VOLUME I

OPERATION AND MAINTENANCE PLAN
SITE-WIDE REMEDIAL PROGRAM
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, ONONDAGA COUNTY, NEW YORK

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CERTFICA TION STATEMENT

The material and data in this Operatior and Maintenance Plan have been prepared under the supervision and direction of the und ersigned.

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This Remedial Program Contact List will be updated on a periodic basis as the remedial program team changes.

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1 INTRODUCTION

This manual has been prepared provide an overview and a general working knowledge of the Operation and Maintenance (O&M) required to implement the remedial program being conducted at the Former GE Court Street Building 5/5A site (herein referred to as the "site"). A Record of Decision (ROD) was issued by the New York State Department of Environmental Conservation (NYSDEC) for the site in March of 1999. The ROD selected No Further Action as the remedy for the site. That remedy consists of the continued O&M of a groundwater collection and treatment system (operated as an Interim Remedial Measure (IRM) since January 1998), and monitoring of site conditions.

The sections of this O&M Plan are as follows.

Section 2 – Site Background — provides an overview of the previous remedial activities conducted at the site.

Section 3 – Cleanup Objectives — provides an overview and a description of the cleanup objectives for the site.

Section 4 – Groundwater Collection and Treatment Sysytem Process Description- Provides an overview of the groundwater collection and treatment system operation and control.

Section 5 – System Startup Procedures — Provides the general procedures associated with enabling the groundwater collection and treatment system following shutdown.

Section 6 - Operations, Maintenance and Monitoring — Explains the normal monitoring inspections and recordkeeping required for maintenance of the groundwater collection and treatment system, and the sampling and reporting required by the NYSDEC for site monitoring.

Section 7 - System Shutdown Procedures — Provides a list of procedures to follow to shutdown the groundwater collection and treatment system for routine maintenance and servicing, and in the case of an emergency.

Section 8 – System Troubleshooting — Provides a guide to remedy groundwater collection and treatment system malfunctions.

Section 9 - Contingency Plan — Provides a description of provisions to prevent, minimize impact or provide detection of emergency conditions.

Section 10 - Health and Safety Plan — Identifies potential safety hazards at the site and precautionary steps to take in order to avoid personnel injury.

Section 11 – Citizens Participation Plan — Identifies components of the remedial program related to involving the public in decision-making regarding site related activities.

A detailed explanation of individual pieces of equipment and instrumentation are included in the Equipment and Instrumentation Manuals (Appendix A, Volume II).

2 SITE BACKGROUND

Remedial activities at the site (Figure 1) are being completed in accordance with the ROD and the requirements of a May 1996 Consent Order between Lockheed Martin Corporation (LMC) and the NYSDEC. A copy of the Consent Order is provided in Appendix B. Access to the site, and the adjoining property to the north and west of the site, has been secured by LMC through easements with DE&JD Associates, Inc., Ronald G. Gustafson, and Onondaga County.

In accordance with the Consent Order, a Remedial Investigation (RI) was completed for the site. As described in the RI Report (EMCON, April 1998), past site operations resulted in volatile organic compound (VOC) impacts along the west side of Building 5. Several IRMs were implemented to eliminate, minimize, and prevent the migration of VOCs in groundwater and surface water pathways. The following IRMs were completed:

- Removal of VOC-impacted soils;
- Elimination or minimization of VOC-impacted groundwater infiltration to the storm sewer system through storm sewer system rehabilitation; and
- Prevention of migration of VOC-impacted groundwater through the shallow groundwater system toward creeks to the north and west of the site through the construction and operation of a groundwater collection and treatment system.

A Feasibility Study (FS) was prepared for the site (EMCON, January 1999) which evaluated remedial alternatives for the site and recommended No Further Action. The ROD for the site (NYSDEC, March 1999) specified No Further Action as the remedy for the site. The No Further Action remedy consists of the continued O&M of the groundwater collection and treatment system (operated as an IRM since January 1998) and monitoring of site conditions.

In June 1999, the NYSDEC reclassified the site from Class 3 to Class 4 on the New York State Registry of Inactive Hazardous Waste Disposal Sites. A Class 4 site is a site that has been properly closed, but requires continued operation, maintenance and/or monitoring.

In December 1999, the NYSDEC granted a petition by G&A Properties, LLC to modify the site boundary to exclude the area where Building 5A is located. The site area was reduced from approximately 14 acres to approximately 10 acres as a result.

3 CLEANUP OBJECTIVES

This section describes the cleanup objectives established for the site and the criteria for remedial program termination.

3.1 Remediation Goals

The remedial goals specified in the ROD for the site (NYSDEC, March 1999) are as follows:

- Prevent the migration of VOC-impacted shallow groundwater to the South Branch of Ley Creek and to Sanders Creek, to the extent feasible considering site conditions;

- Reduce the level of residual VOCs in the shallow groundwater to attain NYSDEC groundwater standards (6 NYCRR Part 703), to the extent feasible considering site conditions, currently available technology, implementability, and cost-effectiveness; and

- Reduce the level of residual VOCs in site soils to attain NYSDEC Soil Cleanup Objectives (NYSDEC Technical and Administrative Guidance Memorandum 4046), to the extent feasible considering site conditions, currently available technology, implementability, and cost-effectiveness.

3.2 Remedial Program Termination

As discussed in the FS, it is anticipated that shutdown of the groundwater collection and treatment system may be appropriate prior to achieving groundwater quality SCGs across the site. In accordance with the FS and the ROD, O&M of the groundwater collection and treatment system will continue until groundwater concentrations of site-related VOCs have leveled off at a relatively low concentration over the majority of the site, significant quantities of contaminants are no longer being removed, and it can be demonstrated that natural attenuation of VOCs will be protective of water quality in the South Branch of Ley Creek and Sanders Creek.

An evaluation will be made in the Annual O&M Reports comparing influent groundwater quality trends and the trends in ambient groundwater monitoring. This comparison will provide the basis for determining when groundwater concentrations of site-related VOCs

have leveled off at a relatively low concentration over the majority of the site, when significant amounts of site-related VOCs are no longer being removed, and when natural attenuation of residual VOCs will be protective of downgradient surface water quality. At that time, with the approval of the NYSDEC, the remedial program will be terminated.

3.3 Intrinsic Remediation Evaluation

For the purposes of this document, "intrinsic remediation" means the reduction of the concentrations of site-related VOCs at the site by biodegradation and/or other natural processes. LMC may evaluate, for its own purposes, intrinsic remediation in meeting the remediation goals. If, based upon that evaluation, LMC proposes to terminate or otherwise modify the groundwater collection and treatment system, it shall submit to the NYSDEC such proposal, which shall conform to the requirements of any relevant Environmental Protection Agency (EPA) or NYSDEC guidance documents regarding intrinsic remediation in effect at the time of submittal of such proposal.

If no such EPA or NYSDEC guidance document exists, such proposal shall conform to the requirements of other relevant technical and scientific guidance documents which set forth principles regarding intrinsic remediation which are generally accepted by technical and scientific professionals with expertise in the subject matter of such guidance. Such submittal shall be in writing and shall include all data generated by the evaluation or evaluations conducted pursuant to the Consent Order (Appendix B) and the O&M Plan, an evaluation of all other site conditions relevant to the proposal to terminate the groundwater collection and treatment system, and an explanation of the basis for its conclusions.

LMC may make its initial submittal after implementing the O&M Plan for 3 years, and thereafter may submit such proposal to the NYSDEC on an annual basis. If the NYSDEC approves such submittal, LMC may terminate or modify the groundwater collection and treatment system in accordance with the terms of the NYSDEC's approval. If the NYSDEC disapproves such submittal or a revised submittal, LMC shall continue to operate and maintain the groundwater collection and treatment system in accordance with the O&M Plan.

No NYSDEC approval to terminate the groundwater collection and treatment system on the basis that intrinsic remediation is occurring shall be given unless LMC demonstrates that (1) the remediation goals specified in the ROD will continue to be met after the termination of the groundwater collection and treatment system, and (2) any relevant requirements of the EPA and NYSDEC guidance documents for intrinsic remediation in effect at the time of submittal of the proposal have been met. If no such EPA or NYSDEC guidance documents exist, such proposal shall conform to the requirements of other relevant technical and scientific guidance documents which set forth principles regarding intrinsic remediation which are generally accepted by technical and scientific professionals with expertise in the subject matter of such guidance.

4 GROUNDWATER COLLECTION AND TREATMENT SYSTEM PROCESS DESCRIPTION

This section provides an overview of the groundwater collection and treatment system operation and control. Details regarding the construction of the groundwater collection and treatment system are provided in the record drawings (Appendix C).

4.1 Process Overview

The groundwater collection and treatment system provides a means for collecting VOC-impacted groundwater at the site and treating the water to remove the contaminants.

As shown in Figure 1, the system includes a collection trench (840 feet in length, equipped with 2 cleanout risers) and sump (located north of Building 5) from which groundwater is pumped to the treatment system.

The collection sump has a low flow pump (P-1, typically operated at 2 gpm) and high flow pump (P-2, typically operated at 10 gpm). The pumps are turned on and off by a series of level sensors in the collection sump. The pump flow rates are variable to allow operational flexibility to account for seasonal conditions.

The collection sump pumps discharge groundwater to a common header pipe located within the treatment building. The flow rate and totalized flow from each pump is monitored separately. The header pipe discharges into the diffused aeration tank. The blower (B-1), which is turned on when the sump pumps are started, forces air through diffuser orifices causing VOCs to be removed from the groundwater flow.

The effluent from the air stripper flows by gravity to a catch basin (CB-20) and through storm piping to Sanders Creek (Outfall OF-1A). The air emissions are discharged to the atmosphere through a 33-foot high stack.

The treatment system was originally designed to provide filtration of the groundwater. This treatment step was terminated in June 1999, with NYSDEC's approval (NYSDEC, June 1999). The components of the filtration equipment (a transfer tank, pumps, and bag filter array) are present at the site and can be returned to service if desired in the future. All major system components are activated from the control panel. The control panel contains a Programmable Logic Controller (PLC) programmed to monitor system operations and to automatically shut down the system when an alarm condition occurs.

4.2 Process Control

During periods of high flow into the collection sump (e.g., following extremely heavy precipitation periods or extended shutdown periods), the influent pipe to the collection sump can be throttled down to control treatment system flows if desired. The flow rate into the collection sump is controlled using a ball valve installed on the influent pipe to the collection sump.

As previously discussed, groundwater will be pumped from the collection sump to the treatment building by two pumps, a low flow pump (2 gpm), and a high flow pump (10 gpm). Flow sensors and totalizers in the treatment building will measure and display the flow transferred by each pump. The operation of the collection sump pumps is controlled by a set of 5 level switches. As the sump level rises above the first high level, the low flow pump is used to transfer groundwater to the treatment system. When the second high level is reached, the low flow pump is shut down and the high flow pump is used to transfer groundwater. A low level switch in the sump turns off the pumps until a high level switch is activated again. High-high and low-low levels in the sump, indicative of the pumps not keeping up with influent flow or the pumps not shutting down when the sump is near empty, respectively, result in alarm signals.

The instantaneous flow discharged from the collection sump pumps can be manually controlled by throttling a diaphragm valve in each influent pipe line located in the treatment building. The pressures in the influent lines are monitored to protect the pumps. If the pressure exceeds the setpoints, indicating blockage in the influent line, the collection sump pumps are shut down and an alarm signal is transmitted.

The air stripper blower line is monitored for temperature, pressure and differential pressure. These three process variables are used to determine the air flow rate. A high temperature and pressure in the line would indicate potential blockage between the air stripper and the blower or clogging of the diffusers. The air stripper piping manifold is constructed of PVC, therefore, protection against excessive temperatures is essential. The air stripper tank is monitored for lid pressure and water level. An abnormal lid pressure would indicate blockage in the vent. An abnormal air stripper tank water level would indicate blockage in the line to CB-20.

The collection sump pumps and air stripper blower are shutdown if one of the following process conditions occur.

1. High or low levels in the collection sump.
2. Blockage in the influent lines.
3. Blockage in air stripper tank air vent.
4. High level in the air stripper tank.
5. Low blower air flow.
6. High blower air temperature.

7. High blower air pressure.
8. High levels in the building floor sump.

These alarm conditions will result in a signal being delivered by autodialer to LMC's O&M Contractor and LMC. Once in alarm mode, the system will not restart until a reset button has been depressed locally or remotely. The O&M Contractor can monitor the system remotely via modem and the PLC to determine flow rates, totalized flow, pressures, equipment operating status, temperatures, and input operating set points.

The system is set up for a time delay between the shutdown of the collection sump pumps and the blower to ensure against the discharge of untreated groundwater.

4.3 Treated Water Effluent Discharge and Air Emissions Requirements

Monitoring of the groundwater influent quality and quantity and treated water effluent quality, will be completed (as described in Section 6.3) to determine compliance with NYSDEC effluent discharge limitations and air emissions requirements. NYSDEC requirements are provided in Appendices D and E for treated water effluent discharge and air emissions, respectively.

5 SYSTEM STARTUP PROCEDURES

This section of the O&M Plan provides the general procedures associated with enabling the groundwater collection and treatment system. The following settings are required prior to system startup.

Power Supply

- Follow appropriate Lock Out/Tag Out procedures to restore power supply.
- Restore power to the system, checking switches located at the utility pole, the circuit breaker panel and the main control panel (PLC).

Collection Sump Pumps

- Place pump power switches to "AUTO" position.
- Open the diaphragm valves on the inlet manifold.
- Close influent and effluent sampling valves.

Air Stripper

- Place air stripper blower power switch in "AUTO" position.

Collection Sump

- Open collection pipe valve to allow water to enter the collection sump. Valve should be opened partially to restrict flow to approximately 10 gpm into the collection sump. As the flow subsides, the valve should be opened completely.
- Sump pumps and blower will automatically begin operating as float levels are achieved.

6 OPERATIONS, MAINTENANCE AND MONITORING

The purpose of this section of the O&M Plan is to provide an overview and general working knowledge of the requirements of the remedial program being conducted at the site, including operation of the groundwater collection and treatment system and its individual components. The Equipment and Instrumentation Manuals (Appendix A) provide a detailed explanation of operation, maintenance, and repair of individual pieces of equipment.

6.1 Normal Inspection and Maintenance

Normal inspection and maintenance tasks will focus on the groundwater collection system, collection sump, discharge pipe line, treatment equipment, and outfall. However, additional maintenance activities will be performed to other aspects of the remedial program (e.g., monitoring wells). Normal maintenance of the system will be accomplished by on-site inspections, scheduled maintenance, and remote monitoring.

6.1.1 On-Site Inspections

The treatment system will be inspected on a quarterly basis. The following tasks will be completed during the on-site inspections.

- Observe condition of collection sump and collection system clean-out risers. Check locking mechanisms and for damage to the access hatch and protective covers.
- Check collection sump for accumulation of sediment. Remove sediment if sediment has accumulated to a point half way between the floor of the collection sump and the inlet to the pumps. Any entry into the collection sump will be performed in accordance with confined space entry requirements.
- Check system for any signs of tampering or loose fittings.
- Check electrical components in control panel for signs of wear, moisture, damage, etc.
- Visually check system components for excessive wear due to mechanical or chemical problems. Replace as necessary.

- Check LED alarm lights on outside of PLC panel.

- Record air pressure, temperature and differential pressure and calculate air delivery flow rate to determine that it is acceptable. Check this flow rate with the PLC calculated value. Check the condition of the air diffusers in the air stripper.

- Record influent pressure readings as sump pumps actuate.

- Record the time of day and total gallons pumped on flowmeter and flow rate when pump is on.

- Note frequency of pump cycling. If cycling too frequently, adjust discharge flow rate by throttling the diaphragm valve on the respective discharge line.

- Sample the influent and effluent of the treatment system in accordance with the effluent limitations and monitoring requirements.

- Inspect monitoring wells for any signs of tampering or loose or unlocked covers.

- Note general condition of asphalt pavement (and any required repair items) around the groundwater treatment building and other remedial program features (e.g., monitoring wells, collection sump, etc.).

- Check treatment system discharge point (CB-20 and OF-01A) for obstructions or excessive sediment accumulation.

6.1.2 Scheduled Maintenance

The groundwater collection pipe will be cleaned as needed to support effective operation of the collection system. Cleaning will be performed by jet cleaning from the clean-out risers toward the collection sump. Water collected in the collection sump during cleaning will be treated by the treatment system. Sediment will be removed from the sump manually or by use of a vacuum tanker, once the water has been evacuated.

A preventive maintenance schedule for the groundwater collection and treatment system is provided in Table 1.

Scheduled maintenance information for treatment equipment, tanks, pumps and blowers, is also provided in the Equipment and Instrumentation Manuals (Appendix A).

All wastes generated from equipment maintenance activities will be containerized for off-site disposal.

6.1.3 Remote Monitoring

The groundwater collection and treatment system is equipped with state-of-the-art control and alarm capabilities. The system was constructed with a microprocessor-based PLC that automatically operates pumps based on sensed liquid levels.

The PLC constantly monitors for extreme high and low water level conditions in the collection sump and for conditions which exceed set-point values for operational status measurements. If any condition is detected outside of the acceptable operating range, the PLC executes an automatic system shutdown and activates the autodialer. The autodialer immediately notifies, by telephone, LMC's O&M Contractor and LMC personnel and provides a brief description of the problem.

The PLC allows LMC's O&M Contractor to perform periodic remote checks of system operation through a PC-based PLC interface, including remote engineering support for technicians present at the site during normal or unscheduled O&M events. Currently, the remote PLC interface has the following monitoring and control capabilities.

- Remote dial-in capability.
- Remote display of real-time operational status measurements.
- Remote reset of control panel alarms.
- Remote start of treatment system pumps.
- Remote adjustment of operating set points.

6.2 Recordkeeping and Reporting

Procedures will be followed to monitor the O&M of the treatment system, including a program of self-inspection, recordkeeping, and reporting. The procedures are discussed in the following sections.

6.2.1 Operating Inspection Forms

Records will be maintained to evaluate the inspection, operating, maintenance, and monitoring of the treatment system. Inspection, operations and maintenance conducted for the treatment system will be summarized in operating inspection forms. Appendix F contains an inspection form that is used for the scheduled O&M visits. This form will document the date, weather, on-site personnel, visitors, description of work performed, equipment utilized, and comments. Appendix F also contains a form to record the reason for and the work completed during unscheduled O&M visits (i.e., responses to alarms). The original forms will be maintained by the O&M Contractor, and copies will be maintained in the ESH office of LMC and at the site.

6.2.2 Laboratory Records

Original copies of laboratory analysis reports will be maintained in the ESH office of LMC, and copies will be maintained at the site.

6.2.3 Reporting Requirements

Copies of all reports will be maintained in the ESH office of LMC and at the site. Site reporting will include quarterly and annual reports, as described below and summarized in Table 2.

Quarterly
As part of the monitoring program, quarterly progress reports of site monitoring activities will be submitted to NYSDEC. Distribution of these quarterly reports will be as follows.

- Benjamin A. Conlon, Esq. – NYSDEC
- Sandra Lee Fenske, Esq. – LMC
- Henriette Hamel, NYSDOH
- Gerald J. Rider , Jr., P.E. – NYSDEC
- Virginia C. Robbins, Esq. – Bond, Schoeneck & King, LLP
- Chris Rossi - NYSDEC, Region 7 (3 copies)

Site inspection and maintenance activities related to O&M of the treatment system will be reported. The following items will be included in the progress reports.

- A summary of the monitoring results obtained.
- The quantity of groundwater treated.
- The quality of influent and effluent groundwater samples.
- Maintenance activities, noting any problems and corrective actions taken.

Annual
An annual report will also be submitted to the NYSDEC. The annual report will include a summary of the previous year's operational data, groundwater quality and elevation monitoring data, and a summary of the system performance during the past year. Each annual report will be submitted to the NYSDEC in January of the following year (e.g., the annual report for 1998 was submitted during January 1999). Distribution of the annual report will be the same as for the quarterly progress reports.

6.3 Routine Monitoring and Laboratory Testing

Monitoring conducted as part of the remedial program will serve the following purposes.

1. To demonstrate that hydraulic control is being maintained along the collection trench.

2. To demonstrate that the treated groundwater meets the effluent discharge limitations established by the NYSDEC.

3. To demonstrate that air emissions from the air stripper do not exceed NYSDEC short-term guideline concentrations (SGCs) or annual guideline concentrations (AGCs).

4. To demonstrate that VOC concentrations of dry weather storm sewer discharges from Outfall OF-02 to the South Branch of Ley Creek are consistent with VOC concentrations detected since the 1997 storm sewer IRM was completed.

Sampling and analysis of the treatment system influent, effluent and site groundwater will be performed as indicated in Table 2. Effluent samples will be collected and analyzed on a quarterly basis for flow, pH, total dissolved solids (TDS), zinc, vinyl chloride, 1,1-dichloroethane (1,1-DCA), 1,2–dichloroethene (1,2-DCE) and trichloroethene (TCE). Influent samples will be collected and analyzed (for VOCs only) at the same frequency as effluent samples. Groundwater elevations will be measured on a semi-annual basis, and groundwater samples will be collected and analyzed (for TCL VOCs as shown in Table 2) on an annual basis. Each of these is discussed further in the following sections.

6.3.1 Hydraulic Control

Hydraulic control of the VOC-impacted shallow groundwater at the site will be monitored by confirming that an inward hydraulic gradient is maintained along both sides of the collection trench. In order to demonstrate this gradient, groundwater elevations will be measured semi-annually (in March and September) at the shallow monitoring wells (MW-1S, MW-2S, MW-3S, MW-4S, MW-5S, MW-6S, MW-7S, MW-8S, MW-9, MW-10, MW-11R, MW-12, MW-13, MW-15, MW-16A, MW-17A, MW-18A, and MW-19S), the staff gauges (SG-1, SG-2, SG-3, SG-4, and SG-5), and the collection system cleanouts (CO-N and CO-S). In addition, the groundwater elevations at the collection system cleanouts (CO-N and CO-S) will be determined quarterly to confirm that water is freely draining from the collection trench toward the collection sump.

6.3.2 Effluent Discharge Limitations

Monitoring of the treatment system effluent will be in accordance with the requirements set forth in NYSDEC's Effluent Limitations and Monitoring Requirements (see Appendix D). Effluent parameters measured include: flow rate, pH, TDS, zinc, vinyl chloride, 1,1-DCA, 1,2-DCE, and TCE. Laboratory testing will be performed by a New York State-certified laboratory in accordance with SW-846 Methods. The influent will only be sampled for VOCs to assess VOC removal, air emissions, and groundwater treatment efficiency.

6.3.3 Air Emissions

To demonstrate that air emissions are protective of human health and the environment, LMC will collect and analyze influent groundwater samples for vinyl chloride, 1,1-DCA, 1,2-DCE, and TCE on the same frequency as effluent samples. The concentration of the influent groundwater will be compared with NYSDEC's Influent Criteria concentrations (Appendix E). A comparison of the concentrations identified in the site influent with the NYSDEC Influent Criteria concentrations is presented in Table 3. If influent groundwater concentrations are determined to be in excess of the NYSDEC's Influent Criteria concentrations, LMC will calculate ambient air quality impacts for comparison to AGCs and SGCs.

6.3.4 Groundwater Quality

As presented in Table 2, groundwater samples will be collected and analyzed (for TCL VOCs) from MW-1S, MW-2S, MW-12, MW-11R, MW-18A, MW-10, MW-17A, MW-16A, MW-8S, and MW-19S on an annual basis in March. Boring logs for these monitoring wells are included in Appendix G, and well locations are shown on Figure 1. This will provide VOC concentrations in the vicinity of former source areas, as well as comparative data upgradient and downgradient of the groundwater collection system.

Procedures for collecting these groundwater samples will be as described in Appendix H. Purge water will be placed into the collection sump and treated. In addition to the monitoring well samples, a field blank and a trip blank will be collected and analyzed. Sample analysis for VOCs will be performed using SW-846 Method 8260.

6.3.5 Storm Sewer Outfall OF-02

Storm sewer samples will be collected from outfall OF-02 (South Branch of Ley Creek) on an annual basis in April. These samples will be collected directly from the outfall to monitor the VOC concentration in the discharge during dry weather conditions. To confirm dry weather conditions prior to collecting the sample, all catch basins will be inspected to ensure that no surface water is flowing into the basins. In addition, a trip blank will be analyzed. The sample will be analyzed for TCL VOCs using SW-846 Method 8260.

6.4 Waste Handling

A waste storage building is located adjacent to the treatment building. This building (with secondary containment) is used for accumulation of waste materials generated during the O&M of the groundwater collection and treatment system. Separate containers will be maintained for used personal protective equipment, solid waste materials (e.g., spent filters, etc.), and liquid wastes and sludges generated during the O&M of the system. In addition, a small metal container "red can" is located within the treatment building for collection of waste materials.

LMC's O&M contractor will be responsible for properly labeling each container, and coordinating with LMC's waste disposal contractor for waste pickup and additional containers and supplies. In addition, LMC's waste disposal contractor will provide regular inspections of the waste storage building.

7 SYSTEM SHUTDOWN PROCEDURES

7.1 Normal Shutdown Procedures

To shutdown the system for routine maintenance or any non-emergency reason, follow the procedure described below:

1. Close collection pipe influent valve in collection sump.
2. All collection sump pumps will automatically stop once the collection sump is evacuated below the low level switch (LSL-1)
3. The air stripper blower will automatically stop (with time delay) after the water level in the air stripper reaches the low level switch (LSL-2).
4. Turn the collection sump pump selector switches to "OFF".
5. Turn the air stripper blower selector switch to "OFF" at the control panel.
6. Do not shut off PLC unless system is shut down for an extended period of time.
7. Implement appropriate Lock Out/Tag Out procedures.

7.2 Emergency Shutdown Procedures

Although the normal shutdown procedure is the preferred method for shutting down the system, the following procedure is recommended when rapid shutdown is necessary during emergency conditions such as fire or catastrophic failure of tanks, pipes, etc.

1. Shut off electrical power to the system by placing the main circuit breaker in the electrical panel in the treatment building to the "OFF" position.

   If the situation requires, disconnection of the electrical power can also be completed at the electrical pole east of the collection sump by placing the selector switch to the "OFF" position.

2. Close collection pipe influent valve in collection sump.
3. Implement appropriate Lock Out/Tag Out procedures.

8 SYSTEM TROUBLE SHOOTING

Some equipment malfunctions will cause an alarm message to be generated by the groundwater collection and treatment system's PLC. Section 8.1 outlines these malfunctions. Section 8.2 addresses additional operating malfunctions that are not programmed into the PLC.

8.1 PLC Programmed Alarms

The PLC is programmed to display the following alarm messages on the message display unit located on the main control panel. Each alarm message will initiate a general system shutdown and will require action by the operator to restore system operation.

Alarm Message	Cause and Remedy
High-High Level in Sump (LAH-1)	**Cause:** Pump P-2 unable to keep up with influent flow to sump Pump P-2 not being turned on as designed. **Remedy:** Check fuse for Pump P-2. Verify that Pump P-2 is pumping in accordance with pump curve. If P-2 is pumping in accordance with pump curve, open diaphragm valve wider to reduce head on pump until sufficient flow rate is obtained. Check pump screens for clogging. Check to ensure that when LSH-2 is reached that P-2 is activated. If not, replace level sensor.

Alarm Message	Cause and Remedy
Low-Low Level in Sump (LAL-1)	**Cause:** Pumps P-1 or P-2 not being turned off as designed. **Remedy:** Check to ensure that when LSL-1 is reached that P-1 or P-2 (whichever is operating) is deactivated. If not, check if the sensor is free of obstructions. If sensor is free to move, replace the level sensor.
High Influent (Low Flow) Pressure (PAH-1)	**Cause:** Plugging of the low flow influent line. Malfunctioning pressure sensor. **Remedy:** Check the setting on the diaphragm valve. Cleanout the Y-check valve. Cleanout the flow sensor. Replace sensor if needed.
High Influent (High Flow) Pressure (PAH-2)	**Cause:** Plugging of the high flow influent line. Malfunctioning pressure sensor. **Remedy:** Check the setting on the diaphragm valve. Cleanout the Y-check valve. Cleanout the flow sensor. Replace sensor if needed.

Alarm Message	Cause and Remedy
High Air Stripper Lid Pressure (PAH-4)	**Cause:** Plugging of the air stripper/building vent. Malfunctioning pressure sensor. **Remedy:** Check to ensure that nothing is blocking the air stripper/building vent. Replace sensor if needed.
High Air Stripper Water Level (LAH-2)	**Cause:** Plugging of the air stripper effluent line. **Remedy:** Check to ensure that nothing is blocking the air stripper effluent line. Check CB-20 and OF-01A.
Low Blower Flow (FAL-1)	**Cause:** Air flow to air stripper insufficient to ensure treatment of groundwater. **Remedy:** Verify that Blower B-1 is operating in accordance with blower curve. If B-1 is operating in accordance with blower curve, check air distribution piping in air stripper for clogging and replace or clean diffusers, if necessary. Check/replace blower intake filter as needed.

Alarm Message	Cause and Remedy
High Blower Pressure (PAH-3)	**Cause:** High pressure in line between blower and air stripper. **Remedy:** Check air distribution piping in air stripper for clogging and clean, if necessary. Check air inlet filter for clogging. Replace blower intake filter as needed.
High Blower Temperature (TAH-1)	**Cause:** High temperature in line between blower and air stripper. Malfunctioning temperature sensor. **Remedy:** Check air distribution piping in air stripper for clogging and clean, if necessary. Summer operation may not be able to handle the same amount of fouling as winter operation. Replace temperature sensor as needed.
High-High Level in Building Sump (LAH-4)	**Cause:** Water has collected in building sump. Malfunctioning sensor. **Remedy:** Identify source of water and repair. Sump pump and connections to treatment influent line is provided to evacuate building sump. Replace level sensor as needed.
Alarm messages associated with former filter processes (LAH-3, LAL-2, DPAH-1, and DPAH-2)	Alarms no longer applicable

8.2 Additional Operating Problems

The following problems could occur with the collection and treatment system.

Problem	Cause and Remedy
No Flow to Collection Sump	**Cause:** Collection lines are clogged or collection pipe valve is closed in collection sump. **Remedy:** Ensure that collection pipe valve is open in collection sump. Collection line blockage can be cleaned from the clean-outs provided.

9 CONTINGENCY PLAN

This Contingency Plan has been developed in the event that any element of the groundwater collection and treatment system fails to operate in accordance with the remedial design. Contingency or emergency conditions can be divided into two types: design failure and equipment failure.

9.1 Design Failure

By design failure, it is meant that the goals of the remediation system are not being accomplished or the NYSDEC effluent discharge limitations and/or air emission requirements are not being complied with. Based upon the monitoring requirements (refer to Section 6.3), the following design failure conditions could exist.

- Hydraulic control is not being maintained.
- Effluent discharge limitations are not being met.
- Air emission requirements are not being met.
- Significant increases in VOC concentration at OF-02 are encountered.

On-going monitoring will indicate whether or not any of these conditions is a problem. In the following sections, the contingency elements, which have been incorporated into the design to minimize the potential for these problems and/or provide for their early detection, are described.

9.1.1 Hydraulic Control

With regards to hydraulic control, the following contingency elements have been incorporated:

- The high flow pump in the collection sump can be modified to discharge up to 16 gpm by adjusting the diaphragm valve in the discharge line.

- The high-high level sensor in the collection sump (LSHH-1) will provide an alarm condition (LAH-1) indicating that the pumps are not keeping up with the flow in the collection trench and thus provide early detection that hydraulic control is possibly not being maintained.

- The buried influent lines from the collection sump can handle approximately 40 gpm. In the event that higher flow rates are encountered (e.g., troubleshooting following an alarm from LSHH-1 shows no mechanical problem with pumps or controls), the high and/or low flow pumps can be replaced with higher capacity pumps. Prior to installing the higher capacity pumps, a review of the treatment capacity of the air stripper would be performed.

9.1.2 Effluent Limitations

With regards to effluent limitations, the following contingency elements have been incorporated:

- The system can handle higher loadings than those encountered during operation to date. The air stripper was designed based on a conservative flow rate (10 gpm) and total VOC concentrations. Design literature from the manufacturer indicates that higher flow rates and VOC concentrations can be treated effectively by this installation.

- The blower low flow alarm (FAL-1) will provide indication that the blower, whether due to diffuser fouling or mechanical failure, is not supplying enough air to adequately treat the groundwater. The system will be shutdown before groundwater exceeding effluent limitations is discharged.

- The system was constructed with room for an additional air stripper, if this is determined to be necessary.

- The treatment system was originally constructed with a transfer tank and bag filters installed downstream of the air stripper to reduce metals concentrations prior to discharge. This stage of treatment has been shown to be unnecessary. However, the equipment and capability remains on-site and can be utilized if needed in the future.

9.1.3 Air Emissions

The contingencies associated with the design of the air stripper (i.e., safety factor on the flow rate and VOC concentrations used for ambient air quality modeling) also provide a safety factor for meeting air emission requirements. In addition, ambient air quality modeling was based on 100 percent stripping efficiency representing the worst case air discharge.

In the event that ambient air impact evaluations indicate that the operation of the treatment system will create ambient air impacts above acceptable levels, steps will be taken to reduce VOC emissions to the air. These steps will be determined based on the

compound(s) of concern and operational conditions, and may include operational changes.

9.1.4 VOC Concentration at OF-02

If significant increases of VOC concentrations are encountered (e.g., concentrations above the effluent discharge limitations specified for the groundwater collection and treatment system), the source of those VOCs will be identified and removed, or they will be otherwise isolated from the storm sewer system. This isolation may include rehabilitation of additional portions of the storm sewer system similar to those completed in 1992, 1993, and 1997. If required, these activities will be performed in accordance with NYSDEC's August 21, 1998 correspondence. In accordance with the August 21, 1998 letter, if LMC wishes to proceed with additional storm sewer work, LMC will submit a letter to NYSDEC briefly outlining the scope of the work to be done. NYSDEC may not require preparation of a work plan or engineering oversight or certification, depending on the scope of the activities.

9.2 Equipment Failure

By equipment failure, it is meant emergency conditions associated with spills, leaks or other unplanned events. Anticipated potential spill conditions associated with the treatment system would be the following.

- Catastrophic failure or leaking of underground piping (Section 9.2.1).
- Catastrophic failure or leaking of aboveground piping or equipment (Section 9.2.2).
- Overfill of groundwater collection sump (Section 9.2.3).

9.2.1 Underground Piping

The operating pressure of the collection sump pumps is well below the design pressure of the discharge piping. In addition, any leaks from this piping will discharge back into the containment zone of the collection system. Therefore, it was not deemed necessary to utilize piping with secondary containment or provide elaborate control mechanisms for detection of no or low flow to the treatment system. However, the condition of leaking or ruptured underground piping can be determined during inspections by noting, when a pump is on, if there is flow being measured.

9.2.2 Aboveground Piping and Equipment

The detection of catastrophic failure of aboveground equipment or piping is more important since an overland release of untreated groundwater from the treatment system would not be contained by the collection system. The treatment building has a floor

sump which is equipped with a level sensor (LSLL-4) and sump pump. If water is detected in the sump (e.g., due to a ruptured pipe or tank), the treatment system will be shutdown and an alarm signal delivered. Once the source of the problem has been determined and repaired, water from the sump can be pumped to the connection provided upstream of the flow meter in the high flow influent line.

This treatment building sump liquid level sensor would also serve to shut down the treatment system in the event of natural flooding entering the treatment building. In addition, the air stripper tank is equipped with a high-high level sensor (LSHH-2). If these levels are reached, the treatment system will be shutdown until the cause of the problem is corrected. These measures ensure that the air stripper is not overfilled.

9.2.3 Collection Sump

The elevation of the top of the HDPE collection sump is above static water conditions measured along the collection trench alignment. However, it is possible (during periods of high precipitation and recharge) that hydraulic conditions at the site could result in an overflow at the collection sump. In the event that system repair or component replacement require an extended period (i.e., more than 1 day) of system shut down, it is important to close the valve on the groundwater collection pipe in the collection sump to ensure that collection sump overflow will not occur.

9.3 Spare Parts

In order to prevent extended shut down periods of the groundwater collection and treatment system due to equipment malfunctioning and lead time on replacement equipment, an appropriate inventory of spare parts is maintained on-site.

An inventory of spare parts and equipment will be maintained for the site on the form provided in Appendix I. The inventory and spare parts and equipment needs will be re-evaluated annually.

10 HEALTH AND SAFETY PLAN

The purpose of the Health and Safety Plan (HASP) contained in Appendix J is to provide specific guidelines and establish procedures for the protection of personnel implementing the remedial program. The HASP will be updated as necessary.

In addition, all personnel conducting O&M activities at the site must have successfully completed the LMC Contractor Safety Training Course within a 1-year period, and must perform work in accordance with the LMC Contractor Safety Handbook and the LMC ESH Policy and Procedure Manual.

11 CITIZENS PARTICIPATION PLAN

The purpose of the Citizens Participation Plan contained in Appendix K is to identify components of the remedial program related to involving the public in decision-making regarding site related activities. The Citizens Participation Plan is implemented by the NYSDEC, and will be updated as necessary.

REFERENCES

Blasland, Bouck & Lee, Inc., May 1998. Groundwater Collection and Treatment System Installation, Former GE Court Street 5/5A site, May 1998.

EMCON, November 1997. Interim Remedial Measures Workplan, Former GE Court Street 5/5A site, Groundwater Collection and Treatment Systems.

EMCON, April 1998. Remedial Investigation Report, Former GE Court Street 5/5A site.

EMCON, January 1999. Feasibility Study Report, Former GE Court Street 5/5A site.

NYSDEC, June 1996. Order on Consent, Index # D7-0001-96-05.

NYSDEC, August 1998. Letter Regarding Former GE Court Street 5/5A Plant, Storm Sewer Interim Remedial Measures, August 28, 1998.

NYSDEC, March 1999. Record of Decision, Former GE Court Street 5/5A site.

NYSDEC, June 1999. Letter Regarding Former GE Court Street Plant 5/5A, Discharge Limitations – Groundwater Collection and Treatment System, June 15, 1999.

NYSDEC, December 1999. Letter Regarding Former GE Court Street Plant 5/5A, Discharge Limitations – Groundwater Collection and Treatment System, December 5, 1999.

TABLES

Table 1
Preventive Maintenance Schedule
Groundwater Collection and Treatment System
Former GE Court Street Building 5/5A Site

Preventive Maintenance Item	Month											
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Routine Maintenance & Inspection			x			x			x			x
Complete Air Stripper Cleaning		x			x			x			x	
Blower Lubrication			x			x			x			x
Calibration Check of Air & Water Pressure Instrumentation				x								
Inspect Pressure Transmitters			x			x			x			x
Test HVAC			x						x			
Re-Evaluate Anticipated Parts Needs (annually)	x											
Assessment of Collection Trench & Sump Sediment			x									

Note: Routine air stripper cleaning is scheduled quarterly. LMC may increase the frequency of cleanings based on operational conditions encountered.

