number of premise or Section, Town and Range numbers

RECEIVED
OCT 23 1964
SANITARY ENGINEERING

3. Owner ☑ or Agent ☐ Floyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah Wis
Complete address required

5. From well to nearest: Building 4 ft; sewer 38 ft; drain —— ft; septic tank 48 ft; dry well or filter bed 96 ft; abandoned well —— ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	80			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	75

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	66
Rock	14	80

11. MISCELLANEOUS DATA:

Yield test: 6 Hrs. at 12 GPM.

Depth from surface to water-level: 17 ft.

Water-level when pumping: 26 ft.

Water sample was sent to the state laboratory at: Madison (City) on Oct 20 1964

Construction of the well was completed on: Oct 12 1964

The well is terminated 8 inches ☑ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No ——

Was the well sealed watertight upon completion? Yes ✓ No ——

Signature Roy Rusk & Son — Registered Well Driller

Black River Falls Wis — Complete Mail Address

Please do not write in space below

Rec'd —— No ——

Ans'd ——

Interpretation ——

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ——

Well no 2

Wel 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Monroe (Town ☒ Village ☐ City ☐) La Grange — Check one and give name

2. Location SW ¼ of SE ¼ Sec 32 T 18 N R 1 W
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Loyd Jones
Name of individual, partnership or firm

4. Mail Address Tomah Wis
Complete address required

5. From well to nearest: Building 4 ft; sewer 30 ft; drain — ft; septic tank 60 ft; dry well or filter bed 75 ft; abandoned well — ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	80			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	67

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	61
Sandrock	19	80

RECEIVED
MAY 5 1961
SANITARY ENGINEERING

Construction of the well was completed on: April 17 19 61

The well is terminated 8 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No

Was the well sealed watertight upon completion? Yes X No

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 9 GPM.

Depth from surface to water-level: 28 ft.

Water-level when pumping: 36 ft.

Water sample was sent to the state laboratory at: Madison (City) on April 26 1961

Signature Rush Bros (Registered Well Driller) — Merrillan Wis (Complete Mail Address)

Please do not write in space below

Rec'd APR 28 1961 No 13307

Ans'd

Interpretation SAFE—BACTERIOLOGICALLY

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

NOV 4 1977

FEB 28 1973

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: Monroe
CHECK ONE: ☒ Town ☐ Village ☐ City
NAME: La Grange

2. LOCATION – ¼ Section: N.E. | Section: 32 | Township: 18 N. | Range: 1 W.
OR – Grid or street no. | Street name: C.T. E.
AND – If available subdivision name, lot & block no.

3. OWNER AT TIME OF DRILLING: Tom Pluess
ADDRESS: R R 1
POST OFFICE: Tomah Wis

4. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
15								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		30		30					

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	60			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	New Steel T.C. 1945	Surface	40
	ASTM A53		
	Valley Steel		

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand and Rock	Surface	20
Black Muck	20	38
Sand Rock	38	60

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Caving Formation	Surface	38

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on: July 30 19 77

11. MISCELLANEOUS DATA
Yield test: 1 Hrs. at 8 GPM

Well is terminated 12 inches ☒ above ☐ below final grade

Depth from surface to normal water level: 21 ft.

Well disinfected upon completion ☒ Yes ☐ No

Depth to water level when pumping: 30 ft.

Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to: Madison laboratory on: Aug 2 19 77

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seal type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Jim Parkhurst Registered Well Driller

COMPLETE MAIL ADDRESS: Elroy Wis

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

MAR 1 1972

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY: Monroe | CHECK ONE: ☒ Town ☐ Village ☐ City | NAME: LaGrange

2. LOCATION – ¼ Section: NE | Section: 32 | Township: 18N | Range: 1W
OR – Grid or street no. | Street name:
AND – If available subdivision name, lot & block no.

3. OWNER AT TIME OF DRILLING: Henry
ADDRESS: Tomah, Wis.
POST OFFICE:

4. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
6	20							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		50			75				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	44½			
6	44½	75			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Plain end Standard Steel 18.97	Surface	44½

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	22
Sandstone	22	75

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
drill cuttings	Surface	10
neat cement	10	44½

10. TYPE OF DRILLING MACHINE USED
☐ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☒ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on: Nov. 22 19 71

11. MISCELLANEOUS DATA
Yield test: 2 Hrs. at 12 GPM
Depth from surface to normal water level: 28 ft.
Depth to water level when pumping: 35 ft.

Well is terminated: 12 inches ☒ above ☐ below final grade
Well disinfected upon completion: ☒ Yes ☐ N
Well sealed watertight upon completion: ☒ Yes ☐ N

Water sample sent to: Madison, Wis. laboratory on: Feb. 29, 19 72

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: [signature] Registered Well Driller
COMPLETE MAIL ADDRESS: 578 Water Ave. Hillsb

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 12-76

NOV 29 1978

1 COUNTY Monroe — CHECK (✓) ONE: ☒ Town ☐ Village ☐ City — Name La Grange

2 LOCATION ¼ Section: SE-NW — Section: 32 — Township: 18N — Range: 1W
OR – Grid or Street No. Street Name:
AND – If available subdivision name, lot & block No.:

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Toms Plumbing Service
ADDRESS Rt. 4
POST OFFICE Tomah Wis

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
10				36						

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Foundation Drain Connected to: Clearwater Dr.	Foundation Drain Connected to: Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit	Seepage Bed	Seepage Trench
											52			78	

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well / Pump / Tank	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit

Temporary Manure Stack | Watertight Liquid Manure Tank | Solid Manure Storage Structure | Subsurface Gasoline or Oil Tank | Waste Pond or Land Disposal Unit (Specify Type) | Other (Give Description)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	45			
6	45	60			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	Black steel 18# Weld ASTM A-53 – Interlake Inc	Surface	47

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat cement	Surface	45

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	19
Sandrock	19	60

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Rotary-hammer w/drilling mud & air ☐ Jetting with ☐ Air ☐ Water
☐ Rotary-air w/drilling mud ☐ Rotary-hammer & air
☐ Rotary-w/drilling mud ☐ Reverse Rotary

Well construction completed on Nov 11 19 78

11. MISCELLANEOUS DATA
Yield Test: 5 Hrs. at 12 GPM
Depth from surface to normal water level 27 Ft.
Depth of water level when pumping 37 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 8 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Madison laboratory on Nov. 28 19 78

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Roy Rusk — Registered Well Driller

Complete Mail Address: Black River Falls Wis 54615

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT

Form 3300-15 DEC 1 1984 12-76

1. COUNTY: Monroe
CHECK (✓) ONE: ☒ Town ☐ Village ☐ City
Name: La Grange

2. LOCATION: ¼ Section: N. W. Section: 32 Township: 18 N Range: 1 W.
OR – Grid or Street No. Street Name:
AND – If available subdivision name, lot & block No.: Sunny View Sub.

3. NAME ☐ OWNER ☒ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Steve Wilder
ADDRESS: R.R.
POST OFFICE: Tomah Wis.

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
6 ft										

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit
									60		Seepage Pit: 100 ft; Seepage Bed; Seepage Trench

Foundation Drain Connected to: Clearwater Dr.: Clearwater Sump

Privy	Pet Waste Pit	Pit: Nonconforming Existing	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well; Pump; Tank								

Temporary Manure Stack | Watertight Liquid Manure Tank | Solid Manure Storage Structure | Subsurface Gasoline or Oil Tank | Waste Pond or Land Disposal Unit (Specify Type) | Other (Give Description)

5. Well is intended to supply water for:

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	37	6	37	61

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification & Method of Assembly

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	New Steel P.E.	Surface	37
	1200psi VSP		
	ASTM A120		
	15.97 P.T.		

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	37

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	15
Sand Rock	15	61

10. TYPE OF DRILLING MACHINE USED
☒ Cable Tool ☐ Rotary-hammer w/drilling mud & air ☐ Jetting with ☐ Air ☐ Water
☐ Rotary-air w/drilling mud ☐ Rotary-hammer & air
☐ Rotary-w/drilling mud ☐ Reverse Rotary

Well construction completed on 10-1 19 84

11. MISCELLANEOUS DATA
Yield Test: 1 Hrs. at 10 GPM
Depth from surface to normal water level 35 Ft.
Depth of water level when pumping 40 Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☐ Yes ☐ No

Water sample sent to Madison laboratory on 10-1 19 84

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Jim Parkhurst Registered Well Driller
Complete Mail Address: Elroy Wis

ELL CONSTRUCTOR'S REPORT
FORM 3300-15

FEB 7 1974

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

COUNTY: Monroe

CHECK ONE: ☒ Town ☐ Village ☐ City

NAME: La Grange

LOCATION – ¼ Section: NE¼ of NW¼ | Section: 32 | Township: 18N | Range: 1W

R – Grid or street no. | Street name

ND – If available subdivision name, lot & block no.

3. OWNER AT TIME OF DRILLING: Dave Olson

ADDRESS

POST OFFICE: Nowark Wis.

Distance in feet from well to nearest: (Record answer in appropriate block)	BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
	5'	35'							

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		36			71				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

. Well is intended to supply water for: Home

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	60			

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	29
Sandrock	29	60

. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Blackpipe steel 19# Threaded new	Surface	33

3. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

10. TYPE OF DRILLING MACHINE USED

☒ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on: Jan. 30 19 74

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

1. MISCELLANEOUS DATA

Yield test: 5 Hrs. at 12 GPM

Depth from surface to normal water level: 26 ft.

Depth to water level when pumping: 32 ft.

Water sample sent to: Madison laboratory on: February 6 19 74

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Roy Rush Registered Well Driller

COMPLETE MAIL ADDRESS: Black River Falls Wis. R. 2 54615

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

REV. 3-71

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Monroe (Town ☑ / Village ☐ / City ☐) LaGrange — Check one and give name

2. Location NW of NW of Sec 33 T16N R1W
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☑ or Agent ☐ Jesse Schultz
Name of individual, partnership or firm

4. Mail Address Tomah, Wisconsin Route 2
Complete address required

5. From well to nearest: Building 5 ft; sewer ____ ft; drain ____ ft; septic tank 25 ft; dry well or filter bed 75 ft; abandoned well ____ ft.

6. Well is intended to supply water for: House

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
5	0	80			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
5"	Steel	8" above	59

9. GROUT:

Kind	From (ft.)	To (ft.)
None		

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand	0	22
Clay	22	24
Sand & mud	24	54
Sandstone	54	80

RECEIVED
OCT 1 1957
ENVIRONMENTAL SANITATION

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 20 GPM.

Depth from surface to water-level: 15 ft.

Water-level when pumping: 60 ft.

Water sample was sent to the state laboratory at: Madison City on Aug. 20 19 57

Construction of the well was completed on: August 16 19 57

The well is terminated 8 inches ☑ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No ____

Was the well sealed watertight upon completion? Yes X No ____

Signature Thomas Nielsen Registered Well Driller — Tomah, Wisconsin Route 3 Complete Mail Address

Please do not write in space below

Rec'd ____ No. ____

Ans'd ____

Interpretation ____

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ____

State of Wisconsin
Department of Natural Resources
Box 450
Madison, Wisconsin 53701

NOV 28 1977

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15
Rev. 10-75

1. COUNTY: Monroe
CHECK (✓) ONE: ☑ Town ☐ Village ☐ City
Name: La Grange

2. LOCATION: NW ¼ NW Section 33 Township 18N Range R1-W
OR – Grid or Street No. Street Name
AND – If available subdivision name, lot & block No.

3. NAME ☑ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Howard Bloom
ADDRESS: R-2
POST OFFICE: Tomah

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain		Sanitary Bldg. Sewer		Floor Drain Connected To:		Storm Bldg. Drain		Storm Bldg. Sewer	
	C.I.	Other	C.I.	Other	C.I. Sewer	Other Sewer	C.I.	Other	C.I.	Other
8'										

Street Sewer		Other Sewers		Foundation Drain Connected to:		Sewage Sump		Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit
San.	Storm	C.I.	Other	Sewer	Sewage Sump	C.I.	Other				Seepage Pit
				Clearwater Dr.	Clearwater Sump						Seepage Bed
											Seepage Trench

Privy	Pet Waste Pit	Pit: Nonconforming Existing	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit
		Well								
		Pump								
		Tank								

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	50	6	50	70

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification & Method of Assembly

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	Black-New 280 plain-end U. S. Steel A. STM A-53	Surface	50 ± 6"

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Cement	Surface	50

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	8
Sand Rock	8	70

10. TYPE OF DRILLING MACHINE USED
☑ Cable Tool ☐ Rotary-air w/drilling mud ☐ Rotary-w/drilling mud ☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary ☐ Jetting with ☐ Air ☐ Water

Well construction completed on Nov. 8 1977

11. MISCELLANEOUS DATA
Yield Test: 8 Hrs. at 12 GPM
Depth from surface to normal water level 14 Ft.
Depth of water level when pumping 18 Ft. Stabilized ☑ Yes ☐ No

Well is terminated 12 inches ☑ above ☐ below final grade
Well disinfected upon completion ☑ Yes ☐ No
Well sealed watertight upon completion ☑ Yes ☐ No

Water sample sent to La Crosse laboratory on Nov. 8 1977

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Norman Haller
Registered Well Driller

Complete Mail Address
4049 State Rd
La Crosse, Wisc.

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT

DEPARTMENT OF RESOURCE DEVELOPMENT

W.O. 8218 Well

1. COUNTY: Monroe

CHECK ONE: ☒ Town ☐ Village ☐ City NAME: La Grange

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

N W 1/4 Sec 33 T18N R1W

3. OWNER AT TIME OF DRILLING

Charles Fiedler

4. OWNER'S COMPLETE MAIL ADDRESS

RFD #1, Tomah, Wisconsin 54660

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
12	10	--	25	--	--	--	--	--

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
--	--	25	--	--	50	--	--	--	--

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

--above indicates none

6. Well is intended to supply water for:

New Residence

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8-3/4	Surface	50			
6	50	82			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	New Std. Black Steel	Surface	50
	P.E. 18.97#		

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Bentonite & cuttings	Surface	50

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	35
Sandstone	35	82

Well construction completed on 10/28 19 68

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: - Hrs. at 20 GPM

Depth from surface to normal water level 5 ft.

Depth to water level when pumping 25 ft.

Water sample sent to Madison laboratory on: 10/28 19 68

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearb wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE

Richard Berkholtz, Pres. Registered Well Driller

COMPLETE MAIL ADDRESS

Berkholtz Drilling Co. Inc.
1170 Forest Lane, Brookfield, Wisconsin 530

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS
				SEE NOTES FROM DENNEE DATED 12-19-68

Wel 6 Rock

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Marinette (Town ☑ Village ☐ City ☐) La Grange
   Check one and give name
2. Location Sec. 23 T. 18 N. R. 19 W.
   Name of street and number of premise or Section, Town and Range numbers
3. Owner ☑ or Agent ☐ Charles A. Fiedler
   Name of individual, partnership or firm
4. Mail Address Lamark Wis
   Complete address required
5. From well to nearest: Building [redacted] ft, sewer [redacted] ft, drain [redacted] ft, septic tank [redacted] ft; dry well or filter bed ____ ft; abandoned well ____ ft. No building there when Drilled
6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20	5	20	90

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
5	steel pipe	0	90

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay	0	20

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	10
sand	10	20
sand	20	90

RECEIVED
1958
ENVIRONMENTAL SANITATION

Construction of the well was completed on: 4/10 1957

The well is terminated 12 inches ☐ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No ____

Was the well sealed watertight upon completion? Yes ✓ No ____

11. MISCELLANEOUS DATA:

Yield test: 2 Hrs. at 5 GPM.

Depth from surface to water-level: 35 ft.

Water-level when pumping: 35 ft.

Water sample was sent to the state laboratory at: Madison City on 5/16 1957

Signature R. E. VanDent Registered Well Driller

Black River Falls Complete Mail Address

Please do not write in space below

Rec'd ____ No. ____

Ans'd ____

Interpretation ____

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ____

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 2-79

NOV 2 1983

1. COUNTY: Monroe
CHECK (✓) ONE: ☒ Town ☐ Village ☐ City
Name: La Grange

2. LOCATION: ¼ Section or Gov't. Lot: SW; Section: 33; Township: 18N; Range: 1W
OR – Grid or Street No. Street or Road Name:
AND – If available subdivision name, lot & block No.:

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓ ONE): LaVerne Baron
ADDRESS: Tomah, WI
POST OFFICE:
ZIP CODE: 54660

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
20										

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Sewage Sump	Foundation Drain Connected to: Clearwater Dr.	Foundation Drain Connected to: Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit	Sewage Absorption Unit: Seepage Bed	Sewage Absorption Unit: Seepage Trench	Manure Hopper or Retention or Pneumatic Tank
											60			75		

Privy	Pet Waste Pit	Pit: Nonconforming Existing	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Or Pit	Earthen Silage Trench	Earthen Manure Basin
		Well Pump Tank										

Temporary Manure Stack or Platform	Watertight Liquid Manure Tank or Basin	Manure Pressure Pipe	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Manure Storage Basin Concrete Floor Only Concrete Floor and Partial Concrete Walls	Other (Describe)

5. Well is intended to supply water for: home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	Surface	84			
6	84	105			

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification

Dia. (in.)	Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	New Standard Steel 18.77 lbs A 53 Welded	Surface	84

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
drill cuttings	Surface	10
Neat Cement	10	84

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	3
clay	3	12
Muck	12	60
sandstone	60	105

10. TYPE OF DRILLING MACHINE USED
☐ Cable Tool ☒ Rotary-hammer w/drilling mud & air ☐ Jetting with
☐ Rotary-air w/drilling mud ☐ Rotary-hammer & air ☐ Air ☐ Water
☐ Rotary-w/drilling mud ☐ Reverse Rotary

Well construction completed on November 7, 19 79

11. MISCELLANEOUS DATA
Yield Test: 2 Hrs. at 20 GPM
Depth from surface to normal water level 4 Ft.
Depth of water level when pumping 10 Ft. Stabilized – ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to _____ laboratory on _____ 19____

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Kuuba Well Drilling, Inc.
Lois Kuuba, sec.
Registered Well Driller

Business Name and Complete Mailing Address: 578 Water Ave. Hillsboro, WI 54

JUN 1 2 1972

WELL CONSTRUCTOR'S REPORT
FORM 3300-15

NOTE
WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin 53701

1. COUNTY Monroe | CHECK ONE ☒ Town ☐ Village ☐ City | NAME La Grange

2. LOCATION – ¼ Section SW¼NW | Section 33 | Township 18N | Range 1W

3. OWNER AT TIME OF DRILLING Ludwig Carl Olson

OR – Grid or street no. | Street name | ADDRESS R. #1

AND – If available subdivision name, lot & block no. | POST OFFICE Tomah Wis

4. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
4	39					/		

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
		51			87			/	

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

5. Well is intended to supply water for: Home

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	Surface	60			

7. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Black steel 17# Threaded new	Surface	54

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Sand	Surface	49
Sandrock	49	60

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
	Surface	

10. TYPE OF DRILLING MACHINE USED

☒ Cable Tool ☐ Direct Rotary ☐ Reverse Rotary
☐ Rotary – air w/drilling mud ☐ Rotary – hammer with drilling mud & air ☐ Jetting with ☐ Air ☐ Water

Well construction completed on June 3 1972

11. MISCELLANEOUS DATA

Yield test: 5 Hrs. at 12 GPM

Well is terminated 8 inches ☒ above ☐ below final gr

Depth from surface to normal water level 20 ft.

Well disinfected upon completion ☒ Yes ☐ N

Depth to water level when pumping 26 ft.

Well sealed watertight upon completion ☒ Yes ☐ N

Water sample sent to Madison laboratory on: June 12 1972

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE Roy Rusk Registered Well Driller

COMPLETE MAIL ADDRESS Black River Falls Wis R. #2 54615

Please do not write in space below

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS

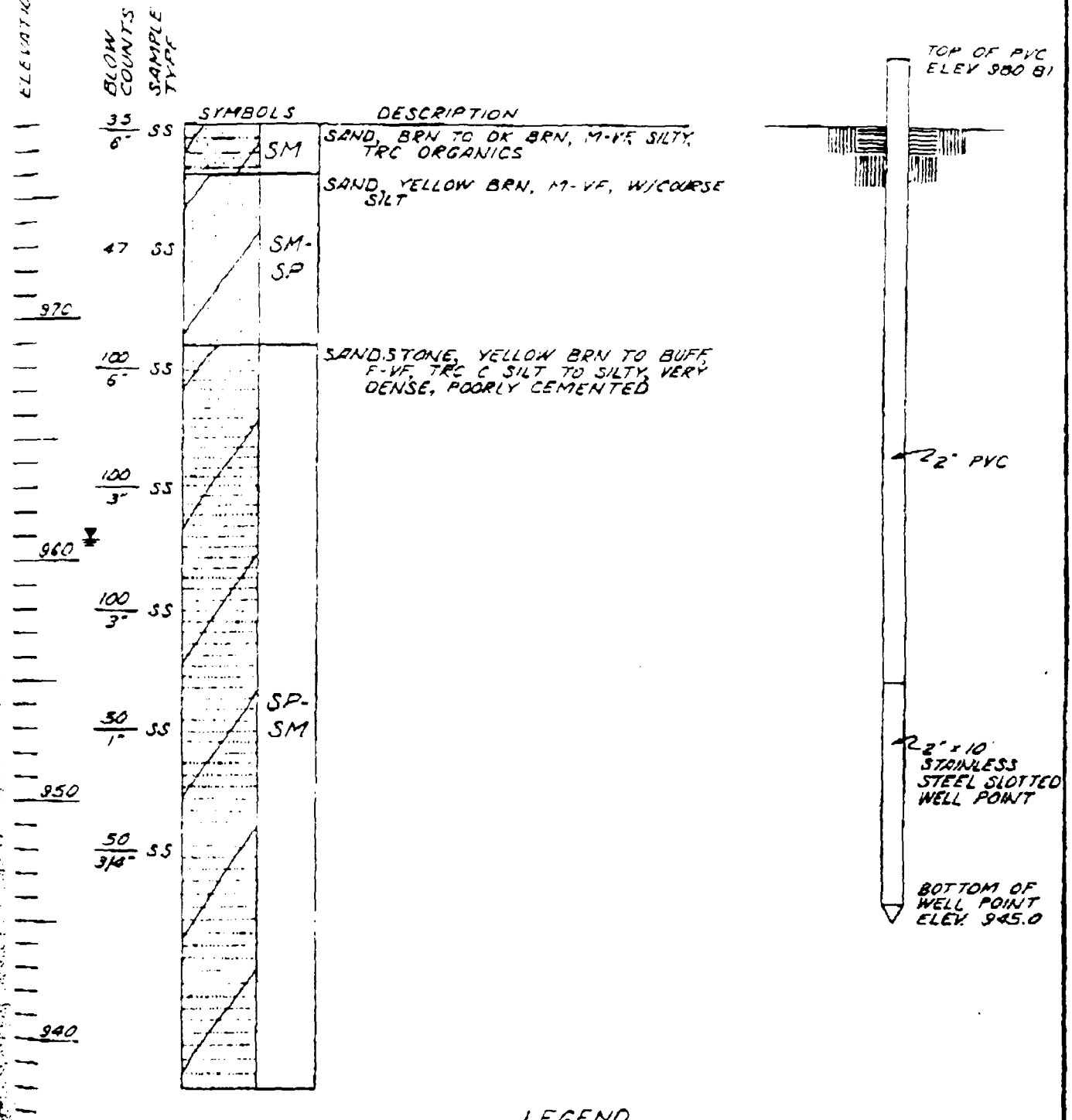
REV. 3-71

APPENDIX B

LOGS OF DH SERIES WELLS

BORING NO OH-1

SURFACE ELEVATION 978.0



BORING NO. OH-1
STARTED 12-29-75
COMPLETED 12-29-75
3¼" HSA TO 40.0

SCALE: 1" = 5'-0"

LEGEND

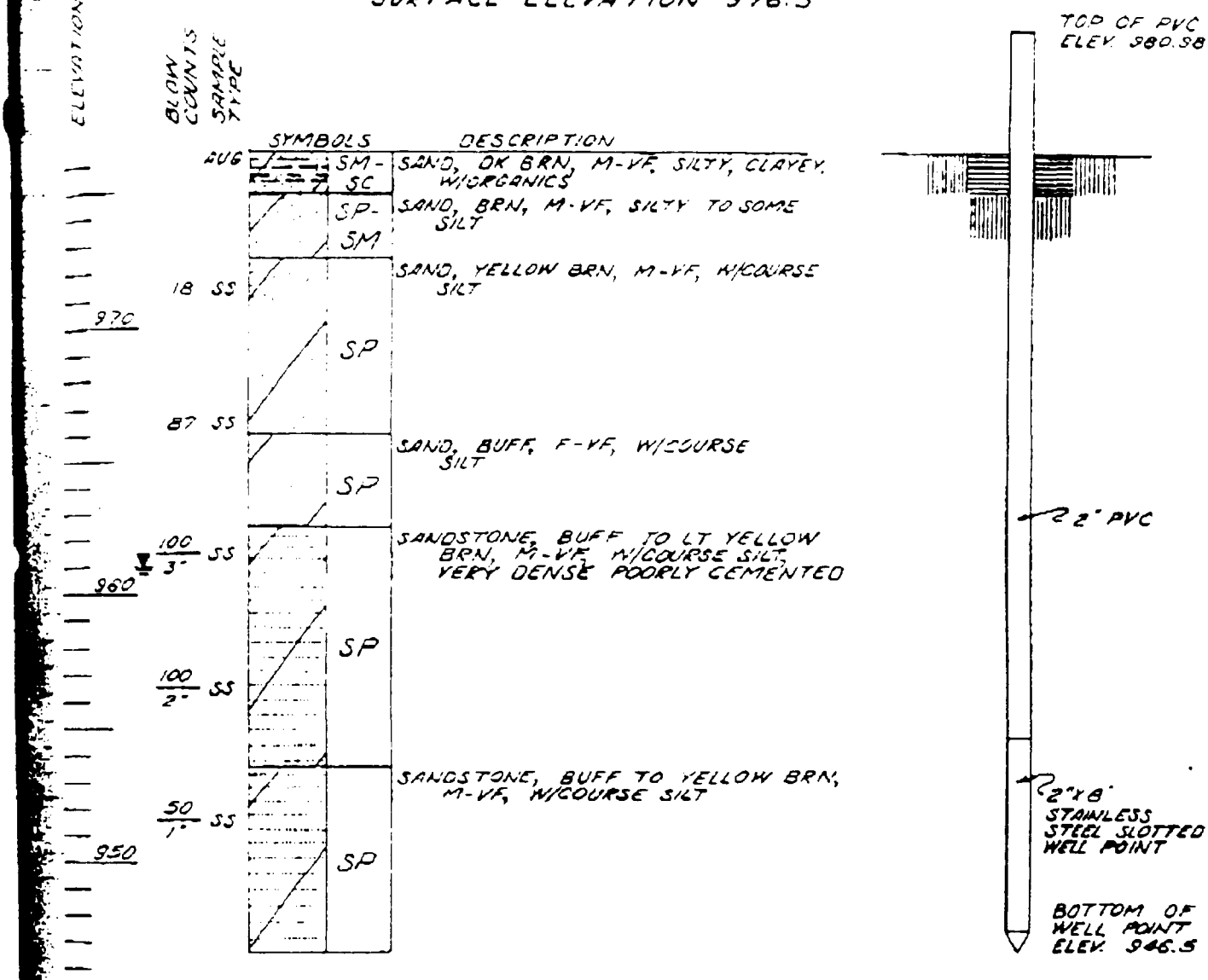
SS STEEL SPLIT SPOON SAMPLER

▼ WATER LEVEL

GRAPHICAL LOG OF BORING
PROPOSED TOMAH LANDFILL
ABANDONMENT
CITY OF TOMAH, WISCONSIN
DATE 1-08-76
JOB NO. 0 01-0080-165

BORING NO. DH-2

SURFACE ELEVATION 976.5



BORING NO DH-2
STARTED 12-30-75
COMPLETED 12-30-75
3 1/4" HSA TO 30.0'

