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2012 Annual Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring Report

Former Lockheed Martin French Road Facility Utica, New York

March 2013

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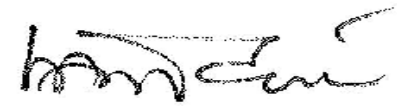

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2012 Annual Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring Report

Former Lockheed Martin French Road Facility, Utica, New York

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Acronyms

CB	catch-basin
cfm	cubic feet per minute
CVOCs	chlorinated volatile organic compounds
DAR	Division of Air Resources
ft	feet
GCTS	groundwater collection and treatment system
gpm	gallons per minute
HDPE	high-density polyethylene
HOA	hand-off-auto
hp	horsepower
in	inch
lb	pounds
MH	manhole
mL	milliliters
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	operations and maintenance
OM&M	operation, maintenance, and monitoring
PLC	programmable logic controller
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RCP	Reinforced-concrete pipe
RL	reporting limits
SCFM	standard cubic feet per minute
SCH	schedule
SOP	standard operating procedure
SPDES	State Pollutant Discharge Elimination System
USEPA	United States Environmental Protection Agency
VOA	volatile organic analysis
VOCs	volatile organic compounds
WTC	water treatment chemical

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1. Introduction

This *Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring Report* was prepared by ARCADIS for Lockheed Martin Corporation (Lockheed Martin), in accordance with the DRAFT *Site Management Plan for the Solvent Dock Area* (ARCADIS 2009) at the Former Lockheed Martin French Road Facility (herein referred to as the "site") in Utica, New York (Figure 1). All work was performed in accordance with the October 3, 2008 "Order on Consent" (CO 6-20080321-5) issued by the New York State Department of Environmental Conservation (NYSDEC). This report summarizes the operation, maintenance, and monitoring (OM&M) of the groundwater collection and treatment system (GCTS) from January 1 through December 31, 2012. The data summary includes a review of influent and effluent system sampling, analysis of key operating parameters (e.g., flow rates, pressures, system run-time, and maintenance activities), and any modifications and recommendations related to continued system operation and monitoring.

2. Groundwater Collection and Treatment System Description

The GCTS is designed to collect groundwater contaminated with chlorinated volatile organic compounds (CVOCs) from the former Solvent Dock Area and former northern-perimeter ditch area and transport it to a treatment building where the CVOCs are removed by a low-profile air stripper. Following treatment, groundwater is discharged via gravity to the local municipal storm drain under a NYSDEC "State Pollutant Discharge Elimination System" (SPDES) permit (permit No. NY-0121894). The system is designed to operate automatically and requires only periodic inspections and maintenance. An automated system operation log is sent daily via e-mail to the project engineer to verify operation. A more detailed explanation of the GCTS appears below.

Groundwater in the former Solvent Dock area (MH-2 and MH-3) and former northern-perimeter ditch area (MH-1) is captured by separate perforated-pipelines and flows via gravity to collection manholes. Groundwater is then pumped (batch mode) from each manhole through subsurface double-walled pipelines to the GCTS building for treatment before being discharged to the local municipal stormwater collection system. The groundwater is treated with a low-profile air stripper, which removes the dissolved-phase CVOCs.

During air stripping, contaminated water enters the air stripper at the top and ambient air enters from the bottom. The groundwater flows over four trays in series where CVOCs are transferred from the aqueous phase (i.e., water) to the vapor phase (i.e.,

counter-current air stream). The air stream (off-gas) is treated using granular activated carbon before discharge to the atmosphere. A GCTS site plan is illustrated in Figure 2, and the GCTS process and instrumentation diagram record drawing showing sampling locations is provided in Appendix A.

2.1 Major System Components

Major components of the system are as follows:

- MH-1: 6-ft diameter and 13-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ horsepower (hp) submersible pumps;
  - Five associated float-switches;
  - 2-in/4-in diameter double walled high-density polyethylene (HDPE) discharge-piping; and
  - Gravity Collection Drain - 670 feet (ft) of 8-inch (in) diameter perforated HDPE pipe installed in a 4–6-ft deep, stone-filled collection trench located parallel to the former northern-perimeter ditch.
- MH-2: 6-ft diameter and 18-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ hp submersible pumps;
  - Five associated float-switches;
  - 2-in/4-in diameter double wall HDPE discharge piping; and
  - Gravity Collection Drain - 70 ft of 6-in diameter perforated HDPE-pipe installed in a 16-ft deep, stone-filled collection trench located adjacent to the former Solvent Dock area.
- MH-3: 6-ft diameter and 17-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ hp submersible pumps;
  - Five associated float-switches;
  - 2-in/4-in diameter double wall HDPE discharge piping; and

  - Gravity Collection Drain - 173 ft of 6-in diameter perforated HDPE-pipe installed in a 9–11-ft deep, stone-filled collection trench located adjacent to the facility stormwater drainage line within the former Solvent Dock area.

- Pre-Engineering Metal Building: A 24-ft 8-in by 20-ft pre-engineered metal treatment-building set on a concrete foundation and slab equipped with a secondary containment- dike and floor sump;

- Programmable Logic Controller (PLC) and motor control panels for the air stripper, duct heater, and manhole pumps;

- Air Stripper: Low profile, stainless steel air stripper rated for a maximum flowrate of 120 gallons per minute (gpm);

- Liquid Phase Discharge: 60-ft of 4-in diameter schedule (SCH)-40 polyvinyl chloride (PVC) gravity-discharge pipe from the air stripper effluent to the local municipal stormwater collection and drainage system [30-in diameter reinforced-concrete pipe (RCP)];

- Duct Heater: Inline duct heater rated at 600 standard cubic feet per minute (SCFM);

- Vapor Phase Treatment Vessels: two 1000-pound (lb) activated carbon vessels operated in series that discharge the treated air stripper off-gas through an exhaust-duct made of PVC (interior) and stainless steel (exterior) that extends approximately 28-ft above the ground surface; and

- Chemical Feed System: Aries Chemical sequestering agent 2908 is injected into the influent groundwater stream for mineral deposit control using a LMI chemical feed pump model AA941-353 BI, equipped with a LMI Digi-Pulse Meter model FM-200 rated for 0.05-5.0 milliliter (ml) per stroke. [Note: Approval for the water treatment chemical (WTC) was received from NYSDEC on April 13, 2011. Usage of the WTC began on April 20, 2011.]

Record drawings for the GCTS are included in Appendix A. System components are described in more detail in the *Operational, Maintenance, and Monitoring Manual* (ARCADIS 2011).

3. 2012 Remedial Operational Objectives

The GCTS' overall remedial goal is to reduce the potential for groundwater contaminated with CVOCs to infiltrate the facility's storm drainage system (Figure 2)

before its contents eventually discharge to Nail Creek. The GCTS' operational objectives are to:

- Maintain and operate the system continuously without significant downtime;
- Demonstrate the GCTS' effectiveness in preventing infiltration of CVOC contaminated groundwater into the site facility's storm drain;
- Demonstrate that the air stripper is removing CVOCs from the influent groundwater streams before being discharged into the local county storm drain system, in compliance with the site's SPDES permit;
- Demonstrate that vapor phase discharge from the air stripper complies with NYSDEC Division of Air Resources (DAR-1); and
- Achieve the site specific goal of 95 percent (%) mass removal of target CVOCs (i.e., TCE and daughter products including 1, 2-DCE) in the system vapor effluent.

4. Operation and Maintenance Activities

The GCTS operated nearly continuously between January 1 - December 31, 2012 (run time was approximately 97%, or 355 of 366 days), with minor scheduled routine maintenance and/or operational interruptions due to system alarm conditions.

The system was inspected either by physical site inspections, remote computer monitoring, and/or via review of the daily system operation e-mails during the reporting period. System operating-parameters are recorded during monthly site inspections and compliance sampling events. The GCTS operational summary is provided in Table 1.

4.1 Daily Routine System Inspections

Daily remote system monitoring of the system was performed during 2012. Monitoring included review of the daily system operational e-mails to confirm that the system was operational, that all system variables were within their allowable ranges, and that no alarm conditions were present.

4.2 Monthly Routine System Inspections

This section summarizes the activities completed during the operations and maintenance (O&M) monthly site visits. These activities were recorded on the "Monthly O&M Checklists" (attached as Appendix B).

Air Stripper:

- Observe the air stripper for any visible leaks;
- Clean air stripper aeration trays and sump (as required);
- Observe the blower for proper operation;
- Inspect the air stripper trays via the glass door and record and note deposits; and
- Record the gauge pressure and level readings on the log sheet for the following:
    - Air stripper sump; and
    - Air stripper-sump water level.

Flow Meters:

- Observe the flow meters to ensure they are operating properly and clean them, as necessary; and
- Record the monthly and permanent totalizer readings.

Vapor Phase Equipment:

- Inspect the duct heater for proper operation;
- Record pre-duct heater and carbon vessel temperatures;
- Inspect the carbon vessels for any signs of leaks; and
- Record pressures before the lead vessel, and between the lead and lag vessels.

Control Panels:

- Test hand-off-auto (HOA) switches for proper operation; and
- Test power and pump-run lights.

Water Treatment Chemical:

- Inspect chemical feed pump and associated tubing for any signs of leaks;
- Record and date remaining chemical level in drum on a monthly basis; and
- Track chemical consumption and dosing rates on a monthly basis.

Pumping Manhole Inspections:

- Check the HDPE double-walled pipe for flow entering the manhole from the outer containment pipe, which could indicate a discharge pipe leak;
- Check the floats to ensure they are hanging properly and unobstructed;
- Observe groundwater in the manhole for any unusual odors, water clarity, etc.; and
- If the pump(s) are running, listen for unusual sounds and inspect the discharge piping in the manhole for leaks.

Miscellaneous O&M:

- Observe all treatment-building piping for signs of leaks;
- Exercise MH-1, MH-2, and MH-3 influent ball valves to clean any mineral deposits in order to maintain full operational range of the valve;
- Check the building unit heaters and thermostats, adjust as necessary; and
- Inspect all health and safety related equipment and replace as necessary.

4.3 Quarterly System O&M and Inspections

This section describes activities completed during the O&M quarterly critical device testing. These activities were recorded on the "Monthly/Quarterly O&M Checklists" (attached as Appendix B). The system was temporarily turned on and off for several hours, per event in January, April, July, and October 2012 to perform critical-device testing. These devices were tested for proper operation as described in the *OM&M Manual* (ARCADIS 2011) standard operating procedures (SOPs). Below is a summary of each event:

- January 27, 2012 – All critical devices passed.
- April 4 and 5, 2012 – All critical devices passed.
- July 13, 2012 – All critical devices passed.
- October 30, 2012 – All critical devices passed.

4.4 Non-Routine Operation and Maintenance Activities

The following non-routine system O&M activities were performed between January 1 and December 31, 2012:

- On January 25, 2012, the rigid high-liquid level sensor for the air stripper sump (LSH-100) was replaced with a mechanical tethered float to provide a larger liquid level operating range for the air stripper.
- On June 22, 2012, a new aggregate flow meter (FT-105) was installed to improve accuracy measurement across the entire range of expected liquid flows in order to better attain the target chemical dosing rate.
- On October 16, 2012, the backup battery for the personnel door interior emergency exit light was replaced.
- On October 16, 2012, the air stripper tray gaskets were replaced.
- On November 30, 2012 a new air flow transmitter (FT-106) was ordered in response to multiple alarm occurrences due to faulty air flow readings. The new transmitter was installed on January 3, 2013.

Several minor changes to critical device set points, standard operating procedures, and O&M log sheets were made during the 2012 reporting period. These were documented in OM&M Plan addendums during 2012 (Appendix C, ARCADIS 2012).

4.5 Alarm Conditions and System Modifications

Several fatal alarm conditions occurred between January 1 and December 31, 2012. The cause of each system alarm and corresponding corrective action are summarized in Table 1. Alarm logs and response sheets are provided in Appendix D. Below is a summary of fatal alarms and corrective actions including any system modifications that were made during the reporting period:

- On January 14 and 30, 2012, the air stripper sump low liquid level alarm was observed. Adjustments to the blower damper were made and the rigid high liquid level sensor was replaced with a tethered float sensor to allow for a larger liquid level operating range.
- On February 6, 2012, the air stripper sump high liquid level alarm was observed. The length of the cord for the newly installed tethered float sensor was increased several inches to further allow a larger liquid level operating range.

- On July 16, 2012, a low pre-carbon temperature alarm condition was observed via temperature transmitter TT-400. This was related to incomplete quarterly critical device testing performed on July 13 which caused the duct heater to remain offline. A site visit was conducted and the duct heater was returned online.
- On July 17, 2012, the air stripper sump high liquid level alarm was observed. A manual adjustment to the blower damper was made to lower the air stripper sump operational level during batch cycles.
- Between October 11 and 13, 2012, the low air flow alarm occurred via air flow transmitter FT-106. Investigation of the system's performance readings via the PLC indicated that FT-106 was likely not measuring correctly. As a result, the alarm delay was changed from five seconds to five minutes.
- Between November 4 and 18, 2012, both the high and low air flow alarms occurred at various times via air flow transmitter FT-106. Investigation of the system's performance readings via the PLC confirmed that FT-106 was no longer functioning properly. A new air flow transmitter was subsequently ordered and the air flow alarms were both changed from fatal to non-fatal alarms.
- On December 26, 2012, the air stripper sump low liquid level alarm was observed. A manual adjustment to the blower damper was made to raise the air stripper sump operational level during batch cycles.
- Several non-fatal alarms were observed during the 2012 reporting period, including failed daily communication logs and low flow meter flows, these non-fatal alarms and the associated corrective actions (if applicable) are documented in Appendix D.

4.6 Whole Effluent Toxicity (WET) Testing

Whole Effluent Toxicity (WET) testing was requested by the NYSDEC in a letter dated January 11, 2012. The 7-day WET testing was completed on March 6, 2012, and submitted to the NYSDEC on April 3, 2012. A NYSDEC review of the results is still pending.

4.7 Arc Flash Study

An Arc Flash Study (ARCADIS 2012) was completed May 3, 2012 for the SSDS in order to satisfy the newly modified Occupational Safety and Health Administration

(OSHA) regulation pertaining to electrical safety in the workplace. The report provided an evaluation of the hazards associated with the arc flash potential for SSDS electrical components, and provided general recommendations related to the reduction of the arc flash potential and associated workplace hazards.

The intent of the arc flash study analysis was to provide calculations and flash hazard analysis in order to determine arc flash boundaries for all major electrical equipment. The Coordination Study was performed to minimize the potential arc flash energy by selecting the optimum settings of protective devices and to verify that no nuisance tripping will occur at the existing substation #5 & #6 located remote in ConMed Facility.

The results of the assessment showed that arc flash hazards exist at the SSDS. As such, arc flash labels were attached to the electrical equipment to warn personnel about potential risk of an arc flash and electric shock hazard on June 7, 2012.

The overall arc flash assessment for the SSDS resulted in the identification of the following required labels:

- No “DANGER” labels are required.
- “WARNING” labels of hazard/risk categories (HRC) 0 thru 4 for all remaining equipment.

The arc flash study also identified what personal protective equipment (PPE) are required when working at or near exposed energized live parts or operating electrical devices. Minimum required level PPE is detailed and indicated on the arc flash labels.

5. Analytical Monitoring Activities

This section summarizes the monthly GCTS compliance sampling and monitoring activities completed during the reporting period.

5.1 System-Effluent Monitoring

The treatment system discharges to an Oneida County storm drain under the terms of an SPDES permit (permit No. NY-0121894). As required by the SPDES permit, effluent grab-water samples were collected monthly from the treatment system. One effluent grab-sample was collected monthly from the treatment-system-effluent sampling-port SP-100 (designated by NYSDEC as “Outfall #2”), located on the 4-in diameter air

stripper liquid phase effluent line. The location of sampling port SP-100 is shown on drawing M-1 in Appendix A.

Samples were collected in 40-ml volatile organic analysis (VOA) vials supplied by a New York State Department of Health (NYSDOH)-certified laboratory. The sampling protocol for the effluent sample is included in the *Site-Specific Quality Assurance Project Plan* (QAPP) (ARCADIS 2009b). The samples were shipped on the day of collection via overnight delivery to TestAmerica Laboratories, Inc. in Amherst, New York. One laboratory trip-blank accompanied each water sample. All samples were analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260. The SPDES permit also requires monthly collection and analysis of a grab sample for pH. The pH is measured locally using a site-dedicated pH meter.

The system-effluent samples contained no detectable concentrations of VOCs above their respective laboratory reporting limits (RL) (as shown in Table 2) during the entire reporting period.

The SPDES permit limits the systems effluent average daily discharge flow (over the course of a monthly reporting period) to 45 gpm. Effluent flow did not exceed this average during the reporting period. In addition, the pH recorded during the 2012 reporting period ranged from 7.1 to 8.4 standard units, and remained within the SPDES effluent limits of 6.5 to 8.5 standard units.

5.2 System-Influent Monitoring

Influent-water samples were collected as part of quarterly monitoring activities in January, April, July, and October 2012. Influent samples were collected from each influent-line (MH-1, MH-2, and MH-3) sampling-tap on the 2-in diameter influent lines before the influent water entered the air stripper. The sampling protocol and delivery method followed were identical to those for the SPDES compliance sampling.

The primary site-related CVOCs detected for MH-1 were:

- 1,1-Dichloroethane (4.9 μg/L in January, 8.5 μg/L in April, 10 μg/L in July, and 8 μg/L in October);
- cis-1,2-Dichloroethene (28 μg/L in January, 39 μg/L in April, 56 μg/L in July, and 43 μg/L in October);

- Tetrachloroethene (16 μg/L in January, 23 μg/L in April, 36 μg/L in July, and 28 μg/L in October); and
- Trichloroethene (26 μg/L in January, 52 μg/L in April, 66 μg/L in July, and 41 μg/L in October).

The primary site-related CVOCs detected for MH-2 were:

- 1,1-Dichloroethane (1.5 μg/L in January, 1.8 μg/L in July, 2.5 μg/L, and 2.4 μg/L in October);
- cis-1,2-Dichloroethene (5.4 μg/L in January, 8.3 μg/L in April, 22 μg/L in July and 13 μg/L in October);
- Tetrachloroethene (1.6 μg/L in January and 1.7 μg/L in April);
- trans-1,2-Dichloroethene (4.9 μg/L in July and 1.6 μg/L in October);
- Trichloroethene (2.8 μg/L in January, 4.8 μg/L in April, 1.6 μg/L in July and 6.7 μg/L in October); and
- Vinyl chloride (1.2 μg/L in January, 1.6 μg/L in April, 2.4 μg/L in July and 3.3 μg/L in October).

The primary site-related CVOCs detected for MH-3 were:

- cis-1,2-Dichloroethene (2.5 μg/L in January, 2.7 μg/L in April and 3.2 μg/L in July);
- Tetrachloroethene (33 μg/L in January, 49 μg/L in April and 49 μg/L in October); and
- Trichloroethene (16 μg/L in January, 17 μg/L in April and 22 μg/L in October).

System influent analytical sampling results are summarized in Table 3.

5.3 Stormwater Monitoring

As outlined in the *Operational, Maintenance, and Monitoring Manual* (ARCADIS 2011), quarterly stormwater samples were collected from 3 catch basin (CB) locations at the site (identified as CB-1, CB-2, and CB-3; as shown on Figure 2). The quarterly stormwater samples contained no detectable concentrations of VOCs above their respective laboratory RLs (as shown in Table 4).

6. System Performance Results

Operational data collected during monthly system-operation inspections are summarized in the following sections.

6.1 Groundwater Recovery/Extracted Liquid Flowrate

The groundwater recovery/extraction-liquid flowrates for the 2012 reporting period are summarized in Table 5. These data include the average and cumulative recovered-groundwater and manhole-pump run-times. Total extracted-groundwater flow readings were collected from the flow-meters FT 101 (MH-1), FT 102 (MH-2) and FT 103 (MH-3). The average monthly system groundwater extraction flowrates from January to December 2012 are included in Table 5. The total flow recorded for manhole MH-1 was approximately 2,320,233 gallons, with a corresponding average recovery rate of 4.3 gpm. The total flow recorded for manhole MH-2 was approximately 404,972 gallons, with a corresponding average recovery rate of 0.8 gpm. The total flow recorded for manhole MH-3 was approximately 1,068,225 gallons, with a corresponding average recovery rate of 2.0 gpm. The resulting total annual flow for the GCTS was approximately 3,793,430 gallons of groundwater. The total flows recorded correspond to an average recovery rate of approximately 7.1 gpm over the entire 2012 reporting period. This average recovery rate corresponds to an approximate 32 percent (%) reduction when compared to the 2011 rate of 10.3 gpm. The reduction in flow is likely attributable to a decrease of annual precipitation in the area, as recorded from local weather data station (Syracuse Hancock International Airport) located in Syracuse, New York. The total annual precipitation amount recorded for 2011 and 2012 were 52 in. and 35 in., respectively. The reduction in flow was most notable in the third quarter of 2012 where the recorded precipitation was only 7.7 in. versus 15.7 in. in 2011.

6.2 Air Stripper Performance

The air stripper vapor flowrate was calculated using the differential pressure (post-carbon vessels) recorded during each monthly sampling event which is converted to volumetric flowrate using a transmitter. The vapor flowrate ranged from 630 to 934 standard cubic feet per minute (scfm) during the 2012 reporting period. These flow ranges correspond to an average of approximately 756 scfm over the entire 2012 reporting period. The air stripper sump pressures ranged from 25 to 32.2 inches of water column (in.W.C.) during the 2012 reporting period. Monthly air stripper performance data are summarized in Table 5.

6.3 Air Stripper Emissions

The GCTS removed an estimated 5.0 lbs of total VOCs from groundwater during the 2012 reporting period. This value was calculated from the quarterly pre-carbon vapor analytical data and the average monthly air stripper effluent vapor flowrate. The estimated total VOC mass removal calculated is most likely on the conservative side as a result of the fact that manhole MH-1, which has the highest influent concentration of VOCs, is always online during the time of the quarterly sample collection. Quarterly estimated mass removal rate data are summarized in Table 6.

VOC removal efficiency of the carbon vessels was tracked throughout the 2012 reporting period. Both cumulative and target VOC percent removal was calculated by comparing the quarterly vapor influent, mid-carbon, and post-carbon analytical results. As noted in Section 3.0, the site specific goal for vapor phase treatment is a 95% mass removal of target VOCs. Percent removals calculated based on effluent results exceeded 95% for the first three quarters of the reporting period. A reduction in mass removal (57%) was calculated for the fourth quarter sampling event. As a precautionary measure a carbon changeout is scheduled for 2013. The changeout is currently pending approval for regeneration by the carbon vendor (Siemens, Darlington, PA), and then subsequently approval of the regeneration profile by the local regulatory agency (PADEP).

The VOC concentrations emitted in the air stripper (pre-carbon, mid-carbon, and post-carbon) were below the allowable annual-guideline concentration (AGC) values (as provided in NYSDEC DAR 1 tables) for each detectable compound. Short-term guideline concentration (SGC) values are not applicable as performance samples are only collected quarterly. Individual VOCs emitted and their estimated maximum

allowable-mass flow-concentrations, as per NYSDEC DAR 1 guidance, are shown in Table 7.

6.4 Water Treatment Chemical Monitoring

As required under the terms of an SPDES permit (permit no. NY0121894), the volume WTC discharged on an annual basis is reported to NYSDEC in the December Monthly Discharge Monitoring Report. The total amount of WTC (i.e., Sequestering Agent - Aries 2908) discharged through the site Outfall 002 during the 2012 reporting was approximately 524 lbs. The total amount of WTC discharged corresponds to an average dosing rate of 16.7 ppm over the entire 2012 reporting period. Monthly WTC consumption, dosing rates, and date of recording are summarized in Table 8.

6.5 Stormwater Monitoring

As presented in Section 5.3, the quarterly stormwater samples contained no detectable concentrations of VOCs above their respective laboratory RLs (as shown in Table 4).

The general absence of constituents detected in the stormwater samples collected at the site continues to indicate that the GCTS is operating as designed and preventing the migration of impacted groundwater into the stormwater system at the locations sampled.

6.6 Groundwater Elevation Measurements

Groundwater elevation measurements are collected from site monitoring wells and piezometers as part of the quarterly O&M program. Groundwater elevations for the reporting period are included in Table 9 and quarterly groundwater contour maps are provided on Figures 3, 4, 5, and 6.

Groundwater elevations are generally consistent with historical measurements at the site and identify the influence of the GCTS at the three collection trenches. Localized fluctuations exist, attributable to variations in subsurface conditions, including building construction, utility corridors, and operation of the GCTS. Measurements indicate general flow toward the south-southeast.

7. 2013 Goals and Recommendations

The information presented in this report indicates that the systems will continue to operate as designed and outlined within the NYSDEC approved *Groundwater Collection and Treatment System 100% Design Work Plan* (ARCADIS 2010), and *Operational, Maintenance, and Monitoring Manual* (ARCADIS 2011). The recommendations and action items planned for during the 2013 reporting period are described in the sections below.

7.1 Goals

The GCTS 2012 remedial and operational goals will be unchanged from those noted in section 3.0. The operational data to be collected includes:

- Quarterly influent-water samples will be collected during the first monthly sampling event of each quarter (i.e., January, April, July, and October);
- Quarterly groundwater-elevation measurements will be collected at all accessible site monitoring-wells and piezometers;
- Quarterly storm-water samples will be collected from the pipe running beneath the manufacturing building and traversing east towards the public storm-drain pipe. These samples will be collected at catch-basin (CB) locations CB-1, CB-2, and CB-3. Samples will be analyzed for VOCs by USEPA Method 8260 and collected and submitted to the laboratory in accordance with procedures outlined in the QAPP;
- Monthly effluent SPDES compliance samples, including tracking the WTC dosing rates;
- Continued demonstration that VOCs concentrations in the GCTS air stripper exhaust (i.e., post-carbon) remain below the NYSDEC DAR 1 guidance values before being discharged to the atmosphere;
- Continued to track the carbon performance in order to maintain the minimum 95% removal goal for target VOCs in the vapor effluent; and
- Daily review of GCTS operation email logs and prompt response to system alarms.

7.2 Recommendations

The following recommendations and action items are planned for implementation during the next reporting period (January through December 2013):

- Continued operation of the GCTS;
- Continued system compliance sampling, including monitoring the pH of the system effluent;
- Continued preventive maintenance and failure-mode-effects analyses to improve system reliability;
- Perform carbon changeout in first quarter of 2013, in response to the noted reduction in carbon efficiency during the fourth quarters of 2011 and 2012;
- NYSDECs review of WET testing results still pending, however, modifications to the SPDES permit are not anticipated with the exception of the requested pH adjustment; and
- Modification of the *OM&M Manual* as needed to include new system enhancements/modifications.

8. References

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ARCADIS

Tables

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
June 1996	Historical data (pre- 2009) has not been included in this table.						
1/17/2009	1/17/09 8:25	1/17/09 9:34	0.05	45	High/low air temperature.	Low ambient air temperature.	Adjusted low temperature alarm setting from 40 to 32 F to account for low ambient temperature.
8/3/2009	7/31/09 9:58	8/3/09 14:38	3.2	40	Wall louver fault.	Power outage due to inclement weather.	Restart system and observe proper operation following storm event.
9/4/2009	9/1/09 15:09	9/4/09 12:47	2.9	NA	Power outage	Power outage due to inclement weather.	Restart system and observe proper operation following storm event.
2009 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		6.1	357.86	98%			
1/25/2010	1/25/10 17:53	1/27/10 7:57	1.6	46/Other	Low Air Flow/System PLC left in manual mode accidentally	Blower influent damper/tray and/or demister pad fouled	Adjust blower damper/Restart system remotely
3/2/2010	3/2/10 17:55	3/3/10 11:31	0.7	42	High level air stripper sump.	Blower influent damper in need of adjustment following air stripper tray cleaning.	Damper adjusted to allow more air flow.
4/7/2010	4/7/10 12:00	4/7/10 18:00	0.3	NA	Quarterly System Testing	NA	NA
4/15/2010	4/15/10 8:00	4/15/10 19:30	0.5	NA	Annual Stripper Cleaning	NA	NA
4/22/2010	4/22/10 6:20	4/22/10 11:08	0.2	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/25/2010	4/25/10 19:08	4/26/10 9:39	0.6	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/27/2010	4/27/10 8:53	4/27/10 14:58	0.3	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/29/2010	4/29/10 16:35	4/30/10 7:41	0.6	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
5/28/2010	5/28/10 16:35	5/31/10 9:40	2.7	NA	Power outage	Power outage due to inclement weather. Electric meter damaged as a result.	Inspect system, temporarily bypass faulty E-meter, perform critical device inspection, restart system and monitor for proper operation.
6/1/2010	6/1/10 14:42	6/2/10 8:55	0.8	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
7/12/2010	7/12/10 16:00	7/16/10 14:31	3.9	0	MH-1 offline for testing phase, air stripper left in auto with MH-2 online.	NA	NA
11/2/2010	11/2/10 22:22	11/3/10 13:45	0.6	41	High Pressure in Air Stripper Sump	Blower damper adjustment.	Adjust air stripper blower damper.
11/10/2010	11/10/10 11:42	11/10/10 20:23	0.4	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/11/2010	11/11/10 9:52	11/11/10 16:21	0.3	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/11/2010	11/11/10 16:37	11/11/10 18:49	0.1	41	High Pressure in Air Stripper Sump	Blower damper adjustment.	Adjust air stripper blower damper.
11/11/2010	11/11/10 19:18	11/12/10 9:08	0.6	41	High Pressure in Air Stripper Sump	Blower damper adjustment.	Adjust air stripper blower damper.
11/12/2010	11/12/10 9:18	11/12/10 12:43	0.1	41	High Pressure in Air Stripper Sump	Blower damper adjustment.	Adjust air stripper blower damper.
11/12/2010	11/12/10 12:55	11/12/10 13:04	0.0	41	High Pressure in Air Stripper Sump	Fouled air stripper trays.	Clean air stripper trays and adjust air stripper blower damper.
11/18/2010	11/18/10 10:23	11/18/10 19:22	0.4	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/19/2010	11/19/10 9:44	11/19/10 17:06	0.3	40	Wall louver damper motor fault.	Power failure due to a system shutdown for system inspection during construction phase.	Restart system after inspection.
11/29/2010[3]	11/29/10 12:53	12/31/10 23:59	23.5	NA	Air Stripper taken permanently offline.	Implementing GCTS system upgrades.	Install temporary air stripper.
2010 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		38.4	326.6	89%			
1/1/2011[4]	1/1/11 0:00	1/24/11 23:59	22.7	NA	Air Stripper taken permanently offline.	Implementing GCTS system upgrades.	Periodically operated system.
1/31/2011	1/31/11 4:30	1/31/11 16:02	0.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Restarted system remotely.
2/2/2011	2/2/11 7:09	2/2/11 11:21	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/8/2011	2/8/11 2:53	2/8/11 8:52	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/8/2011	2/8/11 13:59	2/8/11 19:11	0.2	46	High Pre-Carbon Temperature	Residual heat in duct heater raising pre-carbon temperature following blower/duct heater shutdown.	Modified programming so that duct heater shuts off 2 minutes prior to blower.
2/8/2011	2/8/11 19:51	2/9/11 8:17	0.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
2/11/2011	2/11/11 5:06	2/11/11 11:46	0.3	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/13/2011	2/13/11 18:01	2/17/11 16:03	3.9	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/19/2011	2/19/11 10:31	2/21/11 9:42	2.0	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/24/2011	2/24/11 0:08	2/24/11 8:47	0.4	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Restart system.
2/26/2011	2/26/11 3:23	2/26/11 10:58	0.3	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Restart system.
2/26/2011	2/26/11 13:46	2/28/11 10:22	1.9	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Modified programming so that duct heater shuts off in parallel with blower and pre-carbon temperature alarms are ignored when blower is not operating.
3/14/2011	3/14/11 0:33	3/14/11 10:31	0.4	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/14/2011	3/14/11 23:53	3/15/11 9:14	0.4	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/20/2011	3/20/11 7:16	3/20/11 12:35	0.2	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/23/2011	3/23/11 6:47	3/23/11 11:42	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/26/2011	3/26/11 3:21	3/26/11 9:37	0.3	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/26/2011	3/26/11 21:38	3/29/11 9:52	2.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation. Will replace existing high level sensor with tethered float to allow wider operating range in sump.
6/11/2011	6/11/11 16:53	6/12/11 11:40	0.8	NA	Power outage	Power outage due to inclement weather.	Restart system after inspection.
6/12/2011	6/12/11 23:00	6/13/11 7:15	0.3	47	Low Pre-Carbon Temperature	Duct heater requires local reset following power outage therefore not operating.	Low temperature setpoint temporarily lowered until local restart could be initiated on 6/13/11.
7/9/2011	7/9/11 6:58	7/11/11 8:56	2.1	NA	Power outage	Power outage.	Restart system.
7/12/2011	7/12/11 22:13	7/13/11 12:53	0.6	47	Low Pre-Carbon Temperature	Duct heater requires local reset following power outage therefore not operating.	Duct heater locally reset.
11/21/2011	11/21/11 16:23	11/23/11 12:00	1.8	NA	PLC Reset to "Manual" for unknown reason, identified during remote login following no daily fax receipt.	System reset automatically, exact cause unknown. Suspect cause due to bad remote system reconfiguration due to faulty/interrupted remote connection.	Log into the system remotely and reconfigures the PLC with the latest GCTS File #17.
12/8/2011	12/8/11 10:06	12/9/11 21:00	1.5	46	High Pre-Carbon Temperature	Unknown	Monitor system and temperatures remotely.
12/11/2011	12/11/11 20:06	12/11/11 20:13	0.0	46	High Pre-Carbon Temperature	Unknown	Review datalogger file/site inspection to verify transmitter readings versus field gauge.
12/14/2011	12/12/11 1:17	12/12/11 9:49	0.4	45	High Air Flowrate	Potential drifting associated with transmitter calibration.	Adjust high flow alarm setpoint
12/13/2011	12/13/11 3:50	12/13/11 8:06	0.2	46	High Pre-Carbon Temperature	Potential drifting associated with transmitter calibration.	Adjust high temperature alarm setpoint
2011 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		47	**348**	**88%**			
1/14/2012	1/14/12 19:46	1/15/12 8:10	0.5	32	Low water level in air stripper sump	Increased back pressure from air stripper trays	Temporarily adjust air stripper damper on 1/16/12. Clean air stripper on 1/26/12.
1/26/2012	1/25/12 11:06	1/26/12 13:54	1.1	NA	Annual Stripper Cleaning and float replacement	NA - Scheduled maintenance	NA
1/30/2012	1/30/12 20:03	1/31/12 8:59	0.5	32	Low water level in air stripper sump	Increased back pressure due to air stripper damper being left open too much.	Re-adjust air stripper blower damper on 2/2/12
2/6/2012	2/6/12 16:45	2/7/12 11:00	0.8	42	High water level in air stripper sump	The LSH-100 was tripped during a automated startup when MH-1 was called to pumped. The data logger indicated that the LSH-100 went into alarm several seconds after one of the pumps turned on. The high level alarm is most likely a result of the new level float being set with too short of tether during the initial install.	Manually drained enough water from the air stripper sump in order to clear (un-latch) the high level alarm. The length of the high level float tether was increased 3-inches.

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
3/7/2012	3/7/12 9:06	3/7/12 16:55	0.3	NA	System temporarily taken offline to complete the arc flash study field reconnaissance	NA	NA
4/16/2012	4/16/12 9:18	4/17/12 12:45	1.1	NA	System PLC/building power outage.	Power outage due to inclement weather.	Manually reset PLC UPS/battery backup and restart system. Will test alarm dial-out sequence in the event of a power outage.
4/23/2012	4/23/12 12:27	4/23/12 16:39	0.2	NA	Chris Davern onsite making modification to GCTS cfg file and to test UPS battery	GCTS cfg file was modified to make LSH-100 in the up position be a fatal alarm condition regardless of blower status. UPS battery backup tested successfully, UPS provided power to PLC for approx. 60 minutes.	NA
7/16/2012	7/16/12 5:57	7/16/12 12:12	0.3	47	Low temperature alarm for pre-VPGAC air stream.	Critical device testing activities conducted 7/13/12 resulted in occurrence of internal high temperature alarm for duct heater. Alarm requires local resetting of duct heater, which was not done on 7/13/12.	Mobilize field staff to site and manually reset duct heater high temperature alarm. Restart system.
7/17/2012	7/17/12 18:06	7/18/12 12:16	0.8	42	High water level in air stripper sump	The LSH-100 was tripped following an automated ending of a manhole pumping cycle (i.e., batch). No system adjustments (e.g., damper adjustment) made or observed drift in operational parameters (e.g., air stripper sump pressure).	Mobilize field staff and manually drop liquid level of air stripper sump so that tethered high float LSH-100 will drop into off position. Done by manually partially closing pre-VPGAC butterfly valve to raise air stripper sump pressure and lower air stripper sump elevation. Restart system. Opened damper slightly.
10/11/2012	10/11/12 6:15	10/11/12 13:49	0.3	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Restart system.
10/12/2012	10/12/12 12:10	10/12/12 14:51	0.1	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Inspect transmitter and pitot tube, restart system.
10/13/2012	10/13/12 5:37	10/14/12 18:01	1.5	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Inspect transmitter and pitot tube, restart system.
10/16/2012	10/16/12 8:40	10/17/12 8:35	1.0	NA	Replacement of air stripper gaskets	NA	NA
10/30/2012	10/30/12 12:28	10/30/12 18:50	0.3	NA	Critical Device Testing	NA	NA
11/4/2012	11/4/12 3:37	11/5/12 20:44	1.7	45	Low and High air stripper air flow rates, FT-106.	4-20 mA signal drift from the pressure transmitter FT-106 to the PLC.	Log into system remotely on 11/5/12 at 20:44. Following an inspection of the PLC data logger files the system was restarted and monitored for proper operation. The air flow rate was noted at approximately 550-600 cfm with all three manholes online pumping at a total flow rate of 70 gpm with a corresponding air stripper sump pressure of ~32 in.W.C., which confirmed that sufficient air flow was flowing through the air stripper.
11/7/2012	11/7/12 5:03	11/7/12 9:23	0.2	45	Low and High air stripper air flow rates, FT-106.	4-20 mA signal drift from the pressure transmitter FT-106 to the PLC.	Following receiving the alarm again on 11/7/12 at 5:03 ARCADIS mobilized to site that morning at 9:08 to inspect the system. Following an inspection of the PLC and other major system components, and confirming that the system was operating as intended the Process 45 alarm was changed from a fatal to non-fatal. The system was restarted at 9:23.
12/26/2012	12/26/12 4:24	12/26/12 12:24	0.3	32	Low water level in air stripper sump	Increased back pressure due to air stripper damper being left open too much.	Restart system remotely, monitor for proper operation including flows, pressures, float levels, etc.

2012 % Run Time Summary	Days Offline	Days Online	% Run Time
	11.0	355.0	97%

Notes:

1. Table does not include brief (less than 3 hours [0.1 days]) system shutdowns for routine operation and maintenance activities.

2. Table does not include non-fatal alarms (i.e. low liquid flow, low air flow, etc.) observed during the reporting period.

3. Between 11/29/10 and 12/31/10, temporary system was operational approximately 10 hours (7AM to 5PM) per weekday excluding 12/24/10, 12/30/10, and 12/31/10. System offline for nights and weekends due to lack of safety controls/interlocks and freezing weather conditions.

4. Between 1/1/11 and 1/24/11, the upgraded system was operated on the following dates: 1/13, 1/14, 1/17, 1/18 and 1/20. An average daily run time of 6 hours has been estimated for those dates.

Table 2. Groundwater Collection and Treatment System Effluent Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/L)	SPDES Effluent Limitations (ug/L)	1/8/2009	2/5/2009	3/4/2009	4/1/2009	5/5/2009	6/2/2009	7/1/2009	8/14/2009	9/4/2009	10/9/2009	11/4/2009	12/11/2009	1/12/2010	2/3/2010	3/3/2010	4/7/2010	5/5/2010	6/3/2010	7/8/2010	8/5/2010	9/7/2010	10/6/2010	11/10/2010	12/22/2010
1,1,1-Trichloroethane	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 1.0	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichlorobenzene	10	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
cis-1,2-Dichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Toluene	5	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60
trans-1,2-Dichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	**0.69**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	15	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
pH (S.U.)[2]	**8.5**	**8.36**	**7.31**	**7.10**	**7.47**	**7.61**	**7.43**	**7.00**	**7.08**	**7.84**	**7.07**	**7.04**	**7.13**	**8.13**	**8.51**	**8.51**	**8.53**	**8.62[4]**	**7.19**	**8.5**	**8.1**	**8.3**	**7.8**	**8.1**	**8.0**
Oil & Grease (mg/L)[3]	**-**	NS	NS	NS	NS	NS	< 5.0	**2.5 J**	< 5.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Volatile Organic[1] Compounds (µg/L)	SPDES Effluent Limitations (ug/L)	1/28/11	2/23/11	3/22/11	4/5/11	5/12/11	6/2/11	7/7/11	8/11/11	9/8/11	10/11/11	11/1/11	12/1/11	1/26/12	2/9/12	3/1/12	4/5/12	5/1/12	6/7/12	7/12/12	8/15/12	9/11/12	10/17/12	11/8/12	12/6/12
1,1,1-Trichloroethane	10	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0
o-Xylene	-	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 0.46	**0.47**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 1.0
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0
pH (S.U.)[2]	**8.5**	8.1	**8.2**	**8.1**	**8.1**	**6.9**	**6.8**	**8.1**	**8.2**	**7.9**	**7.8**	**7.8**	**7.7**	**7.9**	**7.92**	**7.86**	**7.1**	**7.94**	**8.23**	**7.82**	**8.14**	**8.14**	**8.4**	**8.15**	**8.17**
Oil & Grease (mg/L)[3]	**-**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.
2. Analyzed in field.
3. Analyzed using United States Environmental Protection Agency (USEPA) Method 1664 A.
4. Several pH measurements were collected in May 2010, ranging from 7.83 to 8.62.

BOLD indicates detected concentrations.

Definitions:

< - less than laboratory detection limit listed
- No Standard
NS - Not Sampled For
mg/L - milligrams per liter
S.U. - Standard Units
µg/L - micrograms per liter

Table 3. Groundwater Collection and Treatment System Influent Groundwater Concentrations, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/L)	MH-1													
	2/4/2009	1/12/2010	4/7/2010	7/8/2010	10/6/2010	12/22/2010	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012
1,1,1-Trichloroethane	< 1.0	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	**8.4**	**9**	**6**	**6**	**6.2**	**3.6**	**4.2**	**2.7**	**8.5**	**5.9**	**4.9**	**8.5**	**10**	**8**
1,2-Dichlorobenzene	< 1.0	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	< 1.0	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	< 1.0	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	**0.70 J**	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	**39**	**44**	**28**	**42**	**35**	**21**	**30**	**19**	**43**	**33**	**28**	**39**	**56**	**43**
Ethylbenzene	< 1.0	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	**31**	**31**	**27**	**29**	**21**	**8.4**	**23**	**18**	**26**	**19**	**16**	**23**	**36**	**28**
Toluene	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	< 1.0	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	**64**	**51**	**55**	**49**	**33**	**11**	**57**	**27**	**57**	**29**	**26**	**52**	**66**	**41**
Vinyl Chloride	**0.50 J**	**0.41 J**	< 1.0	< 1.0	< 1.0	**0.99 J**	**1.3**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 1.0
Xylenes, total	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 1.0

Volatile Organic[1] Compounds (µg/L)	MH-2													
	2/4/2009	1/12/2010	4/7/2010	7/8/2010	10/6/2010	12/22/2010	2/23/2011	4/5/2011[2]	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012
1,1,1-Trichloroethane	< 1.0	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	-	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	**1.6**	**11**	**2**	**2.4**	**2.6**	**1.9**	**1.5**	**-**	**3.5**	**3**	**1.5**	**1.8**	**2.5**	**2.4**
1,2-Dichlorobenzene	< 1.0	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	**-**	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	**-**	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	**-**	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	< 1.0	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	**-**	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	< 1.0	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	**-**	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	**-**	< 0.32	< 0.32	< 0.32	< 0.32	< 0.35	< 0.35
cis-1,2-Dichloroethene	**10**	**47**	**12**	**14**	**13**	**12**	**7.6**	**-**	**12**	**16**	**5.4**	**8.3**	**22**	**13**
Ethylbenzene	< 1.0	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	**-**	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**-**	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	**-**	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	**3.8**	**28**	**3.5**	**9.3**	**7.5**	**4.5**	**2.6**	**-**	**2.8**	**3.6**	**1.6**	**1.7**	< 0.36	**0.76**
Toluene	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	**-**	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	**0.22 J**	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	**-**	< 0.90	< 0.90	< 0.90	< 0.90	**4.9**	**1.6**
Trichloroethene	**6.7**	**53**	**7.5**	**18**	**14**	**8.4**	**4.6**	**-**	**7.7**	**7.5**	**2.8**	**4.8**	**1.6**	**6.7**
Vinyl Chloride	**1.0 J**	< 1.0	**1.4**	**2.3**	**1.8**	**1.5**	**1.5**	**-**	**6.1**	**4.5**	**1.2**	**1.6**	**2.4**	**3.3**
Xylenes, total	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**-**	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 1.0

Volatile Organic[1] Compounds (µg/L)	MH-3								
	1/28/2011	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012
1,1,1-Trichloroethane	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	**3.7**	**2.3**	**3.5**	**3.8**	**3.1**	**2.5**	**2.7**	**3.2**	< 0.81
Ethylbenzene	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66
o-Xylene	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	**1.2**	**1.1**	**12**	**21**	**23**	**33**	**49**	**49**	< 0.36
Toluene	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	**4.2**	**5.6**	**9**	**19**	**13**	**16**	**17**	**22**	< 0.46
Vinyl Chloride	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90
Xylenes, total	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.
2. Manhole MH-2 not sampled during Second Quarter 2011 event due to manhole being offline for pump replacement.

BOLD indicates detected concentrations.