Table 2
Sampling and Reporting Schedule
Former GE Court Street Building 5/5A Site

Month											
January	February	March	April	May	June	July	August	September	October	November	December
Quarterly Report (Fourth Quarter)		Effluent Sampling (Zn, pH, TDS, VOCs[1])	Quarterly Report (First Quarter)		Effluent Sampling (Zn, pH, TDS, VOCs[1])	Quarterly Report (Second Quarter)		Effluent Sampling (Zn, pH, TDS, VOCs[1])	Quarterly Report (Third Quarter)		Effluent Sampling (Zn, pH, TDS, VOCs[1])
Annual Report		Influent Sampling (VOCs[1])	Outfall (OF-02) Sampling (VOCs[2])		Influent Sampling (VOCs[1])			Influent Sampling (VOCs[1])			Influent Sampling (VOCs[1])
		Groundwater Monitoring Well Sampling (VOCs[2])						Groundwater Elevation Measurements			
		Groundwater Elevation Measurements									

[1] Vinyl Chloride, 1,1-Dichloroethane, 1,2-Dichloroethene (total) and Trichloroethene.

[2] USEPA Target Compound List VOCs.

Table 3
Influent VOCs Detected and NYSDEC Influent Criteria Concentrations
Former GE Court Street 5/5A Site

Parameters (VOCs)	NYSDEC Influent Comparison Criteria (ug/l) [1]	Minimum Influent Concentration (ug/l) [2]	Maximum Influent Concentration (ug/l) [2]
Vinyl Chloride	312.6	<10	130
1,1-DCA	1,901.6	38	280
1,2-DCE	200	8	99
TCE	15	<5	74

Notes:
1. Based on July 1, 1998 NYSDEC letter.
2. Based on samples collected from February 1998 through December 1999.

FIGURES

N

DEERE ROAD

298

SG-1

SANDERS CREEK

BUILDING 5

BUILDING 5A

MW-5S

LEGEND:

- MONITORING WELL (ONLY THOSE WELLS INCLUDED IN PERIODIC HYDRAULIC OR GROUNDWATER MONITORING ARE SHOWN)
- STAFF GAUGE
- STORM SEWER OUTFALL
- EXISTING STORM SEWER LINES
- YARD PIPING (APPROXIMATE LOCATIONS COLLECTION TRENCH, INFLUENT/EFFLUENT LINES)

COLLECTION SUMP

MW-19S

INFLUENT LINES

SG-2

MW-3S

CB-3

CB-2

CB-20

MW-4S

MW-2S

TREATMENT BUILDING

MW-1S

CLEANOUT RISER (CR-SOUTH)

MW-12

OF-02

CREEK (SOUTH BRANCH)

SG-5

MW-6S

OF-01A

CB-4

MW-16A

MW-11R

MW-18A

FLOW

SG-3

MW-8S

MW-7S

MW-9

MW-10

LEY

FLOW

MW-13

SG-4

LOCATION OF GROUNDWATER COLLECTION SYSTEM TRENCH

ROUTE

MW-17A

4" EFFLUENT LINE

MW-15

CLEANOUT RISER (CR-NORTH)

EMCON

0 120 240

SCALE IN FEET

DATE	7/99
DWN	AK
APP	CT
REV	
PROJECT NO.	86143-008.000

FIGURE 1

OPERATIONS AND MAINTENANCE PLAN

FORMER GE COURT STREET BUILDING 5/5A

SITE PLAN

1" 1/2" 0" 1"

ENE-MTOWN2/DATA: N:\DWG\86143007\MALMSC01.dwg Xrefs: 11X17, MALMWE01, MALMBDBO
Scale: 1 = 1.00 DimScale: 1 = 120.00 Date: 2/16/98 Time: 3:55 PM Operator: AKINOSIA

APPENDIX B

CONSENT ORDER

STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the
Development and Implementation
of a Remedial Investigation/Feasibility
Study and Interim Remedial Measure for
an Inactive Hazardous Waste
Disposal Site, Under Article 27, Title 13
and Article 71, Title 27 of the
Environmental Conservation Law
of the State of New York by

Lockheed Martin Corporation,
Respondent.

ORDER
ON
CONSENT

INDEX #D7-0001-96-05

WHEREAS,

1. The New York State Department of Environmental Conservation (the "Department") is responsible for enforcement of Article 27, Title 13 of the Environmental Conservation Law of the State of New York ("ECL"), entitled "Inactive Hazardous Waste Disposal Sites." This Order is issued pursuant to the Department's authority under ECL Article 27, Title 13 and ECL Section 3-0301.

2. Lockheed Martin Corporation ("Respondent"), a corporation duly organized under the laws of the State of Maryland and a successor by merger to Martin Marietta Corporation ("Martin Marietta"), is doing business in the State of New York. Martin Marietta formerly leased a facility located at Deere and Tarbell Roads, Syracuse, New York, known as the former GE Court Street 5/5A property.

3. General Electric Company ("GE") leased the former GE Court Street 5/5A property until April 2, 1993 when the lease was assigned to Martin Marietta in connection with the transfer of GE's Aerospace business to Martin Marietta. Respondent claims that GE's operations at the property had ceased by December 31, 1991, and that Martin Marietta did not conduct any operations, except remedial activities, there from April 2, 1993 to December 30, 1993 when it terminated the lease.

4. On January 25, 1994, a permanent access easement was recorded in the Onondaga County Clerk's Office ensuring Respondent's access to the former GE Court Street 5/5A property to perform remediation work.

5. Respondent is entering into this Order on its own behalf and as successor in interest to GE. Thus, Respondent is entering into this Order on behalf of itself and GE.

6. The Department alleges that analyses of soil and groundwater samples from the former GE Court Street 5/5A property have detected contamination with volatile organic compounds ("VOCs").

7. The Department alleges that operations at the former GE Court Street 5/5A property included manufacturing of sonar and radar equipment, printed circuit boards, and power packs.

8. The Department alleges that underground storage tanks ("USTs"), which dispensed solvents, were located west of Building 5. More recent dispensing of solvents utilized 55-gallon drums staged on a diked concrete pad located along the west wall of Building 5.

9. The Department alleges that the USTs and 55-gallon drums staged on-site leaked thereby contaminating both the soil and groundwater with aromatics and chlorinated organics.

10. Data from soil borings and groundwater sampling conducted by Wehran-Envirotech in 1993 confirmed the following contaminants in soil and groundwater at the former GE Court Street 5/5A property: toluene, ethylbenzene, xylenes, 1,1-dichloroethane, vinyl chloride and 1,1,1-trichloroethane. Based upon the 1993 Wehran-Envirotech investigation, further investigation will be conducted to determine the impact of the groundwater contaminant plume at the former GE Court Street 5/5A property.

11. The Department finds that hazardous wastes have been disposed of on the former GE Court Street 5/5A property and has identified the property as an inactive hazardous waste disposal site (the "Site"), as that term is defined at ECL Section 27-1301.2. The Department has therefore listed the Site in the New York State Registry of Inactive Hazardous Waste Disposal Sites as Site Number 734070 and has classified the Site as Classification "3" pursuant to ECL Section 27-1305(4)(b). The Site does not present a significant threat to public health or the environment - action may be deferred. A map of the Site is Annexed (Appendix A).

12. A. The Department has the authority pursuant to ECL Article 27 Title 13 and ECL Article 3 Title 3 to issue an order to the owner of an inactive hazardous waste disposal site and/or any person responsible for the disposal of hazardous wastes at such site to (i) develop an inactive hazardous waste disposal site remedial program, subject to the approval of the Department, and (ii) implement such program within reasonable time limits specified in the order.

B. The Department alleges that any person under order pursuant to ECL Section 27-1313 has a duty imposed by ECL Article 27 Title 13 to carry out the remedial program committed to under order. ECL Section 71-2705 provides that any person who fails to perform any duty imposed by ECL Article 27, Title 13 shall be liable for civil, administrative and/or criminal sanctions.

C. The Department asserts that it also has the power, inter alia, to provide for the prevention and abatement of all water, land, and air pollution. ECL Section 3-0301(1)(i).

13. The Department and Respondent agree that the goals of this Order are for Respondent to investigate and eliminate any potential threat to the public health or environment and to (i) develop and implement appropriate Interim Remedial Measures ("IRMs"); (ii) develop and implement a Remedial Investigation/Feasibility Study ("RI/FS") for the Site; and (iii) reimburse the Department's reasonable administrative and oversight costs associated with the negotiation and implementation of this Order.

14. Respondent, having waived its right to a hearing herein as provided by law, and having consented to the issuance and entry of this Order, without any adjudication of law or fact, agrees to be bound by its terms. Respondent's consent to and compliance with this Order does not constitute, and shall not be construed as, an admission of liability for any purpose or an admission by Respondent of law or fact or the applicability of any law to conditions at the Site. Respondent consents to and agrees not to contest the authority or jurisdiction of the Department to issue or enforce this Order, and agrees not to contest the validity of this Order or its terms.

NOW, having considered this matter and being duly advised, IT IS ORDERED THAT:

I. Initial Submittal

Within 45 days after the effective date of this Order, Respondent shall submit to the Department all data within Respondent's possession or reasonable control regarding environmental conditions on-Site and off-Site, and other file documents containing the information described below, unless Respondent informs the Department and the Department agrees that such data have previously been provided to the Department. The data and other information shall include:

A. A brief history and description of the Site, including the types, quantities, physical state, location, and dates of disposal of hazardous waste including methods of disposal and spillage of such wastes;

B. A concise summary of information held by Respondent and Respondent's attorneys and consultants with respect to all persons responsible for such disposal of hazardous wastes, including but not limited to names, addresses, dates of disposal and any proof linking each such person responsible with hazardous wastes identified pursuant to Subparagraph I.A; and

C. A comprehensive list and copies of all existing relevant reports with titles, authors, and subject matter, as well as a description of the results of all previous investigations of the Site and areas in the vicinity of the Site, including copies of all available relevant topographic and property surveys, engineering studies and aerial photographs. Provided, however, that nothing in this Order shall be construed to require the disclosure of any document protected by the attorney-client privilege or the privileges for attorney work product and material prepared in anticipation of litigation. Notwithstanding this provision, there shall be no such attorney work product, material prepared in anticipation of litigation or attorney-client privilege for data already generated or to be generated with respect to Site conditions. In the event Respondent asserts that any information is privileged, Respondent shall describe the information and the nature of the privilege asserted in writing to the Department with sufficient clarity and particularity to place the Department on notice as to the basis of the claim.

II. RI/FS Work Plan Contents and Submittals

A. Within 60 days after the effective date of this Order, Respondent shall submit to

the Department a detailed work plan describing the methods and procedures to be implemented in performing an RI/FS for the Site ("RI/FS Work Plan").

B. 1. The RI/FS Work Plan shall be based upon correspondence between the Department and the Respondent, referenced in Appendix B attached to this Order, and a scope of work for the remedial investigation outlined by such correspondence, and shall include, but not be limited to, the following:

a. A chronological description of the anticipated RI/FS activities together with a schedule for the performance of these activities.

b. A Sampling and Analysis Plan that shall include:

(i) A quality assurance project plan that describes the quality assurance and quality control protocols necessary to achieve the initial data quality objectives. This plan shall designate a data validation expert and must describe such individual's qualifications and experience.

(ii) A field sampling plan that defines sampling and data gathering methods in a manner consistent with the "Field Methods Compendium," OSWER Directive 9285.2-11 (draft June 1993), as supplemented by the Department.

c. A health and safety plan to protect persons at and in the vicinity of the Site during the performance of the RI/FS which shall be prepared in accordance with 29 CFR 1910 and all other applicable standards. Respondent shall add supplemental items to this plan necessary to ensure the health and safety of all persons at or in the vicinity of the Site during the performance of any work pursuant to this Order.

d. A citizen participation plan that is, at a minimum, consistent with the Department's publication, "New York State Inactive Hazardous Waste Site Citizen Participation Plan," dated August 30, 1988, and any subsequent revisions thereto, and 6 NYCRR Part 375.

2. The RI/FS Work Plan shall incorporate applicable elements, as determined by the Department, of a RI/FS as set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA") [42 USC 9601 et seq.], as amended, the National Contingency Plan ("NCP") of March 8, 1990 [40 CFR Part 300], the USEPA guidance document entitled "Guidance for Conducting Remedial Investigations and Feasibility

Studies under CERCLA," dated October 1988, and any subsequent revisions to that guidance document in effect at the time the RI/FS Work Plan is submitted, and appropriate published and publicly available USEPA and Department guidance documents.

3. The RI/FS Work Plan shall include a chronological description of the anticipated interim remedial measure field investigatory activities (the "IRM Investigation") discussed in correspondence between the Department and Respondent, as referenced in Appendix B attached to this Order, together with a schedule for performance of these activities. The Sampling and Analysis Plan and health and safety plan included in the RI/FS Work Plan shall also apply to the IRM Investigation.

III. Performance and Reporting of Remedial and IRM Investigations

A. Within 30 days after the Department's approval of the RI/FS Work Plan, Respondent shall commence the Remedial and IRM Investigations and perform the work in accordance with the schedule contained in the Department-approved RI/FS Work Plan.

B. Respondent shall perform the Remedial and IRM Investigations in accordance with the Department-approved RI/FS Work Plan.

C. During the performance of the Remedial and IRM Investigations, Respondent or its consultant shall have on-Site a full-time representative who is qualified to supervise the work done.

D. Within the time frame set forth in the Department-approved RI/FS Work Plan, Respondent shall prepare a Remedial Investigation Report that shall:

(1) include all data generated and all other information obtained during the Remedial and IRM Investigations:

(2) provide all of the applicable assessments and evaluations, as determined by the Department, set forth in CERCLA, the NCP, and the guidance documents identified in Subparagraph II.B.2;

(3) identify any additional data that must be collected to complete the Remedial Investigation; and

(4) include a certification by the individual or firm with primary responsibility for the day to day performance of the Remedial and IRM Investigations that all activities that comprised the Remedial and IRM Investigations were performed in full

accordance with the Department-approved RI/FS Work Plan.

E. Respondent's performance of the Remedial and IRM Investigations shall be subject to Respondent's success in gaining necessary access pursuant to an access easement to property located adjacent to the Site, which is owned by the County of Onondaga, as described in Paragraph X of this Order.

IV. Feasibility Study

A. Within 60 days of receipt of the Department's approval of the Remedial Investigation Report, Respondent shall submit a complete Feasibility Study evaluating on-Site and off-Site remedial actions to eliminate, reduce or control, to the maximum extent practicable, all health and environmental hazards and potential hazards attributable to hazardous waste disposal at the Site which occurred prior to December 30, 1993. The Feasibility Study shall be prepared by and have the signature and seal of a professional engineer who shall certify that the Feasibility Study was prepared in accordance with this Order.

B. Respondent shall perform and prepare the Feasibility Study in accordance with the Department-approved RI/FS Work Plan and in a manner consistent with CERCLA, the NCP, and the guidance documents identified in Subparagraph II.B.2.

C. Within 30 days after the Department's approval of the Feasibility Study, Respondent shall cooperate and assist the Department in soliciting public comment on the RI/FS and on the Department's proposed remedial action plan, in accordance with CERCLA, the NCP, the guidance documents identified in Subparagraph II.B.2, and with any Department published and publicly available guidance documents in effect at the time the public comment period is initiated. After the close of the public comment period, the Department shall select a final remedial alternative, including a possible no further action alternative, for the site in a Record of Decision ("ROD"). The ROD shall be incorporated into and become an enforceable part of this Order. Respondent retains all rights pursuant to Article 78 of the Civil Practice Laws and Rules ("CPLR") for the purpose of challenging the Department's selection of a final remedial alternative for the Site as set forth in the ROD.

V. Interim Remedial Measures

A. Within 60 days after the effective date of this Order, Respondent shall submit to the Department a chronological description of the anticipated IRM activities together with a

schedule for performance of those activities (the "IRM Schedule") for the Site.

B. Within 15 days of receipt by Respondent of validated analytical data from the Remedial and IRM Investigations, Respondent shall take one of the following actions:

1. Submit to the Department an IRM work plan to implement the proposed IRM discussed in the correspondence referenced in Appendix B;

2. Submit to the Department an IRM work plan to implement a modified IRM if the analytical data from the remedial and IRM investigations indicate that a modification of the proposed IRM is appropriate; or

3. Submit to the Department a letter indicating that, based on the analytical data from the Remedial and IRM Investigations and best engineering judgement, no IRM is appropriate at the time.

C. If Respondent submits a work plan to the Department, upon the Department's approval of such work plan (the "IRM Work Plan"), the IRM Work Plan and approved IRM schedule shall be incorporated into and become an enforceable part of this Order; and Respondent shall submit to the Department for its review and (as appropriate) approval, in accordance with the schedule contained in the Department-approved IRM Work Plan, detailed documents, drawings and specifications prepared, signed, and sealed by a professional engineer to implement the Department-approved IRM. Such documents shall include a health and safety plan, contingency plan, and (if the Department requires such in light of the proposed IRM) a citizen participation plan that incorporates appropriate activities outlined in the Department's publication, "New York State Inaetive Hazardous Waste Citizen Participation Plan," dated August 30, 1988, and any subsequent revisions thereto, and 6 NYCRR Part 375. Respondent shall then carry out such IRM in accordance with the requirements of the approved IRM Work Plan, detailed documents, drawings and specifications, and this Order. Respondent shall notify the Department of any significant difficulties that may be encountered in implementing the Department-approved IRM Work Plan, detailed documents, drawings or specifications and shall not modify any obligation unless first approved by the Department in writing.

D. During implementation of all construction activities identified in the Department-approved IRM Work Plan, Respondent or its consultant shall have on-Site a full-time representative who is qualified to supervise the work done.

E. Within the schedule contained in the Department-approved IRM Work Plan, Respondent shall submit to the Department a final engineering report prepared by a professional engineer that includes a certification by that individual that all activities that comprised the Department-approved IRM were completed in accordance with the Department-approved IRM Work Plan and this Order.

1. If the performance of the Department-approved IRM includes construction activities, the final engineering report also shall include "as-built" drawings and a final engineering report (each including all changes made to the Remedial Design during construction); and a certification by a professional engineer that the IRM was implemented and all construction activities were completed in accordance with the Department-approved detailed documents, drawings and specifications for the IRM and all such activities were personally witnessed by him or her or by a person under his or her direct supervision. The "as built" drawings, final engineering report, and certification must be prepared, signed, and sealed by a professional engineer.

2. Within the schedule contained in the Department-approved IRM Work Plan, Respondent shall submit to the Department an operations and maintenance plan (IRM O&M Plan) prepared, signed, and sealed by a professional engineer. Upon the Department's approval of the IRM O&M Plan, Respondent shall implement it [the IRM O&M Plan] in accordance with the requirements of the Department-approved IRM O&M Plan.

F. After receipt of the final engineering report and certification, the Department shall notify Respondent in writing whether the Department is satisfied that the IRM was completed in compliance with the Department-approved IRM Work Plan and design.

G. Pursuant to the procedural guidelines established in Subparagraphs V.A-E cited above, Respondent may propose one or more additional IRMs for the Site. The Department will approve such proposals if deemed appropriate by the Department.

VI. Progress Reports

By the tenth day of every month following the effective date of this Order, Respondent shall submit to the parties identified in Subparagraph XV.B in the numbers specified therein copies of written monthly progress reports that:

A. describe the actions which have been taken toward achieving compliance with

this Order during the previous month;

B. include all results of sampling and tests, and if required by the Department, all other data received or generated by Respondent or Respondent's contractors or agents in the previous month, including quality assurance/quality control information, whether conducted pursuant to this Order or conducted independently by Respondent;

C. identify all work plans, reports, and other deliverables required by this Order that were completed and submitted during the previous month;

D. describe all actions, including, but not limited to, data collection and implementation of work plans, that are scheduled for the next month and provide other information relating to the progress at the Site;

E. include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of Respondent's obligations under the Order, and efforts made to mitigate those delays or anticipated delays;

F. include a summary of any modifications to any work plans that Respondent has proposed to the Department or that the Department has approved; and

G. describe all activities undertaken in support of the Citizen Participation Plan during the previous month and those to be undertaken in the next month.

VII. Review of Submittals

A. 1. The Department shall review each of the submittals Respondent makes pursuant to this Order to determine whether it was prepared, and whether the work done to generate the data and other information in the submittal was done, in accordance with this Order and generally accepted technical and scientific principles. The Department shall notify Respondent in writing of its approval or disapproval of the submittal, except for the submittals discussed in Subparagraph II.B.1c. All Department-approved submittals shall be incorporated into and become an enforceable part of this Order.

2. a. If the Department disapproves a submittal, it shall so notify Respondent in writing and shall specify the reasons for its disapproval, and shall offer Respondent an opportunity to meet with the Department's staff to discuss the measures necessary to obtain the Department's approval. Within 30 days after receiving written notice

that Respondent's submittal has been disapproved, or within such other period of time agreed upon by the parties, Respondent shall make a revised submittal to the Department that addresses and resolves all of the Department's stated reasons for disapproving the first submittal.

b. After receipt of the revised submittal, the Department shall notify Respondent in writing of its approval or disapproval. If the Department disapproves the revised submittal, Respondent shall be in violation of this Order and the Department may take any action or pursue whatever rights it has pursuant to any provision of statutory or common law unless, within 15 days of receipt of the Department's notice of disapproval, Respondent invokes the dispute resolution procedure set forth in Paragraph IX below. If the Department approves the revised submittal, it shall be incorporated into and become an enforceable part of this Order.

B. Respondent shall modify and/or amplify and expand a submittal upon the Department's direction to do so if the Department determines, as a result of reviewing data generated by an activity required under this Order or as a result of reviewing any other data or facts, that further work is necessary.

VIII. Compliance

A. Respondent's failure to comply with any term of this Order constitutes a violation of this Order and the ECL.

B. Respondent shall not suffer any penalty under this Order or be subject to any proceeding or action if it cannot comply with any requirement hereof because of war, strike, riot, Act of God, Respondent's inability to gain access to property owned by Onondaga County located adjacent to the Site, pursuant to Paragraph X, or an unforeseeable occurrence which the exercise of ordinary human prudence could not have prevented. Respondent shall, within ten working days of when it obtains knowledge of any such condition, notify the Department in writing. Respondent shall include in such notice the measures taken and to be taken by Respondent to prevent or minimize any delays and shall request an appropriate extension or modification of this Order. Failure to give such notice within such ten-day period constitutes a waiver of any claim that a delay is not subject to penalties. Respondent shall have the burden of proving that an event is a defense to compliance with this Order.

IX. Dispute Resolution

If the Department disapproves a revised submittal, Respondent shall be in violation of this Order unless, within 15 days of receipt of the Department's notice of disapproval, Respondent requests a meeting with the Director of the Division of Hazardous Waste Remediation ("Director") to discuss the Department's objections and Respondent is available to meet immediately thereafter. At this meeting, Respondent shall be given an opportunity to present its responses to the Department's objections, and the Director shall have the opportunity to modify and/or withdraw such objections. Respondent shall submit a revised submittal in accordance with the Department's specific comments, as may be modified by the Director. The period of time within which the submittal must be revised as specified by the Department in its notice of disapproval shall control unless the Director revises the time frame during or after the meeting. The Director's determination shall be a final agency determination for purposes of seeking review under Article 78 of the CPLR.

After receipt of the revised submittal, the Department shall notify Respondent in writing of its approval or disapproval thereof. If the revised submittal fails to address the Department's specific comments, as modified, and the Department disapproves the revised submittal for this reason, Respondent shall be in violation of this Order and the ECL, unless, within 30 days after receipt of the Department's notice of disapproval, Respondent commences an action for review of the Director's determination pursuant to Article 78 of the CPLR.

The invocation of formal dispute resolution procedures under this paragraph shall excuse, toll and/or suspend during the pendency of the dispute resolution process, and if necessary, any court proceeding arising from the dispute process, the compliance obligation or deadline which is in dispute, and any other obligation or deadline which is demonstrably dependent upon the matters in dispute.

Respondent may also dispute invoices issued by the State pursuant to Paragraph XI of this Order for State costs incurred for work performed at the Site. If Respondent disputes a State invoice issued pursuant to Paragraph XI of this Order, Respondent shall invoke dispute resolution by requesting, within 30 days of receipt of the Department's invoice, to meet with the Director to discuss Respondent's objections to the invoice and Respondent being available to meet immediately thereafter. At this meeting, Respondent shall be given an opportunity to

present its objections to the invoice, and the Director shall have the opportunity to revise the invoice. The Director's written determination issued after the meeting shall be a final agency determination for purposes of seeking review under Article 78 of the CPLR. If the Director revises the invoice, Respondent shall pay the revised invoice within 30 days of its receipt from the Department in the manner provided in Paragraph XI of this Order. Respondent's failure to pay the revised invoice within 30 days of receipt thereof or, if the Director determines that the invoice need not be revised, Respondent's failure to pay the original invoice within 30 days of the Director's determination, shall be a violation of this Order and subject to whatever enforcement action is within the Department's jurisdiction,unless, within 30 days after receipt of the Director's determination, Respondent commences an action for review of the Director's determination pursuant to Article 78 of the CPLR. Both parties hereby reserve all rights available to them to raise any available claim or defense regarding disputed expenses.

X. Entry upon Site

On January 25, 1994, Martin Marietta recorded a permanent access easement in Onondaga County Clerk's Office ensuring access to the Site for Respondent, its employees, agents and assigns to perform the remediation work required by this Order. Respondent is negotiating a similar permanent access easement to ensure access upon property located adjacent to the Site that is owned by the County of Onondaga (the "County property"). Respondent shall use best efforts to obtain all permits, easements, rights-of-way, rights-of-entry, approvals, or authorizations necessary to perform Respondent's obligations under this Order. For purposes of this Paragraph, "best efforts" includes, if requested as a condition of the access easement on the County property, Respondent's willingness to remediate environmental conditions on the County property identified in the March 1993 Remedial Action Plan and October 1993 Addendum as required under this Order, but "best efforts" shall not include the payment of money in consideration or the purchase of the County property. If any access required to perform this Order is not obtained despite best efforts within 45 days of the effective date of this Order, or within 45 days of the date the Department notifies Respondent in writing that additional access beyond that previously secured is necessary, Respondent shall promptly notify the Department, and shall include in that notification a summary of the steps Respondent has taken to attempt to obtain access. The Department may,

as it deems appropriate, assist Respondent in obtaining access. Should Respondent's or the Department's best efforts fail to obtain the necessary access, Respondent's obligations under this Order shall be tolled until access is obtained. Respondent shall reimburse the Department, in accordance with the procedures in Paragraph XI, for all costs incurred by the Department in obtaining access, including, but not limited to, attorneys fees. Respondent shall permit the Department full access to all records relating to matters addressed by this Order.

XI. Payment of State Costs

Within 45 days after receipt of an itemized invoice from the Department, Respondent shall pay to the Department a sum of money which shall represent reimbursement for the State's expenses including, but not limited to, direct labor, fringe benefits, indirect costs, analytical costs, and travel costs incurred by the State of New York for work performed at the Site to the effective date of this Order, as well as for reviewing and revising submittals made pursuant to this Order, and overseeing activities conducted pursuant to this Order, and collecting and analyzing samples, and administrative costs associated with this Order. The Department shall send Respondent annual invoices for these costs issued no later than twelve months after the end of the Department's fiscal year, that is March 31, in which the costs were incurred. Payment shall be made by check payable to the Department of Environmental Conservation. Payment shall be sent to the Bureau of Program Management, Division of Hazardous Waste Remediation, N.Y.S.D.E.C., 50 Wolf Road, Albany, NY 12233-7010. Itemization of the costs shall include an accounting of personal services indicating the employee name, title, biweekly salary, and time spent (in hours) on the project during the billing period, as identified by an assigned time and activity code. This information shall be documented by reports of Direct Personal Service. Approved agency fringe benefit and indirect cost rates shall be applied. Non-personal service costs shall be summarized by category of expense (e.g., supplies, materials, travel, contractual) and shall be documented by expenditure reports.

XII. Department Reservation of Rights

A. Nothing contained in this Order shall be construed as barring, diminishing, adjudicating, or in any way affecting any of the Department's civil, criminal, or administrative rights or authorities.

B. Nothing contained in this Order shall be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers.

C. Nothing contained in this Order shall be construed as barring, diminishing, adjudicating or in any way affecting Respondent's right to defend against any action or proceeding initiated by the Department, or by any third party.

XIII. Indemnification

Respondent shall indemnify and hold the Department, the State of New York, and their representatives and employees harmless for all claims, suits, actions, damages, and costs of every name and description ("Liabilities") arising out of or resulting from the fulfillment or attempted fulfillment of this Order by Respondent and/or any of Respondent's directors, officers, employees, servants, agents, successors, and assigns, provided that this indemnification shall not extend to any Liabilities resulting from any grossly negligent or intentionally tortious acts or omissions of the Department, the State of New York, their employees, representatives, or contractors.

XIV. Public Notice

Within 30 days after the effective date of this Order, Respondent shall file a Declaration of Covenants and Restrictions with the Clerk of the County wherein the Site is located to give all parties who may acquire any interest in the Site notice of this Order.

XV. Communications

A. All written communications required by this Order shall be transmitted by United States Postal Service, by private courier service, or hand delivered as follows:

Communication from Respondent shall be sent to:

William L. Daigle, P.E.
Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

with copies to:

1. Robert Montione, Bureau of Environmental Exposure Investigation
   New York State Department of Health
   2 University Place
   Albany, New York 12203
2. Daniel Palm, NYSDEC Region 7
   New York State Department of Environmental Conservation
   615 Erie Boulevard West
   Syracuse, NY 13204-2400
3. Robert K. Davies, Esq.
   New York State Department of Environmental Conservation
   50 Wolf Road Room 410
   Albany, NY 12233-5550

B. Copies of work plans and reports shall be submitted as follows:

1. Three copies (one unbound) to William L. Daigle
   Division of Hazardous Waste Remediation.
2. Two copies to Robert Montione,
   Bureau of Environmental Exposure Investigation.
3. One copy to Daniel Palm, NYSDEC Region 7

[One copy of cover letter transmitting work plans and reports to Robert K. Davies, Esq.]

C. Within 30 days after the Department's approval of the RI/FS, Respondent shall submit to the Department one 3½"computer disk in Word Perfect or compatible format containing the Department-approved RI/FS as well as all other Department-approved submittals other than the Department-approved RI/FS. Respondent shall submit such to William L. Daigle.

D. Communication to be made from the Department to the Respondent shall be sent to:

1. Sandra Lee Fenske, Esq.
   General Counsel
   Lockheed Martin Corporation
   Ocean, Radar and Sensor Systems
   EP7-MD19
   PO Box 4840
   Syracuse, NY 13221-4840
2. Patrick D. Salvador, P.E.
   Principal Engineer
   Lockheed Martin Corporation
   EP7-MD48
   P.O. Box 4840
   Syracuse, NY 13221-4840
3. Virginia C. Robbins, Esq.
   Bond, Schoeneck & King, LLP
   One Lincoln Center
   Syracuse, NY 13202

E. The Department and Respondent reserve the right to designate additional or different addressees for communication or written notice to the other.

XVI. Permits

Pursuant to 6 NYCRR § 375-1.7, Respondent shall be exempt from any otherwise applicable requirement to obtain a permit issuable by the Department for any activity undertaken under this Order, provided that the activity is conducted on-Site, as defined in 6 NYCRR § 375-1.7(b), and the activity satisfies all substantive technical requirements applicable to like activity conducted pursuant to a permit as determined by the Department in accordance with the Standards, Criteria and Guidance (SCGs) referenced in the New York State SCG (Equivalent to ARAR's) Index (revised 12/93).

XVII. Miscellaneous

A. 1. All activities and submittals required by this Order shall address both on-Site and off-Site contamination resulting from the disposal of hazardous wastes at the Site.

2. All activities Respondent is required to undertake under this Order are ordinary and necessary expenses for the continued operation of Respondent.

B. Respondent shall retain professional consultants, contractors, laboratories, quality assurance/quality control personnel, and third party data validators acceptable to the Department to perform the technical, engineering, and analytical obligations required by this Order. Unless previously approved by the Department, the experience, capabilities, and qualifications of the firms or individuals selected by Respondent shall be submitted to the Department within 60 days after the effective date of this Order. The Department shall issue written approval or disapproval within 30 days of receipt of Respondent's submittal. The Department's approval of these firms or individuals shall be obtained before the start of any activities for which Respondent and such firms or individuals will be responsible. The responsibility for the performance of the professionals retained by Respondent shall rest solely with Respondent. Respondent reserves the right to request a change in the professional consultants, contractors, laboratories, quality assurance/quality control personnel and third party data validators at any time during the performance of the various technical, engineering and analytical obligations required by this Order. Any such change request must be submitted by Respondent to the Department in accordance with the review and approval procedure specified above.

C. The Department shall have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled by Respondent, and the Department also shall have the right to take its own samples. Respondent and the Department shall make available to each other the results of all sampling and/or tests or other data generated with respect to implementation of this Order. Respondent shall summarize these results in the progress reports required by this Order.

D. Respondent shall notify the Department at least 5 working days in advance of any field activities to be conducted pursuant to this Order.

E. Respondent shall obtain all permits, easements, rights-of-way, rights-of-entry, approvals, or authorizations necessary to perform Respondent's obligations under this Order.

F. Respondent and Respondent's successors, and assigns shall be bound by this Order. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall in no way alter Respondent's responsibilities under this Order. Respondent's officers, directors, employees, servants, and agents shall be obliged to comply with the relevant provisions of this Order in the performance of their designated duties on behalf of Respondent.

G. Respondent shall provide a copy of this Order to each contractor hired to perform work required by this Order and to each person representing Respondent with respect to the Site and shall condition all contracts entered into in order to carry out the obligations identified in this Order upon performance in conformity with the terms of this Order. Respondent or Respondent's contractors shall provide written notice of this Order to all subcontractors hired to perform any portion of the work required by this Order. Respondent shall nonetheless be responsible for ensuring that Respondent's contractors and subcontractors perform the work in satisfaction of the requirements of this Order.

H. All references to "professional engineer" in this Order are to an individual registered as a professional engineer in accordance with Article 145 of the New York State Education Law.

I. All references to "days" in this Order are to calendar days unless otherwise specified.

J. The section headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any of the provisions of this Order.

K. 1. The terms of this Order constitute the complete and entire Order between the Department and Respondent concerning the development of a Remedial Investigation and Feasibility Study for the Site. No term, condition, understanding, or agreement purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestion, or comment by the Department regarding any report, proposal, plan, specification, schedule, or any other submittal

shall be construed as relieving Respondent of Respondent's obligation to obtain such formal approvals as may be required by this Order.

2. If Respondent desires that any provision of this Order be changed, Respondent shall make timely written application, signed by Respondent, to the Commissioner setting forth reasonable grounds for the relief sought. Copies of such written application shall be delivered or mailed to Robert K. Davies, Esq. and to William L. Daigle, P.E.

L. The effective date of this Order is the date the Commissioner or his designee signs it.

DATED: 6/11, New York
, 1996

MICHAEL D. ZAGATA
Commissioner
New York State Department
of Environmental Conservation

By:

Michael J. O'Toole
Division Director

CONSENT BY RESPONDENT

Respondent hereby consents to the issuing and entering of this Order, waives Respondent's right to a hearing herein as provided by law, and agrees to be bound by this Order.

By: _____
(SIGN NAME)

Stephen Pavlosky
(TYPE NAME)

Title: President, Ocean, Radar & Sensor Systems

Date: May 29, 1996

STATE OF NEW YORK)
) s.s.:
COUNTY OF Onondaga)

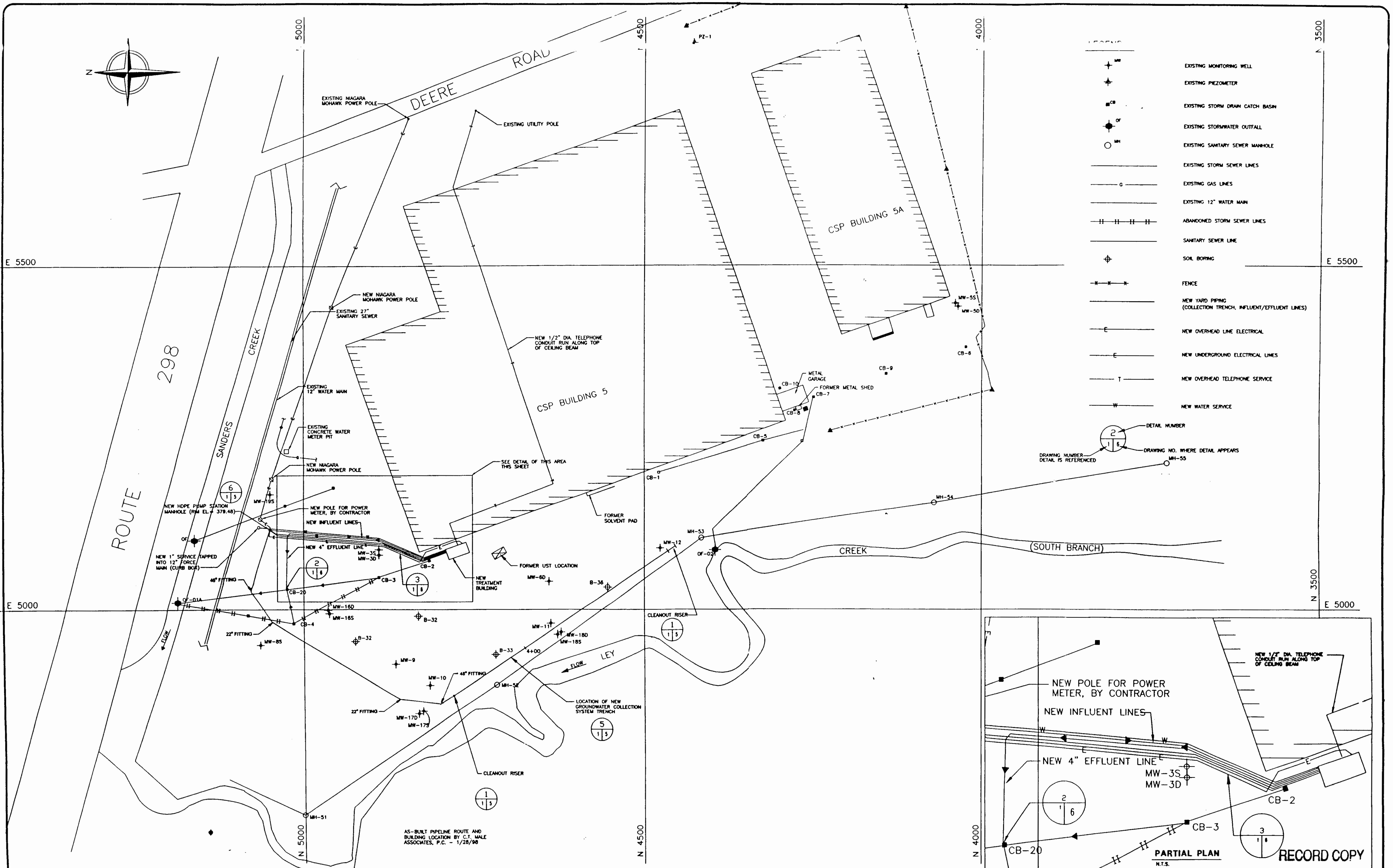
On this 29th day of May, 19 96, before me personally came Stephen Pavlosky, to me known, who being duly sworn, did depose and say that he resides in Skaneateles, New York; that he is the President, Ocean, Radar & Sensor Sys. of Lockheed Martin Corp., the corporation described in and which executed the foregoing instrument; that he is duly authorized to execute the foregoing instrument on behalf of said corporation.