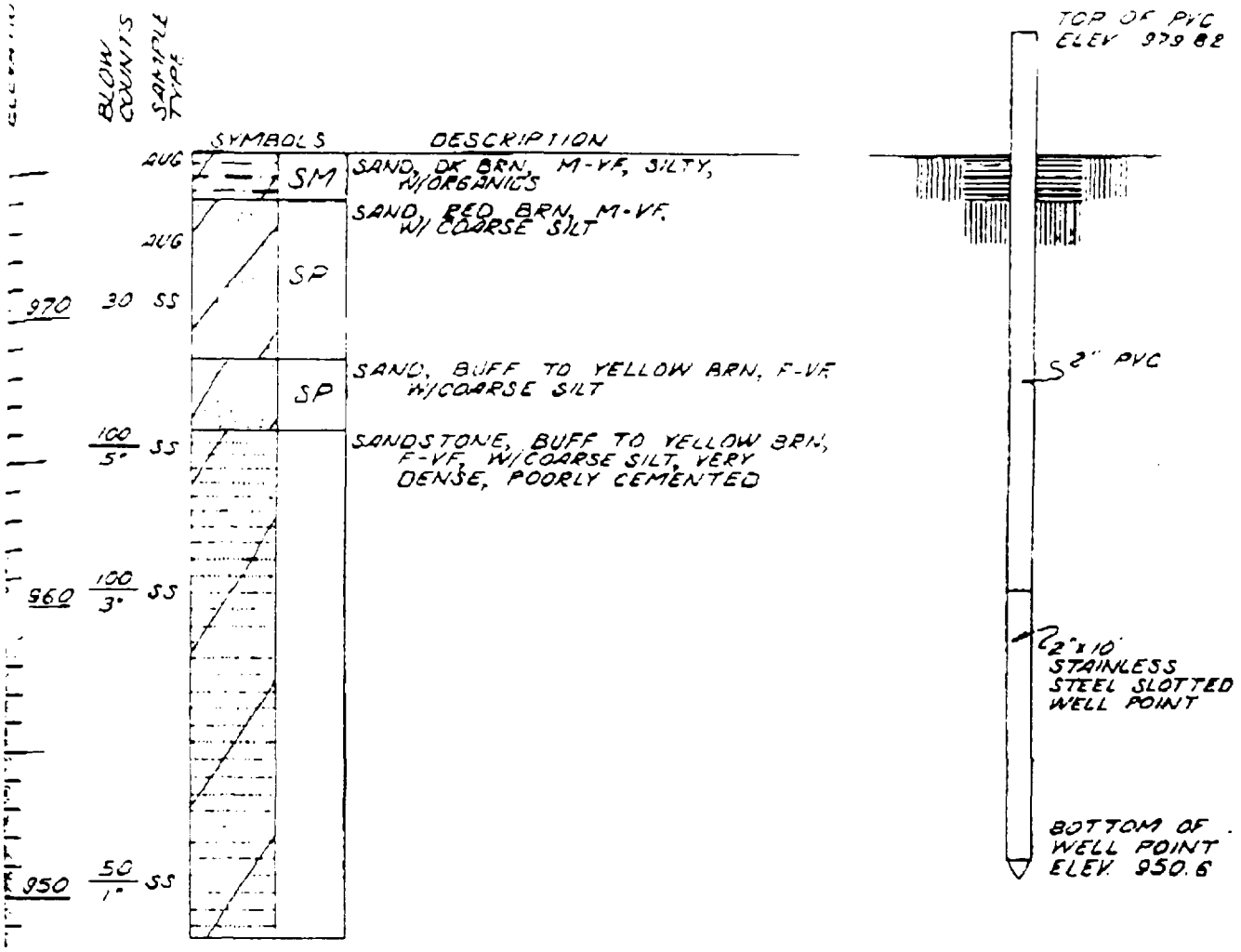
LEGEND

AUG AUGER
SS STEEL SPLIT SPOON SAMPLER
▼ WATER LEVEL

SCALE 1"-6'-0"

GRAPHICAL LOG OF BORING
PROPOSED TOMAH LANDFILL
ABANDONMENT
CITY OF TOMAH, WISCONSIN
DATE 1-08-75
JOB NO. 0 01-0080-165

BORING NO. CH-3
SURFACE ELEVATION 975.6



BORING NO. CH-3
STARTED 1-02-76
COMPLETED 1-02-76
3¼" HSA TO 27.0'

LEGEND

AUG AUGER
SS STEEL SPLIT SPOON SAMPLER

SCALE 1"=6'-0"

GRAPHICAL LOG OF BORING
PROPOSED TOMAH LANDFILL
ABANDONMENT
CITY OF TOMAH, WISCONSIN
DATE: 1-08-75
JOB NO. 0 01-0080-165

APPENDIX C

NET QUALITY ASSURANCE PLAN
STATEMENT OF QUALIFICATIONS

NATIONAL ENVIRONMENTAL TESTING, INC.

BARTLETT DIVISION

QUALITY ASSURANCE PLAN AND STATEMENT OF QUALIFICATIONS

Prepared by and property of:

National Environmental Testing, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, Illinois 60103

Brian A. Wanner
Division Manager
Bartlett Division

Robert N. Bucaro
NET Corporate
Director of Data Quality

Ray Kalicki
Quality Assurance Coordinator
Bartlett Division

This is copy 141 of 200 copies.

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SECTION 3

INTRODUCTION & SCOPE

INTRODUCTION

National Environmental Testing, Inc. (NET) currently operates many independent environmental laboratory divisions in the United States. Services consist primarily of multimedia analysis for metals, extractable and volatile organic compounds, and other conventional pollutants. These services are performed in support of various federal, state and local regulations and policies.

NET's National Quality Assurance Plan (NQAP) is based on the belief that quality is the key to maintaining leadership in the environmental analytical industry. The Corporate NQAP document provides the basic quality assurance framework and foundation that the Bartlett Division conforms to and builds upon.

Specific NQAP QA programs include:

- a Quality Assurance Plan (QAP) for each NET Division describing its capabilities, quality assurance objectives and the systems for meeting those objectives. In addition, Quality Assurance Project Plans (QAPPs) may be developed for specific client or project needs;

- Standard Operating Procedures (SOPs) for instrumentation, field services, analytical services and applicable administrative systems and,

- a consistent national quality control program which includes analysis of blanks, spikes, duplicates, the use of calibration verification standards and participation in NET's Interlaboratory Testing Program (ITP).

In addition to these programs, NET provides the following resources to support the Bartlett Division in our effort to deliver quality services:

- a Divisional and Corporate QA management structure;

- a laboratory information management system (LABSYS);

- laboratory facilities and instrumentation; and

- development and implementation of ongoing training programs.

The Bartlett Division of NET is committed to providing our customers with consistently high quality services. The purpose of this document is to describe the essential elements of the Bartlett Division's quality assurance programs.

QUALITY ASSURANCE POLICY STATEMENT

NET subscribes to the following policies as its standard of quality in its analytical program:

* It is our policy to maintain the national QA program throughout all NET laboratories, thereby providing our clients with consistent data of high, known quality;

* It is our policy to communicate the scope and content of our QA program internally to our employees and to train each employee in the application of our program;

* It is our policy that no data will be reported to our clients that has not met our full QA requirements;

* It is our policy to remove from commercial offering any analysis offered by a NET laboratory when that laboratory fails to demonstrate that it can consistently perform that analysis to NET's high standard of quality based upon NET's Interlaboratory Testing Program; and

* It is our policy that any employee aware of misrepresentation of facts regarding analytical results is required to notify his/her immediate supervisor or, if this is not feasible, another representative of the management of the company immediately.

QUALITY ASSURANCE PLAN (QAP) REVIEW

The Divisional Quality Assurance Coordinator is responsible for reviewing this document. He or she shall revise the Divisional QAP as required.

SECTION 4

Organization and Responsibility

National Environmental Testing, Inc. (NET) is a national network of high quality analytical laboratories. Each laboratory offers a wide variety of environmental testing services. The NET network has laboratories in 11 states. These laboratories are:

National Environmental Testing, Inc. Corporate Offices
Bartlett, Illinois

California

Burbank Division, Burbank, CA
Santa Rosa Division, Santa Rosa, CA

Illinois

Bartlett Division, Bartlett, IL
Chicago Division, Chicago, IL
Rockford Division, Rockford, IL

Indiana

Indianapolis Division, Indianapolis, IN

Iowa

Cedar Falls Division, Cedar Falls, IA

Massachusetts

Cambridge Division, Bedford, MA

Michigan

Auburn Hills Division, Auburn Hills MI

New Jersey

Thorofare Division, Thorofare, NJ

Ohio

Dayton Division, Dayton, OH

Oregon

Portland Division, Portland, OR

Texas

Austin Division, Austin, TX
Dallas Division, Carrolton, TX

Wisconsin

Watertown Division, Watertown, WI

NET is a wholly-owned subsidiary of the Ocean Group, plc, an international corporation providing environmental services, distribution services and marine services. Figure 4.1 is an organizational chart for National Environmental Testing, Inc. with respect to international ties.

The Bartlett Division of NET, formerly Aqualab Inc., was acquired by NET, Inc. in 1986. Laboratory operations for the Bartlett Division are carried out at 850 West Bartlett Road, Bartlett, Illinois 60103. The Corporate headquarters are located at 850 West Bartlett Road, Bartlett, IL 60103.

The Bartlett Division (see Figure 4.2 for organizational structure) is dedicated to delivering analytical data of the highest quality in combination with excellent customer service. Specifically, the Bartlett Division strives to achieve its goals by providing:

- A full-service laboratory for a wide spectrum of environmental testing.
- Experienced technical staff, project managers and customer service representatives.
- Various Certifications and Accreditations
- Substantial laboratory capacity
- A nationally-coordinated Quality Assurance Program

CUSTOMER SUPPORT SERVICES

An integral part of NET's approach is a strong commitment to customer service. For every account, a dedicated, experienced project manager and the customer service department serve as the vital communication links between the client and the Bartlett Division. Project managers are the customer's in-house advocates, facilitating program scheduling and logistics. The Bartlett Division's project managers, in conjunction with the customer service representatives, are responsive and capable of dealing with diversity. In addition, each project manager and customer service representative attends NET's customer service training program.

The project management teams are organized as a unit separate from the laboratory operations. In this manner, project managers work with the operations staff to schedule and track the progress of all projects. Contracts requiring the capacity of more than one NET laboratory can be managed by one project manager, combining the benefits of laboratory capacity and location with the convenience of a single point of contact.

NET-Bartlett provides the following services through the project management staff:

- Prepared sample bottles with proper preservatives (when appropriate) and shipping containers

- Sample pickup and delivery

- Report delivery including electronic deliverables

- Expedited sample turnaround times

- Report interpretation and expert witness support

The pursuit of superior customer services requires commitment, the extent of which is judged by the number and quality of the individuals dedicated to this task, and by the structure of the organization. NET-Bartlett clearly demonstrates a high level of commitment, and will constantly strive to seek new ways of redefining customer service.

ANALYTICAL CAPABILITIES

The Bartlett Division provides the comprehensive range of analytical services demanded by the environmental marketplace of the 1990's. Act-specific methodologies available at NET Bartlett include:

- **Clean Water Act (CWA).** The Bartlett Division performs analyses required for National Pollutant Discharge Elimination System (NPDES) permit holders for effluent monitoring, Municipal Industrial Pretreatment Monitoring, Stormwater monitoring and other assessment programs.

- **Resource Conservation and Recovery Act (RCRA).** The Bartlett Division offers a full range of analytical procedures required by RCRA regulations. These include waste characterization and groundwater monitoring.

- **Safe Drinking Water Act (SDWA).** The Bartlett Division is certified by the Illinois EPA to perform analysis on potable water samples. NET-Bartlett personnel are certified for the analysis of SDWA parameters such as metals, other inorganics, volatile organics, herbicides, pesticides and total and fecal coliform.

This integration of capabilities in the analytical services field is of particular interest to regulated industries, consulting engineering firms, governmental agencies and municipalities that routinely operate in several of these market segments. The ability of this laboratory to perform this array of procedures under a single contract is a part of the Bartlett Division's definition of service.

TECHNICAL SERVICES

NET-Bartlett provides expert environmental sampling and field analysis services. Capabilities include direct experience with all equipment required for the sampling of groundwater, industrial effluents, surface water, and waste drums. The sampling staff manages routine monthly, quarterly and biannual monitoring in coordination with the project management staff. Selected field personnel have successfully completed an Occupational Safety and Health Administration (OSHA) approved 40 hour Safety Training Workshop which fulfills the requirements of 29 CFR 1910.120 which covers Hazardous Waste Operations.

IDENTIFICATION OF RESPONSIBILITIES

President of NET, Inc.

The ultimate responsibility and control of all company programs, including quality assurance, lies with the President of NET, Inc. The President is responsible for developing long-range plans and policies for the entire country.

General Manager

The General Manager act as a liaison between the Division Manager and the President of NET, Inc. The General Manager assists the President in developing long-range plans and policies.

Director of Data Quality

Development, implementation and revision of the Quality Assurance (QA) Program, conducts system audits of NET Divisions, Manages the data quality audit program, Reviews NET SOPs, and monitoring of certification and accreditation status for NET Divisions are some of the responsibilities of the Director of Data Quality. The Director of Data Quality has the responsibility of developing long-range QA/QC programs and policies for the entire corporation.

Division Manager

The Division Manager is responsible for the operational, quality, financial, and human resource activities at the divisional level. In addition, the Division Manager is responsible for the growth and development of the division while assisting in the needs of other NET divisions.

Operations Manager

The Operations Manager is responsible for directing and monitoring analytical operations. These responsibilities include instituting of specific protocols with a strong commitment on quality, working through scheduling issues, evaluating and monitoring personnel, facilities, and equipment. The Operations Manager is also directly responsible for maintaining adequate personnel levels and directing training efforts.

Project Manager

The Project Manager is responsible for communicating the customer's needs to the divisional staff. These responsibilities include handling technical, contractual, pricing, and regulatory questions; coordinating of large projects; final data review, personnel supervision and report approval.

Department Supervisors

Supervisors provide support and direction of work flow to an assigned department on a routine basis. Each supervisor offers guidance, as necessary, in the selection of methodology, depth of analysis, and interpretation of results. They review completed work and monitor acceptance criteria for adherence. Each one assists in and directs orientation and training of new employees. They conduct performance appraisals and initiate personnel actions such as promotions. The Department supervisors provide first-line support of the quality assurance program.

Quality Assurance Coordinator

The Quality Assurance (QA) Coordinator monitors the overall performance of the laboratory, level of proficiency on performance evaluation samples (PE samples), certification status and method development/revision. The QA Coordinator implements the National and Divisional Quality Assurance Program at the divisional level. Internal audits, submission of PE samples, maintenance of current standard operating procedures and methods, and revision of method detection limit (MDL) studies are also some of the QA Coordinator's responsibilities.

Analyst

The analyst is responsible for implementing the quality assurance program in his/her normal schedule of analyses. The analyst is responsible for following the approved SOPs or methods, keeping the integrity of all records, notification to immediate supervisor of all out-of-control analyses and maintaining his/her respective instruments and equipment in appropriate working condition.

Field Service Personnel

Field service personnel are responsible for selecting/performing appropriate collection procedures, maintaining and calibrating equipment, keeping the integrity of all records, and following all established safety procedures to minimize hazards on the job.

Sample Manager

The Sample Custodian serves as a sample coordinator for the entire laboratory. The responsibilities of sample custodian include proper placement of samples within the laboratory and coordination of sample disposal while following proper handling of hazardous materials.

Clerical

Clerical personnel are responsible for accurately and promptly entering data to produce reports, documents and invoices.

Figure 4.1 Organization of National Environmental Testing, Inc.

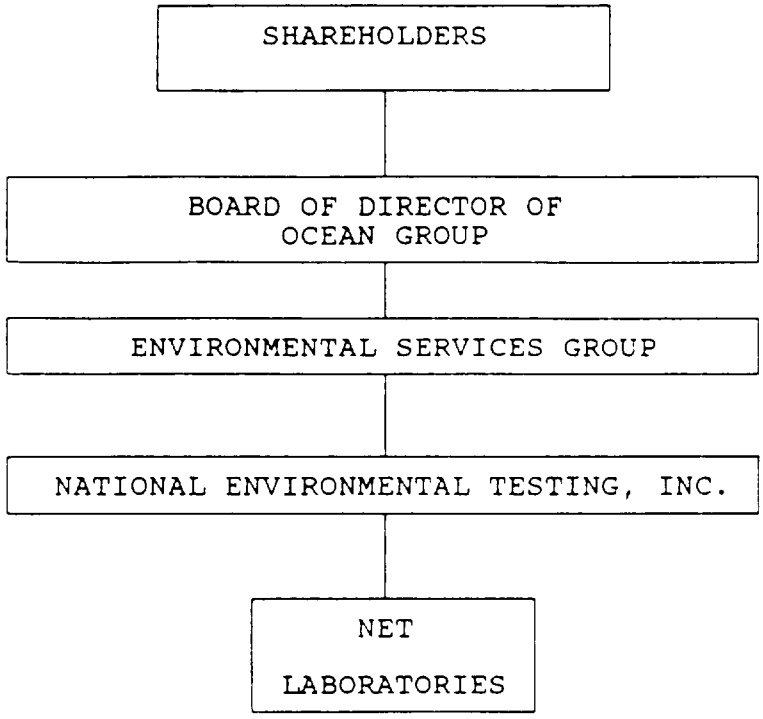
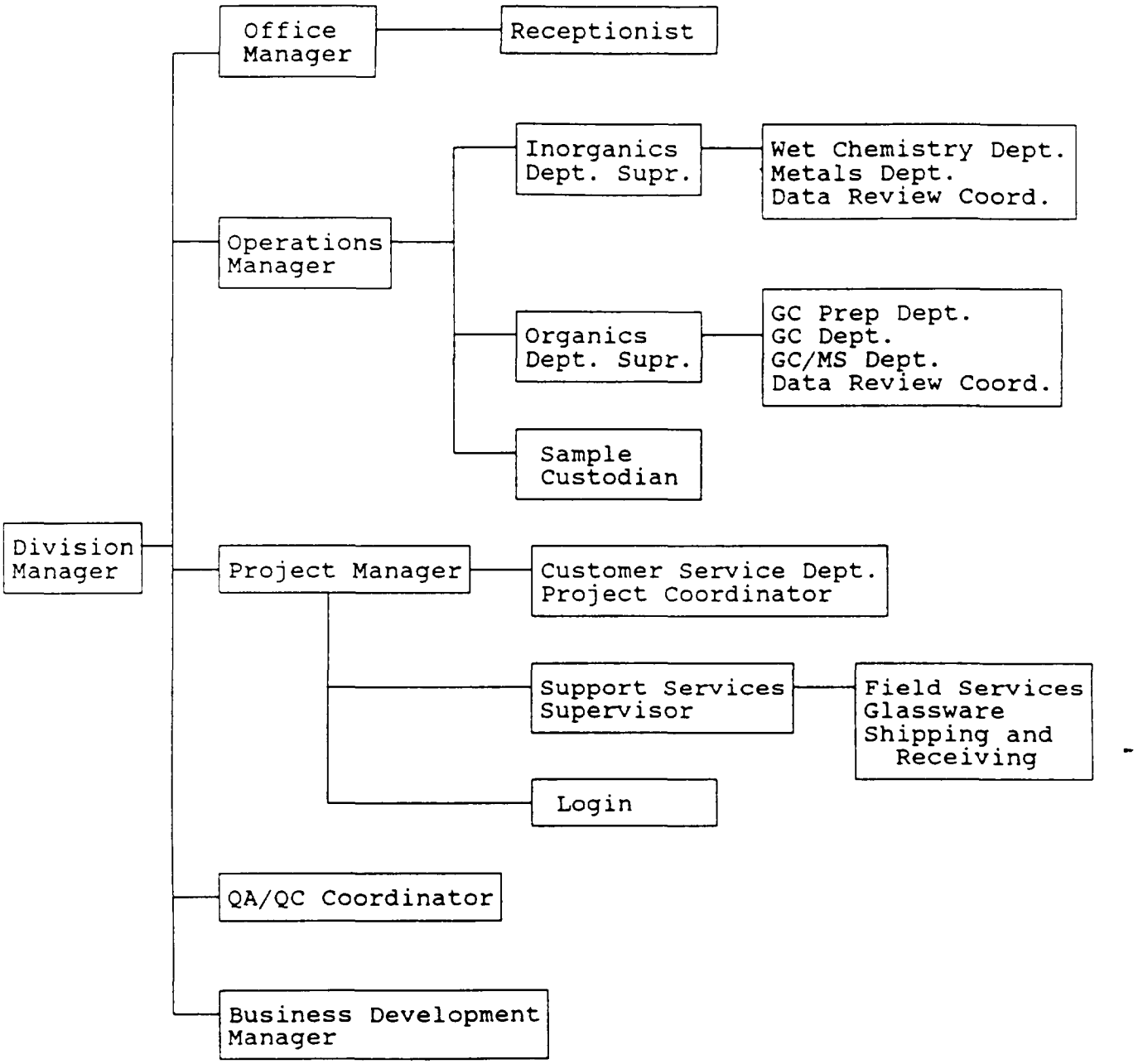


Figure 4.2 Organization of NET, Inc. - Bartlett Division



SECTION 5

QA Objectives for Measurement Data

The quality assurance objectives are to provide analytical data of known quality, to produce defensible analytical data and to produce data which meets the client's specific needs.

Data is assessed by precision, accuracy, representativeness and comparability. Data quality is also assessed by the analysis of Standard Reference Materials (SRMs) when available.

Precision

Precision is defined as the repeatability of a measurement. Precision is evaluated through the use of matrix spike/matrix spike duplicates or through duplicate analysis when matrix spiking is not possible. A matrix spike is a portion of sample which has a known quantity of analyte added to it. Matrix spikes also help assess the effects of the matrix on the analyte.

Accuracy

Accuracy is defined as how close an analysis is to the actual concentration of an analyte in the sample. Accuracy is evaluated through the use of matrix spike/matrix spike duplicates and/or through laboratory control samples especially when matrix spiking is not possible.

Representativeness

Representativeness is a measure of how closely a subsample of the original material reflects the distribution of the analyte originally present. For any project, sampling will be performed by the customer or the customer's contractors. Sample handling protocols (e.g., storage, preservation and transportation) have been developed to preserve the representativeness of the collected samples. Proper documentation will establish that protocols have been followed and sample identification and integrity assured. Every attempt will be made to ensure that the aliquots taken for analysis are representative of the samples received.

Comparability

The generation of comparable data is the goal of any analytical program. This characteristic implies strict adherence to published analytical protocols and use of standard reporting units. NET's QA/QC program is structured to ensure adherence to the proper analysis protocols and to fully document these procedures. The QA objective is that all data resulting from

these analyses be comparable with other measurements made by NET or another organization.

Completeness

Completeness is measured as the percentage of requested analyses delivered without defect, meeting all regulatory requirements. While this is highly dependent on sample matrix, NET Bartlett's goal for completeness is >95%. Completeness is measured as a percentage according to the following formula:

# of analyses delivered without defect/total # of analyses x 100

The QA objectives for accuracy and precision as well as the QA objectives for other quality control samples are summarized for the most commonly analyzed methods in Tables 5.1 to 5.21. Control charts are maintained to assess accuracy for some of the quality control samples listed in Tables 5.1 to 5.21. The laboratory may use control chart derived acceptance limits, when available and with approval from the QA Coordinator, in place of the limits listed here. Control chart assessment is described in detail in Section 14 of this QAP. Definitions of the quality control samples are found in section 11. Method references for those methods indicated in the following Tables can be found in Section 9.

Table 5.1

Quality Assurance Objectives for Wet Chemistry Parameters

Quality Control Measure	Analyte	Control Limits
Calibration Curve	All Possible	Correlation Coef. $\geq$ 0.995 (see also Sect. 8)
Initial Calibration Verification (ICV)	All Possible	Accuracy* 90 - 110 %
Reagent Blank	All Possible	< Reporting Limit
Method Blank	All Possible	< Reporting Limit
Continuing Calibration Verification (CCV)	All Possible	Accuracy** 90 - 110 %
Laboratory Control Sample (LCS)	All Possible	Accuracy** 80 - 120 %
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	All Possible	Accuracy 75 - 125 % Precision $\leq$ 20 % RPD
Duplicate	Parameters that cannot be spiked	Precision $\leq$ 20 % RPD

* The ICV accuracy acceptance limit is 90-110%. If statistics are supplied with the ICV, the control limit will be +/- 2SD from the mean. The mean is the average of the reporting laboratories.

** The indicated accuracy statements are interim guidelines. Statistical control limits may be established at +/- 3 standard deviations from the mean.

Table 5.2

Quality Assurance Objectives for Metals

Quality Control Measure	Analyte	Control Limits
Calibration Curve	All	Correlation Coefficient $\geq$ 0.995 (see also Sec. 8) (Not applicable to ICP)
Initial Calibration Verification (ICV)	All	Accuracy* 90 - 110 %
Reagent Blank	All	< Reporting Limit
Method Blank	All	< Reporting Limit
Continuing Calibration Verification (CCV)	All	Accuracy** 90 - 110 % ICP 90 - 110 % Flame AA 90 - 110 % Hydride AA 90 - 110 % Furnace AA 85 - 115 % Cold Vapor
Laboratory Control Sample (LCS)	All	Accuracy** 80-120%
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	All	Accuracy Advisory limits 80-120% ** Precision 20 % RPD***
Reporting Limit Verification Standard (RLVS)	All	Accuracy Advisory limits 75-125% **
Interference Check Standard (ICS)	ICP elements only	Accuracy** 80-120%

* The ICV accuracy acceptance limit is 90-110%. If statistics are supplied with the ICV, the control limit will be +/- 2SD from the mean. The mean is the average of the reporting laboratories.

** The indicated accuracy statements are interim guidelines. Statistical control limits may be established at +/- 3 standard deviations from the mean.

*** RPD-- Relative Percent Difference - Defined in Section 14.

Table 5.3

Quality Assurance Objectives for GC/MS Volatiles
Method 624/8240

Quality Control Measure	Analyte	Control Limits	
Holding Blank	All Analytes	< 5 X reporting limit for common lab contaminants. All others < RL.	
Method Blank	All Analytes	< 5 X reporting limit for common lab contaminants. All others < RL.	
Tune Check	Bromofluorobenzene	Must meet specific ion method specifications	
Calibration Curve	Calibration Check Compounds (CCCs)	< 30% RSD	
Initial Calibration Verification (ICV)	8240/624 analytes	Accuracy*	
Continuing Calibration Verification (CCV)	CCCs	< 25% RPD of RF** from the initial calibration	
		Accuracy	
		Water	Soil
Surrogates	1,2-Dichloroethane-d4	76-114%	70-121%
	Toluene-d8	88-110%	81-117%
	Bromofluorobenzene	86-115%	74-121%
		Water/Soil	
Matrix Spike (MS) ***	1,1-Dichloroethylene	1-234%	
	Trichloroethylene	71-157%	
	Benzene	37-151%	
	Toluene	47-150%	
	Chlorobenzene	37-160%	
Matrix Spike Duplicate (MSD)		Precision < 20% RPD Advisory limits	

* Statistically determined control limits developed with accuracy being acceptable within +/- 2 standard deviaitons from the mean.