Definitions:

< - less than laboratory detection limit listed

"-" - Analyte Not Analyzed For

J - Indicates concentration is estimated

µg/L - micrograms per liter

Table 4. Stormwater Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[(1)] Compounds (µg/L)	SPDES Effluent Limitations (µg/L)	CB-1											
		1/12/2010	4/7/2010	7/8/2010	12/22/2010	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/16/2012
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	< 0.75	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66
Volatile Organic[(1)] Compounds (µg/L)	**SPDES Effluent Limitations (µg/L)**	**CB-2**											
		1/12/2010	**4/7/2010**	**7/8/2010**	**12/22/2010**	**2/23/2011**	**4/5/2011**	**7/7/2011**	**10/11/2011**	**1/26/2012**	**4/5/2012**	**7/12/2012**	**10/16/2012**
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	< 0.75	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66
Volatile Organic[(1)] Compounds (µg/L)	**SPDES Effluent Limitations (µg/L)**	**CB-3**											
		1/12/2010	**4/7/2010**	**7/8/2010**	**12/22/2010**	**2/23/2011**	**4/5/2011**	**7/7/2011**	**10/11/2011**	**1/26/2012**	**4/5/2012**	**7/12/2012**	**10/16/2012**
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	**0.85**	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	**1.9**	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	**0.51**	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 0.46	< 0.46	**0.69**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.

BOLD indicates detected concentrations.

Definitions:

< - less than laboratory detection limit listed

µg/L - micrograms per liter

ARCADIS

Table 5. Groundwater Collection and Treatment System Flowrates, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Cumulative			MH-1			MH-2			MH-3			Air Stripper Parameters		
	Permanent Flow (gallons)	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons)	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons)	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons)	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Sump Pressure (In. W.C.)	Differential Pressure (In. W.C.)	Vapor Phase Flowrate (scfm)[3]
1/8/2009	51,642,496	547,845	10.3	43,857,473	468,600	8.8	7,785,023	79,245	1.5	-	-	-	14.0	1.0	1,398
2/5/2009	51,882,819	240,323	6.0	44,074,280	216,807	5.4	7,808,539	23,516	0.6	-	-	-	14.0	1.0	1,398
3/4/2009	52,290,566	407,747	10.5	44,426,462	352,182	9.1	7,864,104	55,565	1.4	-	-	-	15.0	1.0	1,398
4/1/2009	52,820,498	529,932	13.1	44,879,781	453,319	11.2	7,940,717	76,613	1.9	-	-	-	14.0	1.0	1,398
5/5/2009	53,224,271	403,773	8.2	45,236,249	356,468	7.3	7,988,022	47,305	1.0	-	-	-	14.0	1.0	1,398
6/2/2009	53,499,861	275,590	6.8	45,470,774	234,525	5.8	8,029,087	41,065	1.0	-	-	-	15.0	1.5	1,712
7/1/2009	53,736,159	236,298	5.7	45,666,782	196,008	4.7	8,069,377	40,290	1.0	-	-	-	15.0	1.5	1,712
8/14/2009	54,078,743	342,584	5.4	45,940,852	274,070	4.3	8,137,891	68,514	1.1	-	-	-	14.0	1.5	1,712
9/4/2009	54,230,373	151,630	5.0	46,060,707	119,855	4.0	8,169,666	31,775	1.1	-	-	-	14.0	1.5	1,712
10/9/2009	54,512,663	282,290	5.6	46,289,841	229,134	4.5	8,222,822	53,156	1.1	-	-	-	14.5	1.0	1,398
11/4/2009	54,750,788	238,125	6.4	46,494,959	205,118	5.5	8,255,829	33,007	0.9	-	-	-	14.5	1.0	1,398
12/11/2009	55,029,188	278,400	5.2	46,722,959	228,000	4.3	8,306,229	50,400	0.9	-	-	-	14.0	1.3	1,594
2009 Totals[1]	**-**	**3,934,537**	**7.3**	**-**	**3,334,086**	**6.2**	**-**	**600,451**	**1.1**	-	-	-	**14.3**	**1.2**	**1,519**
1/12/2010	55,368,138	338,950	7.4	47,041,049	318,090	6.9	8,327,089	20,860	0.5	-	-	-	18.0	1.2	1,531
2/3/2010	55,615,048	246,910	7.8	47,254,345	213,296	6.7	8,360,703	33,614	1.1	-	-	-	24.0	1.0	1,398
3/3/2010	55,830,985	215,937	5.4	47,442,614	188,269	4.7	8,388,371	27,668	0.7	-	-	-	11.0	1.7	1,823
4/7/2010	56,443,357	612,372	12.2	47,970,713	528,099	10.5	8,472,644	84,273	1.7	-	-	-	12.0	1.5	1,712
5/5/2010	56,705,454	262,097	6.5	48,202,863	232,150	5.8	8,502,591	29,947	0.7	-	-	-	17.5	2.7	2,297
6/3/2010	56,921,019	215,565	5.2	48,388,351	185,488	4.4	8,532,668	30,077	0.7	-	-	-	16.1	2.7	2,297
7/7/2010	57,256,158	335,139	6.8	48,646,601	258,250	5.3	8,609,557	76,889	1.6	-	-	-	15.5	2.4	2,166
8/5/2010	57,518,041	261,883	6.3	48,863,064	216,463	5.2	8,654,977	45,420	1.1	-	-	-	15.9	2.2	2,073
9/7/2010	57,797,649	279,608	5.9	49,095,255	232,191	4.9	8,702,394	47,417	1.0	-	-	-	18.5	1.9	1,927
10/5/2010	58,082,548	284,899	7.1	49,327,736	232,481	5.8	8,754,812	52,418	1.3	-	-	-	17.0	2.0	1,977
11/2/2010	58,456,895	374,347	9.3	49,643,060	315,324	7.8	8,813,835	59,023	1.5	-	-	-	22.0	0.9	1,289
12/22/2010	59,009,574	552,679	7.7	50,101,316	458,256	6.4	8,908,258	94,423	1.3	-	-	-	17.0	NA[2]	NA[2]
2010 Totals[2]	**-**	**3,980,386**	**7.4**	**-**	**3,378,357**	**6.2**	**-**	**602,029**	**1.1**	**-**	**-**	**-**	**17.0**	**1.8**	**1,863**
1/28/2011	59,088,966	79,392	1.5	50,142,913	41,597	0.8	8,930,851	22,593	0.4	15,202	-	-	25.9	-	718
2/23/2011	59,483,460	394,494	10.5	50,432,263	289,350	7.7	8,976,813	45,962	1.2	74,384	59182.0	1.6	26.0	-	742
3/22/2011	60,118,863	635,403	16.3	50,940,888	508,625	13.1	9,102,550	125,737	3.2	75,425	1041.0	0.0	26.2	-	681
4/5/2011	60,264,174	145,311	7.2	51,085,909	145,021	7.2	9,102,790	240	0.0	75,475	50	0.0	29.0	-	663
5/12/2011	61,189,715	925,541	17.4	51,609,588	523,679	9.8	9,161,683	58,893	1.1	418,444	342,969	9.2	26.5	-	553
6/2/2011	61,557,472	367,757	12.2	51,834,699	225,111	7.4	9,189,679	27,996	0.9	533,094	114,650	2.9	26.5	-	618
7/7/2011	61,975,516	418,044	8.3	52,075,707	241,008	4.8	9,227,668	37,989	0.8	672,141	139,047	2.8	25.2	-	636
8/11/2011	62,296,730	321,214	6.4	52,243,445	167,738	3.3	9,265,879	38,211	0.8	787,406	115,265	2.3	26.5	-	651
9/8/2011	62,817,398	520,668	12.9	52,508,569	265,124	6.6	9,342,539	76,660	1.9	966,290	178,884	4.4	28.5	-	609
10/11/2011	63,444,585	627,187	13.2	52,883,146	374,577	7.9	9,400,121	57,582	1.2	1,161,318	195,028	4.1	27.0	-	715
11/1/2011	63,764,975	320,390	10.6	53,071,145	187,999	6.2	9,435,095	34,974	1.2	1,258,735	97,417	3.2	27.0	-	784
12/1/2011	64,185,589	420,614	9.7	53,345,456	274,311	6.3	9,469,773	34,678	0.8	1,370,360	111,625	2.6	27.0	-	739
2011 Totals[2][5]	-	**5,176,015**	**10.4**	-	**3,244,140**	**6.5**	-	**561,515**	**1.1**	-	**1,355,158**	**2.7**	**26.8**	-	**676**
1/27/2012	64,972,202	786,613	9.6	53,871,038	525,582	6.4	9,542,467	72,694	0.9	1,558,697	188,337	2.3	32.2	-	745
2/9/2012	65,195,486	223,284	11.9	54,009,006	137,968	7.4	9,573,810	31,343	1.7	1,612,670	53,973	2.9	29.0	-	787
3/1/2012	65,448,455	252,969	8.4	54,180,412	171,406	5.7	9,596,526	22,716	0.8	1,671,517	58,847	1.9	29.0	-	766
First Quarter 2012	-	**1,262,866**	**9.6**	-	**834,956**	**6.4**	-	**126,753**	**1.0**	-	**301,157**	**2.3**	**30.1**	-	**766**
4/5/2012	65,853,255	404,800	8.0	54,447,552	267,140	5.3	9,635,004	38,478	0.8	1,770,699	99,182	2.0	27.0	-	740
5/1/2012	66,090,367	237,112	6.3	54,595,683	148,131	4.0	9,661,648	26,644	0.7	1,833,036	62,337	1.7	26.6	-	805
6/7/2012	66,591,098	500,731	9.4	54,904,479	308,796	5.8	9,710,985	49,337	0.9	1,975,634	142,598	2.7	27.4	-	752
Second Quarter 2012	-	**1,142,643**	**8.1**	-	**724,067**	**5.1**	-	**114,459**	**0.8**	-	**304,117**	**2.2**	**27.0**	-	**766**
7/12/2012	66,828,112	237,014	4.7	55,041,035	136,556	2.7	9,738,010	27,025	0.5	2,049,067	73,433	1.5	25.0	-	630
8/15/2012	67,068,471	240,359	4.9	55,163,445	122,410	2.5	9,766,492	28,482	0.6	2,138,534	89,467	1.8	27.7	-	701
9/11/2012	67,259,158	190,687	4.9	55,259,345	95,900	2.5	9,790,891	24,399	0.6	2,208,922	70,388	1.8	27.7	-	761
Third Quarter 2012	-	**668,060**	**4.8**	-	**354,866**	**2.6**	-	**79,906**	**0.6**	-	**233,288**	**1.7**	**26.8**	-	**697**
10/17/2012	67,568,957	309,799	6.0	55,424,161	164,816	3.2	9,830,240	39,349	0.8	2,314,556	105,634	2.0	26.2	-	677
11/8/2012	67,777,512	208,555	6.6	55,542,079	117,918	3.7	9,852,388	22,148	0.7	2,383,045	68,489	2.2	30.8	-	778
12/6/2012	67,979,019	201,507	5.0	55,665,689	123,610	3.1	9,874,745	22,357	0.6	2,438,585	55,540	1.4	29.3	-	934
Fourth Quarter 2012	-	**719,861**	**5.8**	-	**406,344**	**3.3**	-	**83,854**	**0.7**	-	**229,663**	**1.9**	**28.8**	-	**796**
2012 Totals	-	**3,793,430**	**7.1**	-	**2,320,233**	**4.3**	-	**404,972**	**0.8**	-	**1,068,225**	**2.0**	**28.2**	-	**756**
1/15/2013	68,601,819	622,800	10.8	56,064,192	398,503	6.9	9,937,367	62,622	1.1	2,600,260	161,675	2.8	29.6		830

Notes:

1. 2009 Totals include data between 12/8/2008 and 12/11/2009.

2. Existing air stripper taken offline on 11/29/10 and temporary air stripper in operation through end of 2010 while system upgrades were being implemented. Current air stripper operated intermittently in January 2011 on the dates of 1/13, 1/14, 1/17, 1/18 and 1/20. Current air stripper brought online permanently in February 2011.

3. Prior to 2011, vapor phase flowrate calculated using the Air Velocity Measurement formula as provided in the Dwyer Instruments catalog. Differential pressure used in the blower intake pipe, and constants for temperature (70°F) and barometric pressure (29.92 in.Hg.) were assumed. Following the beginning of 2011, the vapor phase flowrate has been obtained from flow transmitter FT-106.

5. Manhole MH-2 offline for pump replacement from 3/22/11 to 4/20/11.

Definitions:

gpm - gallons per minute

In. W.C. - Inches of Water Column

cfm - cubic feet per minute

NA - Not applicable

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[(1)] Compounds (µg/m^3)	Pre-Carbon																	
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83	
1,1,2,2-Tetrachloroethane	< 1.00		< 1.0		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83	
1,1-Dichloroethane	< 0.62		**18**		**19**		**71**		**41**		**38**		**49**		**150**		**44**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		**0.81**		**0.48**	**J**	<0.60		**0.97**		**1.2**		**0.87**	
1,2,4-Trichlorobenzene	< 1.10		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
1,2,4-Trimethylbenzene	**1**		**4.6**		**1.6**		**1.3**		< 0.75		**0.5**	**J**	< 0.75		**1.8**		**0.9**	
1,2-Dibromoethane	< 1.20		< 1.2		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70	
1,3,5-Trimethylbenzene	< 0.75		**1.5**		< 0.75		< 0.75		< 0.75		< 0.75		< 0.75		**0.65**	**J**	< 0.75	
1,3-butadiene	< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,4-Dioxane	< 1.10		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
2,2,4-trimethylpentane	< 0.71		**0.76**		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71	
4-ethyltoluene	**0.6**	**J**	**1.1**		< 0.75		< 0.75		< 0.75		< 0.75		< 0.75		**0.5**	**J**	< 0.75	
Acetone	**29**		**21**		**10**		**14**		**3.7**		**81**		**3.7**		**16**		**21**	
Allyl chloride	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48	
Benzene	< 0.49		**1.5**		**0.91**		**0.39**	**J**	**0.75**		**1.2**		**0.42**	**J**	**0.65**		**0.32**	**J**
Benzyl chloride	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88	
Bromodichloromethane	< 1.00		< 1.0		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
Bromoform	< 1.60		< 1.6		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60	
Bromomethane	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59	
Carbon disulfide	< 0.47		< 0.47		< 0.47		**0.32**	**J**	< 0.47		< 0.47		< 0.47		**1.3**		< 0.47	
Carbon tetrachloride	< 0.96		**0.77**	**J**	< 0.96		**0.9**	**J**	**0.38**	**J**	**0.38**	**J**	< 0.96		< 0.96		< 0.96	
Chlorobenzene	< 0.70		**0.66**	**J**	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70	
Chloroethane	< 0.40		**1.2**		< 0.40		< 0.40		**0.86**		<0.40		**1.3**		**1.2**		< 0.40	
Chloroform	< 0.74		**5.7**		**10**		**8.5**		**1.3**		**1.8**		**0.94**		**1.9**		**1**	
Chloromethane	**1.2**		**0.84**		< 0.31		< 0.31		**0.57**		< 0.31		**0.9**		< 0.31		< 0.31	
cis-1,2-Dichloroethene	< 0.60		**220**		**140**		**840**		**210**		**200**		**510**		**430**		**200**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69	
Cyclohexane	< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52	
Dibromochloromethane	< 1.30		< 1.3		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30	
Ethyl acetate	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
Ethylbenzene	**2.8**		**2.3**		**0.71**		< 0.66		< 0.66		**0.49**	**J**	< 0.66		**1.3**		< 0.66	
Freon 11	< 0.86		**1.7**		**6**		**1.8**		**1.1**		**2**		**1.5**		**2.5**		**1.7**	
Freon 113	< 1.20		**110**		**60**		**170**		**83**		**30**		**130**		**380**		**110**	
Freon 114	< 1.10		< 1.1		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
Freon 12	**0.65**	**J**	**2.8**		**3.4**		**2.7**		**1.6**		**2.6**		**5.8**		< 0.75		**2.8**	
Heptane	< 0.62		**0.92**		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		**0.5**	**J**	< 0.62	
Hexachloro-1,3-butadiene	< 1.60		< 1.6		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60	
Hexane	< 0.54		< 0.54		< 0.54		< 0.54		**0.75**		**0.75**		< 0.54		**0.64**		< 0.54	
Isopropyl alcohol	< 0.37		**4.3**		**5.4**		< 0.37		< 0.37		**3.5**		< 0.37		**2**		< 0.37	
m&p-Xylene	**7.9**		**8.5**		**2.3**		**1.6**		**0.75**	**J**	**1.3**		< 1.30		**4.7**		< 1.30	
Methyl Butyl Ketone	< 1.20		< 1.2		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
Methyl Ethyl Ketone	**10**		**2.7**		**2.5**		< 0.90		**1.2**		**4**		**0.42**	**J**	**1.6**		**1.1**	
Methyl Isobutyl Ketone	< 1.20		< 1.2		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		**0.66**		**1.6**		< 0.55	
Methylene chloride	< 0.53		**1.8**		**1.8**		**1.8**		**0.56**		**1.2**		**2**		**2.6**		**1**	
o-Xylene	**1.4**		**3.1**		**0.66**		**0.62**	**J**	< 0.66		**0.49**	**J**	< 0.66		**1.7**		< 0.66	
Propylene	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26	
Styrene	**0.52**	**J**	< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65	
Tetrachloroethylene	**0.83**	**J**	**110**		**180**		**460**		**140**		**290**		< 97.00		**470**		**240**	
Tetrahydrofuran	**72**		**2.4**		**5.1**		< 0.45		**0.96**		< 0.45		< 0.45		**1.8**		< 0.45	
Toluene	**5.7**		**7.2**		**2.3**		**1.5**		**1.9**		**2.3**		< 0.57		**6.1**		**2.1**	
trans-1,2-Dichloroethene	< 0.60		**0.64**		**1.5**		**1.1**		**1.4**		**1.7**		< 0.60		**3.2**		< 0.60	
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69	
Trichloroethene	**0.71**	**J**	**350**		**220**		**1,200**		**180**		**210**		< 76.00		**480**		**250**	
Vinyl acetate	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67	
Vinyl chloride	< 0.39		**4.7**		**2.3**		**3**		**1.7**		**3.9**		< 0.39		**2.3**		**2.6**	
Cumulative VOCs (µg/m^3)[(2)]	134.31		890.69		675.48		2,781.34		673.96		877.11		707.61		1,967.74		879.39	
Cum % Removal	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Target VOCs (µg/m^3)[(3)]	1.54		680.64		541.50		2,501.10		531.40		701.70		510.00		1,383.20		690.00	
Target % Removal	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Manholes Online[4]	MH-3^A		MH-1^A		MH-1, 3^A		MH-1^M		MH-1^A		MH-1, 2, 3^M		MH-1^M		MH-1^M		MH-1^A	

Notes:

1. Samples analyzed for VOCs using USEPA Method TO-15.
2. Cumulative VOCs calculated using only detected concentrations.
3. Target VOCs calculated using only detected concentrations of the following compounds: 1,1-dichloroethene, cis-1,2-dichloroethene, tetrachloroethylene, trans-1,2-dichloroethene, and trichloroethene.
4. Indicates which manhole(s) were online during the sampling event.

BOLD indicates detected concentrations.

Definitions:

< - less than reporting limit listed

J - indicates concentration is estimated

µg/m^3 - micrograms per cubic meter

A - indicates that the system/manhole(s) was batching automatically during the sampling event

M - indicates that the air stripper/manhole(s) was turned on manually in order to collect a vapor sample.

NA - not applicable

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/m^3)	Mid-Carbon																	
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83	
1,1,2,2-Tetrachloroethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83	
1,1-Dichloroethane	**0.49**	**J**	< 0.62		< 0.62		**0.66**		**10**		**2.5**		**0.82**		**46**		**6.2**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		**1.7**		< 0.60	
1,2,4-Trichlorobenzene	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
1,2,4-Trimethylbenzene	**1.9**		**2.1**		**3**		**14**	**J**	< 0.75		**5.9**		**0.65**	**J**	**1.2**		**0.6**	**J**
1,2-Dibromoethane	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70	
1,3,5-Trimethylbenzene	**0.8**		**0.8**		**1**		**4.4**		< 0.75		**1.4**		< 0.75		< 0.75		< 0.75	
1,3-butadiene	< 0.34		< 0.34		<0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,4-Dioxane	**2.3**		< 1.10		< 1.10		**1.3**		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
2,2,4-trimethylpentane	< 0.71		**0.66**	**J**	< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71	
4-ethyltoluene	**0.6**	**J**	**0.95**		**2.2**		**3.5**		< 0.75		**0.9**		< 0.75		< 0.75		< 0.75	
Acetone	**20**		**37**		**7.5**		**25**		**3.5**		**4.3**		**1.9**		**4.2**		**4.4**	
Allyl chloride	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48	
Benzene	**2**		**0.81**		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49	
Benzyl chloride	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88	
Bromodichloromethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
Bromoform	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60	
Bromomethane	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59	
Carbon disulfide	< 0.47		< 0.47		< 0.47		**0.32**	**J**	**0.85**		< 0.47		< 0.47		**1.4**		< 0.47	
Carbon tetrachloride	**0.77**	**J**	< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96	
Chlorobenzene	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70	
Chloroethane	< 0.40		< 0.40		< 0.40		< 0.40		**0.46**		**0.8**		**0.54**		< 0.40		< 0.40	
Chloroform	**8.9**		< 0.74		< 0.74		< 0.74		**3.7**		**0.5**	**J**	< 0.74		**2.7**		**2.2**	
Chloromethane	**1.2**		**0.57**		< 0.31		< 0.31		**0.59**		< 0.31		**0.76**		< 0.31		**0.78**	
cis-1,2-Dichloroethene	**24**		< 0.60		< 0.60		**0.44**	**J**	**63**		**25**		**8.5**		**110**		**190**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69	
Cyclohexane	< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52	
Dibromochloromethane	< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30	
Ethyl acetate	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
Ethylbenzene	**0.97**		**4.5**		**8.2**		**7.5**		**0.71**		< 0.66		< 0.66		**0.66**		< 0.66	
Freon 11	**3.1**		< 0.86		< 0.86		**9.9**		**1.5**		**0.86**		< 0.86		**8.5**		**1**	
Freon 113	**1.2**		< 1.20		< 1.20		< 1.20		**16**		**0.93**		< 1.20		**66**		**12**	
Freon 114	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
Freon 12	**3.6**		**4.2**		**4**		**5.7**		**3.8**		**2.6**		**1.6**		< 0.75		**2.5**	
Heptane	**0.62**		**0.79**		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62	
Hexachloro-1,3-butadiene	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60	
Hexane	**0.9**		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54	
Isopropyl alcohol	< 0.37		**5.3**		< 0.37		< 0.37		< 0.37		< 0.37		**0.52**		< 0.37		**0.52**	
m&p-Xylene	**2.4**		**34**	**J**	**20**		**75**		**3.1**		**1.9**		**1.2**	**J**	**3**		< 1.30	
Methyl Butyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
Methyl Ethyl Ketone	**3.1**		< 0.90		**1.9**		**1.7**		**0.87**	**J**	**0.9**		< 0.90		**0.9**		< 0.90	
Methyl Isobutyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55	
Methylene chloride	**0.6**		**0.6**		< 0.53		**1.4**		**1.3**		**0.81**		**1.2**		**3.5**		**0.78**	
o-Xylene	**0.71**		**5.2**		**5.7**		**30**		**1.6**		**0.88**		**0.62**	**J**	**1.2**		< 0.66	
Propylene	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26	
Styrene	**0.48**	**J**	< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65	
Tetrachloroethylene	**8.8**		< 1.00		< 1.00		**1.5**		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
Tetrahydrofuran	**12**		**5.5**		**8.4**		**4.2**		**6.5**		**1.8**		< 0.45		**5.8**		**2.7**	
Toluene	**4**		**21**	**J**	**21**		**39**		**2.2**		**0.69**		**4.9**		**3.3**		**0.69**	
trans-1,2-Dichloroethene	**1**		< 0.60		< 0.60		< 0.60		**1.1**		< 0.60		< 0.60		**1.2**		< 0.60	
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69	
Trichloroethene	**32**		< 0.82		< 0.82		**3.2**		**0.49**	**J**	< 0.82		< 0.82		< 0.82		**0.66**	**J**
Vinyl acetate	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67	
Vinyl chloride	< 0.39		**2.3**		**1.6**		**2.6**		**2.3**		**2.1**		**1**		**2.1**		**1.6**	
Cumulative VOCs (µg/m^3)[2]	138.44		126.28		84.50		231.32		123.57		54.77		24.21		263.36		226.63	
Cum % Removal	NA		86%		87%		92%		82%		94%		97%		87%		74%	
Target VOCs (µg/m^3)[3]	65.80		0.00		0.00		5.14		64.59		25.00		8.50		111.20		190.66	
Target % Removal	NA		100%		100%		100%		88%		96%		98%		92%		72%	
Manholes Online[4]	MH-3^A		MH-1^A		MH-1, 3^A		MH-1^M		MH-1^A		MH-1, 2, 3^M		MH-1^M		MH-1^M		MH-1^A	

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/m^3)	Effluent																	
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		**0.72**	**J**
1,1,2,2-Tetrachloroethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83	
1,1-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		**17**		**2.4**		**0.82**		**12**		**35**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		**0.48**	**J**	< 0.60		< 0.60		**0.64**		**0.69**	
1,2,4-Trichlorobenzene	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
1,2,4-Trimethylbenzene	**1.5**		**3.7**		**1.3**		**3.3**		< 0.75		< 0.75		< 0.75		**2.1**		**1.2**	
1,2-Dibromoethane	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70	
1,3,5-Trimethylbenzene	**0.65**	**J**	**1.4**		**0.65**	**J**	**1.3**		< 0.75		< 0.75		< 0.75		**0.95**		**0.75**	
1,3-butadiene	< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
1,4-Dioxane	**1.6**		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
2,2,4-trimethylpentane	< 0.71		**0.81**		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71	
4-ethyltoluene	< 0.75		**0.95**		**0.8**		**0.95**		< 0.75		< 0.75		< 0.75		**0.6**	**J**	< 0.75	
Acetone	**100**		**27**		**8.5**		**6.2**		**4.4**		**5**		**3.9**		< 0.72		**140**	
Allyl chloride	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48	
Benzene	**1.1**		**1.2**		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		**0.49**		**0.36**	**J**
Benzyl chloride	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88	
Bromodichloromethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00	
Bromoform	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60	
Bromomethane	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59	
Carbon disulfide	< 0.47		< 0.47		< 0.47		**0.47**		**0.38**	**J**	< 0.47		< 0.47		**1.1**		**1.6**	
Carbon tetrachloride	< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96	
Chlorobenzene	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70	
Chloroethane	< 0.40		< 0.40		< 0.40		< 0.40		**0.54**		< 0.40		< 0.40		< 0.40		< 0.40	
Chloroform	< 0.74		< 0.74		< 0.74		< 0.74		**4.2**		**0.55**	**J**	< 0.74		**2.9**		**6**	
Chloromethane	**1.3**		**0.8**		**0.94**		**1.2**		**0.92**		< 0.31		**0.76**		< 0.31		< 0.31	
cis-1,2-Dichloroethene	**9.7**	**J**	< 0.60		< 0.60		< 0.60		**32**		**12**		**5**		**54**		**290**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69	
Cyclohexane	< 0.52		< 0.52		< 0.52		**0.66**		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52	
Dibromochloromethane	< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30	
Ethyl acetate	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92	
Ethylbenzene	**0.97**		**2.4**		**1.5**		**1.8**		< 0.66		< 0.66		< 0.66		**1.3**		< 0.66	
Freon 11	< 0.86		< 0.86		< 0.86		< 0.86		**1.9**		**1.4**		**0.63**	**J**	**12**		**3.2**	
Freon 113	< 1.20		< 1.20		< 1.20		< 1.20		**22**		**22**		< 1.20		**9.7**		**83**	
Freon 114	**0.85**	**J**	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10	
Freon 12	**4.3**		**2.9**		**2.5**		**3.7**		**4.3**		**3.7**		**1.6**		< 0.75		**3.2**	
Heptane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62	
Hexachloro-1,3-butadiene	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60	
Hexane	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54	
Isopropyl alcohol	< 0.37		**6.7**		**4.2**		< 0.37		< 0.37		< 0.37		**1.3**		< 0.37		**20**	
m&p-Xylene	**2.7**		**9.9**		**7.2**		**8.4**		< 1.30		**1.3**		< 1.30		**6**		**0.71**	**J**
Methyl Butyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
Methyl Ethyl Ketone	**22**		< 0.90		**2**		**1.9**		**1.5**		< 0.90		< 0.90		**0.99**		**0.72**	**J**
Methyl Isobutyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55	
Methylene chloride	< 0.53		**0.64**		**1.2**		**2.4**		**0.95**		**0.74**		**3.5**		**4.2**		**16**	
o-Xylene	**0.88**		**3.8**		**1.8**		**2.5**		< 0.66		< 0.66		< 0.66		**2.2**		< 0.66	
Propylene	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26	
Styrene	**0.65**		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65	
Tetrachloroethylene	**1.9**		**0.83**	**J**	< 1.00		< 1.00		**1.2**		< 0.10		**1**		< 1.00		< 1.00	
Tetrahydrofuran	**110**		**6.3**		**6**		**3.7**		**9.7**		**2.8**		**2.9**		**12**		**16**	
Toluene	**2.1**		**8.1**		**1.4**		**2.5**		**0.69**		**0.73**		**0.57**		**6.9**		**2.4**	
trans-1,2-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		**0.44**	**J**	< 0.60		< 0.60		< 0.60		**1.3**	
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69	
Trichloroethene	**21**		< 0.82		< 0.82		< 0.82		< 0.82		< 0.82		**1.4**		< 0.82		**3.7**	
Vinyl acetate	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67	
Vinyl chloride	< 0.39		**2.1**		**1**		**3.2**		**3.7**		**2.7**		**1.1**		**3.5**		**2.2**	
Cumulative VOCs (µg/m^3)[2]	283.20		79.53		40.99		44.18		106.30		55.32		24.48		133.57		628.75	
Cum % Removal	NA		91%		94%		98%		84%		94%		97%		93%		29%	
Target VOCs (µg/m^3)[3]	32.60		0.83		0.00		0.00		33.64		12.00		7.40		54.00		295.00	
Target % Removal	NA		100%		100%		100%		94%		98%		99%		96%		57%	
Manholes Online[4]	MH-3^A		MH-1^A		MH-1, 3^A		MH-1^M		MH-1^A		MH-1, 2, 3^M		MH-1^M		MH-1^M		MH-1^A	

Table 7. Summary of Estimated Air Stripper Emissions, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic Compounds[1]	AGC[2] (µg/m^3)	SGC[2] (µg/m^3)	Maximum Effluent Concentration (µg/m^3)[3]	1/28/2011 Result (µg/m3)	2/23/2011 Result (µg/m3)	4/4/2011 Result (µg/m3)	7/7/2011 Result (µg/m3)	10/12/2011 Result (µg/m3)	1/26/2012 Result (µg/m3)	4/5/2012 Result (µg/m3)	7/12/2012 Result (µg/m3)	10/17/2012 Result (µg/m3)	Maximum Emission Rate (lb/day)[4]	Actual Annual Impact (µg/m^3)[5]	Actual Annual Impact Percentage of AGC (%)
1,1,1-Trichloroethane	5,000	9,000	0.72	ND	ND	ND	ND	ND	ND	ND	ND	**0.72**	4.88E-05	5.70E-05	0.00
1,1-Dichloroethane	0.63	-	35	ND	ND	ND	ND	**17**	**2.4**	**0.82**	**12**	**35**	2.37E-03	2.77E-03	0.44
1,1-Dichloroethene	70	-	0.69	ND	ND	ND	ND	ND	ND	ND	**0.64**	**0.69**	4.68E-05	5.46E-05	0.00
1,2,4-Trimethylbenzene	290	-	3.7	**1.5**	**3.7**	**1.3**	**3.3**	ND	ND	ND	**2.1**	**1.2**	2.51E-04	3.05E-04	0.00
1,3,5-Trimethylbenzene	290	-	1.4	**0.65 J**	**1.4**	**0.65 J**	**1.3**	ND	ND	ND	**0.95**	**0.75**	9.49E-05	1.15E-04	0.00
1,4-Dioxane	0.13	3,000	1.6	**1.6**	ND	ND	ND	ND	ND	ND	ND	ND	1.08E-04	1.32E-04	0.10
2,2,4-trimethylpentane	3,300	-	0.81	ND	**0.81**	ND	ND	ND	ND	ND	ND	ND	5.49E-05	6.67E-05	0.00
4-ethyltoluene	-	-	0.95	ND	**0.95**	**0.8**	**0.95**	ND	ND	ND	**0.6**	ND	6.44E-05	7.82E-05	-
Acetone	28,000	180,000	140	**100**	**27**	**8.5**	**6.2**	**4.4**	**5**	**3.9**	ND	**140**	9.49E-03	1.15E-02	0.00
Benzene	0.13	1,300	1.2	**1.1**	**1.2**	ND	ND	ND	ND	ND	**0.49**	**0.36**	8.14E-05	9.88E-05	0.08
Carbon disulfide	700	6,200	1.6	ND	ND	ND	**0.47**	ND	ND	ND	**1.1**	**1.6**	1.08E-04	1.32E-04	0.00
Chloroform	0.043	150	6	ND	ND	ND	0	ND	ND	ND	**2.9**	6	4.07E-04	4.94E-04	1.15
Chloromethane	90	22,000	1.3	**1.3**	**0.8**	**0.94**	**1.2**	**0.92**	ND	**0.76**	ND	ND	8.81E-05	1.07E-04	0.00
cis-1,2-Dichloroethene	63	-	290	**9.7 J**	ND	ND	ND	**32**	**12**	**5**	**54**	**290**	1.97E-02	2.39E-02	0.04
Cyclohexane	6,000	-	0.66	ND	ND	ND	**0.66**	ND	ND	ND	ND	ND	4.47E-05	5.43E-05	0.00
Ethylbenzene	1,000	54,000	2.4	**0.97**	**2.4**	**1.5**	**1.8**	ND	ND	ND	**1.3**	ND	1.63E-04	1.98E-04	0.00
Freon 11	1,000	68,000	12	ND	ND	ND	ND	ND	**1.4**	**0.63 J**	**12**	**3.2**	8.14E-04	9.88E-04	0.00
Freon 113	180,000	960,000	83	ND	ND	ND	ND	ND	**22**	ND	**9.7**	**83**	5.63E-03	6.83E-03	0.00
Freon 12	12,000	-	4.3	**4.3**	**2.9**	**2.5**	**3.7**	**4.3**	**3.7**	**1.6**	ND	**3.2**	2.92E-04	3.54E-04	0.00
Isopropyl alcohol	7,000	98,000	20	ND	**6.7**	**4.2**	ND	ND	ND	**1.3**	ND	**20**	1.36E-03	1.65E-03	0.00
m&p-Xylene	100	4,300	9.9	**2.7**	**9.9**	**7.2**	**8.4**	ND	**1.3**	ND	**6**	**0.71**	6.71E-04	8.15E-04	0.00
Methyl Ethyl Ketone	5,000	13,000	22	**22**	ND	**2**	**1.9**	**1.5**	ND	ND	**0.99**	**0.72**	1.49E-03	1.81E-03	0.00
Methylene chloride	2.1	14,000	16	ND	**0.64**	**1.2**	**2.4**	**0.95**	**0.74**	**3.5**	**4.2**	**16**	1.08E-03	1.32E-03	0.06
o-Xylene	100	4,300	3.8	**0.88**	**3.8**	**1.8**	**2.5**	ND	ND	ND	**2.2**	ND	2.58E-04	3.13E-04	0.00
Styrene	1,000	17,000	0.65	**0.65**	ND	ND	ND	ND	ND	ND	ND	ND	4.41E-05	5.35E-05	0.00
Tetrachloroethylene	1	1,000	1.9	**1.9**	**0.83 J**	ND	ND	1.2	ND	**1**	ND	ND	1.29E-04	1.56E-04	0.02
Tetrahydrofuran	350	30,000	110	**110**	**6.3**	**6**	**3.7**	**9.7**	**2.8**	**2.9**	**12**	**16**	7.46E-03	9.06E-03	0.00
Toluene	5,000	37,000	8.1	**2.1**	**8.1**	**1.4**	**2.5**	**0.69**	**0.73**	**0.57**	**6.9**	**2.4**	5.49E-04	6.67E-04	0.00
trans-1,2-Dichloroethene	63	-	1.3	ND	ND	ND	ND	ND	ND	ND	ND	**1.3**	8.81E-05	1.07E-04	0.00
Trichloroethene	0.5	14,000	21	**21**	ND	ND	ND	ND	ND	**1.4**	ND	**3.7**	1.42E-03	1.73E-03	0.35
Vinyl chloride	0.1	180,000	37	ND	**2.1**	**1**	**3.2**	**37**	**2.7**	**1.1**	**3.5**	**2.2**	2.51E-03	3.05E-03	3.05

Notes:

1. Volatile organic compounds shown are only those detected in effluent samples during 2011 through 2013
2. AGC and SGC values obtained from NYSDEC DAR-1 AGC/SGC Tables, dated 9/10/07.
3. Concentrations shown for each volatile organic compound are the maximum concentrations detected from 2011 through 2013.
4. Maximum emission rate calculated using the maximum vapor phase concentrations for each volatile organic compound and the average instantaneous vapor phase effluent flow rate (756 scfm) during 2012. Note that the system is not operated continuously, so the actual annual impact estimated in this table is calculated using a significantly higher volume of air than in actually emitted by the system.
5. Actual annual impact calculated by following procedures described in NYSDEC DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants (NYSDEC 1991). Note effective stack height of 28 feet.

Definitions:

< - less than laboratory detection limit listed
"-" - indicates no guideline as been established
AGC - Annual Guideline Concentration
J - Indicates concentration is estimated
lb/day - pounds per day
ND - non-detect
Q - data qualifier
SGC - Short-term Guideline Concentration
µg/m^3 - micrograms per cubic meter

Table 8. Water Treatment Chemical Consumption Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Chemical Name - ARIES 2908
Chemical Specific Gravity - 1.04 to 1.09 1.065
Specific Weight of Water @ 60°F 8.3378 (lb/gallon)
Specific Weight of Chemical @ 60°F 8.8798 (lb/gallon)

Date	Drum #	Days	Volume in 30 Gallon Drum (gal.)	% Full	Δ Volume (gal.)	Δ Lbs	Consumption Rate (lbs/day)[1]	MH-1 Total Flow (gallons)	MH-2 Total Flow (gallons)	MH-3 Total Flow (gallons)	∑ Total Flows (gallons)	Δ Total Flow	Dose Rate This Period (ppm)[2]	Notes
4/20/2011	1	-	30	100%	-	-	-	51,271,950	9,102,881	224,649	60,599,480	-	-	Brought sequestering agent online for first time.
5/19/2011	1	29	18.5	62%	11.5	102.1	3.5	51,670,347	9,169,542	455,374	61,295,263	695,783	16.5	
6/2/2011	1	14	14.1	47%	4.4	39.1	2.8	51,837,640	9,189,887	534,242	61,561,769	266,506	16.5	
7/7/2011	1	35	12	40%	2.1	18.6	0.5	52,075,707	9,227,668	672,141	61,975,516	413,747	5.1	Under dosing due to CFP being offline due to noted past alarms.
8/11/2011	1	35	7	23%	5	44.4	1.3	52,243,445	9,265,879	787,928	62,297,252	321,736	15.5	
9/8/2011	1	28	0	0%	7	62.2	2.2	52,508,569	9,342,539	966,290	62,817,398	520,146	13.5	Drum #1 empty.
NEW DRUM ONLINE														
9/9/2011	2	-	30	100%	-	-	-	52,552,901	9,347,402	986,141	62,886,444	-	-	Brought Drum #2 online.
9/26/2011	2	17	26	87%	4	35.5	2.1	52,717,931	9,374,727	1,081,024	63,173,682	287,238	13.9	Low sequestering agent flow alarm occurs due to solidified chemical. See noted 3.
10/6/2011	2	10	26	87%	0	0.0	0.0	52,842,625	9,395,515	1,142,812	63,380,952	207,270	0.0	See Note 3.
NEW DRUM ONLINE														
10/6/2011	3	-	30	100%	-	-	-	52,842,625	9,395,515	1,142,812	63,380,952	-	-	Cleaned and inspected fittings/tubing; brought Drum #3 online.
11/1/2011	3	26	26	87%	4	35.5	1.4	53,071,145	9,435,095	1,258,735	63,764,975	384,023	10.4	Continue using 3rd drum.
12/1/2011	3	30	0	0%	26	230.9	7.7	53,349,688	9,469,794	1,371,989	64,191,471	426,496	61.0	3rd drum empty, reuse 2nd drum that was taken offline on 10/6/11
NEW/OLD DRUM ONLINE														
12/1/2011	2	-	26	87%	-	-	-	53,349,688	9,469,794	1,371,989	64,191,471	-	-	3rd drum empty, reuse 2nd drum that was taken offline on 10/6/11
12/22/2011	2		22	73%	4	35.5	1.7	53,525,286	9,491,900	1,437,180	64,454,366	262,895	15.2	
2011 Total	**-**	**246**	**-**	**-**	**68**	**603.8**	**-**	**-**	**-**	**-**	**-**	**3,854,886**	**17.6**	Through 12/22/2011
1/27/2012	2	36	15	50%	7	62.2	1.7	53,871,038	9,542,467	1,558,697	64,972,202	517,836	13.5	
2/9/2012	2	13	10	33%	5	44.4	3.4	54,009,006	9,573,810	1,612,670	65,195,486	223,284	22.4	
3/1/2012	2	21	7.5	25%	2.5	22.2	1.1	54,180,412	9,596,526	1,671,517	65,448,455	252,969	9.9	
4/5/2012	2	35	0	0%	7.5	66.6	1.9	54,447,552	9,635,004	1,770,699	65,853,255	404,800	18.5	Drum # 2 empty. Unmeasured volume of solidified chemical in bottom of drum; actual volume remaining greater than 0. Calculated dose rate assumes volume remaining of 0.
NEW DRUM OLINE														
4/5/2012	4	-	30	100%	-	-	-	54,447,552	9,635,004	1,770,699	65,853,255	-	-	Brought Drum #4 online.
5/1/2012	4	26	27.5	92%	2.5	22.2	0.9	54,595,683	9,661,648	1,833,036	66,090,367	237,112	10.5	Drum noted to be under vacuum due to changes in temperatures and not properly vented.
6/7/2012	4	37	18	60%	9.5	84.4	2.3	54,904,479	9,710,985	1,975,634	66,591,098	500,731	19.0	
7/12/2012	4	35	13.7	46%	4.3	38.2	1.1	55,041,035	9,738,010	2,049,067	66,828,112	237,014	18.1	
8/15/2012	4	34	9	30%	4.7	41.7	1.2	55,163,445	9,766,492	2,138,534	67,068,471	240,359	19.6	
9/11/2012	4	27	6	20%	3	26.6	1.0	55,259,345	9,790,891	2,208,922	67,259,158	190,687	15.7	
10/17/2012	4	36	0.5	2%	5.5	48.8	1.4	55,424,161	9,830,240	2,314,556	67,568,957	309,799	17.8	
10/19/2012	4	2	0	0%	0.5	4.4	2.2	55,441,907	9,832,600	2,326,244	67,600,751	31,794	15.7	
NEW DRUM OLINE														
10/19/2012	5	-	30	100%	-	-	-	55,441,907	9,832,600	2,326,244	67,600,751	-	-	Brought Drum #5 online.
11/8/2012	5	20	27	90%	3	26.6	1.3	55,542,079	9,852,388	2,383,045	67,777,512	176,761	17.0	
12/6/2012	5	28	23	77%	4	35.5	1.3	55,665,689	9,874,745	2,438,585	67,979,019	201,507	19.9	
2012 Total	**-**	**350**	**-**	**-**	**59**	**523.9**	**-**	**-**	**-**	**-**	**-**	**3,524,653**	**16.7**	Through 12/6/2012

Notes:

1) Maximum allowable daily loading rate of 12.5 lbs/day per WTC Usage Form dated 4/11/11.

2) Sequestering agent dosing rate is setup to be proportional to the aggregate flow transmitter value (not shown). However, this table utilizes the sum of the three individual pumping manhole flow transmitter values to calculate dose rate.

3) Sequestering agent low flow alarm occurred on 9/26/11 due to partial solidification of chemical within suction/injection fittings and tubing. Inspection not conducted until 10/6/11, during which time the fittings and tubing were cleaned. Drum #2 was taken offline until vendor could troubleshoot observation, in the interim Drum #3 was brought online.

Table 9. Groundwater Elevation Measurements, Former Lockheed Martin French Road Facility, Utica, New York.