BRENDA K. ARNAULT
Notary Public in the State of New York
Qualified in Onondaga County No. 4733047
My Commission Expires March 30, 1997

_____
Notary Public

APPENDIX C

RECORD DRAWINGS – GROUNDWATER COLLECTION AND TREATMENT SYSTEM


DEERE ROAD
ROUTE 298
SANDERS CREEK
CSP BUILDING 5
CSP BUILDING 5A
CREEK (SOUTH BRANCH)
LEY CREEK
FLOW
E 5500
E 5000
N 5000
N 4500
N 4000
N 3500
EXISTING NIAGARA MOHAWK POWER POLE
EXISTING UTILITY POLE
NEW NIAGARA MOHAWK POWER POLE
EXISTING 27" SANITARY SEWER
NEW 1/2" DIA. TELEPHONE CONDUIT RUN ALONG TOP OF CEILING BEAM
EXISTING 12" WATER MAIN
EXISTING CONCRETE WATER METER PIT
NEW NIAGARA MOHAWK POWER POLE
SEE DETAIL OF THIS AREA THIS SHEET
NEW HOPE PUMP STATION MANHOLE (RIM EL.= 379.48)
NEW POLE FOR POWER METER, BY CONTRACTOR
NEW INFLUENT LINES
NEW 4" EFFLUENT LINE
NEW 1" SERVICE TAPPED INTO 12" FORCE MAIN (CURB BOX)
NEW TREATMENT BUILDING
FORMER UST LOCATION
FORMER SOLVENT PAD
METAL GARAGE
FORMER METAL SHED
CLEANOUT RISER
LOCATION OF NEW GROUNDWATER COLLECTION SYSTEM TRENCH
48" FITTING
22" FITTING
AS-BUILT PIPELINE ROUTE AND BUILDING LOCATION BY C.T. MALE ASSOCIATES, P.C. - 1/28/98
PZ-1
MW-5S
MW-5D
MW-19S
MW-3S
MW-3D
MW-6D
MW-16D
MW-16S
MW-8S
MW-9
MW-10
MW-11
MW-18D
MW-18S
MW-17D
MW-17S
MW-12
CB-1
CB-2
CB-3
CB-4
CB-5
CB-6
CB-7
CB-8
CB-9
CB-10
CB-20
B-32
B-33
B-36
MH-51
MH-52
MH-53
MH-54
MH-55
OF-01A
OF-02
LEGEND
EXISTING MONITORING WELL
EXISTING PIEZOMETER
EXISTING STORM DRAIN CATCH BASIN
EXISTING STORMWATER OUTFALL
EXISTING SANITARY SEWER MANHOLE
EXISTING STORM SEWER LINES
EXISTING GAS LINES
EXISTING 12" WATER MAIN
ABANDONED STORM SEWER LINES
SANITARY SEWER LINE
SOIL BORING
FENCE
NEW YARD PIPING (COLLECTION TRENCH, INFLUENT/EFFLUENT LINES)
NEW OVERHEAD LINE ELECTRICAL
NEW UNDERGROUND ELECTRICAL LINES
NEW OVERHEAD TELEPHONE SERVICE
NEW WATER SERVICE
DETAIL NUMBER
DRAWING NUMBER DETAIL IS REFERENCED
DRAWING NO. WHERE DETAIL APPEARS
PARTIAL PLAN
N.T.S.
RECORD COPY
SCALE IN FEET

To the best of my knowledge and belief, and based upon the representations of representatives of Blasland, Bouck & Lee, Inc., and O'Brien and Gere Technical Services, Inc., these record drawings reflect as-built conditions of the groundwater collection and treatment system as constructed by O'Brien & Gere Technical Services, Inc. with construction oversight by Blasland, Bouck & Lee, Inc., as documented in the Certification Report (BB&L, March 1998) prepared for the system. EMCON has not prepared the record drawings, and has not field verified the actual construction. EMCON has compared these record drawings to mark-ups of the design drawings prepared by BB&L to document construction, photographs of the completed treatment system, and the Certification Report (BB&L, March 1998), and has confirmed the inclusion on these drawings of field changes and substitutions approved during construction by EMCON.

Mark A. Sinyka, P.E.
N.Y.P.E Lic. No. 64543
3/31/98

EMCON/Wehran-New York, Inc.

EMCON

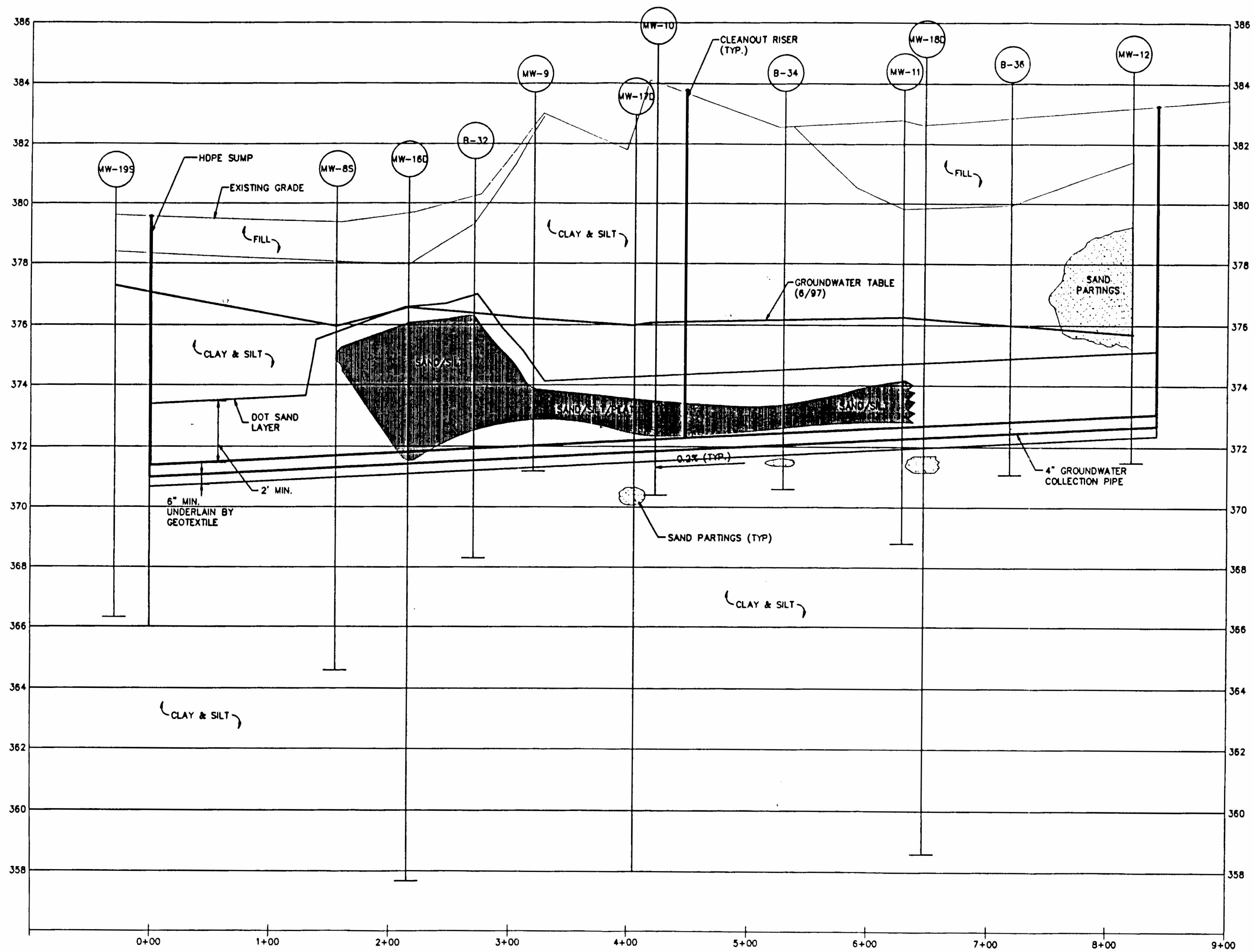
LOCKHEED MARTIN CORPORATION
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, NEW YORK

SITE PLAN

DRAWING NO. 1

PROJECT NO. 86143-003.000

X: (SEE XREF)
P: EMCON
3/30/98 SYR-54-RLP
38138081/AS-BUILT/MALM3C-8.DWG



NOTES:

1. EXISTING GRADE ELEVATION BASED ON ELEVATIONS RECORDED ON BORING LOGS.
2. BORING AND WELL LOCATIONS ARE PROJECTED TO TRENCH ALIGNMENT WHERE APPLICABLE.

RECORD COPY

To the best of my knowledge and belief, and based upon the representations of representatives of Blasland, Bouck & Lee, Inc., and O'Brien and Gere Technical Services, Inc., these record drawings reflect as-built conditions of the groundwater collection and treatment system as constructed by O'Brien & Gere Technical Services, Inc. with construction oversight by Blasland, Bouck & Lee, Inc., as documented in the Certification Report (BB&L, March 1998) prepared for the system. EMCON has not prepared the record drawings, and has not field verified the actual construction. EMCON has compared these record drawings to mark-ups of the design drawings prepared by BB&L to document construction, photographs of the completed treatment system, and the Certification Report (BB&L, March 1998), and has confirmed the inclusion on these drawings of field changes and substitutions approved during construction by EMCON.

Mark A. Swyka, P.E. 5/31/98
N.Y.P.E Lic. No. 64643

EMCON/Wehran-New York, Inc.

EMCON

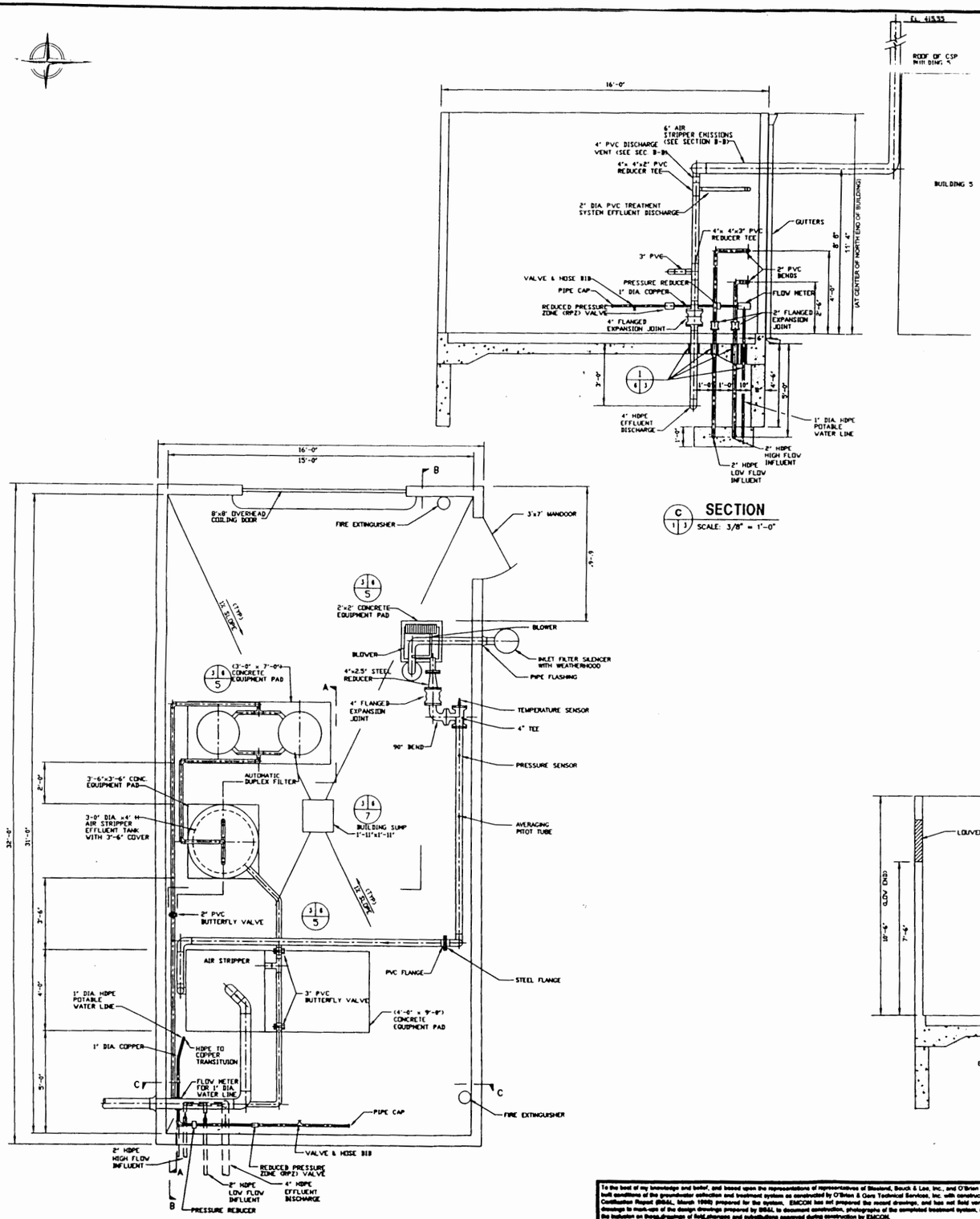
LOCKHEED MARTIN CORPORATION
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, NEW YORK

GROUNDWATER COLLECTION SYSTEM PROFILE

DRAWING NO. 2

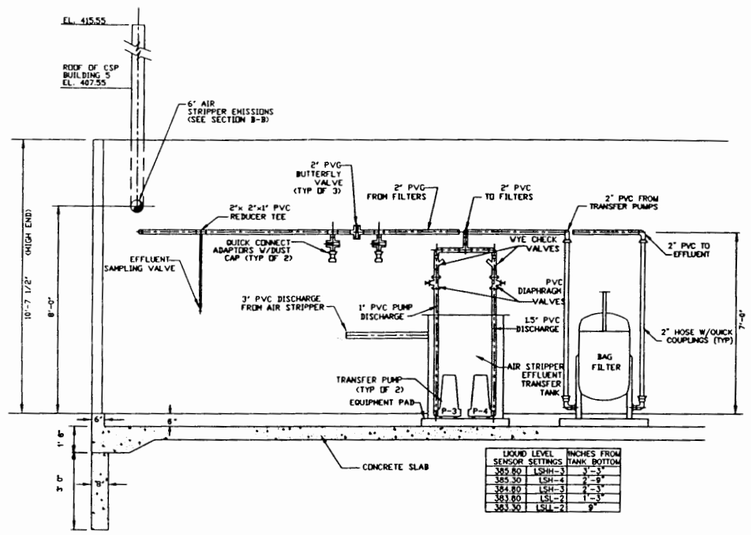
PROJECT NO. 86143-003.000

X: (SEE SIDE)
P: EMCON
3/30/98 SYR-54-RLP
38158001/AS-BUILT/MALMP-01.DWG



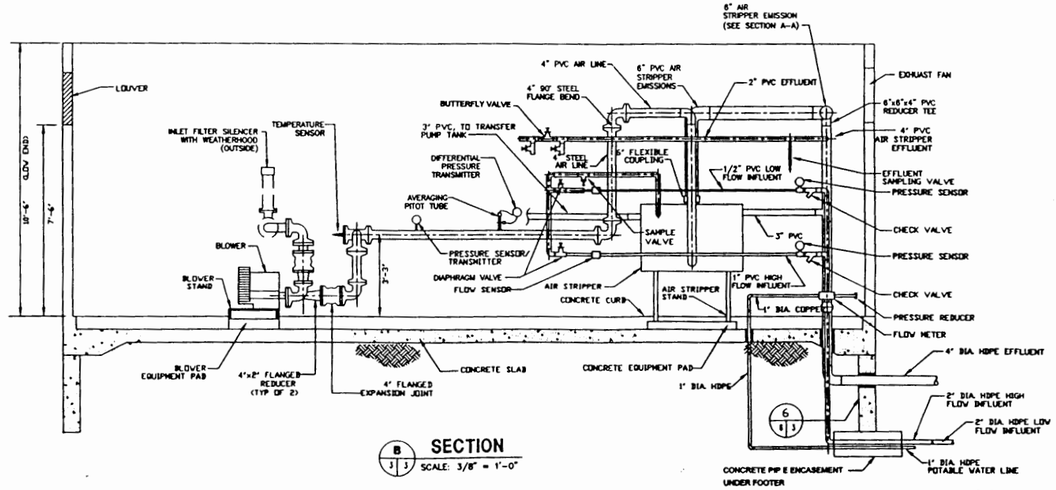
TREATMENT SYSTEM PLAN
SCALE: 3/8" = 1'-0"

SECTION
C | 3 — SCALE: 3/8" = 1'-0"



LIQUID LEVEL SENSOR SETTINGS		INCHES FROM TANK BOTTOM
385.50	LSHH-3	3'-3"
385.30	LSH-4	2'-9"
384.80	LSH-3	2'-3"
383.80	LSL-2	1'-3"
383.30	LSLL-2	9"

SECTION
A | 3 — SCALE: 3/8" = 1'-0"



SECTION
B | 3 — SCALE: 3/8" = 1'-0"

RECORD COPY

To the best of my knowledge and belief, and based upon the representations of representatives of Blasland, Bouck & Lee, Inc., and O'Brien and Gere Technical Services, Inc., these record drawings reflect as-built conditions of the groundwater extraction and treatment system as constructed by O'Brien & Gere Technical Services, Inc. with construction oversight by Blasland, Bouck & Lee, Inc., as documented in the Certification Report (BB&L, March 1998) prepared for the system. EMCON has not prepared the record drawings, and has not field verified the actual construction. EMCON has compared these record drawings to mark-ups of the design drawings prepared by BB&L to document construction, photographs of the completed treatment system, and the Certification Report (BB&L, March 1998), and has confirmed the inclusion on these drawings of field changes and substitutions approved during construction by EMCON.

Mark A. Boyle, P.E.
N.Y.P.E Lic. No. 64543
5/31/98

EMCON/Advron-New York, Inc

EMCON

LOCKHEED MARTIN CORPORATION
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, NEW YORK

TREATMENT SYSTEM PLAN AND SECTIONS

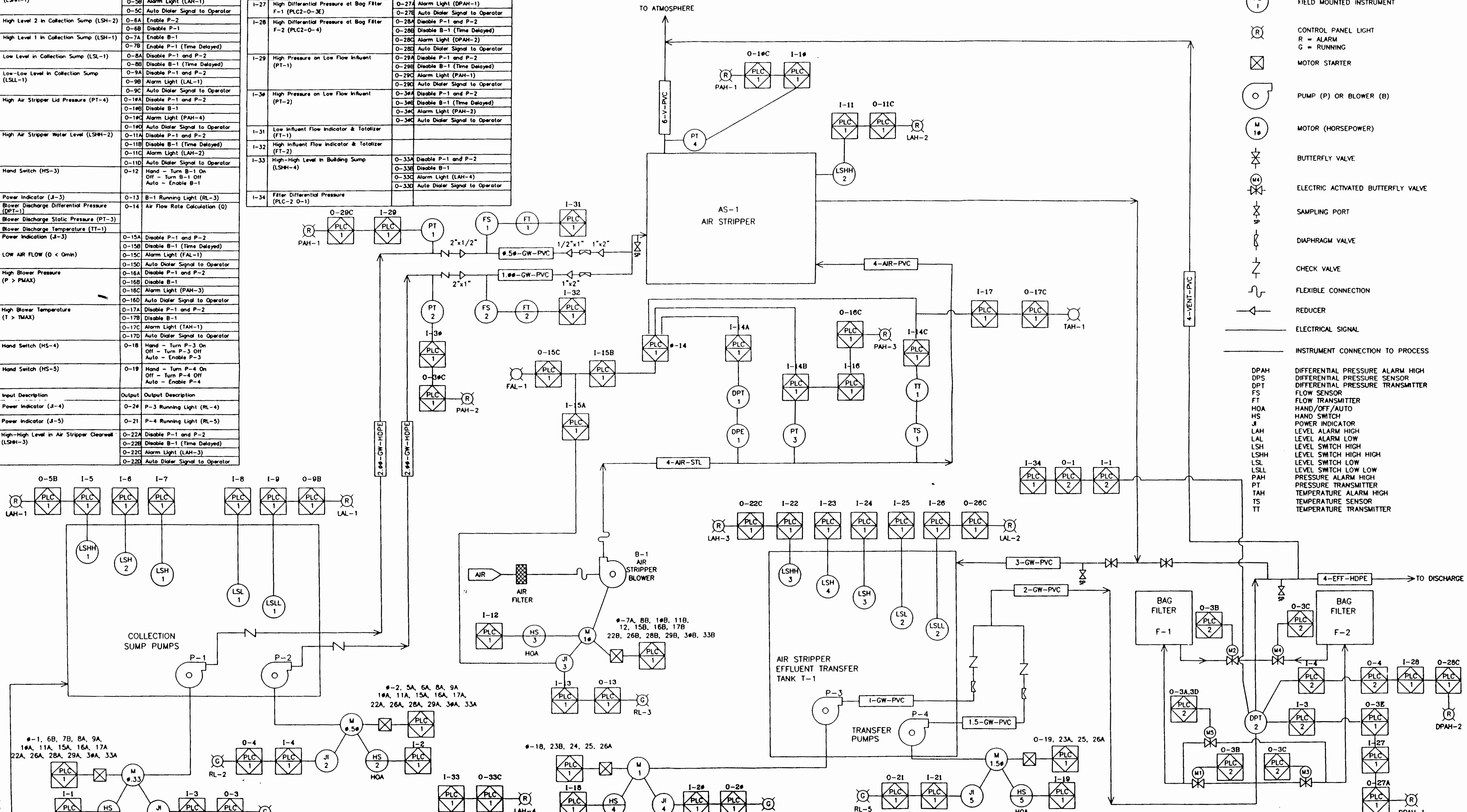
DRAWING NO. 3
PROJECT NO. 86143-003.000

1" 1/2" 0" 1"

Programmable Logic Controller (PLC-1)			
Input	Input Description	Output	Output Description
[illegible]	[illegible]	[illegible]	[illegible] Off – Turn P-1 Off Auto – Enable P-1
I-2	Hand Switch (HS-2)	O-2	Hand – Turn P-2 On Off – Turn P-2 Off Auto – Enable P-2
I-3	Power Indicator (JI-1)	O-3	P-1 Running Light (RL-1)
I-4	Power Indicator (JI-2)	O-4	P-2 Running Light (RL-2)
I-5	High-High Level in Collection Sump (LSHH-1)	O-5A	Enable P-2
		O-5B	Alarm Light (LAH-1)
		O-5C	Auto Dialer Signal to Operator
I-6	High Level 2 in Collection Sump (LSH-2)	O-6A	Enable P-2
		O-6B	Disable P-1
I-7	High Level 1 in Collection Sump (LSH-1)	O-7A	Enable B-1
		O-7B	Enable P-1 (Time Delayed)
I-8	Low Level in Collection Sump (LSL-1)	O-8A	Disable P-1 and P-2
		O-8B	Disable B-1 (Time Delayed)
I-9	Low-Low Level in Collection Sump (LSLL-1)	O-9A	Disable P-1 and P-2
		O-9B	Alarm Light (LAL-1)
		O-9C	Auto Dialer Signal to Operator
I-1ø	High Air Stripper Lid Pressure (PT-4)	O-1øA	Disable P-1 and P-2
		O-1øB	Disable B-1
		O-1øC	Alarm Light (PAH-4)
		O-1øD	Auto Dialer Signal to Operator
I-11	High Air Stripper Water Level (LSHH-2)	O-11A	Disable P-1 and P-2
		O-11B	Disable B-1 (Time Delayed)
		O-11C	Alarm Light (LAH-2)
		O-11D	Auto Dialer Signal to Operator
I-12	Hand Switch (HS-3)	O-12	Hand – Turn B-1 On Off – Turn B-1 Off Auto – Enable B-1
I-13	Power Indicator (JI-3)	O-13	B-1 Running Light (RL-3)
I-14A	Blower Discharge Differential Pressure (DPT-1)	O-14	Air Flow Rate Calculation (Q)
I-14B	Blower Discharge Static Pressure (PT-3)		
I-14C	Blower Discharge Temperature (TT-1)		
I-15A	Power Indication (JI-3)	O-15A	Disable P-1 and P-2
and		O-15B	Disable B-1 (Time Delayed)
I-15B	LOW AIR FLOW (O < Omin)	O-15C	Alarm Light (FAL-1)
		O-15D	Auto Dialer Signal to Operator
I-16	High Blower Pressure (P > PMAX)	O-16A	Disable P-1 and P-2
		O-16B	Disable B-1
		O-16C	Alarm Light (PAH-3)
		O-16D	Auto Dialer Signal to Operator
I-17	High Blower Temperature (T > TMAX)	O-17A	Disable P-1 and P-2
		O-17B	Disable B-1
		O-17C	Alarm Light (TAH-1)
		O-17D	Auto Dialer Signal to Operator
I-18	Hand Switch (HS-4)	O-18	Hand – Turn P-3 On Off – Turn P-3 Off Auto – Enable P-3
I-19	Hand Switch (HS-5)	O-19	Hand – Turn P-4 On Off – Turn P-4 Off Auto – Enable P-4
Input	Input Description	Output	Output Description
I-2ø	Power Indicator (JI-4)	O-2ø	P-3 Running Light (RL-4)
I-21	Power Indicator (JI-5)	O-21	P-4 Running Light (RL-5)
I-22	High-High Level in Air Stripper Clearwell (LSHH-3)	O-22A	Disable P-1 and P-2
		O-22B	Disable B-1 (Time Delayed)
		O-22C	Alarm Light (LAH-3)
		O-22D	Auto Dialer Signal to Operator

Programmable Logic Controller (PLC-1)			
Input	Input Description	Output	Output Description
[illegible]	[illegible] (LSH-4)	[illegible]	[illegible]
		O-23B	Disable P-3
I-24	High Level 1 in Air Stripper Clearwell (LSH-3)	O-24	Enable P-3
I-25	Low Level in Air Stripper Clearwell (LSL-2)	O-25	Disable P-3 and P-4
I-26	Low-Low Level in Air Stripper Clearwell (LSLL-2)	O-26A	Disable P-1,P-2,P-3 and P-4
		O-26B	Disable B-1 (Time Delayed)
		O-26C	Alarm Light (LAL-2)
		O-26D	Auto Dialer Signal to Operator
I-27	High Differential Pressure at Bag Filter F-1 (PLC2-O-3E)	O-27A	Alarm Light (DPAH-1)
		O-27B	Auto Dialer Signal to Operator
I-28	High Differential Pressure at Bag Filter F-2 (PLC2-O-4)	O-28A	Disable P-1 and P-2
		O-28B	Disable B-1 (Time Delayed)
		O-28C	Alarm Light (DPAH-2)
		O-28D	Auto Dialer Signal to Operator
I-29	High Pressure on Low Flow Influent (PT-1)	O-29A	Disable P-1 and P-2
		O-29B	Disable B-1 (Time Delayed)
		O-29C	Alarm Light (PAH-1)
		O-29D	Auto Dialer Signal to Operator
I-3ø	High Pressure on Low Flow Influent (PT-2)	O-3øA	Disable P-1 and P-2
		O-3øB	Disable B-1 (Time Delayed)
		O-3øC	Alarm Light (PAH-2)
		O-3øD	Auto Dialer Signal to Operator
I-31	Low Influent Flow Indicator & Totalizer (FT-1)		
I-32	High Influent Flow Indicator & Totalizer (FT-2)		
I-33	High-High Level in Building Sump (LSHH-4)	O-33A	Disable P-1 and P-2
		O-33B	Disable B-1
		O-33C	Alarm Light (LAH-4)
		O-33D	Auto Dialer Signal to Operator
I-34	Filter Differential Pressure (PLC-2 O-1)		

Duplex Filter Control Panel (PLC-2)			
Input	Input Description	Output	Output Description
[illegible]	[illegible] (DPT-2)	[illegible]	[illegible]
I-2	Setpoint Differential Pressure		
I-3	High Differential Pressure in Filter F-1 (DPT-2)	O-3A	Open Valve on Loop Pipe (M5)
		O-3B	Close F-1 Valves (M1 & M2)
		O-3C	Open F-2 Valves (M3 & M4)
		O-3D	Close Valve on Loop Pipe (M5)
		O-3E	Indicate Switchover
I-4	High Differential Pressure in Filter F-2 (DPT-2)	O-4	Indicates Both Filters Closed



LEGEND:

PIPE SIZE STREAM-PIPE MATERIAL

4-EFF-HDPE

EFF – EFFLUENT HDPE – HIGH DENSITY POLYETHYLENE
GW – GROUNDWATER PVC – POLY(VINYL) CHLORIDE

PROGRAMMABLE LOGIC CONTROL
I = INPUT
ø = OUTPUT

PANEL MOUNTED INSTRUMENT

FIELD MOUNTED INSTRUMENT

CONTROL PANEL LIGHT
R = ALARM
G = RUNNING

MOTOR STARTER

PUMP (P) OR BLOWER (B)

MOTOR (HORSEPOWER)

BUTTERFLY VALVE

ELECTRIC ACTIVATED BUTTERFLY VALVE

SAMPLING PORT

DIAPHRAGM VALVE

CHECK VALVE

FLEXIBLE CONNECTION

REDUCER

ELECTRICAL SIGNAL

INSTRUMENT CONNECTION TO PROCESS

DPAH	DIFFERENTIAL PRESSURE ALARM HIGH
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
FS	FLOW SENSOR
FT	FLOW TRANSMITTER
HOA	HAND/OFF/AUTO
HS	HAND SWITCH
JI	POWER INDICATOR
LAH	LEVEL ALARM HIGH
LAL	LEVEL ALARM LOW
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
PAH	PRESSURE ALARM HIGH
PT	PRESSURE TRANSMITTER
TAH	TEMPERATURE ALARM HIGH
TS	TEMPERATURE SENSOR
TT	TEMPERATURE TRANSMITTER

To the best of my knowledge and belief, and based upon the representations of representatives of Blasland, Bouck & Lee, Inc., and O'Brien and Gere Technical Services, Inc., these record drawings reflect as-built conditions of the groundwater collection and treatment system as constructed by O'Brien & Gere Technical Services, Inc. with construction oversight by Blasland, Bouck & Lee, Inc., as documented in the Certification Report (BB&L, March 1998) prepared for the system. EMCON has not prepared the record drawings, and has not field verified the actual construction. EMCON has compared these record drawings to mark-ups of the design drawings prepared by BB&L to document construction, photographs of the completed treatment system, and the Certification Report (BB&L, March 1998), and has confirmed the inclusion on these drawings of field changes and substitutions approved during construction by EMCON.

3/3/98

Mark A. Smyka, P.E.
N Y P E Lic. No. 64643

EMCON/Wehran-New York, Inc.

EMCON

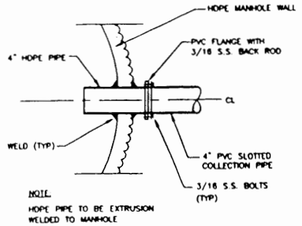
LOCKHEED MARTIN CORPORATION
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, NEW YORK

RECORD COPY

PROCESS AND INSTRUMENTATION DIAGRAM

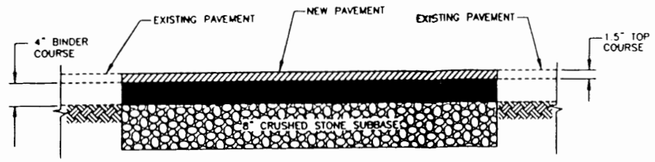
DRAWING NO. 4

PROJECT NO. 86143-003.000



TYPICAL MANHOLE PENETRATION

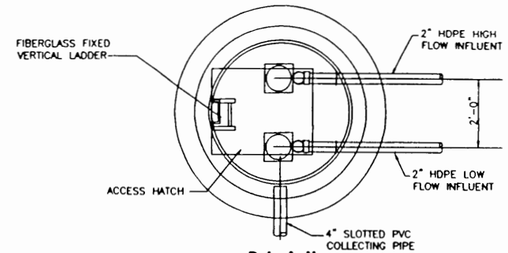
DETAIL 3 / 5 5 — SCALE: 1"= 1'



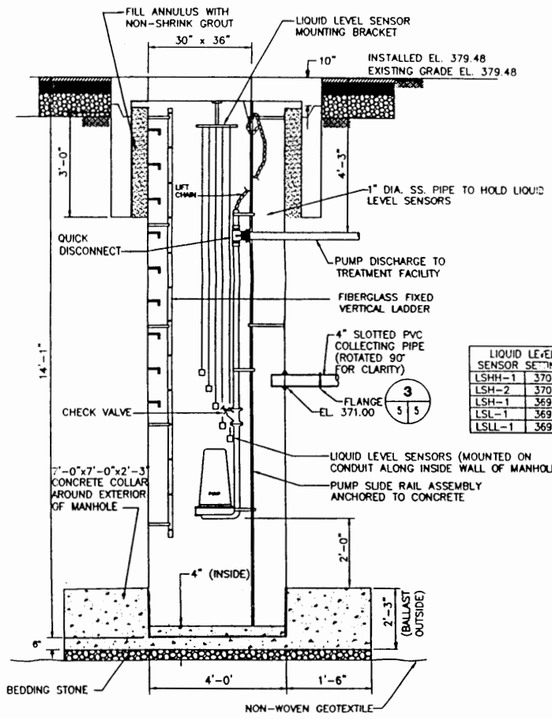
PAVEMENT RESTORATION

NOTE: NOT COMPLETED TO DATE

SECTION 2 / 5 5 — SCALE: N.T.S.



PLAN



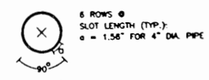
LIQUID LEVEL SENSOR SETTINGS	
LSHH-1	370.75
LSH-2	370.25
LSH-1	369.75
LSL-1	369.25
LSLL-1	369.00

NOTE:
CONCRETE COLLAR TO GO AROUND PERIMETER OF MANHOLE AS SHOWN.

PROPOSED HDPE MANHOLE

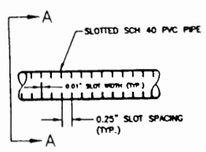
DETAIL 6 / 1 5 — SCALE: N.T.S.

MALMD-15



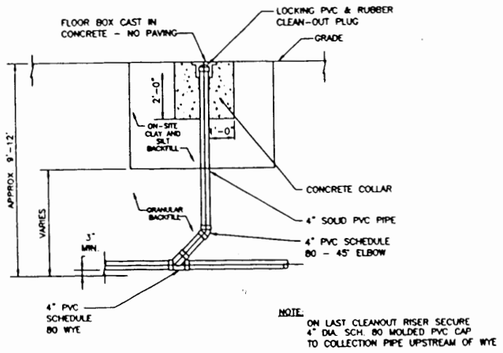
SECTION A / 5 5 — SCALE: 1"= 1'

MALMD-08



PVC SLOTTED PIPE

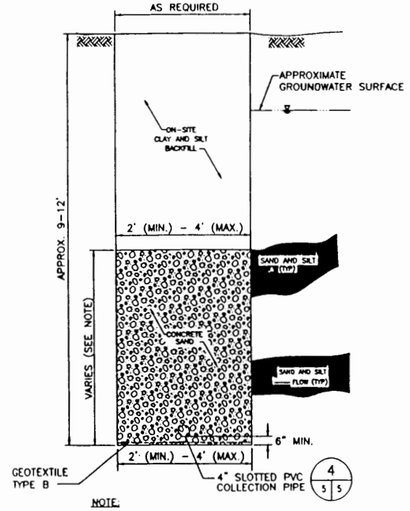
DETAIL 4 / 5 5 — SCALE: 1"= 1'



NOTE:
ON LAST CLEANOUT RISER SECURE 4" DIA. SCH. 80 MOLDED PVC CAP TO COLLECTION PIPE UPSTREAM OF WYE

CLEANOUT RISER

DETAIL 1 / 1 5 — SCALE: 1"=3'-0"



NOTE:
DEPTH OF CONCRETE SAND SHALL BE A MIN. OF 2 FEET ABOVE TOP OF PIPE OR AS SHOWN ON PROFILE.

TYPICAL COLLECTION SYSTEM

DETAIL 5 / 1 5 — SCALE: N.T.S.

RECORD COPY

To the best of my knowledge and belief, and based upon the representations of representatives of Blasland, Bouck & Lee, Inc., and O'Brien and Gere Technical Services, Inc., these record drawings reflect as-built conditions of the groundwater collection and treatment system as constructed by O'Brien & Gere Technical Services, Inc. with construction oversight by Blasland, Bouck & Lee, Inc., as documented in the Certification Report (BB&L, March 1998) prepared for the system. EMCON has not prepared the record drawings, and has not field verified the actual construction. EMCON has compared these record drawings to mark-ups of the design drawings prepared by BB&L to document construction, photographs of the completed treatment system, and the Certification Report (BB&L, March 1998), and has confirmed the inclusion on these drawings of field changes and substitutions approved during construction by EMCON.

Mark A. Boryla, P.E.
N.Y.P.E Lic. No. 64943

5/5/98

EMCON/Wehran-New York, Inc.

EMCON

LOCKHEED MARTIN CORPORATION
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, NEW YORK

COLLECTION SYSTEM DETAILS

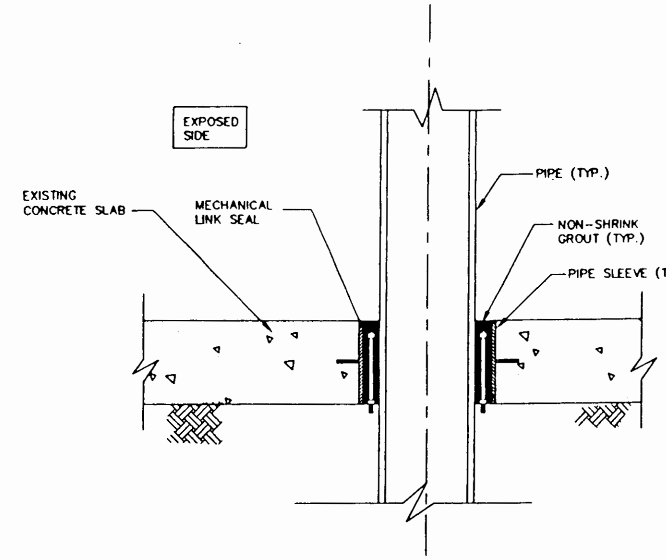
DRAWING NO. 5

PROJECT NO. 96143-003.000

X: (SEE SIDE)
P: EMCON
3/30/98 SYR-54-RLP
38158001/AS-BUILT/AND0502.DWG

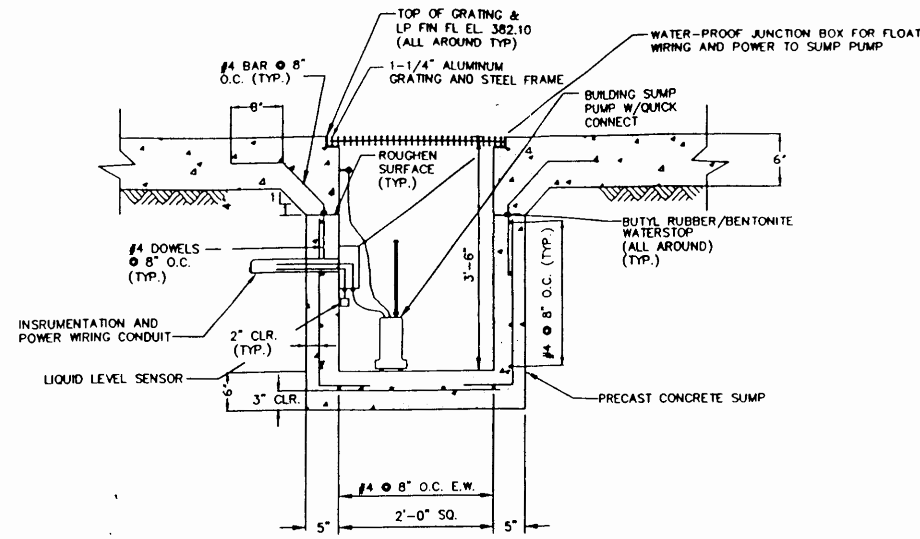
DIE -AND0502/DATA: N:\DWG\96143003\000\AND0502.dwg Xrefs: MALMD-09, MALMD-11, MALMD-14, MALMD-03, MALMB001, MALMD-15, MALMD-08 Scale 1 = 1.00 DimScale 1 = 1.00 Date 8/18/97 Time 7:37 AM Operator NWOODCET

1" 1/2" 0"

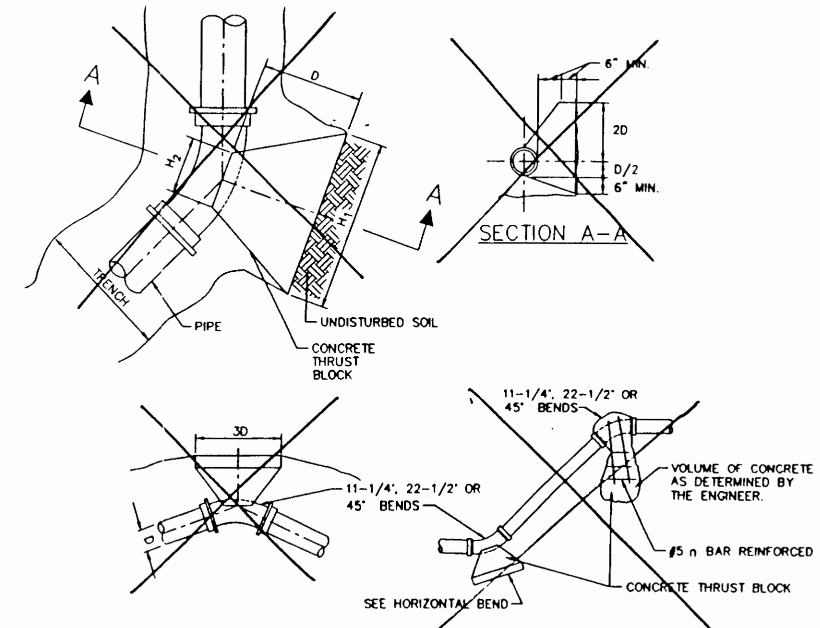


TYPICAL SLAB PIPE PENETRATION

DETAIL 1 (3|6)
SCALE: N.T.S.