** RF- Response Factor

*** An expanded list of spike recovery acceptance limits is available in NET SOP 8240.

Table 5.4

Quality Assurance Objectives for GC/MS Volatiles
Method 524.2

Quality Control Measure	Analyte	Control Limits
Method Blank	All	< Reporting Limit*
Tune Check	Bromofluorobenzene	Must meet the specific ion criteria set by the method
Initial Calibration Verification (ICV)	524.2 analyted in standard	Accuracy**
Continuing Calibration Verification (CCV)	All	< 30 % of RF from the initial calibration
Surrogates	4-Bromofluorobenzene 1,2-Dichlorobenzene-d4	Accuracy 80-120% Accuracy 80-120%
LCS	All 524.2 Target Compounds	Accuracy 80-120%
Sample Duplicate	All 524.2 Calibrated Compounds	Precision ≤ 20% RPD Advisory

* Common lab contaminants such Methylene chloride and acetone are commonly seen in blanks at anywhere from <RL to 5 X RL. Corrective action is taken to reduce as much as possible these contaminant levels.

** Statistically determined control limits developed with accuracy being acceptable within +/- 2 standard deviations from the mean.

Table 5.5

Quality Assurance Objective for GC/MS Semi-Volatiles
Methods 625/8270

Quality Control Measure		Analyte	Control Limits
Method Blank		All	< Reporting Limit
Tune Check		DFTPP	Must meet the specific ion criteria set by the method
Calibration Curve		Calibration Check Compounds	< 30% RSD (CCCs)
ICV		8270/625 analytes in standard	Accuracy*
Continuing Calibration Verification (CCV)		CCCs	RF < 30% from the initial calibration
			Water / Soil
Surrogates	Nitrobenzene-d5		35-114% / 23-120%
	2-Fluorobiphenyl		43-116% / 30-115%
	p-Terphenyl		33-141% / 18-137%
	Phenol-d6		10-94 % / 24-113%
	2-Fluorophenol		21-110% / 25-121%
	2,4,6-Tribromophenol		10-123% / 19-122%
			Water/Soil
Matrix Spike (MS) and Laboratory Control Standard (LCS) **	1,2,4-Trichlorobenzene		44-142%
	Acenapthene		47-145%
	2,4-Dinitrotoluene		39-139%
	Pyrene		52-115%
	n-Nitroso-di-n-propylamine		1-230%
	1,4-Dichlorobenzene		20-124%
	Pentachlorophenol		14-176%
	Phenol		5-112%
	2-Chlorophenol		23-134%
	4-Chloro-3-methylphenol		22-147%
	4-Nitrophenol		1-132%
			Precision (RPD) Water/Soil
Matrix Spike Duplicate	8270/625 Compounds		< 50% Advisory

* Statistically determined control limits developed with accuracy being acceptable within +/- 3 standard deviations from the mean.

** An expanded list of spike recovery acceptance limits is available in the NET 8270 SOP.

Table 5.6

Quality Assurance Objectives for GC Pesticides and PCB's
Method 608/8080

Quality Control Measure	Analyte	Control Limits	
Method Blank	All	< Reporting Limit	
Initial Calibration Verification (ICV)	All	RF %Difference <25%	
Continuing Calibration Verification (CCV)	All	RF %Difference <15%	
		Aqueous	Soil
Surrogates	*TCMX	22 - 154%	31 - 128%
	*Decachlorobiphenyl	23 - 154%	29 - 128%
		Accuracy	
Laboratory Control Standard (LCS) (Single Component Pesticides) and Matrix Spike/ Matrix Spike Duplicate - (Single component Pesticides)	Aldrin	42 - 122 %	
	a-BHC	37 - 134 %	
	b-BHC	17 - 147 %	
	g-BHC	19 - 140 %	
	d-BHC	32 - 127 %	
	Chlordane	45 - 119 %	
	4,4'-DDD	31 - 141 %	
	4,4'-DDE	30 - 145 %	
	4,4'-DDT	25 - 160 %	
	Dieldrin	36 - 146 %	
	Endosulfan I	45 - 153 %	
	Endosulfan II	Det- 202 %	
	Endosulfan Sulfate	26 - 144 %	
	Endrin	30 - 147 %	
	Heptachlor	34 - 111 %	
	Heptachlor Epoxide	37 - 142 %	
	Toxaphene	41 - 126 %	
	**Endrin Aldehyde	Mean +/- 3 Std. Dev	
	**Methoxychlor	Mean +/- 3 Std. Dev	
	Aroclor 1016	50 - 114 %	
	Aroclor 1221	15 - 178 %	
	Aroclor 1232	10 - 215 %	
	Aroclor 1242	39 - 150 %	
	Aroclor 1248	38 - 158 %	
	Aroclor 1254	29 - 131 %	
	Aroclor 1260	8 - 127 %	

* The control limits for these QC samples are determined by control charting with mean +/- 3SD.
** To be determined by control chart ranges.

Table 5.7

Quality Assurance Objectives for PCB's by
EPA 608/SW-846;8080/ASTM D-4059

Quality Control Measure	Analyte	Control Limits	
Method Blank	All	< Reporting Limit	
Initial Calibration Verification (ICV)	Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260	RF %Difference < 25%	
Continuing Calibration Verification (CCV)	Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260	RF %Difference < 15%	
		Oil	Wipes
Surrogates	*TCMX	31 - 128%	31 - 128%
	*Decachlorobyphenyl	29 - 128%	29 - 128%
Matrix Spike (MS)	Aroclor 1242	Accuracy 39-150%	
	Aroclor 1260	Accuracy 8-127%	
Laboratory Control Standard (LCS)	Aroclor 1242 Aroclor 1260	Same as MS	
Matrix Spike Duplicate Analysis (MSD)	Aroclor 1242 Aroclor 1260	Same as MS	

* The control limits for these QC samples are determined by control charting with mean +/- 3SD.

Table 5.8

Quality Assurance Objectives for GC
Method 504

Quality Control Measure	Analyte	Control Limits
Method Blank	EDB*/DBCP**	< Reporting Limits
Initial Calibration Verification (ICV)	EDB/DBCP	RF %Difference <20% from initial calibration
Continuing Calibration Verification (CCV)	EDB/DBCP	RF %Difference <20% from initial calibration
Low Level Verification	EDB/DBCP	Accuracy 60-140%
Laboratory Fortified Blank (LFB)	EDB/DBCP	Accuracy 60-140%
Laboratory Fortified Sample (LFS)	EDB/DBCP	Accuray ***

* EDB - Ethylenedibromide
** DBCP- Dibromochloropropane
*** To be determined by control charting.

Table 5.9

Quality Assurance Objectives for BETX*
Method SW-846-8020/EPA 602

Quality Control Measures	Analyte	Control Limit	
Method Blank	Benzene Ethyl Benzene Toluene Xylene	< Reporting Limit	
Initial Calibration Verification (ICV)	Benzene Ethyl Benzene Toluene Xylene	<25% RSD** from the true value	
Continuing Calibration Verification (CCV)	Benzene Ethyl Benzene Toluene Xylene	RF %Difference <15% from initial calibration	
		Aqueous	Soil
Surrogate	1,4-Bromofluorobenzene	84 - 122%	42 - 127%
		Aqueous	Soil
MS/MSD	Benzene	78 - 121%	73 - 125%
	Ethyl Benzene	80 - 121%	70 - 129%
	Toluene	77 - 122%	73 - 126%
	Xylene	75 - 122%	72 - 121%

* BETX- Benzene, Ethyl Benzene, Toluene and Xylene

** RSD - Relative Standard Deviation

Table 5.10

Quality Assurance Objectives for Polynuclear Aromatic Hydrocarbons (PAHs) by Method 8310

Quality Control Measures	Analyte	Control limit	
Method Blank	All	< Reporting Limit	
Initial Calibration Curve	All	<20% RSD compared to mean RF	
Continuing Calibration Verification (CCV)	All	<15% Diff for RF	
		Accuracy	
		Aqueous	Non-Aqueous
Surrogate*	2-Fluorobiphenyl	37-122%	43-125%
		Accuracy	
		Aqueous	Non-Aqueous
LCS and MS/MSD*	Napthalene	23-139%	32-137%
	Acenapthylene	42-142%	57-122%
	Acenapthene	39-150%	53-151%
	Fluorene	46-137%	61-135%
	Phenanthrene	69-129%	54-171%
	Anthracene	58-132%	66-132%
	Fluoranthene	79-124%	41-179%
	Pyrene	79-126%	57-162%
	Benzo(a)Anthracene	79-131%	62-155%
	Chrysene	82-125%	61-145%
	Benzo(b)Fluoranthene	77-127%	58-137%
	Benzo(k)Fluoranthene	79-124%	62-130%
	Benzo(a)Pyrene	74-124%	59-141%
	Dibenzo(a,h)Anthracene	70-119%	58-131%
	Benzo(g,h,i)Perylene	73-128%	60-139%
	Indeno(1,2,3-cd)Pyrelene	78-123%	51-140%

* The control limits for these QC samples are determined by control charting, mean +/- 3SD.

Table 5.11

Quality Assurance Objectives for Chlorinated Herbicides by Methods 509 B/SW-846 8150

Quality Control Measure	Analyte	Control Limits
Method Blank	All	< Reporting Limit
Initial Calibration Verification (ICV)	All	RF %Difference <25% from initial calibration
Continuing Calibration Verification (CCV)	All	RF %Difference <15% from initial calibration
Surrogate	*DCAA	Accuracy Waters: 23-131% Soils: 0-215%
Matrix Spike/ Matrix Spike Duplicate. (MS/MSD)	All	Accuracy Waters Soils 2,4-D 0-107% 0-145% 2,4,5-TP 0-113% 0-141%

* Control limits to be determined by control charting.

Table 5.12

Quality Assurance Objectives Herbicides
Method EPA 515.1

Quality Control Measures	Analyte	Control Limit
Laboratory Reagent Blank (LRB)	All	< Reporting Limit
Initial Calibration Verification (ICV)	All	<20% RSD from the mean RF
Continuing Calibration Verification (CCV)	All	Accuracy: 80-120% Recovery
Surrogate	DCAA	Accuracy: 70-130% Recovery
Laboratory Fortified Blank (LFB)	All	Accuracy*
Laboratory Fortified Sample (LFS)	All	Accuracy*

* To be determined by control charting.

Table 5.13

Quality Assurance Objectives Carbamates
Method EPA 531.1

Quality Control Measures	Analyte	Control Limit
Laboratory Reagent Blank (LRB)	All	< Reporting Limit
Initial Calibration Verification (ICV)	All	<20% RSD from the mean RF
Continuing Calibration Verification (CCV)	All	RF %Difference <20% from initial calibration
Laboratory Fortified Blank (LFB)	All	Accuracy: 70-130%
Laboratory Fortified Sample (LFS)	All	Accuracy: 70-130%
Monitoring Compound (Surrogate)	BDMC	Accuracy: 70-130%

Table 5.14

Quality Assurance Objectives for Total Petroleum Hydrocarbons (TPH) by the GC TPH California Method

Quality Control Measures	Analyte	Control Limit	
Method Blank	All	< Reporting Limit	
Initial Calibration Verification (ICV)	All	Accuracy:	90-110% Recovery
Continuing Calibration Verification (CCV)	All	RF %Difference <10% from initial calibration	
		Aqueous Accuracy	Soil Accuracy
MS/MSD and LCS	Gas	10 - 155%	32 - 156%
	Diesel	10 - 173%	45 - 145%

Table 5.15

Quality Assurance Objectives for Pesticides/PCBs
Method EPA 508

Quality Control Measures	Analyte	Control Limit
Method Blank	All	< Reporting Limit
Initial Calibration Verification (ICV)	All	%RSD < 20% from the mean RF
Continuing Calibration Verification (CCV)	All	Accuracy: 80 - 120% Recovery
Surrogate		Accuracy: 70 - 130% Recovery
Laboratory Fortified Blank (LFB)	All	Accuracy*
Laboratory Fortified Sample (LFS)	All	Accuracy*

* To be determined by control charting.

Table 5.16

Quality Assurance Objectives for PCB Screen
Method EPA 508A

Quality Control Measures	Analyte	Control Limit
Method Blank	Decachloro-biphenyl (DCB)	< 0.025 mg/uL
Initial Calibration Verification (ICV)	All	%RSD < 6% from the mean RF, %RSD < 0.2% between standards
Continuing Calibration Verification (CCV)	All	RF < 20% Diff from the mean RF, RT = +/- 3SD from the mean RF
Laboratory Fortified Blank (LFB)	All	Accuracy*
Laboratory Fortified Sample (LFS)	All	Accuracy*

* To be determined by control charting.

Table 5.17

Quality Assurance Objectives for Pesticides
Method EPA 507

Quality Control Measures	Analyte	Control Limit
Laboratory Reagent Blank (LRB)	All	< Reporting Limit
Initial Calibration Verification (ICV)	All	<20% RSD from the mean RF
Continuing Calibration Verification (CCV)	All	Accuracy: 80 - 120% Recovery
Surrogate		Accuracy: 70 - 130% Recovery
Laboratory Fortified Blank (LFB)	All	Accuracy*
Laboratory Fortified Sample (LFS)	All	Accuracy*

* To be determined by control charting.

Table 5.18

Quality Assurance Objectives for the Determination of Fecal Coliforms Method 909C (SM 16th Edition)

Quality Control Measure	Analyte	Control Limits
Media pH Control with every media batch	All Media	+/- 0.2 pH units
Filtration Blanks every 20 samples	Fecal Coliforms	< 0 Colony/100 mL
Positive Control end of the day	Fecal Coliforms	Presence
Monthly Duplicate Count	Fecal Coliforms	+/- 10% Diff

Table 5.19

Quality Assurance Objectives for the Determination of Total Coliforms Method 909A (SM 16th Edition)

Quality Control Measure	Analyte	Control Limits
Media pH Control with every media batch	All Media	+/- 0.2 pH units
Filtration Blanks every 20 samples	Total Coliforms	< 0 Colony/100 mL
Positive Control end of the day	Total Coliforms	Presence
Monthly Duplicate Count	Total Coliforms	+/- 10% Diff

Table 5.20

Quality Assurance Objectives for the Determination of Standard Plate Counts Method 907 (SM 16th Edition)

Quality Control Measure	Analyte	Control Limits
Media pH Control with every media batch	All Media	+/- 0.2 pH units
Negative Blank one per day	Any Colony	Absence
Negative Air Blank one per day	Any Colony	Absence
Positive Control one per day	All	Presence
Monthly Duplicate Counts	All	+/- 10% Diff

Table 5.21

Quality Assurance Objectives for the Determination of Total Coliform and Eschiricia Coli - Colilert* Procedure

Quality Control Measure	Analyte	Control Limits
Positive Control per shipment lot	Each New Lot	Presence
Poitive Control daily - at the end of the day	Each Analysis	Presence
Negative Control daily - at the end of the day	Each Analysis	Absence

* Colilert is a registered trademark of ENVIRONETICS, INC. Colilert is referred to as MMO-MUG by the EPA in the Federal Registry and as Chromogenic Substrate by Standard methods. Colilert is referred to as Autoanalysis Colilert Prescence-Abscence (AC P-A) method by the Illinois Pollution Control Board, Title 35, Subtitle F, Chapter 1, Section

611.Appendix D, November 19, 1992.

The Bartlett Division of NET has quality assurance objectives for bacteriological analyses. For a description of the quality assurance objectives for Coliform analyses and Standard Plate Counts the State of Illinois Rules and Regulations, Title 35: Environmental Protection, Subtitle F: Public Water Supplies, Chapter I: Pollution Control Board microbiology sections should be consulted.

SECTION 6

Sampling Procedure

A critical factor which may affect the final conclusions made from a sample is the type of procedure used for sample collection. To assure the reliability of the data, quality control measures are included in the field sampling completed by NET personnel. Result validity is aided by proper calibration, sampling, handling, identification of samples and chain-of-custody procedures.

Guidelines for a particular project are based upon site specific requirements. In most instances, the field personnel rely on Standard Operating Procedures (SOPs) for sampling with the client determining the sampling location. The field sampling SOPs detail the collection, maintenance and specific calibration procedures for sampling equipment.

Selection as to the type of sampling procedure to be used is dependent on the project. All sampling is performed to directly meet the needs of the client, account for the type of analysis being requested, and meet the EPA requirements. Background information is gathered to determine the type of project required and the safety risks (if any) involved in sampling. Information must be collected and documented as to the types of hazards that may be present during sample collection.

The material from which sampling equipment is constructed can affect analytical results. The material selected for sampling certain parameters must not contaminate or alter the sample being collected, and must be easily cleaned or disposed of so that samples are not cross-contaminated. Field personnel select equipment based upon the medium and parameters being sampled.

In the instance where NET personnel are not the individuals collecting the sample, instructions which are specific to the parameter being collected are submitted to the client for assistance. The types of instructions available range from organic volatiles to bacteriological collections.

NET recognizes that proper containers and appropriate preservatives are necessary for the collection of valid samples. In addition, the samples must be analyzed within a specified time frame for each parameter. The Sample Preservative Summary (Table 6.1) details recommended sample containers, preservatives, holding times and the volume of sample needed for aqueous samples. Consult the method for specific requirements. Consult the method or SW-846 for non-aqueous samples.

During the training period for new field personnel, the employee receives instruction on sample site selection, selection and preparation of equipment and materials, sample collection for various media, preservation, documentation, and sample handling.

Training of new field personnel includes completion of an Occupational Safety and Health Administration (OSHA) approved 40 hour Safety Training Workshop. Also Bartlett's OSHA approved Hazard Communication Program for field services includes client specific safety information where appropriate. Confined Space Entry training is received in conformance with all applicable OSHA requirements.

Table 6.1
Sample Preservation Summary

Parameter	Container [G=Glass] [P=Plastic]	Preservative	Recommended Holding Time	Minimum Volume
Bacteriological				
Coliform, fecal	P,G (Sterile)	4°C $Na_2S_2O_3$	6 hr.	250 ml
Coliform, total	P,G (Sterile)	4°C $Na_2S_2O_3$	30 hr.	100 ml
E. Coli	P,G (Sterile)	4°C $Na_2S_2O_3$	6 hr.	250 ml
Physical Properties				
Color	P,G	4°C	2 days	500 ml
Hardness	P,G	4°C HNO_3	6 mo.	150 ml
Hydrogen ion (pH)	P,G	None	Immediately	NA
Residue, total (TS)	P,G	4°C	7 days	250 ml
Residue, filterable (TDS)	P,G	4°C	7 days	250 ml
Residue, non-filterable (TSS)	P,G	4°C	7 days	250 ml
Residue, settleable (SS)	P,G	4°C	2 days	1 L
Residue, volatile (TVS)	P,G	4°C	7 days	250 ml
Specific conductance	P,G	4°C	28 days	250 ml
Temperature	P,G	None	Immediately	NA
Turbidity	P,G	4°C	2 days	500 ml
Inorganic Non-Metallics				
Acidity	P,G	4°C	14 days	1 L

Table 6.1 (Cont.)

Parameter	Container [G=Glass] [P=Plastic]	Preservative	Recommended Holding Time	Minimum Volume
Inorganic Non-Metallics (cont.)				
Alkalinity	P,G	4°C	14 days	1 L
Ammonia	P,G	4°C H2SO4	28 days	1 L
Bromide	P,G	None	28 days	150 ml
Chloride	P,G	None	28 days	250 ml
Chlorine, total residual	P,G	None	Immediately	1 L
Cyanide, total and amenable	P,G	4°C NaOH	14 days	1 L
Fluoride	P	None	28 days	1 L
Kjeldahl and organic Nitrogen	P,G	4°C H2SO4	28 days	1 L
Nitrate	P,G	4°C	2 days	250 ml
Nitrate-Nitrite	P,G	4°C H2SO4	28 days	250 ml
Nitrite	P,G	4°C	2 days	250 ml
Orthophosphorus	P,G	4°C	2 days	1 L
Phosphorus, total	P,G	4°C H2SO4	28 days	250 ml
Silica	P,G	4°C	28 days	250 ml
Sulfate	P,G	4°C	28 days	500 ml

Table 6.1 (Cont.)

Parameter	Container [G=Glass] [P=Plastic]	Preservative	Recommended Holding Time	Minimum Volume
Inorganic Non-metallics (cont.)				
Sulfide	P,G	4°C zinc acetate, NaOH	7 days	100 ml
Sulfite	P,G	4°C	Immediately	250 ml
Surfactants (MBAS)	P,G	4°C	2 days	1 L
Metals				
Chromium VI	P,G	4°C	24 hrs.	250 ml
Mercury	P,G	HNO3	28 days	250 ml
Metals, except above	P,G	HNO3	6 mos.	1 L
Organics				
Halogenated Volatiles (8240/624)	G	HCl, 4°C	14 days	1 X 40 ml
Non-Halogenated Volatiles (8240/624)	G	HCl, 4°C	14 days	1 X 40 ml
Aromatic Volatiles (8240/624)	G	HCl, 4°C	14 days	1 X 40 ml
Volatile Organics (8240/624)	G	HCl, 4°C	14 days	1 X 40 ml
Drinking Water VOC's (Non-Chlorinated) - 524.2	G	HCl, 4°C	14 days	1 X 40 ml
Drinking Water VOC's (Chlorinated) - 524.2	G	4°C HCL; Ascorbic Acid	14 days	1 X 40 ml
Trihalomethanes (Chlorinated) - 524.2	G	4°C HCL; Ascorbic Acid	14 days	1 X 40 ml
Organochlorine Pesticides/PCBs (8080/608)	G Amber	4°C	7 days Pre-Extraction 40 days Post-Extraction	1 L

Table 6.1 (Cont.)

Parameter	Container [G=Glass] [P=Plastic]	Preservative	Recommended Holding Time	Minimum Volume
Organics (Cont.)				
Organochlorine Pesticides/PCBs (508)	G Amber	4°C	7 days Pre-Extraction 40 days Post-Extraction	1 L
Nitrogen-Phosphorous Pesticides (507)	G Amber	4°C	14 days Pre-Extraction 40 days Post-Extraction	1 L
PCBs - Screening Only (508A)	G Amber	4°C	14 days Pre-Extraction 30 days Post-Extraction	1 L
Chlorinated Herbicides (8150/509B)	G Amber	4°C	7 days Pre-Extraction 40 days Post-Extraction	1 L
Herbicides (515.1)	G Amber	4°C	14 days Pre-Extraction 40 days Post-Extraction	1 L
Semivolatile Organics Acid/Base/Neutral Extractables (8270/625)	G Amber	4°C	7 days Pre-Extraction 40 days Post-Extraction	1 L
EDB and DBCP (504)	G Amber	HCl, 4°C	28 days	1 X 40 ml
Polynuclear Aromatic Hydrocarbons (8310)	G Amber	4°C	7 days Pre-Extraction 40 days Post-Extraction	1 L
Carbamates (531.1)	G Amber	4°C, mono-chloroacetic acid	28 days	1 X 40mL
TPH, GC (California Method)	G Amber	4°C	7 days Pre-Extraction 40 days Post-Extraction	1 L

Table 6.1 (Cont.)

Parameter	Container [G=Glass] [P=Plastic]	Preservative	Recommended Holding Time	Minimum Volume
Other Organic				
Biochemical Oxygen Demand	P,G	4°C	2 days	1 L
Biochemical Oxygen Demand, carbonaceous	P,G	4°C	2 days	1 L
Chemical Oxygen Demand	P,G	4°C H_2SO_4	28 days	250 ml
Oil and Grease	G	4°C H_2SO_4 or HCl	28 days	1 L
Total Organic Carbon	P,G	4°C H_2SO_4	28 days	1 L
Phenols	G	4°C H_2SO_4	28 days	1 L
TCLP				
TCLP Extraction	G	4°C		100 g

	From Field Collection to: TCLP Extraction	From TCLP Extraction to: Preparative Determination	From Preparative Extraction to: Determinative Analysis	Total Elapsed Time
Volatiles	14 days	NA	14 days	28 days
Semivolatiles	14	7 days	40	61
Herbicides	14	7 days	40	61
Mercury	28	NA	28	56
Metals, except mercury	180	NA	180	360

SECTION 7

Sample Custody

Introduction

Laboratory analyses are performed to produce data representative of the conditions under which the sample was obtained. To provide representative samples for analysis, both field and laboratory personnel must perform their activities well.

Chain of Custody Procedure

The purpose of the chain of custody is to supply a detailed record of the sample description, collection information, and any transfer of custody from sample collection through sample receipt into the laboratory.

When samples arrive at NET-Bartlett, the login personnel documents any observed problems with the shipping containers on the custody form. Sample label information is checked against the custody record and the condition of the samples noted. If a sample is outside holding time or is not preserved properly, a Customer Service Representative will contact the client. At that point, a decision will be made whether or not to proceed with sample analysis.

Samples are then logged into the laboratory data system which assigns a unique lab sample number. When sample login is complete, the system generates a bottle label which includes the unique lab sample number, the client identification, the sample description, and the date of collection. Lab sample labels are affixed to corresponding bottles and compared to the bottle identification for verification.

Once the sample login is complete, the sample custodian or designee is responsible for proper placement of samples within the laboratory. Samples will be stored under appropriate conditions prior to preparation and analysis. Sample access is limited to NET personnel. Furthermore, security of the laboratory is maintained by an electonic alarm system. In the instance where a sample is transferred to an outside laboratory, sample identification records are verified against the sample label and transfer documents maintained.

Field Collection and Shipping

The collection person first must consider the analyses to be performed so that proper sample containers and shipping containers are assembled and the proper preservatives are added to containers. In addition, field logs and record sheets, chain of custody forms, and analysis request records must be compiled. All records required for documentation of field collection must be completed by the field personnel. The primary documenting

record is the chain of custody. After completing the chain of custody information, the field personnel must review all sample labels for correct information and preservation.

Samples must be placed in containers compatible with the intended analysis and must be preserved properly. Also, sample collection must allow for the time interval between acquiring the sample and analysis (holding time) so that the sample is representative. Table 6.1 provides requirements for various analytical parameters with respect to the type of containers, preservation methods, and maximum holding times between collection and analysis.

Polyethylene or glass containers are required and, in most cases, samples must be cooled to 4°C.

Figure 7.1 represents the NET chain of custody form which may be used by personnel in collecting and shipping samples.

The chain of custody form shall be signed by each individual who has the sample in his possession:

- The chain of custody record shall be initiated in the field by the person collecting the sample, for every sample.

- If the person collecting the sample does not transport the samples to the laboratory or the sample containers for shipment, the first block for "Relinquished By, Received By" shall be signed by the field personnel.

- The person transporting the samples to the laboratory by delivering them for shipment shall sign the record form as "Relinquished By".

- If the samples are shipped to the laboratory by commercial carrier, the chain of custody form shall be sealed in a watertight container, and the shipping containers shall be sealed before giving it to the carrier.

- If the samples are shipped by commercial carrier, the waybill shall serve as an extension of the chain of custody record between the final field custodian and the laboratory.

- If the samples are transported directly to the laboratory, the chain of custody shall be kept in possession of the person delivering the samples.

- Upon receipt in the laboratory, the login personnel shall open the shipping containers, compare the contents with the chain of custody record, and sign, date, record cooler temperatures and make note of any discrepancies on the chain of custody form.

- If discrepancies occur, the samples in question shall be segregated from the normal sample storage and appropriate notification made immediately.

- The chain of custody records shall be maintained with the records for a specific project, becoming part of the project file.

Multipart chain of custody forms may be used so that one copy can be returned to the person shipping the samples after receipt in the laboratory.