Monitoring Well	Top of PVC Riser Elevation	Depth to water (from top of PVC riser)	Groundwater Elevation (ft)	Depth to water (from top of PVC riser)	Groundwater Elevation (ft)	Depth to water (from top of PVC riser)	Groundwater Elevation (ft)	Depth to water (from top of PVC riser)	Groundwater Elevation (ft)
		February 23, 2011		April 1, 2011		July 5, 2011		September 26, 2011	
MW - 1	506.80	8.11	498.69	6.84	499.96	8.57	498.23	8.09	498.71
MW - 2	504.69	NM	--	4.05	500.64	5.89	498.80	5.42	499.27
MW - 3	509.30	10.58	498.72	9.30	500.00	10.98	498.32	10.58	498.72
MW - 4	506.73	NM	--	6.12	500.61	11.24	495.49	10.55	496.18
MW - 5	504.46	3.81	500.65	2.48	501.98	2.63	501.83	3.08	501.38
MW - 6	508.58	6.87	501.71	5.92	502.66	6.23	502.35	5.59	502.99
MW - 7	506.94	8.53	498.41	7.65	499.29	7.84	499.10	7.46	499.48
MW - 9	505.15	2.60	502.55	1.99	503.16	3.01	502.14	2.55	502.60
MW - 10	504.48	4.41	500.07	3.53	500.95	5.16	499.32	4.80	499.68
MW - 11	507.03	8.50	498.53	7.89	499.14	8.09	498.94	6.80	500.23
MW - 12	508.34	NM	--	10.90	497.44	12.08	496.26	NM	--
MW - 13S	506.03	NM	--	5.40	500.63	DRY	--	6.68	499.35
MW - 13BR	506.28	NM	--	9.55	496.73	10.67	495.61	10.94	495.34
MW - 14S	507.85	9.86	497.99	10.22	497.63	12.57	495.28	10.35	497.50
MW - 14BR	507.95	29.25	478.70	28.02	479.93	25.46	482.49	23.55	484.40
MW - 15S	507.46	8.04	499.42	8.24	499.22	8.38	499.08	8.28	499.18
MW - 15BR	507.29	34.23	473.06	33.48	473.81	31.94	475.35	30.79	476.50
MW-16	504.69	NI	--	NI	--	NI	--	NI	--
MW-17	504.64	NI	--	NI	--	NI	--	NI	--
MW-18	504.97	NI	--	NI	--	NI	--	NI	--
MW-19	503.13	NI	--	NI	--	NI	--	NI	--
MW-20	503.40	NI	--	NI	--	NI	--	NI	--
MW-21	503.66	NI	--	NI	--	NI	--	NI	--
IW-1	503.30	NI	--	NI	--	NI	--	NI	--
PZ - 2	508.95	1.78	507.17	6.23	502.72	3.08	505.87	NM	--
PZ - 4	505.51	NM	--	NM	--	1.42	504.09	0.47	505.04
PZ - 5	508.29	9.13	499.16	8.99	499.30	8.94	499.35	8.83	499.46
PZ - 6	508.37	9.44	498.93	9.08	499.29	9.32	499.05	9.11	499.26
PZ - 7	508.36	8.98	499.38	8.80	499.56	9.00	499.36	8.89	499.47
PZ - 8	508.23	8.91	499.32	9.00	499.23	9.51	498.72	9.05	499.18
PZ - 9	508.08	8.22	499.86	7.88	500.20	8.02	500.06	7.86	500.22
PZ - 10	508.14	8.70	499.44	8.75	499.39	9.08	499.06	8.78	499.36
PZ - 11R	505.82	7.04	498.78	7.22	498.60	8.64	497.18	8.44	497.38
PZ - 13R	503.85	6.39	497.46	6.46	497.39	8.17	495.68	8.05	495.80
PZ - 17	504.05	5.66	498.39	5.68	498.37	6.17	497.88	6.47	497.58
PZ - 18	504.85	6.39	498.46	6.53	498.32	7.99	496.86	7.85	497.00
PZ - 19	504.60	6.60	498.00	6.65	497.95	7.36	497.24	7.09	497.51
PZ - 20	503.85	6.28	497.57	6.38	497.47	7.04	496.81	6.62	497.23
PZ - 21	505.70	8.90	496.80	DRY	--	DRY	--	DRY	--
PZ - 22	508.57	6.73	501.84	7.30	501.27	7.94	500.63	7.56	501.01
PZ - 23	510.07	6.81	503.26	6.09	503.98	6.82	503.25	6.12	503.95
PZ - 24	507.83	10.23	497.60	10.52	497.31	10.92	496.91	10.74	497.09
PZ - 25	510.62	6.52	504.10	5.96	504.66	6.67	503.95	6.05	504.57
PZ - 26	510.95	9.07	501.88	8.72	502.23	9.21	501.74	8.99	501.96
PZ - 27	510.13	8.80	501.33	10.08	500.05	11.13	499.00	11.47	498.66
PZ - 28	504.12	3.49	500.63	3.53	500.59	3.93	500.19	3.04	501.08
PZ - 29	503.84	NM	--	2.36	501.48	2.43	501.41	2.12	501.72
PZ - 30	504.72	3.68	501.04	3.56	501.16	4.10	500.62	3.54	501.18
PZ - 31	505.17	1.46	503.71	2.10	503.07	2.33	502.84	1.46	503.71
PZ - 32	504.90	0.65	504.25	0.53	504.37	1.84	503.06	0.45	504.45
PZ - 33	510.00	DRY	--	DRY	--	6.82	503.18	DRY	--
PZ - 34	503.88	2.30	501.58	2.34	501.54	3.11	500.77	2.41	501.47
PZ - 35	503.98	NM	--	0.98	503.00	2.09	501.89	1.04	502.94
PZ - 36	504.04	1.12	502.92	1.00	503.04	1.55	502.49	1.09	502.95
PZ - 39	504.51	2.75	501.76	1.90	502.61	3.53	500.98	2.62	501.89
PZ - 40	506.46	4.45	502.01	4.49	501.97	4.92	501.54	4.58	501.88
PZ - 41	506.27	4.12	502.15	4.10	502.17	4.51	501.76	4.22	502.05
PZ - 42	505.18	NM	--	0.30	504.88	0.62	504.56	0.28	504.90
A1-PZ1	503.77	NM	--	1.16	502.61	1.53	502.24	NM	--
A1-PZ2	503.00	1.92	501.08	2.33	500.67	2.30	500.70	2.00	501.00
A2-PZ1	509.74	NM	--	3.49	506.25	4.35	505.39	3.87	505.87
A2-PZ2	509.46	6.89	502.57	6.41	503.05	6.63	502.83	6.08	503.38
A2-PZ3	509.46	1.69	507.77	2.98	506.48	3.06	506.40	NM	--
A2-PZ4	509.40	0.40	509.00	0.81	508.59	1.86	507.54	0.65	508.75
A2-PZ5	510.03	2.13	507.90	7.68	502.35	7.88	502.15	5.81	504.22
A2-PZ6	509.74	1.21	508.53	0.54	509.20	3.25	506.49	1.20	508.54
A2-PZ7	509.59	1.63	507.96	5.74	503.85	6.27	503.32	NM	--
A2-PZ8	509.70	0.75	508.95	0.80	508.90	5.72	503.98	0.74	508.96

Notes:
- All elevations are reported as feet mean sea level (ft msl)
- Survey data is referenced horizontally to the NAD83 and projected on the New York State Plane Coordinate System (Central Zone). The reference vertical benchmark is the finished floor elevatio

Definitions:
NI - not installed
NM - not measured

Table 9. Groundwater Elevation Measurements, Former Lockheed Martin French Road Facility, Utica, New York.

Depth to water (from top of PVC riser)	Groundwater Elevation (ft)	Depth to water (from top of PVC riser)	Groundwater Elevation (ft)	Depth to water (from top of PVC riser)	Groundwater Elevation (ft)	Depth to water (from top of PVC riser)	Groundwater Elevation (ft)
January 24, 2012		April 10, 2012		July 9, 2012		October 5, 2012	
8.39	498.41	8.64	498.16	8.77	498.03	8.53	498.27
NM	--	5.91	498.78	5.98	498.71	5.93	498.76
10.90	498.40	11.18	498.12	11.2	498.10	10.93	498.37
11.48	495.25	11.70	495.03	11.81	494.92	11.31	495.42
NM	--	4.73	499.73	5.22	499.24	4.85	499.61
5.59	502.99	6.36	502.22	6.91	501.67	6.49	502.09
8.10	498.84	8.01	498.93	7.92	499.02	7.57	499.37
3.28	501.87	3.41	501.74	3.69	501.46	2.97	502.18
4.99	499.49	5.37	499.11	5.49	498.99	5.16	499.32
8.27	498.76	8.47	498.56	8.27	498.76	7.88	499.15
NM	--	12.00	496.34	12.12	496.22	12.12	496.22
6.94	499.09	DRY	--	DRY	--	DRY	--
10.67	495.61	10.05	496.23	NM	--	10.82	495.46
10.31	497.54	10.64	497.21	10.79	497.06	10.84	497.01
56.31	451.64	51.30	456.65	46.1	461.85	41.77	466.18
8.19	499.27	8.44	499.02	8.62	498.84	8.67	498.79
29.20	478.09	28.28	479.01	27.31	479.98	26.43	480.86
4.19	500.50	4.25	500.44	4.46	500.23	4.45	500.24
2.40	502.24	4.14	500.50	4.13	500.51	3.68	500.96
1.48	503.49	3.45	501.52	3.61	501.36	3.4	501.57
1.19	501.94	1.42	501.71	1.46	501.67	1.02	502.11
1.98	501.42	2.50	500.90	2.83	500.57	2.68	500.72
3.50	500.16	3.30	500.36	3.12	500.54	3.11	500.55
1.88	501.42	NM	--	2.7	500.60	2.2	501.10
2.35	506.60	2.98	505.97	4.96	503.99	3.71	505.24
0.00	505.51	2.85	502.66	3	502.51	1.29	504.22
9.04	499.25	10.11	498.18	9.88	498.41	9.44	498.85
9.22	499.15	9.48	498.89	9.44	498.93	9.95	498.42
8.96	499.40	9.12	499.24	9.13	499.23	9	499.36
9.38	498.85	DRY	--	DRY	--	9.43	498.80
8.05	500.03	8.15	499.93	8.06	500.02	8.04	500.04
8.88	499.26	9.08	499.06	9.1	499.04	8.98	499.16
8.50	497.32	8.76	497.06	8.74	497.08	NM	--
8.06	495.79	8.16	495.69	8.15	495.70	8.13	495.72
9.89	494.16	7.30	496.75	7.75	496.30	7.41	496.64
7.89	496.96	7.97	496.88	8.08	496.77	7.98	496.87
7.29	497.31	7.43	497.17	7.52	497.08	7.23	497.37
6.89	496.96	7.14	496.71	7.28	496.57	6.86	496.99
DRY	--	DRY	--	DRY	--	DRY	--
7.07	501.50	7.79	500.78	8.54	500.03	8.62	499.95
6.55	503.52	6.81	503.26	7.24	502.83	6.75	503.32
10.55	497.28	10.85	496.98	11.02	496.81	11.00	496.83
6.37	504.25	6.72	503.90	6.98	503.64	6.80	503.82
9.04	501.91	9.24	501.71	9.48	501.47	9.42	501.53
10.56	499.57	11.00	499.13	11.30	498.83	11.43	498.70
3.64	500.48	3.93	500.19	4.20	499.92	3.91	500.21
2.02	501.82	2.71	501.13	3.00	500.84	2.26	501.58
3.76	500.96	4.18	500.54	4.37	500.35	3.98	500.74
1.42	503.75	1.49	503.68	2.61	502.56	0.00	505.17
0.00	504.90	2.32	502.58	2.98	501.92	0.60	504.30
3.60	506.40	DRY	--	DRY	--	DRY	--
2.52	501.36	2.80	501.08	3.30	500.58	8.11	495.77
3.21	500.77	2.06	501.92	2.56	501.42	1.95	502.03
0.00	504.04	2.79	501.25	2.00	502.04	1.75	502.29
3.25	501.26	3.87	500.64	4.00	500.51	3.10	501.41
NM	--	5.05	501.41	5.39	501.07	4.93	501.53
4.70	501.57	4.80	501.47	5.07	501.20	4.63	501.64
NM	--	0.61	504.57	1.15	504.03	0.55	504.63
NM	--	2.12	501.65	2.37	501.40	1.50	502.27
1.83	501.17	1.27	501.73	2.66	500.34	2.30	500.70
4.18	505.56	4.44	505.30	5.85	503.89	4.10	505.64
6.30	503.16	6.66	502.80	6.77	502.69	6.15	503.31
1.60	507.86	3.72	505.74	4.41	505.05	2.85	506.61
0.00	509.40	2.10	507.30	5.52	503.88	0.82	508.58
3.70	506.33	7.84	502.19	8.01	502.02	6.38	503.65
0.00	509.74	2.31	507.43	4.63	505.11	NM	--
2.98	506.61	6.28	503.31	6.61	502.98	5.61	503.98
0.28	509.42	5.75	503.95	6.09	503.61	0.99	508.71

n of the southeasterly corner of the Boiler House Building (Elevation 506.50 feet).

ARCADIS

Figures

CITY:(MAHWAH) DIV/GROUP:(ENRI- 1) DB:(JG LD:(Opt) PIC:(Opt) PM:(CM) TM:(BM) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Ma□wa□\ACT\NJ001000\0001\00001\2012-02\FIG 1- SITE LOCATION.dwg LAYOUT: 1 SAVED: 2/20/2012 3:3□PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 2/20/2012 3:3□PM BY: GONZALEZ, JAMES
XREFS: IMAGES: PROJECTNAME: ----
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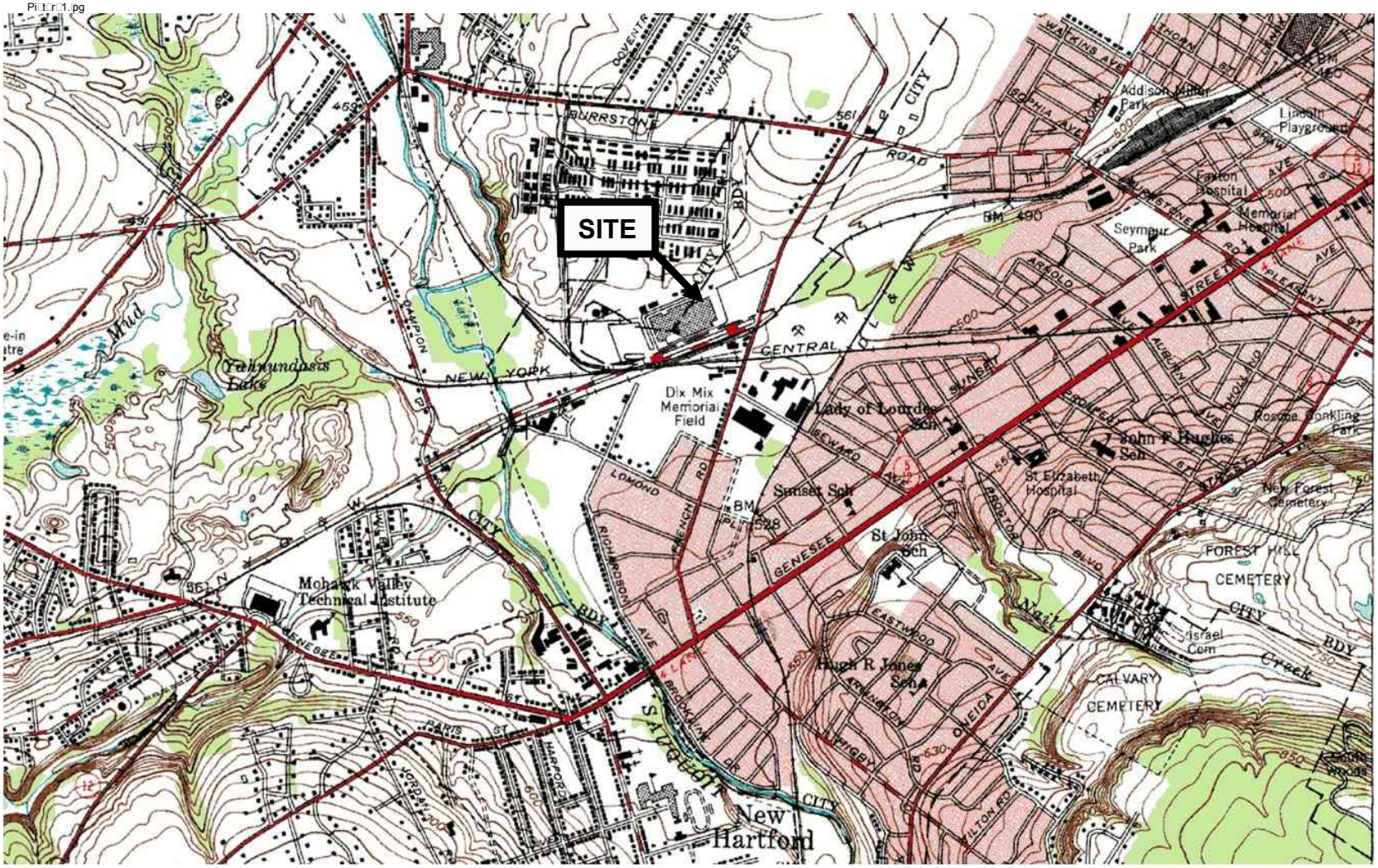


0 12000 24000
SCALE IN FEET

GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD PROPERTY
UTICA, NEW YORK

SITE LOCATION MAP

ARCADIS

FIGURE
1

LEGEND:

BUILDING	MW-9 MONITORING WELL LOCATION
EDGE OF PAVEMENT	IW-1 INJECTION WELL
STORMWATER DRAINAGE SYSTEM	PZ-9 PIEZOMETER LOCATION
GROUNDWATER COLLECTION SYSTEM AND PIPING	SG-22 SOIL GAS PROBE LOCATION
MH-4 MANHOLE	QUARTERLY MONITORING
	SEMI ANNUAL MONITORING
	ANNUAL MONITORING

0 60' 120'
SCALE IN FEET

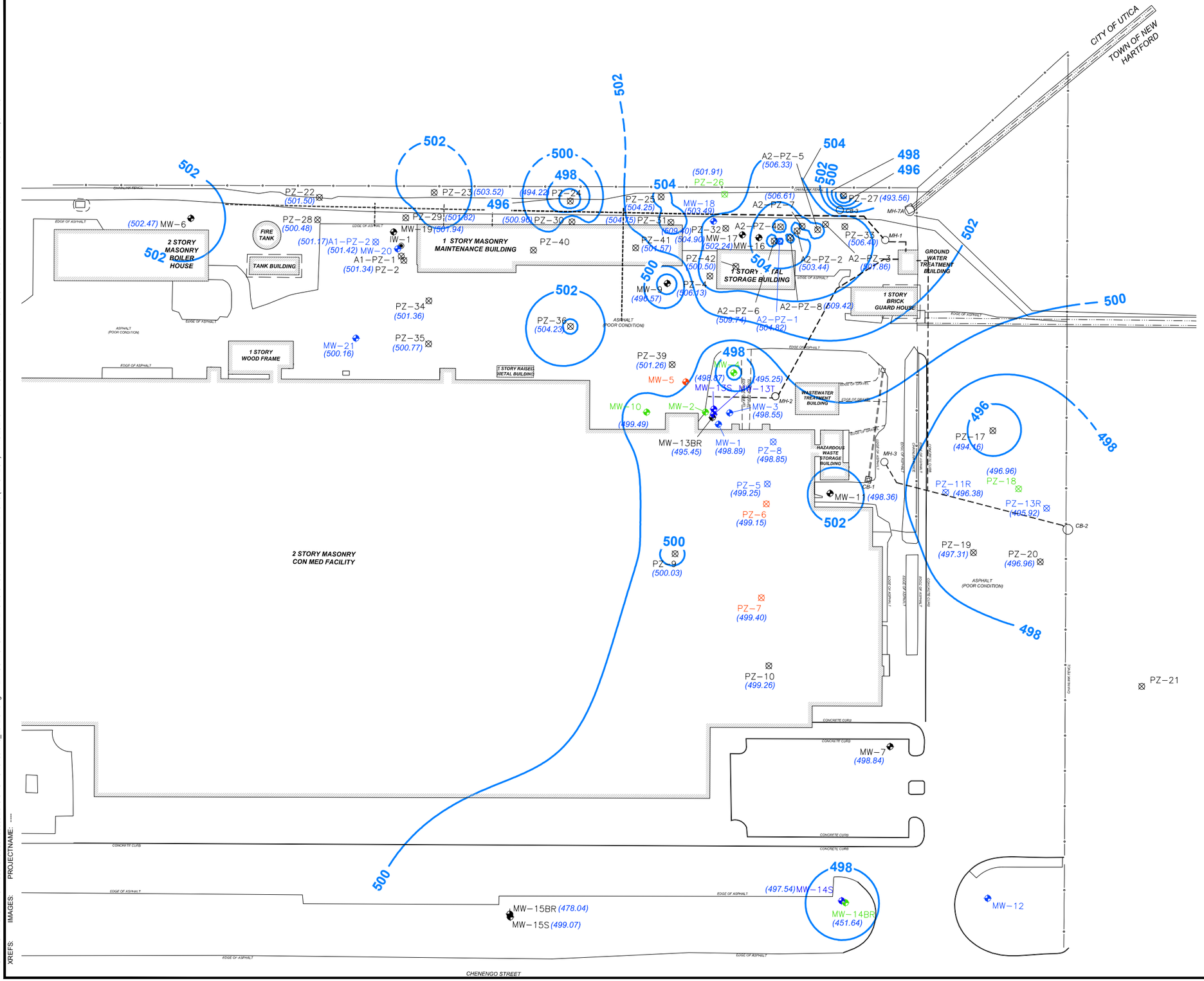
FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT

SITE PLAN AND GROUNDWATER COLLECTION AND TREATMENT SYSTEM LAYOUT

ARCADIS

FIGURE
2



LEGEND:

IW-1	INJECTION WELL LOCATION
MW-10	MONITORING WELL LOCATION
PZ-9	PIEZOMETER LOCATION
	QUARTERLY SAMPLING LOCATION
	SEMI ANNUAL SAMPLING LOCATION
	ANNUAL SAMPLING LOCATION
(496.38)	QUARTERLY GROUNDWATER ELEVATION POINT
500	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
	GROUNDWATER COLLECTION TRENCH
	FENCE LINE
MH-2	MANHOLE LOCATION

NOTES:

1. ALL WELLS AND PIEZOMETERS SHOWN ARE UTILIZED FOR QUARTERLY GROUNDWATER ELEVATIONS EXCEPT WELLS IW-1, MW-13BR, MW-14BR, AND MW-15BR.
2. MW-3 WAS UNABLE TO BE ACCESSED DUE TO SITE CONDITIONS.
3. WELLS MW-13S, PZ-8, PZ-21, AND PZ-33 WERE NOTED TO BE DRY AND NOT USED FOR GROUNDWATER CONTOURS.

0 50' 100'
GRAPHIC SCALE

GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER CONTOURS JANUARY 2012

ARCADIS

FIGURE 3

CITY:MAHWAH DIV/GROUP:ENVIRONMENTAL DB:J.GONZALEZ LD:J.BONSTEEL PIC:L.MCBURNEY PM:C.MOTTA TM:J.BONSTEEL LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Fairlawn\ACTNJ0010400001000052013-01\GWC\104001W3_2012-01.dwg LAYOUT: 3 SAVED: 2/15/2013 10:01 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/15/2013 10:02 AM BY: GONZALEZ, JAMES
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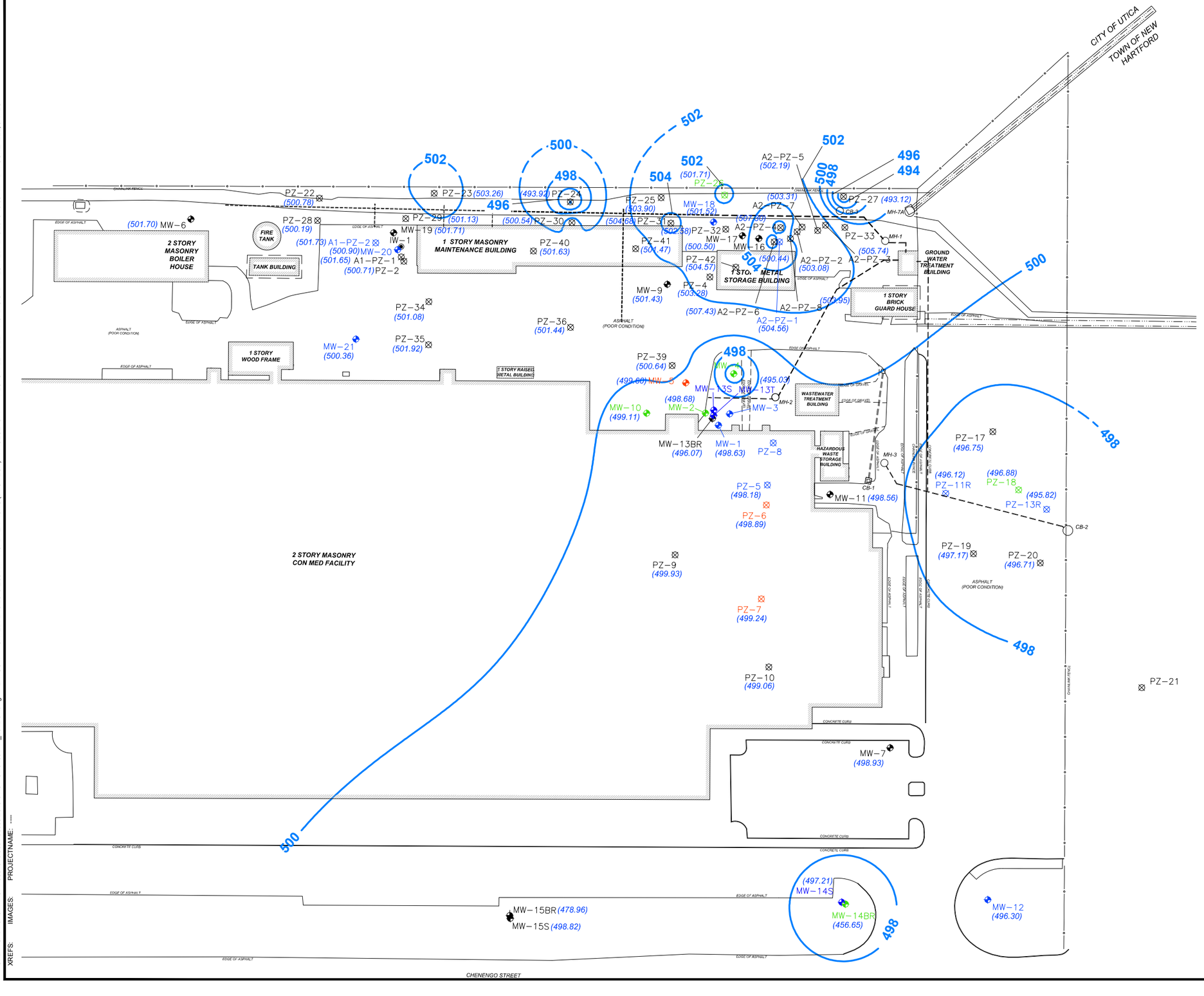


LEGEND:

IW-1	INJECTION WELL LOCATION
MW-10	MONITORING WELL LOCATION
PZ-9	PIEZOMETER LOCATION
	QUARTERLY SAMPLING LOCATION
	SEMI ANNUAL SAMPLING LOCATION
	ANNUAL SAMPLING LOCATION
(496.77)	QUARTERLY GROUNDWATER ELEVATION POINT
500	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
	GROUNDWATER COLLECTION TRENCH
	FENCE LINE
MH-2	MANHOLE LOCATION

NOTES:

1. ALL WELLS AND PIEZOMETERS SHOWN ARE UTILIZED FOR QUARTERLY GROUNDWATER ELEVATIONS EXCEPT WELLS IW-1, MW-13BR, MW-14BR, AND MW-15BR.
2. MW-3 WAS UNABLE TO BE ACCESSED DUE TO SITE CONDITIONS.
3. WELLS MW-13S, PZ-8, PZ-21, AND PZ-33 WERE NOTED TO BE DRY AND NOT USED FOR GROUNDWATER CONTOURS.

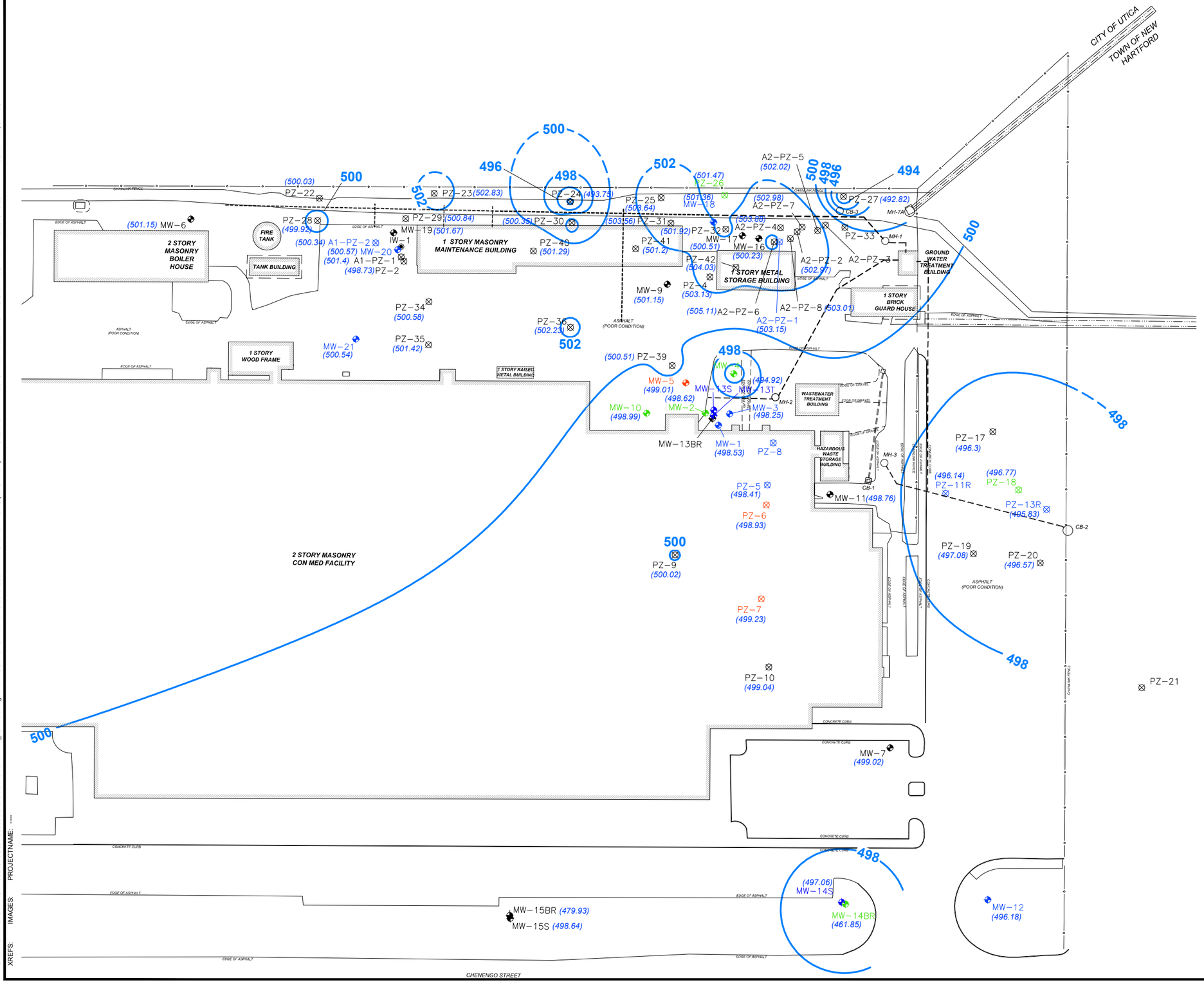
0 50' 100'
GRAPHIC SCALE

GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER CONTOURS APRIL 2012

ARCADIS

FIGURE 4



LEGEND:

- IW-1 — INJECTION WELL LOCATION
- MW-10 — MONITORING WELL LOCATION
- PZ-9 — PIEZOMETER LOCATION
- QUARTERLY SAMPLING LOCATION
- SEMI ANNUAL SAMPLING LOCATION
- ANNUAL SAMPLING LOCATION
- (496.87) — QUARTERLY GROUNDWATER ELEVATION POINT
- 500 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER COLLECTION TRENCH
- FENCE LINE
- MH-2 — MANHOLE LOCATION

NOTES:

1. ALL WELLS AND PIEZOMETERS SHOWN ARE UTILIZED FOR QUARTERLY GROUNDWATER ELEVATIONS EXCEPT WELLS IW-1, MW-13BR, MW-14BR, AND MW-15BR.
2. MW-13BR WAS UNABLE TO BE ACCESSED DUE TO SITE CONDITIONS.
3. WELLS MW-13S, PZ-21, AND PZ-33 WERE NOTED TO BE DRY AND NOT USED FOR GROUNDWATER CONTOURS.

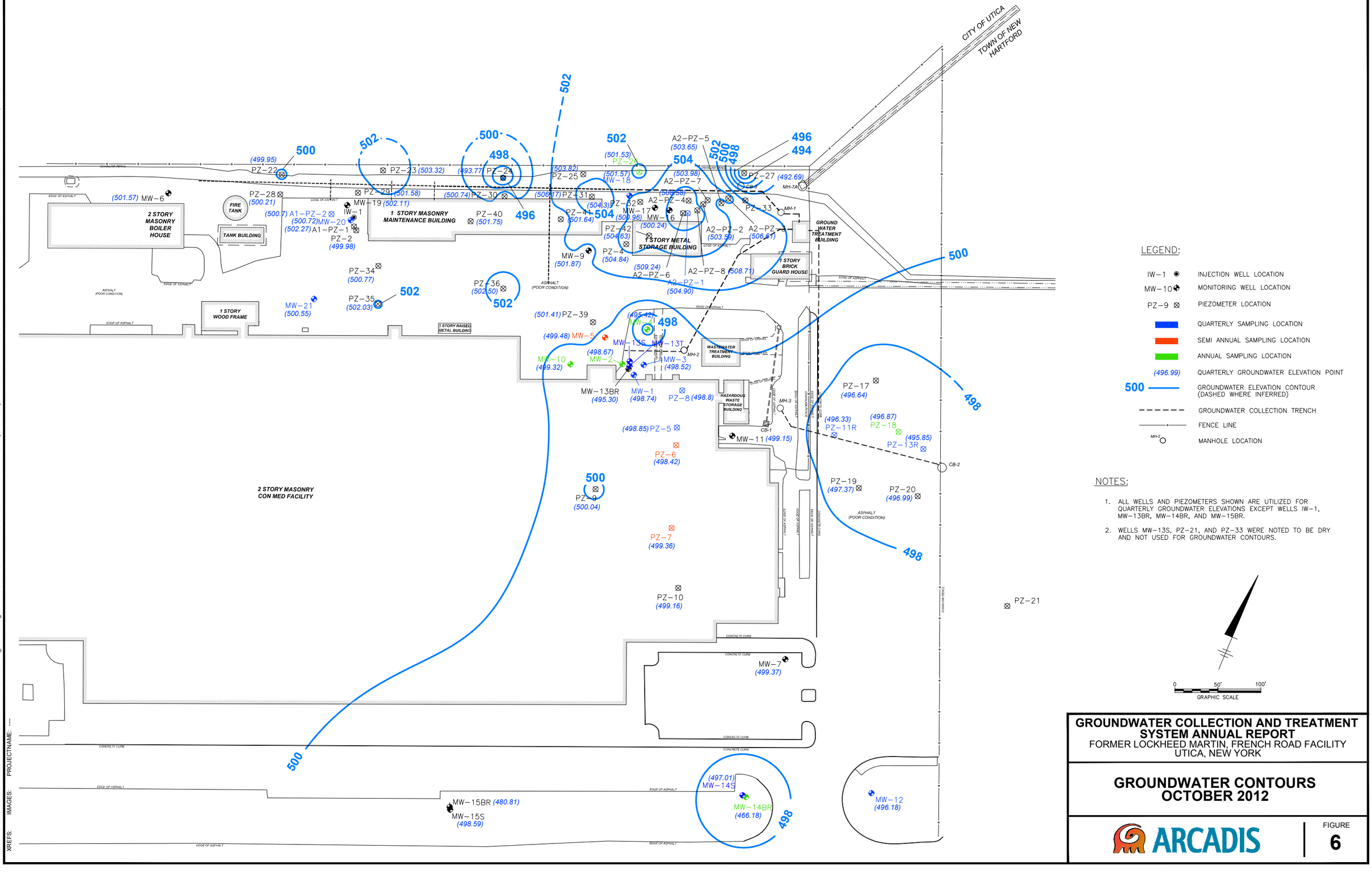
0 50' 100'
GRAPHIC SCALE

GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER CONTOURS JULY 2012

ARCADIS

FIGURE 5



LEGEND:

IW-1	INJECTION WELL LOCATION
MW-10	MONITORING WELL LOCATION
PZ-9	PIEZOMETER LOCATION
	QUARTERLY SAMPLING LOCATION
	SEMI ANNUAL SAMPLING LOCATION
	ANNUAL SAMPLING LOCATION
(496.99)	QUARTERLY GROUNDWATER ELEVATION POINT
500	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
	GROUNDWATER COLLECTION TRENCH
	FENCE LINE
MH-2	MANHOLE LOCATION

NOTES:

1. ALL WELLS AND PIEZOMETERS SHOWN ARE UTILIZED FOR QUARTERLY GROUNDWATER ELEVATIONS EXCEPT WELLS IW-1, MW-13BR, MW-14BR, AND MW-15BR.
2. WELLS MW-13S, PZ-21, AND PZ-33 WERE NOTED TO BE DRY AND NOT USED FOR GROUNDWATER CONTOURS.

0 50' 100'
GRAPHIC SCALE

GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

GROUNDWATER CONTOURS OCTOBER 2012

ARCADIS

FIGURE 6

CITY:MAHWAH DIV/GROUP:ENVIRONMENTAL DB:J.GONZALEZ LD:J.BONSTEEL PIC:L.MCBURNEY PM:C.MOTTA TM:J.BONSTEEL LYR:(Opt)ON=*;OFF=*REF*
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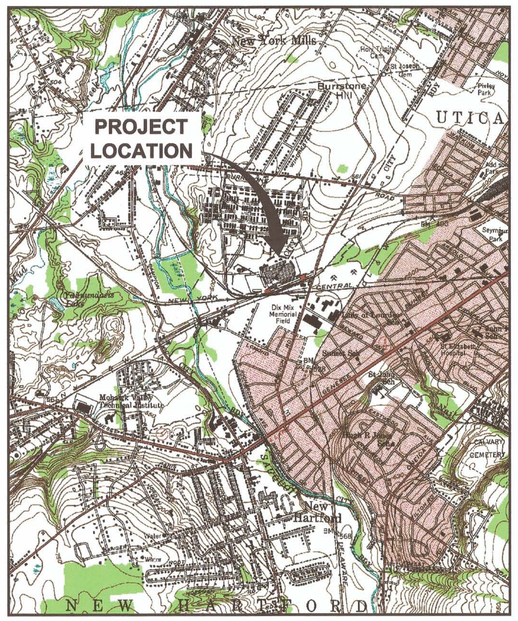
XREFS: IMAGES: PROJECTNAME: ----

Appendix A

Record Drawings

RECORD DRAWINGS

GROUNDWATER COLLECTION AND TREATMENT SYSTEM AT FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., UTICA WEST, 1955

LOCATION MAP

0 2000' 4000'

GRAPHIC SCALE

NEW YORK

DATE ISSUED
MARCH 2011

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

ARCADIS

ARCADIS OF NEW YORK, INC.

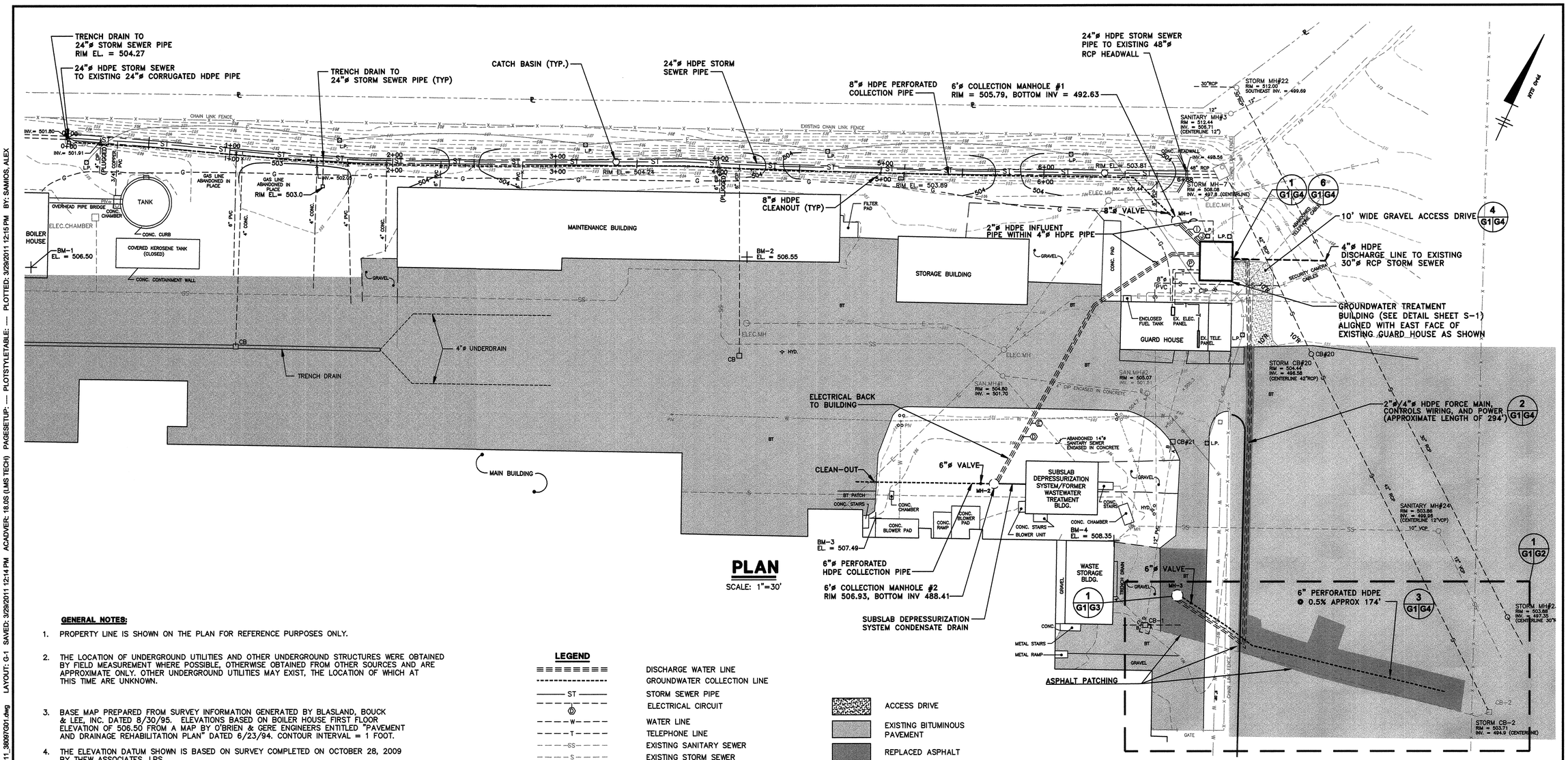
INDEX TO DRAWINGS

	GENERAL
G-1	SITE PLAN
G-2	PLAN & PROFILE OF MH-3 AND GROUNDWATER COLLECTION TRENCH
G-3	PUMPING MANHOLE DETAILS AND SPECIFICATIONS
G-4	PIPING AND TRENCHING DETAILS
G-5	GENERAL NOTES AND ABBREVIATIONS
G-6	LEGEND AND SYMBOLS
	MECHANICAL
M-1	PIPING AND INSTRUMENTATION DIAGRAM
M-2	FLOOR PLAN AND DETAILS
M-3	PROCESS FLOW DIAGRAM
	ELECTRICAL
E-1	ELECTRICAL FLOOR PLANS
E-2	ONE LINE DIAGRAM, CONDUCTOR AND PANELBOARD SCHEDULES
E-3	CONTROL LOGIC
	STRUCTURAL
S-1	BUILDING ELEVATION SECTION AND DETAILS

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 06/13/2011 BY: _____



PLAN

SCALE: 1"=30'

GENERAL NOTES:

1. PROPERTY LINE IS SHOWN ON THE PLAN FOR REFERENCE PURPOSES ONLY.
2. THE LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WERE OBTAINED BY FIELD MEASUREMENT WHERE POSSIBLE, OTHERWISE OBTAINED FROM OTHER SOURCES AND ARE APPROXIMATE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST, THE LOCATION OF WHICH AT THIS TIME ARE UNKNOWN.
3. BASE MAP PREPARED FROM SURVEY INFORMATION GENERATED BY BLASLAND, BOUCK & LEE, INC. DATED 8/30/95. ELEVATIONS BASED ON BOILER HOUSE FIRST FLOOR ELEVATION OF 506.50 FROM A MAP BY O'BRIEN & GERE ENGINEERS ENTITLED "PAVEMENT AND DRAINAGE REHABILITATION PLAN" DATED 6/23/94. CONTOUR INTERVAL = 1 FOOT.
4. THE ELEVATION DATUM SHOWN IS BASED ON SURVEY COMPLETED ON OCTOBER 28, 2009 BY THEW ASSOCIATES, LPS.