BUILDING SUMP



NOTES:

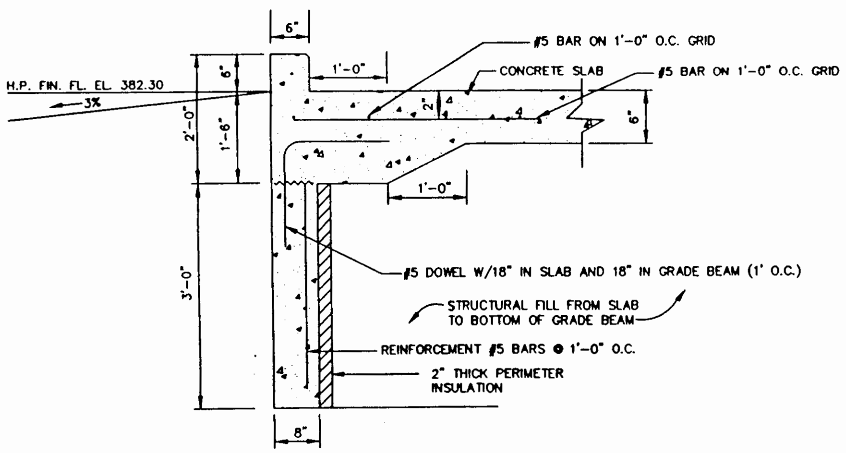
1. DIMENSIONS ARE CONTROLLED BY THE DIAMETER OF THE MAIN BRANCH.
2. ALL CONCRETE TO BE 4,000 PSI MINIMUM.
3. ALL FORCE MAINS (HDPE) CHANGED DIRECTIONS GRADUALLY WITH CONTINUOUS PIPE. THEREFORE, NO THRUST BLOCKS WERE REQUIRED.

TABLE OF DIMENSIONS FOR CONCRETE BLOCKING

TEES, CROSSES, & PLUGS					90° BENDS					45° BENDS					PIPE DIA.
H_1	H_2		D	FT^3	H_1	H_2		D	FT^3	H_1	H_2		D	FT^3	
18"	10"		18"	1.90	18"	10"		12"	1.90	18"	6"		12"	1.50	2" & LESS
24"	12"		18"	2.25	24"	12"		12"	2.25	18"	8"		12"	1.60	3" & 4"

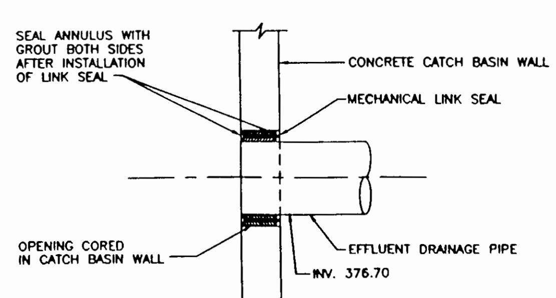
CONCRETE THRUST BLOCKING

DETAIL 4 (6|6)
SCALE: N.T.S.



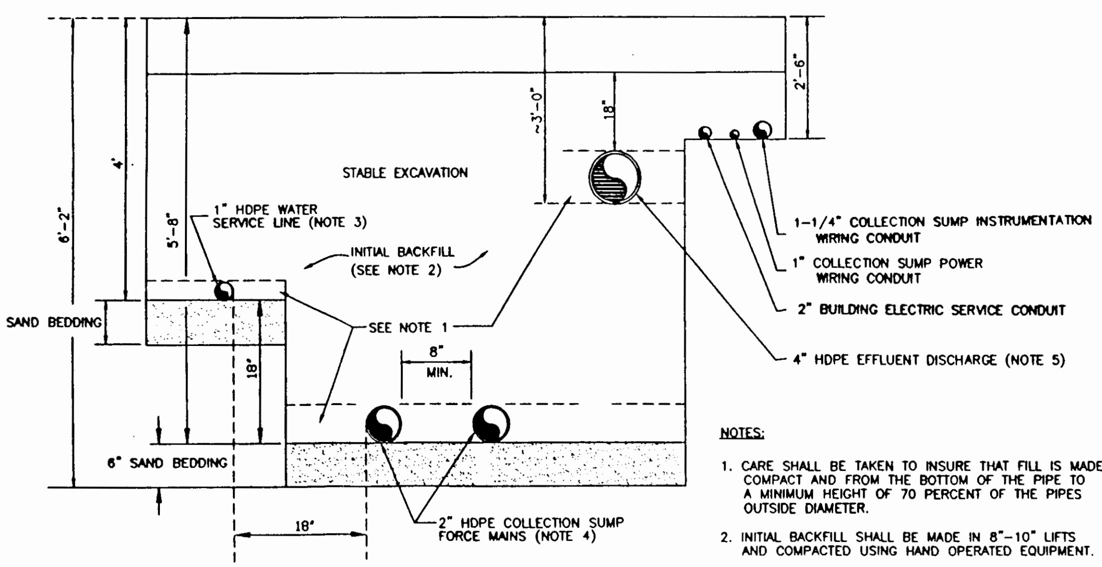
GRADE BEAM AND SLAB-ON-GRADE

DETAIL 6 (3|6)
SCALE: N.T.S.



CATCH BASIN PENETRATION

DETAIL 2 (1|6)
SCALE: N.T.S.

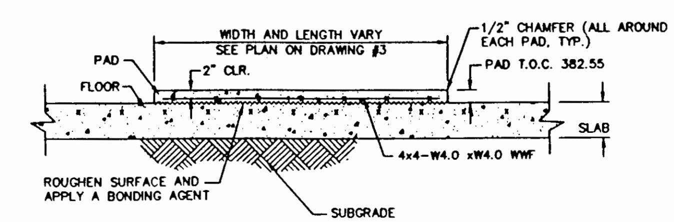


NOTES:

1. CARE SHALL BE TAKEN TO INSURE THAT FILL IS MADE COMPACT AND FROM THE BOTTOM OF THE PIPE TO A MINIMUM HEIGHT OF 70 PERCENT OF THE PIPES OUTSIDE DIAMETER.
2. INITIAL BACKFILL SHALL BE MADE IN 8"-10" LIFTS AND COMPACTED USING HAND OPERATED EQUIPMENT.
3. WATER SERVICE LINE TO BE PLACED ON A SOLID SHELF.
4. THE BOTTOM OF THE WATER SERVICE LINE SHALL BE A MINIMUM OF 18" ABOVE TOP OF THE FORCE MAINS, AND HAVE AN 18" HORIZONTAL CLEARANCE.
5. SLOPED PIPE ELEVATION VARIES (SEE DRAWING 1 FOR DETAILS.)

PIPE BEDDING

DETAIL 3 (6|6)
SCALE: N.T.S.



TYPICAL EQUIPMENT PAD

DETAIL 5 (3|6)
SCALE: N.T.S.

RECORD COPY

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Mark A. Swyka, P.E. 3/31/98
N.Y.P.E Lic. No. 64543

EMCON/Wehran-New York, Inc.

EMCON

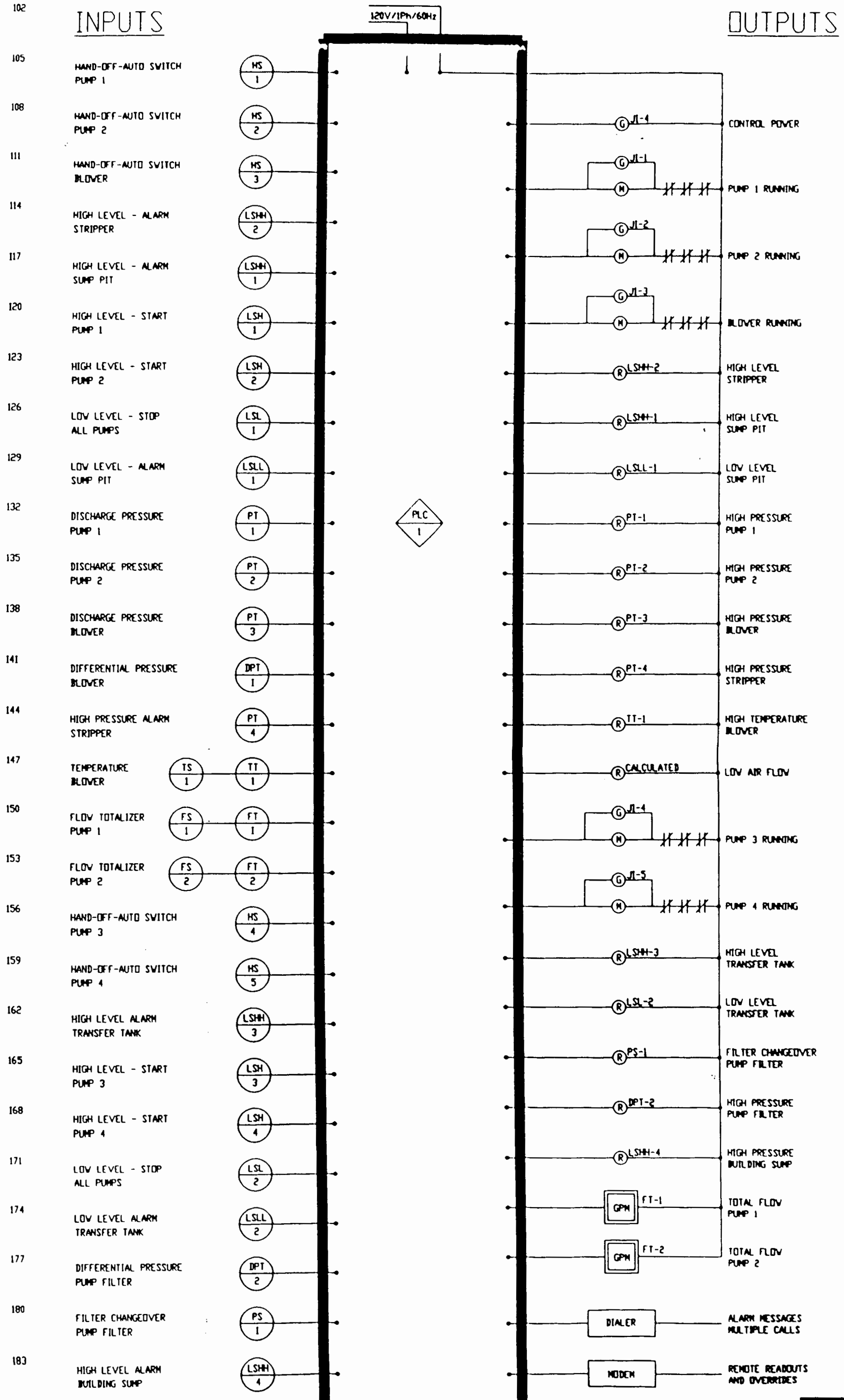
LOCKHEED MARTIN CORPORATION
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, NEW YORK

MISCELLANEOUS DETAILS

DRAWING NO. 6

PROJECT NO. 86143-003.000

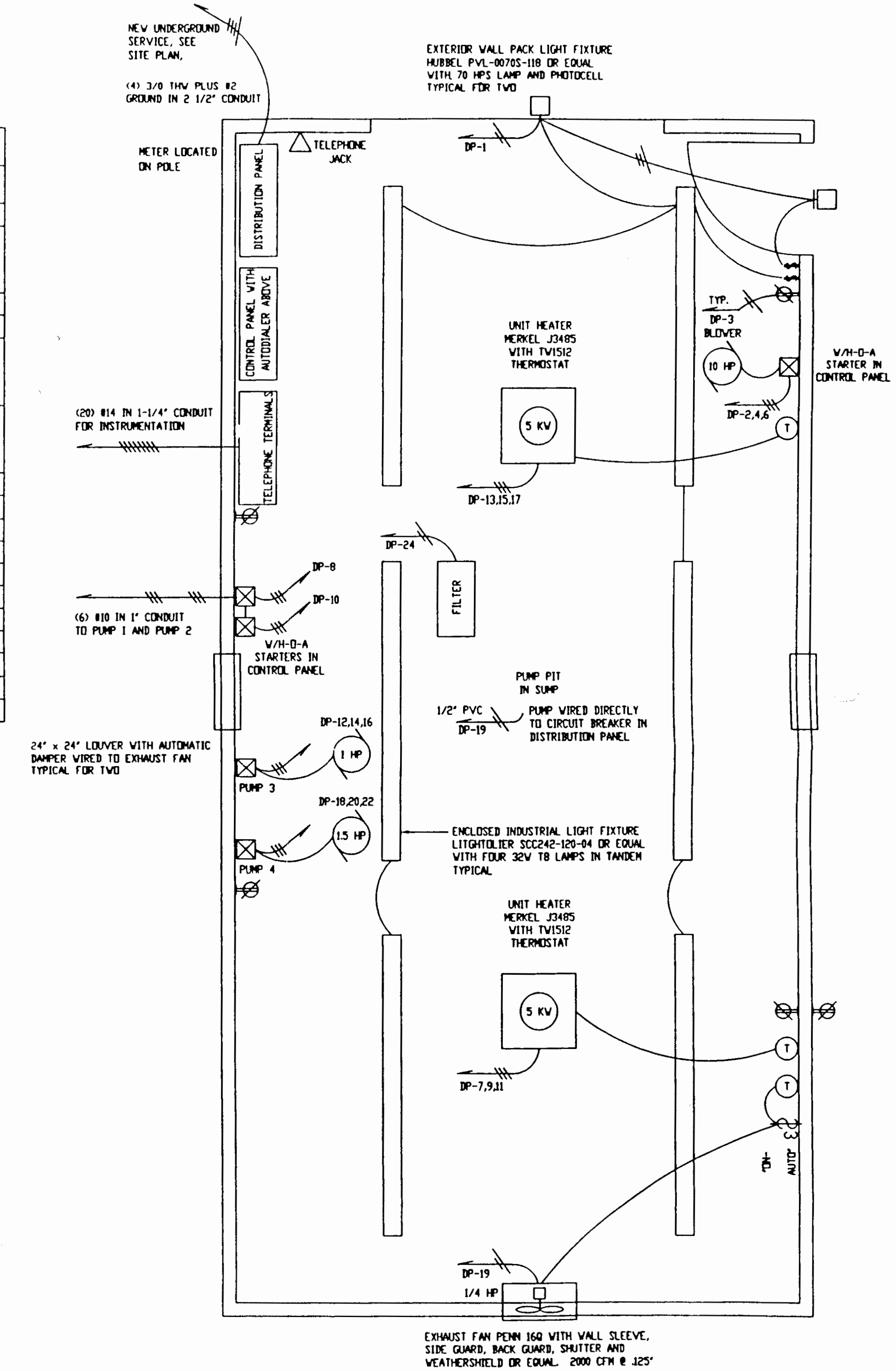
X: (SEE SIDE)
P: EMCON
3/30/98 SYR-54-RLP
36156001/AS-BUILT/AN00501.DWG



INSTRUMENTATION AND CONTROL

NO SCALE

PANEL DP					
42 SPACES, 225 AMPERE MAIN BUSS, 120/208 VOLTS, 3 PHASE 4 WIRE 200 AMPERE MAIN C.B.					
SPACE	C.B.	DESCRIPTION	SPACE	C.B.	DESCRIPTION
1	20 A	LIGHTING	2	40 A 3 P	BLOWER, 10 HP #8 WIRE IN 3/4" COND.
3	20 A	RECEPTACLES	4		
5	20 A	INSTRUMENTATION	6		
7	20 A 3 P	HEATER, 5 KW	8	20 A	PUMP 1, 1/3 HP
9			10	20 A	PUMP 2, 1/2 HP
11			12	20 A 3 P	PUMP 3, 1 HP
13	20 A 3 P	HEATER, 5 KW	14		
15			16		
17			18	20 A 3 P	PUMP 4, 1-1/2 HP
19	20 A	EXHAUST FAN & SUMP PUMP	20		
21	20 A	SPARE	22		
23	20 A	SPARE	24	20 A	FILTER
25	20 A	SPARE	26	20 A	FLOWMETERS
27		SPACE	28		SPACE
29		SPACE	30		SPACE
31		SPACE	32		SPACE
33		SPACE	34		SPACE
35		SPACE	36		SPACE
37		SPACE	38		SPACE
39		SPACE	40		SPACE
41		SPACE	42		SPACE
ALL CIRCUITS SHALL BE #12 WIRE IN 1/2" CONDUIT UNLESS OTHERWISE INDICATED.					



TREATMENT BUILDING PLAN

1/2" = 1'-0"

RECORD COPY

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5/31/98

Mark A. Boyko, P.E.
N.Y.P.E Lic. No. 64643

EMCON/Wehran-New York, Inc.

EMCON

LOCKHEED MARTIN CORPORATION
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, NEW YORK

ELECTRICAL SYSTEM

DRAWING NO. 7

PROJECT NO. 86143-003.000

X: (SEE SIDE)
P: EMCON
3/30/98 SYR-54-RLP
38158001/AS-BUILT/MALMEL01.DWG

APPENDIX D

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Hazardous Site Control, Room 260A
50 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-0927 FAX: (518) 457-8989

John P. Cahill
Commissioner

DEC - 3 1999

Mr. Patrick D. Salvador, P.E.
Lockheed Martin Ocean, Radar and Sensor Systems
Post Office Box 4840
Syracuse, NY 13221-4840

Dear Mr. Salvador:

Re: Former GE Court Street Building 5/5A Site, No. 734070, Onondaga County
Discharge Limitations - Groundwater Collection and Treatment System

Enclosed, please find the revised Effluent Limitations and Monitoring Requirements dated December 1, 1999 for the above referenced site. This supersedes the Effluent Limitations and Monitoring Requirements of June 15, 1999. The only change made to the Effluent Limitations and Monitoring Requirements involves the frequency of measurement of the parameters. Starting in January 2000, Lockheed Martin is to begin monitoring the effluent discharge parameters on a quarterly schedule. Lockheed Martin is to continue monthly monitoring of the groundwater treatment system until January 2000.

Please do not hesitate to contact John Strang, of my staff, at (518) 457-0927 with any questions.

Sincerely,

Gerald J. Rider, Jr., P.E.
Chief
Operation & Maintenance Section

Enclosure

cc: C. Taylor, IT Corp.
H. Hamel, NYSDOH
B. Conlon, Esq.
C. Branagh, Reg. 7
S. Eidt, Reg. 7
B. Baker
J. Strang

c:734070b.wpd:JS:jrs

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning December 1, 1999

and lasting until December 1, 2004

the discharges from the treatment facility to Sanders Creek and/or Ley Creek shall be limited and monitored by the operator as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Minimum Monitoring Requirements Measurement Frequency	Sample Type
Outfall 001: Treated Effluent from Groundwater Collection Trench					
Flow	Monitor	Monitor	GPM	Quarterly	Instantaneous
pH (Range)	Monitor	(6.0 - 9.0)	SU	Quarterly	Grab
Solids, Total Dissolved	Monitor	Monitor	mg/l	Quarterly	Grab
Zinc, Total Recoverable	Monitor	0.4	mg/l	Quarterly	Grab
Vinyl Chloride	Monitor	0.05	mg/l	Quarterly	Grab
1,1-Dichloroethane	Monitor	0.03	mg/l	Quarterly	Grab
1,2-Dichloroethene (Total)	Monitor	0.03	mg/l	Quarterly	Grab
Trichloroethene	Monitor	0.01	mg/l	Quarterly	Grab

Special Conditions:

(1) Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to the following DER contact person: John Strang, (518) 457-0927.

(2) Only site generated wastewater is authorized for treatment and discharge.

(3) Authorization to discharge is valid only for the period noted above but may be renewed if appropriate. A request for renewal must be received 6 months prior to the expiration date to allow for a review of monitoring data and reassessment of monitoring requirements.

(4) Both concentration (mg/l or µg/l) and mass loadings (lbs/day) must be reported to the Department for all parameters except flow and pH.

(5) Samples and measurements, to comply with the monitoring requirements specified above, shall be taken from the effluent side of the treatment system prior to discharge to either Sanders Creek or Ley Creek.

(6) If a discharge limitation for any parameter is exceeded the measurement frequency for all parameters shall be Weekly, until a period of 4 consecutive sampling events shows no exceedances at which point Quarterly monitoring may resume.

(7) Quarterly monitoring has been approved in lieu of the previous monthly monitoring on the basis of the current operation and maintenance of the treatment system. The treatment system shall continue to be operated and maintained in the same manner in which it has been operated and maintained over 2/98 - 9/99 period.

APPENDIX E

AIR EMISSIONS REQUIREMENTS

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Hazardous Site Control, Room 260A
0 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-0927 FAX: (518) 457-8989

John P. Cahill
Commissioner

JUL - 1 1998

Mr. Patrick D. Salvador, P.E.
Principal Engineer
Lockheed Martin
Post Office Box 4840
Syracuse, NY 13221-4840

Dear Mr. Salvador:

Re: Former GE Court Street 5/5A, Site # 7-34-070, Onondaga County
O&M Plan - Air Emission Reevaluation Requirement

This is concerning your letter to Alyse Peterson, dated May 29, 1998, in which Lockheed Martin Corporation (LMC) proposes a revision of the volatile organic compound (VOC) influent criteria concentrations. LMC makes this request so to reduce the frequency of future ambient air quality evaluations. The New York State Department of Environmental Conservation (NYSDEC) makes note that LMC continues to maintain adequate monitoring of the treatment system's potential air quality impacts to ensure protection of human health and the environment.

To date, the VOC influent concentrations measured during the operation of the collection system have not posed an environmental or health concern. However, the influent concentrations for the VOC parameters 1,2-Dichloroethene and Trichloroethene have exceeded the design influent concentration and that has triggered LMC to do an ambient air quality impact evaluation.

We have reviewed Lockheed Martin's request and their proposed air comparison criteria. The NYSDEC does not support the change from the original criteria concentrations to the maximum allowed criteria concentrations. We propose the following Influent Criteria concentrations (changes in bold type) for the Former GE Court Street 5/5A Treatment System:

Parameter	Influent Criteria (ug/l)	Influent High (ug/l)
Vinyl Chloride	312.6	130
Chloroethane	**30**	<10
1,1-DCA	1901.6	270
1,2-DCE	**200**	99
1,1,1-TCA	**15**	<5
Trichloroethene	**15**	5
Benzene	16.2	<5
Toluene	39	<5
Ethylbenzene	**43.9**	<5
Xylenes	156.3	<5

For 1,2-Dichloroethene we have revised the influent criteria to twice the current high influent concentration. For Trichloroethene, Chloroethane, and 1,1,1-Trichloroethane we have revised the influent criteria to three times the detection limit for each parameter. We also changed the influent criteria's concentration for Ethylbenzene to the weighted average as determined in the August 5, 1997 Emission Approval document prepared by EMCON. These new levels should reduce the frequency of air evaluations and still maintain adequate monitoring of the treatment system's air quality impacts.

Please do not hesitate to contact Mr. John Strang, of my staff, at (518) 457-0927 with any questions.

Sincerely,

Gerald J. Rider, Jr., P.E.
Chief
Operation & Maintenance Section

cc: C. Taylor, EMCON
H. Hamel, NYSDOH
C. Branagh, Reg. 7
K. Delaney, Reg. 7
D. Hessler
J. Strang

APPENDIX F

O&M INSPECTION FORMS

FORMER GE COURT STREET BUILDING 5/5A
GROUNDWATER COLLECTION & TREATMENT SYSTEM
O & M INSPECTION FORM

Personnel On Site | **Date** | **Time**

Weather Data

Temp. (F): _____ Relative Humidity (%) _____ Barometric Pressure (in Hg) _____

Cleanout Risers _____ Feet of Water (CO-N) _____ Good Condition _____ Corrected During Visit

_____ Feet of Water (CO-S) DTW CO-N _____ DTW CO-S _____

CO-N TOC Elevation _____ Cover Locked (Y/N):_____

CO-S TOC Elevation _____ Cover Locked (Y/N):_____

Collection Sump _____ Inches of Sediment _____ Good Condition _____ Corrected During Visit ___ Hatch Secure (Y/N)

Work Performed or Needed: _____

Catch Basin CB-20 _____ clear of debris & sed. _____ Good Condition _____ Corrected During Visit

Work Performed or Needed: _____

Outfall OF-01A _____ clear of debris & sed. _____ Good Condition _____ Corrected During Visit

Work Performed or Needed: _____

Monitoring Wells (check for signs of tampering or loose or unlocked covers).

MW-1S ___ OK	MW-2D ___ OK	MW-6S ___ OK	MW-10 ___ OK	MW-14 ___ OK	MW-17A ___ OK	MW-19S ___ OK
MW-1I ___ OK	MW-3S ___ OK	MW-7S ___ OK	MW-11R ___ OK	MW-15 ___ OK	MW-17B ___ OK	
MW-2S ___ OK	MW-4S ___ OK	MW-8S ___ OK	MW-12 ___ OK	MW-16A ___ OK	MW-18A ___ OK	
MW-2I ___ OK	MW-5S ___ OK	MW-9 ___ OK	MW-13 ___ OK	MW-16B ___ OK	MW-18B ___ OK	

Note any repairs made or needed: _____

Pavement and Stormwater Channel Note any problems or maintenance needs associated with the pavement and stormwater channel near the treatment building.

_____

Air Stripper Tank & Diffusers

_____ Inches of Sediment _____ Good Condition _____ Corrected During Visit

Work Performed or Needed: _____

_____

Electric Meter Reading _____ @ _____ Hrs.

Phone Line Function (Y orN) _____ Autodialer _____ Modem _____ Voice

Floor Sump: _____ Clear of Excess Fluid/Sediment/debris (Y/N)

PLC Control Panel (inspect LED alarm lights, and internal electrical components for signs of wear, moisture, damage, etc.)

Work Performed or Needed: _____

Pump Cycling (observe frequency of pump cycling) Cycling Frequency OK (Y/N): ____

Describe Any Modification: _____

Blower Air Inlet _____ Clear of debris _____ Good Condition _____ Corrected During Visit

Work Performed or Needed: _____

FORMER GE COURT STREET BUILDING 5/5A
GROUNDWATER COLLECTION & TREATMENT SYSTEM
O & M INSPECTION FORM

System Pressure

Location	Pressure (psi)
High Flow Influent	
Low Flow Influent	
Blower Discharge	
Blower Discharge Differential	
Air Stripper Tank	
Filter Differential	

System Temperatures

Location	Temperature (F)
Blower Discharge	

System Flow Rates

Location	Flow (gpm)
High Flow Influent	
Low Flow Influent	
Location	**Flow (cfm)**
Blower (PLC)	
Blower (Calculated)	

System Totalized Flows

Location	Flow (gallons)
High Flow Influent	
Low Flow Influent	

Influent Sample Collected (Y or N)	pH (S.U.)	Temp.	Time (hrs.)
Effluent Sample Collected (Y or N)	pH (S.U.)	Temp.	Time (hrs.)
Bag Filters Changed (Y or N)			
Air Stripper Cleaned (Y or N)			

Comments/Other Work Performed

_____

_____

_____

_____

Personal Signature _____

FORMER GE COURT STREET BUILDING 5/5A
GROUNDWATER COLLECTION AND TREATMENT SYSTEM
SUPPLEMENTAL O&M EVENT FORM

INSPECTOR: _____

DATE: _____

ACTIVITY:

☐	RESPONSE TO SYSTEM SHUTDOWN
☐	STRIPPER CLEANING
☐	OTHER

PROVIDE A DESCRIPTION OF THE CAUSE OF THE SHUTDOWN, CORRECTIVE ACTIONS TAKEN, AND/OR OTHER INFORMATION NECESSARY TO UNDERSTAND THE PURPOSE OF THE VISIT.

APPENDIX G

MONITORING WELL BORING LOGS

Wehran EnviroTech

BORING/WELL NO. MW-1S

SHEET 1 of 1

PROJECT: COURT STREET BUILDING # 5 VOC INVESTIGATION
CLIENT: GENERAL ELECTRIC
CONTRACTOR: EMPIRE SOILS

PROJECT NO: 01554.EB
RIG: CME-45

GS ELEV: 381.91ft.
N-S COORD: 4530.24
E-W COORD: 5172.16
WL REF ELEV:
DATE STARTED: 12/19/91
DATE FINISHED: 12/19/91
OPERATOR: RODNEY
GEOLOGIST: MCIVER

GROUNDWATER DATA (feet)

DATE	GW DEPTH	GW ELEV	INTAKE

	CASING	SAMPLE	TUBE	CORE
TYPE	HSA	SS		
DIAM.	4 1/4"ID	2"		
WEIGHT		140 #		
FALL		30"		

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	UNIFIED	FIELD DESCRIPTION (Modified Burmister)	REMARKS I.S.	REMARKS H.S.
								PAVEMENT AND FILL		
		1		16	10			CLAY AND SILT Grey brown mottled Clayey SILT, trace f Sand, some gravel in the top of the spoon	0	1.6
	5	2			6			Brown SILT & CLAY and Gravel, very stiff, mottled	0	0.5
		3		24	4			Dark grey to black organic SILT & CLAY (PEAT)	0	3.9
		4		16	7			Dark brownish grey CLAY & SILT, parting of fm Sand, shell fragments and other organic debris	0	3.9
	10	5		24	3			Brownish grey Clayey SILT, f Sand in partings	0	0.8
		6		NR					0	3.7
	15							end of boring @ 14.5'		
	20									
	25									
	30									
	35									
	40									
	45									
	50									
	55									

Wehran EnviroTech

BORING/WELL NO. MW-2S

SHEET 1 of 1

PROJECT: COURT STREET BUILDING # 5 VOC INVESTIGATION
CLIENT: GENERAL ELECTRIC
CONTRACTOR: EMPIRE SOILS

PROJECT NO: 01554.EB
RIG: CME-45

GS ELEV: 382.10ft.
N-S COORD: 4792.21
E-W COORD: 5045.00
WL REF ELEV:
DATE STARTED: 12/24/91
DATE FINISHED: 12/24/91
OPERATOR: RODNEY
GEOLOGIST: MCIVER

GROUNDWATER DATA (feet)

DATE	GW DEPTH	GW ELEV	INTAKE

	CASING	SAMPLE	TUBE	CORE
TYPE	HSA	SS		
DIAM.	4 1/4"ID	2"		
WEIGHT		140 #		
FALL		30"		

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	UNIFIED	FIELD DESCRIPTION (Modified Burmister)	REMARKS I.S.	REMARKS H.S.
								PAVEMENT AND FILL		
	5							CLAY AND SILT Brown mottled Clayey SILT, trace f Sand grading to		
		1		12	11			@ 6.0' Brown to red brown fmc SAND, little Silt, very moist		0
		2		24	4					75
	10	3		24	2			@ 9', grades to Grey to grey brown CLAY & SILT, trace f Sand mainly in partings		41
		4		24	2					3.5
		5		24	1					1.6
	15							eob @ 16'		
	20									
	25									
	30									
	35									
	40									
	45									
	50									
	55									

WehranEnviroTech

TEST BORING LOG

Boring No. B-37 MW-12

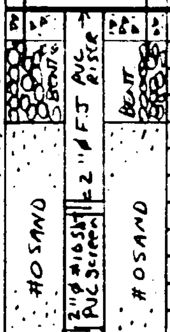
Project COURT STREET BUILDING #5	**Sheet No. 1 of** 1
Client GENERAL ELECTRIC	**Job No.** 01554.03
Boring Contractor PARRATT WOLFF	**G.S. Elevation** 383.44
	W.L. Ref. Elev. 384.98 PVC
	Date Started 4-27-93
	Date Finished 4-27-93
	Driller Doug Richmond
	Inspector JHK

Groundwater

Date	Water Depth	Water Elev.	Intake
4-27-93	3.5' BGS	379.94 APP	0-12' Open Bore
5-3-93	6.5 BPVC	378.48	Screen 7-12

	Cas.	Samp.	Core	Tube
Type	HSA	SS	–	–
Diam.	4 1/4" ID	2"	–	–
Weight	–	140#	–	–
Fall	–	30"	–	–

Well Construction



Depth (Feet)	Sample No.	Type	Rec.	Blows per 6 inches	OVM ppm** Spoon	OVM ppm** HSA
0–2	1	SSA	9	3-4 / 3-3	0	0
2–4	2	SSB	12	3-4 / 3-5	0	0
4–6	3	SSC	20	6-7 / 8-6	0	0
6–8	4	SSD	24	5-5 / 4-4	0	0
8–10	5	SSE	18	3-2 / 2-1	0	10
10–12	6	SSF	20	1-1 / 1-1	0	6

Classification

FILL / REWORKED SOILS

Black Topsoil Clayey SILT, little c-f Sand, trace f Gravel trace roots
@ 0.5' Gray to brown fill SILT & CLAY, Some white porcelain fragments (2)

CLAY & SILT (4)

Orange brown, gray SILT & CLAY medium, moist
@ 3'10" very thin bed of Gray brown SILT & CLAY, little f-m Sand. (8)

@ 4' Red brown CLAY & SILT, stiff frequent partings 1/64" of Gray F SAND, spaced 1 to 1 1/2" appart saturated (12)

@ 6' Red brown CLAY & SILT, medium with less frequent partings of F SAND

@ 8' Red brown CLAY & SILT, soft

@ 10' Gray CLAY & SILT, v. Soft saturated

END OF BORING 12.0'

Remarks

FILL

ZONE OF SAND PARTINGS *

NOTE: H2O at 3.5' BGS AT COMPLETION OF BORING WATER OBSERVED ENTERING BOREHOLE AT FILL/CLAY & SILT CONTACT AT 2.0'

* Denotes sample sent to lab for analysis

** OVM equiped with an 11.8 eV Lamp

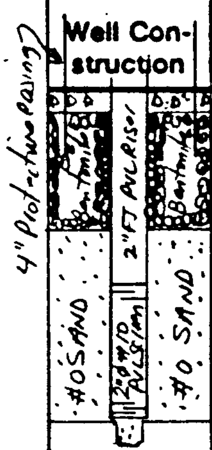
EMCON

TEST BORING LOG

Boring No. MW-11R

Project COURT STREET BUILDING #5	**Sheet No. 1 of** 1
Client GENERAL ELECTRIC	**Job No.** 86143-002.000
Boring Contractor PARRATT - WOLFF	**G.S. Elevation** 382.66

Groundwater					**Cas.**	**Samp.**	**Core**	**Tube**	**W.L. Ref. Elev.** 385.71 PVC
Date	**Water Depth**	**Water Elev.**	**Intake**	**Type**	HSA	SS	–	–	**Date Started** 12-18-97
				Diam.	4 1/4" ID	2"	–	–	**Date Finished** 12-18-97
				Weight	–	140#	–	–	**Driller** Mike Ellingsworth
				Fall	–	30"	–	–	**Inspector** CBT



Depth (Feet)	Samples No.	Type	Rec.	Blows per 6 Inches	Classification	Remarks	OVM ppm Spoon	OVM ppm HSA
0–3.0		AC			REWORKED SOIL Orange brown CLAY & SILT (to 3.0)			
3.0–8.0	1	SS	20"	7-12 / 10-12	CLAY & SILT Orange br gray CLAY & SILT, stiff, moist (to 8.0)		0	0
8.0–12.2	2	SS	18"	15-13 / 13-10	Clayey SILT / SAND Partings Gray SILT & CLAY, trace f Sand saturated		0	0
	3	SS	6"	3-1 / 1-4	@8.5' Clayey SILT, trace f Sand trace Peat @8.75' very thin bed Black PEAT @9.0' Gray Clayey SILT, Some Gl m f Gravel little c f Sand (to 12.2)		0	0.7
12.2–13.0	4	SS	22"	3-3 / 3-2	CLAY & SILT Gray CLAY & SILT saturated medium (to 13.0)		0	0.1

END OF BORING 13.0'

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

emcon

TEST BORING LOG

Boring No. MW-18A

Project	RIFS COURT STREET S/5A SITE
Client	Lockheed Martin Corporation
Boring Contractor	Parratt-Wolff

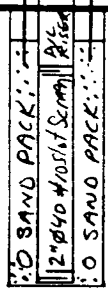
Sheet No. 1 of 1	
Job No.	86143-001.000
G.S. Elevation	382.84
W.L. Ref. Elev.	385.18
Date Started	2-12-97
Date Finished	2-12-97
Driller	Mark Eaves
Inspector	JHK

Groundwater

Date	Water Depth	Water Elev.	Intake
2/20/97	7.57' BPVC		

	Cas.	Samp.	Core	Tube
Type	HSA			
Diam.	4¼" ID			
Weight	—			
Fall	—			

5" steel / Protective Casing



Depth (Feet)	Sample No.	Type	Rec.	Blows per 6 inches	Classification	Remarks
0–2	1	AC			FILL Black brown clayey SILT, little F-M Sand, tr Root White chalk, ceramics	
2–10	2	AC			Clayey SILT Gray with orange or SILT & CLAY to Gray SILT to Gray Clayey SILT 10.0	
					END OF BORING 10.0'	