Laboratory Document Control

The goal of the document control program is to assure that all documents for a group of samples will be accounted for when the project is completed. All observations and results recorded by NET are entered into pre-printed data sheets or into permanent labortory notebooks. Data records are referenced with the sample, date and analyst's initials.

All documentation in notebooks and other documents shall be in ink. If an error is made in a notebook, that person should place one line through the error, enter the correct information, and initial and date the correction.

Laboratory Storage of Samples

The primary considerations for sample storage are:

- maintaining prescribed temperature which, if required, typically is 4°C, and

- extracting and/or analyzing samples within the prescribed holding time for the parameters of interest.

The temperature and holding time requirements of Table 6.1 shall be used. Placing samples in the proper storage environment is the responsiblity of the sample custodian. Should a sample need immediate attention due to a holding time or collection problem, the login personnel will notify either the Operations Manager or the Project Manager for assistance.

Sample Disposal

Several possibilities for sample disposition exist:

- the sample may be consumed completely during analysis,

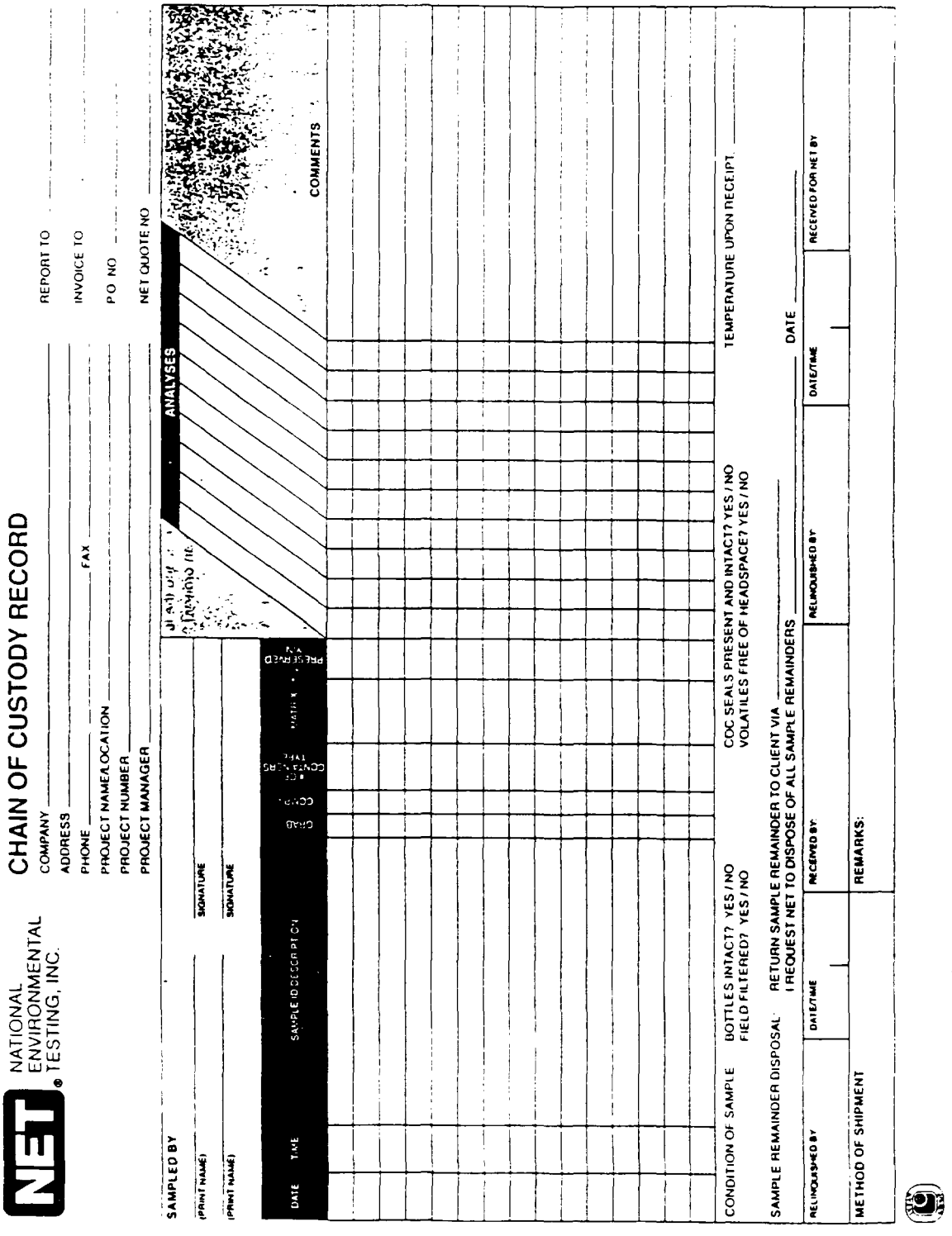
- sample may be returned to the customer or location of sampling for disposal, or

- the sample may be stored after analysis. (samples are normally maintained no longer than five weeks from receipt unless otherwise requested).

Proper environmental control and holding times must be observed if re-analysis is anticipated. If re-analysis is not anticipated, environmental conditions for storage need not be observed. The NET SOP on sample disposal describes the details of these procedures.

The Operations Manager shall determine disposition of samples if not specified on the chain of custody.

Figure 7.1 Chain of Custody Form



SECTION 8

Calibration Procedures and Frequency

This section describes the calibration procedures used for the majority of the instrumentation in the laboratory as well as the frequency of such calibrations.

All materials used for instrument calibration will be of highest purity available from a commercial source or from the U.S. Environmental Protection Agency Pesticide and Industrial Chemicals Repository or the National Bureau of Standards.

GAS CHROMATOGRAPH/MASS SPECTROMETER (GC/MS)

Calibration Standards

Stock solutions are high purity standards. The supplier, date prepared, expiration date, preparation procedure and the analyst who prepared the standard are documented in the standard preparation record book. All stock solutions are recorded in the standards preparation record book and given a unique identification number. From the stock, working standards are prepared by diluting the stock. The process is as follows:

1. Prepare stock solutions if necessary. Stock Solutions for 8240/624 have a shelf life of 2 months. A typical replacement rate for these stock solutions is approximately every two weeks.

2. Prepare working standards by dilution of the stock standards or purchased ampules when appropriate. 524.2 standards are prepared from ampules. The shelf life of the ampules are the stated expiration date on the ampules.

3. Verify the working standards by analysis of an initial calibration verification sample using either EPA QC concentrates or other independent standards.

Calibration Procedure

An initial 5 point calibration curve is performed on each GC/MS instrument using calibration standards prepared as described above. Following the initial calibration the curve is monitored by the following quality control measures.

At the beginning of each 12 hour shift that volatile organic analyses are performed using Methods 624/8240, the GC/MS system must be checked to verify that acceptable performance criteria are obtained for Bromofluorobenzene (BFB). This performance

check is also required at the beginning of each 8 hour run sequence for method 524.2 for drinking water samples. The performance test must be passed before analyzing any samples, blanks or standards. If the tune requirements cannot be met system maintenance may be necessary followed by a new 5 point calibration of the instrument.

At the beginning of each 12 hour shift that semi-volatile organic analyses are performed using Methods 625/8270, the GC/MS system must be checked to see if acceptable performance criteria are achieved for Decafluorotriphenylphosphine (DFTPP). The performance criteria must be achieved before any sample, blanks, or standards are analyzed. If the tune requirements cannot be met system maintenance may be necessary followed by a new 5 point calibration of the instrument.

If tune acceptance criteria are met, a continuing calibration check standard (CCC) is analyzed next. The method specific CCC acceptance criteria must be met before analysis of samples can continue. For Methods 624, 8240, 524.2, 625, and 8270 System Performance Check Compounds (SPCC) are also analyzed and must have acceptable results as compared to the analytical methods criteria. If the CCC or SPCC criteria cannot be met then system maintenance may be required followed by a new calibration of the instrument.

All initial calibration data as well as the subsequent calibration verification data are documented.

GAS AND LIQUID CHROMATOGRAPHY

Calibration Standards

Stock solutions are prepared from high purity standards. The supplier, date prepared, expiration date, preparation procedure and the analyst who prepared the standard are documented in the standard preparation record book. All stock solutions are recorded in the standard preparation record book and given a unique identification number. From the stock, working standards are prepared by diluting the stock.

Calibration Procedure

The instruments are calibrated using a minimum of 5 standards. The Relative Standard Deviation %RSD between the response factors for the calibration standards must meet the linearity specifications of the analytical method or of the bench SOP. The average response factor for the calibration is then used in calculating the concentrations of unknowns based upon their response.

The instruments are calibrated after a CCV fails or any major system change such as the replacement of a column.

SECTION 9

Analytical Procedures, Facilities and Equipment

The Bartlett Division of NET maintains a full range of modern, state-of-the-art equipment and instrumentation. Additional equipment and instrumentation is available at other NET laboratories located throughout the United States.

Listings of major analytical instrumentation and equipment for both the laboratory and field operations are found in Tables 9.1-9.6.

The Bartlett Division occupies approximately 16,700 square feet of laboratory space and employs 32 employees, full and part time. The building floor plan is shown in Figure 9.1.

The Bartlett Division of NET uses a wide range of analytical methodology including many EPA approved methods for the analysis of wastewater, groundwater, drinking water, soils and hazardous waste. Tables 9.7 - 9.9 list the parameters, methodology, referenced method and the associated reporting limits for the metals, wet chemistry and the organics departments.

TABLE 9.1

Equipment Listing for the Metals Department

Group : Furnace
- Graphite Furnace Atomic Absorption; PE Model 5000
- Programmer; Perkin Elmer (PE) HGA 500
- Autosampler; PE AS40
- Printer; Citezen 120D

Group : Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES)
- ICP; Perkin Elmer (PE) 40, sequential
- Autosampler; PE AS-51
- Data System; Wyse Video 7 UGA16
- Printer; Okidata Microline 390

Group : Flame
- Atomic Absorption unit; Perkin Elmer (PE) 460
- Burner Control; PE Serial #79771
- Printer; Model 056-1005

Group : Automated Cold Vapor (Mercury)
- Atomic Absorption unit; PE 460
- Cold Vapor Pump; Serial # 64793

Group : Hydride accessories
- Atomic Absorption unit; PE 460
- Vapor Generator (Hydride); PE MHS-10

Group : Metals Preparation Laboratory
- Balance; Mettler PM 600
- Hot Plates (2); Thermolyne 2200
- Hood Vents (3)

TABLE 9.2

Equipemnt Listing for the Wet Chemistry Department

Description	Manufacturer	Model
TOC Analyzer	Dohrman DC-80	9500
Spectrophotometer; Flow Thru	Milton Roy	401
Spectrophotometer; Drop In Cell	Milton Roy	301
pH Meter	Orion Research	501
Fluoride Probe	Orion Research	720A
Turbidimeter	Hach	2100A
Conductivity Meter; Digital	VWR	23226-523
Flash Point Analyzer	Pensky Martin	K162
Oxygen Meter	YSI Scientific	54A
Oxygen Meter	YSI Scientific	50B
Balance; Toploader	Mettler	PM600
Balance; Analytical	Mettler	H30
COD Digestion Block	Tecam	DB3H
TKN Digestion Block	Technicon	BD20/40
Muffle Furnace	Lindberg	51828
Oven; 180°c	Thelco, GCA/Precision Scientific	16
Oven; 105°c	Blue M, Stabil-therm	
Water Bath	Napco	220A
ZHE Extractor (8)	Millipore	NC1-13D3
TCLP Tumblers (16)		
Platform Shaker	Eberbach	

TABLE 9.2 (CONT.)

Description	Manufacturer	Model
Cyanide Distillation Rigs (16)		
Phenol/Ammonia Distillation Rigs (10)		
Hood Vents (3)		
BACTERIOLOGY		
Autoclave	Market Forge Sterilmatic	STME
Microscope (2)	Graft Apsco Nikon	I9416 42722
Colony Counter	Fisher	7-910
Incubator	Fisher	170
Water Bath (2)	Blue M Lab-Line Instruments	1110-1 3000-2

Table 9.3

Equipment Listing for the GC/MS Department

Unit: GC/MS-A Primary: 524.2 aqueous volatiles
Secondary: 624/8240 aqueous volatiles
- GC- Hewlett Packard Model 5890
- MS- Hewlett Packard Model 5970
- Liquid Sample Concentrator; Tekmar LSC-2000
- Purge Device; ALS 2016
- Data System; Hewlett Packard 1000, RTE-6 Series
- Data Storage; Hewlett Packard 7970E Mag Tape

Unit: GC/MS-C Primary: 624/8240 aqueous volatiles
Secondary: 8240 non-aqueous volatiles
- GC- Hewlett Packard Model 5890
- MS- Hewlett Packard Model 5970
- Liquid Sample Concentrator; Tekmar LSC-2000
- Purge Device; ALS 2016
- Heater; Tekmar 3310
- Data System; Hewlett Packard 1000, RTE-6 Series
- Data Storage; Hewlett Packard 7970E Mag Tape

Table 9.3 (CONT.)

Unit: GC/MS-D (625/8270 Semi-Volatiles)
- GC- Hewlett Packard Model 5890 Series II
- MS- Hewlett Packard Model 5970
- Autosampler; Hewlett Packard Model 7673A
- Data System; Hewlett Packard Model 1000 RTE-A Series
- Data Storage System; HP 7979 Mag Tape
- Data Storage System; Hewlett Packard Model 7974

Unit: GC/MS-E (625/8270 Semi-Volatiles)
- GC- Hewlett Packard Model 5890 Series II
- MS- Hewlett Packard Model 5970
- Autosampler; Hewlett Packard Model 7673A
- Data System; Hewlett Packard Model 1000 RTE-A Series
- Data Storage System; HP 7979 Mag Tape

Unit: GC/MS-F Primary: 8240 non-aqueous volatiles
Secondary: 624/8240 aqueous volatiles
- GC- Hewlett Packard Model 5890
- MS- Hewlett Packard Model 5970
- Liquid Sample Concentrator; Tekmar LSC-2000
- Purge Device; ALS 2016
- Heater; Tekmar 3310
- Data System; Hewlett Packard 1000, RTE-6 Series
- Data Storage; Hewlett Packard 7970E Mag Tape

Balance: Toploader; Mettler PM600

Hood Vent (1)

TABLE 9.4

Equipment Listing for the GC/LC Department

Unit: GC-A (8150 Herbicides, 8080/608 Pesticides/PCBs)
- GC-Hewlett Packard Model 5890
- Autosampler; Hewlett Packard Model 7673A
- Detector; Dual Column ECD

Unit: GC-B (505, 507 and 508 Pesticides/PCBs)
- GC-Hewlett Packard Model 5890
- Autosampler; Hewlett Packard Model 7673A
- Detector; Dual Column ECD

TABLE 9.4 (CONT.)

Unit: GC-C (8080/608 Pesticides/PCBs, 8150 Herbicides)
- GC-Hewlett Packard Model 5890
- Autosampler; Hewlett Packard Model 7673A
- Detector; Dual Column ECD

Unit: GC-D (Glycols/Alcohols)
- GC-Hewlett Packard Model 5890 Series II
- Autosampler; Tekmar 7673A
- Detector; Single Coumn FID

Unit: GC-E (8020 BETX, pVOCs, MTBE, Trimethylbenzenes)
- GC-Hewlett Packard Model 5890
- Purge Device; ALS 2016
- Heater; Tekmar 3310
- Detector; Dual PID

Unit: GC-F (TPH-GC)
- GC-Hewlett Packard Model 5890
- Autosampler; Hewlett Packard Model 7673A
- Detector; Single Column FID

Unit: GC-G (Method Development)
- GC-Hewlett Packard Model 5890
- Detector; NPD/FPD

Unit: GC-H (Method Development)
- GC-Hewlett Packard Model 5890 Series II
- Detector; FID/PID

Unit: HPLC-A (8310)
- LC-Hewlett Packard Model 1090
- Detector; Hewlett Packard 1046A diode array and flourescence detectors

Unit: HPLC-B (531.1 Carbamates, 547 Glyphosates)
- LC-Hewlett Packard Model 1090 Series II
- Detector; Hewlett Packard 1046A diode array and fluorescence detectors

TABLE 9.5

Equipment Listing for the Organic Preparation Department

Description	Manufacturer	Model
Sonicator	Fisher Scientific	Ultrasonic FS-14
Gel Permeation Cleanup (GPC) Device	ABC	Autoprep 1002B
Centrifuge	Dynac	Serial #15816
Oven, 105°c	Fisher	Isotemp 349
Balance; Toploader (1)	Mettler	PM600
Hood Vents (7)		

TABLE 9.6

Equipment Listing for the Field Sampling Department

Description	Manufacturer	Model
Autosamplers (3)	ISCO	2910
Autosamplers (1)	ISCO	1580
Conductivity Meter	VWR	23226-523
pH Meter	Accumet	1001
Pressure Filtration Device	Geotech	
Field Sampling Vehicles (3)	Chevy and Ford Vans 4WD Chevy Pickup	
2 Inch PVC Bailer (1)		
2 Inch Stainless Steel Bailers (2)		
Downrigger with Tripod;	Big Jon	
Depth Meter with 250 ft. teflon tape	Solinst	
Depth Meter	Soiltest	DR-760A

TABLE 9.6 (CONT.)

Teflon Coated Stainless Steel Line - 100 ft.	
12 Gallon Carboy	Nalgene
Toolbox with Tools	

Table 9.7

Summary of Methodology and Reporting Limits
NET Midwest, Bartlett Division Wet Chemistry Department

Parameter	Method References	Reporting Limits	
Acidity as CaCO3 Titrimetric	305.1 / 2310 (1,2)	5 50	mg/L ug/g
Alkalinity as CaCO3 Titrimetric	310.1 / 2320 (1,2)	5 50	mg/L ug/g
Ash	2540 (2)	0.01	%
Biological Oxygen Demand, D.O. elect. 5 day	405.1 / 5210 (1,2)	2	mg/L
Bottom Sediment & Water	D-96 (5)	0.1	%
Bromide Colorimetric	405 (1)	0.50	mg/L
Carbonaceous BOD5 D.O. electrode	405.1 / 5210 (1,2)	2	mg/L
Cation Exchange Capacity (CEC)	9080 (6)	1.0	meq/ 100g
Chemical Oxygen Demand (COD) Spectrophotometric	410.4 / 5220D (1,2)	20 3,350	mg/L ug/g
Chloride; Mercuric Nitrate Titration	325.3 / 4500-Cl C (1,2)	5 50	mg/L ug/g

Table 9.7 (Cont.)

Parameter	Method References	Reporting Limits	
Chlorine DPD colorimetric	4500-Cl G (2)	0.10	mg/L
Coliform, Fecal membrane filter	909C (9)	1/100mL	
Coliform, Total membrane filter	909A (9)	1/100mL	
Coliform, Colilert	See Table 5.21	prescence/ abscence	
Color platinum cobalt units	110.2 (1)	10	APHA
Conductivity umhos 25 degrees C	120.1 / 2510 B (1,2)	1	umhos/cm
Cyanide, Total and Amenable Spectrophotometric	335.1, 335.2 / 4500-CN A,B,C,E,G / 9010 (1,2,6)	0.002 0.10	mg/L ug/g
Cyanide, Reactive	7.3. (6)	0.25	ug/g
Density	2710 F (2)	0.1	g/cc
Extraction (TCLP) Inorganic/Organic/ZHE	1311 (7)	---	
Flash Point Pensky/Martin C.Cup	1010 (6)	25	degrees C
Fluoride, F- Ion Selective Elect.	340.2 / 4500-F C (1,2)	0.05	mg/L
Hardness, Total EDTA Titration	130.2 / 2340 B,C (1,2)	5	mg/L
Hexavalent Chromium Colorimetric	3500-Cr D / 7196 (2,6)	0.01 4	mg/L ug/g
Hydrogen Ion, pH Electrometric	150.1 / 9045 (1,6)	0.01	units

Table 9.7 (Cont.)

Parameter	Method References	Reporting Limits	
Methylene Blue Activated Substance (MBAS)	425.1 / 5540 C (1,2)	0.05	mg/L
Nitrogen, Ammonia Distillation, Nesslerization	350.2 / 4500-NH3 B,C (1,2)	0.50 15	mg/L ug/g
Nitrogen, Kjeldahl Semi-Automatic Block Digestor	351.2 / 4500-Norg B (1,2)	0.50	mg/L
Nitrogen, Nitrate + Nitrite Manual Cd Reduction	353.3 / 4500-NO3 E (1,2)	0.10	mg/L
Nitrogen, Nitrate + Nitrite Electrode Method	4500-NO3 D (2)	0.50	mg/L
Nitrogen, Nitrite Spectrophotometric	354.1 / 4500-NO2 (1,2)	0.01	mg/L
Odor Threshold odor	140.1 / 2150 B (1,2)		T.O.N.
Oil & Grease Partition Grav. Soxhlet Hydrocarbons (nonpolar O&G)	 413.1 / 5520 B (1,2) 5520 D (2) 5520 F (2)	 5 0.005 5	 mg/L % mg/L
Paint Filter Liquids Test	9095 (6)	Pass or Fail	
Phenolics Spectrophotometric, Manual 4-AAP with Distillation	420.1 / 5530 B,C / 9065 (1,2,6)	0.020 0.50	mg/L ug/g
Phosphorus, Ortho and Total, Persulfate Digestion/Ascorbic Acid, Single Reagent	365.2 / 4500-P A,B,E (1,2)	0.02 4.0	mg/L ug/g

Table 9.7 (Cont.)

Parameter	Method References	Reporting Limits	
Residue, Filterable Gravimetric 180 C	160.1 / 2540 C (1,2)	25	mg/L
Residue, Non-Filterable Gravimetric 105 C	160.2 / 2540 D (1,2)	5	mg/L
Residue, Settleable Volumetric, Imhoff	160.5 / 2540 F (1,2)	0.1	mL/L
Residue, Total Gravimetric 105 C	160.3 / 2540 B (1,2)	0.01 25	% mg/L
Residue, Volatile Gravimetric 550 C	160.4 / 2540 E (1,2)	0.01 25	% mg/L
Silica Molybdosilicate	370.1 / 4500-Si D (1,2)	0.2	mg/L
Specific Gravity	2710 F (2)	0.1	g/cc
Standard Plate Count	907 (9)	1/100mL	
Sulfate Turbidimetric	375.4 / 4500-SO4 2- E / 9038 (1,2,6)	10 100	mg/L ug/g
Sulfide Methylene Blue	376.2 / 4500-S2- C,D (1,2)	0.10 1.0	mg/L ug/g
Sulfide Reactive	7.3. (6)	2.5	ug/g
Sulfite Titrimetric	377.1 / 4500-SO3 2- B (1,2)	2	mg/L
Temperature	170.1 / 2550 B. (1,2)	0.1	degrees C
Total Organic Carbon (TOC)	5310 C (2)	1.0	mg/L
Turbidity Nephelometric	180.1 / 2130 B (1,2)	0.1	NTU

Actual quantitation limits may be higher due to matrix interference or sample dilution. Adjustment of RLs for solid samples are based on sample weights.

Table 9.7 (Cont.)

Method References:

1. U.S. EPA 1983. Methods for Chemical Analysis of Water and Wastes. EMSL Cincinnati, Ohio, EPA-600/4-79-020.

2. APHA. 1989. Standard Methods for the Examination of Water and Wastewater. Seventeenth Edition. American Public Health Association, Washington, D.C.

3. NIOSH Manual of Analytical Methods, Third Edition.

4. Code of Federal Regulations. 40 CFR Part 761

5. ASTM - American Society for Testing Materials

6. U.S. EPA 1986. Methods for Evaluating Solid Waste-Physical/Chemical Methods. SW-846 Third Edition. Office of Solid Waste, U.S. EPA, Washington, D.C.

7. Code of Federal Regulations. 40 CFR Part 126 Appendix 2; Method 1311

8. U.S. EPA, EPA/600/4/84-008

9. APHA. 1985. Standard Methods for the Examination of Water and Wastewater. Sixteenth Edition. American Public health Association, Washington, D.C.

Table 9.8

Summary of Analytical Methodology and Reporting Limits
NET - Bartlett Division Metals Department

PARAMETER	METHOD REFERENCE	REPORTING LIMITS
Aluminum (Al)		
Direct Aspiration AA	202.1/ 7020 (1,2)	0.50 mg/L 25 ug/g
ICP	200.7/ 6010 (3,2)	0.10 mg/L 0.5 ug/g
Antimony (Sb)		
Graphite Furnace AA	204.2/ 7041 (1,2)	0.0050 mg/L
ICP	200.7/ 6010 (3,2)	0.50 mg/L 25 ug/g
Arsenic (As)		
Graphite Furnace AA	206.2/ 7060 (1,2)	0.0050 mg/L
ICP	200.7/ 6010 (3,2)	0.20 mg/L 10 ug/g
Barium (Ba)		
Direct Aspiration AA	208.1/ 7080 (1,2)	0.50 mg/L 25 ug/g
ICP	200.7/ 6010 (3,2)	0.020 mg/L 1.0 ug/g
Beryllium (Be)		
Direct Aspiration AA	210.1/ 7090 (1,2)	0.0050 mg/L 0.25 ug/g
ICP	200.7/ 6010 (3,2)	0.0050 mg/L 0.25 ug/g
Boron (B)		
ICP	200.7/ 6010 (3,2)	0.050 mg/L 2.5 ug/g
Cadmium (Cd)		
Direct Aspiration AA	213.1/ 7130 (1,2)	0.050 mg/L 2.5 ug/g
ICP	200.7/ 6010 (3,2)	0.010 mg/L 0.50 ug/g
Calcium (Ca)		
Direct Aspiration AA	215.1/ 7140 (1,2)	1.0 mg/L 50 ug/g
Chromium (Cr)		
Direct Aspiration AA	218.1/ 7190 (1,2)	0.040 mg/L 2.0 ug/g
ICP	200.7/ 6010 (3,2)	0.040 mg/L 2.0 ug/g
Cobalt (Co)		
Graphite Furnace AA	219.2/ 7201 (1,2)	0.20 mg/L 10 ug/g
ICP	200.7/ 6010 (3,2)	0.10 mg/L 5.0 ug/g
Copper (Cu)		
Direct Aspiration AA	220.1/ 7210 (1,2)	0.050 mg/L 2.5 ug/g
ICP	200.7/ 6010 (3,2)	0.010 mg/L 0.50 ug/g

Table 9.8 (Cont.)