LEGEND

DISCHARGE WATER LINE	ACCESS DRIVE
GROUNDWATER COLLECTION LINE	EXISTING BITUMINOUS PAVEMENT
STORM SEWER PIPE	REPLACED ASPHALT
ELECTRICAL CIRCUIT	EXISTING HYDRANT
WATER LINE	EXISTING POSITION INDICATOR VALVE
TELEPHONE LINE	EXISTING LIGHT POLE
EXISTING SANITARY SEWER	EXISTING MANHOLE
EXISTING STORM SEWER	EXISTING CATCH BASIN
EXISTING WATER LINE	
EXISTING GAS LINE	
EXISTING ELECTRIC LINE	
EXISTING CHAIN LINK FENCE	
EXISTING PROPERTY LINE	

0 30' 60'
GRAPHIC SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
3	03/23/11	AS-BUILT RECORD DRAWINGS	CM	MM
2	02/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	01/06/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/02/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

SITE PLAN AND DETAILS

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011
ARCADIS OF NEW YORK, INC. 465 NEW KARNER ROAD ALBANY, NEW YORK TEL. 518.452.7826

G-1

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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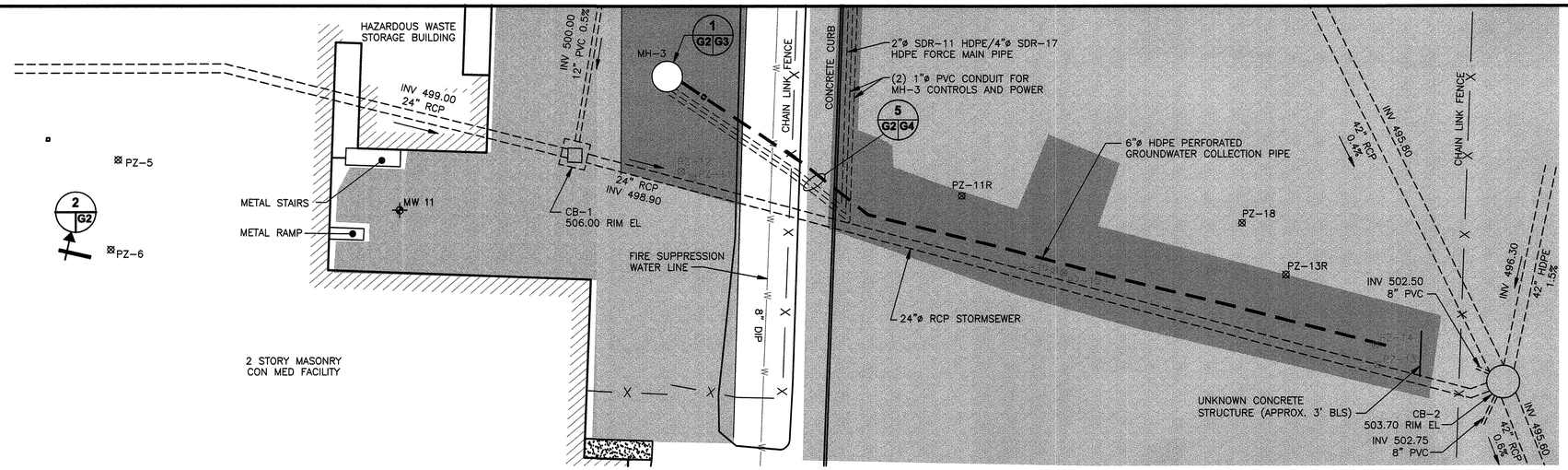
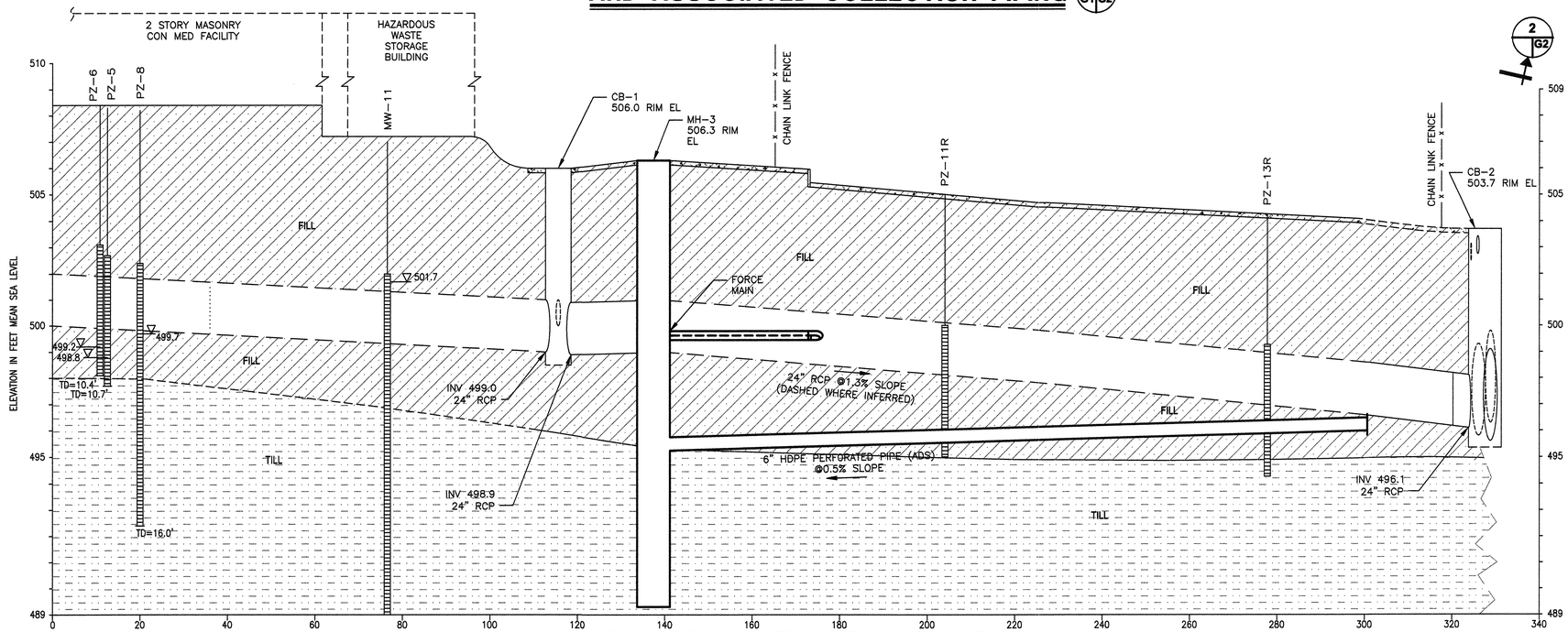


PLAN VIEW OF MANHOLE NO.3 AND ASSOCIATED COLLECTION PIPING (1 G1 G2)



ELEVATION VIEW OF MANHOLE NO.3 AND ASSOCIATED COLLECTION PIPING (2 G2)

LEGEND:

- MW 11 — MONITORING WELL LOCATION
- PZ-5 — PIEZOMETER LOCATION
- PZ-16 — FORMER PIEZOMETER LOCATION
- ▽ 501.7 — GROUNDWATER LEVEL, 11/18/08
- FILL
- TILL
- WELL DESIGNATION
- EXISTING LAND SURFACE (DASHED WHERE INFERRED)
- GEOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREENED INTERVAL
- END OF BOREHOLE

HORIZONTAL SCALE 0 15' 30'
VERTICAL SCALE 0 2.5' 5'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
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2	02/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	01/06/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/02/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PLAN & PROFILE OF MH-3 AND GROUNDWATER COLLECTION TRENCH

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

G-2

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYRON="OFF-REF"
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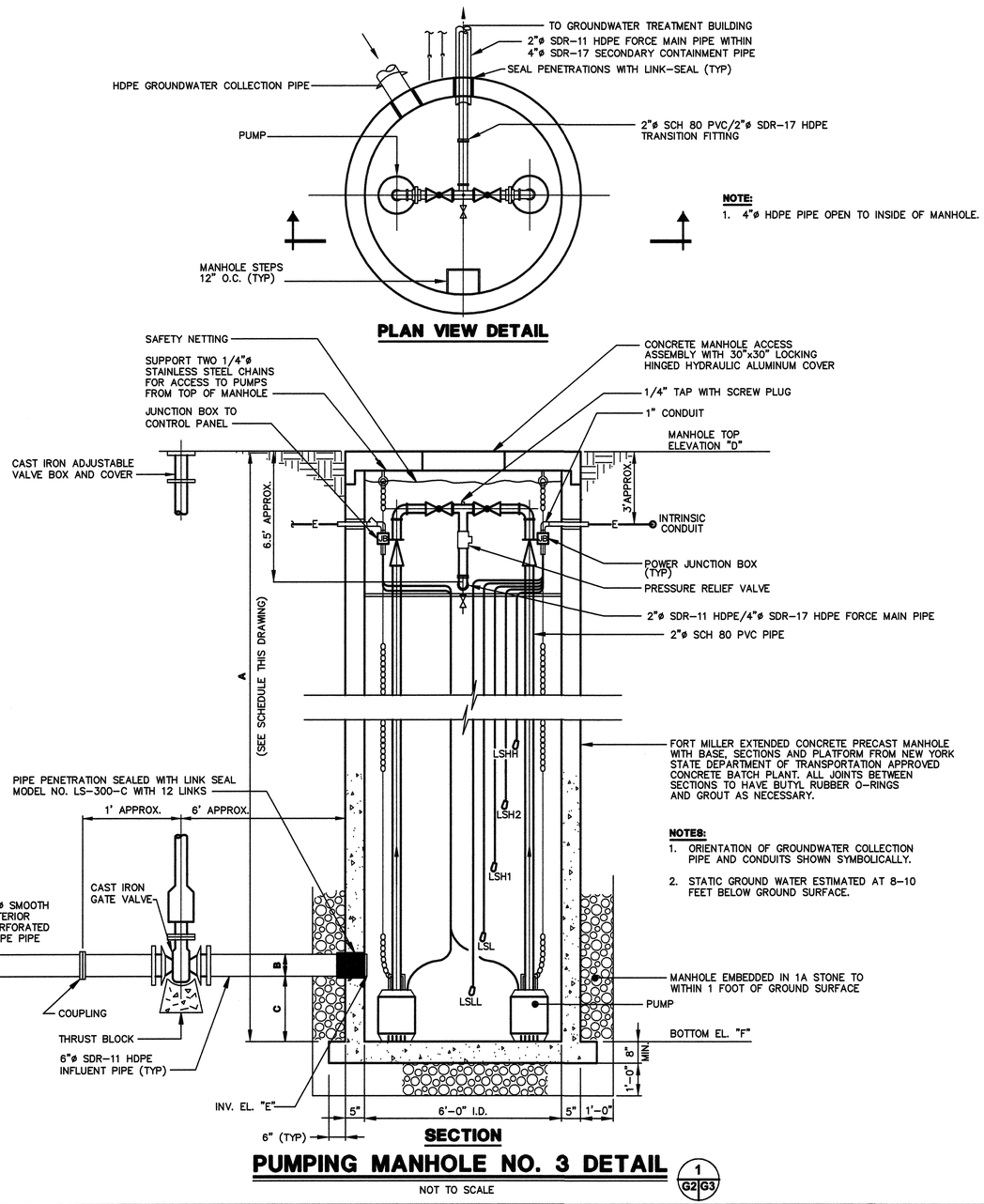
PPX2



NOTE:
1. 4"ø HDPE PIPE OPEN TO INSIDE OF MANHOLE.

NOTES:
1. ORIENTATION OF GROUNDWATER COLLECTION PIPE AND CONDUITS SHOWN SYMBOLICALLY.
2. STATIC GROUND WATER ESTIMATED AT 8-10 FEET BELOW GROUND SURFACE.

LEGEND

- BALL VALVE
- CHECK VALVE
- NUT UNION
- SAMPLE/DRAIN TAP
- —E— POWER WIRING
- PRESSURE RELIEF VALVE

COLLECTION MANHOLE SCHEDULE	
DESCRIPTION	MH-3
DIST. A	17'-0"
DIST. B	0'-6"
DIST. C	6'-0"
TOP EL. D	506.3'
INV. EL. E	503.3'
BOT. EL. F	489.3'
LSLL	490.8'
LSL	491.8'
LSH1	494.3'
LSH2	496.3'
LSHH	498.8'

PUMPING MANHOLE NO. 3 DETAIL

1 G2 G3

NOT TO SCALE

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF* G:\ENVCAD\SYRACUSE\RETURN-TO\Mattweh-NJN\NJ001024\0001\00005\38097G03.dwg LAYOUT: G-3 SAVED: 3/29/2011 12:45 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: — PLOTSTYLETABLE: — PLOTTED: 3/29/2011 12:46 PM BY: SAMIOS, ALEX
XREFS: X00-2 IMAGES: PROJECTNAME: —

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: ——— USE TO VERIFY FIGURE REPRODUCTION SCALE

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1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 3/31/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

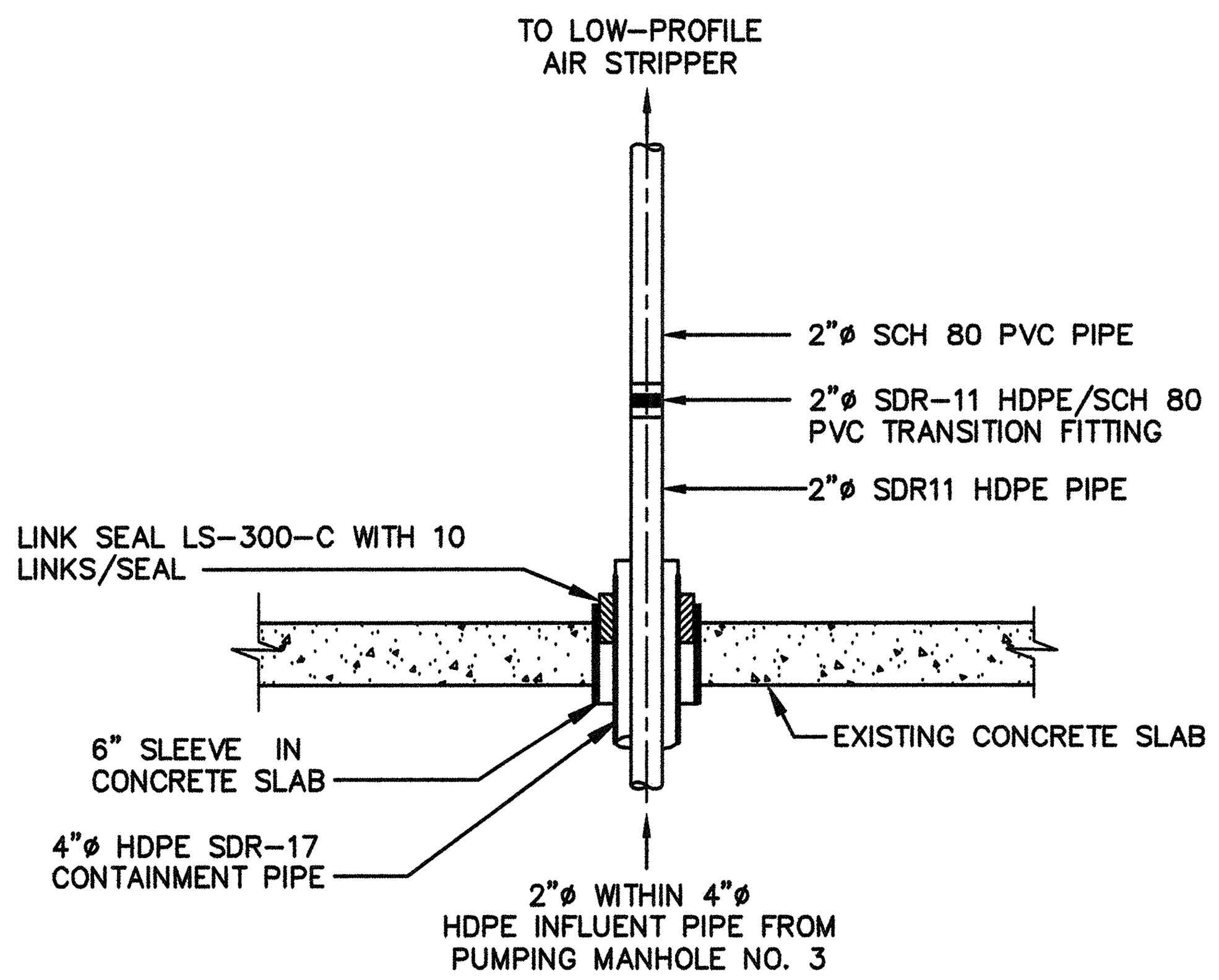
FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PUMPING MANHOLE DETAILS AND SPECIFICATIONS

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

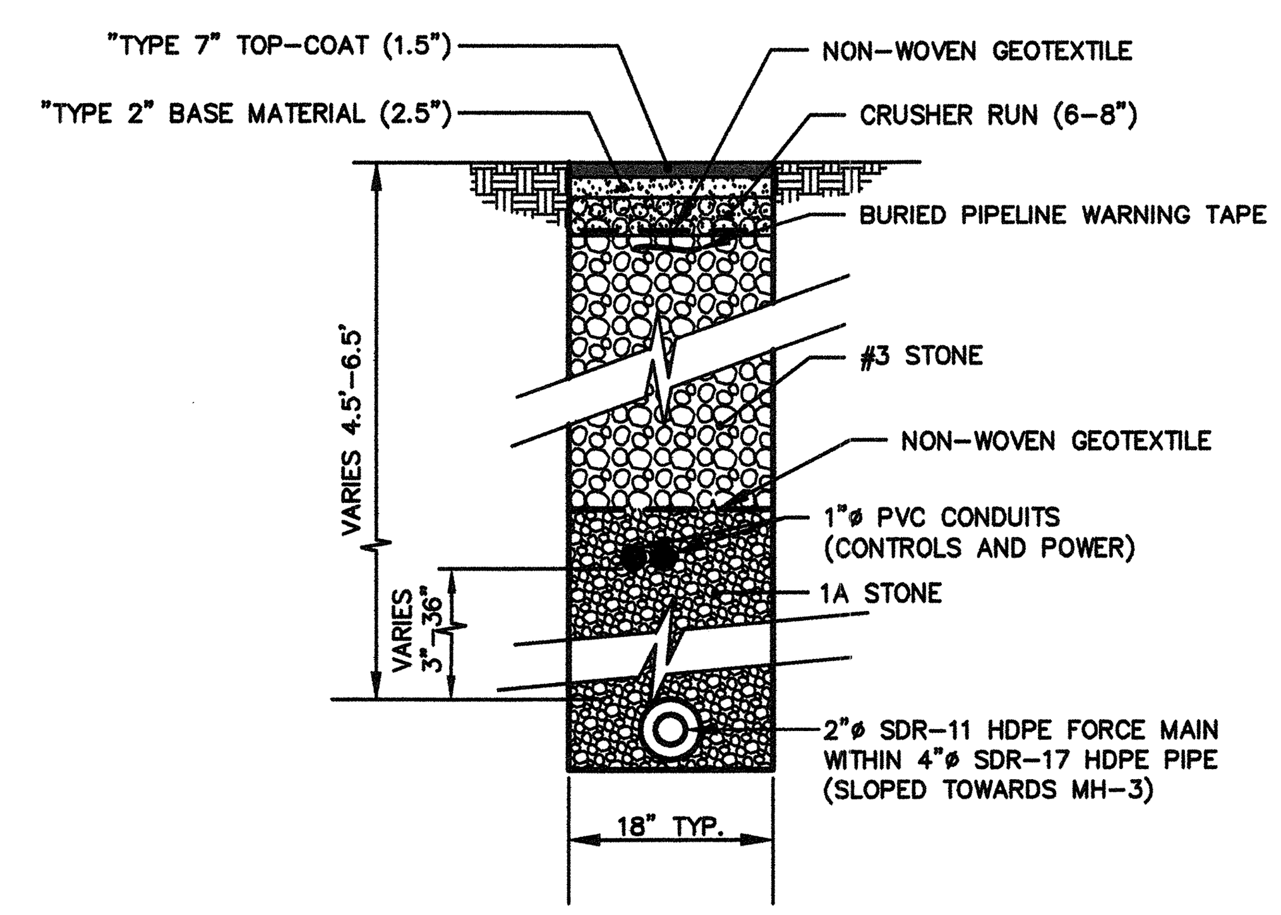
ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

G-3



MANHOLE NO. 3 DISCHARGE PIPE FLOOR PENETRATION DETAIL (1 G1 G4)

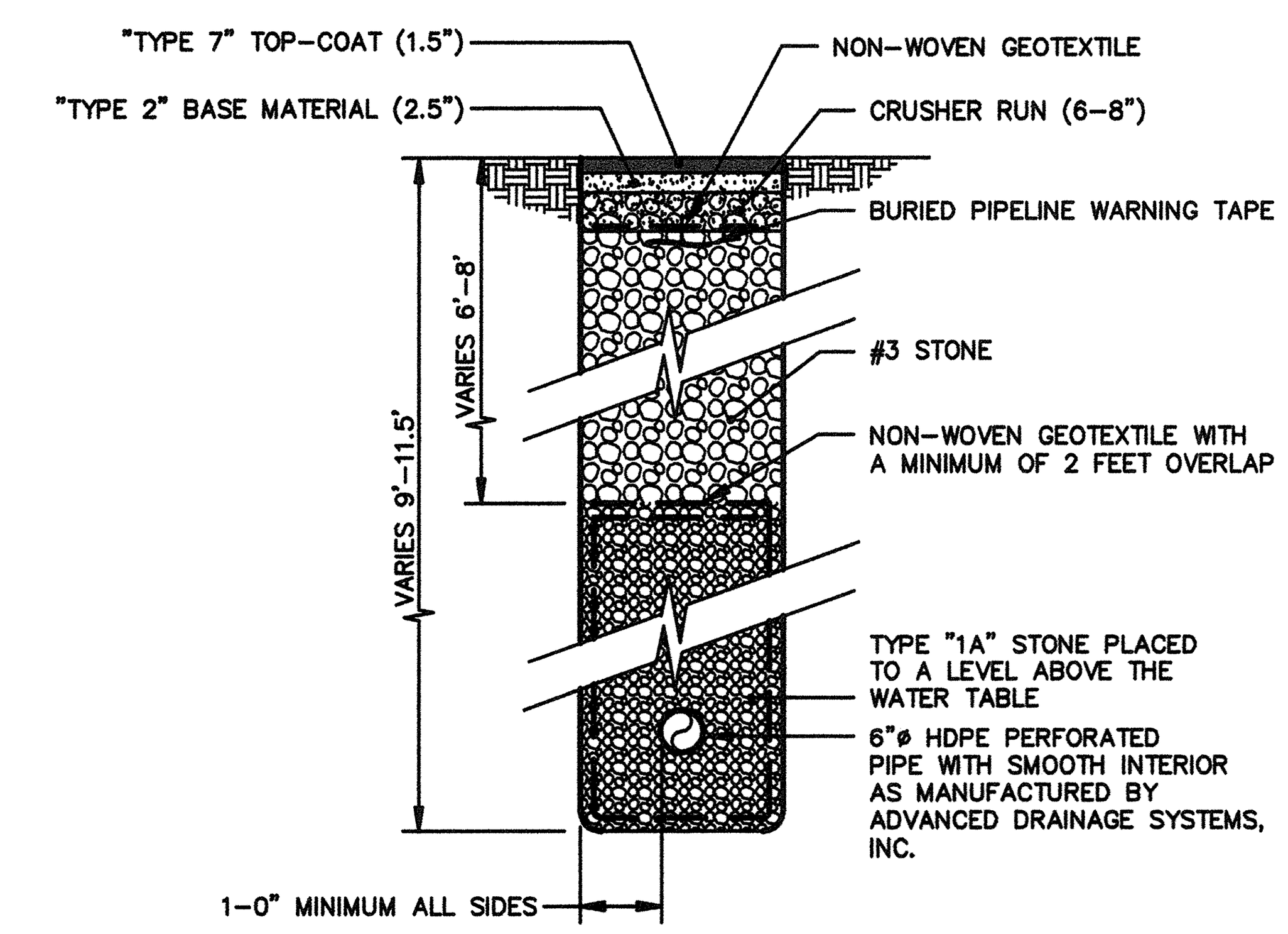
NOT TO SCALE



NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

MANHOLE NO. 3 DISCHARGE TRENCH DETAIL (TYPICAL) (2 G1 G4)

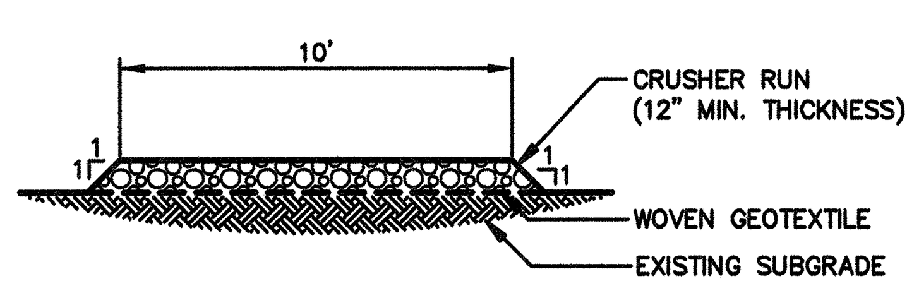
NOT TO SCALE



NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

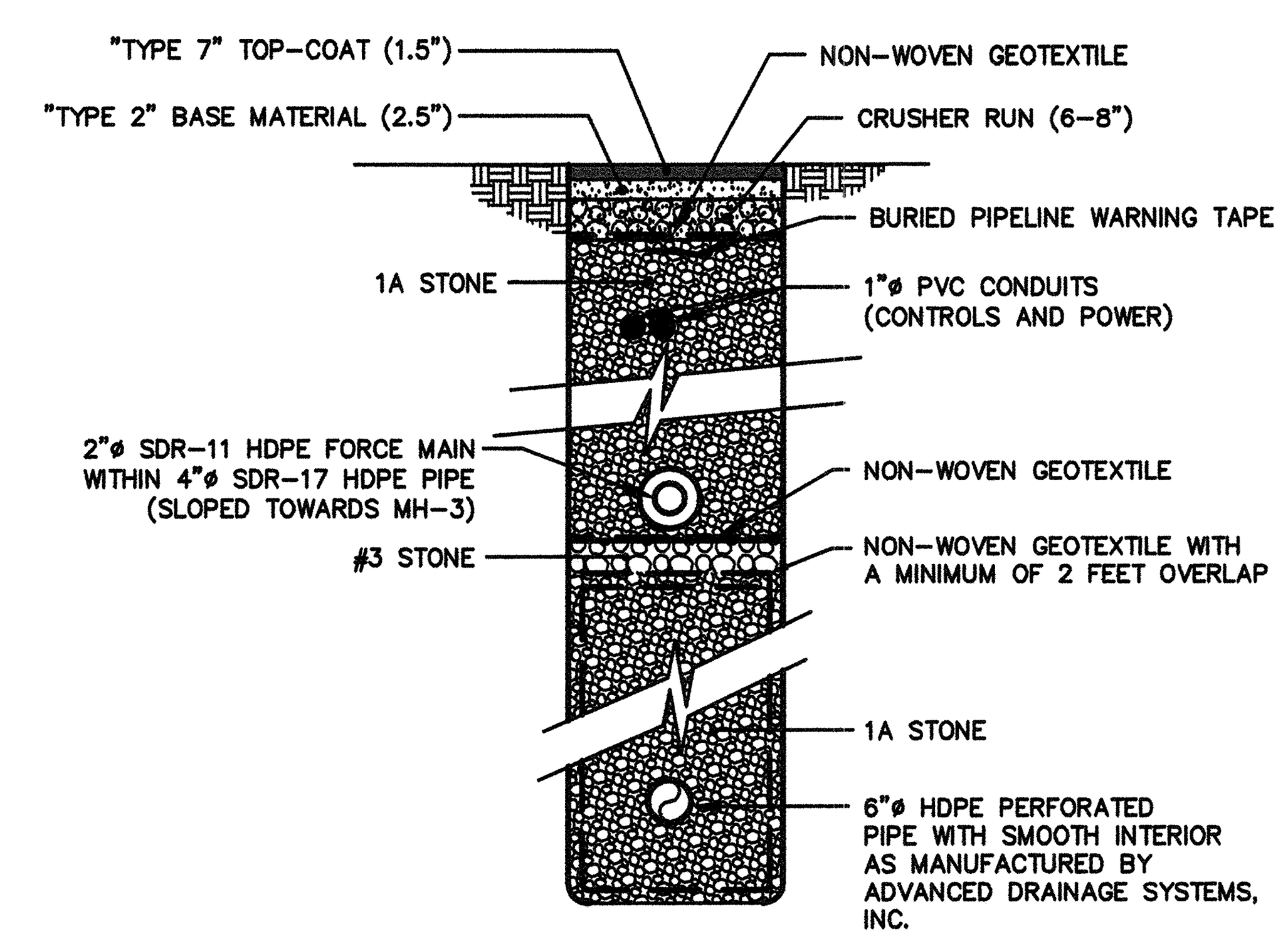
MANHOLE NO. 3 COLLECTION TRENCH DETAIL (TYPICAL) (3 G1 G4)

NOT TO SCALE



GRAVEL ACCESS DRIVE DETAIL (4 G1 G4)

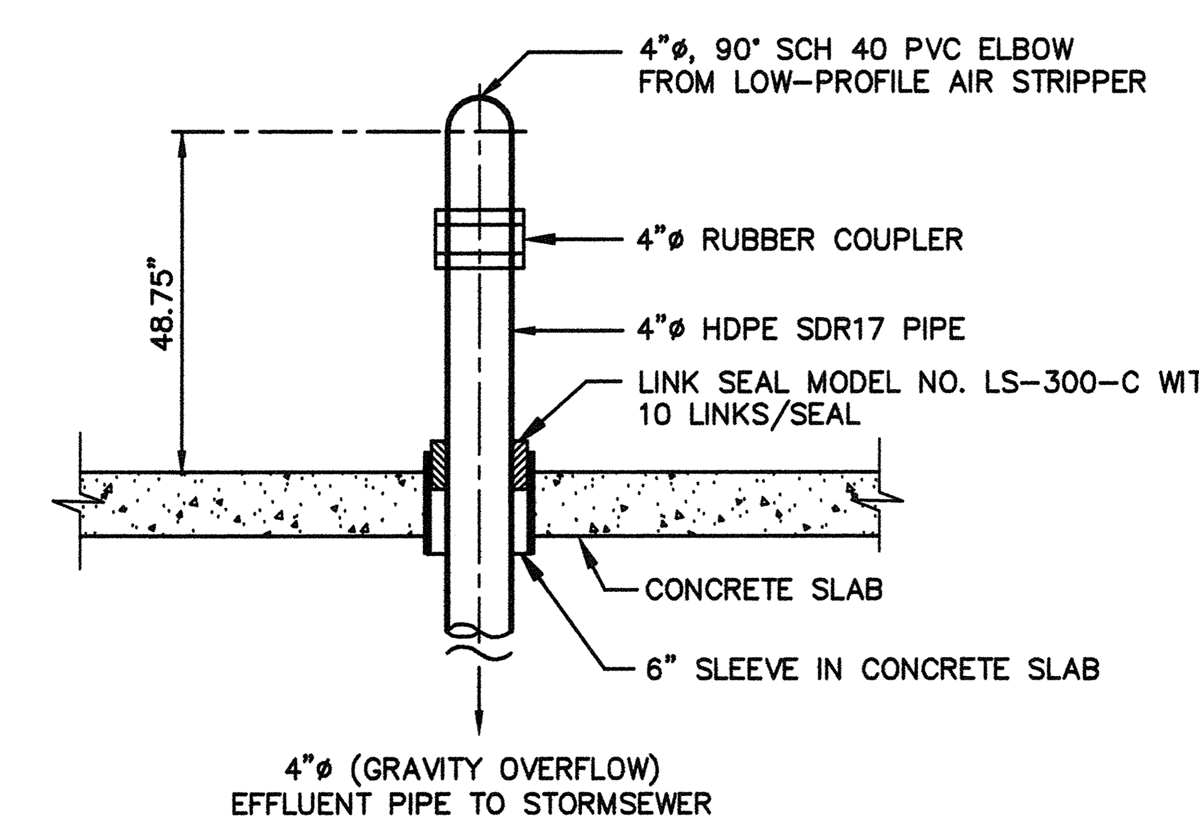
NOT TO SCALE



NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

COMBINED MANHOLE NO. 3 DISCHARGE AND COLLECTION TRENCH DETAIL (TYPICAL) (5 G2 G4)

NOT TO SCALE



EFFLUENT PIPE FLOOR PENETRATION DETAIL (6 G1 G4)

NOT TO SCALE

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No.	Date	Revisions	By	Ckd
3	3/17/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527

State	Date Signed	Project Mgr.
NY	06/13/2011	P.MILIONIS
Designed by	Drawn by	Checked by
T.CARIGNAN	J.GONZALEZ	E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PIPING AND TRENCHING DETAILS

ARCADIS Project No. NJ001024.0001.00005
Date: MARCH 2011
ARCADIS OF NEW YORK, INC. 465 NEW KARNER ROAD ALBANY, NEW YORK TEL. 518.452.7826

G-4

GENERAL NOTES:

1. AIR STRIPPER SYSTEM MANUFACTURED BY QED MODEL EZ-TRAY 12.4 STAINLESS STEEL FABRICATION.

2. ALL PIPING AND MANIFOLDS LABELED WITH STENCIL OR ADHESIVE. FLOW ARROWS LABELED AT INLET AND DISCHARGE CONNECTIONS, PIPING AND DESCRIPTION (E.G., MANHOLE NO. 3 INFLUENT) CLEARLY LABELED AT ALL VALVE AND APPURTENANCE LOCATIONS.

3. FLOW TRANSMITTERS ARE SIGNET ANALOG FLOW TOTALIZER, WHICH DISPLAYS FLOW RATE AND TOTALIZED FLOW VOLUME OR EQUAL. SIGNET INDICATOR ARE A MODEL 8511. ASSOCIATED SIGNET SENSORS ARE MODEL 3-2536-PO. FITTINGS AND DIAL RANGES ARE AS FOLLOWS:

   A. MANHOLE NO. 1, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020 (SALVAGED FROM DEMOLITION)
      DIAL RANGE – 3-180 GPM

   B. MANHOLE NO. 2, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020 (SALVAGED FROM DEMOLITION)
      DIAL RANGE – 3-180 GPM

   C. MANHOLE NO. 3, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020 (NEW)
      DIAL RANGE – 3-180 GPM

   D. COMBINED FLOW, 3 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020 (NEW)
      DIAL RANGE – 7-400 GPM

   E. SUMP PUMP 1-INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T012 (EXISTING)
      DIAL RANGE – 3-180 GPM

4. ALL FLOW METERS HAVE STRAIGHT PIPE PRECEDING (10 TIMES PIPE DIAMETER) AND FOLLOWING (5 TIMES PIPE DIAMETER) THEM.

5. MANHOLE NO. 3 PUMPS ARE GOULDS PUMPS MODEL 3887 WITH VITON SEALS AND CAST IRON IMPELLER (3/4 HP, 230 VOLTS, 1,750 RPM, 1 PHASE) CAPABLE OF 50 GPM @ 25 FEET TDH (ONE PUMP) OR EQUAL.

6. DUCT HEATER IS HEAT EXCHANGE AND TRANSFER, INC. MODEL ADH-12-483 (12KW, 480V, 3 PHASE).

7. ALL SURFACES AT RECENTLY POURED CONCRETE RECEIVING NEW CONCRETE SHALL BE PREPARED BY CLEANING, WETTING AND TREATMENT WITH A NEAT CEMENT GROUT.

8. VAPOR PHASE CARBON VESSELS SIEMENS FB-1000 1,000 LB VESSELS. VESSELS UTILIZE SIEMENS VOCARB 36C VAPOR PHASE GRANULAR ACTIVATED CARBON.

ABBREVIATIONS:

A.F.F	ABOVE FINISHED FLOOR
BV	BALL VALVE
BFV	BUTTERFLY VALVE
CMP	CHEMICAL METERING PUMP
FS	FLOW SENSOR
FT	FLOW TRANSMITTER
HS	HAND SWITCH
LI	LEVEL INDICATOR
LSH	LEVEL SENSOR HIGH
LSL	LEVEL SENSOR LOW
LV	LOUVER
MIN.	MINIMUM
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
SP	SAMPLE PORT
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TT	TEMPERATURE TRANSMITTER
UH	UNIT HEATER

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF* LAYOUT: G-5 SAVED: 3/31/2011 9:27 AM ACADVER: 18.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: --- PLOTTED: 3/31/2011 9:27 AM BY: SAMIOS, ALEX
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THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
2	3/18/11	AS-BUILT RECORD DRAWINGS	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK – MOH MOHIUDDIN – 074527 – LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

GENERAL NOTES AND ABBREVIATIONS

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011
ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

G-5

ELECTRICAL LEGEND

- 2 LAMP FLUORESCENT LIGHT FIXTURE, LETTER DENOTES FIXTURE TYPE (n)
- WL — EXTERIOR WALL PACK LIGHT FIXTURE
- ELU — EMERGENCY LIGHT FIXTURE
- S — SINGLE POLE SWITCH
- DUPLEX RECEPTACLE
- GFI — GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE
- JB — JUNCTION BOX
- MOTOR
- CIRCUIT HOMERUN
- TELEPHONE OUTLET
- LS — LIMIT SWITCH
- CIRCUIT BREAKER
- DISCONNECTED, UNFUSED

SECTION AND DETAIL LEGEND

SECTION CUT

- SECTION IDENTIFICATION
- DRAWING WHERE DETAIL IS LOCATED
- DRAWING WHERE DETAIL IS CALLED OUT

MECHANICAL LEGEND

INSTRUMENTATION SYMBOLS

- X / Y — LOCALLY MOUNTED
- X / Y — PANEL MOUNTED
- X / Y HOA — ON–OFF HAND SWITCH
- PLC (INTERLOCK)

MOTORIZED EQUIPMENT

- MANHOLE PUMP
- BLOWER
- METERING PUMP

PIPING COMPONENTS

- REDUCER
- PI — SAMPLING/PRESSURE ASSEMBLY
- FM — FLOW METER
- E — POWER WIRING
- PI — PRESSURE INDICATOR
- SAMPLE/DRAIN TAP
- CHECK VALVE
- BALL VALVE
- BUTTERFLY VALVE
- FLOW DIRECTION
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- AIR FLOW
- HOSE BIBB
- UNION
- WM — WATER METER

OTHER EQUIPMENT

- VAPOR–PHASE GAC VESSEL
- AIR STRIPPER
- SEQUESTERING AGENT

CIVIL LEGEND

SITE PLAN LEGEND

- MANHOLE DISCHARGE WATER LINE
- GROUNDWATER COLLECTION LINE
- ST — STORM SEWER PIPE
- E — ELECTRICAL CIRCUIT
- W — WATER LINE
- T — TELEPHONE LINE
- SS — EXISTING SANITARY SEWER
- S — EXISTING STORM SEWER
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- G — EXISTING ELECTRIC LINE
- X — EXISTING CHAIN LINK FENCE
- EXISTING PROPERTY LINE
- ACCESS DRIVE
- EXISTING BITUMINOUS PAVEMENT
- HYD. — EXISTING HYDRANT
- PIV — EXISTING POSITION INDICATOR VALVE
- LP. — EXISTING LIGHT POLE
- MH #22 — EXISTING MANHOLE
- CB#21 — EXISTING CATCH BASIN
- MW 11 — MONITORING WELL LOCATION
- PZ–5 — PIEZOMETER LOCATION
- TEST PIT LOCATION

PROFILE LEGEND

- 501.7 ▽ — GROUNDWATER LEVEL, 11/18/08
- OUTLINE OF TEST PIT PROFILE
- FILL
- TILL
- MW–11 — WELL DESIGNATION
- EXISTING LAND SURFACE (DASHED WHERE INFERRED)
- GEOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREENED INTERVAL
- END OF BOREHOLE

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PROJECTNAME: —

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
2	3/18/11	AS-BUILT RECORD DRAWINGS	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

LEGEND AND SYMBOLS

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

ARCADIS OF NEW YORK, INC.
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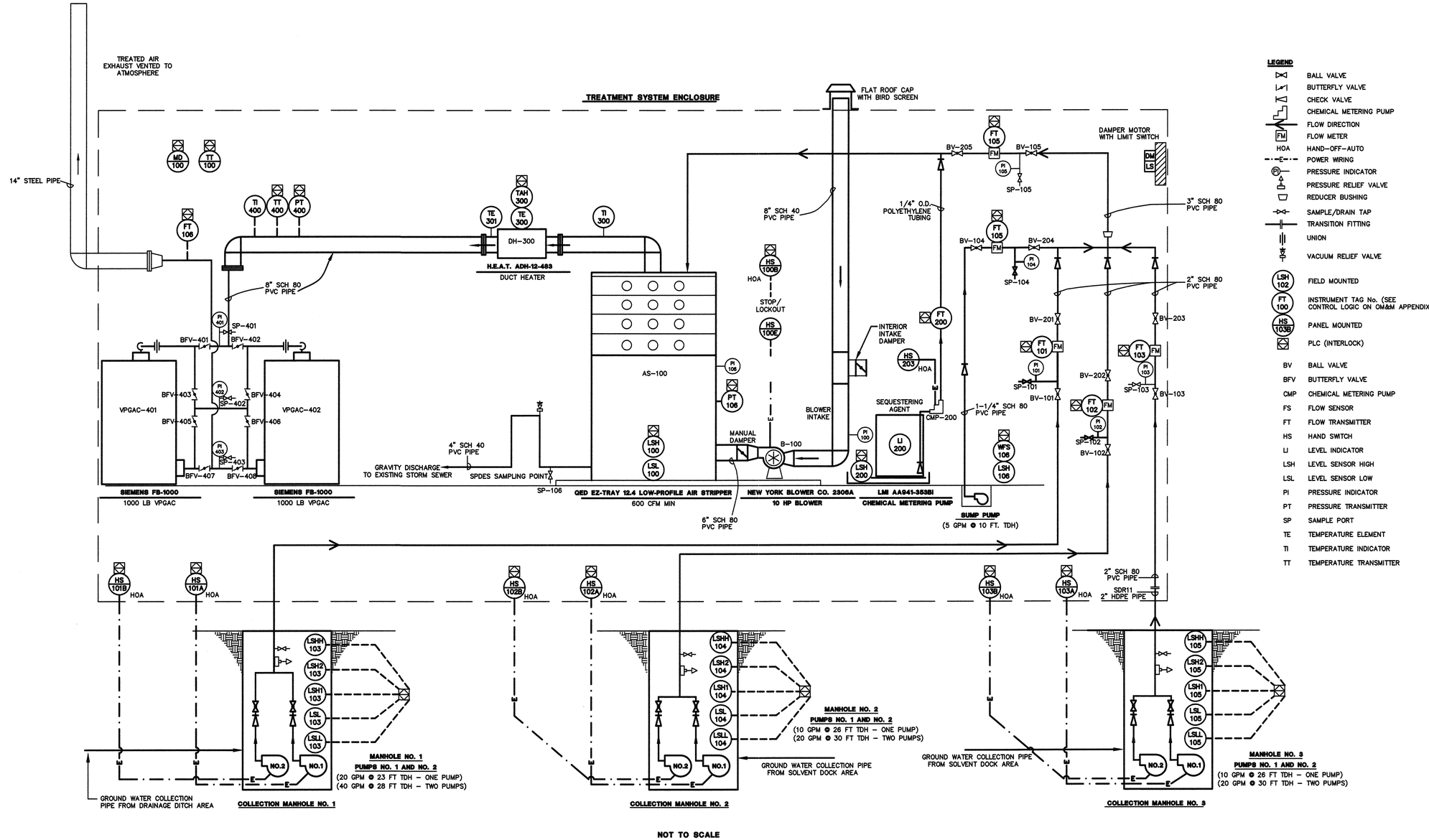
ALBANY, NEW YORK
TEL. 518.452.7826

G-6



NOT TO SCALE

LEGEND

- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- CHEMICAL METERING PUMP
- FLOW DIRECTION
- FM — FLOW METER
- HOA — HAND-OFF-AUTO
- POWER WIRING
- PI — PRESSURE INDICATOR
- PRESSURE RELIEF VALVE
- REDUCER BUSHING
- SAMPLE/DRAIN TAP
- TRANSITION FITTING
- UNION
- VACUUM RELIEF VALVE
- LSH 102 — FIELD MOUNTED
- FT 100 — INSTRUMENT TAG No. (SEE CONTROL LOGIC ON OM&M APPENDIX)
- HS 103B — PANEL MOUNTED
- PLC (INTERLOCK)

BV	BALL VALVE
BFV	BUTTERFLY VALVE
CMP	CHEMICAL METERING PUMP
FS	FLOW SENSOR
FT	FLOW TRANSMITTER
HS	HAND SWITCH
LI	LEVEL INDICATOR
LSH	LEVEL SENSOR HIGH
LSL	LEVEL SENSOR LOW
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
SP	SAMPLE PORT
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TT	TEMPERATURE TRANSMITTER

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: ——— USE TO VERIFY FIGURE REPRODUCTION SCALE

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3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 04/13/2011 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

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FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

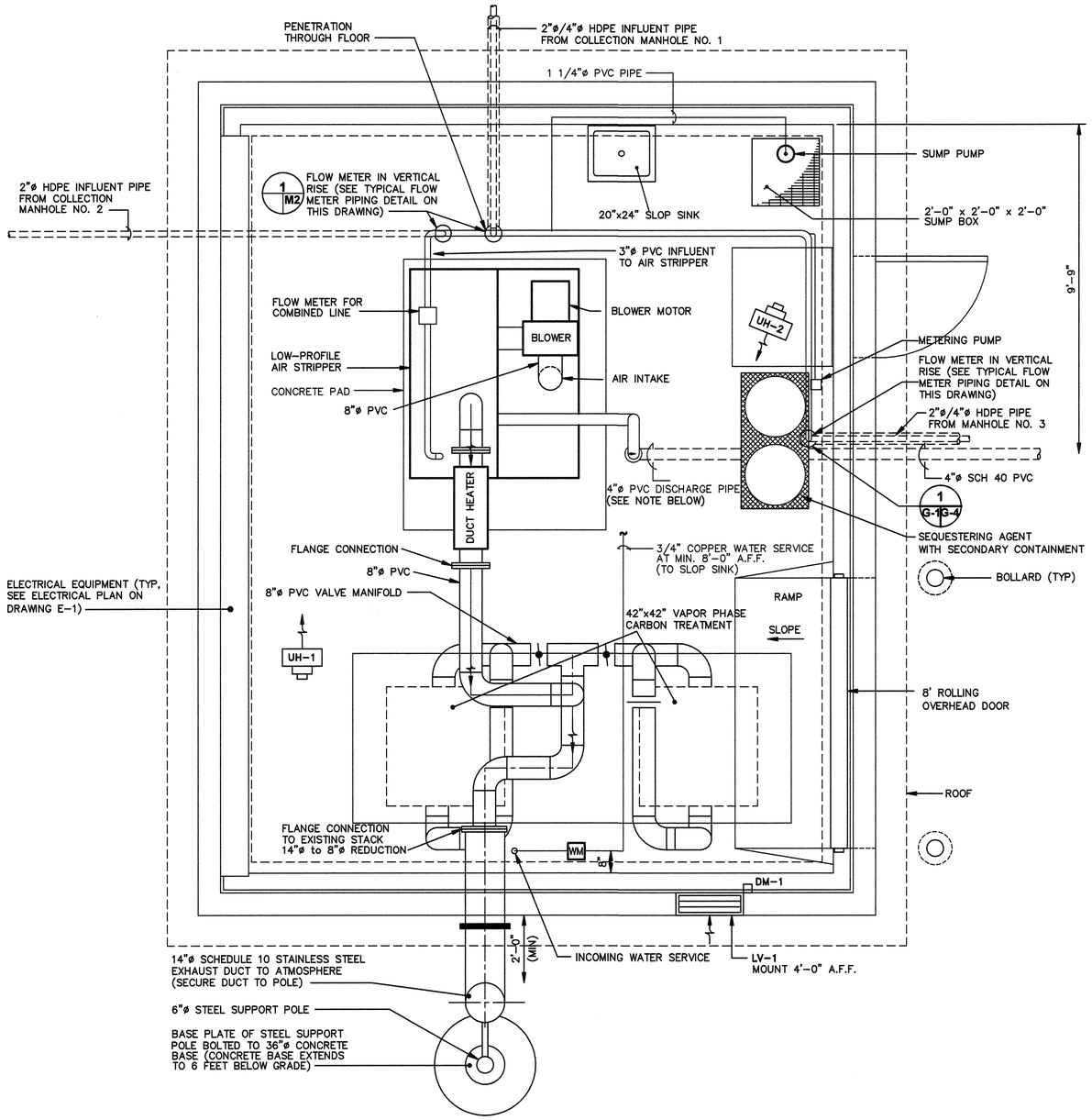
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PIPING AND INSTRUMENTATION DIAGRAM

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

M-1



FLOOR PLAN

SCALE: 1/2"=1'-0"

1/2"=1'-0" 2' 0 2' 4'

NTS 0404

LEGEND

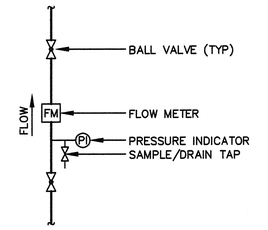
- DIRECTION OF FLOW
- AIR FLOW
- HOSE BIBB
- WM WATER METER

ABBREVIATIONS:

A.F.F.	ABOVE FINISHED FLOOR
MIN.	MINIMUM
DM	DAMPER MOTOR
LV	LOUVER
UH	UNIT HEATER

GENERAL NOTES:

1. REFER TO DRAWING G-5 FOR SPECIFICATIONS AND NOTES.



TYPICAL FLOW METER PIPING DETAIL

1 M2

NOT TO SCALE

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PROJECTNAME: —
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SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 04/13/2011 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

FLOOR PLAN AND DETAILS

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

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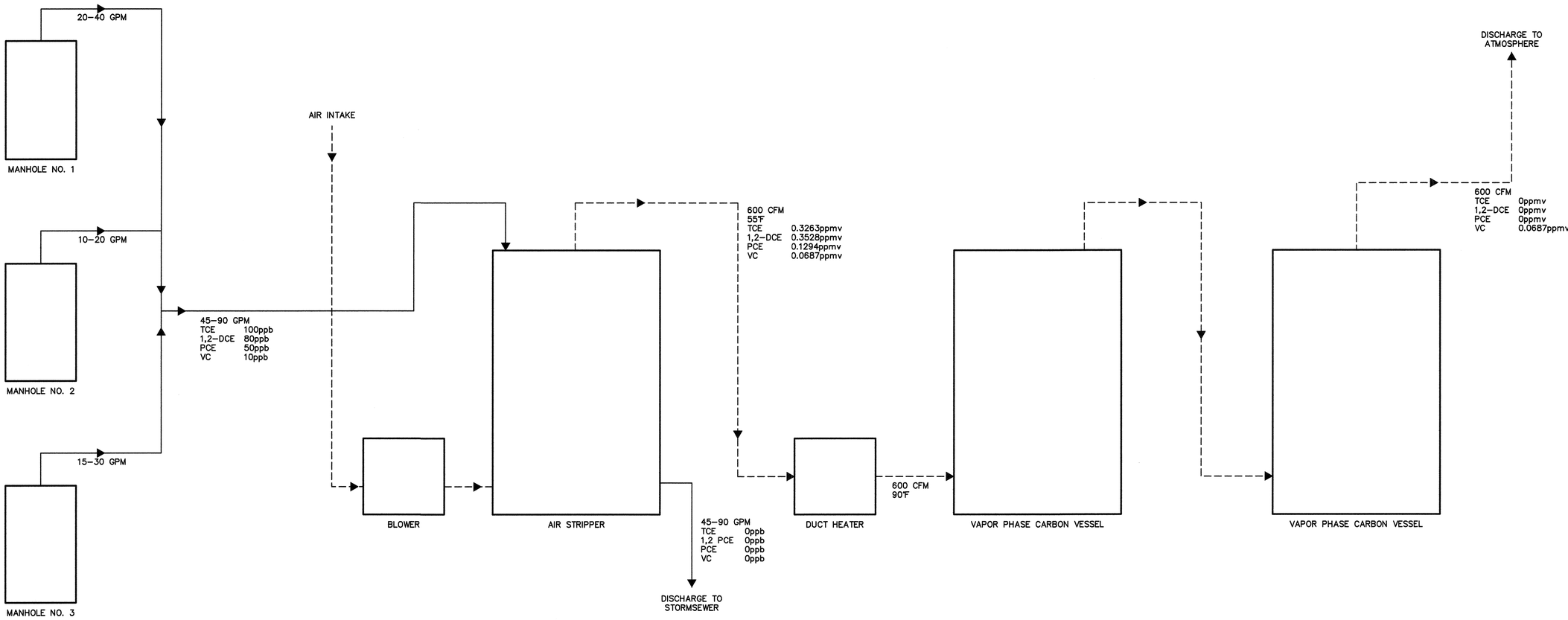
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

M-2



LEGEND

——— WATER

– – – – VAPOR

NOTES

1. OFF GAS CONCENTRATIONS BASED ON QED AIR STRIPPER MODEL VERSION 2.01 AT 90 GPM PROVIDED IN APPENDIX A OF GROUNDWATER COLLECTION AND TREATMENT SYSTEM 100% DESIGN WORKPLAN.

SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd
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0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 04/13/2011 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

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FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

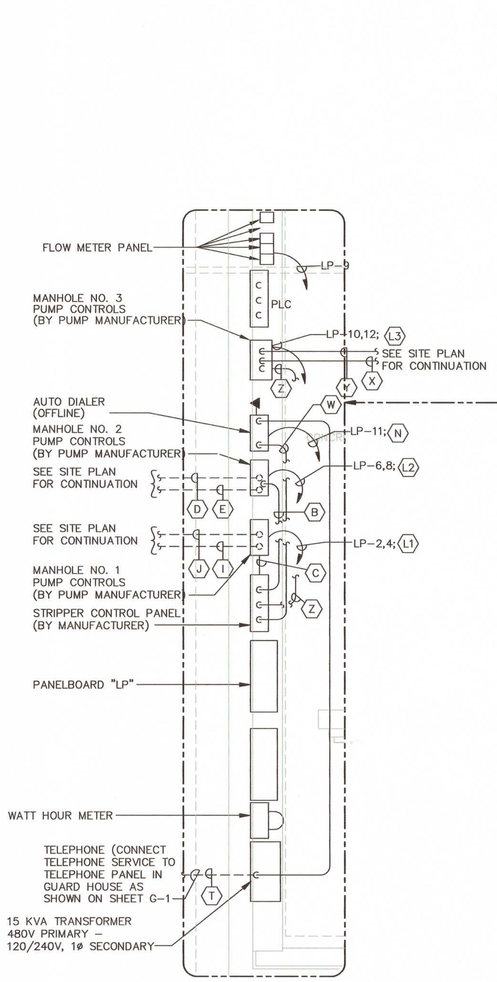
PROCESS FLOW DIAGRAM

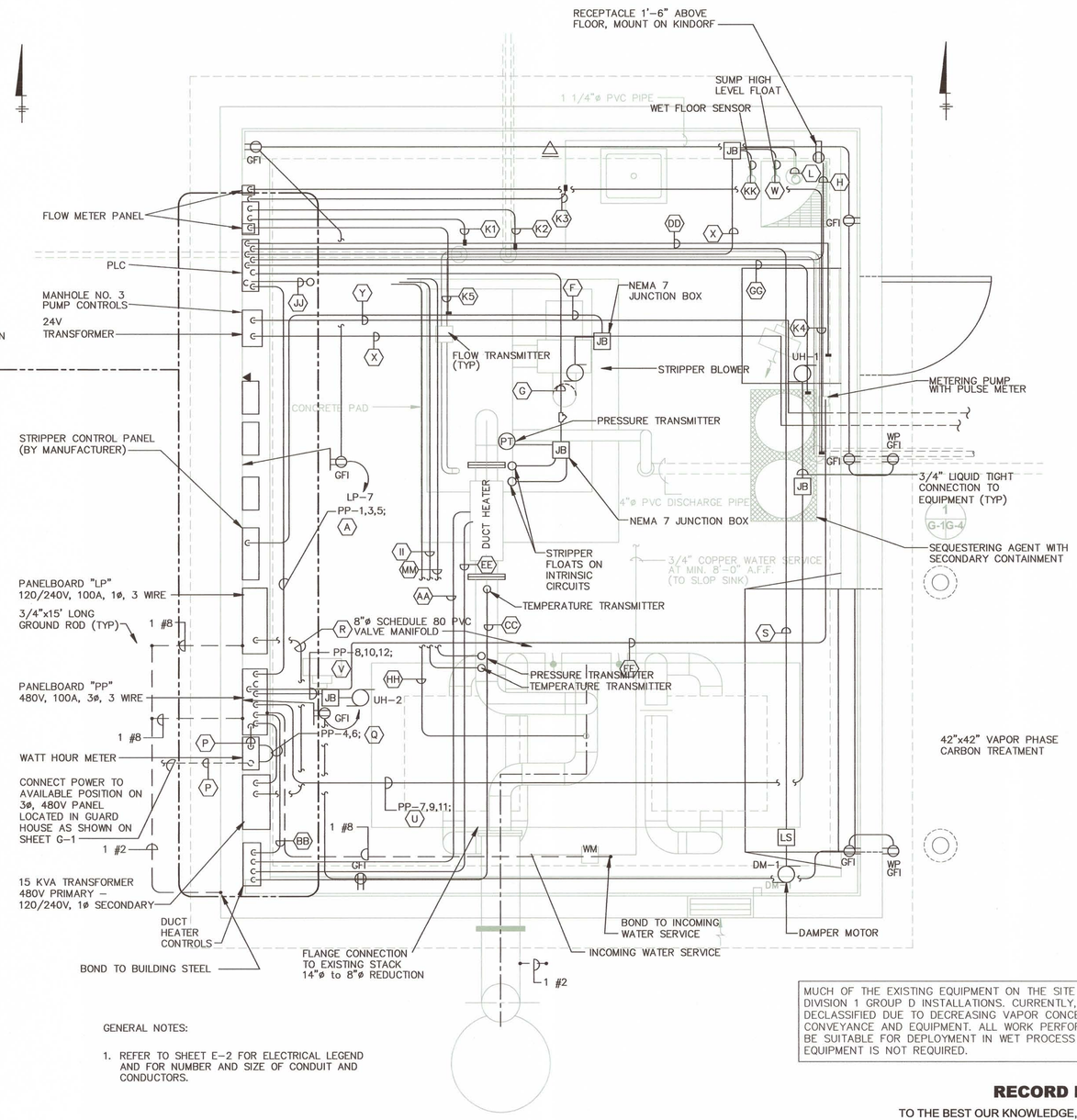
ARCADIS Project No.
NJ001024.0001.00005

Date
MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

M-3





GENERAL NOTES:

1. REFER TO SHEET E-2 FOR ELECTRICAL LEGEND AND FOR NUMBER AND SIZE OF CONDUIT AND CONDUCTORS.

MUCH OF THE EXISTING EQUIPMENT ON THE SITE IS SUITABLE FOR CLASS 1, DIVISION 1 GROUP D INSTALLATIONS. CURRENTLY, THE SITE HAS BEEN DECLASSIFIED DUE TO DECREASING VAPOR CONCENTRATIONS IN PROCESS CONVEYANCE AND EQUIPMENT. ALL WORK PERFORMED IN THIS PHASE SHALL BE SUITABLE FOR DEPLOYMENT IN WET PROCESS LOCATIONS, AND NEMA 7 EQUIPMENT IS NOT REQUIRED.

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY: Michael E. Currie

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
\\N12FP1\Data\-DATA\WIPLM\Utica\final as builts\GCS\01024E01.DWG LAYOUT: E-1 SAVED: 6/11/2011 7:52 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: 6030FULL.CTB PLOTTED: 6/13/2011 7:24 AM BY: CURRIE, MIKE

XREFS: 01024X00 01024M02
IMAGES:
PROJECTNAME: ----

1/2"=1'-0" (2' 0 2' 4')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
4	6/12/11	AS-BUILT RECORD DRAWINGS	MEC	MEC
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name		
MICHAEL E. CURRE		
Professional Engineer's No.		
082521		
State	Date Signed	Project Mgr.
NY	6/13/11	P.MILIONIS
Designed by	Drawn by	Checked by
C.MCLAUGHLIN	J.GONZALEZ	M.CURRIE

STATE OF NEW YORK MICHAEL E. CURRE NO. 082521 LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

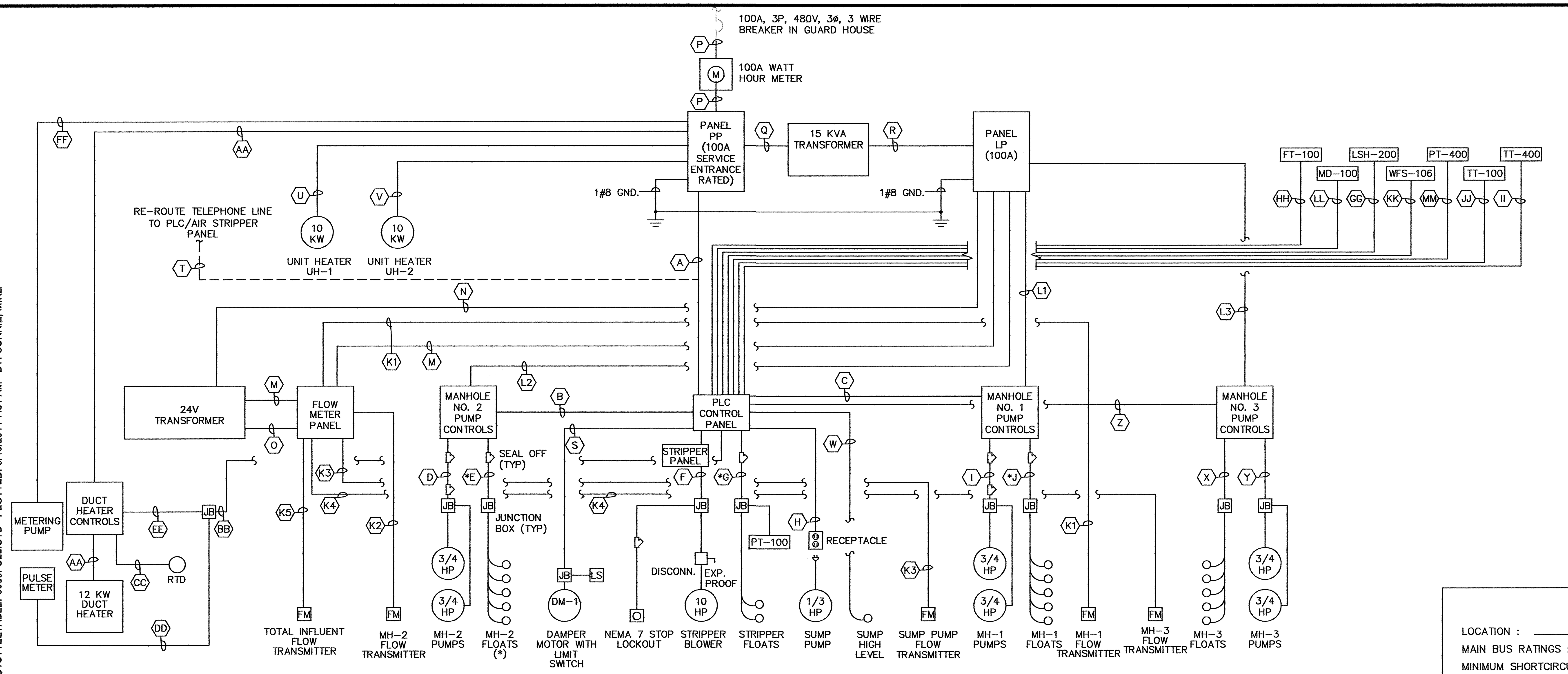
ELECTRICAL FLOOR PLANS

ARCADIS Project No. NJ001024.0001.00005

Date MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

E-1



ONE-LINE DIAGRAM

NOT TO SCALE

LEGEND

- 2 LAMP FLUORESCENT LIGHT FIXTURE, LETTER n DENOTES FIXTURE TYPE
- WL — EXTERIOR WALL PACK LIGHT FIXTURE
- ELU — EMERGENCY LIGHT FIXTURE
- S — SINGLE POLE SWITCH
- DUPLEX RECEPTACLE
- GFI — GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE
- JB — JUNCTION BOX
- MOTOR
- CIRCUIT HOMERUN
- TELEPHONE OUTLET
- LS — LIMIT SWITCH
- CIRCUIT BREAKER
- DISCONNECTED, UNFUSED

LOAD SERVICE – 480V CONNECTED LOADS					
LOAD/ITEM DESCRIPTION	LOAD (KW)	LOAD (HP)	LOAD (F.L.A.)	CB	SERVICE FACTOR
DUCT HEATER (12 KW)	12.0	--	67.7	30	50%
A/S BLOWER (NEW)	--	10	14.0	30	100%
UNIT HEATER (UH-1)	10.0	--	12.1	20	50%
UNIT HEATER (UH-2)	10.0	--	12.1	20	50%
WELL PUMPS (6)	--	3/4 (EA)	20.7	10	50%
MISC 1ø LOADS	--	--	4.6	20	50%
TOTAL	--	--	81.2A	--	--

CONDUIT/CONDUCTOR SCHEDULE

CIRCUIT ⬡	CONDUCTOR SIZE	CONDUIT SIZE	NAME
A	3 #10, #10G	3/4" EMT	BLOWER, SUMP PUMP, AND STRIPPER CONTROL POWER FEED
B	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 2 PUMP CONTROLS
C	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 1 PUMP CONTROLS
D	6 #12, 2 #12G	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 PUMP POWER
E*	10 #12	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 LEVEL SWITCHES
F	3 #8, 1 #12G 2 #14	1-1/2" RGS	BLOWER POWER AND CONTROL
G*	8 #14	3/4" RGS	BLOWER PRESSURE SWITCH & LEVEL SWITCHES
H	2 #12, 1 #12G	3/4" RGS	SUMP PUMP RECEPTACLE POWER
I	6 #12, 2 #12G	1" RGS	MANHOLE NO. 1 PUMP POWER
J*	10 #14	1" RGS	MANHOLE NO. 1 LEVEL SWITCHES
K1 K2 K3 K4 K5	MANUFACTURER'S CABLES	3/4" RGS	MANHOLE NO. 1 FLOW METER, MANHOLE NO. 2 FLOW METER, & SUMP PUMP FLOW METER MANHOLE NO. 3 FLOW METER TOTAL INFLUENT FLOW METER
L1 L2 L3	3 #10, 1 #10G 3 #10, 1 #10G	3/4" EMT	PUMP CONTROL PANEL POWER FEEDS
M	2 #12, 1 #12G	3/4" EMT	FLOW METER & CHART REC. POWER FEED
N	2 #12, 1 #12G	3/4" EMT	24V TRANSFORMER POWER FEED

CIRCUIT ⬡	CONDUCTOR SIZE	CONDUIT SIZE	NAME
O	3 TSP #16	3/4" EMT	FLOW SIGNALS (SEE NOTE 1)
P	3 #2, 1 #6G	1-1/2" EMT (RGS OUTDOORS)	BUILDING POWER
Q	3 #8, 1 10G	1" SEAL TITE	TRANSFORMER FEED
R	3 #6, 1 #8G	1" SEAL TITE	PANEL LP FEED
S	2 #12, 1 #12G 2 #14	3/4" EMT	DAMPER MOTOR AND LIMIT SWITCH
T	6 #22	1-1/2" RGS	TELEPHONE SERVICE
U	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-1)
V	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-2)
W	10 #14	3/4" EMT	SUMP HIGH LEVEL
X	10 #14 1 #14G	1" RGS (SEE NOTE 9)	MANHOLE NO. 3 LEVEL SWITCHES
Y	6 #10 2 #10G	1" RGS (SEE NOTE 9)	MANHOLE NO. 3 PUMP POWER
Z	8 #14 1 #14G	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 3 PUMP CONTROLS
AA	3 #8 1 #8G	1" RGS	DUCT HEATER POWER
BB	6 #14 1 #14G	3/4" RGS	DUCT HEATER HOMERUN
CC	#18 SHIELDED TWISTED PAIR	1" RGS	DUCT HEATER TEMP SENSOR
DD	2 #14 1 #14G	1" RGS	METERING PUMP CONTROLS AND PULSE METER
EE	4 #14 1 #14G	3/4" RGS	DUCT HEATER CONTROLS

CIRCUIT ⬡	CONDUCTOR SIZE	CONDUIT SIZE	NAME
FF	2 #14 1 #14G	3/4" RGS	METERING PUMP POWER
GG	2 #22	3/4" EMT	WET PALLET SENSOR
HH	1 #18	3/4" EMT	AIR FLOW TRANSMITTER
II	1 #18	3/4" EMT	TEMPERATURE TRANSMITTER
JJ	1 #20	3/4" EMT	TEMPERATURE TRANSMITTER
KK	1 #18 1 #18G	3/4" EMT	WET FLOOR SENSOR
LL	1 #22	3/4" EMT	MOTION DETECTOR
MM	1 #18	3/4" EMT	PRESSURE TRANSMITTER

* INDICATES INTRINSICALLY SAFE SYSTEM PER NEC-504

CONDUIT/CONDUCTOR SCHEDULE

NOT TO SCALE

PANELBOARD LP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
FED FROM : PANEL "PP" CIRCUITS 4 & 6
MAIN BUS RATINGS : 100 AMPS , 240/120 VOLTS , 1 PHASE , 3 WIRE
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000 RMS. SYMM. AMPS
NQOD TYPE
MAIN BREAKER TRIP : 60 AMPS ,
INCOMING FEED : 3#6, 1#8 GND., 1"C
ESTIMATED CONNECTED LOAD : 7.1 KVA
ENCLOSURE : SURFACE MOUNTED NEMA 1

DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	B C	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
INDOOR/OUTDOOR LIGHTING	480W	20 / 1	1		2	30	1.5 HP	MANHOLE NO.1 PUMP CONTROLS	L1
SPARE		20 / 1	3		4	2			
A RECEPTS (SOUTH)	720W	20 / 1	5		6	30	1.5 HP	MANHOLE NO.2 PUMP CONTROLS	L2
B RECEPTS & MTRG PMPS (NORTH)	900W	20 / 1	7		8	2			
	–	20 / 1	9		10	30	1.5 HP	MANHOLE NO.3 PUMP CONTROLS	L3
FLOW METER & CHART RECORDER	–	20 / 1	11		12	2			
SPARE	–	20 / 1	13		14	20 / 1	–	MANHOLE NO.3 FLOW METER	K4
UPS & CONTROLS IN ASMCP	–	15 / 1	15		16	20 / 1	–	C RECEPTS	K5
SPARE	–	20 / 1	17		18	20 / 1	–	SPARE	
SPACE	–		19		20	20 / 1	–	SPARE	
MAIN	–	60 / 2							

PANELBOARD PP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
FED FROM : GUARD HOUSE PANEL CIRCUIT
MAIN BUS RATINGS : 100 AMPS , 480 VOLTS , 3 PHASE , 3 WIRE
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000 RMS. SYMM. AMPS
I-LINE HCN TYPE
MAIN BREAKER TRIP : 100 (SERVICE ENTRANCE RATED) AMPS ,
INCOMING FEED : 3#2, 1#6 GND., 1-1/2"C
ESTIMATED CONNECTED LOAD : –
ENCLOSURE : SURFACE MOUNTED NEMA 1

	DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	A B C	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
AA	DUCT HEATER	12KW	40	1		2				
				3		4	20		WELL PUMP TRANSFORMER FEED	
			3	5		6				
A	BLOWER, STRIPPER CONTROLS	15HP	45	7		8	3			
				9		10	35	15KVA	TRANSFORMER FEED	Q
			3	11		12	2			
U	UNIT HEATER (UH-1)	10KW	30	13		14	30	10 KW	UNIT HEATER (UH-2)	V
				15		16				
			3	17		18	3			

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY: [signature]

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: P. PROFIENMFIC: D. SOUDA PM: P. MILIONIS TM: J. BONSTEEL TR: C. DAVERN LYR:ON=*;OFF=*REF*
N:\JP1\Data\-DATA\WIP\LMC\Utica\final as builts\GCS01024E02.dwg LAYOUT: E-2 SAVED: 6/12/2011 8:39 AM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: 6030FULL.CTB PLOTTED: 6/13/2011 7:31 AM BY: CURRIE, MIKE

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
4	6/12/11	AS-BUILT RECORD DRAWINGS	MEC	MEC
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MICHAEL E. CURRE
Professional Engineer's No.: 082521
State: NY Date Signed: 6/13/11 Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN Drawn by: J.GONZALEZ Checked by: M.CURRIE

STATE OF NEW YORK · MICHAEL E. CURRIE · No. 082521 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

ONE LINE DIAGRAM, CONDUCTOR AND PANELBOARD SCHEDULES

ARCADIS Project No. NJ001024.0001.00005
Date: MARCH 2011
ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

E-2

LOGIC FOR MANHOLE NO. 1

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN OFF POSITION
3. MANHOLE NO. 1 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-103)
4. MANHOLE NO. 1 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-103)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-103) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-103) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN OFF POSITION
3. MANHOLE NO. 1 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-103)
4. MANHOLE NO. 1 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-103)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-103) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-103) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN HAND POSITION

LOGIC FOR MANHOLE NO. 2

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN OFF POSITION
3. MANHOLE NO. 2 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-104)
4. MANHOLE NO. 2 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-104)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-104) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-104) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN OFF POSITION
3. MANHOLE NO. 2 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-104)
4. MANHOLE NO. 2 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-104)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-104) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-104) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN HAND POSITION

LOGIC FOR MANHOLE NO. 3

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN OFF POSITION
3. MANHOLE NO. 3 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-105)
4. MANHOLE NO. 3 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-105)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-105) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-105) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN OFF POSITION
3. MANHOLE NO. 3 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-105)
4. MANHOLE NO. 3 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-105)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-105) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-105) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN HAND POSITION

LOGIC FOR AIR STRIPPER BLOWER (B-100)

BLOWER SHALL OPERATE IF:

1. BLOWER HOA SWITCH (HS-100) IS IN HAND POSITION
2. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 1 PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
3. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 1 PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
4. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 2 PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
5. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 2 PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
6. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 3 PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
7. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 3 PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]

BLOWER SHALL NOT OPERATE IF:

1. BLOWER HOA SWITCH (HS-100) IS IN OFF POSITION
2. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND FATAL ALARMS (SHOWN ON THIS DRAWING) HAVE BEEN INDICATED AT PLC FOR GREATER THAN TEN MINUTES
3. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND NONE OF THE STATEMENTS LISTED ABOVE ARE TRUE

LOGIC FOR DUCT HEATER (DH-300)

DUCT HEATER SHALL OPERATE IF:

1. DUCT HEATER HEAT ON/OFF SWITCH IS IN ON POSITION AND BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND BLOWER (B-100) IS RUNNING

DUCT HEATER SHALL NOT OPERATE IF:

1. DUCT HEATER HEAT ON/OFF SWITCH IS IN OFF POSITION
2. DUCT HEATER HEAT ON/OFF SWITCH IS IN ON POSITION AND BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND BLOWER (B-100) IS NOT RUNNING

LOGIC FOR CHEMICAL METERING PUMP (CMP-200)

CHEMICAL METERING PUMP SHALL OPERATE IF:

1. AGGREGATE FLOW TRANSMITTER (FT-105) IS REGISTERING AN INSTANTANEOUS FLOWRATE

CHEMICAL METERING PUMP SHALL NOT OPERATE IF:

1. AGGREGATE FLOW TRANSMITTER (FT-105) IS NOT REGISTERING AN INSTANTANEOUS FLOWRATE

FATAL ALARMS:

1. HIGH AIR STRIPPER SUMP PRESSURE (PT-106)
2. LOW AIR STRIPPER SUMP PRESSURE (PT-106)
3. HIGH AIR STRIPPER SUMP LEVEL (LSH-100)
4. LOW AIR STRIPPER SUMP LEVEL (LSL-100)
5. HIGH AIR FLOWRATE (FT-106)
6. LOW AIR FLOWRATE (FT-106)
7. PRE-CARBON HIGH TEMPERATURE (TT-400)
8. PRE-CARBON LOW TEMPERATURE (TT-400)
9. PRE-CARBON HIGH PRESSURE (PT-400)
10. PRE-CARBON LOW PRESSURE (PT-400)
11. BUILDING WET FLOOR SENSOR ALARM (WFS-106)

NOTES:

1. CONTROLS WERE MODIFIED FROM AN ELECTRICAL CIRCUIT RELAY. BASED CONTROL SYSTEM TO A MICROPROCESSOR BASED (PROGRAMMABLE LOGIC CONTROLLER) CONTROLS BY AZTECH TECHNOLOGIES, INC, IN DECEMBER 2007.
2. MODIFIED CONTROL DETAILS AND LINE DRAWINGS/SCHEMATIC ARE PROVIDED IN THE APPENDIX OF OM&M MANUAL.
3. PLC PROGRAMMING WILL BE PERFORMED BY ARCADIS.

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY:

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
\\N2FP1\Data-DAT4\WIPLM\C\Ulica\final as builts\GCS\01024E03.DWG LAYOUT: E-3 SAVED: 6/11/2011 7:52 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: 6030FULL.CTB PLOTTED: 6/13/2011 7:33 AM BY: CURRIE, MIKE
XREFS:
0102AX00
IMAGES: PROJECTNAME: ----

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: ——— USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
4	6/12/11	AS-BUILT RECORD DRAWINGS	MEC	MEC
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MICHAEL E. CURRE
Professional Engineer's No.: 082521
State: NY | Date Signed: 6/13/11 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: M.CURRIE

STATE OF NEW YORK · MICHAEL E. CURRE · LICENSED PROFESSIONAL ENGINEER · NO. 082521

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

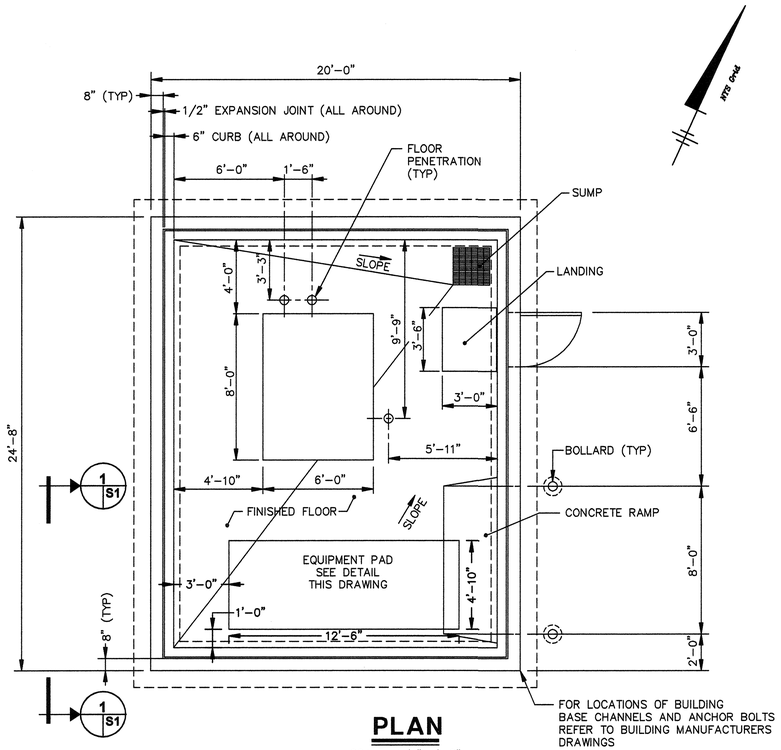
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

CONTROL LOGIC

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

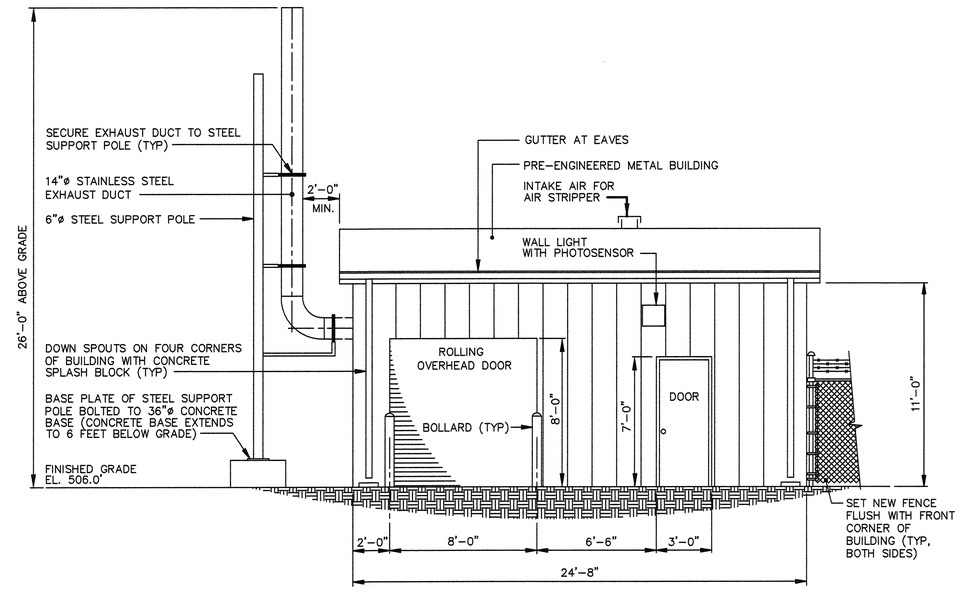
ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

E-3



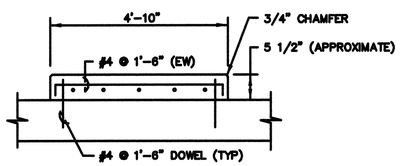
PLAN

SCALE: 1/4"=1'-0"



EAST ELEVATION

SCALE: 1/4"=1'-0"



EQUIPMENT PAD DETAIL 1 S1

NOT TO SCALE

SCALE: 1/4"=1'-0" 4' 2' 0 4' 8'

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYRON="OFF="REF"
G:\ENVCAD\SYRACUSE\ACTIVE\NJ001024\0001\00005\CONTRACT\AS-BUILT\01024S01.dwg LAYOUT: S-1 SAVED: 3/30/2011 2:58 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---PLOTSTYLETABLE: ARCADIS (SIZE C-E).CTB PLOTTED: 3/30/2011 3:01 PM BY: DECLERCQ, BRIAN
XREFS: IMAGES: PROJECTNAME: ---
01024X00

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: ——— USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name	MOH MOHIUDDIN PhD, PE, DEE	
Professional Engineer's No.	074527	
State	Date Signed	Project Mgr.
NY	06/13/2011	P.MILIONIS
Designed by	Drawn by	Checked by
C.MCLAUGHLIN	J.GONZALEZ	E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

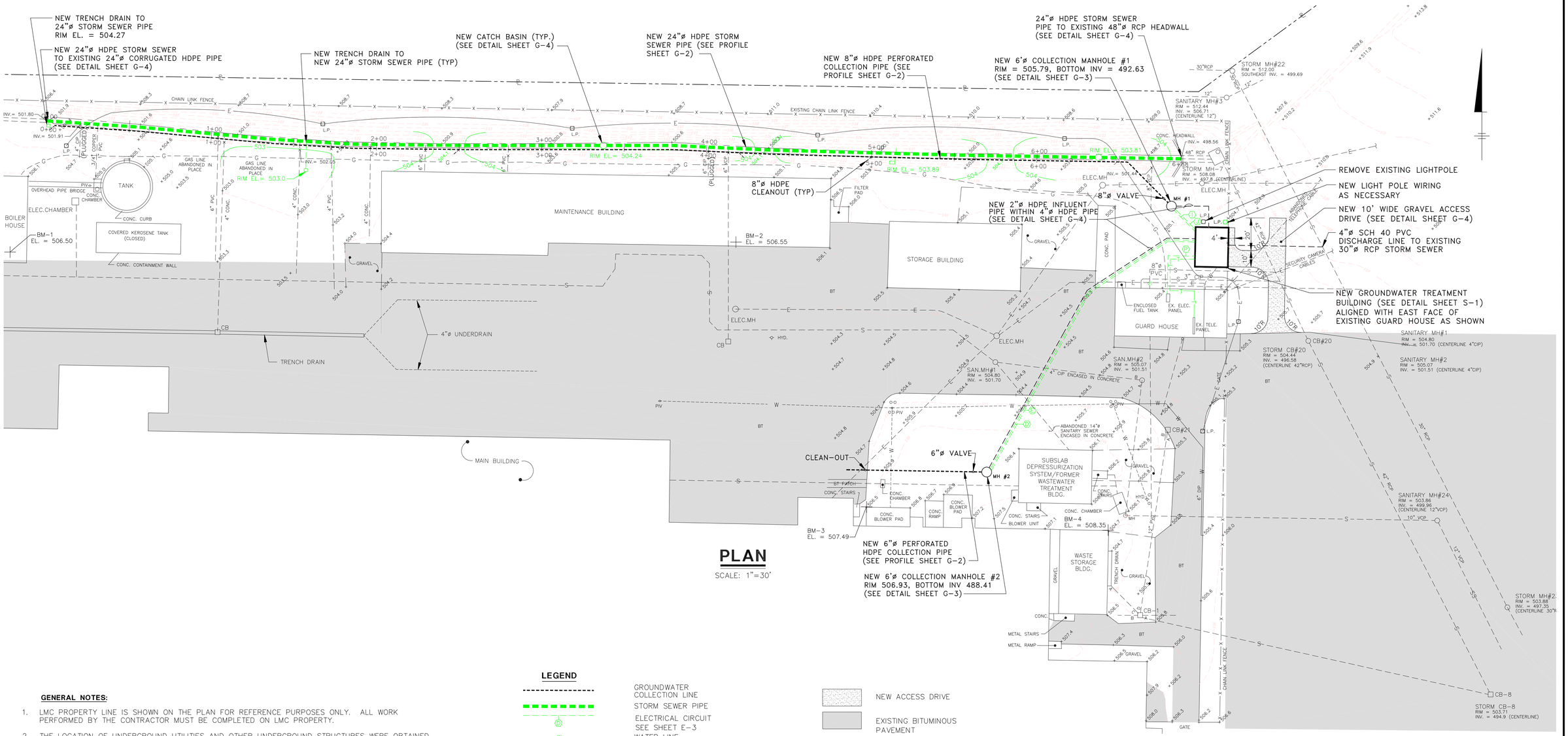
BUILDING ELEVATION, SECTION AND DETAILS

ARCADIS Project No. NJ001024.0001.00005

Date MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

S-1



PLAN

SCALE: 1"=30'

GENERAL NOTES:

1. LMC PROPERTY LINE IS SHOWN ON THE PLAN FOR REFERENCE PURPOSES ONLY. ALL WORK PERFORMED BY THE CONTRACTOR MUST BE COMPLETED ON LMC PROPERTY.
2. THE LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WERE OBTAINED BY FIELD MEASUREMENT WHERE POSSIBLE, OTHERWISE OBTAINED FROM OTHER SOURCES AND ARE APPROXIMATE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST, THE LOCATION OF WHICH AT THIS TIME ARE UNKNOWN. THE CONTRACTOR SHALL VERIFY THE LOCATION OF UTILITIES IN THE FIELD PRIOR TO INITIATING WORK UNDER THIS CONTRACT.
3. BASE MAP PREPARED FROM SURVEY INFORMATION GENERATED BY BLASLAND, BOUCK & LEE, INC. DATED 8/30/95. ELEVATIONS BASED ON BOILER HOUSE FIRST FLOOR ELEVATION OF 506.50 FROM A MAP BY O'BRIEN & GERE ENGINEERS ENTITLED "PAVEMENT AND DRAINAGE REHABILITATION PLAN" DATED 6/23/94. CONTOUR INTERVAL = 1 FOOT.