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

WehranEnviroTech

TEST BORING LOG

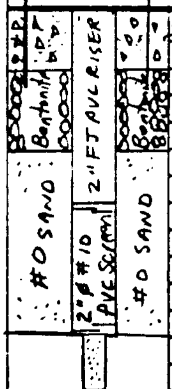
Boring No. B-33 MW-10

Project	COURT STREET BUILDING #5
Client	GENERAL ELECTRIC
Boring Contractor	PARRATT - WOLFF
Sheet No. 1 of	1
Job No.	01554.03
G.S. Elevation	384.29
W.L. Ref. Elev.	386.13
Date Started	4-27-93
Date Finished	4-29-93
Driller	Doug Richmond
Inspector	JHK

Groundwater

Date	Water Depth	Water Elev.	Intake
4-27-93	4'6" BGS	379.79	0-14' open bore
5-3-93	6.83 BTPVC	379.30	screen 7-12'

	Cas.	Samp.	Core	Tube
Type	HSA	SS	—	—
Diam.	4 1/4" ID	2"	—	—
Weight	—	140#	—	—
Fall	—	30"	—	—



Depth (Feet)	No.	Type	Rec.	Blows per 6 inches	Classification	Remarks	OVM** PPM Spoon	OVM** PPM HSA
0	1	SSA	12	2 - 4 / 6 - 8	FILL / REWORKED SOIL: Black to dark gray Topsoil SILT & CLAY trace(+) vegetation medium, moist @ 0.5' Gray SILT & CLAY occ pocket of Red br clay & silt mottled (4)		0	0.6
	2	SSB	8	4 - 6 / 7 - 8			0.6	0.6
5	3	SSC	15	4 - 6 / 10 - 10	CLAY & SILT: Orange brown, gray mottled CLAY & SILT, moist, stiff @ 8'6" Gray CLAY & SILT, saturated @ 9'6" Gray saturated CLAY & SILT trace(+) of Sand @ 10' Gray CLAY & SILT, medium (11)		0	0
	4	SSD	16	15 - 17 / 18 - 17			0	0
10	5	SSE	22	4 - 3 / 6 - 5			0	0.6
	6	SSF	20	3 - 3 / 2 - 3	SILT / SAND / PEAT: Gray Clayey SILT, some Sand, occassional pocket or lens of Brown PEAT @ 11.25' & 11.75' medium, saturated (12)	* SILT / SAND / PEAT	0	5.9
	7	SSG	12	1 - 1 / 1 - 1	CLAY & SILT: Gray CLAY & SILT soft, saturated (14)		0	0
15					END OF BORING 14.0'			

NOTE: SOILS SHOWED SATURATION AT 8'6", HOWEVER AFTER DRILLING TO COMPLETION WATER LEVEL CAME UP TO 4'6" BGS

BORING WAS ADVANCED TO 12' DEPTH ON 4-27 THEN SPOON SAMPLE WAS TAKEN FROM 12-14' ON 4-29 TO CONFIRM BOTTOM OF SILT/SAND UNIT, BUT SCREEN BOTTOM WAS SET AT BASE OF SILT/SAND UNIT

* Denotes sample sent to lab for analysis

** OVM Equiped with an 11.8 eV Lamp

EMCON

TEST BORING LOG

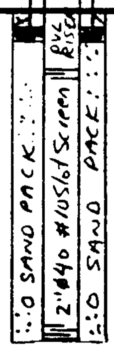
Boring No MW-17A

Project RIFS COURT STREET S/SA SITE	Sheet No. 1 of 1
Client Lockheed Martin Corporation	Job No. 86143-001.000
Boring Contractor Parratt-Wolff	G.S. Elevation 381.76

Groundwater					Cas.	Samp.	Core	Tube
Date	Water Depth	Water Elev.	Intake	Type	HSA			
2/20/97	5.12' BPVC			Diam.	4¼" ID			
				Weight	—			
				Fall	—			

W.L. Ref. Elev.	384.11
Date Started	2-12-97
Date Finished	2-12-97
Driller	Mark Eaves
Inspector	JHK

5" Steel/Protective Casing



Well Construction	Depth (feet)	Samples No.	Type	Rec.	Blows per 6 inches	Classification	Remarks
	0					SILT & CLAY Black SILT & CLAY little Root Matter to Orange brown SILT & CLAY	
	5	1	AC			7.5'	
	10	2	AC			Clayey SILT, w/ Sand Gray clayey SILT, little f Sand to Gy clayey SILT and mf Gvl, little f Sand, oc Root, 12.0'	
						END OF BORING 12.0'	
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

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TEST BORING LOG
Boring No. MW-16A

Project RIFS COURT STREET S/SA SITE	Sheet No. 1 of 1
Client Lockheed Martin Corporation	Job No. 86143-001.000
Boring Contractor Parratt-Wolff	G.S. Elevation 379.57
	W.L. Ref. Elev. 379.3
	Date Started 2-12-97
	Date Finished 2-12-97
	Driller Mark Eaves
	Inspector JHK

Groundwater					Cas.	Samp.	Core	Tube
Date	Water Depth	Water Elev.	Intake	Type	HSA			
2/20/97	2.33' BPVC			Diam.	4¼" ID			
				Weight	–			
				Fall	–			

Well Construction	Depth (ft)	Samples No.	Type	Rec.	Blows per 6 inches	Classification	Remarks
0 SAND PACK 2" 10SLT Screen 0 SAND PACK	0	1	AC			ASPHALT / SAND GVL FILL Brown CF SAND, and f-M GVL, tr+ Silt 1.75	
		2	AC			SILT & CLAY Gryl brown SILT & CLAY, stff 3.5	
	5	3	AC			SAND W/ SILT Org gy F-M SAND, some f Clayey SILT to yl br F-C SAND, some f Clayey SILT, little f Gvl 8.5	
	10					END OF BORING 8.5'	
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

Wehran EnviroTech

BORING/WELL NO. MW-8S

SHEET 1 of 1

PROJECT: COURT STREET BUILDING # 5
CLIENT: GENERAL ELECTRIC
CONTRACTOR: PARRATT-WOLFF

PROJECT NO: 01554.03
RIG: CME-45

GS ELEV: 379.328ft.
N-S COORD: 5064.978
E-W COORD: 4949.436
WL REF ELEV:
DATE STARTED: 8/17/92
DATE FINISHED: 8/17/92
OPERATOR: BARNEY
GEOLOGIST: MCIVER

GROUNDWATER DATA (feet)

DATE	GW DEPTH	GW ELEV	INTAKE

	CASING	SAMPLE	TUBE	CORE
TYPE	HSA	SS		
DIAM.	4 1/4"ID	2"		
WEIGHT		140 #		
FALL		30"		

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	UNIFIED	FIELD DESCRIPTION (Modified Burmister)	REMARKS H.S.
		1		12	7			CLAY AND SILT Brown and grey mottled SILT & CLAY, partings of f sand, roots	0
		2		12	10				0
	5	3		12	3			Brown and black fmc SAND, little silt, wet	0.1
		4		24	2			Lt brown and grey mottled SILT & CLAY, trace f sand Grey CLAY & SILT, trace f sand, roots, organics	0.1
	10	5		24	WOH			Grey CLAY & SILT, trace f sand	0
		6		24	WOH				0
		7		24	3			Grey CLAY & SILT, with 1" to 2" stringers of brown f sand throughout	0
	15							eob @ 14.8'	
	20								
	25								
	30								
	35								
	40								
	45								
	50								
	55								

emcon

TEST BORING LOG
Boring No. MW-19S

Sheet No. 1 of 1

Project	RIFS COURT STREET S/SA SITE
Client	LOCKHEED MARTIN CORPORATION
Boring Contractor	PARRATT-WOLFF
Job No.	86143-001.000
G.S. Elevation	
W.L. Ref. Elev.	379.31
Date Started	6-9-97
Date Finished	6-9-97
Driller	Doug Thoma
Inspector	JHK

Groundwater					Cas.	Samp.	Core	Tube
Date	Water Depth	Water Elev.	Intake	Type	HSA	SS	—	—
6-10-97	2.25'BGS		3-10'	Diam.	4 1/4" ID	2"	—	—
				Weight	—	140#	—	—
				Fall	—	30"	—	—

Well Construction: 6" Flushmount Protective Casing; Cement; 2" Riser PVC Sch 40; Bentonite Pellets

Depth	No.	Type	Rec.	Blows per 6 inches
0	1	SS	16	X - 5
				5 - 6
	2	SS	12	6 - 8
				8 - 12
5	3	SS	24	4 - 4
				4 - 4
	4	SS	24	4 - 3
				3 - 2
	5	SS	24	1 - 1
				1 - 1
10	6	SS	24	1 - 1
				1 - 1
	7	SS	14	1 - 1
				1 - 2
15	8	SS	16	2 - 2
				2 - 2
20				
25				
30				
35				
40				
45				
50				

Classification

ASPHALT / SAND & GVL FILL Asphalt to 0.3'
@ 0.3' Rd gy CF SAND, some Clayey SILT, little f-m GVL
@ 0.5' Rd br F-M GRAVEL and cf Sand, little Silt 1.3'

SILT & CLAY
Orange br gy mottled SILT & CLAY stiff moist 5.3'
@ 3.25' Or. br Gy SILT & CLAY with occ partings 1/64" Clayey SILT
@ 3.75' Org br red br clayey SILT saturated
@ 4.0' Org br SILT & CLAY
@ 5.0' Gray Clayey SILT, little f Sand 5.3'

CLAY & SILT
Gray CLAY & SILT, soft, sat
@ 8.0' Gray SILT & CLAY, tr(+) f-m Gravel, tr f-c Sand
@ 8.3' Gray SILT & CLAY
@ 15.0' Gray SILT, trace f Sand
@ 15'6" Gray Clayey SILT 16'

END OF BORING 16.0'

Remarks

Saturated @ 3'9"

** PID equipped with an 11.7 eV lamp

PID ** ppm	Spoon	HSA
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0

APPENDIX H

GROUNDWATER SAMPLING PROCEDURES FOR MONITORING WELLS

Appendix H

Groundwater Sampling Procedures for Monitoring Wells

I Introduction

This protocol describes the procedures to be used to collect groundwater samples. A low-flow submersible pump will be used to purge the wells prior to sampling. After purging is completed, a bailer will be used to collect the sample. During precipitation events, groundwater sampling will be discontinued until precipitation ceases.

II Materials

The following materials, as required, shall be available during groundwater sampling:

- Photoionization detector (PID)
- Appropriate health and safety equipment, as specified in the Health and Safety Plan
- Plastic sheeting (for each sampling location)
- Bailers (Teflon or stainless steel)
- Decontaminated submersible pump and controller, tubing, etc., as necessary for purging and sampling (e.g., Grundfos™ variable rate pump)
- Decontamination sleeve for pump
- 120/240 volt, 3500 watt generator for operation of pump, if required
- Gasoline and container (for the generator), if required
- Polypropylene rope
- Buckets to measure purge water
- Water level well probe

- 6 foot rule with gradation in hundredths of a foot
- Conductivity meter
- pH meter
- Dissolved oxygen meter
- Appropriate water sample containers
- Appropriate blanks (trip blank supplied by the laboratory)
- Appropriate transport containers (coolers with ice) and appropriate labeling, packing, and shipping materials
- Groundwater sampling logs
- Chain-of-custody forms
- Indelible ink pens
- Site map with well locations and groundwater contour maps
- Keys to wells

III Procedures

1. Identify site and well sampled on sampling log sheets along with date, arrival time, and weather conditions. Identify the personnel and equipment utilized and other pertinent data requested on the logs provided at the end of this procedure. Calibrate field instruments in accordance with the manufacturer's instruction manual and record this calibration in the field notebook.

2. Label all sample containers with indelible ink.

3. Don safety equipment, as required in the Health and Safety Plan. Don a new pair of disposable gloves. Disposable gloves will be used for the entire sampling event and are well-specific.

4. Place plastic sheeting adjacent to well to use as a clean work area.

5. Remove lock from well and if rusted or broken, replaced with a new brass keyed-alike lock.

6. Set the sampling device and meters on plastic sheeting.

7. Obtain a water level depth and bottom of well depth using an electric well probe and record on sampling log sheet using indelible ink. Clean the well probe after each use with a soapy (Alconox) water wash and a distilled/deionized water rinse. (Note: water levels may be measured at all wells prior to initiating any sampling activities.)

8. Calculate the number of gallons of water in the well. Record the well volume on the groundwater sampling field log using indelible ink.

9. Calculate the length of the tubing needed to extend the submersible pump to the required depth (usually the bottom of the well), leaving enough length at the top of the tubing to reach the purge water container on a hose connection which extends to a holding vessel.

10. Place one end of the tubing and the clamp over the pump discharge fitting and tighten the clamp.

11. Lower the pump and the power cord into the well. If the well opening is sharp, precautions should be taken so as not to cut the tubing or power cord on the edge of the well opening. Lower the pump until it is about 1 foot off the bottom of the well. Secure the power cord and the tubing to the side of the well.

12. Position the generator so that the exhaust from the engine is downwind of the working area.

13. Plug the pump controller source into the 20 amp, 240 volt outlet on the generator. Move the pump switch to the middle position and dial the flow rate to approximately 2.5 gallons per minute (gpm).

14. Start the generator by turning the fuel level to the "on" position and if the generator is cold, pull out the choke. (Check the oil level in the generator prior to starting. If the level is low, fill with 4-cycle oil [see operator's manual for proper SAE rating for ambient air temperature]).

15. When the generator is running smoothly, push the choke in, and turn the generator power switch "on." The economy switch must be in the "off" position.

16. Put the pump switch to the run position (middle) and adjust the pump to produce a smooth flow of discharge water from the well. The optimum maximum operating flow rate for the Grundfos™ pump is about 4.5 gpm.

17. Care should be taken to never allow the submersible pump to pump air or pull in silt and sand.

18. Remove the required purge volume of water from the well (measure purge water volume in measuring buckets). The required purge volume shall be 3 well volumes, unless the well runs dry, in which case the water that comes into the well will be sampled. When pumping wells which are known to pump dry, the pumping rate will be decreased to minimize volatilization of the groundwater in the well prior to sampling. Measure and record the initial temperature, specific conductance, and pH of the purge water and periodically make additional measurements during well evacuation. Evacuation should continue until these parameters have stabilized to within $\pm$10% over at least 2 successive well volumes removed or until at least 3 well volumes have been purged.

19. After purging, the pump will be removed from the well and the sample will be taken directly from a bailer.

20. Secure with packing material and maintain at approximately 4°C on wet ice in an insulated transport container provided by the laboratory.

21. After all sampling containers have been filled, remove an additional volume of groundwater. Check the calibration of the pH meter and then measure and record on the field log physical appearance, pH, temperature, conductivity, dissolved oxygen, and turbidity. Obtain and record duplicate measurements every 20 samples. Record measurements using an indelible ink pen.

22. Replace the well cap and lock well.

23. Record the time sampling procedures were completed on the field logs.

24. Place all disposable materials (plastic sheeting and health and safety equipment) in appropriate containers. Go to next well and repeat the above steps until al wells are sampled.

25. Complete the procedures for packing, shipping, and handling with associated chain-of-custody.

GROUND-WATER SAMPLING LOG

Well No. _____ Site Name _____

Key No. _____ Sampling Personnel _____

PID Background _____ Well _____ Date _____ Time In _____ Time Out _____

Draeger Tubes - Background _____ Weather _____

Well _____ Compound _____

WELL INFORMATION

	TIC	TOC
Reference Point Marked on Casing		
Well Diameter		
Well Depth		
Water Table Depth		
Length of Casing Above Grade		

Slug Test? (Y/N) _____

Redevelop? (Y/N) _____

WELL WATER INFORMATION

Length of Water Column	
Volume of Water in Well	
Pumping Rate of Pump	
Volume of Bailer	
Minutes of Pumping	
Number of Bails	

EVACUATION INFORMATION

Volume of Water Removed from Well _____ Evacuation Method: Bailer ( ) Pump ( )

Did well go dry? Y N Evacuation Rate _____

Parameter	Initial	After 1 Volume Removed	After 2 Volumes Removed	After 3 Volumes Removed
Temperature				
pH				
Conductance				

GROUND-WATER CHARACTERISTICS AFTER SAMPLE COLLECTED

Temperature	
Conductivity	
pH	
Turbidity	
Dissolved Oxygen	

Redline? Y N

Calibration Standard Readings _____ 10; _____ 4; _____ 7

MISCELLANEOUS OBSERVATIONS/PROBLEMS _____

SAMPLE DESTINATION

Laboratory _____ Via _____ Sent By _____

_____

Field Sampling Coordinator

APPENDIX I

SPARE PARTS/EQUIPMENT LIST

FORMER GE COURT STREET 5/5A SITE
SPARE PARTS / EQUIPMENT LIST

Item	Part Number	Estimated Net Price (per unit)	Supplier	Phone Number	Estimated Life Expectancy	Estimated Lead Time For Delivery	Recommemded Spare Part Inventory	Current Spare Part Inventory
Air Stripper Blower REGENAIR by GAST	R7100A-3	$ 1,728	KINEQUIP, INC.	(716) 694-5000	10 to 15 years	2 weeks or less	1	1
Air Stripper Intake Filter Element BALDWIN	PA 1934	$71 for 4	Trumpler Clancey	(315) 488-3200	1 Month	2 weeks or less	4	2
Air Stripper Parts CARBTROL								
Lid Seals	MSD4 Seals		Carbtrol Corp.	(800) 242-1150	2 Years	4 weeks	12 Ft.	12 Ft.
Air Diffuser Pipes (8 pipe set)	MSD4 Air Diffuser Pipes	$ 200			4 Years	4 weeks	0	0
Submersible Pumps GOULDS								
	2ED52B0EA (Pump 1)	$ 792	Inland Supply	(315) 471-6171	2 Years	1 week	0	0
	2ED15C0DA (Pump 2)	$ 978			2 Years	1 week	1	0
	2ED15E3BA (Pump 3)	$ 1,195			2 Years	1 week	0	0
	2ED15F3AA (Pump 4)	$ 1,322			2 Years	1 week	0	1
Water Flow Tubes (Magnetic) FOXBORO								
8000 A Series (1/2 inch, Pump 1)	800HA-WPR-SJGFNA-A	$ 962	Foxboro	(716) 377-2740	More Than 5 Years	4 weeks	0	0
8000 A Series (1 inch, Pump 2)	8001A-WPR-BJGFGZ	$ 1,049			More Than 5 Years	4 weeks	0	0
Water Flow Meters (Magnetic) FOXBORO	IMT 25-PDADB10N-AB	$ 1,080	Foxboro	(716) 377-2740	More Than 5 Years	1 week	0	0
Air / Water Pressure Measurment DWYER								
Pressure Transmitter (0-10 psi)	634E-0	$ 189	Dwyer Instruments	(219) 879-8000	1 Year	2 weeks	1	0
Pressure Transmitter (0-30 psi)	634E-1	$ 189			1 Year		1	0
Differential Pressure Transmitter	603 A	$ 149			1 Year		1	1
Flow Sensor Pitot	DS-300-2	$ 129			More Than 5 Years		1	1
Control Panel Fuses LITTLEFUSE / GOULD								
	Littlefuse JTD 8	$ 9	CED Baldwin Hall	(315) 463-9251	1 Year	Next Business Day	3	3
	Littlefuse JTD 10	$ 9			1 Year	(Stocked Locally)	3	3
	Littlefuse JTD 12	$ 9			1 Year		3	3
	Littlefuse JTD 15	$ 9			1 Year		3	3
	Littlefuse JTD 20	$ 9			1 Year		3	3
	Littlefuse JTD 50	$ 15			1 Year		4	4
	Littlefuse FLM 5	$ 3			1 Year		2	2
	Gould A4J100	$ 20			1 Year		3	3
Float Switches for Sumps TEEL / COLE PALMER								
Influent Sump Float Switch	CP E-07188-62	$ 90	Cole Palmer	(800) 323-4340	1 Year	1 week	1	0
Transfer Sump Float Switch	TEEL (Grainger 6B482)	$ 67	Granger	(315) 433-2771	1 Year	1 week	1	0
Control Panel Motor Starters ALLEN BRADLEY			CED Baldwin Hall					
Air Stripper Blower Starter Contactor	100-A38N*C, Ser. C	$ 116	new: 100-C37D10	(315) 463-9251	2 Years	Next Business Day	1	1
Air Stripper Blower Starter Overload	193 CPC 45	$ 88	new: 193-EA1JD		2 Years	(Stocked Locally)	1	1
Air Stripper Blower Starter Part 3	195-GA10A	$ 7	new: 100-SA10		2 Years		1	1
Pump 1 Starter Contactor	100-A09ND3 Ser B	$ 50	new: 100-C09D10		2 Years		0	0
Pump 1 Starter Overload	193 BSC 10	$ 35	new: 193-EA1FB ?		2 Years		1	0
Pump 2 Starter Contactor	100-A09ND3 Ser B	$ 50	new: 100-C09D10		2 Years		1	1
Pump 2 Starter Overload	193 BSC 15	$ 38	new: 193-EA1GB		2 Years		1	1
Pump 3 Starter Contactor	100-A09ND3 Ser B	$ 50	new: 100-C09D10		2 Years		0	0
Pump 3 Starter Overload	193 BSC 60	$ 35	new: 193-EA1FB ?		2 Years		1	0
Pump 4 Starter Contactor	100-A12ND3 Ser B	$ 64	new: 100-C12D10		2 Years		1	0
Pump 4 Starter Overload	193 BSC 60	$ 35	new: 193-EA1FB ?		2 Years		0	0

Revised 8/16/99

APPENDIX J

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

For

SITE-WIDE REMEDIAL PROGRAM ACTIVITIES
FORMER GE COURT STREET 5 / 5A SITE
DEWITT, NEW YORK

Prepared By:

PARSONS ENGINEERING SCIENCE, INC.
290 ELWOOD DAVIS ROAD
LIVERPOOL, NY 13088

Reviewed and Approved By:

	Name	Date
Project Manager	John Kurtzweil	12-9-99
Parsons ES H&S Officer	Brian J. Bowell, CIH, CSP	12-9-99

TABLE OF CONTENTS

EMERGENCY CONTACTS

In the event of any situation or unplanned occurrence requiring assistance, the appropriate contact(s) should be made from the list below. This emergency contacts list will be located in the treatment building, on the wall near the desk.

On-site Phone Nearest to Work Areas	Phone Number
Court Street Remediation Building	(315) 432-5662

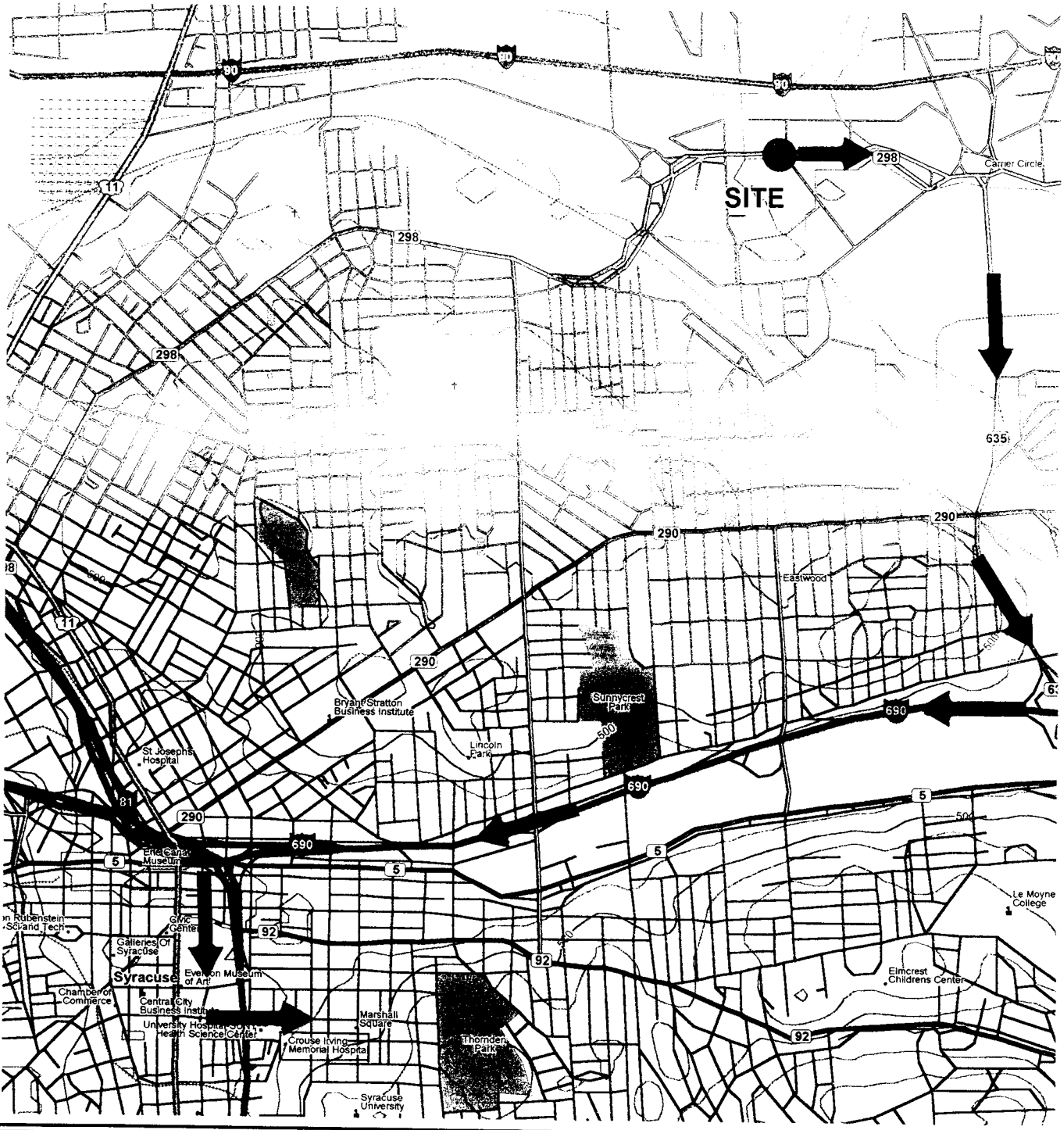
Program Contacts	Phone Number
John Mastracchio (Parsons ES Project Manager)	(315) 451-9560
Brian Powell (Parsons ES H/S Officer)	(315) 451-9560
Pat Salvador (LMC Project Manager)	(315) 456-3199
Nick Caparco (LMC H/S Officer)	(315) 456-2606
Kevin Griffin (LMC Waste Handling)	(315) 456-1653

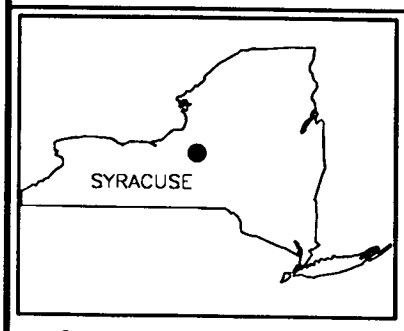
Contingency Contacts	Phone Number
Fire Department	911
Ambulance	911
Poison Control Center	(800) 252-5655
Pollution Toxic Chemical, Spills	(800) 424-8802
UFPO	(800) 962-7962
Utility Emergencies: (Electric)	(800) 637-2770
Utility Emergencies: (Gas)	(800) 627-6466
Parsons ES Contract Physician (IMA)	(315) 478-1977 (315) 432-9705

Medical Emergency	
Ambulance:	911
Hospital Name:	Crouse Memorial Hospital
Hospital Phone Number:	(315) 470-7111
Hospital Address:	Irving Avenue Syracuse, NY
Map to Hospital:	SEE FIGURE 1
Travel Time From Site:	10 - 15 Minutes

ROUTE TO HOSPITAL:

1. From facility parking lot, turn left on Deere Road. Turn right onto Rt. 298 (Court St.).
2. Turn right onto Carrier Circle, exit onto Thompson Rd. South
3. Follow Thompson Rd. South to Rt. 690. Ramp onto Rt. 690 West (toward Syracuse).
4. After approximately 4 miles, take Townsend Rd. exit. Turn left at bottom of ramp. In less than 1 mile, turn left onto Adams St.
5. At next light, turn right onto Irving Ave. Crouse Irving Memorial Hospital will be on the immediate right.





QUADRANGLE LOCATION
NEW YORK

LATITUDE: N43° 05' 16"
LONGITUDE: W76° 06' 10"

N

FIGURE 1

FORMER GENERAL ELECTRIC
COURT STREET SITE
SYRACUSE, NEW YORK

ROUTE TO HOSPITAL MAP

PARSONS ENGINEERING SCIENCE, INC.
DESIGN • RESEARCH • PLANNING
290 ELWOOD DAVIS ROAD • SUITE 312 • LIVERPOOL, N.Y. 13088 • 315/451-9560
OFFICES IN PRINCIPAL CITIES

12/03/99 (SEH)
734960.02100

Anticipated Site Activities

Site inspection and maintenance of an existing groundwater collection & treatment system and miscellaneous supporting facilities (collection sump, monitoring wells, etc.), sampling storm sewers, sampling monitoring wells, and measuring groundwater elevations and stream levels.

Level D

Photoionization Detector (PID) readings less than 5 ppm in the breathing zone.

No visible dust.

Level C

Technician is not expected to go to Level C Personal Protection. However, should PID readings exceed 5 ppm in the breathing zone, technician will stop work and reevaluate.

SECTION 1 - INTRODUCTION

1.1 Purpose and Requirements

The purpose of this health and safety plan is to establish personnel protection standards and mandatory safety practices and procedures for field efforts. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are being conducted at the Former GE Court Street 5/5A Site (Site).

The provisions of the plan are mandatory for all personnel conducting work at the site. Health and safety plans must be prepared by any contractors and they must conform to this plan as a minimum. All personnel who engage in project activities must be familiar with this plan and comply with its requirements. These personnel must sign-off on the Plan Acceptance Form (Attachment A) prior to beginning work on the site. The Plan Acceptance Form must be submitted to the site Health and Safety Officer.

1.2 Site Description

The site is a former electronics manufacturing facility. It is currently used as warehouse space. Releases of industrial solvents from past operations have impacted the groundwater. The remedial system collects groundwater from a buried, perforated trench pipe into an underground sump. Pumps within the sump transfer the water to the treatment system building where it is treated through air stripper and bag filtration processes. Treated effluent is discharged through buried piping to a storm water catch basin. Lockheed Martin completed the remedial system construction during January 1998. The system has been operating for approximately 2 years.

1.3 Scope of Work

Field tasks to be conducted at the site include:

- site inspection and maintenance of the groundwater collection & treatment system and miscellaneous supporting facilities (collection sump, monitoring wells, etc.), including cleaning the air stripper;
- collection of groundwater samples from the groundwater collection & treatment system;
- collection of groundwater samples from monitoring wells;
- collection of dry weather samples from Outfall 02A;
- collection of water level measurements from monitoring wells; and
- accessing the collection sump to perform pump maintenance.

1.4 Project Team Organization

The names of principal on-site personnel associated with this project are identified below:

Project Manager: John Mastracchio

Field Team Leader: Ed Rudy

Site Health and Safety Officer: Ed Rudy

Office Health and Safety Officer: Brian Powell

All Parsons ES personnel have been appropriately trained in first aid, hazardous waste safety procedures including the operating and fitting of personal protective equipment, and are experienced with the types of field tasks to be conducted at the site.

SECTION 2 - RISK ANALYSIS

2.1 Chemical Hazards

Contaminants which have been measured from previous monitoring efforts and which are expected to be encountered while conducting field tasks at the site are listed in Table 1. The chemicals of concern found at the site are volatile organic compounds. Relevant properties and action levels of these compounds are listed as well. In the groundwater treatment building, direct monitoring for organic vapors in the breathing zone is not necessary since the VOCs are only present as dissolved contaminants at low concentrations (~ 10 ppm total) in groundwater.

In addition to the compounds detected on site, some solvents used in the decontamination of equipment are potentially hazardous to human health if they are not used properly. Material Safety Data Sheets for methyl alcohol, distilled white vinegar, sodium chloride (rock salt), and isobutylene are included in Attachment B. Some or all of these compounds may be used in the current tasks to be performed at the site.

2.2 Physical Hazards

2.2.1 Heat Stress

The use of protective equipment that may create heat stress, such as Tyvec© overalls and respirator, are not anticipated for use at this site. If conditions indicate that Level D protection is not sufficient, personnel should not access the site.

2.2.2 Cold-Related Illness

Thermal injury due to cold exposure can become a problem for field personnel. Hypothermia and frostbite are common cold related conditions. These conditions are defined below.

Hypothermia. Hypothermia is defined as a decrease in the patient core temperature below 96°F. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interferences with any of these mechanisms can result in hypothermia, even in the absence of what normally is considered a "cold" ambient temperature. Symptoms of hypothermia include: shivering, apathy, listlessness, sleepiness, and unconsciousness.

Frostbite. Frostbite is both a general and medical term given to areas of local cold injury. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20°F. Symptoms of frostbite are: a sudden blanching or whitening of the skin; the skin has a waxy or white appearance and is firm to the touch; tissues are cold, pale, and solid.

TABLE 1
RELEVANT PROPERTIES OF CONTAMINANTS
KNOWN AT THE FORMER GE COURT STREET 5/5A SITE
DEWITT, NEW YORK

Compound (Synonym)	OSHA PEL[1] (ppm)	IDLH (ppm)	LEL (%)	Odor Threshold[2] (ppm)	Odor Character	Vapor Pressure (mm Hg)	Physical State	Detectable w/ 10.6 eV lamp PID (I.P. eV)
Vinyl Chloride	1	N.D.	3.6		"Pleasant"	2508	Vapor	Yes (9.99)
Chloroethane	1000	3800	3.8		Pungent, (ether-like)	1000	Vapor	No (10.97)
1,1-Dichloroethane	100	3000	5.4	49-1359	Acrid	182	Vapor	No (11.06)
cis-1,2-Dichloroethylene	200	1000	5.6		Slightly Acrid (chloroform-like)	180-265	Vapor	Yes (9.65)
trans-1,2-Dichloroethylene	200	1000	5.6		Slightly Acrid (chloroform-like)	180-265	Vapor	Yes (9.65)
1,1,1-Trichloroethane	350	700	7.5	390	Aromatic	100	Vapor	No (11.25)
Trichloroethylene	100	1000	8.0		Chloroform-like	58	Vapor	Yes (9.45)
Benzene	1	500	1.2			75	Vapor	Yes (9.24)
Toluene	100	500	1.2	1.6	Sour, burnt	20	Vapor	Yes (8.81)
Ethylbenzene	100	800	1.0	0.6	Oily, solvent	10	Vapor	Yes (8.76)
o-,m-,p-Xylenes	100 150 [STEL]	900	1.0	20	Aromatic	7,9,9	Vapor	Yes (8.4-8.6)

29 CFR 1910, July 1, 1989 (8-hour Time weighted average unless otherwise specified.)

(2) ACGIH 1989 Highest reported value of acceptable odor threshold range.

[IDLH] Immediately dangerous to life or health.

[CA] Suspect carcinogen - Minimize all possible exposures.

[STEL] 15 minute Short Term Exposure Limit

[SKIN] Designates that skin is an important possible route of exposure.

ND Not Determined.

2.2.3 Prevention of Cold Related Illness

- Educate workers to recognize the symptoms of frostbite and hypothermia;
- Identify and limit known risk factors;
- Assure the availability of enclosed, heated environment on or adjacent to the site;
- Assure the availability of dry changes of clothing;
- Develop the capability for temperature recording at the site; and
- Assure the availability of warm drinks.

Monitoring

Start (oral) temperature recording at the site:

- When worker's performance or mental status changes;
- At a worker's request;
- As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind-chill less than 20°F, or wind-chill less than 30°F with precipitation); and
- As a screening measure whenever any one worker on the site develops hypothermia.

Any person developing moderate hypothermia (a core temperature of 92°F) cannot return to work for 48 hours.

2.2.4 Biological Hazards

Work in wooded areas presents the following risks:

- insect bites;
- snakes; and
- poison ivy/oak.

Anyone susceptible to reactions from these hazards should either use insect repellant and protective outer clothing, or should not perform work in the wooded area.

2.2.5 Explosion Hazards

None Expected

2.2.6 Confined Space Entry

The following work areas at the Court Street 5/5A Site are considered confined spaces:

- The groundwater collection sump (permit-required confined space); and
- The treatment building sump (non-permit required confined space).

Prior to entering any confined space, the Lockheed Martin patrol office shall be notified. When entering any confined space, the confined space entry procedures

provided in Attachment E of this health and safety plan shall be followed.

2.2.7 Drowning Hazard

Gauging water levels or collection of water level measurements near Ley and Sanders creeks poses a potential drowning hazard. Personnel should stay clear of stream banks when possible. Any personnel required to enter the stream should wear a personal floatation device.

2.2.8 Working Alone

When working on a hazardous task or in a hazardous location, it is mandatory that at least two people be within sight and sound of each other. When working under nonhazardous conditions, working alone is permitted if the project manager or Lockheed Martin is aware of the location and nature of the task and contact is established at least every two hours.

SECTION 3 - PERSONNEL PROTECTION AND MONITORING

3.1 Medical Surveillance

The services of a licensed occupational health physician with knowledge and/or experience in the hazards associated with the project will provide the medical examinations and surveillance specified herein.

Personnel involved in this operation must undergo medical surveillance prior to employment, and thereafter at 12-month intervals. The 12-month medical examination includes a complete medical and work history and a standard occupational physical, examination of all major organ systems, complete blood count with differential (CBC), and a SMAC/23 blood chemistry screen which includes calcium, phosphorous, glucose, uric acid, BUN, creatinine, albumin, SGPT, SGOT, LDH, globulin, A/G ratio, alkaline phosphatase, total protein, total bilirubin, triglyceride, cholesterol, and a creatinine/BUN ratio. Additionally a pulmonary function test will be performed by trained personnel to record Forced Vital Capacity (FVC) and Forced Expiratory Volume in second ($FEV_{1.0}$). An audiogram and visual acuity measurement, including color perception, is provided The medical exam is performed under the direction of a licensed Occupational Health Physician. A medical certification as to the fitness or unfitness for employment on hazardous waste projects, or any restrictions on his/her utilization that may be indicated, is provided by the physician. This evaluation will be repeated as indicated by substandard performance or evidence of particular stress that is evident by injury or time loss illness on the part of any worker.

3.2 Site Specific Training

The Site Health and Safety Officer will be responsible providing training to all personnel that are to work at the site. This training will consist of the following topics:

- Names of personnel responsible for site safety and health;
- Safety, health, and other hazards at the site;
- Proper use of personal protective equipment;
- Work practices by which the employee can minimize risk from hazards;
- Safe use of engineering controls and equipment on the site;
- Acute effects of compounds at the site;
- Decontamination procedures; and

In addition, all personal must have completed Lockheed Martin health and safety training in the past year in order to perform any work at the site.

3.3 Personal Protective Equipment and Action Levels

3.3.1 Conditions for Level D

Level D protection will be worn for initial entry on-site and initially for all activities. Level D protection will consist of:

- Long pants; and
- Safety boots.

3.3.2 Conditions for Retreat

There are no anticipated conditions for retreat.

3.4 Monitoring Requirements

In the groundwater treatment building, direct monitoring for organic vapors in the breathing zone is not necessary since the VOCs are only present as dissolved contaminants at low concentrations (~ 10 ppm total) in groundwater.

SECTION 4 - WORK ZONES AND DECONTAMINATION

4.1 Site Work Zones

Since the remedial action for this site has already been constructed, there is negligable exposure of workers to contaminated liquids or solids. There is no need to establish exclusion, decontamination, or support zones.

4.2 Decontamination

Any water used in decontamination procedures will be disposed of in containers provided by Lockheed Martin.