PARAMETER	METHOD REFERENCE	REPORTING LIMITS
Iron (Fe)		
Direct Aspiration AA	236.1/ 7380 (1,2)	0.10 mg/L 5.0 ug/g
ICP	200.7/ 6010 (3,2)	0.050 mg/L 2.5 ug/g
Lead (Pb)		
Direct Aspiration AA	239.1/ 7420 (1,2)	0.10 mg/L 5.0 ug/g
Graphite Furnace AA	239.2/ 7421 (1,2)	0.0050 mg/L
ICP	200.7/ 6010 (3,2)	0.080 mg/L 4.0 ug/g
Magnesium (Mg)		
Direct Aspiration AA	242.1/ 7450 (1,2)	1.0 mg/L 50 ug/g
Mercury (Hg)		
Manual Cold Vapor AA	245.1/ 7471, 7470 (1,2)	0.0002 mg/L 0.02 ug/g
Molybdenum (Mo)		
Direct Aspiration AA	246.1/ 7480 (1,2)	0.50 mg/L 25 ug/g
ICP	200.7/ 6010 (3,2)	0.10 mg/L 5.0 ug/g
Nickel (Ni)		
Direct Aspiration AA	249.1/ 7520 (1,2)	0.10 mg/L 5.0 ug/g
ICP	200.7/ 6010 (3,2)	0.050 mg/L 2.5 ug/g
Potassium (K)		
Direct Aspiration AA	258.1/ 7610 (1,2)	1.0 mg/L 50 ug/g
Selenium (Se)		
Hydride Gen AA (Mod.)	3114B/ 7741 (5,2)	0.0050 mg/L
ICP	200.7/ 6010 (3,2)	0.10 mg/L 5.0 ug/g
Silicon (Si)		
Direct Aspiration AA	3111 D (5)	5.0 mg/L 250 ug/g
Silver (Ag)		
Direct Aspiration AA	272.1/ 7760 (1,2)	0.040 mg/L 2.0 ug/g
Graphite Furnace AA	272.2/ 7761 (1,2)	0.0050 mg/L
ICP	200.7/ 6010 (3,2)	0.050 mg/L 2.5 ug/g
Sodium (Na)		
Direct Aspiration AA	273.1/ 7770 (1,2)	1.0 mg/L 50 ug/g
Strontium (Sr)		
ICP	200.7/ 6010 (3,2)	0.010 mg/L 0.50 ug/g
Thallium (Tl)		
Direct Aspiration AA	279.1/ 7840 (1,2)	0.50 mg/L 25 ug/g
Graphite Furnace AA	279.2/ 7841 (1,2)	0.0050 mg/L
ICP	200.7/ 6010 (3,2)	0.20 mg/L 10 ug/g

Table 9.8 (Cont.)

PARAMETER	METHOD REFERENCE	REPORTING LIMITS	
Tin (Sn)			
Direct Aspiration AA	282.1/ 7870 (1,2)	2.0 mg/L	100 ug/g
ICP	200.7/ 6010 (1,2)	1.0 mg/L	50 ug/g
Titanium (Ti)			
Direct Aspiration AA	283.1 (1)	1.0 mg/L	50 ug/g
ICP	200.7/ 6010 (3,2)	0.020 mg/L	1.0 ug/g
Vanadium (V)			
ICP	200.7/ 6010 (3,2)	0.050 mg/L	2.5 ug/g
Zinc (Zn)			
Direct Aspiration AA	289.1/ 7950 (1,2)	0.050 mg/L	2.5 ug/g
ICP	200.7/ 6010 (3,2)	0.020 mg/L	1.0 ug/g
PREPARATIONS FOR METALS ANALYSES			
Total Dissolved Metals 0.45 u filtration	4.1.1 (1)		
Total Metals, Aqueous ICP, Flame AA	4.1.3/ 3010 (1,2)		
Total Metals, Aqueous GFAA	3020 (2)		
Total Metals, Solids	3050 (2)		
Arsenic/Selenium Digestions	7061/7741 (2)		

Method References:

1. Methods for Chemical Analysis of Water and Wastes. Cincinnati, Ohio: U.S. Environmental Protection Agency, 1979. EPA-600/4-79-020.

2. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. 3rd Edition. Washington, DC: U.S. Environmental Protection Agency, 1986. SW-846.

3. Methods for the Determination of Metals in Environmental Samples. EMSL U.S. EPA; June 1991 EPA-600/4-91-010.

4. ASTM- American Society for Testing and Materials, D1428-82.

5. Standard Methods for the Examination of Water and Wastewater. 17th Edition. Washington, DC: American Public Health Association, 1989.

Table 9.9

Summary of GC/MS and GC Methodology and Reporting Limits
NET Midwest, Bartlett Division Organics Departments

Parameter	Method References	Reporting Limits			
VOLATILE ORGANIC ANALYTES					
Acrolein	624, 8240 (1,2)	50	ug/L	50	ug/kg
Acetone	624, 8240	20	ug/L	50	ug/kg
Acrylonitrile	624, 8240	50	ug/L	50	ug/kg
Benzene	624, 8240 524.2 (3)	1.0 0.5	ug/L ug/L	2.0	ug/kg
Bromobenzene	524.2	1.0	ug/L		
Bromochloromethane	524.2	1.0	ug/L		
Bromodichloromethane	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Bromoform	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Bromomethane	624, 8240 524.2	1.0 2.0	ug/L ug/L	5.0	ug/kg
2-Butanone (MEK)	624, 8240	20	ug/L	50	ug/kg
n-Butylbenzene	524.2	1.0	ug/L		
tert-Butylbenzene	524.2	1.0	ug/L		
sec-Butylbenzene	524.2	1.0	ug/L		
Carbon disulfide	624, 8240	20	ug/L	20	ug/kg
Carbon tetrachloride	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Chlorobenzene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Chloroethane	624, 8240 524.2	2.0 2.0	ug/L ug/L	7.0	ug/kg

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits	
2-Chloroethylvinyl ether	624, 8240	2.0 ug/L	5.0 ug/kg
Chloroform	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
Chloromethane	624, 8240	1.0 ug/L	7.0 ug/kg
	524.2	2.0 ug/L	
o-Chlorotoluene	524.2	1.0 ug/L	
p-Chlorotoluene	524.2	1.0 ug/L	
Dibromochloromethane	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
Dibromomethane	524.2	1.0 ug/L	
1,2-Dibromo-3-Chloropropane	524.2	10 ug/L	
Dichloromethane	524.2	0.5 ug/L	
Dichlorodifluoromethane	524.2	1.0 ug/L	
o-Dichlorobenzene	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
p-Dichlorobenzene	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
m-Dichlorobenzene	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	1.0 ug/L	
1,1-Dichloroethane	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	1.0 ug/L	
1,2-Dichloroethane	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
1,1-Dichloroethene	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
cis-1,2,Dichloroethene	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
trans-1,2-Dichloroethene	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
1,2-Dichloropropane	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits	
1,3-Dichloropropane	524.2	1.0 ug/L	
2,2-Dichloropropane	524.2	1.0 ug/L	
1,1-Dichloropropene	524.2	1.0 ug/L	
1,3-Dichloropropene	524.2	1.0 ug/L	
cis-1,3-Dichloropropene	624, 8240	1.0 ug/L	2.0 ug/kg
trans-1,3-Dichloropropene	624, 8240	1.0 ug/L	2.0 ug/kg
Ethylbenzene	624, 8240 524.2	1.0 ug/L 0.5 ug/L	2.0 ug/kg
Ethylene Dibromide (EDB)	524.2	10 ug/L	
Fluorotrichloromethane	624, 8240 524.2	1.0 ug/L 1.0 ug/L	2.0 ug/kg
Hexachlorobutadiene	524.2	1.0 ug/L	
2-Hexanone	624, 8240	20 ug/L	20 ug/kg
Isopropylbenzene	524.2	1.0 ug/L	
p-Isopropyltoluene	524.2	1.0 ug/L	
Methylene chloride	624, 8240	5.0 ug/L	20 ug/kg
4-Methyl-2-pentanone (MIBK)	624, 8240	5.0 ug/L	20 ug/kg
Naphthalene	524.2	1.0 ug/L	
n-Propylbenzene	524.2	1.0 ug/L	
Styrene	624, 8240 524.2	1.0 ug/L 0.5 ug/L	2.0 ug/kg
1,1,1,2-Tetrachloroethane	524.2	0.5 ug/L	
1,1,2,2-Tetrachloroethane	624, 8240 524.2	1.0 ug/L 0.5 ug/L	3.0 ug/kg
Tetrachloroethene	624, 8240 524.2	1.0 ug/L 0.5 ug/L	2.0 ug/kg

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits	
Toluene	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
1,2,3-Trichlorobenzene	524.2	1.0 ug/L	
1,2,4-Trichlorobenzene	524.2	0.5 ug/L	
1,1,1-Trichloroethane	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
1,1,2-Trichloroethane	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
Trichloroethene	624, 8240	1.0 ug/L	2.0 ug/kg
	524.2	0.5 ug/L	
1,2,3-Trichloropropane	524.2	1.0 ug/L	
1,2,4-Trimethylbenzene	524.2	1.0 ug/L	
1,3,5-Trimethylbenzene	524.2	1.0 ug/L	
Vinyl acetate	624, 8240	5.0 ug/L	20 ug/kg
Vinyl chloride	624, 8240	1.0 ug/L	7.0 ug/kg
	524.2	0.5 ug/L	
o-Xylene	524.2	0.5 ug/L	
m & p-Xylene	524.2	0.5 ug/L	
Xylenes Total	624, 8240	1.0 ug/L	3.0 ug/kg
SEMI-VOLATILE ORGANIC ANALYTES - BASE/NEUTRALS			
Acenaphthene	625, 8270 (1,2)	10 ug/L	330 ug/kg
Acenaphthylene	625, 8270	10 ug/L	330 ug/kg
Aniline	625, 8270	10 ug/L	330 ug/kg
Anthracene	625, 8270	10 ug/L	330 ug/kg
Benzidine	625, 8270	50 ug/L	1600 ug/kg
Benzo(a)anthracene	625, 8270	10 ug/L	330 ug/kg

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits			
Benzo(b)fluoranthene	625, 8270	10	ug/L	330	ug/kg
Benzo(k)fluoranthene	625, 8270	10	ug/L	330	ug/kg
Benzo(g,h,i)perylene	625, 8270	10	ug/L	330	ug/kg
Benzo(a)pyrene	625, 8270	10	ug/L	330	ug/kg
Benzyl butyl phthalate	625, 8270	10	ug/L	330	ug/kg
Bis(2-chloroethyl)ether	625, 8270	10	ug/L	330	ug/kg
Bis(chloromethyl)ether	625, 8270	10	ug/L	330	ug/kg
Bis(2-chloroethoxy)methane	625, 8270	10	ug/L	330	ug/kg
Bis(2-chloroethyl)ether	625, 8270	10	ug/L	330	ug/kg
Bis(2-chloroisopropyl)ether	625, 8270	10	ug/L	330	ug/kg
Bis(2-Ethylhexyl)phthalate	625, 8270	10	ug/L	330	ug/kg
4-Bromophenyl phenyl ether	625, 8270	10	ug/L	330	ug/kg
4-Chloroaniline	625, 8270	20	ug/L	660	ug/kg
2-Chloronaphthalene	625, 8270	10	ug/L	330	ug/kg
4-Chlorophenyl phenyl ether	625, 8270	10	ug/L	330	ug/kg
Chrysene	625, 8270	10	ug/L	330	ug/kg
Dibenzo(a,h)anthracene	625, 8270	10	ug/L	330	ug/kg
Dibenzofuran	625, 8270	10	ug/L	330	ug/kg
Di-n-butylphthalate	625, 8270	10	ug/L	330	ug/kg
1,2-Dichlorobenzene	625, 8270	10	ug/L	330	ug/kg
1,3-Dichlorobenzene	625, 8270	10	ug/L	330	ug/kg
1,4-Dichlorobenzene	625, 8270	10	ug/L	330	ug/kg
3,3'-Dichlorobenzidine	625, 8270	20	ug/L	660	ug/kg
Diethylphthalate	625, 8270	10	ug/L	330	ug/kg

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits			
Dimethylphthalate	625, 8270	10	ug/L	330	ug/kg
2,4-Dinitrotoluene	625, 8270	10	ug/L	330	ug/kg
2,6-Dinitrotoluene	625, 8270	10	ug/L	330	ug/kg
Di-n-octylphthalate	625, 8270	10	ug/L	330	ug/kg
1,2-Diphenylhydrazine	625, 8270	10	ug/L	330	ug/kg
Fluoranthene	625, 8270	10	ug/L	330	ug/kg
Fluorene	625, 8270	10	ug/L	330	ug/kg
Hexachlorobenzene	625, 8270	10	ug/L	330	ug/kg
Hexachlorobutadiene	625, 8270	10	ug/L	330	ug/kg
Hexachlorocyclopentadiene	625, 8270	10	ug/L	330	ug/kg
Hexachloroethane	625, 8270	10	ug/L	330	ug/kg
Indeno(1,2,3-cd)pyrene	625, 8270	10	ug/L	330	ug/kg
Isophorone	625, 8270	10	ug/L	330	ug/kg
2-Methylnaphthalene	625, 8270	10	ug/L	330	ug/kg
Naphthalene	625, 8270	50	ug/L	1600	ug/kg
2-Nitroanaline	625, 8270	50	ug/L	1600	ug/kg
3-Nitroanaline	625, 8270	50	ug/L	1600	ug/kg
4-Nitroanaline	625, 8270	10	ug/L	330	ug/kg
Nitrobenzene	625, 8270	10	ug/L	330	ug/kg
N-Nitrosodimethylamine	625, 8270	10	ug/L	330	ug/kg
N-Nitrosodiphenylamine	625, 8270	10	ug/L	330	ug/kg
N-Nitrosodi-n-propylamine	625, 8270	10	ug/L	330	ug/kg
Phenanthrene	625, 8270	10	ug/L	330	ug/kg
Pyrene	625, 8270	10	ug/L	330	ug/kg

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits			
Pyridine	625, 8270	50	ug/L	1650	ug/kg
1,2,4-Trichlorobenzene	625, 8270	10	ug/L	330	ug/kg
ACIDS					
Benzoic acid	625, 8270	50	ug/L	1600	ug/kg
Benzyl Alcohol	625, 8270	20	ug/L	660	ug/kg
4-Chloro-3-methylphenol	625, 8270	10	ug/L	330	ug/kg
2-Chlorophenol	625, 8270	10	ug/L	330	ug/kg
2,4-Dichlorophenol	625, 8270	10	ug/L	330	ug/kg
2,4-Dimethylphenol	625, 8270	10	ug/L	330	ug/kg
2,4-Dinitrophenol	625, 8270	50	ug/L	1600	ug/kg
2-Methyl-4,6-dinitrophenol	625, 8270	50	ug/L	1600	ug/kg
2-Methylphenol (o-Cresol)	625, 8270	10	ug/L	330	ug/kg
4-Methylphenol (p-Cresol)	625, 8270	10	ug/L	330	ug/kg
Cresols, Total	625, 8270	10	ug/L	330	ug/kg
2-Nitrophenol	625, 8270	10	ug/L	330	ug/kg
4-Nitrophenol	625, 8270	50	ug/L	1600	ug/kg
Pentachlorophenol	625, 8270	50	ug/L	1600	ug/kg
Phenol	625, 8270	10	ug/L	330	ug/kg
2,4,5-Trichlorophenol	625, 8270	10	ug/L	330	ug/kg
2,4,6-Trichlorophenol	625, 8270	10	ug/L	330	ug/kg

An initial calibration verification standard is analyzed with each new calibration. This standard is prepared from an independent source standard different than that used for the instrument calibration. The ICV standard must be recovered within the acceptance criteria of the analytical method or bench SOP.

Continuing Calibration Verification Standards (CCVS) are analyzed according to the analytical SOP schedule, typically every 10 samples or 14 injections (whichever comes first) or every 24 hours. If the CCVS does not meet the analytical method specifications then the instrument must be recalibrated.

All initial and subsequent continuing calibration verifications are recorded.

ATOMIC ABSORPTION SPECTROPHOTOMETER

Calibration Standards

The calibration stock solutions and the calibration standards are prepared from NIST traceable standards where possible. The lot number, date prepared, date of expiration and the analyst who prepared the standard are recorded in the standard preparation record book. The process is as follows:

1. Calibration standards are prepared by dilution of the stock standard.

2. The calibration standards are prepared using the same type of acid or combination of acids as the sample will have after digestion.

Calibration Procedure

The instruments are calibrated for every analytical run sequence beginning with a blank and three standards, analyzing them from lowest to the highest concentration. The acceptance criteria for the calibration curve is a correlation coefficient of greater than 0.995.

After the instrument is calibrated, the calibration curve is verified by analyzing an initial calibration verification sample (ICV). The ICV is an EPA quality control concentrate or an independent known from a supplier different than the supplier of the stock standard and it has a concentration that was not used to generate the curve.

If the ICV sample analysis exceeds the control limits, the analysis is ended and the problem is investigated and corrected. The instrument is then recalibrated and the ICV analyzed again.

Sample analysis can only begin after the ICV has been recovered within the acceptance criteria.

To assure calibration accuracy throughout each analytical run, a continuing calibration verification sample (CCV) must be analyzed at a frequency of 10% during the analytical run. The CCV is also analyzed after the last sample on the analytical run. If a CCV is outside the control limits, the analysis must be terminated and the analysis started back at the last CCV which was in control. If the CCV continues to fall outside of the control limits the instrument may need to be recalibrated or resloped followed by an ICV and begin the analysis where the last CCV was in control.

The initial calibration as well as all subsequent calibrations and calibration verifications are documented.

ICP Calibration Procedure

The instrument is calibrated for every analytical run sequence with a blank and one standard for each analyte of interest.

A series of Spectral Interference Check Standards (SICs) are analyzed. If the SICs do not meet the specified acceptance criteria the problem is investigated and corrected.

The calibration curve is verified by analyzing an Initial Calibration Verification sample (ICV). The ICV is an EPA quality control concentrate or an independent known from a supplier different than the supplier of the stock standard and it has a concentration that was not used to generate the curve.

To assure calibration accuracy throughout the analytical run, a continuing calibration verification sample must be analyzed every 10 samples at a minimum. If a CCV does not meet specified acceptance criteria then the samples following a failed CCV must be repeated on another run or bracketed by acceptable CCVs.

The initial calibration as well as all subsequent calibrations and calibration verifications are documented and archived.

WET CHEMISTRY DEPARTMENT

Calibration Standards

Calibration standards are made from high quality materials. The supplier, date prepared, expiration date and the analyst who prepared the standard are documented in the standard preparation record book. All stock solutions as well as calibration standards are labeled with the parameter, date prepared, expiration date and the analysts initials. Stock solutions have

a shelf life of no more than 1 year from preparation.

Depending upon the analyte, calibration procedures will vary. Following is the typical calibration procedures for the majority of the Wet Chemistry methods.

Some Wet Chemistry parameters require the use of a 5 point referenced calibration curve. The data used in plotting a referenced calibration curve will consist of a blank and a minimum of 5 standards evenly distributed throughout the range of the method. This data must be collected under the same conditions as those that will exist during routine analyses. Because of their importance, two sets of data are required for calibration curves, each being performed at different times. The standard calibration curve is prepared by plotting the absorbance values of standards (y-axis) versus the corresponding concentration (x-axis). The standard absorbance values should be corrected for the blank value where required, but the blank is not included in the curve itself, unless the instrument manufacturers instructions state otherwise. This may occur on instruments which have a data system capable of drawing the curve.

For analytes which are calibrated daily, a blank and a minimum of three calibration standards are required for the calibration of the instrument. These standards are evenly distributed throughout the range of the method. The curve is plotted as described above for a five point curve.

For analytes which are not calibrated using the above procedures, the manufacturers recommended calibration procedures are used.

Each calibration requiring the use of multiple standards for the calibration curve, a correlation coefficient of 0.995 or greater must be achieved using all calibration standards. The blank must not be included in the calibration, unless instrument manufacturers instructions state otherwise.

From the linear least square model, back calculate the standards' values. These values must not differ from the theoretical standards' values by more than +/- 10% for the upper level standards and +/- 20% for the low standard on the curve.

Every calibration curve is verified by analyzing an Initial Calibration Verification Standard (ICVS) and obtaining a value within +/- 10% of the true value or within the acceptance ranges established according to averages reported by the independent agency supplying the standard.

Continuing Calibration Verification Standards (CCVS) are analyzed at a minimum of 1 per 20 samples to verify that the calibration of the instrument is still valid throughout the analytical run. Both the initial and subsequent calibration verifications are

recorded in the proper record books.

ANALYTICAL BALANCES

All analytical balances are calibrated annually by a certified technician. All analytical balances are checked daily or at each use with a designated weight. The calibration checks must have a weight which does not exceed limits described in the NET "Balance Calibration SOP". Any deviation must result in a new calibration with verification using the class "S" weights.

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits	
GC VOLATILE ANALYTES			
1,2-Dibromo-3-chloropropane (DBCP)	504 (3)	0.02 ug/L	
Ethylene Dibromide (EDB)	504	0.01 ug/L	
Benzene	602, 8020 (1,2)	1.0 ug/L	2.0 ug/kg
Ethyl Benzene	602, 8020	1.0 ug/L	2.0 ug/kg
Toluene	602, 8020	1.0 ug/L	2.0 ug/kg
Xylene	602, 8020	1.0 ug/L	2.0 ug/kg
GC SEMIVOLATILE ANALYTES			
2,4-D	8150, 509B (2,4)	2.0 ug/L	20 ug/kg
	515.1 (3)	0.1 ug/L	
2,4,5-TP (Silvex)	8150, 509B	2.0 ug/L	20 ug/kg
	515.1	0.2 ug/L	
Dalapon	515.1	1.0 ug/L	
Dinoseb	515.1	0.2 ug/L	
Pentachlorophenol	515.1	0.04 ug/L	
Picloram	515.1	0.1 ug/L	
Alachlor	507 (3)	0.2 ug/L	
Aldrin	608, 8080 (1,2)	0.05 ug/L	5.0 ug/kg
	508 (3)	0.05 ug/L	
Atrazine	507	0.1 ug/L	
alpha-BHC	608, 8080	0.05 ug/L	5.0 ug/kg
beta-BHC	608, 8080	0.05 ug/L	5.0 ug/kg
delta-BHC	608, 8080	0.05 ug/L	5.0 ug/kg

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits	
gamma-BHC (Lindane)	608, 8080	0.05 ug/L	5.0 ug/kg
	508	0.02 ug/L	
Chlordane	608, 8080	0.50 ug/L	50 ug/kg
	508	0.2 ug/L	
4,4'-DDD	608, 8080	0.10 ug/L	10 ug/kg
4,4'-DDE	608, 8080	0.10 ug/L	10 ug/kg
4,4'-DDT	608, 8080	0.10 ug/L	10 ug/kg
Total DDT	508	1.0 ug/L	
Dieldrin	608, 8080	0.10 ug/L	10 ug/kg
	508	0.05 ug/L	
Endosulfan I	608, 8080	0.05 ug/L	5.0 ug/kg
Endosulfan II	608, 8080	0.10 ug/L	10 ug/kg
Endosulfan Sulfate	608, 8080	0.10 ug/L	10 ug/kg
Endrin	608, 8080	0.10 ug/L	10 ug/kg
	508	0.01 ug/L	
Endrin Aldehyde	608, 8080	0.10 ug/L	10 ug/kg
Heptachlor	608, 8080	0.05 ug/L	5.0 ug/kg
	508	0.04 ug/L	
Heptachlor Epoxide	608, 8080	0.05 ug/L	5.0 ug/kg
	508	0.02 ug/L	
Hexachlorobenzene	505 (3)	0.1 ug/L	
Hexachlorocyclopentadiene	505	0.1 ug/L	
Methoxychlor	608, 8080	0.50 ug/L	50 ug/kg
	508	0.1 ug/L	
Simazine	507	0.07 ug/L	
Toxaphene	608, 8080	0.50 ug/L	50 ug/kg
	508	1.0 ug/L	
Di (2-ethylhexyl) adipate	506 (8)	0.6 ug/L	
Di (2-ethylhexyl) phthalate	506	0.6 ug/L	

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits			
Aroclor 1016	608, 8080	1.0	ug/L	100	ug/kg
	508	0.5	ug/L		
Aroclor 1221	608, 8080	1.0	ug/L	80	ug/kg
	508	0.5	ug/L		
Aroclor 1232	608, 8080	1.0	ug/L	80	ug/kg
	508	0.5	ug/L		
Aroclor 1242	608, 8080	1.0	ug/L	80	ug/kg
	508	0.5	ug/L		
Aroclor 1248	608, 8080	1.0	ug/L	80	ug/kg
	508	0.5	ug/L		
Aroclor 1254	608, 8080	1.0	ug/L	100	ug/kg
	508	0.5	ug/L		
Aroclor 1260	608, 8080	1.0	ug/L	100	ug/kg
	508	0.5	ug/L		
PCBs as Decachlorobiphenyl	508A (3)	1.0	ug/L		
Total Petroleum Hydrocarbons	California Method				
HPLC SEMIVOLATILE ANALYTES					
Acenaphthene	8310 (2)	0.018	mg/L	0.660	mg/kg
Acenaphthylene	8310	0.010	mg/L	0.660	mg/kg
Anthracene	8310	0.0066	mg/L	0.660	mg/kg
Benzo(a)anthracene	8310	0.00013	mg/L	0.0026	mg/kg
Benzo(b)fluoranthene	8310	0.00018	mg/L	0.0036	mg/kg
Benzo(k)fluoranthene	8310	0.00017	mg/L	0.0034	mg/kg
Benzo(a)pyrene	8310	0.00023	mg/L	0.0046	mg/kg
	550 (8)	0.02	ug/L		
Benzo(g,h,i)perylene	8310	0.00076	mg/L	0.051	mg/kg
Chrysene	8310	0.00015	mg/L	0.030	mg/kg

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits	
Dibenzo(a,h)anthracene	8310	0.00030 mg/L	0.006 mg/kg
Fluoranthene	8310	0.0021 mg/L	0.660 mg/kg
Fluorene	8310	0.0021 mg/L	0.140 mg/kg
Indeno(1,2,3-cd)pyrene	8310	0.0021 mg/L	0.0086 mg/kg
Naphthalene	8310	0.010 mg/L	0.025 mg/kg
Phenanthrene	8310	0.0064 mg/L	0.660 mg/kg
Pyrene	8310	0.0027 mg/L	0.180 mg/kg
Aldicarb	531.1 (3)	0.5 ug/L	
Aldicarb Sulfone	531.1	0.6 ug/L	
Aldicarb Sulfoxide	531.1	0.5 ug/L	
Carbaryl	531.1	0.5 ug/L	
Carbofuran	531.1	0.9 ug/L	
3-Hydroxycarbofuran	531.1	1.0 ug/L	
Methiocarb	531.1	1.0 ug/L	
Methomyl	531.1	0.5 ug/L	
Oxamyl	531.1	3.0 ug/L	
Propoxur	531.1	0.5 ug/L	
Glyphosate	547 (8)	6.0 ug/L	
Endothall	548 (8)	9.0 ug/L	
Diquat	549 (8)	0.4 ug/L	
SAMPLE PREPARATION FOR ORGANIC ANALYSES			
Liquid/Liquid Extraction Separatory Funnel	3510 (2)	NA	
Liquid/Liquid Extraction Continuous Extraction	3520 (2)	NA	

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits
Solid/Liquid Extraction Soxhlet Extraction	3540 (2)	NA
Solid/Liquid Extraction Sonication Extraction	3550 (2)	NA
Waste Sample Waste Dilution	3580 (2)	NA
Volatile Sample Methanol Extraction	5030 (2)	NA
Alumina Cleanup (Modified)	3610 (2)	NA
Florisil Cleanup	3620 (2)	NA
Silica Gel Cleanup	3630 (2)	NA
Acid-Base Cleanup	3650 (2)	NA
Sulfur Cleanup	3660 (2)	NA
GPC Cleanup	3640 (2)	NA

NA - Not Applicable

According to each method, compound lists may be extended upon QC approval.

Method References:

(1). U.S. EPA 1984. Methods for Organic Chemical Analysis for Municipal and Industrial Wastewater. Appendix A. 40 CFR Part 136. Federal Register, Vol. 49, No. 209, 1984.

(2). U.S. EPA 1986. Test Methods for Evaluating Solid Waste-Physical/Chemical Methods. SW-846 Third Edition. Office of Solid Waste, U.S. EPA, Washington D.C.

(3). U.S. EPA 1988. Methods for the Determination of Organic Compounds in Drinking Water. EPA/EMSL, Cincinnati, Ohio, EPA/600/4-88-039.

(4). APHA. 1985. Standard Methods for the Examination of Water and Wastewater. Sixteenth Edition. American Public Health Association, Washington, D.C.