LEGEND

- GROUNDWATER COLLECTION LINE
- STORM SEWER PIPE
- ELECTRICAL CIRCUIT SEE SHEET E-3
- WATER LINE
- TELEPHONE LINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING ELECTRIC LINE
- EXISTING CHAIN LINK FENCE
- EXISTING PROPERTY LINE
- NEW ACCESS DRIVE
- EXISTING BITUMINOUS PAVEMENT
- HYD. EXISTING HYDRANT
- PIV EXISTING POSITION INDICATOR VALVE
- L.P. EXISTING LIGHT POLE
- MH #22 EXISTING MANHOLE
- CB#21 EXISTING CATCH BASIN

1"=30' 30' 0 30' 60'

RECORD DRAWING: MADE FROM BBL DRAWING G-1, FILE NUMBER 380.92.01F, DATED OCTOBER 13, 1995

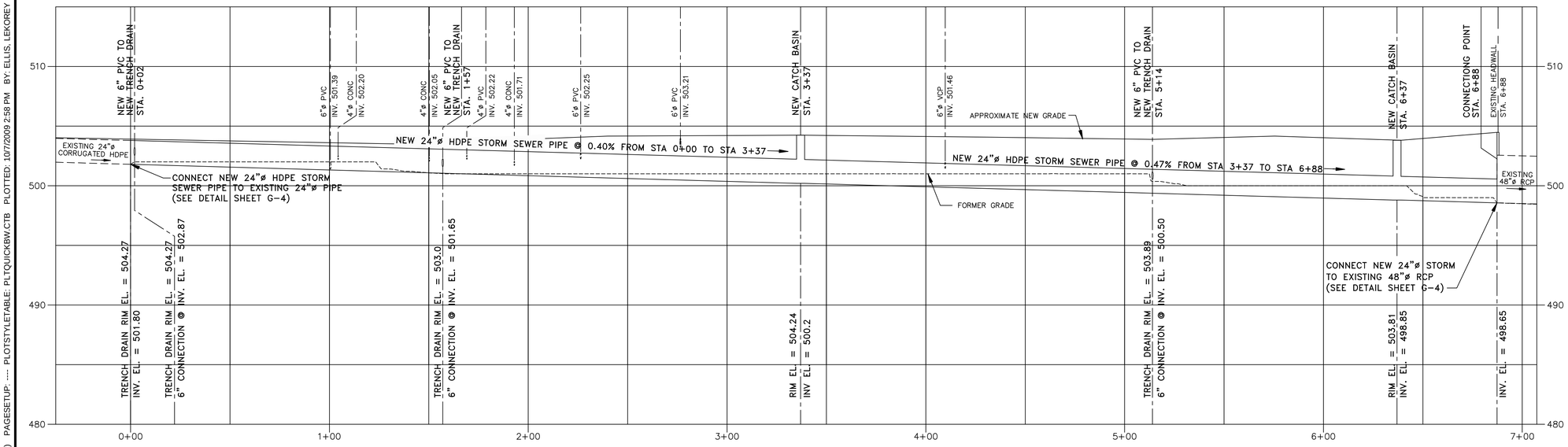
LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

SITE PLAN

ARCADIS

FIGURE
G-1

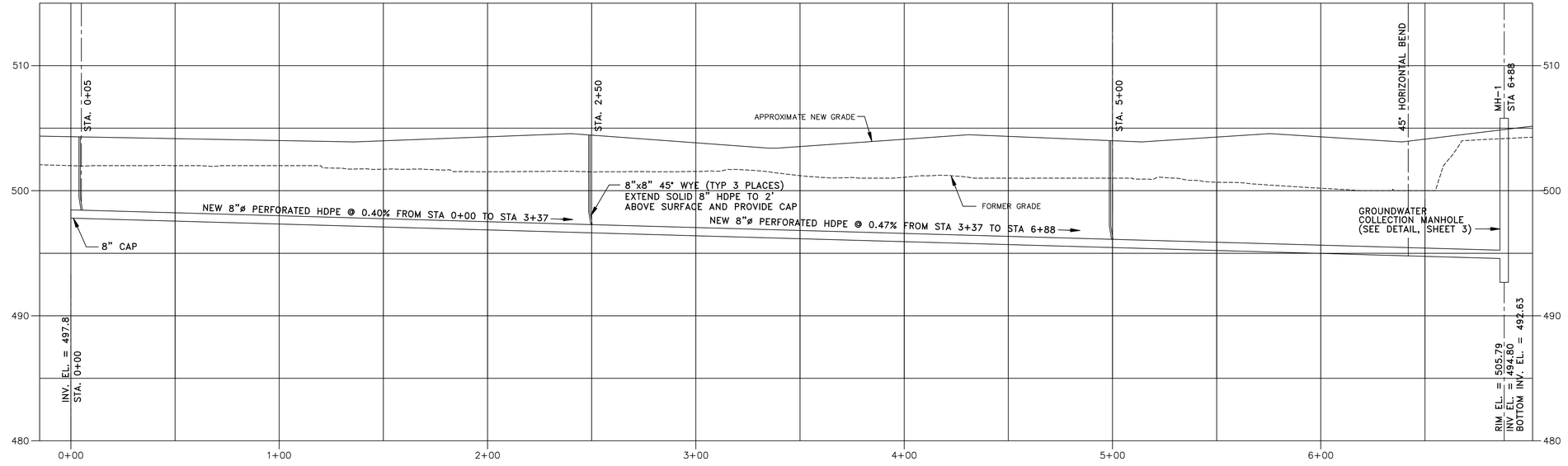


NOTES:

1. NEW GRADE ELEVATIONS ARE SHOWN AS REFERENCE ONLY. ACTUAL AS-BUILT GRADES MAY VARY.

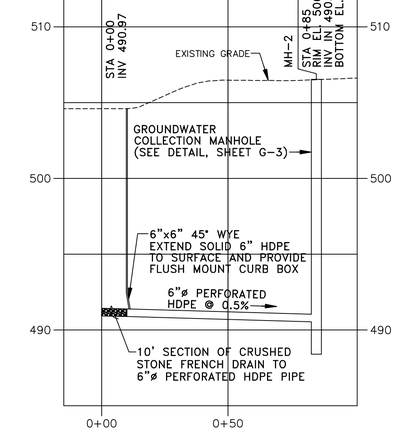
DRAINAGE DITCH AREA STORM SEWER PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



DRAINAGE DITCH AREA GROUND-WATER COLLECTION SYSTEM PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



SOLVENT DOCK AREA GROUND-WATER COLLECTION SYSTEM PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

SCALE: 1"=30' 0 30' 60'

SCALE: 1"=5' 0 5' 10'

RECORD DRAWING: MADE FROM BBL DRAWING G-2, FILE NUMBER 380.92.02F, DATED OCTOBER 13, 1995

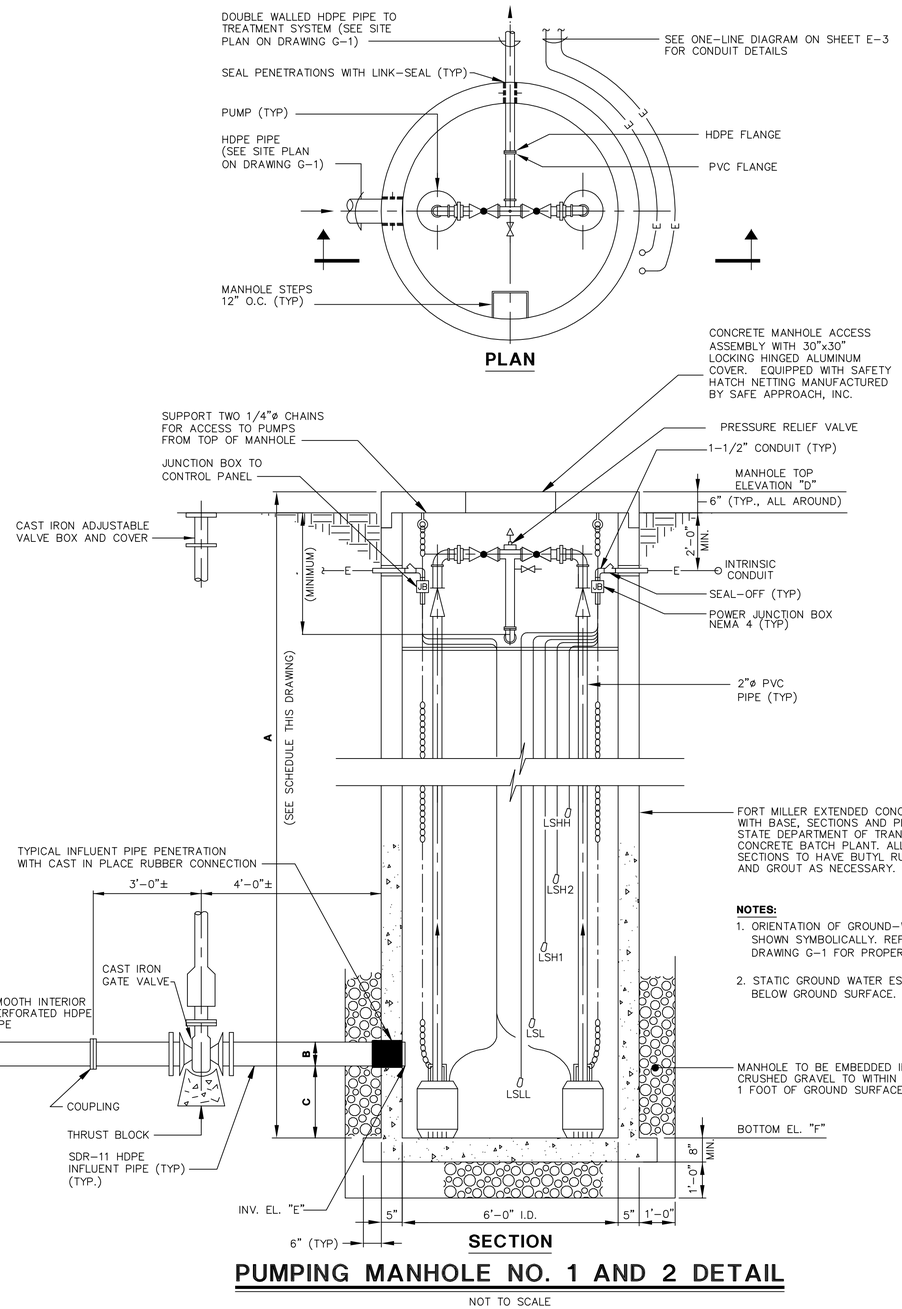
LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PROFILES

ARCADIS

FIGURE
G-2

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Cary\RETURN-TO\Newtown-NY\NJ001\00\000110\0002\MAP\REPORT\NONE\380975\01\380975G02.DWG LAYOUT: G-2 SAVED: 8/20/2009 6:55 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTQUICKBW.CTB PLOTTED: 10/7/2009 2:58 PM BY: ELLIS, LEKOREY
XREFS: 38097X00 IMAGES: PROJECTNAME: ----



PUMPING MANHOLE NO. 1 AND 2 DETAIL

NOT TO SCALE

NOTES:

1. ORIENTATION OF GROUND-WATER COLLECTION PIPE SHOWN SYMBOLICALLY. REFER TO SITE PLAN ON DRAWING G-1 FOR PROPER ORIENTATION.
2. STATIC GROUND WATER ESTIMATED AT 3-6 FEET BELOW GROUND SURFACE.

NOT TO SCALE

SPECIFICATIONS AND NOTES (APPLICABLE TO DRAWINGS G-1 THROUGH E-3)

1. AIR STRIPPER SYSTEM TO BE MANUFACTURED BY SHALLOWTRAY MODEL 3631, 316 AS SPECIFIED IN MATERIAL AND PERFORMANCE SPECIFICATION MP-04006.
2. ALL PVC PIPES SHALL BE SCHEDULE 80 TYPE II UNLESS OTHERWISE SPECIFIED.
3. ALL PVC JOINTS TO BE SOLVENT WELDED.
4. ALL PVC PIPES SHALL BE SUPPORTED EVERY 5'-0" AND LOCATED 2'-0" (MAX) FROM JOINT LOCATIONS.
5. ALL CORRUGATED HDPE PIPE SHALL BE ADS N-12 SMOOTH INTERIOR OR EQUAL. ALL OTHER HDPE PIPE TO BE SDR-11 OR SDR-17 AS INDICATED.
6. ALL HDPE JOINTS TO BE BUTT FUSED.
7. ALL PIPE AND HOSE TO BE INSTALLED AND PRESSURE-TESTED AS PER MANUFACTURER'S SPECIFICATIONS. ZERO LEAKAGE IS ALLOWED FOR ALL JOINTS.
8. ALL PIPING AND MANIFOLDS TO BE LABELED WITH STENCIL OR ADHESIVE. FLOW ARROWS TO BE LABELED AT INLET AND DISCHARGE CONNECTIONS, PIPING AND DESCRIPTION (E.G., MANHOLE NO. 1 INFLUENT) SHALL ALSO BE CLEARLY LABELED AT ALL VALVE AND APPURTENANCE LOCATIONS.
9. FLOW METERS SHALL BE SIGNET ANALOG FLOW TOTALIZER, WHICH DISPLAYS FLOW RATE AND TOTALIZED FLOW VOLUME OR EQUAL. SIGNET INDICATOR SHALL BE A MODEL P57540. ASSOCIATED SIGNET SENSOR SHALL BE MODEL P51530-PO. FITTINGS AND DIAL RANGES ARE AS FOLLOWS:
   A. MANHOLE NO. 1, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020
      DIAL RANGE – 0-60 GPM
   B. MANHOLE NO. 2, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020
      DIAL RANGE – 0-30 GPM
   C. SUMP PUMP 1-INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T012
      DIAL RANGE – 0-30 GPM
10. ALL FLOW METERS SHALL HAVE STRAIGHT PIPE PRECEDING (10 TIMES PIPE DIAMETER) AND FOLLOWING (5 TIMES PIPE DIAMETER) THEM.
11. ALL SAMPLE TAPS AND DRAIN VALVES SHALL CONSIST OF A 1/2"ø PIPE EXTENSION AND BALL VALVE OR EQUAL. SAMPLE TAPS AND DRAIN VALVES SHALL BE LOCATED AT LOCATIONS SHOWN ON THE DRAWINGS AND AT ALL LOW ELEVATIONS IN PROCESS PIPING.
12. ALL BALL VALVES TO BE PVC TRUE UNION TYPE WITH VITON SEALS BY TRUE BLUE OR EQUAL.
13. ALL BALL CHECK VALVES TO BE PVC, TRUE UNION TYPE WITH VITON SEALS BY PLASTO-MATIC OR EQUAL.
14. ALL PRESSURE GAUGES TO BE TRERICE MODEL NO. 450 LFB (WET) SILICONE-FILLED OR EQUAL. DIAL RANGES ARE AS FOLLOWS:
   A. MANHOLE NO. 1 INFLUENT LINE – (0-30 PSI)
   B. MANHOLE NO. 2 INFLUENT LINE – (0-30 PSI)
   C. SUMP PUMP INFLUENT LINE – (0-15 PSI)
15. SUMP PUMP SHALL BE A GRUNDFOG MODEL BOSS 210-A STAINLESS STEEL TOP-DISCHARGE SUBMERSIBLE SUMP PUMP WITH AUTOMATIC FLOAT SWITCH.
16. MANHOLE NO. 1 PUMPS SHALL BE GOULDS PUMPS MODEL 3887 WITH VITON SEALS AND CAST IRON IMPELLER (3/4 HP, 230 VOLTS, 1,750 RPM, 1 PHASE) CAPABLE OF 20 GPM @ 23 FEET TDH (ONE PUMP) AND 40 GPM @ 28 FEET TDH (TWO PUMPS) OR EQUAL.
17. MANHOLE NO. 2 PUMPS SHALL BE GOULDS PUMPS MODEL 3887 WITH VITON SEALS AND CAST IRON IMPELLER (3/4 HP, 230 VOLTS, 1,750 RPM, 1 PHASE) CAPABLE OF 10 GPM @ 26 FEET TDH (ONE PUMP) AND 20 GPM @ 30 FEET TDH (TWO PUMPS) OR EQUAL.
18. DUCTWORK
   A. UNLESS SPECIFICALLY SHOWN OTHERWISE, DUCTWORK SHALL BE FABRICATED OF ASTM AA167 TYPE 316 STAINLESS STEEL, SCHEDULE 10.
   B. DUCTWORK JOINTS, FABRICATION, AND SUPPORTS SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS.
   C. ALL DUCTWORK TO BE AIR TIGHT.
19. POTABLE WATER LINE PIPING SHALL BE ASTM B88 TYPE L COPPER WITH ANSI/ASME B16.29 WROUGHT COPPER FITTINGS. JOINTS SHALL BE SOLDERED WITH GRADE 95TA SOLDER.
20. ITEMS OF SPECIFIC MANUFACTURERS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE PRINTED INSTRUCTIONS AND/OR THE MANUFACTURERS REPRESENTATIVES DIRECTIONS.
21. ALL WALL PENETRATIONS SHALL BE SEALED WITH SILICONE AND COORDINATED WITH BUILDING MANUFACTURER SO AS NOT TO VOID BUILDING WARRANTEE.
22. ALL EXPOSED METALLIC SURFACES SHALL BE CORROSION RESISTANT OR CORROSION RESISTANT PAINTED.
23. ALL EQUIPMENT SHALL BE SUPPLIED AS SHOWN ON THE DRAWINGS. ANY PROPOSED DEVIATION FROM THE DRAWING MUST BE APPROVED BY LMC'S REPRESENTATIVE.
24. CONCRETE COATING SYSTEM TO BE PROVIDED AS PER SPECIFICATION MP-03002.
25. CONTRACTOR TO PROVIDE AND MOUNT ON WALL A FULLY-CHARGED DRY CHEMICAL TYPE FIRE EXTINGUISHER WITH AN A, B, C, RATING KIDDE OR EQUAL.
26. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL BUILDING CODES AND LOCAL HEALTH DEPARTMENT REGULATIONS.
27. SLOP SINK SHALL BE MUSTEE UTILATUB MODEL 18F OR EQUAL. PROVIDE WITH MANUFACTURERS FAUCET WITH SWING SPOUT 1-1/2" BASKET STRAINER AND P-TRAP.
28. NEW MANHOLES SHALL BE EXFILTRATION TESTED AS FOLLOWS: THE MANHOLE SHALL BE FILLED WITH POTABLE WATER FOR 8 HOURS AND WILL BE ACCEPTABLE IF, FOR A TWO-HOUR OBSERVATION PERIOD THE LEAKAGE RATE IN THE STRUCTURE IS BELOW ONE GALLON PER VERTICAL FOOT OF DEPTH OVER A CALCULATED 24-HOUR PERIOD, NO VISIBLE LEAKAGE OF ANY AMOUNT IS ACCEPTABLE.
29. DESIGN LOADS: ALL STRUCTURAL LOADS AND LOAD COMBINATIONS SHALL BE IN ACCORDANCE WITH THE NEW YORK STATE BUILDING CODE.
30. SEE MECHANICAL DRAWINGS FOR LOCATION OF ALL OPENINGS IN FLOOR AND WALLS NOT SHOWN ON STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL VERIFY THE NUMBER, SIZE AND LOCATION OF ALL OPENINGS BEFORE POURING ANY CONCRETE.
31. ALL BACKFILL REQUIRED AS THE RESULT OF OVER EXCAVATION, UNLESS DIRECTED BY REPRESENTATIVES OF LMC, SHALL BE MADE WITH COMPACTED SPECIAL BACKFILL OR LEAN CONCRETE FILL.
32. BACKFILL AT WALLS SHALL BE PLACED AND COMPACTED SIMULTANEOUSLY ON BOTH SIDES.
33. BACKFILL SHALL NOT BE PLACED AGAINST FOUNDATION WALLS UNTIL 28-DAY DESIGN STRENGTH IS REACHED OR THE WALLS ARE ADEQUATELY BRACED.
34. ALL STEEL REINFORCING SHALL BE SECURELY WIRED TOGETHER IN THE FORMS.
35. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4-INCH.
36. ALL SURFACES AT RECENTLY POURED CONCRETE RECEIVING NEW CONCRETE SHALL BE PREPARED BY CLEANING, WETTING AND TREATMENT WITH A NEAT CEMENT GROUT.
37. TRENCH DRAIN SHALL CONSIST OF A 24" WIDE , 11" DEEP AND 39" LONG PRECAST CONCRETE DRAIN WITH CAST IRON GRATING, AND 6"ø OUTLET.
38. PUMPING MANHOLES NO.1 AND NO.2 ARE ELECTRICALLY CLASSIFIED AS CLASS 1, DIVISION 1, GROUP D ATMOSPHERES.

LEGEND

- BALL VALVE
- CHECK VALVE
- NUT UNION
- SAMPLE/DRAIN TAP
- E — POWER WIRING
- PRESSURE RELIEF VALVE

COLLECTION MANHOLE SCHEDULE

DESCRIPTION	MH-1	MH-2
DIST. A	13'-1"	18'-5"
DIST. B	0'-8"	0'-6"
DIST. C	2'-0"	2'-0"
TOP EL. D	505.79'	506.93'
INV. EL. E	494.66'	490.44'
BOT. EL. F	492.63'	488.41'
LSLL	494.13'	489.91'
LSL	495.13'	491.41'
LSH1	497.63'	493.41'
LSH2	499.63'	496.41'
LSHH	502.13'	499.41'

RECORD DRAWING: MADE FROM BBL DRAWING G-3, FILE NUMBER 380.92.03F, DATED OCTOBER 13, 1995

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PUMPING MANHOLE DETAILS AND SPECIFICATIONS

ARCADIS

FIGURE
G-3

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*OFF=*REF*
G:\ENVCAD\Cary\RETURN-TON\Newtown-NY\NJ001000001\000021\MAP\REPORT\NONE\380970130970703.DWG LAYOUT: G-3 SAVED: 8/21/2009 1:53 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTQUICKBW.CTB PLOTTED: 10/7/2009 2:58 PM BY: ELLIS, LEKOREY
XREFS: IMAGES: PROJECTNAME: ----
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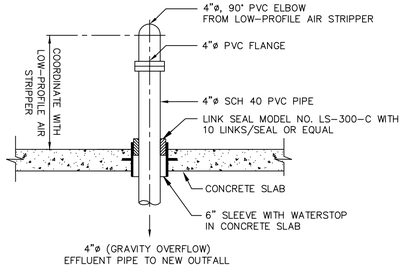
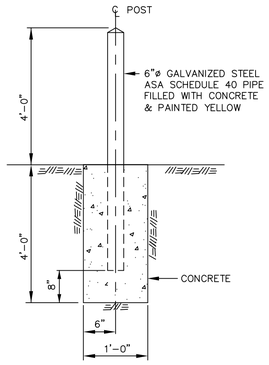


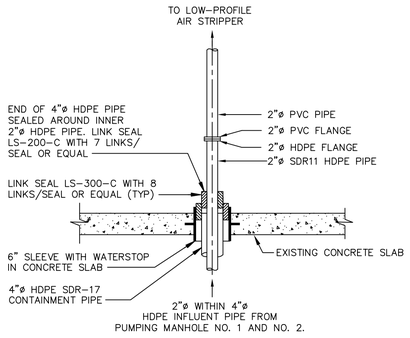
EFFLUENT PIPE DETAIL

NOT TO SCALE



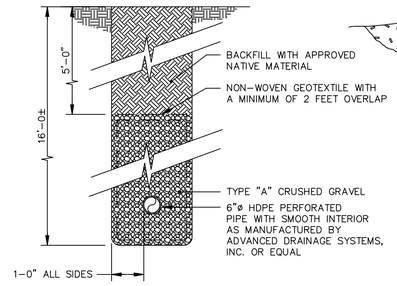
BOLLARD DETAIL

NOT TO SCALE



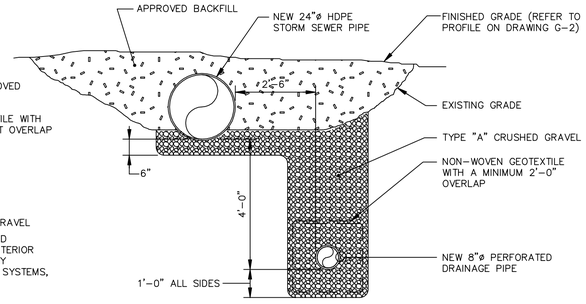
INFLUENT PIPE DETAIL

NOT TO SCALE



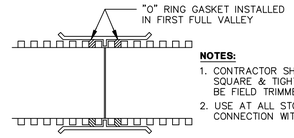
SOLVENT DOCK AREA TRENCH DETAIL

NOT TO SCALE



DRAINAGE DITCH AREA TRENCH DETAIL

NOT TO SCALE

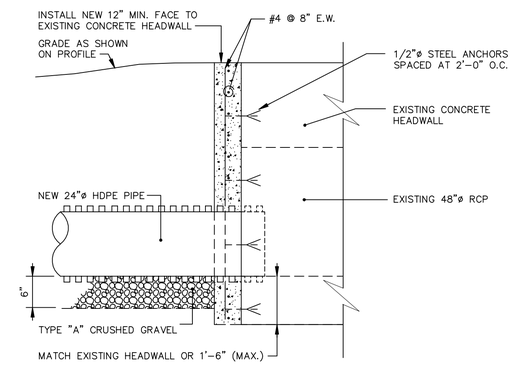


NOTES:

1. CONTRACTOR SHALL MAKE ALL JOINTS SQUARE & TIGHT. DAMAGED ENDS SHALL BE FIELD TRIMMED.
2. USE AT ALL STORM SEWER PIPE JOINTS & CONNECTION WITH EXISTING 24"ø STORM SEWER.

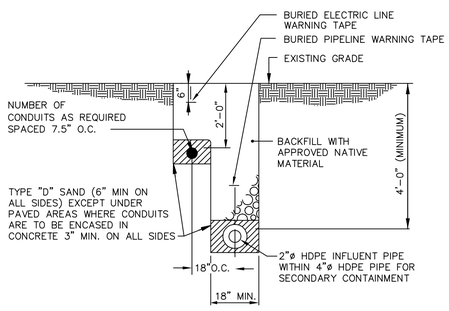
STORM SEWER PIPE COUPLING DETAIL

NOT TO SCALE



STORM SEWER CONNECTION TO EXISTING CONCRETE HEADWALL DETAIL

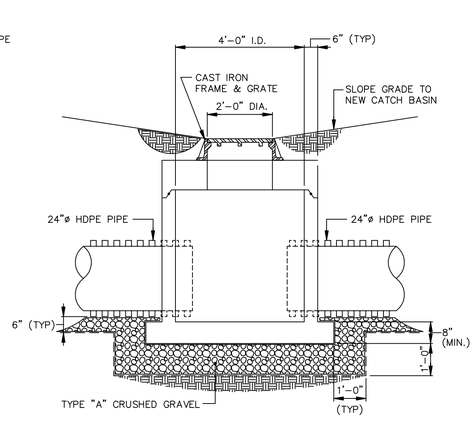
NOT TO SCALE



TYPICAL TRENCH DETAIL

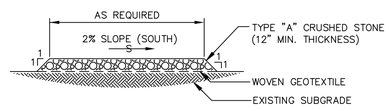
NOT TO SCALE

NOT TO SCALE



CATCH BASIN DETAIL

NOT TO SCALE



NOTES:

1. ROAD SUBGRADE SHALL BE STRIPPED OF NATIVE VEGETATION TO THE BOTTOM OF ROOT ZONE. THE SUBGRADE WILL THEN BE PROOF ROLLED WITH A SMOOTH DRUM VIBRATORY ROLLER WITH A MINIMUM STATIC WEIGHT OF 10 TONS.
2. AREAS THAT DO NOT PASS PROOF ROLLING WILL BE OVER EXCAVATED AND REPLACED WITH CRUSHED STONE AS DIRECTED BY LMC'S REPRESENTATIVE.
3. WOVEN GEOTEXTILE SHALL BE PLACED OVER THE PROPOSED ROAD SUBGRADE SO THAT IT IS FREE OF FOLD AND WRINKLES. MINIMUM OVERLAPS BETWEEN ROLLS OF GEOTEXTILE SHALL BE 3 FEET.
4. CRUSHED STONE WILL BE PLACED FROM TRUCKS ONTO EXISTING CRUSHED STONE AND THEN SPREAD ONTO THE GEOTEXTILE WITH A DOZER. UNDER NO CIRCUMSTANCE IS CONSTRUCTION EQUIPMENT TO DRIVE DIRECTLY ON THE GEOTEXTILE OR WITH LESS THAN 6-INCHES OF CRUSHED STONE OVER THE GEOTEXTILE.
5. AFTER COMPLETION OF FINISH GRADING ALL POINTS ON THE ROAD SURFACE SHALL BE ROLLED AT LEAST 4 TIMES WITH A SMOOTH DRUM VIBRATORY ROLLER WITH A MINIMUM STATIC WEIGHT OF AT LEAST 10 TONS.

GRAVEL ACCESS DRIVE DETAIL

NOT TO SCALE

RECORD DRAWING: MADE FROM BBL DRAWING G-4, FILE NUMBER 380.92.04F, DATED OCTOBER 13, 1995

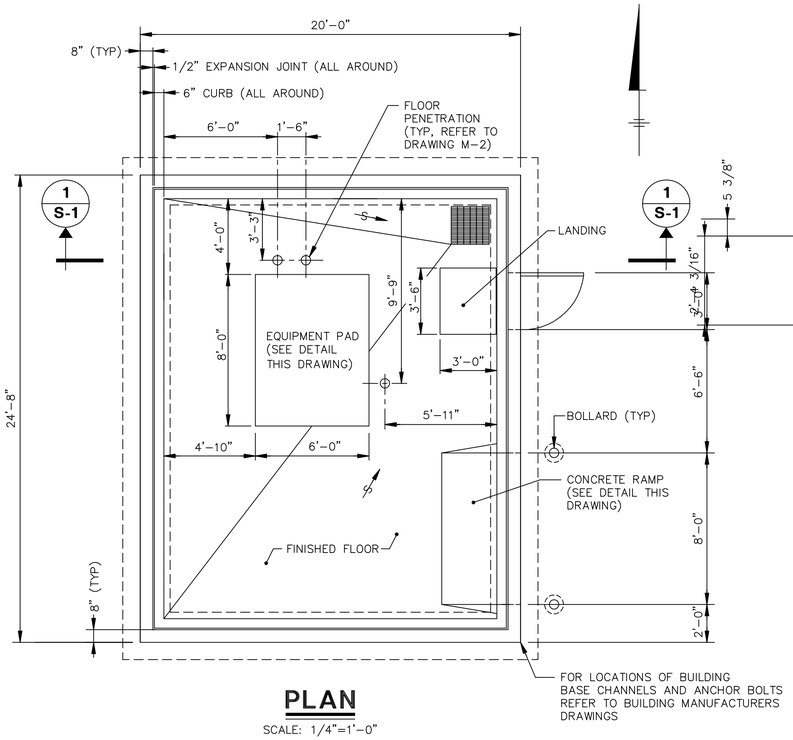
LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

MISCELLANEOUS DETAILS

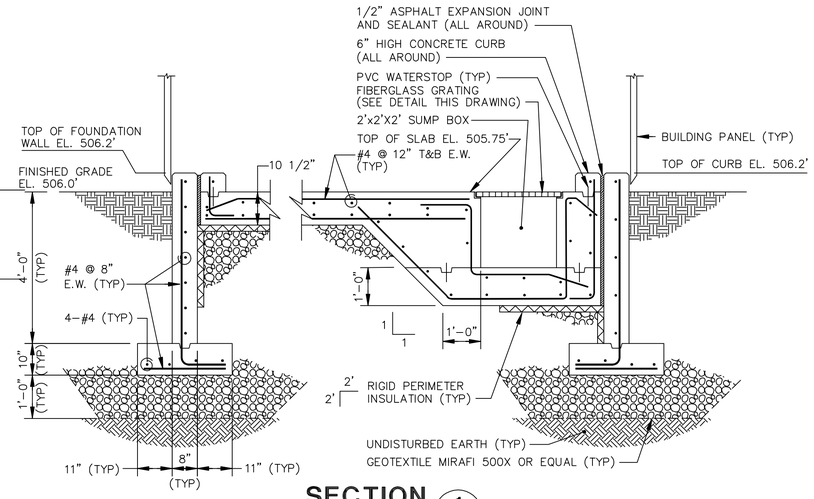
ARCADIS

FIGURE
G-4



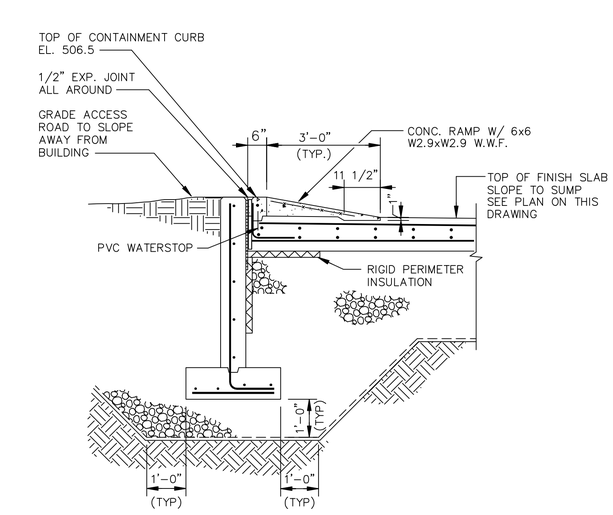
PLAN

SCALE: 1/4"=1'-0"



SECTION 1/S-1

SCALE: 1/2"=1'-0"

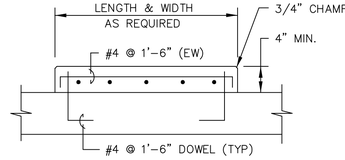


NOTES:

1. SEE SECTION 1 ON THIS DRAWING FOR REINFORCING, BAR SIZE & SPACING.
2. SLOPE SIDES OF RAMP DOWN TO BASE SLAB.

TYPICAL RAMP DETAIL

SCALE: 1/2" = 1'-0"

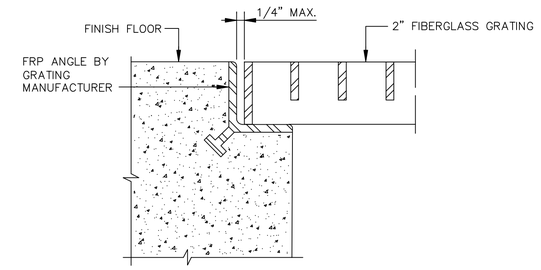


NOTE:

ANCHOR BOLTS FOR EQUIPMENT AND PAD SIZES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

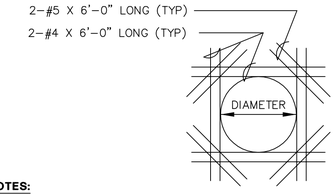
EQUIPMENT PAD DETAIL

NOT TO SCALE



GRATING DETAIL

NOT TO SCALE



NOTES:

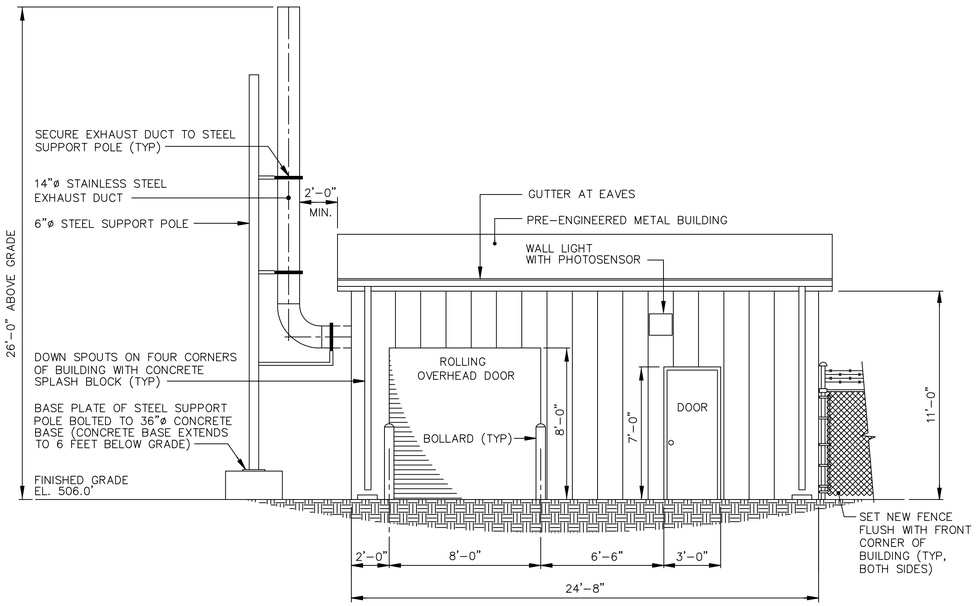
1. PROVIDE ADDITIONAL REINFORCEMENT WHEN OPENING SIZE OR DIAMETER IS EQUAL TO OR GREATER THAN SPECIFIED BAR SPACING.
2. PROVIDE ONE HALF THE AREA OF CUT BARS EACH SIDE, MINIMUM (2)-#4 @ 6" E.F.
3. EXTEND REINFORCEMENT A MINIMUM OF 48 BAR DIAMETERS BEYOND THE FACE OF THE OPENING. WHEN EMBEDMENT CAN NOT BE OBTAINED EXTEND BARS AS FAR AS POSSIBLE AND PROVIDE STANDARD HOOK.
4. ADDITIONAL DIAGONAL REINFORCEMENT FOR ALL OPENINGS GREATER THAN 4'-0", PROVIDE ONE HALF AREA OF CUT BARS EACH CORNER MINIMUM (2)-#6 @ 6" E.F.

ADDITIONAL REINFORCING DETAIL AT SLAB OPENINGS

NOT TO SCALE

GENERAL NOTE:

FOR STRUCTURAL NOTES REFER TO DRAWING G-3



EAST ELEVATION

SCALE: 1/4"=1'-0"

SCALE:
1/4"=1'-0" 4' 2' 0 4' 8'
1/2"=1'-0" 2' 0 2' 4'

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

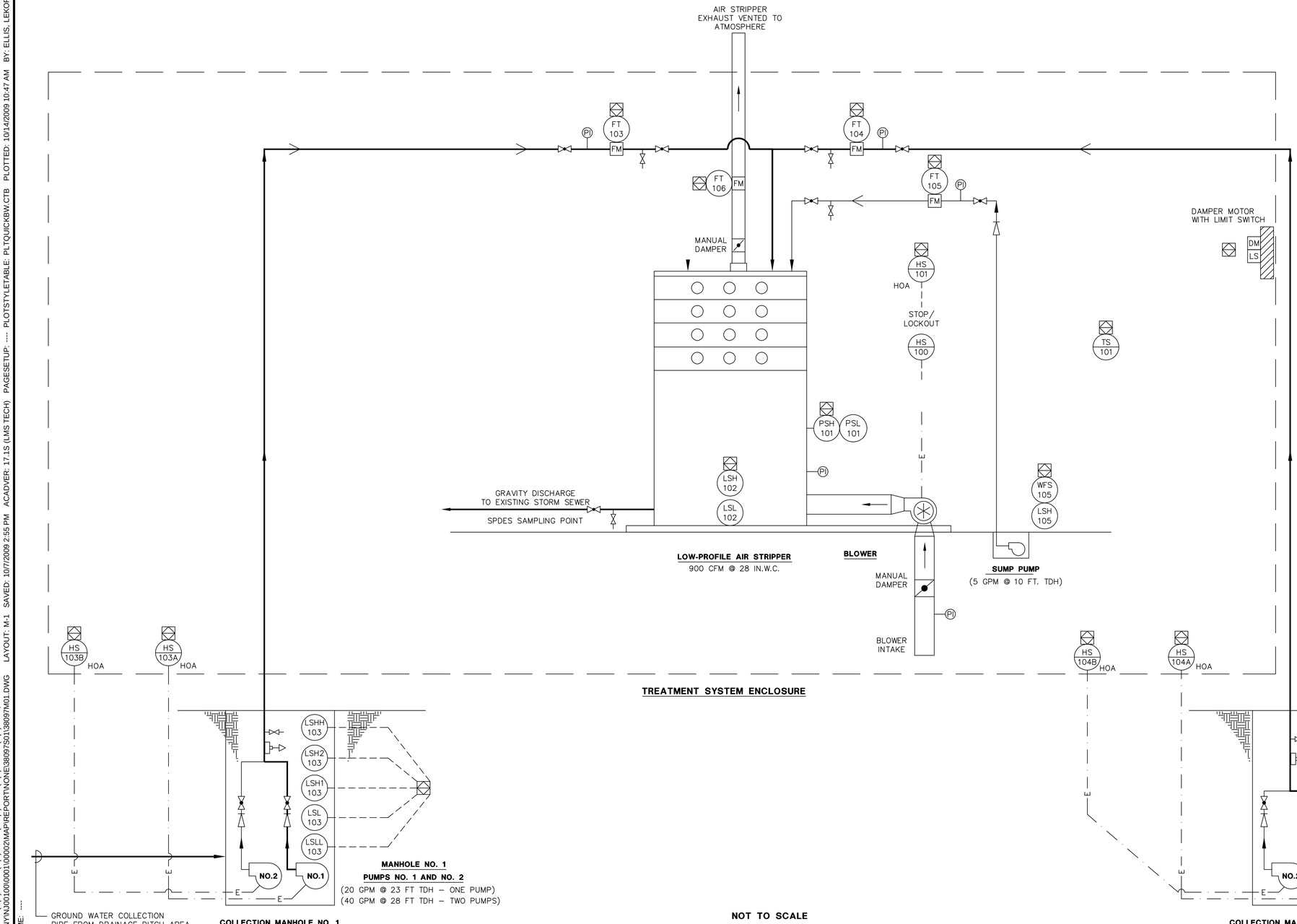
BUILDING ELEVATION, SECTION AND DETAILS

ARCADIS

FIGURE
S-1

RECORD DRAWING: MADE FROM BBL DRAWING S-1, FILE NUMBER 380.92.05F, DATED OCTOBER 13, 1995

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Read) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* G:\ENVCAD\Cary\RETURN-TON\newtown-NY\NJ001001000100002\MAP\REPORT\NONE\380973S01\380973S01.DWG LAYOUT: S-1 SAVED: 8/21/2009 1:55 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTQUICKBW.CTB PLOTTED: 10/7/2009 2:57 PM BY: ELLIS, LEKOREY
XREFS: 380973X00 IMAGES: PROJECTNAME: ----



LEGEND

- PI — PRESSURE INDICATOR
- SAMPLE/DRAIN TAP
- CHECK VALVE
- BALL VALVE
- FM — FLOW METER
- -E- — POWER WIRING
- HOA — HAND–OFF–AUTO
- FT 100 — INSTRUMENT TAG No. (SEE CONTROL LOGIC ON OM&N APPENDIX)
- PLC (INTERLOCK)
- LSH 102 — FIELD MOUNTED
- HS 103B — PANEL MOUNTED
- FLOW DIRECTION
- PRESSURE RELIEF VALVE
- HS — HAND SWITCH
- LSH — LEVEL SENSOR HIGH
- LSHH — LEVEL SENSOR HIGH HIGH
- LSL — LEVEL SENSOR LOW
- LSLL — LEVEL SENSOR LOW LOW
- PSL — PRESSURE SENSOR LOW
- PSH — PRESSURE SENSOR HIGH
- TS — TEMPERATURE SENSOR
- PI — PRESSURE INDICATOR

RECORD DRAWING: MADE FROM BBL DRAWING M-1, FILE NUMBER 380.92.02F, DATED OCTOBER 13, 1995

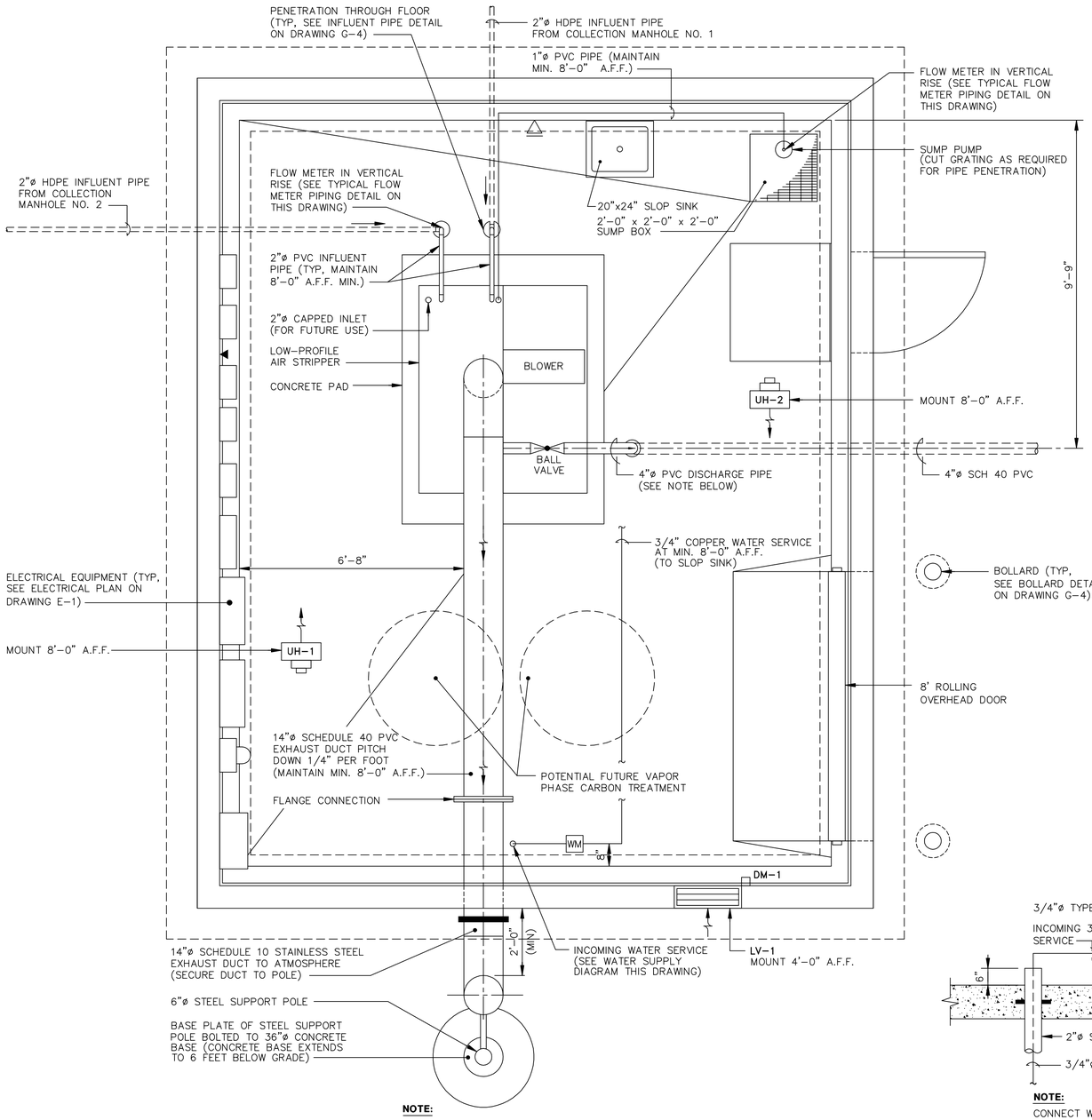
LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PROCESS AND INSTRUMENTATION DIAGRAM

ARCADIS

FIGURE
M-1



NOTE:

CONTRACTOR SHALL VERIFY ALIGNMENT OF 4"ø DISCHARGE PIPE PENETRATION WITH AIR STRIPPER MANUFACTURER.

FLOOR PLAN

SCALE: 1/2"=1'-0"

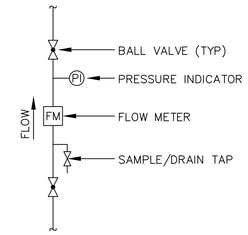
1/2"=1'-0" 1' 0 1' 2'

LEGEND

- DIRECTION OF FLOW
- AIR FLOW
- HOSE BIBB
- WM — WATER METER

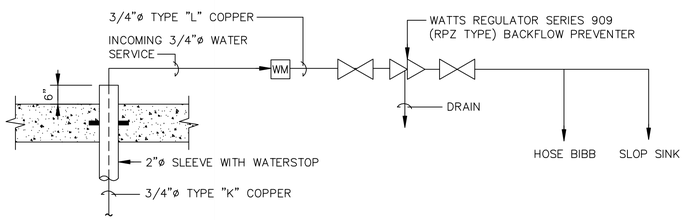
ABBREVIATIONS:

A.F.F.	ABOVE FINISHED FLOOR
MIN.	MINIMUM
DM	DAMPER MOTOR
LV	LOUVER
UH	UNIT HEATER
B.V.	BALL VALVE



TYPICAL FLOW METER PIPING DETAIL

NOT TO SCALE



NOTE:

CONNECT WATER SUPPLY SERVICE TO EXISTING GUARD HOUSE WATER SUPPLY LINE TO SPIGOT.

WATER SUPPLY DIAGRAM

NOT TO SCALE

HEATING AND VENTILATING EQUIPMENT SPECIFICATIONS:

A. UNIT HEATERS

UNIT HEATER (UH-2)

1. HEATER SHALL BE CHROMOLAX CATALOG NO. LUH-10-43 OR EQUAL
2. HEATER SHALL BE 10 kW, 460 VAC, THREE PHASE, CAPABLE OF 750 CFM 47° RISE AND 27° THROW.
3. PROVIDE WITH MANUFACTURER'S INTEGRAL THERMOSTAT AND HANGER KIT.

B. LOUVERS

LOUVER (LV-1)

1. LOUVER SHALL BE ARROW UNITED MODEL NO. 690, RUSKIN MODEL NO. ELC6375 D, OR EQUAL.
2. LOUVER SHALL BE ALUMINUM, COMBINATION TYPE WITH DRAINABLE BLADES.
3. LOUVER LV-1 SHALL HANDLE 900 CFM AT APPROXIMATELY 650 FPM FREE AREA VELOCITY AND A MAXIMUM PRESSURE DROP OF 0.05" W.C.

C. DAMPER MOTORS

DAMPER MOTOR (DM-1)

1. DAMPER MOTORS SHALL BE 120 VAC, 2 POSITION SPRING RETURN, 60-INCH POUNDS TORQUE WITH AUXILIARY SWITCH TO MAKE OR BREAK A CIRCUIT AT THE POWERED END OF STROKE.
2. DAMPER MOTORS SHALL BE BARBER COLEMAN MODEL NO. MA418-500.

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO ALL APPLICABLE RULES, REGULATIONS AND CODES INCLUDING, BUT NOT LIMITED TO, NEW YORK STATE BUILDING CODES AND LOCAL HEALTH DEPARTMENT REGULATIONS.
2. ITEMS OF SPECIFIC MANUFACTURERS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE PRINTED INSTRUCTIONS AND/OR THE MANUFACTURER'S REPRESENTATIVES DIRECTIONS.
3. ALL ELECTRICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED.
4. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
5. ALL THERMOSTATS SHALL BE MOUNTED 5'-0" AFF.
6. DIMENSIONS SHOWN "AFF" INDICATE THE ACTUAL CLEAR DIMENSION FROM THE FINISHED FLOOR ELEVATION TO THE BOTTOM OF THE UNIT.
7. ALL INDOOR PROCESS EQUIPMENT EXHAUST DUCTS SHALL BE PVC. ALL OUTDOOR EXHAUST DUCTS SHALL BE STAINLESS STEEL.
8. PROTECT ALL HEATING AND VENTILATING EQUIPMENT FROM DAMAGE DURING CONSTRUCTION. DAMAGED UNITS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
9. INTERIOR OF AIR STRIPPER AND AREA WITHIN 3-FEET OF BLOWER ARE ELECTRICALLY CLASSIFIED AS CLASS 1, DIVISION 1, GROUP D ATMOSPHERE.