4.2.1 Decontamination of Personnel

Decontamination will not be necessary if only Level D protection is used. However, any used PPE generated during site activities should be removed and left in containers provided by Lockheed Martin.

4.2.2 Decontamination of Equipment

Decontamination of equipment, with the exception of a well probe used for depth-to-water measurements, is not anticipated.

SECTION 5 - ACCIDENT PREVENTION AND CONTINGENCY PLAN

5.1 Accident Prevention

All personnel will receive health and safety training prior to the initiation of any site activities. On a day-to-day basis, individual personnel should be constantly alert for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Rapid recognition of dangerous situations can avert an emergency. Periodic meetings should be held and the discussion should include:

- Tasks to be performed;
- Hazards that may be encountered, including their effects, how to recognize symptoms or monitor them, concentration limits, or other danger signals; and
- Emergency procedures.

5.2 Contingency Plan

5.2.1 Emergency Procedures

In the event that an emergency develops on site, the procedures delineated herein are to be immediately followed. Emergency conditions are considered to exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure while on site; or
- A condition is discovered that suggests the existence of a situation more hazardous than anticipated.

General emergency procedures, and specific procedures for personal injury and chemical exposure, are described in this health and safety plan.

5.2.2 Chemical Exposure

If a member of the field crew demonstrates symptoms of chemical exposure, the procedures outlined below should be followed.

- The individual should leave the immediate area of contamination and, if necessary, contact the appropriate emergency response agency.
- Precautions should be taken to avoid exposure of other individuals to the chemical.
- If the chemical is on the individual's clothing, the chemical should be neutralized or removed if it is safe to do so.
- If the chemical has contacted the skin, the skin should be washed with copious amounts of water. Potable water is available in the treatment building.
- All chemical exposure incidents must be reported in writing to the Office Health and Safety Representative. The Site Health and Safety Officer is responsible for completing the accident report (See Attachment A of this Section).

- All chemical exposure incidents must be reported in writing to the Office Health and Safety Representative. The Site Health and Safety Officer is responsible for completing the accident report (See Attachment A of this Section).

5.2.3 Personal Injury

In case of personal injury at the site, the procedures outlined below should be followed.

- A field team member trained in first aid can administer treatment to an injured worker.
- The victim should then be transported to the nearest hospital or medical center. If necessary, an ambulance should be called to transport the victim.
- The Field Team Leader or Site Health and Safety Officer is responsible for making certain that an accident report form is completed. This form is to be submitted to the Office Health and Safety Representative. Follow-up action should be taken to correct the situation that caused the accident.

5.2.4 Evacuation Procedures

- All personnel in the work area should evacuate the area and meet in the common designated area.
- All personnel suspected to be in or near the contract work area should be accounted for and the whereabouts of missing persons determined immediately.

5.2.5 Procedures Implemented in the Event of a Major Fire, Explosion, or On-Site Health Emergency Crisis

- Notify the paramedics and/or fire department, as necessary.
- Isolate the area.
- Stay upwind of any fire.
- Keep the area surrounding the problem source clear after the incident occurs.
- Complete accident report form and distribute to appropriate personnel.

HEALTH AND SAFETY PLAN ATTACHMENT A

FORMS FOR HEALTH AND SAFETY-RELATED ACTIVITIES

Job Safety and Health Poster

Accident Report Form

Plan Acceptance Form

Site Specific Training Form

Note: The OSHA Job Safety and Health Protection Poster should be posted on the wall next to the desk in the treatment building. The following page is an example of the poster to be used in the field. The actual poster must be an 11 inch by 17 inch size version of this page.

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Provisions of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discriminatory action.

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory civil penalties against employers of up to $7,000 for each serious violation and for optional penalties of up to $7,000 for each nonserious violation. Penalties of up to $7,000 per day may be proposed for failure to correct violations within the proposed time period and for each day the violation continues beyond the prescribed abatement date. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $70,000 for each such violation. A minimum penalty of $5,000 may be imposed for each willful violation. A violation of posting requirements can bring a penalty of up to $7,000.

There are also provisions for criminal penalties. Any willful violation resulting in the death of any employee, upon conviction, is punishable by a fine of up to $250,000 (or $500,000 if the employer is a corporation), or by imprisonment for up to six months, or both. A second conviction of an employer doubles the possible term of imprisonment. Falsifying records, reports, or applications is punishable by a fine of $10,000 or up to six months in jail or both.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

OSHA has published Safety and Health Program Management Guidelines to assist employers in establishing or perfecting programs to prevent or control employee exposure to workplace hazards. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free assistance in identifying and correcting hazards and in improving safety and health management is available to employers, without citation or penalty, through OSHA-supported programs in each State. These programs are usually administered by the State Labor or Health department or a State university.

Posting Instructions

Employers in States operating OSHA approved State Plans should obtain and post the State's equivalent poster.

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or facsimile) in a conspicuous place where notices to employees are customarily posted.

More Information

Additional information and copies of the Act, OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, GA	(404) 562-2300
Boston, MA	(617) 565-9860
Chicago, IL	(312) 353-2220
Dallas, TX	(214) 767-4731
Denver, CO	(303) 844-1600
Kansas City, MO	(816) 426-5861
New York, NY	(212) 337-2378
Philadelphia, PA	(215) 596-1201
San Francisco, CA	(415) 975-4310
Seattle, WA	(206) 553-5930

Washington, DC
1997 (Reprinted)
OSHA 2203

Alexis M. Herman, Secretary of Labor

U.S. Department of Labor
Occupational Safety and Health Administration

This information will be made available to sensory impaired individuals upon request.
Voice phone: (202) 219-8615 TDD message referral phone: 1-800-326-2577

ACCIDENT REPORT FORM

Project: _____

EMPLOYER

1. Name _____
2. Mailing Address _____
   (No. and Street) (City or Town) (State)
3. Location, if different from mail address _____

_____

INJURED OR ILL EMPLOYEE

4. Name _____ Social Security Number _____
   (First) (Middle) (Last)
5. Home Address _____
   (No. and Street) (City or Town) (State)
6. Age _____ 7. Sex: Male _____ Female _____ (Check one)
8. Occupation _____
   (Specific job title, not the specific activity employee was performing at time of injury)
9. Department _____
   (Enter name of department in which injured person is employed, even though they may have been temporarily working in another department at the time of injury)

THE ACCIDENT OR EXPOSURE TO OCCUPATIONAL ILLNESS

10. Place of accident of exposure _____
    (No. and Street) (City or Town) (State)
11. Was place of accident or exposure on employer's premises? _____
    (Yes/No)
12. What was the employee doing when injured? (Be specific - Was employee using tools or equipment or handling material?) _____

_____

_____

ACCIDENT REPORT FORM
(Continued)

13. How did the accident occur? _____
(Describe fully the events which resulted in the

_____

injury or occupational illness. Tell what happened and how. Name objects and

_____

substances involved. Give details on all factors which led to accident. Use separate

_____

sheet for additional space.)

14. Time of accident: _____

15. Parsons ES WITNESS TO ACCIDENT

(Name)	(Affiliation)	(Phone No.)
_____	_____	_____
(Name)	(Affiliation)	(Phone No.)
_____	_____	_____
(Name)	(Affiliation)	(Phone No.)

OCCUPATIONAL INJURY OR OCCUPATIONAL ILLNESS

16. Describe the injury or illness in detail and indicate the part of the body affected. _____

_____

17. Name the object or substance which directly injured the employee. (For example, object which struck employee; the vapor or poison inhaled or swallowed; the chemical or radiation which irritated the skin; or in cases of strains, hernias, etc., the object the employee was lifting, pulling, etc.

_____

_____

18. Date of injury or initial diagnosis of occupational illness _____
(Date)

19. Did the accident result in employee fatality? _____ (Yes or No)

ACCIDENT REPORT FORM
(Continued)

OTHER

20. Name and address of physician _____

21. If hospitalized, name and address of hospital _____

_____

Date of report _____ Prepared by _____

Official position _____

PLAN ACCEPTANCE FORM

PROJECT HEALTH AND SAFETY PLAN

I have read and agree to abide by the contents of the Health and Safety Plan for the following project:

Remedial activities at the Former GE Court Street 5/5A Site

_____
Name (print)

_____
Signature

_____
Date

Place a copy of this form in the project file, send one copy to Lockheed Martin and keep a copy at the site.

SITE SPECIFIC TRAINING

PROJECT HEALTH AND SAFETY PLAN

I hereby confirm that site-specific health and safety training has been conducted by the site health and safety officer which included:

- Names of personnel responsible for site safety and health
- Safety, health, and other hazards at the site
- Proper use of personal protective equipment
- Work practices by which the employee can minimize risk from hazards
- Safe use of engineering controls and equipment on the site
- Acute effects of compounds at the site
- Decontamination procedures

For the following project:

Remedial activities at the Former GE Court Street 5/5A

_____
Name (print)

_____
Signature

_____
Date

Place a copy of this form in the project file, send one copy to Lockheed Martin and keep a copy at the site.

HEALTH AND SAFETY PLAN ATTACHMENT B

MATERIAL SAFETY DATA SHEETS

- Methyl Alcohol
- Distilled White Vinegar
- Sodium Chloride (Rock Salt)
- Isobutylene

Please reduce your browser font size for better viewing and printing.

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

MALLINCKRODT J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response In Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 202-483-7616

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-562-2537) for assistance.

METHYL ALCOHOL

MSDS Number: M2015 --- *Effective Date: 12/08/96*

1. Product Identification

Synonyms: Wood alcohol; methanol; carbinol
CAS No.: 67-56-1
Molecular Weight: 32.04
Chemical Formula: CH3OH
Product Codes:
J.T. Baker: 5217, 5370, 5794, 5807, 5811, 5842, 5869, 9049, 9063, 9067, 9069, 9070, 9071, 9073, 9075, 9076, 9077, 9091, 9093, 9096, 9097, 9098, 9263, 9893
Mallinckrodt: 3004, 3006, 3016, 3017, 3018, 3024, 3041, 3701, 4295, 5160, 8814, H080, H488, H603, V079, V571

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methyl Alcohol	67-56-1	100%	Yes

3. Hazards Identification

Emergency Overview

POISON! DANGER! VAPOR HARMFUL. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)
Flammability Rating: 4 - Extreme (Flammable)
Reactivity Rating: 1 - Slight
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:
A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Once absorbed into the body, it is very slowly eliminated. Symptoms of overexposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, coma, and death. A person may get better but then worse again up to 30 hours later.
Ingestion:
Toxic. Symptoms parallel inhalation. Can intoxicate and cause blindness. Usual fatal dose: 100-125 milliliters.
Skin Contact:
Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure.
Eye Contact:
Irritant. Continued exposure may cause eye lesions.
Chronic Exposure:
Marked impairment of vision and enlargement of the liver has been reported. Repeated or prolonged exposure may cause skin irritation.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

---

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.
Skin Contact:
Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

5. Fire Fighting Measures

Fire:
Flash point: 12C (54F) CC
Autoignition temperature: 464C (867F)
Flammable limits in air % by volume:
lel: 7.3; uel: 36
Flammable.
Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Moderate explosion hazard and dangerous fire hazard when exposed to heat, sparks or flames. Sensitive to static discharge.
Fire Extinguishing Media:
Water spray, dry chemical, alcohol foam, or carbon dioxide.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire. Vapors can flow along surfaces to distant ignition source and flash back.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

J. T. Baker SOLUSORB(tm) solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
For Methyl Alcohol:
- OSHA Permissible Exposure Limit (PEL):
200 ppm (TWA)
- ACGIH Threshold Limit Value (TLV):

200 ppm (TWA), 250 ppm (STEL) skin
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices* , most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.
Skin Protection:
Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.
Eye Protection:
Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear, colorless liquid.
Odor:
Characteristic odor.
Solubility:
Miscible in water.
Specific Gravity:
0.8
pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
64.5C (147F)
Melting Point:
-98C (-144F)
Vapor Density (Air=1):
1.1
Vapor Pressure (mm Hg):
97 @ 20C (68F)
Evaporation Rate (BuAc=1):
5.9

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
May form carbon dioxide, carbon monoxide, and formaldehyde when heated to decomposition.
Hazardous Polymerization:
Will not occur.

Incompatibilities:
Strong oxidizing agents such as nitrates, perchlorates or sulfuric acid. Will attack some forms of plastics, rubber, and coatings. May react with metallic aluminum and generate hydrogen gas.
Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Methyl Alcohol (Methanol) Oral rat LD50: 5628 mg/kg; inhalation rat LC50: 64000 ppm/4H; skin rabbit LD50: 15800 mg/kg; Irritation data-standard Draize test: skin, rabbit: 20mg/24 hr. Moderate; eye, rabbit: 100 mg/24 hr. Moderate; Investigated as a mutagen, reproductive effector.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Methyl Alcohol (67-56-1)	No	No	None

12. Ecological Information

Environmental Fate:
When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life between 1 and 10 days. When released into water, this material is expected to readily biodegrade. When released into the air, this material is expected to exist in the aerosol phase with a short half-life. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into air, this material is expected to have a half-life between 10 and 30 days. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.
Environmental Toxicity:
This material is expected to be slightly toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: METHANOL
Hazard Class: 3
UN/NA: UN1230
Packing Group: II
Information reported for product/size: 350LB

International (Water, I.M.O.)

Proper Shipping Name: METHANOL
Hazard Class: 3.2, 6.1
UN/NA: UN1230
Packing Group: II
Information reported for product/size: 350LB

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------

Ingredient	TSCA	EC	Japan	Australia
Methyl Alcohol (67-56-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\---------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Methyl Alcohol (67-56-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\---------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Methyl Alcohol (67-56-1)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\---------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Methyl Alcohol (67-56-1)	5000	U154	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 2PE
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 3 Reactivity: 0
Label Hazard Warning:
POISON! DANGER! VAPOR HARMFUL. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER.
Label Precautions:
Keep away from heat, sparks and flame.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Avoid breathing vapor.
Avoid contact with eyes, skin and clothing.
Label First Aid:
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.
Product Use:
Laboratory Reagent.
Revision Information:
New 16 section MSDS format, all sections have been revised.
Disclaimer:
****

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****

Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)

H J HEINZ -- DISTILLED WHITE VINEGAR
MATERIAL SAFETY DATA SHEET
NSN: 895000N048492
Manufacturer's CAGE: 73137
Part No. Indicator: A
Part Number/Trade Name: DISTILLED WHITE VINEGAR

General Information

Company's Name: H.J. HEINZ CO.
Company's Street: 1062 PROGRESS ST.
Company's City: PITTSBURGH
Company's State: PA
Company's Country: US
Company's Zip Code: 15212-5990
Company's Emerg Ph #: 412-237-5118
Company's Info Ph #: 412-237-5119
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 13NOV92
Safety Data Review Date: 11FEB94
MSDS Serial Number: BVCGS
Hazard Characteristic Code: NK

Ingredients/Identity Information

Proprietary: NO
Ingredient: DILUTE ACETIC ACID (CH*3 COOH)
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: 1010888AA
CAS Number: 8028-52-2
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)

Physical/Chemical Characteristics

Appearance And Odor: CLEAR LIQUID, ODOR OF VINEGAR
Boiling Point: 244F,118C
Vapor Pressure (MM Hg/70 F): 11 MM
Vapor Density (Air=1): 2.1
Specific Gravity: 1.01
Evaporation Rate And Ref: NOT KNOWN
Solubility In Water: COMPLETE
pH: SUPDAT

Fire and Explosion Hazard Data

Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).
Special Fire Fighting Proc: USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MANUFACTURER.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.
Materials To Avoid: NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomp Products: NONE SPECIFIED BY MANUFACTURER.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: PROLONGED INHALATION OF VAPORS CAN CAUSE IRRITATION TO RESPIRATORY TRACT. EYES:WILL CAUSE EYE IRRITATION - SMARTING AND REDDENING OF THE EYE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT.
Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: INHAL:REMOVE TO FRESH AIR. SUPPORT BREATHING (GIVE O*2/ARTF RESP) (FP N). SKIN:FLUSH W/COPIOUS AMOUNTS OF WATER. CALL MD (FP N). EYE:FLUSH IMMEDIATELY AND THOROUGHLY WITH WATER FOR AT LEAST 15-20 MINUTES (TIMED BY A CLOCK). CALL A PHYSICIAN. INGEST:LARGE AMOUNTS, WATER SHOULD BE CONSUMED TO DILUTE. DO NOT INDUCE VOMITING. DO NOT GIVE EMETICS OR BAKING SODA. CALL A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: IF VINEGAR IS SPILLED, WATER MAY BE USED TO DILUTE.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL REGULATIONS (FP N).
Precautions-Handling/Storing: NONE SPECIFIED BY MANUFACTURER.
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation: NONE SPECIFIED BY MANUFACTURER.
Protective Gloves: NONE SPECIFIED BY MANUFACTURER.
Eye Protection: NONE SPECIFIED BY MANUFACTURER.
Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Suppl. Safety & Health Data: PH:2.2 @ 100 GRAIN.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 11FEB94
Label Date: 11FEB94
Label Status: G
Common Name: DISTILLED WHITE VINEGAR
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE:INHAL/EYES:IRRITATION. CHRONIC:NONE SPECIFIED BY MANUFACTURER.
Protect Eye: Y

Protect Skin: Y
Protect Respiratory: Y
Label Name: H.J. HEINZ CO.
Label Street: 1062 PROGRESS ST.
Label City: PITTSBURGH
Label State: PA
Label Zip Code: 15212-5990
Label Country: US
Label Emergency Number: 412-237-5118

MORTON SALT -- MORTON WHITE CRYSTAL, SOUTHERN COURSE ROCK SALT - SODIUM CHLORIDE T
MATERIAL SAFETY DATA SHEET
NSN: 6810001275668
Manufacturer's CAGE: MORTO
Part No. Indicator: A
Part Number/Trade Name: MORTON WHITE CRYSTAL, SOUTHERN COURSE ROCK SALT

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General Information

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Item Name: SODIUM CHLORIDE TECHNICAL
Company's Name: MORTON SALT
Company's Street: 100 N RIVERSIDE PLASA
Company's City: CHICAGO
Company's State: IL
Company's Country: US
Company's Zip Code: 60606-1597
Company's Emerg Ph #: 312-807-2000
Company's Info Ph #: 312-807-2000
Record No. For Safety Entry: 002
Tot Safety Entries This Stk#: 003
Status: SE
Date MSDS Prepared: 21OCT96
Safety Data Review Date: 04OCT96
Supply Item Manager: CX
MSDS Serial Number: CCJPX
Specification Number: NK
Spec Type, Grade, Class: NK
Hazard Characteristic Code: NK
Unit Of Issue: TN
Unit Of Issue Container Qty: 2000 LB TIN
Type Of Container: NK
Net Unit Weight: NK
NRC/State License Number: NK
Net Explosive Weight: NK
Net Propellant Weight-Ammo: NK
Coast Guard Ammunition Code: NK

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Ingredients/Identity Information

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Proprietary: NO
Ingredient: SODIUM CHLORIDE
Ingredient Sequence Number: 01
Percent: NK
NIOSH (RTECS) Number: VZ4725000
CAS Number: 7647-14-5
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

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Physical/Chemical Characteristics

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Appearance And Odor: COLORLESS OR WHITE ODORLESS CRYSTALS
Boiling Point: 2575F,1413C
Melting Point: NK
Vapor Pressure (MM Hg/70 F): 1.0 @ 865C
Vapor Density (Air=1): NA
Specific Gravity: 2.165
Decomposition Temperature: NK
Evaporation Rate And Ref: NA
Solubility In Water: 36G/100CC WATER@20C
Percent Volatiles By Volume: 0.0
Viscosity: NK
pH: 7.0

Radioactivity: NK
Corrosion Rate (IPY): NK
Autoignition Temperature: NK

Fire and Explosion Hazard Data

Flash Point: NA
Lower Explosive Limit: NA
Upper Explosive Limit: NA
Extinguishing Media: NONE REQUIRED
Special Fire Fighting Proc: NONE
Unusual Fire And Expl Hazrds: NONE

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NK
Materials To Avoid: REACTS W/STRONG ACIDS TO GENERATE HCL & STRONG OXIDIZING AGENTS TO GENERATE CL2.
Hazardous Decomp Products: NONE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NK *SKIN IRRITATION RABBIT. EYE IRRIT RABBIT 100MG/24 HR MODERATE.

Health Hazard Data

LD50-LC50 Mixture: LD50 3000MG/KG ORAL RAT 500MG/24HR MILD*
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: INGEST: VERY LARGE DOSES CAUSE VOMITING/ DIARRHEA/PROSTRATION. SKIN: NOT EXPECTED TO BE HEALTH HAZARD. EYE: MAY CAUSE IRRIT. INHALING DUST MAY CAUSE MILD IRRIT TO MUCOUS MEMBRANES/NOSE DEHYDRATION/CONGESTION IN INTERNAL ORGANS. HYPERTONIC SALT SOLUTION**
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NK
Signs/Symptoms Of Overexp: NK **MAY CAUSE INFLAMMATORY REACTIONS IN GI TRACT.
Med Cond Aggravated By Exp: NK
Emergency/First Aid Proc: EYES: IMMEDIATELY FLUSH W/PLENTY OF WATER 15 MINUTES. CALL DR. SKIN: WASH W/SOAP & WATER. GET MEDICAL AID IF IRRITATION DEVELOPS. INHALATION: GET FRESH AIR. GET MEDICAL AID FOR ANY BREATHING DIFFICULTY. INGESTION: IF LARGE AMOUNTS WERE SWALLOWED GET MEDICAL AID.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: SWEEP UP & CONTAINERIZE SMALL SPILLS FOR RECLAIMATION OR DISPOSAL. VACUUMING/WET SWEEPING MAY BE USED TO AVOID DUST DISPERSAL. LARGE: SHOVEL/SWEEP UP & CONTAINERIZE FOR DISPOSAL.
Neutralizing Agent: NK
Waste Disposal Method: UNSAVEABLE PRODUCT MAY BE DELIVERED TO APPROVED WASTE DISPOSAL FACILITY. OR IF LOCAL REGS ALLOW CAN BE DISOLVED IN SUFFICIENT AMOUNTS OF WATER TO MEET WATER QUALITY STANDARDS & FLUSHED DOWN SEWER. COMPLY W/ALL LOCAL, STATE, FEDERAL REGULATIONS.
Precautions-Handling/Storing: TRANSPORT IN DRY EQUIPMENT. STORE IN DRY LOCATION.
Other Precautions: NK

Control Measures

Respiratory Protection: FOR CONDITIONS OF USE WHERE EXPOSURE TO DUST APPARENT, A NIOSH APPROVED DUST/MIST RESPIRATOR MAY BE WORN. FOR

EMERGENCIES A SCBA MAY BE NECESSARY.
Ventilation: DILUTION SATISFACTORY CONTROL. IF CONDITIONS CREATE DISCOMFORT TO WORKER LOCAL EXHAUST SHOULD BE CONSIDERED.
Protective Gloves: IF NECESSARY
Eye Protection: CHEMICAL SAFETY GOGGLES, NO CONTACTS.
Other Protective Equipment: MAINTAIN EYEWASH FOUNTAIN & QUICK DRENCH FACILITIES IN WORK AREAS. IF DEEMED NECESSARY, CLEAN BODY COVERING CLOTHING.
Work Hygienic Practices: NK
Suppl. Safety & Health Data: NK

Transportation Data

Trans Data Review Date: 96278
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
DOT/DoD Exemption Number: NK
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI PSN Code: ZZZ
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
MMAC Code: NK
N.O.S. Shipping Name: NK
Additional Trans Data: NK

Disposal Data

Label Data

AIR LIQUIDE AMERICA CORP-FMLY BIG THREE INDUS -- ISOBUTYLENE - CALIBRATION GAS CYL
MATERIAL SAFETY DATA SHEET
NSN: 6665012148247
Manufacturer's CAGE: 17688
Part No. Indicator: A
Part Number/Trade Name: ISOBUTYLENE

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General Information

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Item Name: CALIBRATION GAS CYLINDER
Company's Name: AIR LIQUIDE AMERICA CORP-FMLY BIG THREE INDUSTRIES
Company's Street: 3535 W 12TH ST
Company's P. O. Box: 3047
Company's City: HOUSTON
Company's State: TX
Company's Country: US
Company's Zip Code: 77253
Company's Emerg Ph #: 800-424-9300 CHEMTREC
Company's Info Ph #: 713-868-0440 FAX: 800-231-1366
Distributor/Vendor # 1: HNU SYSTEMS INC
Distributor/Vendor # 1 Cage: 57631
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 005
Status: SE
Date MSDS Prepared: 20FEB97
Safety Data Review Date: 19AUG97
Supply Item Manager: CX
MSDS Preparer's Name: UNKNOWN
Preparer's Company: CHEMICAL SAFETY ASSOCIATES, INC.
Preparer's St Or P. O. Box: 9163 CHESAPEAKE DR
Preparer's City: SAN DIEGO
Preparer's State: CA
Preparer's Zip Code: 92123-1002
MSDS Serial Number: CFCVY
Specification Number: NONE
Spec Type, Grade, Class: NONE
Hazard Characteristic Code: G3
Unit Of Issue: EA
Unit Of Issue Container Qty: 0.6 LB
Type Of Container: CYLINDER
Net Unit Weight: 0.6

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Ingredients/Identity Information

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Proprietary: NO
Ingredient: ISOBUTYLENE (CYLINDER CONTAINS 75 PPM IN AIR).
Ingredient Sequence Number: 01
Percent: <1
NIOSH (RTECS) Number: UD0890000
CAS Number: 115-11-7
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: AIR
Ingredient Sequence Number: 02
Percent: 99
NIOSH (RTECS) Number: 1005486AI
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

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Physical/Chemical Characteristics

Appearance And Odor: COLORLESS GAS: ODOR SIMILAR TO BURNING COAL.
Boiling Point: 19.6F,-6.9C
Melting Point: -220F,-140C
Vapor Pressure (MM Hg/70 F): 1233
Vapor Density (Air=1): 0.15LB/FT3
Specific Gravity: 1.997
Evaporation Rate And Ref: NOT APPLICABLE
Solubility In Water: INSOLUBLE
Autoignition Temperature: 869F

Fire and Explosion Hazard Data

Flash Point: 14F,-10C
Lower Explosive Limit: 1.8
Upper Explosive Limit: 9.6
Extinguishing Media: SHUT OFF SOURCE OF GAS. USE WATER SPRAY TO COOL FIRE EXPOSED CYLINDERS, STRUCTURES AND EQUIPMENT.
Special Fire Fighting Proc: STRUCTURAL FIREFIGHTERS MUST WEAR SELF-CONTAINED BREATHING APPARATUS. BECAUSE OF DANGER OF BLEVE, EVACUATION OF NON-EMERGENCY PERSONNEL IS ESSENTIAL.
Unusual Fire And Expl Hazrds: DANGER! FIRES IMPINGING ON OUTSIDE SURFACE OF UNPROTECTED CYLINDERS CAN BE VERY DANGEROUS. EXPOSURE TO FIRE CAN CAUSE CATASTROPHIC FAILURE OF THE CYLINDER.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): CONTACT WITH INCOMPATIBLE MATERIALS AND EXPOSURE TO HEAT, SPARKS, OTHER SOURCES OF IGNITION.
Materials To Avoid: STRONG OXIDIZING AGENTS (EG. CHLORINE, BROMINE PENTAFLUORIDE, OXYGEN, OXYGEN DIFLUORIDE, NITROGEN TRIFLUORIDE).
Hazardous Decomp Products: WHEN IGNITED IN PRESENCE OF OXYGEN-CARBON MONOXIDE AND CARBON DIOXIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): WILL NOT OCCUR.

Health Hazard Data

LD50-LC50 Mixture: LC50 (INHALATION, RAT)-620,000 MG/KG/4HR
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ISOBUTYLENE MAY CAUSE SOME IRRITATION OF MUCOUS MEMBRANES. IN ADDITION, CONTACT WITH RAPIDLY EXPANDING GASES CAN CAUSE FROSTBITE TO EXPOSED TISSUE. ISOBUTYLENE IS NOT KNOWN TO CAUSE SENSITIZATION IN HUMANS. CURRENTLY, BIOLOGICAL EXPOSURE INDICES (BEI'S) ARE NOT APPLICABLE FOR ISOBUTYLENE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: ISOBUYLENE IS NOT FOUND ON THE FOLLOWING LISTS: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA.
Signs/Symptoms Of Overexp: IRRITATION OF MUCOUS MEMBRANES; FROSTBITE TO EXPOSED TO TISSUE.
Med Cond Aggravated By Exp: ACUTE OR CHRONIC RESPIRATORY CONDITIONS MAY BE AGGRAVATED BY OVEREXPOSURE TO THE COMPONENTS OF THIS PRODUCT.
Emergency/First Aid Proc: ADMINISTER OXYGEN, IF NECESSARY; TREAT SYMPTOMS; REDUCE OR ELIMINATE EXPOSURE.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE IMMEDIATE AREA. UNCONTROLLED

RELEASES SHOULD BE RESPONDED TO BY TRAINED PERSONNEL USING PRE-PLANNED PROCEDURES. PROPER PROTECTIVE EQUIPMENT SHOULD BE USED. IN CASE OF GAS RELEASE, CLEAR THE AFFECTED AREA, PROTECT PEOPLE AND RESPOND.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: WASTE DISPOSAL MUST BE IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE AND FEDERAL REGULATIONS. RETURN CYLINDERS WITH ANY RESIDUAL PRODUCT TO AIR LIQUIDE. DO NOT DISPOSE OF LOCALLY.
Precautions-Handling/Storing: STORE UPRIGHT & FIRMLY SECURED TO PREVENT FALLING OR BEING KNOCKED OVER. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM SOURCES OF HEAT.
Other Precautions: KEEP STORAGE AREA CLEAR OF MATERIALS WHICH MAY BURN. DO NOT ALLOW AREA WHERE CYLINDERS ARE STORED TO EXCEED 125F (52C). STORE CYLINDERS AWAY FROM HEAVILY TRAFFICKED AREAS AND EMERGENCY EXITS. PROTECT AGAINST PHYSICAL DAMAGE.

Control Measures

Respiratory Protection: MAINTAIN OXYGEN LEVELS ABOVE 19.5% IN THE WORKPLACE. USE SUPPLIED AIR RESPIRATORY PROTECTION IF OXYGEN LEVELS ARE BELOW 19.5% OR DURING EMERGENCY RESPONSE TO A RELEASE OF THIS PRODUCT. FOLLOW 29 CFR 1910.134 OR EQUIVALENT STATE STANDARDS.
Ventilation: USE EXPLOSION-PROOF LOCAL EXHAUST VENTILATION TO PREVENT ISOBUTYLENE CONCENTRATION FROM EXCEEDING LEL OF 1.8%.
Protective Gloves: LEATHER GLOVES WHEN HANDLING CYLINDERS.
Eye Protection: SAFETY GLASSES.
Other Protective Equipment: USE BODY PROTECTION APPROPRIATE FOR TASK. COTTON CLOTHING RECOMMENDED TO PREVENT STATIC BUILD-UP.
Work Hygienic Practices: WASH HANDS AFTER HANDLING AND BEFORE EATING, DRINKING, OR SMOKING. LAUNDER CONTAMINATED CLOTHES BEFORE REUSE.
Suppl. Safety & Health Data: HNU P/N IS: 101-350-N. MSDS BY MFR WRITTEN FOR "PURE" ISOBUTYLENE; PHYSICAL & FIRE DATA AREAS ARE FOR PURE IOSBUTYLENE. THIS NSN IS FOR A CYLINDER CONTAINING 75-150 PPM (<1%) OF ISOBUTYLENE.

Transportation Data

Trans Data Review Date: 97231
DOT PSN Code: DQQ
DOT Proper Shipping Name: COMPRESSED GASES, N.O.S.
DOT Class: 2.2
DOT ID Number: UN1956
DOT Label: NONFLAMMABLE GAS
IMO PSN Code: EQH
IMO Proper Shipping Name: COMPRESSED GAS, N.O.S. o
IMO Regulations Page Number: 2124
IMO UN Number: 1956
IMO UN Class: 2(2.2)
IMO Subsidiary Risk Label: -
IATA PSN Code: HDO
IATA UN ID Number: 1956
IATA Proper Shipping Name: COMPRESSED GAS, N.O.S. *
IATA UN Class: 2.2
IATA Label: NON-FLAMMABLE GAS
AFI PSN Code: HDO
AFI Prop. Shipping Name: COMPRESSED GAS, N.O.S.
AFI Class: 2.2
AFI ID Number: UN1956
AFI Basic Pac Ref: A6.3,A6.5,A6.7
N.O.S. Shipping Name: CONTAINS ISOBUTYLENE AND AIR
Additional Trans Data: CYLINDER CONTAINS 75-150 PPM ISOBUTYLENE IN AIR. WEIGHT OF GAS MIXTURE IN EACH CYLINDER IS 0.6 LBS. WT OF EMPTY CYLINDER IS 2.4 LBS.

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 19AUG97
Label Status: F
Common Name: ISOBUTYLENE
Chronic Hazard: NO
Signal Word: WARNING!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: CONTENTS UNDER PRESSURE! ISOBUTYLENE MAY CAUSE SOME IRRITATION OF MUCOUS MEMBRANES. IN ADDITION, CONTACT WITH RAPIDLY EXPANDING GASES CAN CAUSE FROSTBITE TO EXPOSED TISSUE. ISOBUTYLENE IS NOT KNOWN TO CAUSE SENSITIZATION IN HUMANS. CURRENTLY, BIOLOGICAL EXPOSURE RESPIRATORY SYSTEM. FIRST AID: ADMINISTER OXYGEN, IF NECESSARY; TREAT SYMPTOMS; REDUCE OR ELIMINATE EXPOSURE.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: AIR LIQUIDE AMERICA CORP-FMLY BIG THREE INDUSTRIES
Label Street: 3535 W 12TH ST
Label P.O. Box: 3047
Label City: HOUSTON
Label State: TX
Label Zip Code: 77253
Label Country: US
Label Emergency Number: 800-424-9300 CHEMTREC
Year Procured: 1995

HEALTH AND SAFETY PLAN ATTACHMENT C

STANDARD SAFE WORK PRACTICES

STANDARD SAFE WORK PRACTICES

1) Eating, drinking, chewing tobacco, smoking and carrying matches or lighters is prohibited in a contaminated or potentially contaminated area or where the possibility for the transfer of contamination exists.

2) Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling on the ground, leaning or sitting on equipment or ground. Do not place monitoring equipment on potentially contaminated surfaces (i.e., ground, etc).

3) All personnel should make use of their senses to alert them to potentially dangerous situations in which they should not become involved; i.e., presence of strong and irritating or nauseating odors.

4) Prevent, to the extent possible, spillages. In the event that a spillage occurs, contain liquid if possible.

5) All personnel shall be familiar with the physical characteristics of investigations, including:

- Wind direction
- Accessibility to associates, equipment, vehicles
- Communication
- Hot zone (areas of known or suspected contamination)
- Site access
- Nearest water sources

6) All wastes generated during activities on-site should be disposed of as directed by Lockheed Martin's waste disposal contractor.

HEALTH AND SAFETY PLAN ATTACHMENT D

DRILLING SAFETY GUIDE

Drilling Safety Guide

INTERNATIONAL DRILLING FEDERATION

DCDMA
The Drilling Equipment Manufacturers Association

NDCA
National Drilling Contractors Association

CDDA
Canadian Diamond Drilling Association

DRILLING SAFETY GUIDE

The *Drilling Safety Guide* has been prepared through the combined efforts of member delegations of the Diamond Core Drill Manufacturers Association (DCDMA), the National Drilling Contractors Association (NDCA) and the National Water Well Association-Drill Rig/Heavy Equipment Products Group (NWWA) and is published by the International Drilling Federation for the benefit of the drilling industries.

This guide contains suggested safety procedures. It is not intended to set forth any standard industry procedures or requirements. This manual is to be used as a guideline for the safe operation of drilling equipment. IDF, DCDMA, NDCA, NWWA, their officers, and members deny any liability for any injury to people or property that may occur even if these procedures are properly followed. Further, the IDF, DCDMA, NDCA, NWWA, their officers, and members do not accept responsibility for the completeness of the guide or the applicability of the statements or procedures to the use of all drilling machines and tools in all environments. Many aspects of drilling safety cannot be expressed in detail and cannot be met by mechanical means; drilling safety can only be accomplished with the exercise of intelligence, care, and common sense.

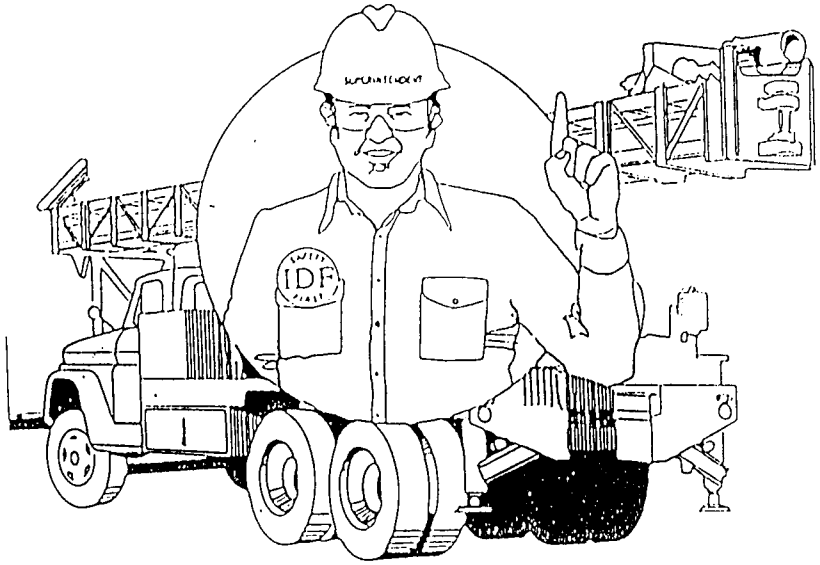
DRILLING SAFETY GUIDE

Table of Contents

DRILLING SAFETY GUIDE

1. An Introduction To Drilling Safety

The organization for which you work is interested in your safety. Your employer cares about your safety not only when you are working on or around a drill rig, but also when you are traveling to and from a drilling site, moving the drill rig and tools from location to location on a site, or providing maintenance on a drill rig or drilling tools. This safety guide is for your benefit. Failure to heed the safety procedures contained in this manual could result in serious injury or death.



Every drill crew should have a designated safety supervisor who has the authority to enforce safety on the drilling site. A rig worker's first safety responsibility is to obey the directions of the safety supervisor.