(5). U.S. EPA 1983. Methods for Chemical Analysis of Water and Wastes. EMSL Cincinnati, Ohio, EPA-600/4-79-020.

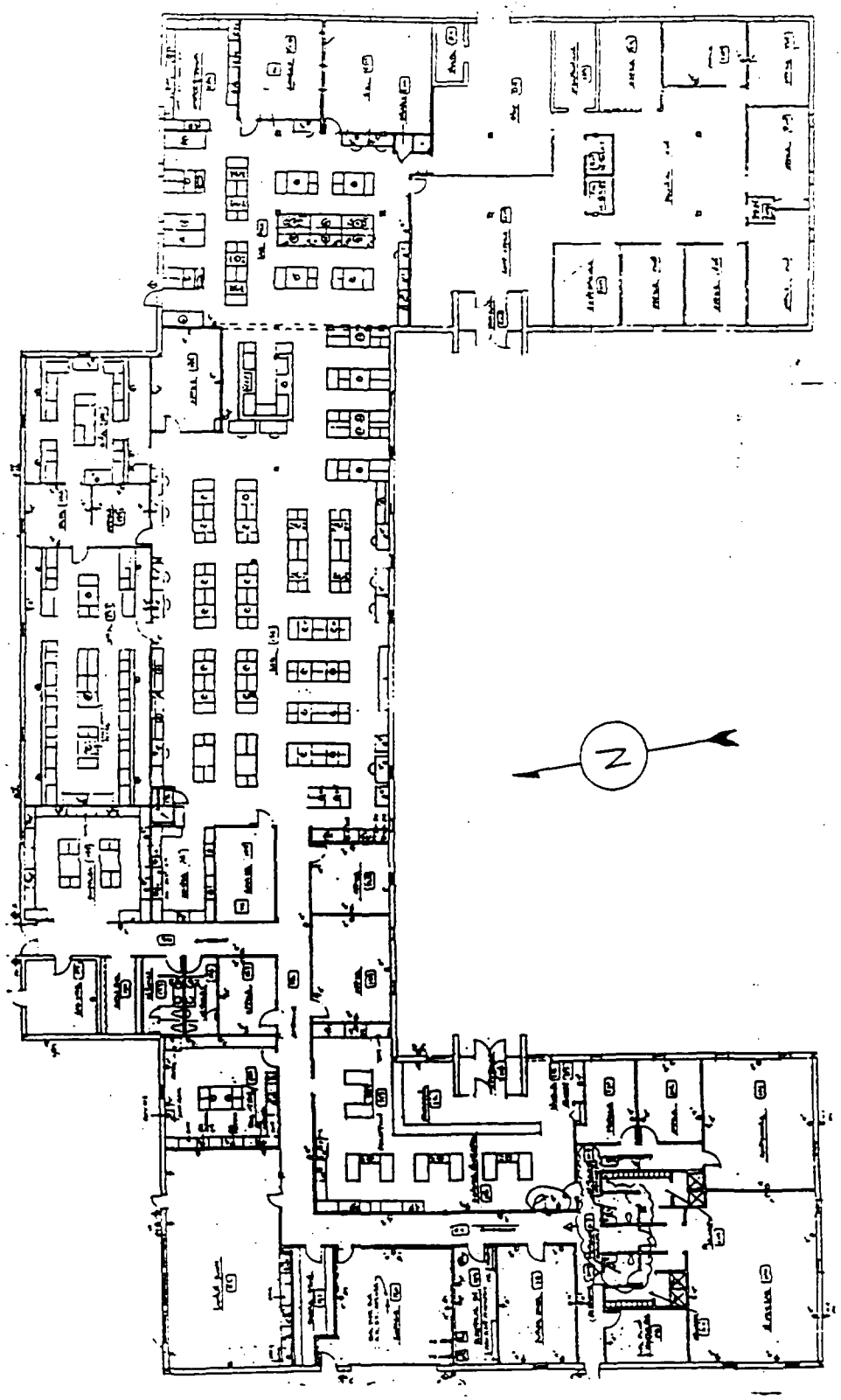
(6). NIOSH. Manual of Analytical Methods, Third Edition.

Table 9.9 (Cont.)

(7). USEPA EMSL, Cincinnati, Ohio; The Analysis of Trihalomethanes in finished Waters by the Purge and Trap Method. November 6, 1979

(8). U.S. EPA 1990. Methods for the Determination of Organic Compounds in Drinking Water. EPA/EMSL, Cincinnati, Ohio, EPA/600/4-90/020, July 1990.

Figure 9.1 NET Bartlett Division - Laboratory Floor Plan



SECTION 10

Data Reduction, Validation, and Reporting

Data Reduction

Analytical results are reduced to appropriate concentration units which are dictated by the analytical method. Data is recorded in a bound, numbered logbook or on computer print-out forms. Where required by method, blank correction will be applied. Calculations will be independently verified by appropriate laboratory staff.

Data Validation

Data validation is the process of evaluating data and either accepting or rejecting it based upon a set of criteria. NET data review personnel and/or supervisory personnel validate laboratory data with the use of the following criteria:

- proper sample collection
- use of Standard Operating Procedures or other approved analytical procedures
- use of properly operating and calibrated instruments
- precision and accuracy comparable to that obtained in similar analytical programs

Records on all data will be maintained. These records include the chromatograms, strip charts and laboratory notebooks. Persons validating the data will have a sufficient knowledge of the technical work to identify questionable values.

Data Reporting

All reports will be assembled and approved by the project manager, and delivered to the client within the agreed upon time period in a standard format.

Any additional information required by the client, such as operating conditions, QA/QC data, recommendations, method citations or problems will be reported by the Project Manager.

Occasionally a report must be re-issued due to the addition of test or correction of an error. When the report is re-issued, a notation of "Corrected" is to be placed on the page of the report.

Data Release to Third Parties

The following description is taken from "NET Terms and Conditions":

"NET will not intentionally divulge to any person (other than the Client or any other person designated by the Client in writing) any information regarding the services, or any information disclosed to NET by the Client. This shall not apply to the extent that the information is required to be disclosed by NET under the compulsion of legal process, NET will, to the extent feasible, provide reasonable notice to the client before disclosing the information."

REPORTING SCHEME

Figure 10.1 shows the analytical data reporting scheme from analysis to archival of analytical results. Figure 10.2 is an example of a routine report and Figure 10.3 is an example of a "Corrected" report. A variety of report formats are available to meet your specific needs.

INTERNAL COMMUNICATION

Figures 10.4 and 10.5 are examples of forms which have been instituted for the purpose of communicating information and maintaining documentation of this information within the laboratory. Figure 10.4 is the Laboratory Notification Form which allows information such as matrix problems, incorrect sample preservatives, or unusual observations to be communicated. Figure 10.5 is the Analysis Re-Evaluation Request Form which allows the Project Manager or Data Review Clerk to request a re-evaluation of a parameter with the type of action to take and the sample number(s) in question. Response information such as the reason for the difference noted (if any), problem corrected, and the type of action that will be needed is collected. These forms are directed through the QA Coordinator with copies being retained in respective project files.

Figure 10.1 Analytical Data Review and Reporting Scheme

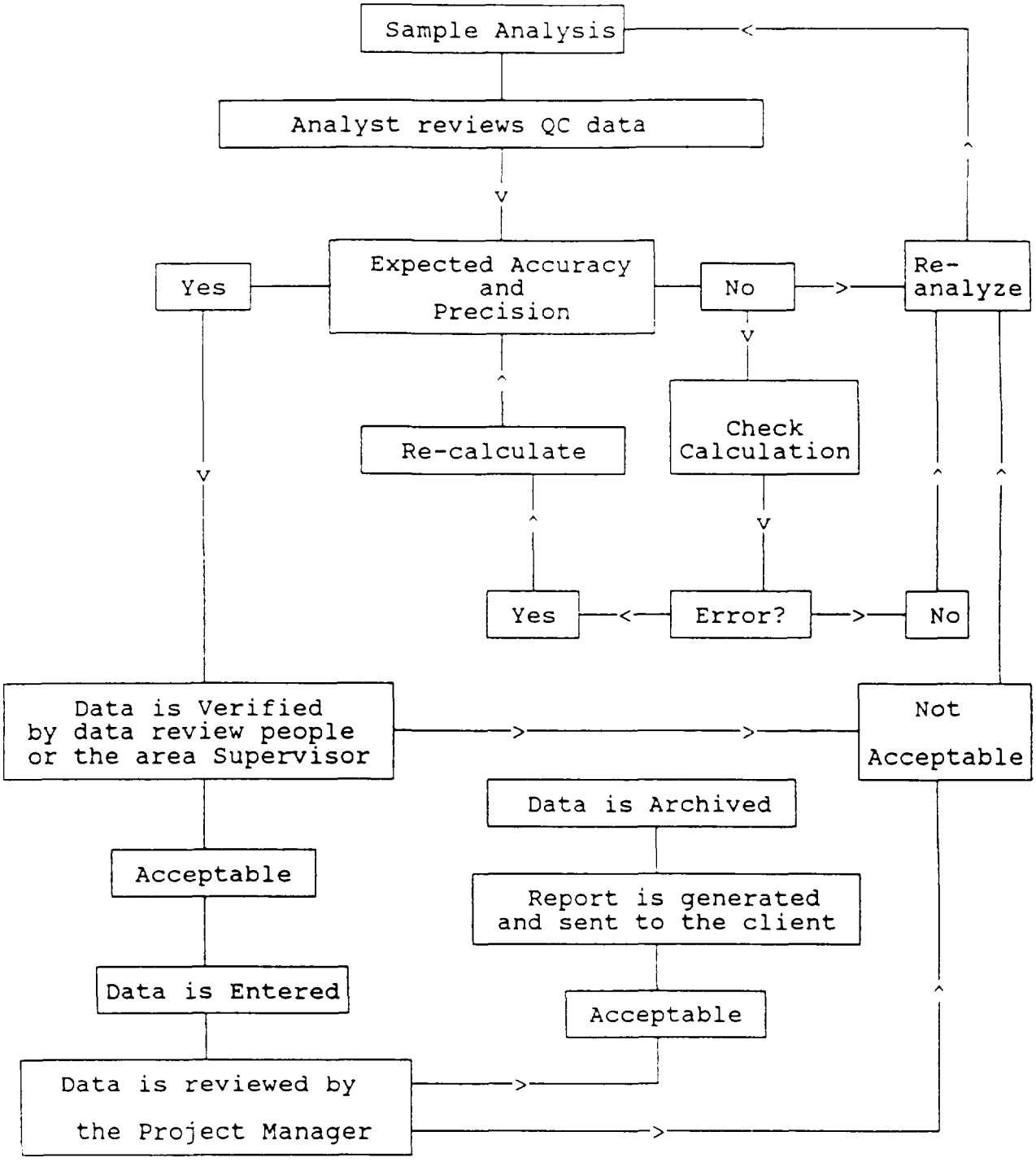


Figure 10.2 Routine Report Format

NATIONAL ENVIRONMENTAL TESTING, INC.

Bartlett Division
850 W. Bartlett Rd
Bartlett IL 60103
Tel (708) 289-3100
Fax (708) 289-5445

ANALYTICAL REPORT

Mr. or Ms. Customer
GREATEST COMPANY IN THE WORLD
1 Main Street
Small Town, USA 60777

10/25/1993

Sample No. : xxxxx5

NET Job No.: 93.xxxx5

Sample Description: Lincoln - Hanover Park

Date Taken: 10/18/1993
Time Taken: 20:00
IEPA Cert. No. 100221

Date Received: 10/18/1993
Time Received: 11:15
WDNR Cert. No. 999447130

Parameter	Results		Units	Date of Analysis	Method POL	Analyst	Batch No. Prep/Run		Analytical Method
TCLP, Metals	Leached			10/18/1993		jas		201	1311 (1)
Metals Prep, TCLP	Complete			10/20/1993		jmt	438		3010 (1)
Metals Prep, Ag TCLP	Complete			10/22/1993		edo	170		7760 (1)
Metals Prep, Hg TCLP	Complete			10/22/1993		edo	288		
TCLP - ICP	Complete			10/24/1993		jmt		984	6010 (1)
TCLP-Arsenic, ICP	<0.20		mg/L	10/24/1993	0.20	jmt	438	702	6010 (1)
TCLP-Barium, ICP	0.347		mg/L	10/24/1993	0.020	jmt	438	651	6010 (1)
TCLP-Cadmium, ICP	<0.010		mg/L	10/24/1993	0.010	jmt	438	623	6010 (1)
TCLP-Chromium,ICP	<0.040		mg/L	10/24/1993	0.040	jmt	438	613	6010 (1)
TCLP-Lead, ICP	<0.080		mg/L	10/24/1993	0.080	jmt	438	774	6010 (1)
TCLP-Mercury, CVAA	<0.0004	D2	mg/L	10/24/1993	0.0002	jmt	288	291	7470 (1)
TCLP-Selenium, ICP	<0.10		mg/L	10/24/1993	0.10	jmt	438	535	6010 (1)
TCLP-Silver, AA	<0.040		mg/L	10/24/1993	0.040	edo	170	200	7760 (1)
TCLP Organic Prep	Leached			10/20/1993		jas	85		
Prep, BNA Extract (TCLP)	extracted			10/22/1993		las	210		3500 (1)
TCLP-ACID COMPOUNDS - 8270									
TCLP-Cresols, Total	<0.10		mg/L	10/24/1993	0.10	rla	210	416	8270 (1)
TCLP-3-Methylphenol (m-cresol)	<0.10		mg/L	10/24/1993	0.10	rla	210	416	8270 (1)
TCLP-2-Methylphenol (o-Cresol)	<0.10		mg/L	10/24/1993	0.10	rla	210	416	8270 (1)
TCLP-4-Methylphenol (p-Cresol)	<0.10		mg/L	10/24/1993	0.10	rla	210	416	8270 (1)
TCLP-Pentachlorophenol	<0.50		mg/L	10/24/1993	0.50	rla	210	416	8270 (1)
TCLP-2,4,5-Trichlorophenol	<0.50		mg/L	10/24/1993	0.50	rla	210	416	8270 (1)
TCLP-2,4,6-Trichlorophenol	<0.10		mg/L	10/24/1993	0.10	rla	210	416	8270 (1)
Surr: Phenol-d6	53		%	10/24/1993	10-110	rla	210	416	8270 (1)
Surr: 2-Fluorophenol	51		%	10/24/1993	43-116	rla	210	416	8270 (1)
Surr: 2,4,6-Tribromophenol	77		%	10/24/1993	10-123	rla	210	416	8270 (1)

D2: Parameter analysis performed at a 2x dilution.

Figure 10.3 "Corrected" Report

NATIONAL ENVIRONMENTAL TESTING, INC.

Bartlett Division
850 W. Bartlett Rd
Bartlett, IL 60103
Tel (708) 289-3100
Fax (708) 289 5445

ANALYTICAL REPORT

Mr. or Ms. Customer
GREATEST COMPANY IN THE WORLD
1 Main Street
Small Town, USA 60777

10/25/1993
Sample No. : xxxxx5
NET Job No.: 93.xxxx5

Sample Description: Lincoln - Hanover Park

Date Taken: 10/18/1993
Time Taken: 20:00
IEPA Cert. No. 100221

Date Received: 10/18/1993
Time Received: 11:15
WDNR Cert. No. 999447130

Parameter	Results		Units	Date of Analysis	Method PQL	Analyst	Batch No. Prep/Run	Analytical Method
TCLP, Metals	Leached			10/18/1993		jas	201	1311 (1)
Metals Prep, TCLP	Complete			10/20/1993		jmt	438	3010 (1)
Metals Prep, Ag TCLP	Complete			10/22/1993		edo	170	7760 (1)
Metals Prep, Hg TCLP	Complete			10/22/1993		edo	288	
TCLP - ICP	Complete			10/24/1993		jmt	984	6010 (1)
TCLP-Arsenic, ICP	<0.20		mg/L	10/24/1993	0.20	jmt	438 702	6010 (1)
TCLP-Barium, ICP	0.347		mg/L	10/24/1993	0.020	jmt	438 651	6010 (1)
TCLP-Cadmium, ICP	<0.010		mg/L	10/24/1993	0.010	jmt	438 623	6010 (1)
TCLP-Chromium, ICP	<0.040		mg/L	10/24/1993	0.040	jmt	438 613	6010 (1)
TCLP-Lead, ICP	<0.080		mg/L	10/24/1993	0.080	jmt	438 774	6010 (1)
TCLP-Mercury, CVAA	<0.0004	D2	mg/L	10/24/1993	0.0002	jmt	288 291	7470 (1)
TCLP-Selenium, ICP	<0.10		mg/L	10/24/1993	0.10	jmt	438 535	6010 (1)
TCLP-Silver, AA	<0.040		mg/L	10/24/1993	0.040	edo	170 200	7760 (1)
TCLP Organic Prep	Leached			10/20/1993		jas	85	
Prep, BNA Extract (TCLP)	extracted			10/22/1993		las	210	3500 (1)
TCLP-ACID COMPOUNDS - 8270								
TCLP-Cresols, Total	<0.10		mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
TCLP-3-Methylphenol (m-cresol)	<0.10		mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
TCLP-2-Methylphenol (o-Cresol)	<0.10		mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
TCLP-4-Methylphenol (p-Cresol)	<0.10		mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
TCLP-Pentachlorophenol	<0.50		mg/L	10/24/1993	0.50	rla	210 416	8270 (1)
TCLP-2,4,5-Trichlorophenol	<0.50		mg/L	10/24/1993	0.50	rla	210 416	8270 (1)
TCLP-2,4,6-Trichlorophenol	<0.10		mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
Surr: Phenol-d6	53		%	10/24/1993	10-110	rla	210 416	8270 (1)
Surr: 2-Fluorophenol	51		%	10/24/1993	43-116	rla	210 416	8270 (1)
Surr: 2,4,6-Tribromophenol	77		%	10/24/1993	10-123	rla	210 416	8270 (1)

CORRECTED REPORT

D2: Parameter analysis performed at a 2x dilution.

Figure 10.4 Laboratory Notification Form

LABORATORY NOTIFICATION FORM

Date Initiated:_____

SAMPLE NUMBER(S):_____JOB NO._____

PARAMETER:_____ DEPARTMENT:_____

CLIENT:_____ ANALYST:_____

DEVIATION/CONCERN:_____

_____

_____

_____

_____

ACTION RECOMMENDED:

_____

_____

_____

_____

RESPONSE NEEDED TO THE LAB BY:_____

CLIENT CONTACT YES _____ NO _____

CONTACT NAME:_____ DATE:_____

COMMENTS:_____

_____

_____

_____

_____

_____

This form has been copied to:

_____ Project Manager (DJK)
_____ Operations Manager (NEC)
_____ Division Manager (TAG)
_____ QA/QC Coordinator (RCK)
_____ Customer Service (KAP) (DGW)
_____ Office Manager (WTH)
_____ Marketing (MLK) (GTS)
_____ Login
_____ Lab Staff_____

Figure 10.5 Analysis Re-Evaluation Request Form

RE-EVALUATION REQUEST FORM

Department:_____ Job Number:_____

Parameter:_____ Client:_____

Due Date:_____ Requested By:_____

Date Completed:_____ Request Date:_____

Sample ID	Original Result	RER Result	Explanation

Action Requested:

_____ Check Calculations

_____ Check QC

_____ Check Data Entry

_____ Repeat Analysis

_____ Other_____

Reason for Request:_____

_____

_____

_____

Action Taken:

_____ Contacted Client

_____ No action needed

_____ Entered new results

_____ Issued corrected report

_____ Other_____

Routing:

_____ Dept Supervisor

_____ Project Manager

_____ QA/QC Officer

_____ Ops Manager

SECTION 11

Internal Quality Control and Frequency

INTERNAL QUALITY CONTROL

Internal quality control makes use of several types of QC samples to monitor the performance of the measurement process. Quality control checks are analyzed to ensure the generation of accurate and valid data on client samples. Below is a list of the types of QC samples used in the laboratory.

Method Blank

A DI water sample that is prepared in the laboratory just like a sample. The method blank is analyzed with samples that were processed at the same time as the blank. The method blanks are used to assess the extent of contamination, if any, obtained during the preparation process.

Laboratory Reagent Blank (LRB)

A DI water sample that is prepared in the laboratory just like a sample. The method blank is analyzed with samples that were processed at the same time as the blank. The method blanks are used to assess the extent of contamination, if any, obtained during the preparation process. This term is most commonly used in drinking water methodology.

Solvent/Reagent Blank

A blank prepared from any solvent or reagent lot used in the analysis. This blank is used to assess any background contamination of the solvents/reagents.

Holding Blanks

A DI water blank that is placed in the storage location for volatile organic samples. A holding blank will be analyzed on a weekly basis. This blank is used to assess any cross contamination of the volatile samples stored in the particular location.

Initial Calibration Verification Standard (ICV)

The calibration of an instrument is checked with this standard prepared from a source other than that used to calibrate the instrument. An ICV is analyzed after each new calibration of an instrument.

Continuing Calibration Verification (CCV)

During the analytical run, at a minimum frequency of one CCV per 20 samples, the mid-range calibration standard is re-analyzed to assess the calibration of the instrument.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A sample is split into three aliquots. One aliquot of the sample is set aside. The other two aliquots are spiked with a known concentration of the analyte(s). All three aliquots are prepared in the same manner and analyzed in the same analytical batch. Precision can then be determined by comparing the matrix spike/matrix spike duplicate (MS/MSD) pair. Accuracy can be determined from the matrix of interest by calculating the recovery of the spiked analytes.

Laboratory Fortified Sample (LFS)

A sample is split into two aliquots. One aliquot of the sample is set aside. The other aliquots is spiked with a known concentration of the analyte(s). Both aliquots are prepared in the same manner and analyzed in the same analytical batch. Accuracy can be determined from the matrix of interest by calculating the recovery of the spiked analytes. This term is most commonly used in drinking water methodology.

Duplicate Analysis

For those analytes which cannot be spiked i.e. pH, two aliquots of the sample are analyzed. The results of the two analyses are compared to determine precision. Duplicate analysis is performed at a minimum frequency of 1 per 20 samples or per batch, which ever is less.

Tune Check

GC/MS instruments analyze BFB (4-Bromofluorobenzene) for volatiles or DFTPP (Decafluorotriphenylphosphine) for semi-volatiles to tune check. The mass spectrum of the appropriate compound is produced every 12 hours or every 8 hours in the case of Method 524.2. The abundances of the ions produced in this spectrum must pass all of the method specifications.

Surrogate Compounds (Organic Analysis)

Samples have surrogate compounds added to them before sample preparation. Surrogate compounds are chemically similar to the analytes being measured. Surrogates are used to assess the behavior of the analytes with the matrix, during sample preparation and analysis. Surrogate compounds must meet all method specifications.

Internal Standards (GC/MS)

Internal standards are pure compounds added to each standard and sample in known amounts to measure the relative response of method analytes. Each internal standard represents a group of analytes. The internal standard is used in conjunction with the calibration standards to determine analyte concentration. Internal standards are added immediately before analysis. Internal standard peak areas must meet all method specifications.

Laboratory Control Standard (LCS)

The LCS consists of a prepared standard which is set up along with a group of client samples. This standard is also analyzed along with the batch of samples to which it belongs. The accuracy of the preparation procedure can be assessed by determining the percent recovery of the analyte in the standard.

Laboratory Fortified Blank (LFB)

The LFB consists of a prepared standard which is set up along with a group of client samples. This standard is also analyzed along with the batch of samples to which it belongs. The accuracy of the preparation procedure can be assessed by determining the percent recovery of the analyte in the standard. This term is most commonly used in drinking water methodology.

Reporting Limit Verification Standard (RLVS)

A standard prepared at the reporting limit for the analyte of interest. This standard is used to assess the validity of the current reporting limit when the calibration curve does not include a standard at the reporting limit. This is used to assure the client that the reporting limit is an achievable quantity.

The quality assurance measures and their frequency are described below. Control limits for the QC samples are summarized in Tables 5.1 - 5.21.

Metals Analyses

Method Blanks - are carried through the sample preparation at a frequency of one per batch of 20 samples per matrix, with the exception of Mercury where the method blank is analyzed once every 15 samples.

Laboratory Control Standard - A LCS is carried through the sample preparation at a frequency of one per batch of 20 samples per matrix. All analytes represented in a given analytical batch will have the LCS analyzed for that metal. The Mercury LCS is

analyzed once every 15 samples.

Matrix Spike/Matrix Spike Duplicate - One MS/MSD is represented in each digested batch of samples which contain a maximum of 20 samples. The MS/MSD is analyzed for all of the metals represented in the analytical batch.

Calibration - A three point curve analyzed at the beginning of each analytical run for all furnace and flame analyses. ICP analyses require only a single point calibration daily.

Initial Calibration Verification Standard - Each analytical run will have an ICV analyzed immediately after each daily calibration.

Reporting Limit Verification Standard - If the low standard in the calibration curve is not at the reporting limit then the RLVS is analyzed at the beginning of each analytical run.

Reagent Blank - Analyzed at the beginning, and at a minimum every 10 samples and also at the end of the analytical run.

Continuing Calibration Verification Standard - Analyzed every tenth sample at a minimum throughout the analytical run. Each analytical run will also end with a CCV.

Spectral Interference Check Standard (SIC)- Analyzed with each analytical run following the daily calibration and at the end of the run.

Dupicate Analysis - A sample duplicate may be included an analysis batch.

Wet Chemistry Analyses

Titrations:

- Reagent Blank - Run with each analytical run and every 20 samples.
- Method Blank - (if applicable) analyzed with the analytical run and every 20 samples.
- CCV's - Analyzed at the beginning and the end of the analytical run and every 20 samples.
- MS/MSD's - Analyzed if possible every 20 samples.

Spectrophotometric Parameters:

- Reagent Blank - If necessary, one per analytical run is analyzed and at a minimum every 20 samples.
- ICV - Analyzed from an alternate source once with each new calibration.

- Method blank - Analyzed once with each batch of samples requiring a preparation/digestion.
- CCV's - Analyzed at the beginning, every 20 samples and the end of the analytical run.
- MS/MSD's - Analyzed every 20 samples or per analytical batch if less than 20 samples.
- LCS - Same as Method Blank

Gravimetric Parameters:

- Method Blank - Analyzed once with each analytical batch.
- Standard - Analyzed per analytical batch.
- Duplicate - Analyzed every 10 samples or per analytical batch.

Total Organic Carbon Analyzer:

- Calibration - Verified with each new analytical run.
- ICV - Analyzed after each new calibration verification.
- CCV - Analyzed at the beginning, every 20 samples and at the end of the analytical run.
- Reagent Blank - Analyzed after every 20 samples and the end of the analytical run.
- MS/MSD - Analyzed after every 20 samples or per analytical batch if less than 20 samples.

Digestions/Preparations/Distillations/Extractions:

- Method Blank - Set up with each analytical batch.
- LCS - Set up with each analytical batch.
- MS/MSD - Set up with each analytical batch per matrix and every 20 samples.

(Batch = sample set prepared using the same reagent lots and standard lots not to exceed twenty samples.)

GC/MS Organic Department

- Holding Blank - Analyzed weekly from each storage refrigerator for volatile organics.
- Method Blank - Analyzed with each analytical batch of samples.
- Tune Check - Bromofluorobenzene or DFTPP analyzed at the beginning of each 8 or 12 hour run sequence depending upon the method being used.
- ICV - Analyzed with each new calibration curve.
- CCV - CCC compounds analyzed after each successful tune for each analytical run sequence.
- Surrogates - Added to each sample, blank and spike and analyzed each run.
- MS/MSD - Volatiles: One per 20 samples, except method 524.2.
  Semi-Volatiles: One per 20 samples extracted.
- LCS - Volatiles: Analyzed every 20 samples or less.
  Semi-Volatiles: One per extraction set up to 20 Samples.