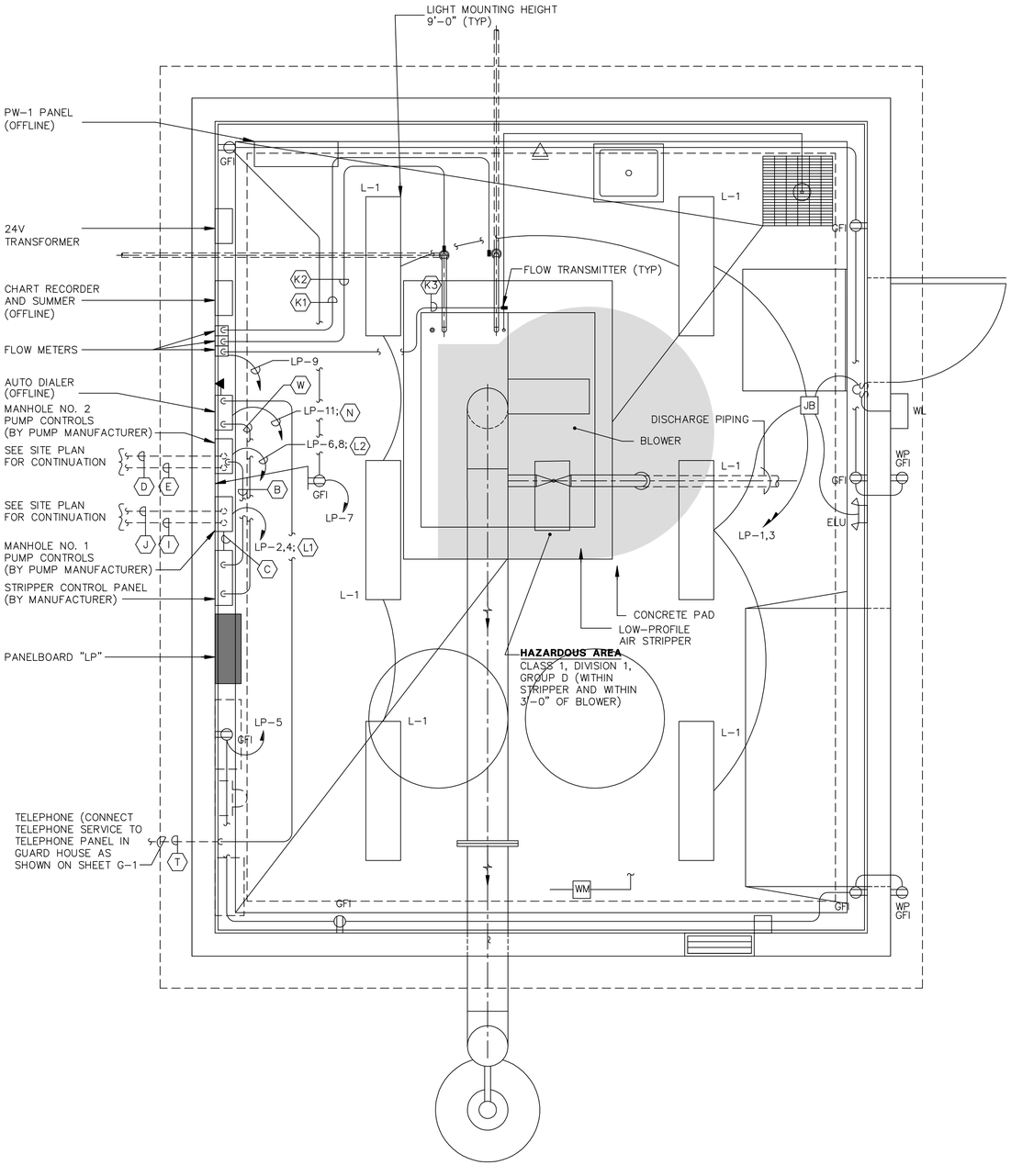
RECORD DRAWING: MADE FROM BBL DRAWING M-2, FILE NUMBER 380.92.07F, DATED OCTOBER 13, 1995

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

FLOOR PLAN AND DETAILS

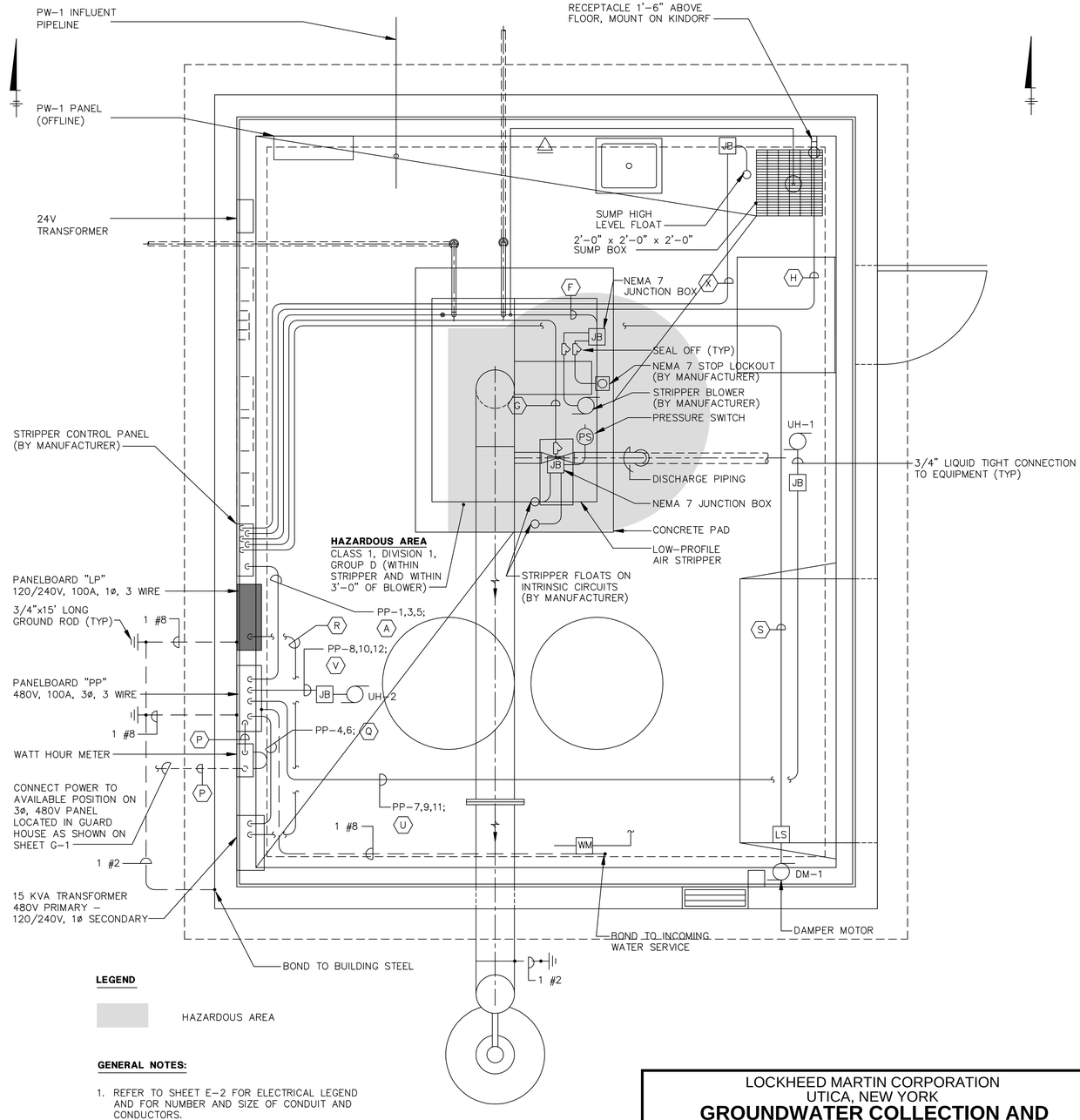
ARCADIS

FIGURE
M-2



LIGHTING PLAN

SCALE: 1/2" = 1'-0"



POWER PLAN

SCALE: 1/2" = 1'-0"

LEGEND

HAZARDOUS AREA

GENERAL NOTES:

1. REFER TO SHEET E-2 FOR ELECTRICAL LEGEND AND FOR NUMBER AND SIZE OF CONDUIT AND CONDUCTORS.

SCALE:

1/2"=1'-0" 2' 0 2' 4'

RECORD DRAWING: MADE FROM BBL DRAWING E-1, FILE NUMBER 380.92.08F, DATED OCTOBER 13, 1995

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

ELECTRICAL FLOOR PLANS

ARCADIS

FIGURE
E-1

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Cary\RETURN-TO\Newtown-NY\NJ00100\0001\100002\MAP\REPORT\NONE\38097S01\38097E01.DWG LAYOUT: E-1 SAVED: 8/21/2009 2:17 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTQUICKBW.CTB PLOTTED: 10/7/2009 2:56 PM BY: ELLIS, LEKOREY
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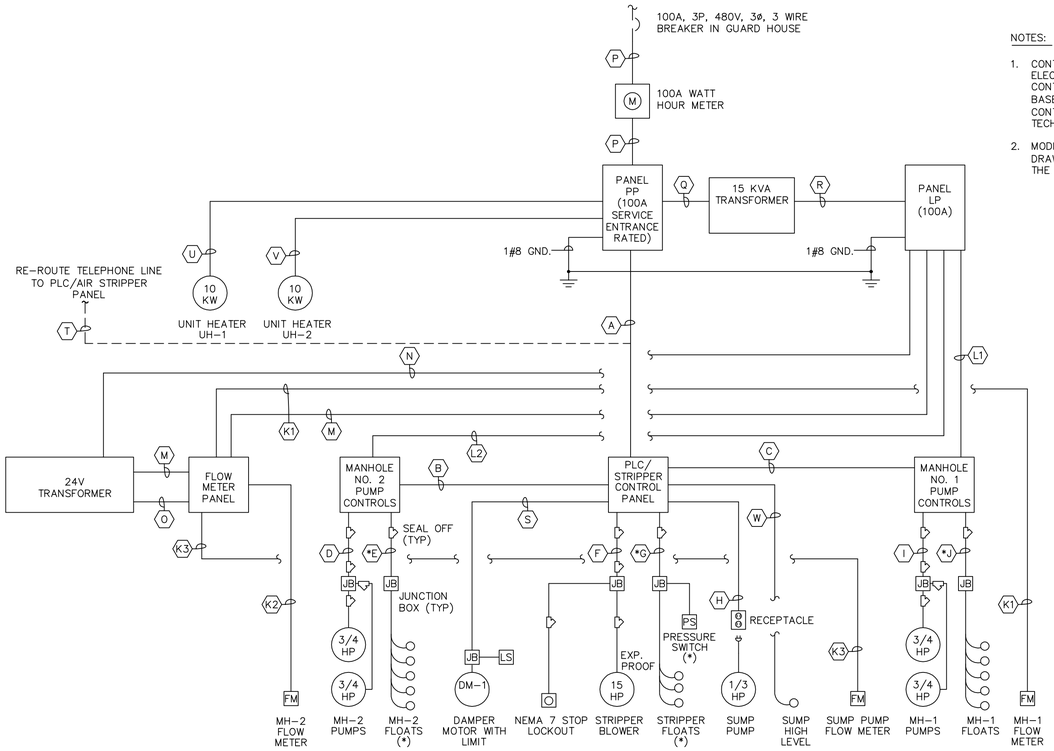

ONE-LINE DIAGRAM

NOT TO SCALE

NOTES:

1. CONTROLS WERE MODIFIED FROM A ELECTRICAL CIRCUIT RELAY. BASED CONTROL SYSTEM TO A MICROPROCESSOR BASED (PROGRAMMABLE LOGIC CONTROLLER) CONTROLS BY AZTECH TECHNOLOGIES, INC, IN DECEMEBR 2007.
2. MODIFIED CONTROL DETAILS AND LINE DRAWING/SCHEMATIC ARE PROVIDED IN THE APPENDIX OF OM&N MANUAL.

SWITCH

CIRCUIT ○	CONDUCTOR SIZE	CONDUIT SIZE	NAME
A	3 #10, #10G	3/4" EMT	BLOWER, SUMP PUMP, AND STRIPPER CONTROL POWER FEED
B	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 2 PUMP CONTROLS
C	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 1 PUMP CONTROLS
D	6 #12, 2 #12G	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 PUMP POWER
E*	10 #12	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 LEVEL SWITCHES
F	3 #8, 1 #12G 2 #14	1-1/2" RGS	BLOWER POWER AND CONTROL
G*	8 #14	3/4" RGS	BLOWER PRESSURE SWITCH & LEVEL SWITCHES
H	2 #12, 1 #12G	3/4" RGS	SUMP PUMP RECEPTACLE POWER
I	6 #12, 2 #12G	1" RGS	MANHOLE NO. 1 PUMP POWER
J*	10 #14	1" RGS	MANHOLE NO. 1 LEVEL SWITCHES
K1 K2 K3	MANUFACTURER'S CABLES	3/4" RGS	MANHOLE NO. 1 FLOW METER, MANHOLE NO. 2 FLOW METER, & SUMP PUMP FLOW METER

CIRCUIT ○	CONDUCTOR SIZE	CONDUIT SIZE	NAME
L1 L2	3 #10, 1 #10G	3/4" EMT	PUMP CONTROL PANEL POWER FEEDS
M	2 #12, 1 #12G	3/4" EMT	FLOW METER & CHART REC. POWER FEED
N	2 #12, 1 #12G	3/4" EMT	24V TRANSFORMER POWER FEED
O	3 TSP #16	3/4" EMT	FLOW SIGNALS
P	3 #2, 1 #6G	1-1/2" EMT (RGS OUTDOORS)	BUILDING POWER
Q	3 #8, 1 10G	1" SEAL TITE	TRANSFORMER FEED
R	3 #6, 1 #8G	1" SEAL TITE	PANEL LP FEED
S	2 #12, 1 #12G 2 #14	3/4" EMT	DAMPER MOTOR AND LIMIT SWITCH
T	6 #22	1-1/2" RGS	TELEPHONE SERVICE
U	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-1)
V	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-2)
W	10 #14	3/4" EMT	SUMP HIGH LEVEL

* INDICATES INTRINSICALLY SAFE SYSTEM PER NEC-504

CONDUCTOR SCHEDULE

NOT TO SCALE

NOT TO SCALE

PANELBOARD LP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
MAIN BUS RATINGS : 100 AMPS , 240/120
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000
MAIN BREAKER TRIP : 60 AMPS ,
ESTIMATED CONNECTED LOAD : 7.1 KVA

FED FROM : PANEL "PP" CIRCUITS 4 & 6
VOLTS , 1 PHASE , 3 WIRE
RMS. SYMM. AMPS NQOD TYPE
INCOMING FEED : 3#6, 1#8 GND., 1"C
ENCLOSURE : SURFACE MOUNTED NEMA 1

DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
INDOOR LIGHTING	480W	20/1	1	2	30/2	1.5 HP	MANHOLE NO.1 PUMP CONTROLS	L1
OUTDOOR LIGHTING	300W	20/1	3	4				
RECEPTACLES (SOUTH)	720W	20/1	5	6	30/2	1.5 HP	MANHOLE NO.2 PUMP CONTROLS	L2
RECEPTACLES (NORTH)	900W	20/1	7	8				
FLOW METER & CHART RECORDER	–	20/1	9	10	20/1	–	SPARE	
SPARE	–	20/1	11	12	20/1	–	SPARE	
SPARE	–	20/1	13	14	20/1	–	SPARE	
SPARE	–	20/1	15	16	20/1	–	SPARE	
SPARE	–	20/1	17	18	20/1	–	SPARE	
SPARE	–	20/1	19	20	20/1	–	SPARE	

PANELBOARD PP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
MAIN BUS RATINGS : 100 AMPS , 480
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000
MAIN BREAKER TRIP : 100 (SERVICE ENTRANCE RATED) AMPS ,
ESTIMATED CONNECTED LOAD : –

FED FROM : GUARD HOUSE PANEL CIRCUIT
VOLTS , 3 PHASE , 3 WIRE
RMS. SYMM. AMPS I-LINE HCN TYPE
INCOMING FEED : 3#2, 1#6 GND., 1-1/2"C
ENCLOSURE : SURFACE MOUNTED NEMA 1

	DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
A	BLOWER, STRIPPER CONTROLS	15HP	45/3	1	2			SPACE	
	SUMP PUMP, & DAMPER MOTOR			3	4	35/2	15KVA	TRANSFORMER FEED	Q
				5	6				
U	UNIT HEATER (UH-1)	10KW	30/3	7	8	30/3	10KW	UNIT HEATER (UH-2)	V
				9	10				
				11	12				

LEGEND

n	2 LAMP FLUORESCENT LIGHT FIXTURE, LETTER DENOTES FIXTURE TYPE
WL	EXTERIOR WALL PACK LIGHT FIXTURE
ELU	EMERGENCY LIGHT FIXTURE
S	SINGLE POLE SWITCH
	DUPLEX RECEPTACLE
GFI	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE
JB	JUNCTION BOX
	MOTOR
	CIRCUIT HOMERUN
	TELEPHONE OUTLET
LS	LIMIT SWITCH
	CIRCUIT BREAKER

RECORD DRAWING: MADE FROM BBL DRAWING E-2, FILE NUMBER 380.92.09F, DATED OCTOBER 13, 1995
DRAWING E-3, FILE NUMBER 380.92.10F, DATED OCTOBER 13, 1995

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

ONE LINE DIAGRAM, CONDUCTOR AND PANELBOARD SCHEDULES

ARCADIS

FIGURE
E-2

ARCADIS

Appendix B

Monthly O&M Checklists

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/27/12
Time: 0800
Technician: J. Guthrowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Yes/Auto
System currently cycling? Yes
Alarms? (list)

Electrical Meter Reading (kWh): 90185

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	~~30~~ 30.5	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	~~17.85~~	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2 9/16 ~~2.25~~	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	~~90~~ 0	(°)

~~2.9~~ 16.5-17.

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Light
Note scaling observed inside air stripper via clear tray access door ~~Mod.~~ (Cleaned) Light

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	12:00 1/27/12	12:00	12:00	12:00	12:00
Instantaneous Flowrate [gpm]	39.5	18.5	17.2	0	71-75
"Total" Flow (resettable, gal)	NM				→
"Perm" Flow (gal)	14253888	2397095	1632421	1652	5449703
Pump 1 Running (Y/N)?	Y	Y	Y	N	NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/27/12
Time: 12:45
Technician: CP

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	54	(°F)	
Pre-Carbon Temperature	TI-400	76	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	84	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11.1	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4.5	(in. W.C.)	
Effluent Pressure	PI-403	< 1	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	32.2	(in. W.C.)	
Vapor Flowrate	FT-106	680-745	(cfm)	
Pre-Carbon Temperature	TT-400	80.5	(°F)	
Pre-Carbon Pressure	PT-400	9.9	(in. W.C.)	
Building Temperature	TT-100	61.4	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	No	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	5.3 (mA) 8 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	15 gal remaining	
Quantity of additional full drums	2	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Good

MONTHLY OM&M TASKS

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes
pH of effluent sample	7.89
Model of pH meter	Hanna HI 99001
Calibration notes / method used	4/7 solution

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/27/12
Time: 8:00
Technician: CD

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	No
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes
Observe groundwater inside each manhole and note odor and appearance	MH-1 + MH-3 → clear, no odor MH-2 → slight sheen, no odor
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	Good
With pump(s) running, listen for any unusual sounds	Okay
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	Good.
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes, all exercised
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP - 3/11 O&M - 3/11
Is emergency spill kit available? (Y/N)	Yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes 4/1/11

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/27/12
Time: 8:00
Technician: CD

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Yes, 1/26/12
MH-1 influent pH 6.97
MH-2 influent pH 7.10
MH-3 influent pH 6.71
Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Yes, 1/27/12
Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Yes 1/26/12
Quarterly groundwater elevation levels collected? (Y/N) Yes 1/24/12
Blower bearings greased? (Y/N) Yes 1/26/12
Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 2300-2400 (fpm), 745 (cfm)
FT-106 = 680-745 ✓

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* Yes

If yes, document testing and note any changes in sensor calibration factors: Yes. Pumpdown tests for all 3 MH's.
MH-1 → Δ FT-101 = 310 g. ; Δ DTW = 18.1875" = 320 gal = -3% ✓
MH-2 → Δ FT-102 = 496 g. ; Δ DTW = 28.375" = 499 gal = -0.6% ✓
MH-3 → Δ FT-103 = 588 g. ; Δ DTW = 34" = 598 gal = -1.7% ✓

FT-105 → 11:20	FT-101 = 14252048	FT-102 = 2396246	FT-103 = 1631572	FT-105 = 5446279	
12:40	= 14254609	2397426	1632715	5450978	
	Δ = 2561	Δ = 1,180	Δ = 1,143 Σ = 4884	Δ = 4,699	OK = 38% ✓

Manhole floats tested? (Y/N) Yes. All working properly.

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Yes	Yes	Yes
	Notes: Good → PA_106 occurred.					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Yes	Yes	Yes
	Notes: Good → PA_106 occurred.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Yes	Yes	Yes
	Notes: Confirmed following installation of tethered float 1/26/12.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/27/12
Time: 8:00
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Yes	Yes	Yes
	Notes: Good. Tested during sump evacuation for LSH-100 install.					
High Air Flowrate	FT-106	FA_106	fatal	Yes	Yes	Yes
	Notes: Good.					
Low Air Flowrate	FT-106	FA_106	fatal	Yes	Yes	Yes
	Notes: Good. FA-106 ✓					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Yes	Yes	Yes
	Notes: Good. 3 min delay. TAH400 ✓					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Yes	Yes	Yes
	Notes: Good. 1 min delay. TAL400 ✓					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Yes	Yes	Yes
	Notes: Good. 45 second delay. PA-400 ✓					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Yes	Yes	Yes
	Notes: Good. 45 second delay. PA-400 ✓					
MH-1 Low Flowrate	FT-101	FA_101	warning	Yes	No	Yes
	Notes: Turned HOA to off. FA-101 ✓					
MH-2 Low Flowrate	FT-102	FA_102	warning	Yes	No	Yes
	Notes: Turned HOA to off. Good; FA-102 now fatal.					
MH-3 Low Flowrate	FT-103	FA_103	warning	Yes	No	Yes
	Notes: Turned HOA to off. Good → FA-103 after 30 seconds					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/27/12
Time: 8:00
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Turn all six pump HOAs off; got FA.105					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Yes	Yes	Yes
	Notes: Over filled sump. Fatal alarm. "WFS106"					
Building Sump High Level	LSH-106	LSH106	warning	Yes	No	Yes
	Notes: Filled sump w/ clean water. Observed LSH-106 switch.					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Yes	No	Yes
	Notes: ✓ Received FA.200					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Yes	No	Yes
	Notes: ✓ Received LSH200					
MH-1 High Level	LSHH-103	LA_MH1	warning	Yes	No	Yes
	Notes: Good. Conducted w/ manhole float testing.					
MH-1 Low Level	LSLL-103	LA_MH1	warning	Yes	N	Yes
	Notes: Should force off both MH-1 pumps ✓ ✓ Good					
MH-2 High Level	LSHH-104	LA_MH2	warning	Yes	No	Yes
	Notes: ✓ Good					
MH-2 Low Level	LSLL-104	LA_MH2	warning	Yes	No	Yes
	Notes: Should force off both MH-2 pumps ✓ ✓ Good					
MH-3 High Level	LSHH-105	LA_MH3	warning	Yes	No	Yes
	Notes: ✓ Good					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/27/12
Time:
Technician:

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning	Yes	No	Yes
	Notes: Should force off both MH-3 pumps ✓ ✓ Good					
Building High Temperature	TT-100	TA_100	shutdown	Yes	Yes	Yes
	Notes: Good					
Building Low Temperature	TT-100	TA_100	shutdown	Yes	Yes	Yes
	Notes: Good.					

CADIS

Water Level Record

Project LMC Utica, NY Date 1/24/12 Staff: J. G.

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
MW - 1	8.39	11:12	Good
MW - 2	~~5.59~~	—	Under large snow bank
MW - 3	10.90	11.29	Good
MW - 4	11.48	11.33	Good
MW - 5	—	—	Ice under wellcover
MW - 6	5.59	1546	Bailer in well(Remove to collect WL)
MW - 7	8.10	1420	Good
MW - 9	3.28	1237	Good
MW - 10	4.99	1225	Good
MW - 11	8.27	1355	Good
MW - 12	—	—	Well under very large snowbank
MW - 13S	6.94	1509	Well Dry 6.94, Depth to bottom
MW - 13BR	10.67	11:11	Good
MW - 14S	10.31	1406	Good
MW - 14BR	56.31	1524	Good
MW - 15S	8.19	1410	Good
MW - 15BR	29.20	1653	Under pressure *caution when opening good
MW-16	4.19	1710	
MW-17	2.40	1712	
MW-18	1.48	1715	
MW-19	1.19	1305	Good
MW-20	1.98	1306	Good
MW-21	3.58	1330	Good
MW-1	1.88	1307	4" Well
PZ - 2	2.35	1314	Good
PZ - 4	0.00	12.34	Water @ bottom of wellcover
PZ - 5	9.04	1658	(Inside Conmed)
PZ - 6	9.22	1724	(Inside Conmed)
PZ - 7	8.96	1731	(Inside Conmed)
PZ - 8	9.38	1635	(Inside Conmed)
PZ - 9	8.05	1738	(Inside Conmed)
PZ - 10	8.89	1740	(Inside Conmed)
PZ - 11R	(8.50) — (1/25/12) — (1/26)		Bolt is bent, can not Remove
PZ - 13R	8.06	1430	Good
PZ - 17	9.89	1517	Good

4.19 1710 East
2.48 1712 center } MW-16-18
1.48 1715 west

ARCADIS

Water Level Record

Project LMC Utica, NY Date 1/24/12 Staff: J. G.

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
PZ - 18	7.89	1424	Good
PZ - 19	7.29	1637	Good
PZ - 20	6.89	1480	Good
PZ - 21	Dry	1530	(Outside IHOP, next to SG Point)
PZ - 22	7.07	1318	Good
PZ - 23	6.55	1250	
PZ - 24	10.55	1030	
PZ - 25	6.37	1032	
PZ - 26	9.04	1033	
PZ - 27	10.56	1035	
PZ - 28	3.64	1253	
PZ - 29	2.02	1245	
PZ - 30	3.76	1023	
PZ - 31	1.42	0958	
PZ - 32	0.00	1008	All Good, water @ Surface
PZ - 33	3.60	0943	Good
PZ - 34	2.52	1607	Good
PZ - 35	3.21	1603	Good
PZ - 36	0.00	1610	Water @ Top of Riser
PZ - 39	3.25	1614	(1) Bolt Missing
PZ - 40	—	1621	(In Maintenance building) – Unable to Access
PZ - 41	4.70	1619	(In Maintenance building)
PZ - 42	—	1630	(In Maintenance building) water froze in Riser
A1-PZ1	—	1645	J Plug frozen
A1-PZ2	1.83	1119	Good
A2-PZ1	4.18	0951	All Good
A2-PZ2	6.30	0946	
A2-PZ3	1.60	0944	
A2-PZ4	0.60	0953	water @ surface
A2-PZ5	3.70	0944	

ARCADIS

Water Level Record

Project LMC Utica, NY Date 1/24/12 Staff: J. G.

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
A2-PZ6	0.00	0952	All Good, Water @ Surface
A2-PZ7	2.98	0945	↓
A2-PZ8	0.28	0946	↓

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/9/12
Time: 1145
Technician:

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? yes
Alarms? (list) None

Electrical Meter Reading (kWh): 93394

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	29.0	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	16.5	(inches)
Blower intake line vacuum [PI-100]	-2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? yes
Note scaling inside liquid effluent pipe from access port little to no scaling
Note scaling observed inside air stripper via clear tray access door little to no scaling

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) yes all three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes all six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	2/9/12/1150				→
Instantaneous Flowrate [gpm]	37.80	N/A	16.80	N/A	53.98
"Total" Flow (resettable, gal)	1,965,893	349,946	383,142	50	3,019,539
"Perm" Flow (gal)	14,412,959	2,429,957	1,698,277	16.52	5,695,022
Pump 1 Running (Y/N)?	yes	NO	yes	N/A	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/9/12
Time: 1200
Technician: Jason Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	53	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	13	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	30.10	(in. W.C.)	
Vapor Flowrate	FT-106	787.5	(cfm)	
Pre-Carbon Temperature	TT-400	83.8	(°F)	
Pre-Carbon Pressure	PT-400	10.6	(in. W.C.)	
Building Temperature	TT-100	62.5	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.9 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	1/3 of Drum Remaining	
Quantity of additional full drums	2 full Drums	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): All good, no leaking, no build up

MONTHLY OM&M TASKS

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1140 on 2/9/12
pH of effluent sample	7.92
Model of pH meter	Hanna HI991001
Calibration notes / method used	3 Point Cal.

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/9/12
Time: 1400
Technician: Jason Gotlewski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1: None MH-2: None MH-3: None
Do level floats appear to be in good condition and hanging freely? (Y/N)	All good in All 3MH's
Observe groundwater inside each manhole and note odor and appearance	Clear w/no odor in All 3MH's
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	Yes, All Good
With pump(s) running, listen for any unusual sounds	No unusual sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	All Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	No Issues
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Heater working Thermostat checked, Good

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes 3/11/11
Is emergency spill kit available? (Y/N)	Yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes Posted on Wall
Is current SPDES permit onsite? (Y/N) (note date)	Yes

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/1/12
Time: 1215
Technician: Jason Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 97297

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	29.0	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	16.5	(inches)
Blower intake line vacuum [PI-100]	-2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port little
Note scaling observed inside air stripper via clear tray access door little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes All Three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes All Six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	3\1\12/1215	←	←	←	→
Instantaneous Flowrate [gpm]	38.22	15.96	17.50	N/A	71.65
"Total" Flow (resettable, gal)	2,112,489	369,944	435,243	50	3,227,390
"Perm" Flow (gal)	14,559,580	2,449,958	1,750,378	1652	5,902,836
Pump 1 Running (Y/N)?	Yes	Yes	Yes	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/1/12
Time: 1220
Technician: Jason Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300		~~(°F)~~	Accidentally not recorded in field.
Pre-Carbon Temperature	TI-400	88	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	84	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	1	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	30.95	(in. W.C.)	
Vapor Flowrate	FT-106	766.4	(cfm)	
Pre-Carbon Temperature	TT-400	96.0	(°F)	
Pre-Carbon Pressure	PT-400	9.1	(in. W.C.)	
Building Temperature	TT-100	63.1	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.95 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	1/4 Remaining	
Quantity of additional full drums	2 Full Drums	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): All good w/no leaking or buildup

MONTHLY OM&M TASKS

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes collected @ 1225 on 3/1/12
pH of effluent sample	7.86
Model of pH meter	Hanna HI 991001
Calibration notes / method used	3 point cal.

Effluent Sample collected while MH-1 & MH-3 was in cycle

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/1/12
Time: 1230
Technician: Jason Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1: None MH-2: None MH-3: None
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes, Good in All 3
Observe groundwater inside each manhole and note odor and appearance	Clear/No Odor in All 3
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All Good w/ No leaks in All 3
With pump(s) running, listen for any unusual sounds	No Unusual Sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good in All 3
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	No Issues
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Heater working Thermostat checked, Good

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes, Good, working
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes 3/1/11
Is emergency spill kit available? (Y/N)	Yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes Posted on wall
Is current SPDES permit onsite? (Y/N) (note date)	Yes

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/5/12
Time: 15:40
Technician: CD/JG

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Yes, AUTO
System currently cycling? Yes, but # MH-1 blower on in manual for sampling.
Alarms? (list) None

Electrical Meter Reading (kWh): 102,850

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	27.0	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.5	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0°	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Hand [for sampling]
Note scaling inside liquid effluent pipe from access port Present. < 1 mm
Note scaling observed inside air stripper via clear tray access door Trays inspected, clean

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) All auto except HS-101A for MH-1 pump # for sump

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	4/5/12 | 15:45	→	→	→	→
Instantaneous Flowrate [gpm]	33-34	16-17.5	17.5-18.0	NM	61-66
"Total" Flow (resettable, gal)	NM	NM	→	→	→
"Perm" Flow (gal)	14829215	2488832	1853922	1652	6290998
Pump 1 Running (Y/N)?	Y	N	N	N	NA
Pump 2 Running (Y/N)?	N	Y	Y	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows. * All three MH's were bumped to collect these readings

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/5/12
Time: 16:00 - 15:45
Technician: CD/JG

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	63°	(°F)	
Pre-Carbon Temperature	TI-400	78	(°F)	
Duct Heater Temperature Setpoint	-	~~85~~	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	78	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11.8	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4.1	(in. W.C.)	
Effluent Pressure	PI-403	< 1	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	~~29.1~~	(in. W.C.)	
Vapor Flowrate	FT-106	694-786	(cfm)	
Pre-Carbon Temperature	TT-400	~~78~~ 99.5	(°F)	
Pre-Carbon Pressure	PT-400	9.4	(in. W.C.)	
Building Temperature	TT-100	59.7	(°F)	door open

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	yes	
Is low flow alarm present? (Y/N)	no	
Is pump in external mode? (Y/N)	yes	
If in external mode, record one set of mA and stroke speed values	4.8 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	30 gal	Finished DRUM #2 [9/9/11 - 10/7/11 + 12/1/11 - 4/5/12] Begin DRUM #4
Quantity of additional full drums	1	Labeled #5

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Good.

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary manually turn on MH-1 Pump 1 or 2 (and blower if not already running in Auto).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes
pH of effluent sample	7.08
Model of pH meter	Hanna 991001
Calibration notes / method used	4 + 7
MH-1 online (Auto or Manual?)	Only MH-1 in manual
Are MH-2 or MH-3 online in auto during sampling collection?	No

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/5/12
Time: 17:00
Technician: CD

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	No
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes
Observe groundwater inside each manhole and note odor and appearance	MH-2 sheen MH-1, 3 no sheen or odor
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	OK
With pump(s) running, listen for any unusual sounds	OK
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	All okay
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	No leaks observed
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	Several BFV Handle locks stick (not actual valve)
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes, SW & NE heaters okay.

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	? Turned off light breaker on low voltage panel, E-light on
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes OMM → March 2011 Yes HASP → March 2012
Is emergency spill kit available? (Y/N)	Yes, in SSDS building
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes 4/1/11

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/4/12-4/5/12
Time:
Technician: CD/JG

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Yes
MH-1 influent pH 6.96 sampled
MH-2 influent pH 7.32
MH-3 influent pH 7.19

Note: MH-1 must be online during sample collection, if necessary manually turn on MH-1 Pump 1 or 2 (and blower if not already running in Auto).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Yes
Are MH-2 or MH-3 online in auto during sampling collection? Only MH-1 online in manual
Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Yes, 4/5/12
Quarterly groundwater elevation levels collected? (Y/N) Not yet; sched. for next week
Blower bearings greased? (Y/N) N
Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) ~2300 ✓ (fpm) ~730 ✓ (cfm)

FT-106 = 709-780

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* Yes

If yes, document testing and note any changes in sensor calibration factors:
FT-102 → Pumpdown test → 250 using DTW, 240 w/ transmitter ± 4% = OK ✓
FT-103 → Pumpdown test → 602 using DTW, 611 using transmitter
FT-101 → Pumpdown test → 540 using DTW; 556 using ± 1% = OK ✓
Δ transmitter → 3.0% = okay
FT-105 → Over two recording points several hrs apart, Σ of Δ's for MH-1,2,3 = 2,375 gal & Σ for cumulative = 2,052 → 13.0% → not okay.

Manhole floats tested? (Y/N) Yes

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Operating pressure ~26-27 inwc w/ 34 gpm. Change high setpoint from 34 to 24. Short delay. Shutdown.					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Operating pressure ~26-27 inwc w/ 34 gpm. Change low setpoint from 8 to 30. short delay. shutdown.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Sump level @ 20". Tripped LSH-100 with blower off this is not alarm - With blower on in auto, this is an alarm with delay. Note sump level must drop down to 11-11.5" to change status of float again					

4/4/12 16-18:00

CD determines we should change logic so that the ProControl makes LSH-100 a fatal alarm at all times.

DONE. 15 second delay.

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/4/12
Time: 18:00
Technician:

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	Y	Y
	Notes: Closed pre-carbon BFV. Evacuated sump. Shutdown.					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Changed high flow setpoint from 1200 to 700 (operating @ 800). Quick delay, shutdown. DIFFERS FROM SOP					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Closed pre-carbon BFV partially. Flowrate dropped < 400, short delay, shutdown					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Changed high from 110 to ~~90~~ 65. 1 minute delay. Shutdown.					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: Changed low from 60 to 105. 3 minute delay. Shutdown					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Operating @ 9 inwc. Change high from 25 to 6. 45 second delay. Shutdown					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Changed low from 1 to 11. 45 second delay. Shutdown.					
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: Turned off both MH-1 pumps w/ HOA switch. 30 second delay. Non-fatal					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: Turned off both MH-2 pumps w/ HOA switch. Non-fatal					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: Turned off both MH-3 pumps w/ HOA switch. Non-fatal					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/4/12 - 4/5/12
Time: 16:30
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Received during MH-3 test.					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Filling sump. Tripped WFS-106. Shutdown					
Building Sump High Level	LSH-106	LSH106	warning	Y	Y	Y
	Notes: Filled sump. Tripped LSH-106. Non-fatal					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Remove suction tubing. Achieved non-fatal alarm.					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Tested with water. Non-fatal.					
MH-1 High Level	LSHH-103	LA_MH1	warning	Y	N	Y
	Notes: Confirmed by physically switching LSHH.					
MH-1 Low Level	LSLL-103	LA_MH1	warning	Y	N	Y
	Notes: Should force off both MH-1 pumps Confirmed physically. Pumps off.					
MH-2 High Level	LSHH-104	LA_MH2	warning	Y	N	Y
	Notes: Confirmed physically.					
MH-2 Low Level	LSLL-104	LA_MH2	warning	Y	N	Y
	Notes: Should force off both MH-2 pumps Confirmed physically. Pumps off.					
MH-3 High Level	LSHH-105	LA_MH3	warning	Y	N	Y
	Notes: Confirmed physically.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/5/18
Time:
Technician: CD/JG

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning	Y	Y	Y
	Notes: Should force off both MH-3 pumps Confirmed physically. Both pumps turn off.					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Changed low from ~~40~~ 40 to 100, shutdown.					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Changed high from 110 to 50. Shutdown after 2 min delay.					

NJ0010 40.1.101

ARCADIS

Water Level Record

Project LMC Utica, NY Date 4/10/12 Staff: Jason Gutkowski

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
MW - 1	8.64	1515	
MW - 2	5.91	1522	
MW - 3	—	—	could not find
MW - 4	11.70	1524	
MW - 5✓	4.73	1425	Dan
MW - 6	6.36		Bailer in well(Remove to collect WL) NO Bailer in well
MW - 7	8.01	1443	
MW - 9	3.41	1457	
MW - 10	5.37	1509	
MW - 11	8.47	1107	
MW - 12	12.00	1425	
MW - 13S	Dry	1247	
MW - 13BR	10.05	1516	
MW - 14S	10.64	1436	
MW - 14BR	51.30	1437	
MW - 15S	8.44	1430	
MW - 15BR	28.28	1431	Under pressure *caution when opening (28.28)
MW-16	4.25	1159	
MW-17	4.14	1200	
MW-18	3.45	1201	
MW-19	1.42	1600	Collected on 4/9/12
MW-20	2.50	1600	Collected on 4/9/12
MW-21	3.30	1300	
IW-1	—	—	4" Well ~~could not find~~ Injection well
PZ - 2	2.98	1600	Collected on 4/9/12
PZ - 4	2.85	1448	
PZ - 5✓	10.11	1305	(Inside Conmed) Dan
PZ - 6✓	9.48	1320	(Inside Conmed) Dan
PZ - 7✓	9.12	1646	(Inside Conmed) Dan
PZ - 8✓	Dry	1244	(Inside Conmed)
PZ - 9	8.15	1601	(Inside Conmed)
PZ - 10	9.08	1558	(Inside Conmed)
PZ - 11R✓	8.76	1723	Dan
PZ - 13R✓	8.16	1355	Dan
PZ - 17	7.30	1345	
PZ - 18	7.97	1356	
PZ - 19	7.43	1402	
PZ - 20	7.14	1340	
PZ - 21	Dry	1415	(Outside IHOP, next to SG Point)
PZ - 22	7.79	1244	
PZ - 23	6.81	1214	
PZ - 24	10.85	1211	
PZ - 25	6.72	1209	
PZ - 26	9.24	1206	
PZ - 27	11.00	1224	
PZ - 28	3.93	1242	

ARCADIS

Water Level Record

Project LMC Utica, NY Date 4/10/12 Staff: Jason Gutkowski

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
PZ - 29	2.71	1254	
PZ - 30	4.18	12:19	
PZ - 31	1.49	1208	
PZ - 32	2.32	1205	
PZ - 33	Dry	1140	
PZ - 34	2.80	1305	
PZ - 35	2.06	1306	
PZ - 36	2.79	1309	
PZ - 39	3.87	13.13	
PZ - 40	5.05	1100	(In Maintenance building)
PZ - 41	4.80	1105	(In Maintenance building)
PZ - 42	0.61	1319	(In Maintenance building)
A1-PZ1	2.12	1600	collected on 4/9/12 &
A1-PZ2	1.27	1600	collected on 4/9/12
A2-PZ1	4.44	1150	
A2-PZ2	6.66	1147	
A2-PZ3	3.72	1141	
A2-PZ4	2.10	1149	
A2-PZ5	7.84	1143	
A2-PZ6	2.31	1153	
A2-PZ7	6.28	1146	
A2-PZ8	5.75	1148	

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/1/12
Time: 0950
Technician: J. Gottkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 105306

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	25	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17.0	(inches)
Blower intake line vacuum [PI-100]	-2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port little
Note scaling observed inside air stripper via clear tray access door little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes All Three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes All Six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	5/1/12/1330	→	→	→	→
Instantaneous Flowrate [gpm]	36.15	14.93	15.75	N/A	66.47
"Total" Flow (resettable, gal)	2529585	435,243	605647	50	3837264
"Perm" Flow (gal)	14,976,677	2,515,254	1,920,768	1652	6,513,110
Pump 1 Running (Y/N)?	Yes	Yes	Yes	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/1/12
Time: 0930
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	58	(°F)	
Pre-Carbon Temperature	TI-400	72	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	12	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	26.62	(in. W.C.)	
Vapor Flowrate	FT-106	805.6	(cfm)	
Pre-Carbon Temperature	TT-400	80.8	(°F)	
Pre-Carbon Pressure	PT-400	11.9	(in. W.C.)	
Building Temperature	TT-100	61.2	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.9 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	27.5 gal. remaining	Drum is under Neg. Pressure side of drum has been pulled in by vacuum, (Neg. Pressure)
Quantity of additional full drums	1 Full drum	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Good, no leaking or build up

Drum was vented by loosening the unused bung plug.

MONTHLY OM&M TASKS

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes Collected @ 1335
pH of effluent sample	7.94
Model of pH meter	Hanna HI 99100
Calibration notes / method used	2 Point Cal.

Effluent sample collected while MH-1 was in cycle

MH-2 and MH-3 were offline while collecting sample.

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/1/12
Time: 1500
Technician: J. Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH1: None MH2: None MH3: None
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes, All three
Observe groundwater inside each manhole and note odor and appearance	Clear, no odor in All three
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All good, No leaks in all three
With pump(s) running, listen for any unusual sounds	No unusual sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good in all three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All good, no leaks
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Heater is working Thermostat checked, good

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes, working
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes 3/11
Is emergency spill kit available? (Y/N)	Yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes Posted on wall
Is current SPDES permit onsite? (Y/N) (note date)	Yes Posted on wall

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/7/12
Time: 0915
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Yes, Auto
System currently cycling? yes
Alarms? (list) None

Electrical Meter Reading (kWh): 109763

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	25.5	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17.4	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Auto
Note scaling inside liquid effluent pipe from access port little
Note scaling observed inside air stripper via clear tray access door little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) yes All 3
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes All 6

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	6/7,	→	→	→	→
Instantaneous Flowrate [gpm]	36.14	18.07	16.52	N/A	69.91
"Total" Flow (resettable, gal)	2837532	484302	755576	50	4316533
"Perm" Flow (gal)	15284743	2564369	2070729	1652	6992048
Pump 1 Running (Y/N)?	Yes	Yes	Yes	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/7/12
Time: 0930
Technician: Jason Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	59	(°F)	
Pre-Carbon Temperature	TI-400	77	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.44	(in. W.C.)	
Vapor Flowrate	FT-106	751.8	(cfm)	
Pre-Carbon Temperature	TT-400	81.4	(°F)	
Pre-Carbon Pressure	PT-400	9.9	(in. W.C.)	
Building Temperature	TT-100	64.6	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	No	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.3 (mA) 1 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	18 gal. remaining	
Quantity of additional full drums	1 Full Drum	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Good no leaking or build up. All good

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1000 on 6/7/12
pH of effluent sample	8.23
Model of pH meter	Hanna HI 99100
Calibration notes / method used	2 point Cal,
Are MH-2 or MH-3 online in auto during sampling collection?	MH2 online while sampling

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/7/12
Time: 0800
Technician: J. Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH1: None MH2: None MH3: None
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes, in all three
Observe groundwater inside each manhole and note odor and appearance	Clear w/ no odor in all three
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All good, no leaks in all three
With pump(s) running, listen for any unusual sounds	No unusual sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good, all three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All good, no leaks
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	yes
List any notable observations	—
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Checked, yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes, GFIs working
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes all
Is emergency spill kit available? (Y/N)	Yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes posted on wall
Is current SPDES permit onsite? (Y/N) (note date)	yes posted on wall

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/12/12
Time: 1015
Technician: CD/JG

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list)

Electrical Meter Reading (kWh): 112043

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	25	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	19.5	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.5	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Thin scaling (< 1mm est.)
Note scaling observed inside air stripper via clear tray access door Clean

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	7/13/12;14:50	→	→	→	→
Instantaneous Flowrate [gpm]	41.3	18.6	16.4	—	66.0
"Total" Flow (resettable, gal)	NR	→	→	→	→
"Perm" Flow (gal)	1542617	2592545	2150361	1652	7224044
Pump 1 Running (Y/N)?	Y	Y	Y	N	NA
Pump 2 Running (Y/N)?	Y	Y	Y	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) No *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/12/12
Time: 11:15
Technician: CD/JG

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	67	(°F)	
Pre-Carbon Temperature	TI-400	83	(°F)	
Duct Heater Temperature Setpoint	-	95	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3	(in. W.C.)	
Effluent Pressure	PI-403	< 1	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	26.5	(in. W.C.)	
Vapor Flowrate	FT-106	630	(cfm)	
Pre-Carbon Temperature	TT-400	78.8	(°F)	
Pre-Carbon Pressure	PT-400	7.9	(in. W.C.)	
Building Temperature	TT-100	82.1	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running) with FT-105 @ 18-19 gpm

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	No	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.47 (mA) / 2 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	13.7	13.7 gallons remaining.
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Looks okay.