2. Governmental Regulations

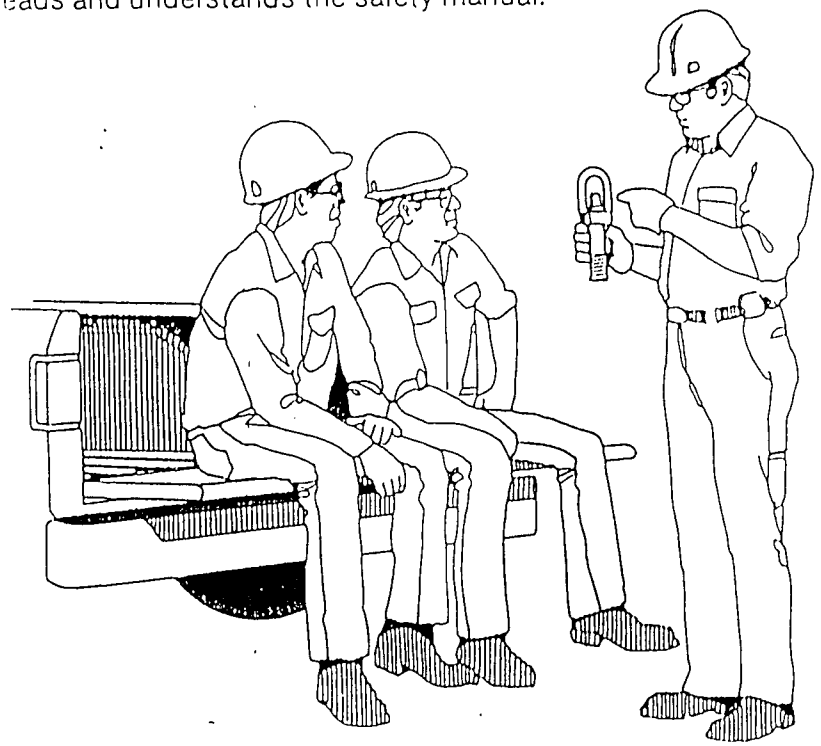
All local, state, and federal regulations or restrictions, currently in effect or effected in the future, take precedence over the recommendations and suggestions which follow. Government regulations will vary from country to country and from state to state.

3. The Safety Supervisor

The safety supervisor for the drill crew will, in most cases, be the drill rig operator. The safety supervisor must:

- Consider the "responsibility" for safety and the "authority" to enforce safety to be a matter of first importance.
- Be the leader in using proper personal safety gear and set an example in following the rules that are being enforced on others.
- Enforce the use of proper personal protective safety equipment and take appropriate corrective action when proper personal protective safety equipment is not being used.
- Understand that proper maintenance of tools and equipment and general "housekeeping" on the drill rig will provide an environment that will promote and enforce safety.
- Before drilling is started with a particular drill, ensure that anyone who operates the drill has had adequate training and is thoroughly familiar with the drill rig, its controls, and its capabilities.
- Inspect the drill rig at least daily for structural damage, loose bolts and nuts, proper tension in chain drives, loose or missing guards or protective covers, fluid leaks, damaged hoses, and/or damaged pressure gauges and pressure relief valves.
- Check and test all safety devices, such as emergency shutdown switches, at least daily and preferably at the start of a drilling shift. Drilling must not be permitted until all emergency shutdown and warning systems are working correctly. Do not allow any emergency device to be bypassed or removed.
- Check that all gauges, warning lights, and control levers are functioning properly and listen for unusual sounds each time an engine is started.
- Ensure that every drill rig worker is informed of safe operat-

ing practices on and around the drill rig. Provide every drill rig worker with a copy of the organization's drilling operations safety manual, and when appropriate, the drill rig manufacturer's operations and maintenance manual. Ensure that every employee reads and understands the safety manual.



- Carefully instruct a new worker in drilling safety and observe the new worker's progress towards understanding safe operating practices.
- Assess the mental, emotional, and physical capability of each worker to perform the assigned work in a proper and safe manner. Remove any worker from the drill site whose mental and physical capabilities might cause injury to the worker or coworkers.
- Ensure that a first-aid kit and a fire extinguisher, which are properly maintained, are on each drill rig and each additional vehicle.
- Be well trained in and capable of using first-aid kits, fire extinguishers, and all other safety devices and equipment. Train crew members.

- Maintain a list of addresses and telephone numbers of emergency assistance units (ambulance services, police, hospitals, etc.) and inform other members of the drill crew of the existence and location of the list.

4. Individual Protective Equipment

For most geotechnical, mineral, and/or groundwater drilling projects, individual protective equipment must include a safety hat, safety shoes, safety glasses, and close-fitting gloves and clothing. The clothing of the individual drill rig worker is not generally considered protective equipment; however, the worker's clothing should be comfortable but must be close fitting, without loose ends, straps, draw strings, belts or otherwise unfastened parts that might catch on some rotating or translating component of the drill rig. Rings and jewelry must not be worn during a work shift.

- *Safety Head Gear.* Safety hats (hard hats) must be worn by everyone working or visiting at or near a drilling site. All safety hats must meet the requirements of ANSI Z89.1. All safety hats must be kept clean and in good repair with the headband and crown straps properly adjusted for the individual drill rig worker or visitor.
- *Safety Shoes or Boots.* Safety shoes or boots must be worn by all drilling personnel and all visitors to the drill site that observe drilling operations within close proximity of the drill rig. All safety shoes or boots must meet the requirements of ANSI Z41.1.
- *Gloves.* All drilling personnel must wear gloves for protection against cuts and abrasions that could occur while handling wire rope or cable and from contact with sharp edges and burrs on drill rods and other drilling or sampling tools. All gloves must be close fitting and not have large cuffs or loose ties that can catch on rotating or translating components of the drill rig.
- *Safety Glasses.* All drilling personnel must wear safety glasses. All safety glasses must meet the requirements of ANSI Z87.1.
- *Other Protective Equipment.* For some drilling operations, the environment or regulations may dictate that other protective equipment be used. The requirement for such equipment must

be determined jointly by the management of the drilling organization and the safety supervisor. Such equipment might include face or ear protection or reflective clothing. Each drill rig worker must wear noise-reducing ear protectors when appropriate.

When drilling is performed in chemically or radiologically contaminated ground, special protective equipment and clothing may, and probably will, be required. The design and composition of the protective equipment and clothing must be determined jointly by the management and the client who requests the drilling services, and under some circumstances, with the concurrence of a health and safety professional.

5. Housekeeping On and Around the Drill Rig

The first requirement for safe field operations is that the safety supervisor understand and fulfill the responsibility for maintenance and "housekeeping" on and around the drill rig. The safety supervisor must:

- Provide suitable storage locations for all tools, materials, and supplies so that these items can be conveniently and safely handled without hitting or falling on a member of the drill crew or a visitor.
- Avoid storing or transporting tools, materials, or supplies within or on the mast (derrick) of the drill rig, unless designed for this purpose.
- Stack pipe, drill rods, casing, augers, and similar drilling tools in orderly fashion on racks or sills to prevent spreading, rolling, or sliding.
- Place penetration or other driving hammers at a safe location on the ground or secure them to prevent movement when not in use.
- Keep work areas, platforms, walkways, scaffolding, and other accessways free of materials, debris, obstructions, and substances such as ice, grease or oil that could cause a surface to become slick or otherwise hazardous.
- Keep all controls, control linkages, warning and operation lights and lenses free of oil, grease, and/or ice.
- Store gasoline only in a non-sparking, red container with a flame arrester in the fill spout and having the word "gasoline" easily visible.

6. Maintenance

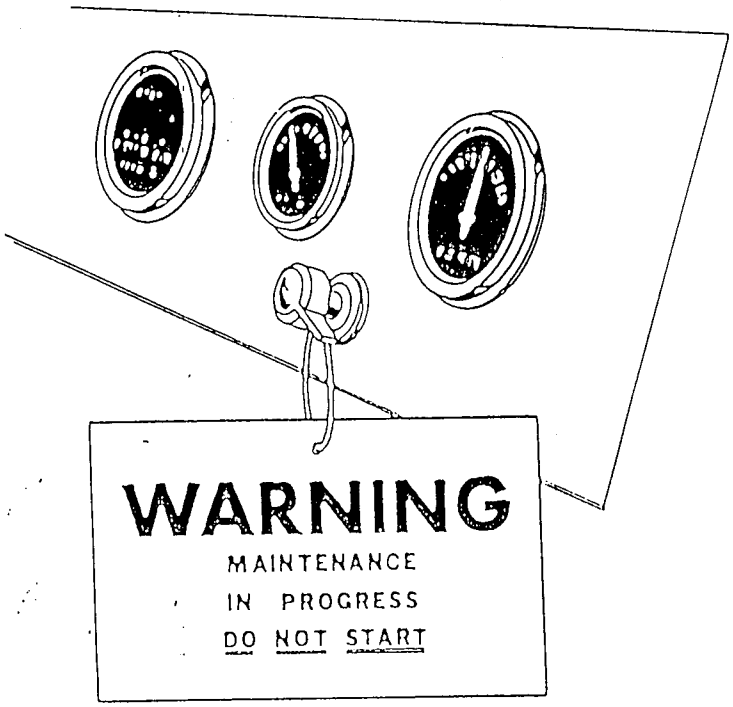
Good maintenance will make drilling operations safer. Also, maintenance must be performed safely. The following points are essential to safety:

- Wear safety glasses when performing maintenance on a drill rig or on drilling tools.
- Shut down the drill rig engine to make repairs or adjustments to a drill rig or to lubricate fittings (except repairs or adjustments that can only be made with the engine running). Take precautions to prevent accidental starting of an engine during maintenance by removing or tagging the ignition key.

• Block the wheels or lower the leveling jacks or both and set hand brakes before working under a drill rig.

• Release all pressure on the hydraulic systems, the drilling fluid system and the air pressure systems of the drill rig — when possible and appropriate — prior to performing maintenance. In other words, reduce the drill rig and operating systems to a "zero energy state" before performing maintenance. Use extreme caution when opening drain plugs and radiator caps and other pressurized plugs and caps.

• Do not touch an engine or the exhaust system of an engine following its operation until the engine and exhaust system have had adequate time to cool.



• Never climb the mast (derrick) to do maintenance or make repairs. Lower mast, stop engine and deenergize rig before starting maintenance or repair on mast.

• Never weld or cut on or near a fuel tank.

• Do not use gasoline or other volatile or flammable liquids as a cleaning agent on or around a drill rig.

• Follow the manufacturer's recommendations for applying the proper quantity and quality of lubricants, hydraulic oils and/or coolants.

• Replace all caps, filler plugs, protective guards or panels, and high pressure hose clamps and chains or cables that have been removed for maintenance before returning the drill rig to service.

7. Hand Tools

Since there are almost an infinite number of hand tools that can be used on or around a drill rig and in repair shops, there are an equal number of instructions for proper use. "Use the tool for its intended purpose" is the most important rule. The following suggestions apply to safe use of several hand tools that frequently are used on and around drill rigs:

• When a tool becomes damaged, either repair it before using it again or get rid of it.

• When using a hammer, any kind of hammer for any purpose, wear safety glasses and require all others around you to wear safety glasses.

• When using any kind of chisel or punch, for any purpose, wear safety glasses and require all others around you to wear safety glasses.

• Keep all tools cleaned and stored appropriately when not in use.

• Use wrenches — not pliers — on nuts.

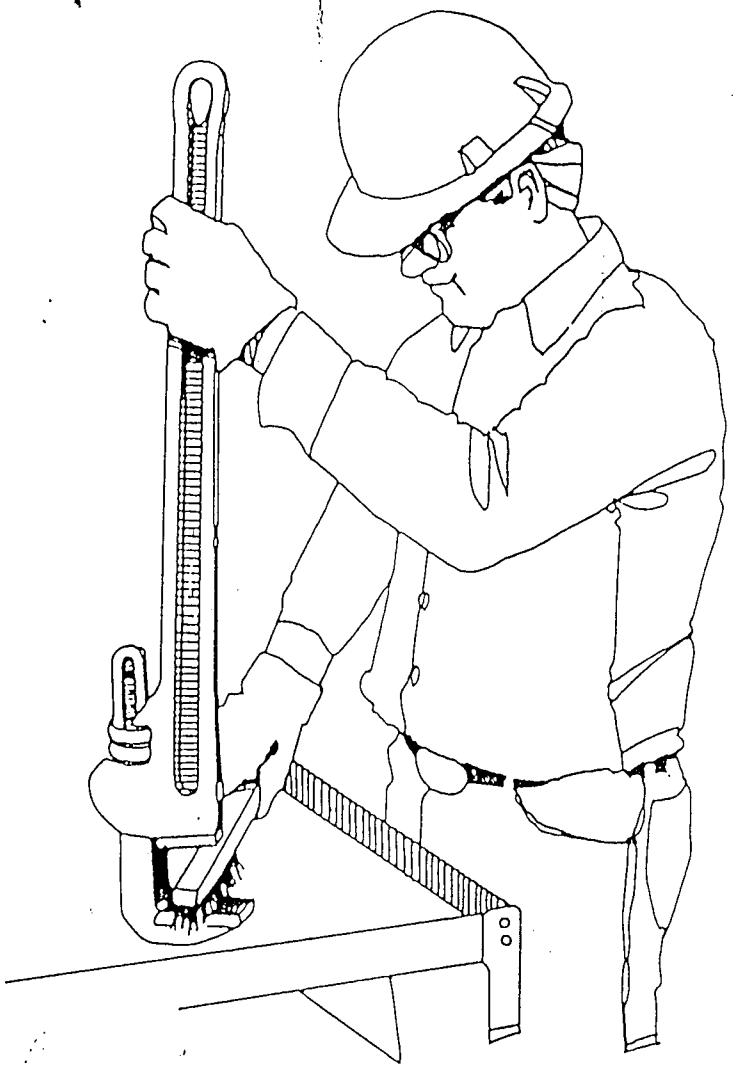
• Use screwdrivers with blades that fit the screw.

• When using a wrench on a tight nut, first use some penetrating oil and then use the largest wrench available that fits the nut. When possible pull on the wrench handle rather than push on it; apply force to the wrench with both hands when possible and with both feet firmly placed. Always assume that you may lose your footing; check the place that you may fall for sharp objects.

• Keep all pipe wrenches clean and in good repair. Use a wire brush frequently to clean the jaws of pipe wrenches. An accumulation of dirt and grease can cause wrenches to slip.

• Never use pipe wrenches in place of a rod-holding device.

• Replace hook and heel jaws when they become visibly worn.



• When breaking tool joints on the ground or on a drilling platform, position your hands so that your fingers will not be smashed between the wrench handle and the ground or the platform if the wrench should slip or the tool joint suddenly let go.

8. Clearing the Work Area

Prior to drilling, adequately clear and level the site to accommodate the drill rig and supplies and provide a safe working area.

Do not begin drilling if tree limbs, unstable ground, or site obstructions cause unsafe tool handling conditions.

9. Start-Up

Instruct all drill rig personnel and visitors to "stand clear" of the drill rig immediately prior to starting the engine.

• Make sure all brakes are set, all gear boxes are in neutral, all hoist levers are disengaged, all hydraulic levers or air controls are in the correct positions, and the cathead rope is not on the cathead before starting a drill rig engine.

• Start all engines according to the manufacturer's manual.

10. Drilling Operations

Safety requires the attention and cooperation of every worker and site visitor.

• Do not drive the drill rig from hole to hole with the mast (derrick) in the raised position.

• Before raising the mast (derrick), look up to check for overhead obstructions. (Refer to Section 11 on Overhead and Buried Utilities.)

• Before raising the mast (derrick), clear all drill rig personnel (with exception of the operator) and visitors from the areas immediately to the rear and the sides of the mast. Inform all drill rig personnel and visitors that the mast is being raised prior to raising it.

• Before the mast (derrick) of a drill rig is raised and drilling is begun, the drill rig must first be leveled and stabilized with leveling jacks and/or solid cribbing. Relevel the drill rig if it settles after initial set up. Lower the mast (derrick) only when the leveling jacks are down and do not raise the leveling jack pads until the mast (derrick) is lowered completely.

• Before starting drilling operations, secure, and/or lock the mast (derrick) if required, according to the drill manufacturer's recommendations.

• Do not stand on the elevated deck of a truck-mounted or all-terrain-mounted drill rig while the drill rig is in operation unless necessary for special tasks and the operator has been notified.

• Only operate a drill rig from the position of the controls. Before leaving the area of the controls, shift the transmission

controlling the rotary drive into neutral and place the feed lever in neutral. Before leaving the vicinity of the drill, shut down the drill engine.

- Throwing or dropping tools must not be permitted. Carefully pass tools by hand between personnel or use a hoist line.
- Do not consume alcoholic beverages, other depressants, or chemical stimulants prior to starting work on a drill rig or while on the job.
- If it is necessary to drill within an enclosed area, make certain that exhaust fumes are conducted out of the area. Exhaust fumes are toxic and some cannot be detected by smell.
- Clean mud and grease from boots before stepping on a drill platform and use hand holds and railings. Watch for slippery ground when stepping down from the platform.
- During freezing weather, do not touch any metal parts of the drill rig with exposed flesh. Freezing of moist skin to metal can occur almost instantaneously.
- Drain all air and water lines and pumps when not in use if freezing weather is expected.
- Adequately cover or protect all unattended boreholes to prevent drill rig personnel, site visitors, or animals from stepping or falling into the hole. Cover, protect or backfill all open boreholes according to local or state regulations on completion of the drilling project.
- Never allow "horsing around" within the vicinity of the drill rig and tool and supply storage areas -- even when the drill rig is shut down.
- When using a ladder on a drill rig, face the ladder and grasp either the side rails or the rungs with both hands while ascending or descending. Do not attempt to use one or both hands to carry a tool while on a ladder. Use a hoist line and a tool "bucket" or a safety hook to raise or lower hand tools.
- Terminate drilling operations during an electrical storm and move the complete crew away from the drill rig.

An elevated derrick platform should be used with the following precautions:

- When working on a derrick platform, use a safety belt and a lifeline. The safety belt must be at least 4 in. (100 mm) wide and should fit snugly but comfortably. The lifeline, when attached

to the derrick, must be less than 6 ft. (2 m) long. The safety belt and lifeline must be strong enough to withstand the dynamic force of a 250 lb. (115 kg) weight (contained within the belt) falling 6 ft. (2 m).

- Use a safety device when climbing to a derrick platform that is higher than 20 ft. (6 m).
- When on a derrick platform, fasten the lifeline to the derrick just above the derrick platform and to a structural member that is not attached to the platform or to other lines or cables supporting the platform.
- When first arriving at a derrick platform, immediately inspect for broken members, loose connections, loose tools, or other loose materials.
- Securely attach tools to the platform with safety lines. Do not attach a tool to a line attached to one's wrist or any other part of the body.
- When working on a derrick platform, do not guide drill rods or pipe into racks or other supports by taking hold of a moving hoist line or a traveling block.
- Do not leave loose tools and similar items on the derrick platform or on structural members of the derrick.
- A derrick platform over 4 ft. (1.2 m) above ground surface must have toe boards and safety railing that are in good condition.
- Avoid being under rig workers on elevated platforms whenever possible.

If heavy objects must be manually lifted, exercise care to avoid injury.

- Before lifting an object without using a hoist, make sure that the load is within your personal lifting capacity. If it is too heavy, ask for assistance.
- Before lifting a relatively heavy object, approach the object by bending at the knees, keeping the back vertical and unarched while obtaining a firm footing. Grasp the object firmly with both hands and stand slowly and squarely while keeping the back vertical and unarched. In other words, perform the lifting with the muscles in the legs, not with the muscles in the lower back.
- If a heavy object must be moved some distance without the aid of machinery, keep the back straight and unarched. Change directions by moving the feet, not by twisting the body.

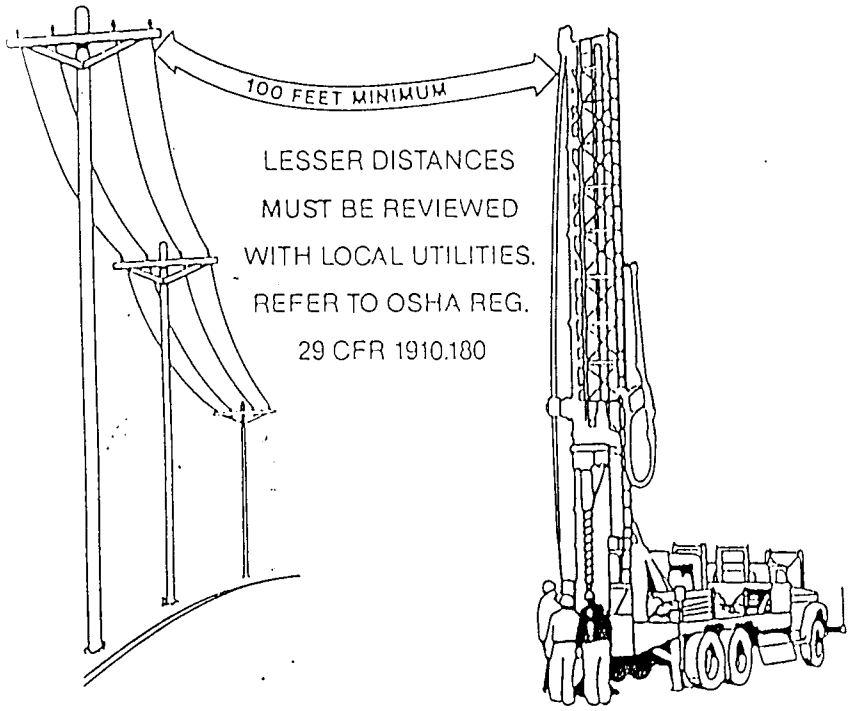
• Move heavy objects with the aid of hand carts whenever possible.

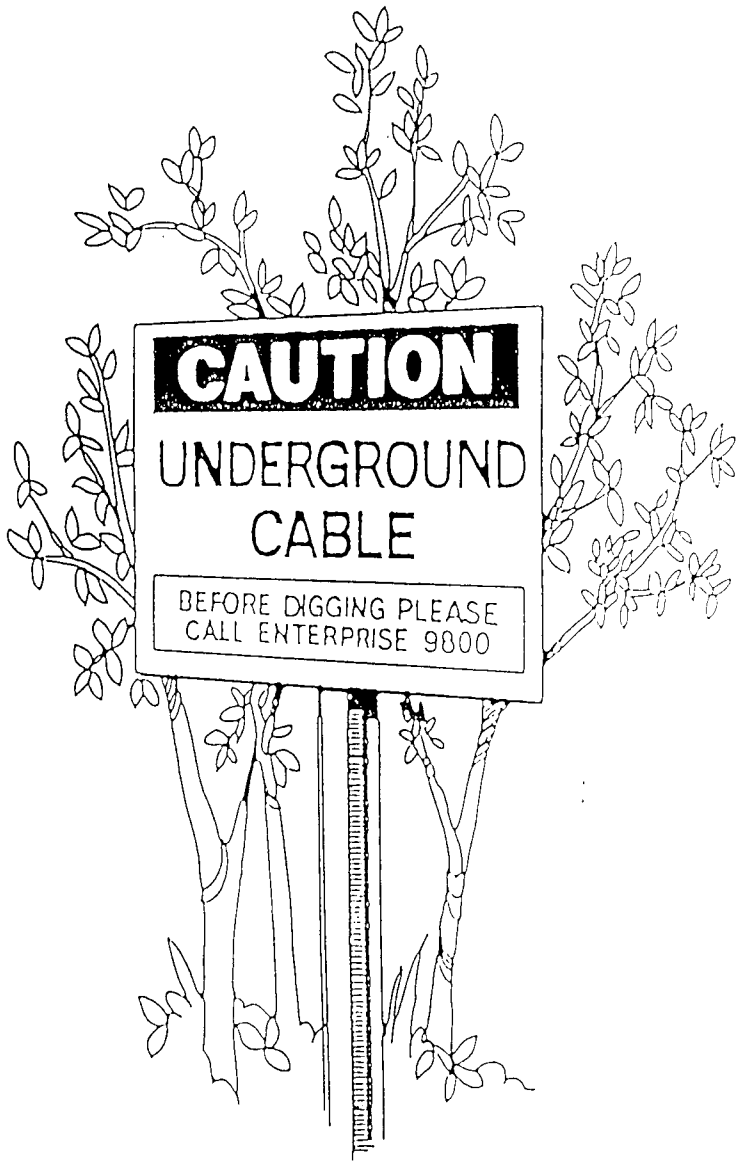
11. Overhead and Buried Utilities

Both supervisors and members of the exploration crew must take special precautions when a drill rig will be used on a site or project within the vicinity of electrical power lines and other utilities. Electricity can shock, it can burn, and it can cause death.

• Locate, note, and emphasize overhead and buried utilities on all boring location plans and boring assignment sheets.

• When overhead electrical power lines exist at or near a drilling site or project, consider all wires to be alive and dangerous.





• Watch for sagging power lines before entering a site. Do not lift power lines to gain entrance. Call the utility and ask them to lift or raise the lines or deenergize (turn off) the power.

• Before raising the drill rig mast (derrick) on a site in the vicinity of power lines, walk completely around the drill rig. Determine the minimum horizontal distance from any point on the drill rig

to the nearest power line when the mast is raised and/or being raised. If this horizontal distance is less than 100 ft. (30 m), first consult the local utility company and refer to OSHA REG 29 CFR 1910.180 before commencing operations.

- Keep in mind that both hoist lines and overhead power lines can be moved toward each other by the wind.
- In order to avoid contact with power lines, only move the drill rig with the mast (derrick) down.
- If there are any questions concerning the safety of drilling on sites in the vicinity of overhead power lines, call the power company. The power company will provide expert advice at the drilling site as a public service and at no cost.

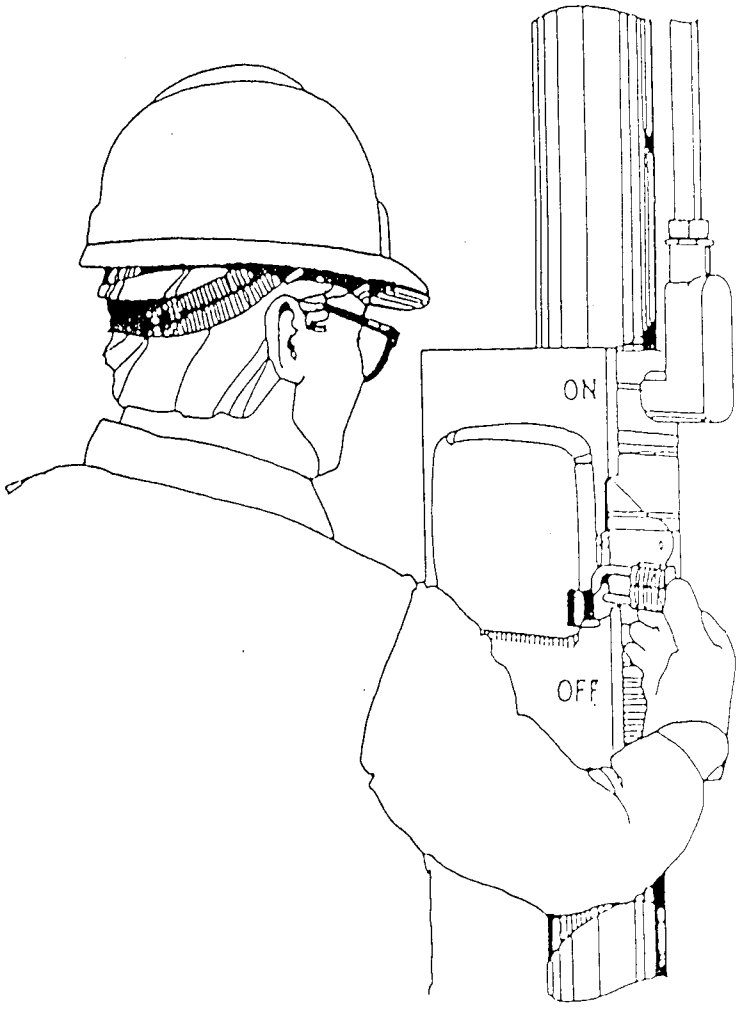
Electricity is as dangerous underground as overhead. Be aware of and always suspect the existence of underground utilities such as electrical power, gas, petroleum, telephone, sewer and water.

- If a sign warning of underground utilities is located on a site boundary, do not assume that underground utilities are located on or near the boundary or property line under the sign. Call the utility and check it out. The underground utilities may be a considerable distance away from the warning sign.
- Always contact the owners of utility lines or the nearest underground utility location service before drilling. Determine jointly with utility personnel the precise location of underground utility lines, mark and flag the locations, and determine jointly with utility personnel what specific precautions must be taken to ensure safety.

12. Supplying Power to the Job Site

Drilling projects sometimes require around-the-clock operations and, therefore, require temporary electrical lighting. In general, all wiring and fixtures used to provide electricity for drilling operations should be installed by qualified personnel in accordance with the National Electrical Code (NFPA70-1984) with consideration of the American Petroleum Institute's recommended practices for electrical installations for production facilities (API-RP-500B). Lights should be installed and positioned so that the work area and operating positions are well

lighted without shadows or blind spots. The following are specific recommendations for land-based drilling operations:



- Before working on an electrical power or lighting system, lock-out the main panel box with your own lock and keep the key on your person at all times.
- Install all wiring using high quality connections, fixtures and wire. Be sure that the wiring is insulated and protected with consideration for the drilling environment. Do not use makeshift

wiring and equipment.

- Place all lights positioned directly above working areas in cages or similar enclosures to prevent loose or detached lamps or vaportight enclosures from falling on workers.
- Install lights so as to eliminate glare or "blind spots" on tools, ladders, walkways, platforms, and the complete working area.
- Locate and guard electrical cables to prevent damage by drilling operations or by the movement of personnel, tools, or supplies.
- Use only three-prong, U-blade, grounded type plug receptacles and have adequate current carrying capacity for the electrical tools that may be used.
- Use only electrical tools that have three-prong, U-blade, ground wire plugs and cords.
- Do not use electrical tools with lock-on devices.
- Provide adequate grounding for all electrical welders, generators, control panels, and similar devices.
- Provide secure protective enclosures on control panels, fuse boxes, transformers, and similar equipment.
- Avoid attaching electrical lighting cables to the derrick or other components of the drill rig. If this must be done, use only approved fasteners. Do not "string" wire through the derrick.
- Do not use poles used to hold wiring and lights for any other purpose.
- Turn power off before changing fuses or light bulbs.
- Require all workers in a drilling area illuminated with electrical lighting to wear safety head gear that protects the worker's head, not only against falling or flying objects, but also against limited electrical shock and burns according to ANSI Z89.1 and Z89.2.
- Allow only trained, designated personnel to operate electrical equipment.
- Do not permit unqualified field personnel to work on or near electric lines or devices.

13. Contact with Electricity

If a drill rig makes contact with electrical wires, it may or may not be insulated from the ground by the tires of the carrier. Under either circumstance, if the human body simultaneously

comes in contact with the drill rig and the ground, electrocution can result, causing death or serious injury. If a drill rig or a drill rig carrier makes contact with overhead or underground electrical lines:

- Under most circumstances the operator and other personnel on the seat of the vehicle should remain seated and not leave the vehicle. They should not move or touch any part, particularly a metallic part, of the vehicle or the drill rig.
- If it is determined that the drill rig should be vacated, all personnel must jump clear and as far as possible from the drill. Personnel must not step off — but must jump off. Do not hang on to the vehicle or any part of the drill when jumping clear.
- If you are on the ground, stay away from the vehicle and the drill rig; do not allow others to get near the vehicle and the drill rig. Seek assistance immediately from local emergency personnel such as the police or a fire department.
- When an individual is injured and in contact with the drill rig or with power lines, attempt rescue with extreme caution. If a rescue is attempted, use a long, dry, unpainted piece of wood or a long, dry, clean rope. Keep as far away from the victim as possible and do not touch the victim until the victim is completely clear of the drill rig or electrical lines.
- Do not attempt to administer first aid unless the victim is completely clear of the electrical source. Begin cardiopulmonary resuscitation (CPR) immediately if a heart beat (pulse) cannot be detected.

14. Wire Line Hoists, Wire Rope, and Hoisting Hardware

Use wire line hoists, wire rope, and hoisting hardware only as stipulated by the American Iron and Steel Institute *Wire Rope Users Manual.*

- Visually inspect all wire ropes and fittings during use and thoroughly inspect them at least once a week for abrasion, broken wires, wear, reduction in rope diameter, reduction in wire diameter, fatigue, corrosion, damage from heat, improper reeving, jamming, crushing, bird caging, kinking, core protrusion, and/or damage to lifting hardware. Replace wire ropes when inspection indicates excessive damage, as described in the *Wire Rope Users Manual.*

• Thoroughly inspect all wire ropes that have not been used for a period of a month or more.

• Install all connections and end fittings, which consist of spliced eyes and various manufactured devices, according to the manufacturer's specifications. Do not exceed ratings specified by manufacturer.

• If a ball-bearing type hoisting swivel is used to hoist drill rods, inspect and lubricate swivel bearing daily to assure that the swivel freely rotates under load.

• If a rod slipping device is used to hoist drill rods, do not drill through or rotate drill rods through the slipping device; do not hoist more than 1 ft. (0.3 m) of the drill rod column above the top of the mast (derrick); do not hoist a rod column with loose tool joints; and do not make, tighten, or loosen tool joints while the rod column is being supported by a rod slipping device. If drill rods should slip back into the borehole, do not attempt to break the fall of the rods by hand or by tensioning the slipping device.

• Most sheaves on exploration drill rigs are stationary with a single part line. Never increase the number of parts of line without first consulting with the manufacturer of the drill rig.

• Wire ropes must be properly matched with each sheave. If the rope is too large, the sheave will pinch the wire rope. If the rope is too small, it will groove the sheave. Once the sheave is grooved, it will severely pinch and damage larger-sized wire ropes.

The following procedures and precautions must be understood and implemented for use of wire ropes and rigging hardware:

• Use tool handling hoists only for vertical lifting of tools (except when angle hole drilling). Do not use tool handling hoists to pull on objects away from the drill rig; however, drills may be moved using the main hoist of the drill if the wire rope is spooled through proper sheaves according to the manufacturer's recommendations.

• When stuck tools or similar loads cannot be raised with a hoist, disconnect the hoist line and connect the stuck tools directly to the feed mechanism of the drill. Do not use hydraulic leveling jacks for added pull to the hoist line or to the feed mechanism of the drill.

• When attempting to pull out a mired down vehicle or drill rig carrier, only use a winch on the front or rear of the vehicle and stay as far as possible away from the wire rope. Do not attempt to use tool hoists to pull out a mired down vehicle or drill rig carrier.

• Apply loads smoothly and steadily to minimize shock loading of a wire rope.

• Avoid sudden loading in cold weather.

• Never use frozen ropes.

• Protect wire rope from sharp corners or edges.

• Replace faulty guides and rollers.

• Replace worn sheaves or worn sheave bearings.

• Replace damaged latches on hooks before using.

• Know the working load of the equipment and tackle being used. Never exceed this limit.

• Periodically inspect and test hoist clutches and brakes.

• Know and do not exceed the rated capacity of mast hooks, rings, links, swivels, shackles, and other lifting aids.

• Always wear gloves when handling wire ropes.

• Do not use hands to guide wire rope on hoist drums.

• Following the installation of a new wire rope, first lift a light load to allow the wire rope to adjust.

• Never conduct any hoisting operations when the weather conditions are such that hazards to personnel, the public, or property are created.

• Never leave a load suspended in the air when the hoist is unattended.

• Keep hands away from hoists, wire rope, hoisting hooks, sheaves, and pinch points while slack is being taken up or when the load is being hoisted.

• Never hoist the load over the head, body, or feet of any personnel.

• Never use a hoist line to "ride" up the mast (derrick) of a drill rig.

• Use replacement wire ropes that conform to the drill rig manufacturer's specifications.

15. Cathead and Rope Hoists

Follow these procedures when using a cathead hoist:

• Keep the cathead clean and free of rust, oil and grease. Rust should be removed from the cathead with a wire brush having a handle.

• Check the cathead periodically, when the engine is not running, for rope wear grooves. If a rope groove forms to a depth greater than 1/8 in. (3 mm), replace the cathead.

• Always use a clean, dry, sound rope. A wet or oily rope may "grab" the cathead and cause drill tools or other items to be rapidly hoisted to the top of the mast.

• Should the rope "grab" the cathead or otherwise become tangled in the drum, release the rope and sound an appropriate alarm for all personnel, including the operator, to rapidly back away and stay clear. If the rope "grabs" the cathead, and tools are hoisted to the sheaves at the top of the mast, the rope will often break, releasing the tools. If the rope does not break, stay clear of the drill rig until the operator cautiously returns to turn off the drill rig engine and appropriate action is taken to release the tools. Keep careful watch on the suspended tools and quickly back away after turning off the engine.

• Always protect the rope from contact with chemicals. Chemicals can cause deterioration of the rope that may not be detected visibly.

• Never wrap the rope from the cathead (or any other rope, wire rope, or cable on the drill rig) around a hand, wrist, arm, foot, ankle, legs, or any other part of the body.

• Always maintain a minimum of 18 inches of clearance between the operating hand and the cathead drum when driving samplers, casing, or other tools with the cathead and rope method. Be aware that the rope advances toward the cathead with each hammer blow as the sampler or other drilling tool advances into the ground.

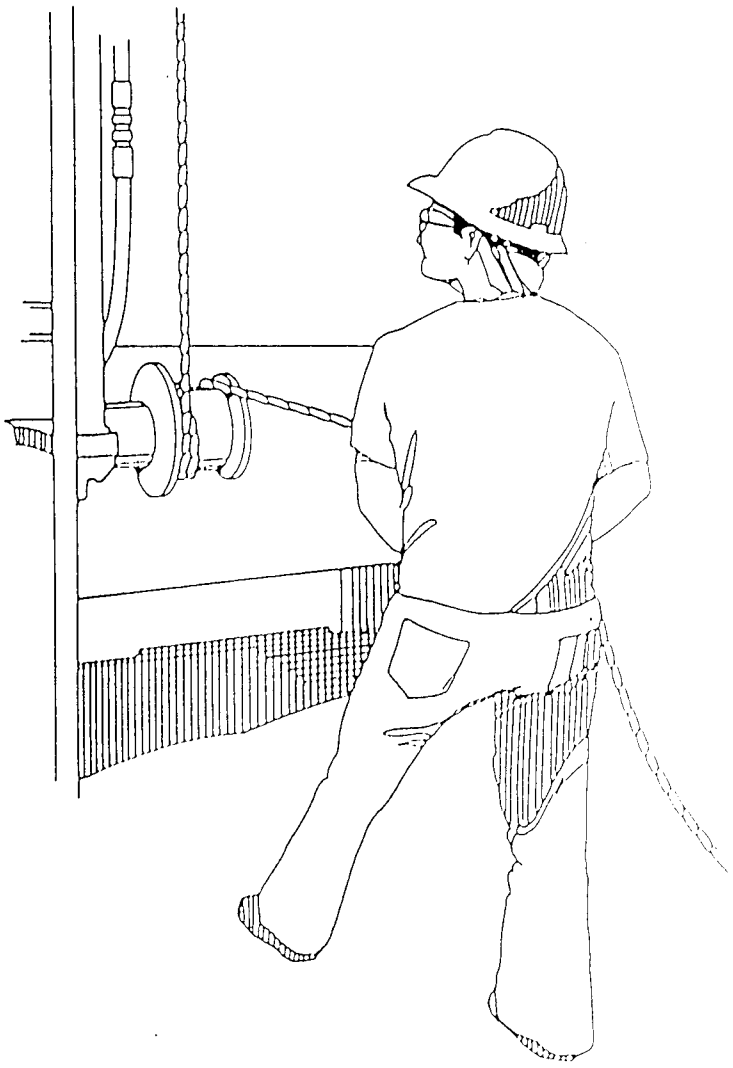
• Never operate a cathead (or perform any other task around a drill rig) with loose, unbuttoned, or otherwise unfastened clothing or when wearing gloves with large cuffs or loose straps or lacings.

• Do not use a rope that is any longer than necessary. A rope that is too long can form a ground loop or otherwise become entangled with the operator's legs.

• Do not use more rope wraps than are required to hoist a load.

• Do not leave a cathead unattended with the rope wrapped on the drum.