GC Organic Department

Methods 608/8080/ for PCB's

- Method Blank - Set up and analyzed every batch of samples.
- ICV - Analyzed with each new calibration curve.
- CCV - Analyzed 1 per 10 samples or 14 injections, whichever is smaller and for drinking water parameters at the end of the run sequence.
- Surrogates - Added to each sample, balnk and spike and analyzed each run.
- MS/MSD - Analyzed per 20 samples (if sample volume permits).
- LCS - Analyzed per 20 samples or extraction batch, whichever is smaller.

Methods 608/8080 for Pesticides

- Method Blank - Set up and analyzed every batch of samples.
- ICV - Analyzed with each new calibration curve.
- CCV - A single component pesticide mix is analyzed 1 per 10 samples or 14 injections, whichever is smaller and for drinking waters at the end of the run sequence.
- Surrogates - Added to each sample, blank and spike and analyzed each run.
- MS/MSD - Analyzed every 20 samples (if sample volume permits).
- LCS - Analyzed every 20 samples or extraction batch,

whichever is smaller.

Method 504

- Method Blank - Analyzed every 20 samples in the analytical run.
- ICV - Analyzed after each new calibration curve.
- CCV - Analyzed at the beginning, every 10 samples and at the end of the analytical run.
- RLVS- The Reporting Limit Verification Standard is analyzed weekly.
- LFB - 10% of sample load.
- LFS - Analyzed every 20 samples.

Method 8020/602

- Method Blank - Analyzed every 20 samples in an analytical run.
- Surrogate - Added to all samples, blanks and spikes and analyzed for each analytical run.
- ICV - Analyzed with each new calibration.
- CCV - Analyzed at the beginning and every 10 samples each analytical run.
- MS/MSD - Analyzed every 20 samples.
- LCS - Analyzed with each analytical batch of samples.

Methods SM 509B/SW-846 8150

- Method Blank - Analyzed every 20 samples or each extraction batch.
- Surrogate - Added to all samples, blanks and spikes and analyzed each analytical run.
- ICV - Analyzed after each new calibration curve.
- CCV - Analyzed at the beginning of each analytical run and every 10 samples or 14 injections, whichever is smaller.
- MS/MSD - Analyzed after every 20 samples per matrix.
- LCS - Analyzed with each analytical batch of samples.

Method 515.1

- Method Blank - Analyzed every ten samples.
- Surrogate - Added to all samples, blanks and spikes and analyzed each analytical run.
- ICV - Analyzed after each new calibration curve.
- CCV - Analyzed at the beginning, every 10 samples and at the end of each analytical run.
- LFS - Analyzed 10% of samples.
- LFB - Analyzed every 20 samples or analytical batch.

TPH California Method

- Method Blank - Analyzed every 20 samples or analytical batch.
- CCV - Analyzed every 24 hours.
- MS/MSD - Analyzed every 20 samples.
- LCS - Analyzed with each analytical batch of samples.

Method 508

- LRB - Analyzed every 20 samples or extraction batch, whichever is smaller.
- Surrogate - Added to all samples, blanks and spikes and analyzed each analytical run.
- ICV - Analyzed with each new calibration.
- CCV - Analyzed at the beginning of each run and every 8 hours.
- LFS - 10% of all samples are spiked.
- LFB - Analyzed every 10 samples or extraction batch, whichever is smaller.

Method 508A

- LRB - Analyzed every 10 samples in an analytical run.
- ICV - Analyzed with each new calibration
- CCV - Analyzed at the beginning, every 10 samples and at the end of the analytical run.
- LFS - Analyzed every 20 samples.
- LFB - analyzed every 10 sample or extraction batch, whichever is smaller.

Method 507

- LRB - Analyzed every 10 samples or extraction batch, whichever is smaller.
- Surrogate - Added to all samples, blanks and spikes and analyzed with each run.
- ICV - Analyzed with each new calibration.
- CCV - Analyzed at the beginning, every 10 samples and at the end of the analytical run.
- LFS - Analyzed every 20 samples.
- LFB - Analyzed with each analytical batch of samples.

LC Organic Department

Method 8310

- Method Blank - Analyzed every 20 samples or extraction batch, whichever is smaller.
- Surrogate - Added to all samples, blanks and spikes and analyzed each run.

- ICV - Analyzed with each new calibration.
- CCV - Analyzed every 24 hours.
- MS/MSD - Analyzed every 20 samples.
- LCS - Analyzed with each analytical batch of samples.

Method 531.1

- LRB - Analyzed every 10 samples in an analytical run.
- Surrogate - Added to all samples, blanks and spikes and analyzed each run.
- ICV - Analyzed with each new calibration.
- CCV - Analyzed at the beginning, every 10 samples and at the end of the analytical run.
- LFS - Analyzed 10% of all samples.
- LFB - Analyzed every 10 samples in an analytical run.

Bacteriological Analyses

The Internal Quality control measures and frequencies are listed in Tables 5.18 through 5.21. Drinking Water quality control measures are found in the referenced citation in Section 5.

11.1 Personnel Training

All analysts are required to demonstrate proficiency in the analyses they will be performing prior to working on actual samples. The training encompasses the analytical procedures to be utilized, the elements of quality control to be associated with the procedure, and the necessary safety information. All of these elements are included in each Standard Operating Procedure. Training is conducted by senior laboratory personnel, and requires that each analyst be familiar with the SOP associated with the task, observe an experienced analyst perform the analysis, work under direct supervision, and finally demonstrate proficiency at the analysis. Figure 11.1 is a SOP training documentation form used when training a new analyst. This form is taken from the NET "Certification of Laboratory Personnel" SOP. Each analyst has a personal training record which is updated periodically.

In addition to the internal training, employees are encouraged to participate in short courses available from instrument manufacturers and professional development seminars. All external training documentation is also kept in the personnel training files. The training files are maintained by the Department Supervisors with a master compendium of copied training files maintained by the QA Coordinator.

Figure 11.1 SOP Training and Implementation Record Form

SOP TRAINING AND IMPLEMENTATION RECORD

SOP Title: _____

Method No.: _____

Revision: _____

Initial Review: establish what needs to be changed in order to comply with SOP. Include list of reagents or other equipment which needs to be obtained in order to implement the changes. Attach a summary of the initial review to this form.

Date of Initial Review: _____

Training: the analyst(s) has read the SOP and the procedure has been performed by the following analyst accompanied by the assigned trainer.

Analyst(s) Signature: _____

Supervisor/Trainer Signature: _____

Date Training Completed: _____

Performance evaluation sample: must be analyzed and be acceptable before client samples can be analyzed, if adopting a new method.

PE Sample ID	True Value	Acceptance Limits	Date Ampule Prepared	Date Analysis Performed	Value Obtained	Acceptable

Comments: _____

_____

_____

Supervisor Signature and Date: _____

LABORATORY TRAINING SUMMARY

Name_____ Date Employed_____

Instructions for use of this forms: This form should be updated each time an analyst is certified for preforming a new procedure. Enter the analysis and date training was initiated in the first and second column. The date and/or reference for each additional item should be entered as appropriate indicating that the requirement has been successfully met.

Analysis	Date Initiated	Read SOP	MVS	MDL	Observation	PE	QCIs	Followup	Date Completed	Initials Supervisor	Initials Analyst	Certification Awarded

KEY:

MVS = Method Validation Sample, Refer to method specific SOP for details.
MDL = Method Detection Limit, Refer to Detection Limit SOP. Analyst must demonstrate knowledge of concepts/calculation and have actually performed at least one MDL study
Observation = Verify that the analyst is using appropriate technique
PE = Performance Evaluation sample, administer PE sample(s) according to this SOP and the method specific SOP.
QCIs = Quality Control Indicators, verify that the analyst is aware of control limits for acceptability of QCIs, documentation of QCIs, and corrective action for QCIs out of control.
The need for follow up should be discussed prior to awarding the certificate.

NET, INC.

Figure 11.1 SOP Training and Implementation Record Form (CONT.)

SECTION 12

Performance and Systems Audits

PERFORMANCE AUDITS

The QA objective of the Bartlett Division of NET is to provide data of known and documented high quality. To this end, the Bartlett Division participates in several performance evaluation audits as well as NET's own Interlaboratory Testing Program.

The external performance evaluation audits and round robins that Bartlett participates in are briefly described below.

EPA Water Pollution (WP) Performance Evaluation Audit Program: The U.S. EPA distributes ampules containing unknown concentrations of a wide variety of organic and inorganic parameters. The analyses are made by the laboratory personnel using routine analytical procedures. After evaluation by the EPA, NET receives a listing of true concentrations of each analyte. This program monitors laboratories which perform analyses on NPDES and POTW pre-treatment agreement samples. This performance evaluation audit is conducted on a semi-annual basis.

EPA Water Supply (WS) Performance Audit Program: A program similar to the EPA WP performance evaluation audit, except this program monitors laboratories which perform analysis for the Safe Drinking Water Act parameters. This audit is conducted on a semi-annual basis.

The State of Illinois perfroms an on-site audit once every three years and reviews WS performance sample results for Illinois Safe Drinking Water Act (SDWA) certification.

The Illinois Department of Public Health (IDPH) audits the bacteriology lab once every two years for IDPH certification.

Wisconsin DNR performs a bi-annual audit and Wisconsin performance samples are analyzed yearly for Wisconsin wastewater certification.

Our American Association of Laboratory Accreditation (A2LA) certification requires an audit once every two years and an annual laboratory review.

For all systems audits performed, a complete response is provided by the Division's Quality Assurance Coordinator.

Please see Table 12.1 for a listing of current certifications and Performance Evaluation sample participation. Figure 12.1 through 12.4 provides a copy of NET Bartlett's certificates held with the Illinois EPA, Illinois DPH, Wisconsin DNR and A2LA.

INTERNAL SYSTEMS AUDITS

The system audit is a systematic check of a qualitative nature consisting of a review of a laboratory's quality assurance systems and physical facilities for sampling, calibration and measurements. System audits are conducted on a monthly basis by the QA Coordinator in the departments within the Bartlett Division of NET. These departments are: Bacteriology, Wet Chemistry, Metals, GC, LC, GC/MS, Field Sampling, Reporting, Customer Service and Administration.

These audits may include several components listed below:

- Personnel, facilities and equipment
- Chain of custody procedures
- Instrument calibration and maintenance
- Standards preparation and verification
- Analytical procedures
- Quality control procedures
- Data handling procedures
- Documentation control procedures
- Deliverable requirements

CERTIFICATIONS

The Bartlett Division of NET maintains several certifications. Analytical services that require laboratory certification which NET-Bartlett does not currently hold, (such as industrial hygiene monitoring) may be obtained through the NET network of laboratories.

See Table 12.1 and Figures 12.1 through 12.4 for current certifications.

Table 12.1

January 31, 1994
Page 1 of 2

National Environmental Testing Bartlett Division
Certifications, Audit Programs and Interlaboratory Collaborative Studies

Major Program/ Years of Participation	Activity
U.S. EPA Performance Evaluation Samples **(WP and WS series)** for drinking water and water pollution.	Perform analyses four times per year. Results are scored by U.S. EPA and are available for review.
State of Illinois EPA State of Illinois Rules and Regulations: Title 35: Subtitle A: Chapter II: Part 183 Certification and Operation of Environmental Laboratories. Approval since 1986. Current certificate: 7/93 to 4/96 Certificate # 100221	Perform annual chemical analyses of public water supply proficiency samples. Pass bi-annual on-site audit.
State of Wisconsin Department of Natural Resources. Under the provisions of ch. NR 149 Laboratory Certification and Registration. Approval since 1980 Current certificate: Aug 4, 1993 - Jun 30, 1994 Laboratory ID# 999447130	Perform annual analyses of proficiency evaluation samples. Pass an initial on-site audit and periodic update audits.
Illinois Department of Public Health. Standard Plate Count, Total and Fecal Coliform in water. Examination of Samples of Water Supplies and Their Sources. Approval since 1976. Current certificate expires March 1995. Registry No. 17533	Pass a bi-annual on-site audit.

Table 12.1 (cont.)

National Environmental Testing Bartlett Division
Certifications, Audit Programs and Interlaboratory Collaborative Studies

Major Program/ Years of Participation	Activity
A2LA - The American Association for Laboratory Accreditation. Requirements set forth by ISO/IEC guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" and any additional program requirements in the identified field of testing. Presented: 1-18-94 Valid to: 11-30-95 Certificate # 0453-01	Pass an initial and bi-annual on-site audit. Perform an annual review with A2LA. Submit WP and WS PE studies as they are performed.
Discharge Monitoring Report (DMR) QA Study. For **NPDES** work done at the Bartlett Division for state municipalities. Approval from 1982 to current.	Perform annual analyses of NPDES proficiency evaluation samples.
Waste Management, Inc. - Environmental Monitoring Laboratories. Groundwater Monitoring Program. 1989 to current.	Approval based upon an annual on-site audit and review of proficiency evaluation samples.
US Ecology. Approved Vendors List. June, 1992 to current.	Approval based on an annual on-site audit.

Table 12.1 (cont.)

January 31, 1994
Page 1 of 1

National Environmental Testing Bartlett Division
Addendum to
Certifications, Audit Programs and Interlaboratory Collaborative Studies

Major Program/ Years of Participation	Activity
U.S. EPA Contract Laboratory Program (CLP) January 1989 - July 1991	Perform analysis of quarterly blind proficiency samples for the organic target compound list. Pass yearly on-site system audits.

Note: NET Bartlett succesfully completed the pre-award proficiency sample analysis as well as the on-site audit; however, in December, 1991, NET withdrew from the bidding process of its own accord.

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

AWARDS THIS

CERTIFICATE OF APPROVAL

TO

National Environmental Testing, Inc.-Bartlett Division

850 West Bartlett Road

Bartlett, IL 60103

FOR THE FOLLOWING CHEMICAL ANALYSES OF ENVIRONMENTAL SAMPLES:

EPA Method 524.2, Rev. 3.0: Phase I, II, and V VOCs and TTHMs; ***Provisional Certification Granted for EPA Method 504, Rev. 2.0:*** 1,2-Dibromo-3-Chloropropane, Ethylene Dibromide;
Provisional Certification Granted for EPA Method 505, Rev. 2: Alachlor, Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Simazine, Toxaphene;
Provisional Certification Granted for EPA Method 531.1, Rev. 3.0: Aldicarb, Aldicarb Sulfone, Aldicarb Sulfoxide, Oxamyl, Carbofuran,
Provisional Certification Granted for EPA Method 508A, Rev.1.0: PCBs as decachlorobiphenyl; ***Provisional Certification Granted for EPA Method 549, July 1990:*** Diquat,
Provisional Certification Granted for EPA Method 515.1, Rev. 4.0: 2,4-D, Dalapon, Dinoseb, Pentachlorophenol, Picloram, Silvex ***Approval Granted for :*** Dicamba
Provisional Certification Granted for EPA Method 506, July 1990: Di(2-ethylhexyl) adipate, Di(2-ethylhexyl) phthalate, ***EPA Method 550, July 1990:*** Benzo(a)pyrene,
Provisional Certification Granted for EPA Method 547, July 1990: Glyphosate; ***Provisional Certification Granted for EPA Method 548 , July 1990:*** Endothall,
EPA Method 200.7, Rev. 3.3: Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Manganese, Nickel, Zinc; ***EPA FLAA Methods, MCAWW 1983:*** Calcium, Silver, Sodium,
EPA GFAA Methods, MCAWW 1983: Antimony, Lead, Selenium, Thallium; ***EPA Method 245.1, MCAWW 1983:*** Mercury; ***EPA Method 206.3, MCAWW 1983:*** Arsenic
EPA Method 375.4, MCAWW 1983: Sulfate; ***EPA Method 335.2, MCAWW 1983:*** Cyanide; ***EPA Method 310.1, MCAWW 1983:*** Alkalinity;
EPA Method 160.1, MCAWW 1983: TDS; ***EPA Method 340.2, MCAWW 1983:*** Fluoride; ***EPA 150.1, MCAWW 1983:*** pH in potable water.

CERTIFICATE NUMBER : 100221

DATE OF ISSUE : 02/94 Update

DATE OF EXPIRATION : 04/96

DIRECTOR

CERTIFICATION OFFICER

DIVISION MANAGER

Figure 12.1 Illinois EPA Certificate

STATE OF ILLINOIS

DEPARTMENT OF PUBLIC HEALTH

CERTIFICATE OF APPROVAL

FOR PUBLIC HEALTH LABORATORY SERVICE

NET MIDWEST, INC.

850 WEST BARTLETT ROAD, BARTLETT, ILLINOIS 60103

is approved for the following laboratory examinations:

HETEROTROPHIC PLATE COUNT FOR WATER

TOTAL AND FECAL COLIFORM EXAMINATION OF SAMPLES OF WATER FROM PUBLIC WATER SUPPLIES AND THEIR SOURCES (MF)

NEAL CLEGHORN, TONI GARTNER, SUSAN HAMPSON, KELLY JONES, MARILYN SCHIFERL, AND JOHN SPANZCAK ARE APPROVED FOR THE ABOVE TESTS.

[redacted]

Registry No. 17533

Date MARCH 11, 1993

For the period ending MARCH 11, 1995

John R. Lumpkin, M.D.
Director of Public Health

Figure 12.2 Illinois DPH Certificate

Figure 12.3 Wisconsin DNR Certificate

The State of Wisconsin

DEPARTMENT OF NATURAL RESOURCES

Hereby grants

Certification

under the provisions of ch. NR 149, Wisconsin Administrative Code to:

MET Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

999447130
Laboratory ID Number

Issued: January 24, 1994

Expires: June 30, 1994

for the following test categories:

* Oxygen Utilization
* Nitrogen
  Ammonia
  Nitrite
  Nitrate
  Kjeldahl Nitrogen
* Phosphorus
* Physical
* General I
* General II
  Chloride
  Cyanide
  COD
  Fluoride
  Phenolics
  Sulfate
* General III
  EP Toxicity
  Ignitability
  Reactivity
  TCLP
* Metals I
  Silver
  Aluminum
  Arsenic
  Barium
  Beryllium
  Calcium
  Cadmium
  Cobalt
  Chromium
  Copper
  Iron
  Mercury
  Potassium
  Magnesium
  Manganese
  Molybdenum
  Sodium
  Nickel
  Lead
  Antimony
  Selenium
  Tin
  Strontium
  Thallium
  Vanadium
  Zinc
* Organics; Purgeable
* Organics; Base/Neutral
  Semivolatiles by GC/MS
* Organics; Acid
* Liquid Chromatography
  Polynuclear Aromatic Hc
  Pesticides by LC
* Pesticides; Acid
* Petroleum Hydrocarbons
  Petroleum VOCs
* Organics; Organochlorine
  PCBs
  Organochlorine Pesticides

George E. Meyer
Secretary

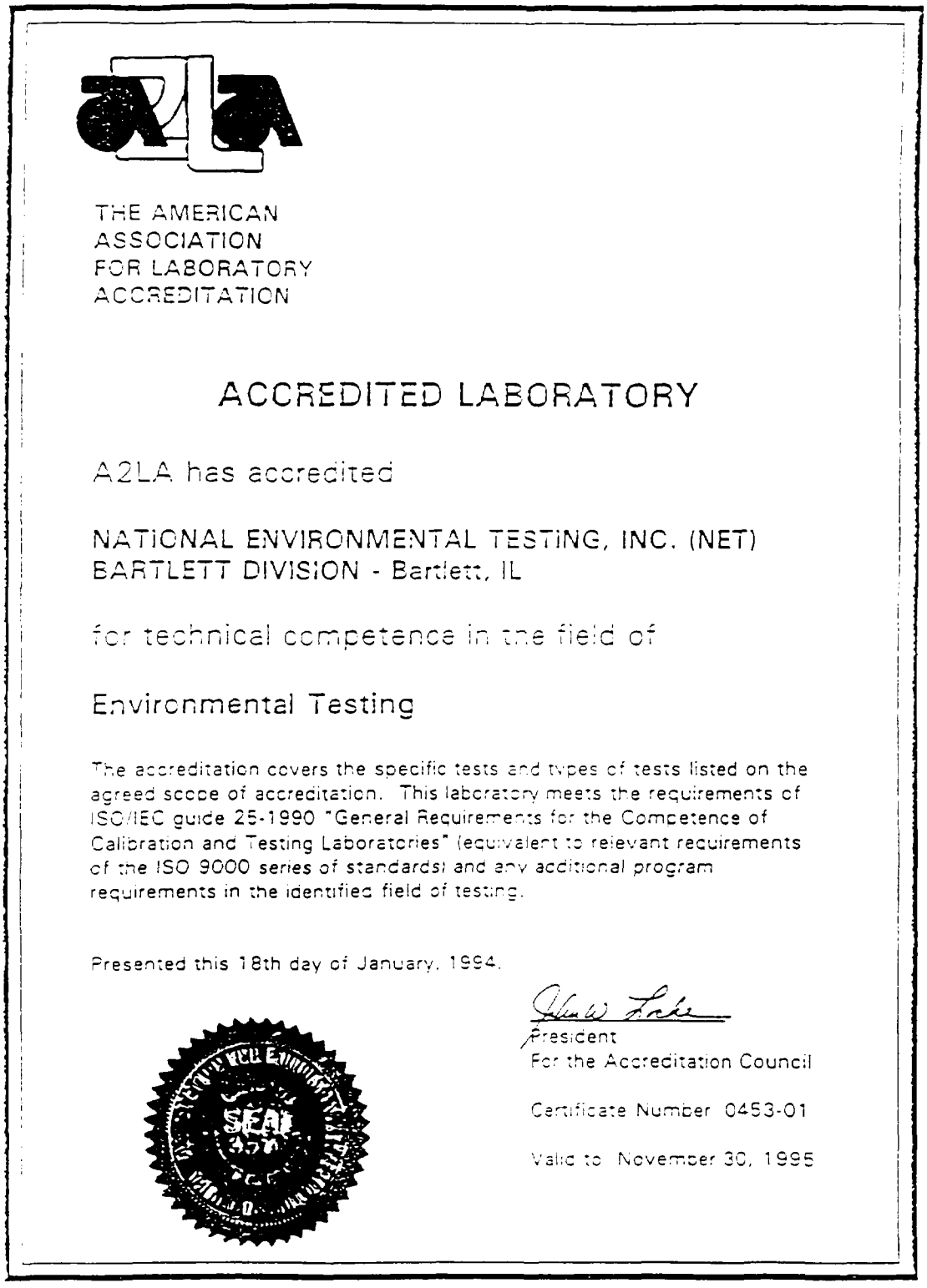
Administrator, Division for Environmental Quality

Director, Office of Technical Services

This certificate is valid unless revoked or suspended and supercedes all previous certificates.

Form 4800-10 Rev. 2-93

Figure 12.4 A2LA Certificate



THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

NATIONAL ENVIRONMENTAL TESTING, INC. (NET)
BARTLETT DIVISION - Bartlett, IL

for technical competence in the field of

Environmental Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards) and any additional program requirements in the identified field of testing.

Presented this 18th day of January, 1994.

President
For the Accreditation Council

Certificate Number 0453-01

Valid to November 30, 1995

SECTION 13

Preventative Maintenance

Preventative maintenance procedures such as lubrication, detector cleaning and the frequency of such maintenance are performed according to the procedures outlined in the manufacturer's manual. Precision and accuracy data are examined for trends beyond control limits to determine evidence of instrument problems. Maintenance must be performed when instrument performance begins to deteriorate as made evident by poor peak resolution, shifts in calibration curves, loss of sensitivity, or failure to meet one of the quality control criteria.

Instrument notebooks are kept containing usage, calibration, maintenance and repair record/agreements for each major instrument. The laboratory maintains adequate supplies of spare parts for use as needed.

In the event of equipment failure that cannot be resolved in-house, service is obtained from the instrument manufacturer, if available, at the laboratory. If on-site repair is not possible, then arrangements are made to ship the instrument back to the manufacturer for necessary repairs. Back-up instruments which have been approved for the analysis shall perform the analysis normally carried out by the malfunctioning instrument, if feasible. If back-up is not available and analysis cannot be carried out within the time frame, the samples shall be subcontracted to another certified laboratory to carry out the analysis.

SECTION 14

Specific Routine Procedures to be Used to Assess Data Precision and Accuracy of Specific Measurement Parameters Involved

ANALYSIS OF STATISTICAL DATA

The Bartlett Division of NET utilizes control charts and tabulations to analyze accuracy and precision data. Control limits are determined using a minimum of twenty data points.

The minimum twenty data points are carefully evaluated to be sure these data points are representative of the procedure. Data points are tabulated and the mean and Standard Deviation (SD) are measured. Control limits are set at the mean +/- 3SD. Warning limits are set at the mean +/- 2SD. The control and warning limits are then set for ensuing data.

NET's "Procedure for Statistical Control Charting/Tabulation" should be consulted for NET's minimum control charting requirements and for example control charts.

Control charts may be maintained for:

Accuracy: Laboratory Control Standard
Continuing Calibration Verification
Surrogate Recovery
Matrix Spike % Recovery
Initial Calibration Verification Standard

Precision: MS/MSD Relative Percent Difference (RPD)
Individual Duplicates, RPD or Difference

Laboratory Contamination: Method Blanks
Reagent Blanks

Out of control situations are defined as:

* A single point outside the 3 sigma control limit
* 7 consecutive points increasing
* 7 consecutive points decreasing
* 7 consecutive points on the same side of the mean

Any out of control situation requires corrective action and identification of the problem. Corrective action can be documented in the instrument maintenance log, on a "Laboratory Notification Form" or in a separate corrective action report.

SECTION 15

Corrective Action

A quality assurance program cannot be considered complete without a defined and usable policy for correcting quality problems. NET utilizes a closed-loop corrective action system which is directed by the Division Manager and the Quality Assurance Coordinator. The quality assurance program is designed to avoid problems but it also is used to identify potential problems and to identify and correct any problems that may exist. Quality control problems fall into two categories: those requiring immediate corrective action or those which require long-term corrective action.

The quality control procedures outlined to this point in the manual are designed to help analysts detect the need for corrective action. Often the analyst's previous experience will be the most valuable tool in identifying suspicious results or malfunctioning equipment; immediate corrective action can then be taken. The actions taken or suspicious data are noted in the laboratory notebook but further documentation is not necessary unless further corrective action will be needed. Table 15.1 lists common sampling and analysis errors and the corrective action for the error.

Long-term corrective action is identified by standard QC procedures, control charts, performance or systems audits. Any quality issue that cannot be solved by immediate action requires long-term corrective action. NET uses a system to ensure that the condition is reported to a person who is part of the closed-loop action and follow-up plan. Figures 15.1 through 15.5 show the forms used by NET to track corrective action.

As part of the systems audits in each department, previous findings requiring corrective action are investigated during the next audit to determine if the corrective action taken on the earlier problem is still being used consistently.

The essential steps of the closed loop corrective action system are:

1. Identify the problem
2. Assign responsibility for investigating the problem
3. Investigate and determine the cause of the problem
4. Determine a corrective action to eliminate the problem

5. Assign responsibility for implementing the corrective action.

6. Implement the corrective action.

7. Verify that the corrective action has solved the problem by running either a double or single blind performance evaluation sample or a followup systems audit.

8. Document and archive the entire corrective action process.

The corrective action process is documented using the Laboratory Notification Form (LNF), figure 10.4, the Reevaluation Request Form (RER), figure 10.5, or the Internal Testing Program (ITP) Corrective Action Report (CAR), figure 15.1 through 15.3, each according to the type of corrective action. Generally, the LNF is used for non-performance sample related corrective action that is internally generated. The RER is used for corrective action generated by a client request. The ITP CAR is used for performance sample based corrective action.