• Position all other hoist lines to prevent contact with the operating cathead rope.



• When using the cathead and rope for driving or back-driving, make sure that all threaded connections are tight and stay as far away as possible from the hammer impact point.

• Only operate the cathead standing on a level surface with good, firm footing conditions without distraction or disturbance.

16. Augers

Follow these general procedures when starting a boring with continuous flight or hollow-stem augers:

• Start an auger boring with the drill rig level, the clutch or hydraulic rotation control disengaged, the transmission in low gear, and the engine running at low RPM.

• Apply an adequate amount of down pressure prior to rotation to seat the auger head below the ground surface.

• Look at the auger head while slowly engaging the clutch or rotation control and starting rotation. Stay clear of the auger.

• Slowly rotate the auger and auger head while continuing to apply down pressure. Keep one hand on the clutch or on the rotation control at all times until the auger has penetrated about one foot or more below ground surface.

• If the auger head slides out of alignment, disengage the clutch or hydraulic rotation control and repeat the hole starting process.

• An auger guide can facilitate the starting of a straight hole through hard ground or a pavement.

Establish a system of responsibility for the operator and tool handler to follow during the series of various activities required for auger drilling, such as connecting and disconnecting auger sections, and inserting and removing the auger fork. The operator must ensure that the tool handler is well away from the auger column and that the auger fork is removed before starting rotation. In addition:

• When rotating augers, stay clear of the rotating auger and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason whatever.

• Only use the manufacturer's recommended method of securing the auger to the power coupling. Do not use an overlength pin or bolt. Do not touch the coupling or the auger with hands, a wrench, or any other tools during rotation.

• Whenever possible, use tool hoists to handle auger sections.

• Never place hands or fingers under the bottom of an auger

section when hoisting the auger over the top of the auger section in the ground or other hard surfaces such as the drill rig platform.

• Never allow feet to get under the auger section that is being hoisted.

• Use a long-handed shovel to move auger cuttings away from the auger. Never use hands or feet to move cuttings away from the auger.

• Do not attempt to remove earth from rotating augers. Clean augers only when the drill rig is in neutral and the augers are stopped from rotating.

17. Rotary and Core Drilling

Check rotary drilling tools prior to drilling:

• Lubricate and check for frozen bearings before using water/air swivels and hoisting plugs. Water/air swivel bearings must be free before using, and stay clear of water/air swivel hose when rotating.

• Check drill rod chuck jaws periodically and replace when necessary.

• Check the capacities of hoists and sheaves against the anticipated weight to the drill rod string plus other expected hoisting loads.

During rotary or core drilling, follow these special precautions that involve chucking, joint break, hoisting, and lowering of drill rods:

• Only the operator of the drill rig should be allowed to brake or set a manual chuck so that rotation of the chuck will not occur prior to removing the wrench from the chuck.

• Drill rods should not be braked during lowering into the hole with drill rod chuck jaws.

• Do not lower drill rods into the hole with pipe wrenches.

• If a string of drill rods is accidentally or inadvertently released into the hole, do not attempt to grab the falling rods by hand or with a wrench.

• In the event of a plugged bit or other circulation blockage, relieve the high pressure in the piping and hose between the pump and the obstruction before breaking the first tool joint.

• When drill rods are hoisted from the hole, clean them only with a wiper made of rubber or other suitable material. Do not use hands to clean drilling fluid from drill rods.

• If work must progress above a portable drilling fluid (mud) pit, do not attempt to stand on narrow sides or cross members. Equip the mud pit with rough surfaced, fitted cover panels of adequate strength to hold drill rig personnel.

• Do not lift or lean unsecured drill rods against the mast. Either provide some method of securing the upper ends of the drill rod sections for safe vertical storage or lay the rods down.

18. Transporting a Drill Rig

When transporting a drill rig on and off a drilling site:

• Allow only licensed individuals to operate the vehicle. Comply with all federal, state, and local regulations.

• Know the traveling height (overhead clearance), width, length, and weight of the drill rig with carrier and know the highway and bridge load, width, and overhead limits. Allow adequate margins and make sure that they are not exceeded.

• Never move a drill rig unless the vehicle brakes are in sound working order.

• Allow for mast overhang when cornering or approaching other vehicles or structures.

• Be aware that the canopies of service stations and motels are often too low for a drill rig mast to clear with the mast in the travel position.

• Watch for low hanging electrical lines, particularly at the entrances to drilling sites, restaurants, motels, or other commercial sites.

• Never travel on a street, road, or highway with the mast (derrick) of the drill rig in the raised or partially raised position.

• Remove all ignition keys when a drill rig is left unattended.

19. Loading and Unloading

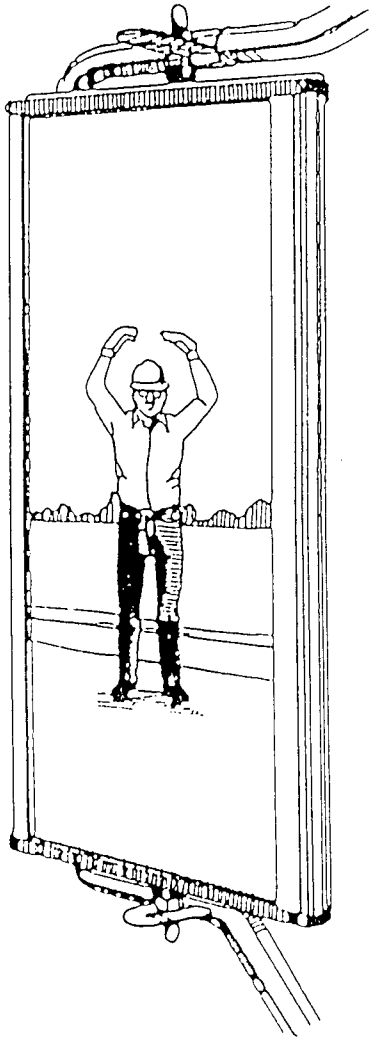
When loading or unloading a drill rig on a trailer or a truck:

• Use ramps of adequate design that are solid and substantial enough to bear the weight of the drill rig with carrier — including tooling.

• Load and unload on level ground.

• Use the assistance of someone on the ground as a guide.

• Check the brakes on the drill rig carrier before approaching loading ramps.



• Distribute the weight on the drill rig, carrier, and tools on the trailer so that the center of weight is approximately on the centerline of the trailer and so that some of the trailer load is transferred

to the hitch of the pulling vehicle. Refer to the trailer manufacturer's weight distribution recommendations.

- Secure the drill rig and tools to the hauling vehicle with ties, chains, and/or load binders of adequate capacity.

20. Off-Road Movement

Follow these procedures during off-road movement:

- Before moving a drill rig, first walk the route of travel, inspecting for depressions, stumps, gulleys, ruts, and similar obstacles.
- Always check the brakes of a drill rig carrier before traveling, particularly on rough, uneven, or hilly ground.
- Check the complete drive train of a carrier at least weekly for loose or damaged bolts, nuts, studs, shafts, and mountings.
- Discharge all passengers before moving a drill rig on rough or hilly terrain.
- Engage the front axle (for 4 x 4, 6 x 6, etc. vehicles or carriers) when traveling off highway on hilly terrain.
- Use caution when traveling side-hill. Conservatively evaluate side-hill capability of drill rigs because the arbitrary addition of drilling tools may raise the center of mass. When possible, travel directly uphill or downhill. Increase tire pressures before traveling in hilly terrain (do not exceed rated tire pressure).
- Attempt to cross obstacles such as small logs and small erosion channels or ditches squarely rather than at an angle.
- Use the assistance of someone on the ground as a guide when lateral or overhead clearance is close.
- Set all brakes and/or locks after the drill has been moved to a new drilling site. When grades are present, block the wheels.
- Never travel off-road with the mast (derrick) of the drill rig in the raised or partially raised position.

21. Tires, Batteries, and Fuel

Check tires on the drill daily for safety and, during extended travel, for loss of air. Maintain air pressures for travel on streets, roads, and highways according to the manufacturer's recommendations. Only repair truck and off-highway tires with the required special tools and follow the recommendations of a tire manufacturer's repair manual.

If tires on all-terrain drills are deflated to reduce ground pressure for movement on soft ground, reinflate the tires to normal pressures before movement on firm or hilly ground or on streets, roads, and highways. Underinflated tires are not stable on firm ground.

During air pressure checks, inspect for:

- Missing or loose wheel lugs.
- Objects wedged between duals or embedded in the tire casing.
- Damaged or poorly fitting rims or rim flanges.
- Abnormal or uneven wear and cuts, breaks, or tears in the casing.

Batteries contain strong acid. Use extreme caution when servicing batteries.

- Service batteries only in a ventilated area and while wearing safety glasses.
- When a battery is removed from a vehicle or service unit, disconnect the battery ground clamp first.
- When installing a battery, connect the battery ground clamp last.
- When charging a battery with a battery charger, turn off the power source to the battery before either connecting or disconnecting charger leads to the battery posts. Loosen cell caps before charging to permit the escape of gas.
- Spilled battery acid can burn skin and should be immediately flushed with lots of water. If battery acid gets into someone's eyes, flush immediately with large amounts of water and see a medical physician at once.
- To avoid battery explosions, keep the cells filled with electrolyte, use a flashlight (not an open flame) to check electrolyte levels and avoid creating sparks around the battery by shorting across a battery terminal. Keep lighted or smoking materials and flames away from batteries.

Take special precautions for handling fuel and refueling the drill rig or carrier.

- Only use the type and quality of fuel recommended by the engine manufacturer.
- Refuel in a well-ventilated area.

• Do not fuel tanks while the engine is running. Turn off all electrical switches.

• Do not spill fuel on hot surfaces. Clean any spills before starting an engine.

• Wipe up spilled fuel with cotton rags or cloths; do not use wool or metallic cloth.

• Keep open lights, lighted smoking materials, flames, or sparking equipment well away from the fueling area.

• Turn off heaters in carrier cabs when refueling the carrier or the drill rig.

• Do not fill portable fuel containers completely full to allow expansion of the fuel during temperature changes.

• Keep the fuel nozzle in contact with the tank being filled to prevent static sparks from igniting the fuel.

• Do not transport portable fuel containers in the vehicle or carrier cab with personnel.

• During travel store fuel containers and hoses so they are in contact with a metal surface. This should prevent the buildup of static charge.

22. First Aid

Train at least one member of the drill crew, and if only one, preferably the drilling and safety supervisor, to perform first aid. First aid must be taught on a person-to-person basis, not by providing or reading a manual. Manuals should only provide continuing reminders and be used for reference. Courses provided or sponsored by the American Red Cross or a similar organization best satisfy the requirements of first aid training for drill crews.

For drilling operations it is particularly important that those responsible for first aid should be able to recognize the symptoms of and be able to provide first aid for electrical shock, heart attack, stroke, broken bones, eye injury, snake bite, and cuts or abrasions to the skin. Again, first aid for these situations is best taught to drill crew members by instructors qualified by an agency such as the American Red Cross.

Keep first aid kit available and well maintained on each drill site.

23. Drill Rig Utilization

Do not attempt to exceed manufacturers' ratings of speed, force, torque, pressure, flow, etc. Only use the drill rig and tools for the purposes for which they are intended and designed.

24. Drill Rig Alterations

Alterations to a drill rig or drilling tools must only be made by qualified personnel and only after consultation with the manufacturer.

HEALTH AND SAFETY PLAN ATTACHMENT E

CONFINED SPACE ENTRY

CONFINED SPACE ENTRY

A large percentage of the fatal accidents that occur nationwide occur in confined spaces. Clearly the problem is a lack of knowledge of the dangers involved in entering and working in confined spaces and the proper procedures to follow to prevent accidents.

1 Definition of Confined Space

A confined space is defined as any enclosed or semi-enclosed space that has restricted means for entry or exit and is not intended for continuous occupancy. Typical confined spaces are manholes, metering stations, valve or siphon chambers, digesters, silos, empty tanks, pits, or any other area in the system that has direct contact with wastewater, sludge, sludge gas, or conduits carrying these substances. At the Former GE Court Street 5/5A Site, the groundwater collection sump is considered a confined space.

2 Classification of Confined Spaces

Confined spaces are classified based upon existing or potential hazards. The two classifications of confined spaces are non-permit confined space and permit-required confined space.

A non-permit confined space, such as the sump in the treatment building, does not contain atmospheric hazards or have the potential to contain any hazard capable of causing death or serious physical harm. Examples of non-permit confined spaces include vented vaults or motor control cabinets. These spaces have either natural or permanent mechanical ventilation to prevent the accumulation of a hazardous atmosphere, and they do not present engulfment or other serious hazards. Since non-permit spaces are free of atmospheric or safety hazards, they do not require special entry protocols. However, entry into these areas must comply with applicable OSHA requirements (i.e., illumination, ladders, etc.).

A permit-required confined space, such as the groundwater collection sump, has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere
- Contains a material that has the potential for engulfing a person
- Has an internal configuration such that a person could be trapped by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section
- Contains any other recognized serious safety or health hazard

The Office Health and Safety Representative shall evaluate the site to determine if any spaces are permit-required confined spaces. Procedures described in sections 3 through 10 apply only to permit-required confined spaces.

If there are changes in the use or configuration of a non-permit confined space that could increase the hazards to the entrants, the Office Health and Safety Representative shall re-evaluate the space and reclassify it as a permit-required confined space if necessary.

3 Warning Signs

A site that contains permit-required confined spaces must post warning signs at the entrance of these spaces. Signs, must as a minimum, contain the following language:

DANGER
PERMIT-REQUIRED CONFINED SPACE
DO NOT ENTER

4 Permit-Required Confined Space Entry Program

Parsons ES employees must enter permit-required confined spaces in accordance with Lockheed Martin's written permit-required confined space entry program. The following Parsons ES program shall also be followed. The program includes the following:

- Measures necessary to prevent unauthorized entry into confined spaces
- Methods for identifying and evaluating the hazards of the confined space prior to entry
- Procedures and practices necessary for safe entry
- Safety equipment necessary to conduct operations
- Methods to evaluate space conditions during entry operations
- Designated persons who have active roles in confined space operations (e.g., entrants, attendants, and entry supervisor) and their duties
- Methods to apprise contractors of precautions or procedures to implement when hired to conduct operations in a permit space

5 Notification

Prior to entering a confined space, Lockheed Martin's security/patrol office must be notified at 2111 when at the Lockeed Martin Electronics Parkway Facility or 456-2917 when off-site.

6 Entry Permit

Entry into any area designated as a permit-required confined space will require a permit. The permit is an authorization and approval that specifies the location and type of work to be performed and certifies that all existing hazards have been evaluated and that all necessary steps have been taken to ensure worker safety. The entry permit must address the following items:

- Permit space to be entered
- Purpose of the entry
- Date and the authorized duration of the entry permit
- Names of the persons who will enter the confined space (entrants)
- Names of the persons who will be attendants
- Name of the entry supervisor
- Hazards of the confined space to be entered
- Measures used to isolate the permit space and to eliminate or control the hazards before entry into the confined space
- Acceptable entry conditions
- Results of initial and periodic tests accompanied by the names or initial of the tester
- Rescue and emergency services and the means used for summoning the services
- Communication procedures used by entrants and attendants to maintain contact during the entry
- Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment

- Other information necessary to ensure employee safety, given the circumstances of the particular confined space

A confined space entry permit is provided attached. Once the entry has been completed, the entry supervisor will cancel the permit. Canceled permits must be maintained for at least 1 year. An example of a confined space entry permit is included at the end of this section.

7 Equipment For Permit-Required Entry

The following is a list of equipment used to conduct permit-required confined space operations:

- Ventilation equipment needed to obtain acceptable airborne concentrations
- Atmospheric testing equipment to identify oxygen deficiency, combustible gases, and suspected toxic gases (e.g., hydrogen sulfide)
- Communication equipment for entrants and attendant
- Personal protective equipment (e.g., respirators and hard hats) when feasible engineering controls or work practices do not adequately protect employees
- Lighting equipment to enable employees to work safely and exit quickly in the event of an emergency
- Pedestrian or vehicle barriers (e.g., traffic cones, barricades, warning signs, and traffic flags) to protect entrants from external hazards
- Ladder, tripod, and body harness for safe entry and egress
- Any other equipment necessary for the entry into and rescue from the confined space

The above equipment will be provided by Parsons ES and will be maintained in proper working condition.

8 Atmospheric Testing of Permit-Required Confined Spaces

All permit-required confined spaces must be considered dangerous before entry until proven safe. Air monitoring shall be performed before removing the cover, if practicable. Some covers have openings through which a probe may be inserted. If not, the lid must be removed using appropriate tools, and the atmosphere tested before entry.

Atmospheric testing will be performed by the entry supervisor or attendant for oxygen deficiency and explosive and toxic gases. Multi-gas meters are available that test for oxygen deficiency, explosive gases, and certain toxic gases (hydrogen sulfide and carbon monoxide).

It is important to understand that some gases or vapors are heavier than air and will settle to the bottom of the space whereas, some gases are lighter than air and will be found around the top of the confined space as shown in Figure 1. All areas of a space must be tested (top, middle, bottom). Entry will be allowed only when the following atmospheric conditions are met:

- Oxygen concentration in the confined space is greater than 19.5 percent and less than 23.5 percent by volume.
- Presence of flammable gases or vapors is less than 10 percent of the lower flammable limit.

- Potential toxic gases or vapors are present at concentrations below OSHA permissible exposure limits and/or ACGIH TLVs (e.g., <10 ppm for hydrogen sulfide, <25 ppm Carbon Monoxide).

If atmospheric readings do not comply with acceptable entry parameters, then ventilation of the space is required. A blower for positive displacement of the atmosphere is often used. Allow sufficient time for the blower to displace five times the volume of the space. Next retest the space to verify that acceptable concentrations have been met before entry. The blower shall remain in operation throughout occupancy of the space.

When using gasoline- or diesel-powered blowers, ensure that the exhaust gas from the engine is not drawn into the space by the blower. If a hazardous atmosphere persists in spite of ventilation, it will be necessary for the employee to use proper respiratory protection equipment. A positive-pressure self-contained breathing apparatus or positive-pressure airline respirator with a 5-minute escape tank are often used for permit-required confined space operations.

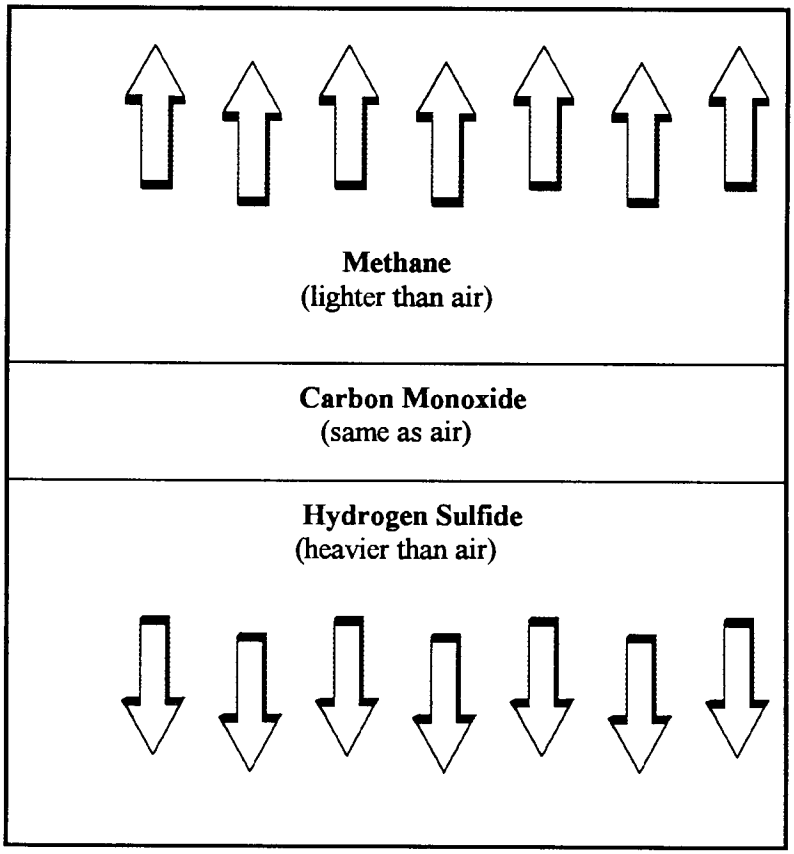


Figure 1 Atmospheric Testing: From outside, top to bottom

Personnel working in a permit-required confined space must be equipped with a continuous atmospheric monitoring device. This is true even if the atmosphere was found to be safe initially, because conditions can change. Equipment used for continuous monitoring of the atmosphere shall be explosion-proof and equipped with an audible alarm that will alert employees when a hazardous condition develops.

An employee's well-being depends on the proper functioning of safety equipment. Careful, regular maintenance of the monitoring equipment is essential. All monitoring instruments must be

calibrated prior to use and maintained according to manufacturer's specifications. The Office Health and Safety Representative shall keep records of instrument calibration and maintenance.

9 Isolating The Permit Space

Before entering a permit-required confined space, isolate the space from all other systems to ensure that injury does not occur. Blanks must be used to physically isolate all pipelines connected to the confined space. Shut-off valves or pipelines to the space must be locked in the closed position and tagged for identification. In continuous systems, where complete isolation is not possible (e.g., sewer lines), specific written safety procedures should be developed and implemented.

Electrical isolation of the confined space is necessary to prevent accidental activation of moving parts that would be hazardous to the worker. Circuit breakers or disconnects should be locked out and tagged in the off position with a key-type padlock. The only key is to remain with the person who locked the breaker. If more than one person is inside the space, each person must place his or her own lock on the circuit breaker.

Mechanical isolation of moving parts can be achieved by disconnecting linkages or removing drive belts or chains. Equipment with moving mechanical parts must also be blocked in such a manner that there can be no accidental rotation. Remember, lives are at stake. All steps are equally important. Lockout and tagout procedures must conform to OSHA standards (see 29 CFR part 1910.147).

10 Responsibilities and Duties of Personnel Conducting Permit-Required Confined Space Operations

As stated in Section 4, the permit-required confined space entry program should designate personnel who have active roles in the program. Every Parsons ES permit-required confined space operation requires an authorized entrant(s), an attendant, an entry supervisor, and a rescue team or service.

Any person entering a permit-required confined space must know the potential hazards of the space, including the signs or symptoms of exposure. Entrants must be familiar with the proper use of safety equipment and should be in constant communication with the outside attendant. When an entrant recognizes the signs or symptoms of exposure in another entrant or himself or detects a prohibited condition, the entrant must inform the attendant of the problem and initiate evacuation.

The attendant remains outside the permit space during the entire operation and is responsible for maintaining an accurate count of entrants in the confined space. The attendant should communicate with entrants as necessary to monitor status. The attendant must also know potential hazards during entry including signs, symptoms, and behavioral effects of exposure to hazardous substances. The attendant monitors activities inside and outside the space to determine if it is safe for the entrants to remain. The attendant is required to order an immediate evacuation of the space when one of the following conditions occur:

- A prohibited condition is detected in the space.
- The attendant detects the symptoms of exposure in an entrant.
- The attendant detects a situation outside the space that could endanger the entrants.

In the event of an emergency requiring the rescue of an entrant, the attendant is only permitted to perform a non-entry rescue (i.e., extracting personnel by use of retrieval system) or to summon a rescue team.

The entry supervisor (usually the Site Health and Safety Officer) is the individual responsible for the development of the permit and has overall accountability for the safety of the operation.

The entry supervisor checks permit entries, verifying that all tests specified have been conducted and that all procedures and equipment are in place prior to entry. Additionally, the entry supervisor ensures that a rescue team or service is available and readily accessible.

The nature of work in permit-required confined spaces makes emergencies a continual possibility, no matter how infrequently they actually occur. Emergencies occur quickly and unexpectedly and require immediate response. In an emergency, rescue personnel would either enter a permit space to remove entrants or would remain outside and pull out entrants by use of retrieval lines. The plant may either establish an in-house rescue team or make arrangements for off-site services (i.e., fire department). If off-site emergency rescue services are to be used, the response time to the space must be within 8 minutes.

11 Training For Permit-Required Confined Space Work

Anyone entering a permit-required confined space must recognize and understand the potential hazards to health and safety associated with the operation. Personnel involved in permit space activities must be thoroughly familiar with Parsons ES' and LMC's permit-required confined space program and must receive training. The objectives of the confined space training program are to:

- Make workers aware of the potential hazards they may encounter.
- Provide the knowledge and skills necessary to perform the work with minimal risk to worker health and safety.
- Make workers aware of the purpose and limitations of safety equipment.
- Ensure that workers can safely avoid or escape from emergencies.

The level of training provided by the Office Health and Safety Officer should be consistent with the worker's job function and responsibilities. The training program must involve both classroom instruction and hands-on practice. Hands-on instruction should consist of entry and rescue drills. Employees must demonstrate proficiency in the knowledge and skills necessary for safe entry and response (proficiency may be demonstrated through oral or written examination or evaluation of field simulations). The Office Health and Safety Representative will issue certificates documenting the successful completion of training.

Training is required before the employee is assigned to a permit-required confined space operation and when the employee's assigned duties change (e.g., when assignment changes from entrant to rescue team member). Members of the in-house rescue team must practice confined space rescues annually. This training should consist of simulated rescues in which the team removes a mannequin from an actual permit-required confined space.

CONFINED SPACE ENTRY PERMIT

TASK: _____ Issue Date: _____

LOCATION: _____ Expiration : _____

Note: This permit expires after one shift (8-12 Hours). A new permit must be issued for any change of shift. Return copy of completed permit to Office H&S Representative

Signature below indicates this permit has been read and understood.

Entrants

_____ ☒ _____

_____ ☒ _____

_____ ☒ _____

Attendant(s)

_____ ☒ _____

_____ ☒ _____

_____ ☒ _____

Entry Supervisor

(usually H&S Representative)

_____

Outside Contractor(s)

_____ ☒ _____

_____ ☒ _____

EMERGENCY CONTACTS

POLICE _____ NEAREST HOSPITAL _____

POISON CONTROL CENTER _____ ADDRESS _____

FIRE DEPARTMENT _____ CROSS STREETS _____

PLANT RESCUE SERVICE _____ _____

(IF APPLICABLE)

_EMERGENCY ROOM _____

AMBULANCE _____ PHYSICIAN _____

Prepared by: _____ _____

Entry Supervisor Date

Approved by: _____ _____

Health & Safety Representative Date

PERMIT MUST BE POSTED AT WORK SITE

Safety Check List

(All boxes must be complete before entry is allowed)

Protective equipment

	YES	NO
Full-body harness	☐	☐
Lanyard, life-line	☐	☐
Tripod and winch	☐	☐
Davit arm and winch	☐	☐
Ladder	☐	☐

Other (specify) _____

Respirators

	YES	NO
SCBA, 5-minute escape	☐	☐
SCBA, 30-minute	☐	☐
Air line	☐	☐
Air purifying, full-face	☐	☐

Other (specify) _____

Protective Clothing

Face shield	☐	☐
Cotton coveralls	☐	☐
Rain suit	☐	☐
Reflective vest	☐	☐
Gloves		
Leather	☐	☐
Rubber, butyl	☐	☐
Boots		
Leather, safety	☐	☐
PVC knee	☐	☐

Head wear		
Hard hat	☐	☐
Welding Helmet	☐	☐
Eye wear		
Safety glasses	☐	☐
Safety goggles	☐	☐
Welding goggles	☐	☐
Ear wear		
Earplugs	☐	☐
Muffs	☐	☐

Other (specify) _____

Communication

Radio, 2-way	☐	☐

Other (specify) _____

Lighting (®UL and MSHA approved)

Flashlight	☐	☐
Lantern	☐	☐

Other (specify) _____

First Aid

First Aid Kit	☐	☐
Fire Extinguisher	☐	☐
Eye Wash	☐	☐

Other (specify) _____

Warning Equipment/Indicators

Barriers	☐	☐
Caution tape	☐	☐
Warning signs	☐	☐

Other (specify) _____

Isolation Checks	Yes	No	N/A	Date	Time
Lines blanked or disconnected	☐	☐	☐	_____	_____
Lockout/tagout of electrical or mechanical hazard	☐	☐	☐	_____	_____
Vessel purged, flushed and vented	☐	☐	☐	_____	_____
Other (specify)_____				_____	_____

Ventilation Method	Yes	No	N/A
Venturi blower	☐	☐	☐
Electric or gasoline air blower with flexible hose	☐	☐	☐
Other (specify)_____			

EMERGENCY RESPONSE RESCUE PROCEDURE

APPENDIX K

CITIZENS PARTICIPATION PLAN

CITIZENS PARTICIPATION PLAN
OPERATIONS AND MAINTENANCE
SITE-WIDE REMEDIAL PROGRAM
FORMER GE COURT STREET BUILDING 5/5A
TOWN OF DEWITT, ONONDAGA COUNTY, NEW YORK

Prepared For:

Lockheed Martin Corporation
Syracuse, New York

Prepared by:

IT CORPORATION
13 British American Boulevard
Latham, New York 12110
(518) 783-1996

January 2000

Contents

1.0 INTRODUCTION

The New York State Department of Environmental Conservation (NYSDEC), in cooperation with the New York State Department of Health (NYSDOH) and Lockheed Martin Corporation (LMC) is committed to informing and involving the public during the remediation of the Former GE Court Street Building 5/5A Site. This Citizens Participation Plan (CPP) describes activities that will be completed to obtain input from and involve the public during the ongoing remedial program at the Former GE Building 5/5A Site.

This CPP was developed pursuant to the requirements of Title 6 of the New York Code of Rules and Regulation (NYCRR) Part 375-1.5, Citizens Participation Requirements. This CPP presents basic site information (Section 2), a description of the project (Section 3), a discussion of citizens participation activities (Section 4), a listing of project contacts (Section 5), and identifies a listing of interested and/or affected parties (Section 6).

LMC is performing the remedial program with NYSDEC oversight. NYSDEC will implement the citizens participation activities described herein. NYSDOH will participate in these activities, and LMC will provide assistance as needed.

2.0 SITE BACKGROUND

The Former GE Court Street 5/5A Site is located at the intersection of Deere Road and Route 298 in the Town of DeWitt, Onondaga County, New York. The Former GE Court Street 5/5A Site is listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites. A Remedial Investigation/Feasibility Study (RI/FS), and several Interim Remedial Measures (IRMs) have been performed at the site with NYSDEC oversight.

Based on the results of the RI/FS and the IRMs performed at the site, a Record of Decision (ROD) was prepared by the NYSDEC in March 1999 to present the selected remedy for the Former GE Court Street 5/5A Site. The ROD determined that actual or threatened releases of hazardous constituents from the site have been addressed by implementing the IRMs, and therefore the selected remedy was for No Further Action. Based on the ROD, the site was reclassified as Class 4 on the New York State Registry of Inactive Hazardous Waste Disposal Sites. This classification means that the site has been properly closed, but requires continued operation, maintenance, and/or monitoring.

As discussed in the ROD, the IRMs which have been implemented at the Former GE Court Street Building 5/5A Site are listed below. Detailed information on these activities can be found in the documents available at the document repository for the site (see Section 5).

- Installation/Operation of a Groundwater Collection and Treatment System
- Soil Removal Action
- Storm Sewer Rehabilitation

Ongoing remedial activities consist of the operation and maintenance (O&M) of the groundwater collection and treatment system and monitoring of site conditions. The remedial program is being completed by LMC in accordance with the ROD, an O&M Plan, and the requirements of a May 1996 Consent Order between LMC and the NYSDEC.

3.0 PROJECT DESCRIPTION

As specified in the ROD, the remedial program at the Former GE Court Street Building 5/5A Site consists of the continued O&M of the groundwater collection and treatment system and monitoring of site conditions.

The groundwater collection and treatment system provides a means for collecting groundwater at the site and treating the water to remove the contaminants. The system includes a collection trench and sump from which groundwater is pumped to a treatment system. The treatment system consists of a diffused aeration air stripper that is designed to remove site contaminants from the groundwater flow. The effluent from the air stripper flows by gravity to Sanders Creek. The air emissions from the treatment system are discharged to the atmosphere through a 33-foot high stack.

Monitoring conducted as part of the remedial program will serve the following purposes:

1. To demonstrate that hydraulic control is being maintained along the collection trench.
2. To demonstrate that the treated groundwater discharged to Sanders Creek meets the effluent discharge limitations established by the NYSDEC.
3. To demonstrate that air emissions from the air stripper do not exceed NYSDEC short-term guideline concentrations (SGCs) or annual guideline concentrations (AGCs).
4. To demonstrate that VOC concentrations of dry weather storm sewer discharges to the South Branch of Ley Creek are consistent with VOC concentrations detected since the 1997 storm sewer IRM was completed.

As described in the ROD, the system will be operated and maintained until groundwater concentrations of site-related VOCs have leveled off at a relatively low concentration over the majority of the site, significant quantities of contaminants are no longer being removed, and natural attenuation processes can be relied upon to protect surface water quality in the South Branch of Ley Creek and Sanders Creek.

4.0 CITIZENS PARTICIPATION ACTIVITIES

A number of citizens participation activities have been conducted throughout the remedial activities conducted previously at the site. These include the following.

- Development of a Citizens Participation Plan for the site in January 1997. This CPP is an update to the January 1997 CPP.
- A document repository was established at the East Syracuse Free Library in January 1997. This repository has been updated as subsequent documents have become available.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties in January 1997. This list was updated in January 1999 in preparation for the distribution of the Proposed Remedial Action Plan (PRAP), and is provided in Section 5 of this CPP.
- A fact sheet announcing the RI/FS for the site was sent to the public by NYSDEC in January 1997.
- A fact sheet announcing the implementation of the groundwater collection and treatment system IRM was sent to the public by NYSDEC in September 1997.
- A fact sheet was sent to the public by NYSDEC in February 1999 to inform the public of the PRAP for review and comment.
- A public meeting was held on March 11, 1999 to discuss the PRAP and solicit public comments.
- The ROD was completed by NYSDEC in March 1999.

In the future, citizen participation activities will include distribution of fact sheets at significant decision points in the remedial program at the site, as determined by the NYSDEC. For example, it is expected that once the remedial goals of the ROD are achieved, a fact sheet will be developed to announce the decision to cease O&M of the groundwater collection and treatment system.

5.0 PROJECT CONTACTS

The following are the O&M contacts for the Former GE Court Street Building 5/5A remedial program.

Contact	Phone Number	Location
NYSDOH **Henriette Hamel**	(315) 426-7627	Syracuse, New York
NYSDEC – Operations & Maintenance Section **Gerald Rider, PE**	(518) 457-0927	Albany, New York
LMC – Principal Engineer **Patrick D. Salvador, PE**	(315) 456-3199	Syracuse, New York

The document repository is established at the East Syracuse Free Library, 4990 James Street, East Syracuse, New York. The phone number is (315) 437-4841. The library hours are as follows.

Monday – Thursday	10:00 am to 8:00 pm
Friday	10:00 am to 6:00 pm
Saturday	10:00 am to 2:00 pm (Labor Day through mid-June)

6.0 IDENTIFICATION OF INTERESTED/AFFECTED PUBLIC (CONTACT LIST)

This section identifies individuals and organizations representing the Town of DeWitt, Onondaga County, and the State of New York as well as individuals and groups potentially interested/affected by remedial activities at the site, as updated by the NYSDEC in a January 7, 1999 Memorandum.

Local Contacts

- Town of DeWitt, Town Supervisor – Ms. Kelly Dellas, DeWitt Town Hall, 5400 Butternut Drive, DeWitt, New York, 13214, (315) 446-3428
- Town of DeWitt, Town Clerk – Ms. Barbara Klim, DeWitt Town Hall, 5400 Butternut Drive, DeWitt, New York, 13214, (315) 446-3428
- Town of DeWitt, Town Engineer – Mr. Michael Kolceski, O'Brien & Gere Engineers, Inc., 500 Brittonfield Parkway, Syracuse, New York, 13221, (315) 437-6100
- Onondaga County, County Executive – Mr. Nicholas Pirro, Onondaga County Courthouse, 401 Montgomery Street, Syracuse, New York, 13202, (315) 435-3516
- Onondaga County, County Clerk – Ms. M. Ann Ciarpelli, Onondaga County Courthouse, 401 Montgomery Street, Syracuse, New York, 13202, (315) 435-2226
- Onondaga County, County Legislator – Ms. Vikki Bakker, Onondaga County Courthouse, 401 Montgomery Street, Syracuse, New York, 13202, (315) 435-2226
- Onondaga County, Commissioner, Health Department – Dr. Lloyd Novick, 421 Montgomery Street, Syracuse, New York, 13202, (315) 435-3252
- Onondaga County, Director, Office of the Environment – Mr. Dave Coburn, 421 Montgomery Street, Syracuse, New York, 13202, (315) 435-3252

State Contacts

- New York State Senator John A. DeFrancisco, State Office Building, Room 804, 333 East Washington Street, Syracuse, New York, 13202, (315) 428-7632
- New York State Assemblywoman Joan Christensen, 4317 East Genessee Street, DeWitt, New York, 13214, (315) 449-9536
- NYSDEC, Operations and Maintenance Section – Mr. Gerald Rider, PE, 50 Wolf Road, Albany, New York, (315) 457-0927
- NYSDEC, Region 7 – Ms. Chris Rossi, 615 Erie Boulevard West, Syracuse, New York 13204, (315) 426-7551
- NYSDEC – Mr. Benjamin Conlon, Esq., 50 Wolf Road, Albany, New York, 12233, (518) 457-7821
- NYSDEC, Operations and Maintenance Section – Mr. John Strang, PE, 50 Wolf Road, Albany, New York, (315) 457-0927

- NYSDEC Toll Free Information Line – (800) 342-9296
- NYSDOH, Syracuse Field Office – Ms. Henriette Hamel, 217 South Salina Street, Syracuse, New York, 13202, (315) 426-7627
- NYSDOH Toll Free Information Line – (800) 458-1158 (x402)

Lockheed Martin Corporation Contacts

- General Counsel - Sandra Lee Fenske, Esq., Lockheed Martin Corporation, Ocean, Radar & Sensor Systems, PO Box 4840, Syracuse, New York 13221, (315) 456-3598
- Principal Engineer – Patrick D. Salvador, PE, Lockheed Martin Corporation, Ocean, Radar & Sensor Systems, PO Box 4840, Syracuse, New York 13221, (315) 456-3199

Media Contacts

- Syracuse Newspapers, Clinton Square, PO Box 4814, Syracuse, New York, 13202, (315) 470-0011

Residential Contacts

- DE & JD Associates, Inc., 325 University Avenue, Syacuse, NY 13210
- Griffith Williams & Albert Morgan, PO Box 156, Syracuse, NY 13206
- Ronald Gustafson, 221 West Avenue, East Syracuse, NY 13057
- Dennis and Pauline Fehr, Box 89, Friedensburg, PA 17933
- County of Onondaga, 650 Hiawatha Blvd., Syracuse, NY 13204
- Jack Lombardi, et al., Real Estate Department, PO Box 4996, Syracuse, NY 13221
- Graphic Drive Partnership, 209 Berkeley Drive, Syracuse, NY 13210
- O'Brien & Gere, Property Development, Inc., 500 Brittonfield Parkway, Syracuse, NY 13221
- Frel Properties, Inc., c/o Eagan Real Estate, Money Tower I, Suite 1200, Syracuse, NY 13202
- Northbrook Properties, Inc., PO Box 1287, Northbrook, IL 60065
- Deborah Buniski (for Northbrook Properties), 2700 Capitol Trail, Newark, DE 19711