All long-term corrective actions, once identified, are followed through the closed loop system by the QA Coordinators. The Division Manager has the ultimate responsibility to see that the prescribed corrective action is operational and has solved the problem.

Figure 15.1 Part One ITP Corrective Action Report.

National Environmental Testing, Inc.

Corrective Action Report

TO:_____ Date:____/____/____

RE: Out-of Control Value Reported

FR:_____

Division:_____ Program:_____

Department:_____ Date CAR Due:_____

Analysis:_____

Reported Value:_____ True Value:_____

Control Limits:_____

Method Reference:_____

Instrument ID and Type:_____

Problem Identifcation (Check all that apply)

- ☐ Training
- ☐ Method not followed
- ☐ QC not performed
- ☐ QC limits ignored
- ☐ Detection Limit Problems
- ☐ Dilution/Calculation error
- ☐ Other:_____
- ☐ Supervision
- ☐ Login
- ☐ Reporting
- ☐ Laboratory Contamination
- ☐ Instrument Problems
- ☐ Standards problem
- ☐ Unknown

Corrective Action Taken:_____

_____ Project Manager Date

_____ Quality Assurance Coordinator Date

_____ Division Manager Date

usr/mam/mam2/carp1

Figure 15.2. Part Two of ITP Corrective Action Report.

Corrective Action Report - Quality Control Indicators Part 2

Analyte(s):_____ Division:_____

MDL Study

Date analyzed	Detection Limit	Reporting Limit	Units

Calibration (express in same units as sample)

Date analyzed	# of Stds	Lowest Std.	Highest Std.	r or %RSD

Initial Calibration Verification

Date analyzed	True Concentration	Measured Conc.	Control Limits

Method Blank

Prep Date	Prep Batch #	Date analyzed	Anal Batch #	Measured Conc.	Control Limits

Laboratory Control Sample

Prep Date	Prep Batch #	Date analyzed	Anal Batch #	True Conc.	Measured Conc.	Control Limits

Accuracy Check - Sample Spike/MS & MSD

Prep Date/Batch#	Date anal/Batch#	Sample Conc.	Spike Conc.	Measured Conc.	Spk % Rcvry	Control Limits
Prep Date/Batch#	Date anal/Batch#	Sample Conc.	Spike Conc.	Measured Conc.	Spk % Rcvry	Control Limits

Precision Check - MS/MSD or Sample & Duplicate

Prep Date	Prep Batch #	Date analyzed	Anal Batch #	MS (or Sample) Conc.	MSD (or Duplicate) Conc.	RPD	Control Limits

Continuing Calibration Verification

	Date analyzed	True Conc.	Measured Conc.	%Recovery	Control Limits
(BEFORE)					
(AFTER)					

Additional Comments:

CAR Follow-Up Schedule:

usr/manu/manl .arp1

Figure 15.3. Part Three ITP Corrective Action Report.

NATIONAL ENVIRONMENTAL TESTING, INC.

Corrective Action Report

DATE:

TO: Director of Data Quality cc:

RE: Division Administered PE Results

FR: Division QA Coordinator

ITP#:_____ Analysis:_____ Division:_____

PE Sample Source: _____

PE True Value: _____ PE Control Limits: _____

Control Limit Reference:_____

Laboratory Result: _____

Date of PE Analysis: _____

Was the PE Single Blind? _____ Double Blind? _____

Is the Analysis now in control:_____

Comments: _____

_____

_____

_____

_____

_____

This sheet is accompanied by the QCI sheet for this PE sample.

_____
Quality Assurance Coordinator

usr/mam/mam2/cam3

SECTION 16

Outside Lab Subcontractors Data Quality Requirements

NET Bartlett Divsion provides a wide range of services and instrumentation. In addition, NET Bartlett has the advantage of using "sister" NET laboratories, which work under the same National Quality Assurance Plan as NET Bartlett, for services that may not be provided at the Bartlett Division. In some circumstances, most often do to specific state regulations, it is necessary to subcontract services provided by another laboratory.

In order to ensure the high quality of data provided by NET continues to be provided when a subcontract laboratory is used, the following standards have been set for approval of subcontract laboratories.

Minimum Approval Requirements

The following is a list of minimum requirements to be met before approving a subcontract laboratory.

* State or Federal Certifications - Acquire a copy of the certificate that applies to the subcontracted procedure(s), if applicable.
* Vendor's QAP and SOQ - Review these materials to ensure quality control measures and capabilities are sufficient to meet the original work plan.
* WP/WS Studies - Review past performance according to these PE studies.

Additional Requirements

The requirements listed above are minimum requirements. Upon request by our client or as deemed necessary by the Division Manager, Project Manager or QA Coordinator at NET, the following procedures may also be carried out to approve a subcontract laboratory.

* Vendor Audit Survey (written) - covering general or specific QA/QC issues such as MDLs, methods, QCIs, Control limits...
* Send PE samples to the vendor.
* On-Site Audit (detailed) - covering good laboratory practices, method requirements, QCIs...

The procedures listed above are carried out by the Quality Assurance Coordinator at the Bartlett Division. He or she may rely on other personnel for specific expertise especially in the case of an on-site audit.

The minimum requirements set forth here are to be maintained at a frequency of once every two years. The QA Coordinator shall maintain a list of approved subcontract laboratories.

Any measurement reported from a subcontract laboratory will be flagged as such on the NET Bartlett Analytical Report.

SECTION 17

Quality Assurance Reports to Management

In order to provide information to the Division Manager, Operations Manager and Project Manager concerning the performance of the laboratory in the quality assurance program, the QA Coordinator will meet with them on a weekly or bi-weekly basis, as needed, to review quality control data trends, problems, and other information.

The information in these meetings is then summarized and disseminated to other Departmental Supervisors.

Monthly QA reports are made to the Corporate Director of Data Quality, Division Manager and Laboratory Staff and covers the following materials: Audits and Client Visits, Performance Evaluation Samples, Certifications, Accreditations, Training, SOPs, QAPPs and any other developing items related to the quality assurance and quality control system.

APPENDIX D

STANDARD OPERATING PROCEDURE
FIELD GAS CHROMATOGRAPH

1.0 SCOPE

This operating procedure describes the operation and maintenance of the Photovac 10S gas chromatograph (GC) for use in the field. Manufacturer's specifications and recommendations should be followed or referred to as and when need arises.

2.0 OBJECTIVES

The activities covered by this procedure:

- Insure quality control in field GC analyses.
- Insure uniformity and continuity in operation, calibration, and maintenance of both the equipment and measuring techniques by different qualified field analysts or technicians.

3.0 EQUIPMENT NEEDED

- GC and its accompanying accessories.
- Carrier gas.
- Syringe.
- Calibration gas.
- User's manual for GC.

Read all the instructions before using the instrument. Refer to the owner's manual for a list of other trouble shootings and problems, additional maintenance and repair information, as well as for a more detailed description of the equipment and its correct operation.

4.0 PRELIMINARY TO OPERATION

1. Locate the unit in an area with low-traffic and where the temperature remains fairly constant. Peak retention times are inversely proportional to temperature (i.e., retention times get shorter as the environment gets hotter) for which reason the instrument should be located inside a shelter where there could be some degree of temperature control. Avoid exposing the instrument to rain, snow or dust. Never operate the instrument outdoors in a misty or very humid day.

2. The carrier gas recommended is "Air Ultra-Zero" or "Air Zero-Zero"; this must contain less than 0.1 ppm of total hydrocarbon contamination. "Zero" grade air is not recommended.

3. Manual injection of small samples is done using a gas tight syringe (2-inch maximum side port needle).

4. Never turn the instrument "ON" without a flow of carrier gas. It could cause damage to the lamp.

5. If operating the instrument from an external carrier gas cylinder, use a high purity, 2-stage regulator that can reduce the pressure to 40 psi (280 kPa). The connection between the cylinder regulator and the instrument should be very clean and made of Teflon or stainless steel. This transfer line should be ⅛-inch diameter. Never use rubber or soft plastic tubing.

6. If using the automatic mode of operation, follow the next guidelines:

   a) If calibrant is toxic, connect the *PUMP OUT* port to a vented line. Also, purge the calibrant line before connecting.

   b) If using an external pressurized tank to supply the calibration gas, it should be equipped with a reducing regulator to deliver at 5 psi (35 kPa). The delivery line should also be Teflon or stainless steel.

7. Be very careful not to change the settings of any valve, specially of the gas fittings on the instrument top panel (*DETECTOR OUT, AUX OUT*) unless adjustment of the flow is necessary. Refer to the *START-UP AND OPERATION* section for more information.

8. The injection ports are fitted with "Septum" which is used to prevent leakage. The septum is reached by unscrewing the black "Septum Retainers" in the instrument top panel. The septum Teflon side should be down when inserting them into the retainers. The septum must be changed every 25-30 injections. Do not overtighten the retainers because the needle becomes blocked with a core of septum material.

9. Allow 30 minutes for warmup time after the initial switch on of the power before doing any calibration of the instrument.

10. When not using a particular fitting, wrap it in a clean plastic bag or aluminum foil and set aside in a safe place because it could cause contamination of the instrument. The instrument should also be covered with its lid and be closed when not in use.

11. Always disconnect the pressure device when not using the instrument.

12. Concentration range is from 0.001 ppb to 9999 ppm. Below 0.001 ppb, the instrument will print as 0.0000 ppb. Above 9999 ppm will appear as ****.

13. This instrument in particular does not detect compounds with ionization potential greater than eleven (11).

14. Never inject a sample that contains moisture in it.

15. Fill the internal tank of the instrument up to 1200 psi for one day of use. Delivery pressure should not exceed 40 psi.

16. The instrument battery lasts for eight hours. Recharge the battery the same amount of hours it was used.

5.0 MAINTENANCE

1. Routine maintenance of the instrument consists of monitoring the consumable air carrier gas and replacing it periodically.

2. Shut the unit down for 20 minutes after changing carrier gas.

3. Change paper and pens on the printer/plotter as needed.

4. The lamp will also require periodic replacement depending upon the sampling frequency. Refer to the owner's manual for specific details.

5. The septum in the injection ports must be changed every 25-30 injections.

6.0 START-UP AND OPERATION

1. If operating the instrument from an external gas cylinder, connect the cylinder to the *EXTERNAL CARRIER IN* fitting. If operating the instrument from its own internal carrier gas reservoir, check the gauge marked *DELIVERY* located at the rear left on the instrument. This gauge shows the pressure at which the carrier gas is being delivered and should always read 40 psi.

2. Connect the instrument to the main electrical supply or to an external battery providing a maximum of 14 volts.

3. Establish a supply of carrier gas.

4. Use a 2-channel flowmeter (0-50 mL/min) to compare the readings with the Custom Specification Sheet, located in the clear plastic folder in the front of the owner's manual, using the following procedure:

- Connect the left channel to *DETECTOR OUT* and the right channel to the *AUX OUT* needle valve.

- Compare the readings (both flows should be equal and should be between 10-15 mL/min).

- Adjust the readings if necessary:

  - the left channel is adjusted via the RED color coded valve;

  - the right channel is adjusted using the small needle valve attached to the *AUX OUT* port (these valves interact so adjustments need to be iterative);

  - if the readings are not the same, adjust the *AUX OUT* needle valve until they are equal. Turn the valve handle clockwise to lower the right channel and to raise the left channel. Turn it counterclockwise to raise the right and lower the left. Wait 10 seconds or so for the flow to stabilize;

  - once both flows are equal they can be raised or lowered together by using the *RED FLOW* valve at the left on the top panel. Turn it clockwise to lower both flows or counterclockwise to raise both flows to 15 mL/min. Stabilization will take 20 seconds or so;

  - leave the meter in place and continue until the readings are the same.

- Allow the instrument to stabilize for 20 minutes after all adjustments are completed.

5. If using the isothermal GC capillary column oven assembly, connect the power supply to the 10S *EXT DC* top panel receptacle.

   - Open the module to check the oven unit.

   - Check the temperature setting. The corresponding light will be ON if it is selected. Change to the desired temperature by turning the switch.

6. Depress the *ON* key, you should see "LAMP NOT READY PLEASE WAIT". Wait 2-3 minutes until "READY ENTER COMMAND" appears. Let the instrument warmup for 30 minutes.

7. Depress the *TEST* key follow by *ENTER*. A Status Report will be printed. Check all the instrument setup parameters with the Custom Specification Sheet. The headings "Field" and "Power" should be within 20% of the setup, the other numbers should correspond exactly with the Specification Sheet.

8. Press the *LIST* key. Select the library needed and press *ENTER* for a list of all the compounds stored in it. There are four separate libraries available within the computer. These libraries are for storing information entered with the "setup" group and with the *CYCLE*, *EVENT*, *INFO*, and *CAL* keys.

9. Depress the *GAIN* key to set the gain. Press the up arrow key until the gain number correspond with the Specification Sheet and press *ENTER*.

10. Depress the *CYCLE* key. Check the "TIMER DELAY", "ANALYSIS TIME", and "CYCLE TIME" settings with the Specification Sheet. Use the *CLEAR* key and the numerical key pad to make any changes, otherwise press *ENTER*.

11. Depress the *USE* key. Select the library to be used and hit *ENTER*. Type the day number and press *ENTER*. Follow the same procedure for the month, year, hour and minute. Note that the instrument uses a 24-hour clock.

7.0 CALIBRATION AND ANALYSIS

1. If using the automatic mode, connect the supply of calibration gas. The delivery line should be connected to the *CAL IN* port. If calibrant is toxic, connect the *PUMP OUT* port to a vented line. Also, purge the calibrant line before connecting.

2. Press the *INFO* key to enter information to print with each analysis.

3. To see how the results are affected if a parameter is changed after an analysis is done, press the *CAL* key and *ENTER* to relist the information.

4. To store compounds in a library for calibration purposes, press the *STORE* key. Select the peak number corresponding to the chromatogram to be identified and press *ENTER*. Type the name of the compound, the concentration in ppm and its limit value in ppm. The purpose of the limit value is to flag the result by printing in red when this value is exceeded.

5. Use the *EDIT* key if the spelling of a compound or its limit value needs to be changed. Enter the ID number from the library printout. To delete a compound, press the *CLEAR* key and *ENTER* after entering the ID number and pressing *ENTER*.

6. To update retention times due to changes in the instrument temperature, inject a sample of your calibrant gas. After the analysis is done, press the *CAL* key. Type the plotter peak to relist and the ID number in the library. For retention time update only, the concentration in ppm must be zero. For recalibration type the concentration of your standard and hit *ENTER*.

7. The volume of the sample injected is varied by changing the difference between "EVENT 4 OFF" time and "EVENT 5 ON" time. Refer to the owner's manual for additional information and specific instructions.

8. Pump the syringe about 10 times to ensure it is flushed with the mixture, then withdraw a syringe full from the bag or container. Depress the plunger until the desired volume remains in the syringe.

9. To start an analysis, press the *START-STOP* key, select "*PROBE IN*" and press *ENTER*. Hold the syringe barrel in one hand and guide the needle down the hole in the center of the "Manual Injection Port 1" until resistance as the needle point touches the rubber septum is felt. Get ready with the other hand to push the plunger down. Injection should be made immediately following the two-second buzz.

APPENDIX E

RESUMES OF NEW PROJECT MEMBERS

Curriculum Vitae

THOMAS M. COVILLI, CIH

Title	Associate/Regional Health & Safety Manager
Expertise	Industrial Hygiene Site Remediation Training
Professional Work Experience	1980-Present

Safety and Industrial Hygiene

- Complete Industrial Hygiene survey, including safety/IH audit, training program evaluations, chemical exposure monitoring, noise exposure monitoring, ventilation system evaluation, review of records, job hazard analysis, etc., conducted for a major paint manufacturing company in St. Louis, Missouri. Provided consultation services for this company which achieved the "Star" status under OSHA's prestigious VPP (Voluntary Protection Program).

- Comprehensive industrial hygiene survey including noise monitoring; exposure monitoring for various airborne dusts; organic chemicals and metal fumes; and ventilation system evaluation conducted for a large St. Louis based corporation involved in the foods industry.

- Managed the personal exposure monitoring for an extensive asbestos abatement project involving over $7,000,000 of abatement and demolition work conducted at the Ford City Complex in Chicago, Illinois.

- Served as managing CIH in representing the Clayton School District during an extensive asbestos abatement project which was conducted in accordance with AHERA regulations.

- Provided CIH consulting services for a St. Louis based company involved in decontaminating chemical storage tanks; conducted confined space entry testing, lock-out procedures, etc., as necessary to effect safe entry. Recommended appropriate personal protective equipment and emergency equipment for such entries.

- Served as CIH responsible for all air monitoring services (exposure monitoring, area monitoring, and clearance monitoring) for an extensive abatement project performed at the Kirkwood School District under AHERA guidelines.

- Conducted airborne area and exposure monitoring for carbon monoxide at a large iron foundry located in Northeast Missouri; involved recommendations for improvements (i.e., administrative and engineering controls) for certain point sources.

- Implementation of Hazard Communication Program and required training for employees at several companies in the chemical industry, rail car manufacturing and repair industry, and metal plating industry.

- Health & Safety Officer for environmental investigative work at the Bettis Atomic Power Plant NPL site in West Mifflin, Pennsylvania.

- Dames & Moore Regional Health & Safety Manager for the Midcontinental United States responsible for training, audits, medical surveillance, and internal professional consultation on health and safety issues.

- Performed noise and air exposure assessments at a foam production facility in Kansas City, Missouri including air monitoring for isocyanates, nuisance particulate, and 1,1,1-trichloroethane.

Remedial

- Managed an environmental site remediation project requiring identification, transportation and disposal of several hundred leaking above ground containers of hazardous substances for a hanger facility at Lambert St. Louis International Airport, St. Louis, Missouri. Project required soil sampling and analysis to determine extent of surface soil contamination, as well as excavation, transportation, and disposal of contaminated soils. Project also included proper closure of four (4) underground storage tanks containing hazardous materials.

- Managed an extensive cleanup of over 200 leaking underground containers which also involved radiological contamination located at a major airport facility, including assessment; identification; excavation; transportation and disposal of waste and USEPA/State/and DOE liaison.

- Provided individualized underground storage tank management assistance to a number of facilities, including compliance assessment, recommendations, supervision of remedial excavation, sampling and analysis to determine potential leakage, and resultant soil excavation, transportation and disposal.

- Managed two (2) environmental remediation projects at the old Department of Energy facility in Weldon Spring, Missouri. One project involved management and disposal of several thousand gallons of PCB oils and associated transformer carcasses; the second project involved management of consolidation and repackaging of over 4,000 containers of hazardous chemicals and wastes including substances such as mercury, PCB contaminated oils, asbestos, reactive metals, chlorinated hydrocarbons, aromatic and aliphatic hydrocarbons, acids, caustics, strong oxidizers, and radiologically contaminated liquids and solids.

- Project Manager for remedial activities under a 106 Superfund Administrative Order at a former waste oil re-refinery facility which had PCB contamination. Activities included wastewater treatment, sludge solidification, oil disposal and site grading, PRP Committee coordination, and agency/legal liaison.

- Assistant Project Manager for a major surface impoundment removal project that involved over 4,000,000 gallons of waste in at a railcar repair facility in Texas. Required detailed coordination and quality control soil sampling/testing.

- Managed a lead abatement project at a former zinc galvanizing facility in Missouri which included interfacing with the Missouri Department of Natural Resources, establishing clean-up goals, and performing personnel, area, and perimeter air monitoring.

Environmental

- Phase I assessments including limited asbestos surveys for two (2) large supermarket chains in Kansas City, Missouri.

- Project Manager and Health & Safety Officer for a subsurface geological and hydrogeological investigation at a parcel of land adjacent to a landfill involving radiological and organic chemical contamination.

- Environmental compliance assessments in St. Louis, Missouri for two (2) facilities of a large client in the telecommunications industry.

- Project Manager for a geological and hydrogeological site investigation at a former railcar repair facility in Illinois involving PNA and volatile organic chemical contamination.

- Environmental compliance audits at several railcar repair facilities throughout the country to assure compliance with federal, state, and local regulations, as well as compliance to company policy and procedures.

- Prepared contingency plans (as required by the EPA for generators of hazardous wastes) specific for each of several companies (in the metal plating industry, rail car repair industry, and chemical industry).

- Wrote batch wastewater pretreatment procedures for six (6) railcar repair facilities which included communication with various state and local agencies to determine discharge parameters for public-owned treatment work systems.

Past Experience

Allstates Environmental Services, Vice President, 1987-1990
Metcalf and Associates, Vice President, 1986-1987
Petrolite, Inc., Environmental Chemist, 1984-1986
ACF Industries, Division Environmental Chemist, 1980-1984

Academic Background

B.S., Zoology (minor in chemistry), Southeast Missouri State University, 1980

Professional Organizations

Member of American Industrial Hygiene Association
Member of American Academy of Industrial Hygiene
Member of the Missouri Waste Control Coalition
Member of the Air and Waste Management Association

Professional Registration

Certification in the Comprehensive Practice of Industrial Hygiene (CIH), 1987 (Certificate #3723)
Accreditation as Inspector/Management Planner under the Asbestos Hazard Emergency Response Act (AHERA), 1987 (Certificate #VIIKU23110-25R)

Selected Publications

In-house company-specific chemical commodity safety and handling manual with separate procedures for handling over 1,000 different chemicals. Manual has sections pertaining to first aid, exposure precautions, toxicology, hazard assessment, special safety equipment, and confined space entry.

In-house company-specific data guide used by plant and corporate personnel for environmental purposes detailing procedures for handling and disposing of hazardous and other type waste as well as other environmental matters. This involved a great deal of research and thorough understanding of federal environmental regulations (e.g., RCRA, CERCLA, Clean Water Act, Clean Air Act).

Article in a St. Charles, Missouri magazine regarding Hazard Communication and Community Right to Know.

Curriculum Vitae

JAMES R. BODDY

Title — Senior Engineer

Expertise — *Soil Mechanics and Foundation Engineering*

Experience with Firm — Dames & Moore, 1971

Project manager and principal investigator on studies pertaining to geotechnical and civil-related engineering, including earth structures, building structures, storage tanks, and power generating plants, as well as the closure plans of existing facilities and structures at mining and milling operations, oil refineries, and chemical plants. Other projects include diking embankments, waste impoundments, and water retention and mill tailing dams.

- Principal-in-charge of the development of engineering design and ground water components for the closure and post closure plans of a solid waste disposal basin for an oil refinery near East St. Louis, Illinois.
- Preliminary evaluation and development of alternatives and cost estimates for a reclamation closure plan at a large copper mining, milling and refining facility in Salt Lake City, Utah.
- Investigation of ground water and development of remedial plans for control of contaminant migration from a uranium tailings impoundment.
- Study of the leakage of possible contaminants from bottom ash and fly ash ponds at a power generating station.
- Engineering support for the closure and post closure plans of the remote hazardous waste management facility at an oil refinery in North Salt Lake City, Utah.
- Investigation of the geotechnical and ground water conditions contributing to a major slide area within a section of a pit wall within a large open pit mine.
- A complete design of a water retention earthfill embankment in Arizona from conceptual planning through construction management. Primary emphasis of this project was given to embankment stability of soft shale.
- Geotechnical investigation of foundation conditions for the design of a mining plant, including foundation recommendations for office, storage, and processing facilities.
- Development of geotechnical concepts and preparation of design plans and specifications of embankments and tailings impoundment systems for several mining and milling facilities.
- Performing geotechnical design evaluation and complete designs of water retention earth fill embankments in the western United States.

- o Subsurface investigation and the development of geotechnical parameters for a 50-mile gas pipeline constructed within peat and soft soil areas.
- o Development of geotechnical and foundation design parameters for hospitals, condominiums, and industrial facilities.
- o Development of geotechnical design concepts for a 9-mile section of proposed mountain roadway on variable soil and rock conditions.
- o Establishing foundation, geotechnical, and ground water engineering parameters for 25 miles of diking. Major concerns centered around soft ground conditions and protection of the embankment slopes against stream flow erosion.

Past Experience

Design Engineer with the Los Angeles County Road Department, Los Angeles, California

- o Structural and foundation design of highways and related structures such as culverts and bridges.

Academic Background

M.S., Soils Engineering, University of Illinois
M.S., Engineering Mechanics and Structures, University of Southern California
B.S., Civil Engineering, University of Illinois

Countries Worked In

United States (including Alaska), Canada, Iran, Indonesia, Nigeria

Registration

Professional Engineer, California, Utah, New Mexico, Wyoming, Colorado, Idaho, Illinois, West Virginia, and Ohio

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JAMES R. BODDY

Title Senior Geotechnical Engineer/Principal

Expertise Manager of Geotechnical Engineering and Design

Experience with Firm

Principal and project director on engineering studies pertaining to remedial action plans and environmental projects including the following:

- Project management of engineering studies and design for a remedial action program at the former Vitro Chemical Company site in Salt Lake City, Utah. The engineering study included alternatives in on-site and off-site remedial design and construction of 2 million tons of uranium tailings material.
- Project Manager of a reclamation alternatives study and cost estimate for a large copper mining and processing facility in Salt Lake City, Utah for the company's implementation and long-term care. Conceptual development of the closure plans included actions at the mine, waste dumps, tailings impoundment facilities, smelter, concentrators, crusher area, and refinery.

- Project Director on indefinite delivery orders for studies and designs pertaining to miscellaneous civil and military hazardous waste and environmental projects under the jurisdiction of the Kansas City District Office of the U.S. Corps of Engineers. Two delivery orders of this work are:

  - Engineering services for a RCRA Facilities Investigation (RFI) at Fort Bliss, Texas.

  - Engineering services for the remedial design to remove buried drums at the Gustavus Airport, Gustavus, Alaska.

  - Project director and manager for the geotechnical engineering and remedial design for an inactive evaporation pond at Aerojet Heavy Metals (AHMC) facility near Jonesboro, Tennessee. The disposal and evaporation facility had been used for process liquids waste containing depleted uranium (DU) and thorium contamination.

  - Project director for engineering design and study of ground water monitoring and closure and post-closure care plans of a solid waste disposal basin (SWDB) under RCRA control at an oil company manufacturing complex in southwest Illinois near St. Louis, Missouri.

  Project manager and principal investigator on geotechnical studies pertaining to engineering investigations for building structures, fuel storage tanks, power generating plants, roadways and roadway structures, and power transmission lines; and geotechnical and ground water-related studies pertaining to diking projects, embankments, processing plants, and waste impoundments. Projects have been located throughout the United States and internationally in Indonesia, Iran, and Nigeria.

- Establishing foundation, geotechnical, and ground water engineering parameters for 25 miles of diking. major concerns centered around soft ground conditions and protection of the embankment slopes against stream flow erosion.

- Development of geotechnical design concepts for a 9-mile section of proposed mountain roadway on variable soil and rock conditions.

- Investigation of the geotechnical and ground water conditions contributing to a major slide area within a section of a pit wall within a large open pit mine.

- Geotechnical/structural investigation of a large housing development experiencing foundation distress and developing remedial actions.

- Development of geotechnical and foundation design parameters for hospitals, condominiums, and industrial facilities.

- Geotechnical investigation of foundation conditions for the design of a mining plant, including foundation recommendations for office, storage, and processing facilities.

- Development of geotechnical concepts and preparation of design plans and specifications of embankments and tailings impoundment systems for several mining and milling facilities.

- Performing geotechnical design evaluation and complete designs of water retention earth fill embankments in the western United States.

Past Experience

Design Engineer with the Los Angeles County Road Department, Los Angeles, California. Work consisted of structural and foundation design of highways and related structures such as culverts and bridges.

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