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours). 7/12/12 12:00

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes
pH of effluent sample	7.82
Model of pH meter	Hanna 991001
Calibration notes / method used	7+4
Are MH-2 or MH-3 online in auto during sampling collection?	No

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/12/12
Time: 11:30
Technician: CD/JG

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	No
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes, all 3
Observe groundwater inside each manhole and note odor and appearance	MH-1 + MH-3; clear + no odor MH-2; organic sheen + no odor
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	OK
With pump(s) running, listen for any unusual sounds	OK
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good, used for pump-down tests
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	Nothing noteworthy observed; no leaks
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes, ~~MH-1 BV's difficult~~
List any notable observations	MH-1 BV's difficult to move
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	NE → OK SW → highest thermostat temp (75°F) already achieved in this portion of bldg; did not turn on

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	No. Recorded battery P/N. Replace.
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	No.
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP - March 2011 OM+M - March 2011
Is emergency spill kit available? (Y/N)	Y, in SSDS bldg
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes, need ear plugs
Is current SPDES permit onsite? (Y/N) (note date)	Yes, April 2011

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/12-7/13/12
Time: —
Technician: CD/JG

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Yes

MH-1 influent pH 6.79
MH-2 influent pH 7.28
MH-3 influent pH 6.61

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Yes

Are MH-2 or MH-3 online in auto during sampling collection? MH-1 only

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Yes

Quarterly groundwater elevation levels collected? (Y/N) Yes

Blower bearings greased? (Y/N) Yes

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 2480 (fpm) 786 (cfm)

FT-106 = 710-810

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)*

If yes, document testing and note any changes in sensor calibration factors

FT-102 – Δ DTW = 18.75" = 330 gal (211 gal/12")
trans. Δ: 340 (+3%) = OK. FT-105 Δ: 321 (-2.7%) = OK
FT-103 – Δ DTW = 25.25" = 444 gal
trans. Δ = 430 (-3%) = OK. FT-105 Δ: 419 (-5.6%) = OK.
FT-101 → Δ DTW = 26" = 457 gal.
trans Δ = 439 = -4% = OK
FT-105 → Δ = 452 = OK ✓

Manhole floats tested? (Y/N) No

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y, PA_106	Y	Y
	Notes: Current setpoint = 34 in W.C. Change to 20. 10-15 sec delay Then shutdown. MCP light "BLOWER PRESSURE HH or LL ALARM" on.					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Yes	Y	Y
	Notes: Current setpoint = 8 in W.C. Change to 33. 10-15 sec delay Then shutdown. MCP light ___ on.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Filled sump (bldg sump); pumping into AS while AS off but in auto. Set off alarm. Shutdown. Depth in AS sump >21". MCP light "Aerator sump level alarm" on.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/13/12
Time: 13:00
Technician: CJ

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	Y	Y
	Notes: Closed pre-VPGAC BFV. Level dropped to approx. 12.75" to drop float. Shutdown.					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Setpoint is 1200 cfm. Changed to 500. Short delay Then shutdown.					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Setpoint is 400 cfm. Changed to 1,000. Short delay Then shutdown.					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Setpoint is 110°F. Changed to 70°F. Shutdown. ~1 min delay					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: Setpoint is 60°F. Changed to 109°F. Shutdown. ~3 min delay					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Was 25 inW.C. Changed to 5. ~45 sec delay. Shutdown.					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Setpoint is 1 inW.C. Changed to 24 inW.C. ~45 sec delay. Shutdown					
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: Turned off HOA.					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: Turned off MH-2 HOA.					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: Turned MH-3 HOA's to off.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/13/12
Time: 13:00
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Confirmed while testing MH low-flow alarms					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Overflowed sump. Input/output switch. Shutdown.					
Building Sump High Level	LSH-106	LSH106	warning	Y.	N	Y
	Notes: Filled sump. Input + output changed. No shutdown.					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Removed foot valve from drum. Received alarm. Re-primed.					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Put probes into water. Received input/output change. No shutdown.					
MH-1 High Level	LSHH-103	LA_MH1	warning			
	Notes: Did not test.					
MH-1 Low Level	LSLL-103	LA_MH1	warning			
	Notes: Should force off both MH-1 pumps Did not test.					
MH-2 High Level	LSHH-104	LA_MH2	warning			
	Notes: Did not test.					
MH-2 Low Level	LSLL-104	LA_MH2	warning			
	Notes: Should force off both MH-2 pumps Did not test.					
MH-3 High Level	LSHH-105	LA_MH3	warning			
	Notes: Did not test.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/13/12
Time: 13:00
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps Did not test.					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Setpoint is 110°F. Changed to 70°F. Shutdown.					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Setpoint is 40°F. Changed to 90°F. Shutdown.					

ARCADIS

Page 1 of 2

Water Level Record

Project LMC Utica, NY

Date 7/9/12 & 7/10/12 Staff: JG/ES

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
MW - 1	8.74	1310	
MW - 2	5.98	1259	4" well
MW - 3	11.20	14.22	
MW - 4	11.81	1210	
MW - 5	5.32	1553	
MW - 6	6.91	1109	Bailer in well(Remove to collect WL)
MW - 7	7.92	1430	
MW - 9	3.69	1435	
MW - 10	5.49	1340	
MW - 11	8.27	1338	
MW - 12	12.12	12.17	
MW - 13S	Dry	1301	Dry@6.50
MW - 13BR			Can't find
MW - 14S	10.79	1215	
MW - 14BR	46.10	1213	
MW - 15S	8.62	1206	
MW - 15BR	27.31	1208	Under pressure *caution when opening
MW-16	4.46	1023	
MW-17	4.13	1025	
MW-18	3.61	1028	
MW-19	1.46	1053	
MW-20	2.83	1055	
MW-21	3.18	1350	
IW-1	2.70	1058	4" Well
PZ - 2	~~DRY~~ 4.96	~~1302~~	
PZ - 4	3.00	1440	
PZ - 5	9.88 ~~Dry~~	1740 1510	(Inside Conmed) ~~(Cover broke) Dry 9.30~~ 7/6/12
PZ - 6	9.44	1742	(Inside Conmed) Can't Find 7/10/12
PZ - 7	9.13	1745	(Inside Conmed) 7/10/12
PZ - 8	Dry	1510	(Inside Conmed) Cover broke, Dry @ 9.30
PZ - 9	8.06	14.52	(Inside Conmed)
PZ - 10	9.10	14.55	(Inside Conmed)
PZ - 11R	8.74	1533	
PZ - 13R	8.15	1251	
PZ - 17	7.75	1255	
PZ - 18	8.08	1250	
PZ - 19	7.52	12:38	
PZ - 20	7.28	12:33	
PZ - 21	Dry	12:27	(Outside IHOP, next to SG Point) Dry @ 8.91
PZ - 22	8.54	1111	
PZ - 23	7.24	1048	
PZ - 24	11.02	1041	
PZ - 25	6.98	1035	
PZ - 26	9.48	1031	
PZ - 27	11.30	1044	
PZ - 28	4.20	1107	

ARCADIS

Water Level Record

Project LMC Utica, NY Date 7/9/12 Staff: JG/BS

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
PZ - 29	3.00	1051	
PZ - 30	4.37	1040	
PZ - 31	2.61	1035	
PZ - 32	2.98	1025	
PZ - 33	N/A	1000	Dry, hit bottom @ ~~6.59~~ 6.30'
PZ - 34	3.30	1345	
PZ - 35	2.56	1347	
PZ - 36	2.00	1340	
PZ - 39	4.00	1335	
PZ - 40	5.39	1358	(In Maintenance building)
PZ - 41	5.07	1355	(In Maintenance building)
PZ - 42	1.15	1405	(In Maintenance building)
A1-PZ1	2.37	1102	
A1-PZ2	2.66	1105	
A2-PZ1	5.85	1020	
A2-PZ2	6.77	1016	
A2-PZ3	4.41	1005	
A2-PZ4	5.52	1022	
A2-PZ5	8.01	1010	
A2-PZ6	4.63	1020	
A2-PZ7	6.61	1015	
A2-PZ8	6.09	1018	

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/15/12
Time: 1410
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Yes Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 114240

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	~~18.7525~~	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	18.75	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Auto
Note scaling inside liquid effluent pipe from access port None
Note scaling observed inside air stripper via clear tray access door None

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes All Three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes All six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	8/15/12, 1410	→	→	→	→
Instantaneous Flowrate [gpm]	36.47	16.90	16.39	N/A	58.90
"Total" Flow (resettable, gal)	3,098,861	540,339	928,671	50	4,780,671
"Perm" Flow (gal)	15,545,934	2,620,354	2,243,795	1652	7,456,158
Pump 1 Running (Y/N)?	Yes	Yes	Yes	No	NA
Pump 2 Running (Y/N)?	No	No	No	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) No *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/15/12
Time: 1400
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	72	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.69	(in. W.C.)	
Vapor Flowrate	FT-106	701.3	(cfm)	
Pre-Carbon Temperature	TT-400	79.0	(°F)	
Pre-Carbon Pressure	PT-400	7.9	(in. W.C.)	
Building Temperature	TT-100	77.4	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	yes	
If in external mode, record one set of mA and stroke speed values	4.8 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	9 gal. Remaining	
Quantity of additional full drums	1 Full Drum	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Good No Leeking or Buildup; All Good

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1400 on 8/15/12
pH of effluent sample	8.14
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 point Cal.
Are MH-2 or MH-3 online in auto during sampling collection?	NO MH-1 only

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/15/12
Time: 1300
Technician: J. Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1: None MH-2: None MH-3: None
Do level floats appear to be in good condition and hanging freely? (Y/N)	yes, All Three
Observe groundwater inside each manhole and note odor and appearance	Clear, NO odor in All Three
Is confined space entry signage present at each manhole? (Y/N)	yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All Good, No Leaks in All Three
With pump(s) running, listen for any unusual sounds	NO Unusual Sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good, All Three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good, NO Leaks
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	N/A
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes OMM 7/31/2012 HASP 3/28/2012
Is emergency spill kit available? (Y/N)	yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes Posted on wall
Is current SPDES permit onsite? (Y/N) (note date)	yes Posted on wall

Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Time: 0945
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto, yes
System currently cycling? yes
Alarms? (list) None

Electrical Meter Reading (kWh): 115889

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	26	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17.25	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Auto
Note scaling inside liquid effluent pipe from access port Very little
Note scaling observed inside air stripper via clear tray access door Very little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) yes All Three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes All six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	9/11/12, 0945	→	→	→	→
Instantaneous Flowrate [gpm]	34.72	14.82	16.80	N/A	55.50
"Total" Flow (resettable, gal)	3,194,552	564,799	1,002,105	50	4,964,992
"Perm" Flow (gal)	15,641,640	2,644,804	2,317,229	1652	7,640,471
Pump 1 Running (Y/N)?	yes	yes	yes	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Time: 0955
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	70	(°F)	
Pre-Carbon Temperature	TI-400	78	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	12	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.72	(in. W.C.)	
Vapor Flowrate	FT-106	760.9	(cfm)	
Pre-Carbon Temperature	TT-400	80.8	(°F)	
Pre-Carbon Pressure	PT-400	10.4	(in. W.C.)	
Building Temperature	TT-100	68.5	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.1 (mA) 2 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	6991. Remaining	
Quantity of additional full drums	1 Full Drum	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): All Good, No leaking or Build up. All Good

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1500 on 9/11/12
pH of effluent sample	8.11
Model of pH meter	Hanna HI 99100
Calibration notes / method used	2 point Cal.
Are MH-2 or MH-3 online in auto during sampling collection?	MH-3 online in Auto

MH-1 was Placed in Manual TO Sample

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1: None MH-2: None MH-3: None
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes All Three
Observe groundwater inside each manhole and note odor and appearance	Clear w/ No odor In All Three
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All Good, No leaks In All Three
With pump(s) running, listen for any unusual sounds	No unusual Sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good In All Three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good, No Leaks
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes Tested

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes
Is emergency spill kit available? (Y/N)	yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes Posted on wall
Is current SPDES permit onsite? (Y/N) (note date)	yes Posted on wall

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/17/12
Time: 15:21
Technician: CD/JG

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* AUTO
System currently cycling? Yes
Alarms? (list)

Electrical Meter Reading (kWh): 118762

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	26.2	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17.5-18.0	(inches)
Blower intake line vacuum [PI-100]	2.0	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.5	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Light scaling present
Note scaling observed inside air stripper via clear tray access door Cleaned 10/16/12; ports all clear.

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	10/17/12 15:25	→	→	→	→
Instantaneous Flowrate (gpm)	35.3-36.7	18.6-19.0	15.7-16.2	—	57-59
"Total" Flow (resettable, gal)	NA	→	→	→	→
"Perm" Flow (gal)	15816745	2684287	2433722	1652	7949916
Pump 1 Running (Y/N)?	N	Yes	N	N	NA
Pump 2 Running (Y/N)?	Yes	N	Yes	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/17/12
Time: 15:21
Technician: CD/JG

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	63	(°F)	
Pre-Carbon Temperature	TI-400	77	(°F)	
Duct Heater Temperature Setpoint	-	95	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10.9	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3.8	(in. W.C.)	
Effluent Pressure	PI-403	1.9	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	28 45	(in. W.C.)	
Vapor Flowrate	FT-106	650-705	(cfm)	
Pre-Carbon Temperature	TT-400	78.9	(°F)	
Pre-Carbon Pressure	PT-400	8.6	(in. W.C.)	
Building Temperature	TT-100	68.3	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	4.5 (mA) 3 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	< 1 gal	<1 gal remaining in Drum # 4 (start 4/5/12)
Quantity of additional full drums	1	Labeled Drum #5

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): OK

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes
pH of effluent sample	8.37
Model of pH meter	Oakton pH Tester30
Calibration notes / method used	4 + 7 solutions
Are MH-2 or MH-3 online in auto during sampling collection?	No, only MH-1

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/23/12
Time: 15:30
Technician: CD

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	N
Monthly manhole inspections conducted? (Y/N)	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1 - No MH-3 - No MH-2 - No
Do level floats appear to be in good condition and hanging freely? (Y/N)	MH-1 - yes MH-2 - yes MH-3 - yes
Observe groundwater inside each manhole and note odor and appearance	MH-1 - clear, no odor MH-2 - no odor, clear MH-3 - clear, odor present
Is confined space entry signage present at each manhole? (Y/N)	MH-1 - yes MH-2 - yes MH-3 - yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	MH-1 - OK MH-3 - OK MH-2 - OK
With pump(s) running, listen for any unusual sounds	MH-1 - OK MH-3 - OK MH-2 - OK
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	MH-1 - good MH-3 - good MH-2 - good.
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	No problems observed
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes; BV-101 + 102 (old ball valves) are not very moveable easily
List any notable observations	
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes. Changed both thermostats from lowest setpoint (45°F) to 60°F.

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes, replaced battery last week
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes, HASP 3/12, OM&M 7/12
Is emergency spill kit available? (Y/N)	In SSDS building + overpack drum
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/17/12
Time: 15:20
Technician: CP/JG

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Yes

MH-1 influent pH 7.29
MH-2 influent pH 7.89
MH-3 influent pH 8.15

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Yes

Are MH-2 or MH-3 online in auto during sampling collection? No

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Yes

Quarterly groundwater elevation levels collected? (Y/N) Yes

Blower bearings greased? (Y/N) No

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 2200 2300 (fpm) 713 (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* Yes (10/23/12, 12:45)

If yes, document testing and note any changes in sensor calibration factors FT-101 Close gate valve. DTW = 119 1/4". FT(101)trans = 15858669, FT-105(trans) = 80 21682. Pumpdown MH-1. New DTW = 141 3/8" Δ = 22.375" = 394 gal. FT-101(trans) = 15859045. Δ = 376 FT-105(trans) = 80 22054, Δ = 372. Max error = 5.6% = OK. FT-102 Close valve. DTW = 176.5." FT-102(trans) = 2693560, FT-105(trans) = 80223 17. Pumpdown. New DTW = 191.5; Δ = 15" = 264 gal. New FT-102 = 2693830, Δ = 270 New FT-105 = 8022555, Δ = 238 Max error = 10.2%, NOTOK → FT-105. FT-103 Close gate valve DTW = 154.5." FT-103(trans) = 2460836. FT-105(trans) = 8022054. Pumpdown. New DTW = 171.5, Δ = 17" = 299 gallons. New FT-103(trans) = 2461125. Δ = 289 New FT-105(trans) = 8022317, Δ = 263 Max error = 12.9% NOTOK = FT-105. FT-105 reading low by %'s of -5.6, -9.8, and -12.0 for FT-101, FT-102, FT-103. Will correct assuming 9 % error. Old FT-105 K-factors = 74. New K = 74/1.09 = 67.9. Change FT-105 K's from 74 to 67.9.

Manhole floats tested? (Y/N)

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

10/30

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Current setpoint = 34 psi. Current reading = 25 psi. Change high setpoint to 24 psi. 10 sec delay. Shutdown. MCP panel light change. ✓					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Current low setpoint = 8 psi. Change to 30 psi. 10 sec delay then shutdown. MCP light changes.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Changed PT-106 high setpoint from 34 to 40. Change FT-106 low setpoint from 400 to 200. Closed BFV-401 partially to lower sump level. 5-10 sec delay then shutdown.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/30/12
Time: 17:10
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
High Air Stripper ~~Low~~ Liquid Level	LSL-100	LA_100	fatal	Y	Y	Y
	Notes: Filled sump w/ sink water during non-batch cycle.					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Current high set to 1200 cfm. Current value is ~600 cfm. Change 1200 to 500. 5 sec delay then shutdown					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Low is currently 400. Change to 1000. 5 sec delay then shutdown.					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Current high setpoint is 110. Current value is 93 Change H to 80°. 1 min delay then shutdown.					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: Current low setpoint is 60°F. Change to 100. 3 min delay then shutdown.					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Current high setpoint is 25. Current value is 8. Change H to 7, 45 sec delay then shutdown.					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Current low is 1.0 inW.C. Change to 11. 45 sec delay then shutdown.					
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: Turn off via HOA when running. ~~45-50 sec delay~~ 45-50 sec delay.					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: Turned off HOA. delay, no shutdown.					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: Turned of HOAs while on in auto.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/30/12
Time: 17:25
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Had all HOA's off when MH-1 was being called. ~30 sec delay.					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Continued filling sump.					
Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
	Notes: Filled sump w/ sink water.					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Removed foot pump from drum. Re ~~called~~ primed afterwards.					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Put sensor in cup of water.					
MH-1 High Level	LSHH-103	LA_MH1	warning			
	Notes: Did Not Test.					
MH-1 Low Level	LSLL-103	LA_MH1	warning			
	Notes: Should force off both MH-1 pumps Did not test.					
MH-2 High Level	LSHH-104	LA_MH2	warning			
	Notes: Did not test.					
MH-2 Low Level	LSLL-104	LA_MH2	warning			
	Notes: Should force off both MH-2 pumps Did not test.					
MH-3 High Level	LSHH-105	LA_MH3	warning			
	Notes: Did not test.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/30/12
Time: 18:00
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps Did not test.					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Current high setpoint is 110. Current value is 70. Change high to 65. ~2 min delay then shutdown.					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Current low is 40. Changed to 100. ~2 min delay then shutdown.					

ARCADIS

Water Level Record

Project LMC Utica, NY

Date 10/5/12 Staff: Rebecca Herbst
Geoff Bisher

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
MW - 1	8.53 DZ	1510	10/4/12
MW - 2	5.93	1128	
MW - 3	10.93 DZ	1400	10/4/12
MW - 4	11.31	1107	
MW - 5	4.85	1230	
MW - 6	6.99	1400-1500	Bailer in well(Remove to collect WL) GLB
MW - 7	7.57	1329	
MW - 9	2.97	1235	
MW - 10	5.16 DZ	1225	10/4/12
MW - 11	7.88	1250	
MW - 12	12.12	1350	
MW - 13S	Dry	1110	
MW - 13BR	10.82	1115	
MW - 14S	10.84	1334	
MW - 14BR	41.77 DZ	1046	10/4/12
MW - 15S	8.67	1342	
MW - 15BR	26.43	1359	Under pressure *caution when opening
MW-16	4.45	912	
MW-17	3.68	911	
MW-18	3.4	906	
MW-19	1.02	1207	
MW-20	2.68	1162	
MW-21	3.11	1240	
IW-1	2.20	1145	4" Well Something on Top of water
PZ - 2	3.71	1203	
PZ - 4	1.29	1400-1500	GLB
PZ - 8	9.43	1410	(Inside Conmed)
PZ - 6	9.95	1415	(Inside Conmed)
PZ - 7	10	1420	(Inside Conmed)
PZ - 5	9.44	1415	(Inside Conmed)
PZ - 9	8.04	1400	(Inside Conmed)
PZ - 10	8.98	1425	(Inside Conmed)
PZ - 11R	NA	NA	Car Parked on road Not access
PZ - 13R	8.13 DZ	1655	10/4/12
PZ - 17	7.41	1255	
PZ - 18	1.98	1305	
PZ - 19	7.23	1330	
PZ - 20	6.86	1320	
PZ - 21	Dry	NA	(Outside IHOP, next to SG Point) GLB (1400-1500)
PZ - 22	8.62	1015	
PZ - 23	6.75	1012	
PZ - 24	11.00	1009	
PZ - 25	6.8	1067	
PZ - 26	9.42	1002	No Lock
PZ - 27	11.43	955	
PZ - 28	3.91	1020	

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Water Level Record

Project LMC Utica, NY

Date 10/5/12 Staff: RH/GB

Well (s)	Depth to Water (ft) TIC/MP	Time	Remarks (Well condition - J-plug, lock, bolts, MH, Inner Casing)
PZ - 29	2.26	1032	
PZ - 30	3.98	1035	
PZ - 31	At Grade	NA	Soil
PZ - 32	.6	910	
PZ - 33	~~Dry~~ Dry	~~0941~~	0941
* PZ - 34	3.11 ~~3.14~~	9-10	
* PZ - 35	1.95	9-10	
* PZ - 36	1.73	9-10	
PZ - 39	3.10	9-10	
* PZ - 40	4.93	9-10	(In Maintenance building)
* PZ - 41	4.63	9-10	(In Maintenance building)
* PZ - 42	.55	9-10	(In Maintenance building)
A1-PZ1	1.5	1168	
A1-PZ2	DB 2.30	1435	10/4/12
A2-PZ1	~~6.6~~ 9.10	919	
A2-PZ2	6.15	924	
A2-PZ3	2.85	936	
A2-PZ4	.82	918	
A2-PZ5	6.38	1100	
A2-PZ6	See Note	917	At Top Approx 6 in Below TIC Visual Est
A2-PZ7	5.61	926	
A2-PZ8	6.99	1400 ~~1150~~	GLB

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/8/2012
Time: 10:00
Technician: Jason Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 120790

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	29	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	15.5	(inches)
Blower intake line vacuum [PI-100]	-1	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes, Auto
Note scaling inside liquid effluent pipe from access port Trace
Note scaling observed inside air stripper via clear tray access door Trace

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes, all three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes, all six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	11/8/2012, 10:25				
Instantaneous Flowrate [gpm]	35.55	17.32	17.01	NA	63.92
"Total" Flow (resettable, gal)	3,479,331	626,422	1,185,639		5,466,744
"Perm" Flow (gal)	15,926,421	2,706,427	2,500,769		8,142,222
Pump 1 Running (Y/N)?	Yes	Yes	Yes	No	NA
Pump 2 Running (Y/N)?	No	No	No	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes/on *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) No *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/8/2012
Time: 10:00
Technician: Jason Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	68	(°F)	
Pre-Carbon Temperature	TI-400	89	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11.5	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	1	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	30.8	(in. W.C.)	
Vapor Flowrate	FT-106	697-778	(cfm)	instantaneous flowrate varies
Pre-Carbon Temperature	TT-400	88.7	(°F)	
Pre-Carbon Pressure	PT-400	9.2	(in. W.C.)	
Building Temperature	TT-100	69	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	No	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.8 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	27	gallons remaining
Quantity of additional full drums	None	need to order more

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Good, no leaking or wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y, 11/8/12 @ 10:15
pH of effluent sample	8.15
Model of pH meter	Hanna 991001
Calibration notes / method used	2-point calibration, 7 and 10
Are MH-2 or MH-3 online in auto during sampling collection?	No

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/8/2012
Time: 15:00
Technician: Jason Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	No, all three MH inspected
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes, all three
Observe groundwater inside each manhole and note odor and appearance	Clear, no odor
Is confined space entry signage present at each manhole? (Y/N)	Yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All three inspected, no leaks
With pump(s) running, listen for any unusual sounds	All three inspected, no unusal sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	All three were in good condition
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	Good, no leaks
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	NA
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes, OMM 10/12, HASP 3/12
Is emergency spill kit available? (Y/N)	Yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes, dated 3/12

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/6/12
Time: 0840
Technician: Jason Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 125002

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	28.5	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	14.5	(inches)
Blower intake line vacuum [PI-100]	-2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes Auto
Note scaling inside liquid effluent pipe from access port None
Note scaling observed inside air stripper via clear tray access door None

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes All Six
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes All Six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	12/6/12 1200				→
Instantaneous Flowrate [gpm]	36.29	18.23	16.38	N/A	60.95
"Total" Flow (resettable, gal)	3,604,571	648,823	1,244,816	50	5,678,817
"Perm" Flow (gal)	16,051,661	2,728,838	2,559,945	1652	8,354,299
Pump 1 Running (Y/N)?	Yes	Yes	Yes	No	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes/ON *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/6/12
Time: 0820
Technician: Jason Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	69	(°F)	
Pre-Carbon Temperature	TI-400	90	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	83	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	12.5	(in. W.C.)	
Mid-Carbon Pressure	PI-402	5.5	(in. W.C.)	
Effluent Pressure	PI-403	1.0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	29.30	(in. W.C.)	
Vapor Flowrate	FT-106	893 TO 934	(cfm)	
Pre-Carbon Temperature	TT-400	88.8	(°F)	
Pre-Carbon Pressure	PT-400	11.1	(in. W.C.)	
Building Temperature	TT-100	68.9	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.8 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	23 gal.	
Quantity of additional full drums	None	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): All Good, NO Leaks or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1220 on 12/6/12
pH of effluent sample	8.17
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 Point Calibration
Are MH-2 or MH-3 online in auto during sampling collection?	NO

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/6/12
Time: 1230
Technician: Jason Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1 MH-2 MH-3
Do level floats appear to be in good condition and hanging freely? (Y/N)	yes All Three
Observe groundwater inside each manhole and note odor and appearance	Clear, No Odor
Is confined space entry signage present at each manhole? (Y/N)	yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All Good, No Leaks
With pump(s) running, listen for any unusual sounds	No Unusual Sound
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good, All Three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	Good No Leaks
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes Hasp: 3/12 OM&M: 7/12
Is emergency spill kit available? (Y/N)	Yes in SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes
Is current SPDES permit onsite? (Y/N) (note date)	yes Posted On Wall

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Appendix C

OM&M Plan Addendum

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GCTS OM&M Manual Addendum Log Table

Addendums are to be added to every copy of the OM&M Manual, and logged on Table A-1 to verify that all hard copies current:

Table A-1 Addendum Log Table

Addendum Number	Date of Addendum	Reason for Addendum	Person Completing Addendum
1	12/28/11	Updated Appendix D Monthly OMM Log Sheets, Tables, Table 2 Significant Equipment Log, and Table 3 Critical Device Alarm Setpoints.	Todd Carignan
2	1/12/12	Updated Appendix D Monthly OMM Log Sheets and Table 2 Significant Equipment Log	Todd Carignan
3	3/30/12	Updated Appendix D Monthly OMM Log Sheets, SOP-03, and SOP-12	Todd Carignan
4	4/9/12	Updated SOP-03, and SOP-12	Todd Carignan
5	4/30/12	Updated Appendix D Monthly and Quarterly OMM Log Sheets	Todd Carignan
6	6/18/12	Updated SOP-12 (Revised High/Low Air Stripper flow rate testing method).	Todd Carignan
7	7/13/12	Updated SOP-11 (Revised sequestering agent changeout SOP including drum venting and securing).	Todd Carignan
8	10/8/12	Updated SOP-10 (Revised carbon changeout SOP including multiple vessel changeouts).	Todd Carignan
9	11/21/12	Updated Table 3, Critical Device Alarm Set Points.	Todd Carignan
10			

Make additional copies of this form as necessary.

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Table 2. Significant Equipment List, Groundwater Collection and Treatment System OM&M Manual, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Quantity	Description	Specification
2	Pumping Manhole No. 1 Pumps	Goulds Model 3887-WSO71BF submersible sewage pump capable of 20 gpm at 23 feet TDH; 3/4 hp; 230 volts, single phase
2	Pumping Manhole No. 2 Pumps	Goulds Model 3887-WSO71BF submersible sewage pump capable of 20 gpm at 23 feet TDH; 3/4 hp; 230 volts, single phase
2	Pumping Manhole No. 3 Pumps	Goulds Model 3887-WSO71BF submersible sewage pump capable of 20 gpm at 23 feet TDH; 3/4 hp; 230 volts, single phase
5	Pumping Manhole No. 1 Float Switch	Flygt Model ENM-10 float switch, mechanical switch, polypropylene float body. 2 amps at 115 or 230 volts
5	Pumping Manhole No. 2 Float Switch	Flygt Model ENM-10 float switch, mechanical switch, polypropylene float body. 2 amps at 115 or 230 volts
5	Pumping Manhole No. 3 Float Switch	Flygt Model ENM-10 float switch, mechanical switch, polypropylene float body. 2 amps at 115 or 230 volts
1	Air Stripper	QED Environmental Systems. EZ-12.4 SS, design flow rate of 10 to 70 gpm, max flow rate of 120gpm
1	Blower	New York Blower Model 2306A, 10 hp, 460 volts, 3 phase blower (minimum performance of 600 cfm at 39 inches of water column). Baldor Reliance Motor - CAT NO: M3771T, Bearings: DE 6307
1	Duct Heater	Heat Exchange And Transfer, Inc. Model ADH-12-483, 460 volts, 3 phase duct heater
1	Pre-VPGAC Temperature Transmitter	ProSense Model TTD25N-20-0300F-H, 0-300 degrees Fahrenheit, 4-20 mA ouput
2	VPGAC Vessels	Siemens Model FB1000, 1,000 pound vessels with VOCarb 36C media
1	Pre-VPGAC Pressure Transmitter	ProSense PTD25-20-0015H pressure transmitter, 0-15 psi range, 4-20 mA output
1	Differential Pressure Transmitter	Dwyer Series 668C-4 differential pressure transmitter, 0-2.5 in. WC, 4-20 mA output, DS-300 Series sensor
1	Pressure Transmitter (Air Stripper)	Wika Model S-10 pressure switch, 4-20 mA output
5	Flow Sensor	1.25-Inch Signet Model 3-2536-PO with 0-200 gpm flow range and a 4-20 mA output signal and signet sensor model 2536
5	Flow Transmitter	Signet Compak Flow Transmitter Model 8511, 10-30 volts, 4-20 mA Input
1	Metering Pump (Sequestering Line)	LMI Model AA941-353BI metering pump, 120 V, 0.58 GPH
1	Programmable Logic Controller	EOS Research ProView Pro Control Series 2+ PLC
2	Treatment Building Heaters	Model MUH-10-4, 480 volt, 3 phase, 34100 BTU/HR
1	Treatment Building Sump Pump	Dayton, Cast iron submersible pump, 1/4 hp, 115 volts, single phase with option tethered float control

Definitions:

cfm - cubic feet per minute

gpm - gallons per minute

hp - horsepower

in. W.C. - inches of water column

mA - milliamps

PLC - Programmable Logic Controller

TDH - Total Dynamic Head

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Table 3. Critical Device Alarm Setpoints, Groundwater Collection and Treatment System OM&M Manual, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Alarm Description	Corresponding Input	Alarm Output[1]	Type	Alarm Setpoint[2]	Delay[3]	Process[4]
Air Stripper Sump High Pressure	PT-106	PA_106	shutdown	> 34 in. W.C.	10 seconds	41
Air Stripper Sump Low Pressure	PT-106	PA_106	shutdown	< 8 in. W.C.	10 seconds	41
Air Stripper High Liquid Level	LSH-100	LA_100	shutdown	ON (>15 in.)	15 seconds	42
Air Stripper Low Liquid Level	LSL-100	LA_100	shutdown	OFF (<13.25 in.)	5 seconds	32
High Air Flowrate	FT-106	FA_106	warning	> 1,200 cfm	5 minutes	45
Low Air Flowrate	FT-106	FA_106	warning	< 300 cfm	5 minutes	45
Pre-Carbon High Temperature	TT-400	TAH400	shutdown	> 110 °F	1 minute	46
Pre-Carbon Low Temperature	TT-400	TAL400	shutdown	< 60 °F	3 minutes	47
Pre-Carbon High Pressure	PT-400	PA_400	shutdown	> 25 in. W.C.	45 seconds	52
Pre-Carbon Low Pressure	PT-400	PA_400	shutdown	< 1 in. W.C.	45 seconds	52
MH-1 Low Flowrate	FT-101	FA_101	warning	< 10 gpm	30 seconds	29
MH-2 Low Flowrate	FT-102	FA_102	warning	< 10 gpm	30 seconds	30
MH-3 Low Flowrate	FT-103	FA_103	warning	< 10 gpm	30 seconds	31
Aggregate Low Flowrate	FT-105	FA_105	warning	< 3 gpm	30 seconds	55, 56, 57
Building Wet Floor Sensor Alarm	WFS-106	WFS106	shutdown	ON	1 second	13
Building Sump High Level	LSH-106	LSH106	warning	ON	2 seconds	43
Sequestering Agent Low Flow	FT-200	FA_200	warning	ON	1 second	53
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	ON	10 seconds	54
MH-1 High Level	LSHH-103	LA_MH1	warning	ON (>9.5 ft.)	3 seconds	35
MH-2 High Level	LSHH-104	LA_MH2	warning	ON (>11 ft.)	2 seconds	37
MH-3 High Level	LSHH-105	LA_MH3	warning	ON (>9.5 ft.)	2 seconds	39
MH-1 Low Level[5]	LSLL-103	LA_MH1	warning	OFF (<1.5 ft.)	2 seconds	36
MH-2 Low Level[5]	LSLL-104	LA_MH2	warning	OFF (<1.5 ft.)	2 seconds	38
MH-3 Low Level[5]	LSLL-105	LA_MH3	warning	OFF (<1.5 ft.)	2 seconds	40
Motion Detector	MD-100	MOTION	warning	ON	1 second	20
Building High Temperature	TT-100	TA_100	shutdown	> 110 °F	2 minutes	44
Building Low Temperature	TT-100	TA_100	shutdown	< 40 °F	2 minutes	44

1) Alarm output shown is exactly as shown on ProControl fax reports as "Discrete Outputs." System must be operating in automatic mode for an alarm output to become indicated.

2) For all "level" alarms, the raised position of the float or sensor is "ON."

3) Delay refers to amount of time in which alarm condition must persist before alarm response is initiated.

4) Process refers to the line of logic which causes alarm condition to occur.

5) Manhole low level alarms force off that respective manhole's pumps, but do not initiate system shutdown.

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* _____
System currently cycling? _____
Alarms? (list) _____

_____

Electrical Meter Reading (kWh): _____

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]		(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*		(inches)
Blower intake line vacuum [PI-100]		(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*		(inches)
Interior dilution damper position *(0° is shut, 90° is open)*		(°)

Is white "POWER ON" light on air stripper control panel lit? _____
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? _____
Note scaling inside liquid effluent pipe from access port _____
Note scaling observed inside air stripper via clear tray access door _____

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) _____
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) _____

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time					
Instantaneous Flowrate [gpm]					
"Total" Flow (resettable, gal)					
"Perm" Flow (gal)					
Pump 1 Running (Y/N)?					NA
Pump 2 Running (Y/N)?				NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) _____ *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) _____ *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300		(°F)	
Pre-Carbon Temperature	TI-400		(°F)	
Duct Heater Temperature Setpoint	-		(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-		(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401		(in. W.C.)	
Mid-Carbon Pressure	PI-402		(in. W.C.)	
Effluent Pressure	PI-403		(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106		(in. W.C.)	
Vapor Flowrate	FT-106		(cfm)	
Pre-Carbon Temperature	TT-400		(°F)	
Pre-Carbon Pressure	PT-400		(in. W.C.)	
Building Temperature	TT-100		(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)		
Is low flow alarm present? (Y/N)		
Is pump in external mode? (Y/N)		
If in external mode, record one set of mA and stroke speed values	(mA) (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length		*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]		
Quantity of additional full drums		

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.) _____

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	
pH of effluent sample	
Model of pH meter	
Calibration notes / method used	
Are MH-2 or MH-3 online in auto during sampling collection?	

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	
Monthly manhole inspections conducted? (Y/N)	
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	
Do level floats appear to be in good condition and hanging freely? (Y/N)	
Observe groundwater inside each manhole and note odor and appearance	
Is confined space entry signage present at each manhole? (Y/N)	
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	
With pump(s) running, listen for any unusual sounds	
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	
List any notable observations	
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	
Is eyewash/shower station operational and unobstructed? (Y/N)	
Is interior emergency lighting operational? (Y/N)	
Is first aid kit present and in good condition? (Y/N)	
Is lockout/tagout equipment available? (Y/N)	
Have electrical GFIs been tested and reset? (Y/N)	
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	
Is emergency spill kit available? (Y/N)	
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	
Is current SPDES permit onsite? (Y/N) (note date)	

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) _____

MH-1 influent pH _____
MH-2 influent pH _____
MH-3 influent pH _____

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) _____

Are MH-2 or MH-3 online in auto during sampling collection? _____

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) _____

Quarterly groundwater elevation levels collected? (Y/N) _____

Blower bearings greased? (Y/N) _____

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) _____ (fpm) _____ (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* _____

If yes, document testing and note any changes in sensor calibration factors _____

Manhole floats tested? (Y/N) _____

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response):*

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal			
	Notes:					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal			
	Notes:					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal			
	Notes:					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal			
	Notes:					
High Air Flowrate	FT-106	FA_106	fatal			
	Notes:					
Low Air Flowrate	FT-106	FA_106	fatal			
	Notes:					
Pre-Carbon High Temperature	TT-400	TAH400	fatal			
	Notes:					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal			
	Notes:					
Pre-Carbon High Pressure	PT-400	PA_400	fatal			
	Notes:					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal			
	Notes:					
MH-1 Low Flowrate	FT-101	FA_101	warning			
	Notes:					
MH-2 Low Flowrate	FT-102	FA_102	warning			
	Notes:					
MH-3 Low Flowrate	FT-103	FA_103	warning			
	Notes:					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning			
	Notes:					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal			
	Notes:					
Building Sump High Level	LSH-106	LSH106	warning			
	Notes:					
Sequestering Agent Low Flow	FT-200	FA_200	warning			
	Notes:					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning			
	Notes:					
MH-1 High Level	LSHH-103	LA_MH1	warning			
	Notes:					
MH-1 Low Level	LSLL-103	LA_MH1	warning			
	Notes: Should force off both MH-1 pumps					
MH-2 High Level	LSHH-104	LA_MH2	warning			
	Notes:					
MH-2 Low Level	LSLL-104	LA_MH2	warning			
	Notes: Should force off both MH-2 pumps					
MH-3 High Level	LSHH-105	LA_MH3	warning			
	Notes:					

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Date: _____
Time: _____
Technician: _____

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps					
Building High Temperature	TT-100	TA_100	shutdown			
	Notes:					
Building Low Temperature	TT-100	TA_100	shutdown			
	Notes:					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: _____
Time: _____
Technician: _____

CRITICAL DEVICE CORRECTIVE ACTION LOG SHEET

Date: _____ Time: _____

Critical Device Failure:

Device Failure:

Corrective Action:

Lockheed Martin Corporation
SOP GCTS – System Sampling

SOP Author:	ARCADIS-US
SOP #:	GCTS-03
Revision #:	2
Date Implemented:	3/16/11
Approval:	

Description

This SOP is to be used when performing system sampling of the GCTS.

Abbreviations

GCTS	Groundwater Collection and Treatment System
SOP	Standard Operating Procedure
VOCs	Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
QAPP	Quality Assurance Project Plan
PPE	Personal Protective Equipment
VPGAC	Vapor Phase Granular Activated Carbon

Monthly System Groundwater Sampling

1. A liquid phase effluent sample should be collected monthly from the air stripper effluent sampling port SP-106 (Outfall #2). VOCs should be analyzed by USEPA Method 8260 in accordance with the ARCADIS QAPP.

2. An effluent sample may only be collected while the system is running during a manhole dewatering cycle (i.e. when the air stripper blower and at least one of the six manhole pumps are online). **NOTE: MH-1 must be online during sample collection. If MH-1 Pump 1 or 2 is not on upon arrival, then sampler shall wait until MH-1 cycles on automatically (MH-1 typically batches approximately every 1.5 hours).**

3. Observe system operating in automatic for at least 20 minutes.

4. Sampling personnel should be wearing Level D PPE.

5. Calibrate the onsite pH meter with 4.0 and 7.0 buffer solution.

6. Place a purge bucket under the sampling point to collect water that is not collected in the VOA vial(s). Purge approximately 500 mL (just enough to flush the sample port).

7. Collect a pH reading and record on Monthly OM&M Log Sheet.

8. An approximate flow of 40 mL/min (i.e. fill one VOA vial in one minute) will be attempted for sampling to minimize volatilization of the VOCs in the water coming out of the sampling port.

9. Fill each VOA vial to the top until the surface tension of the water is mounded up above the top. Try to minimize spillover to maximize HCl preservative. Verify that there is no headspace in the VOA vial.

10. Once sampling is complete the VOA vials should be labeled and put on ice and the purge water should be poured into the building sump. Return selector switches to the Auto position if they were placed in Hand.

Photo 1: Effluent Sampling Location

SOP Author:	ARCADIS-US
SOP #:	GCTS-03
Revision #:	2
Date Implemented:	3/16/11
Approval:	

Lockheed Martin Corporation
SOP GCTS – System Sampling

Quarterly System Groundwater Sampling

1. Liquid phase influent samples should be collected quarterly for pumping manholes MH-1, MH-2, and MH-3 from sampling ports SP-101, SP-102, and SP-103, respectively (Photo 2). VOCs should be analyzed by USEPA Method 8260 in accordance with the ARCADIS QAPP.

Photo 2: MH-3 Influent Sample Location

2. Steps 1 through 10 may be replicated for the quarterly influent sampling. Note pH reading on Quarterly OM&M Log Sheet.

Quarterly System Vapor Sampling

11. Quarterly vapor phase samples should be collected from the VPGAC pre-carbon, mid-carbon, and effluent sample ports (SP-401, SP-402, and SP-403, respectively) on the VPGAC manifold (Photo 3). Grab samples should be collected directly from the sample ports. Samples will be analyzed for VOCs using USEPA Method TO-15 in accordance with the ARCADIS QAPP and submitted to Centek Laboratories, LLC. **NOTE: MH-1 must be online during sample collection. If MH-1 Pump 1 or 2 is not on upon arrival, then sampler shall wait until MH-1 cycles on automatically (MH-1 typically batches approximately every 1.5 hours).**

1. Confirm that each of the manifold valves are in the proper lead lag operating positions (open or closed) prior to proceeding with sampling.

2. Confirm that each vapor sampling port contains a hose barb fitting which is appropriate for the tubing to be used (typically tubing with I.D. of ¼"). Use silicon tubing to connect a lab-provided regulator/gauge assembly to a male threaded x hose barb fitting. Check that tubing is secured tightly at both ends. Verify that the ¼" ball valve associated with each sample port is closed.

3. Attach a 1-liter Summa canister to the regulator/gauge assembly. Vacuum is now being applied to the sample port. Record the initial vacuum in the canister read from the vacuum gauge assembly (typically canisters are charged with a vacuum of -30 in.Hg.).

4. Slowly open sample port valve to begin extracting vapor sample. **WARNING**, once the sample port is opened and sample extraction begins, the vacuum in the canister will begin to drop. While carefully monitoring the vacuum drop on the gauge, close the sample port ball valve when the vacuum gauge reads 7 to 8 in.Hg. Note that typically the ball valve will need to be closed to read an accurate canister vacuum (i.e. vacuum is typically lower while sample extraction is occurring as compared to when the sample port ball valve is shut and extraction is not occurring.

5. After the target sample volume (vacuum of 7 to 8 in.Hg.) for the Summa canister is collected, remove the regulator/gauge assembly from the Summa canister. Record the final canister vacuum. Thread the dust cap onto the Summa valve.

Lockheed Martin Corporation
SOP GCTS – System Sampling

SOP Author:	ARCADIS-US
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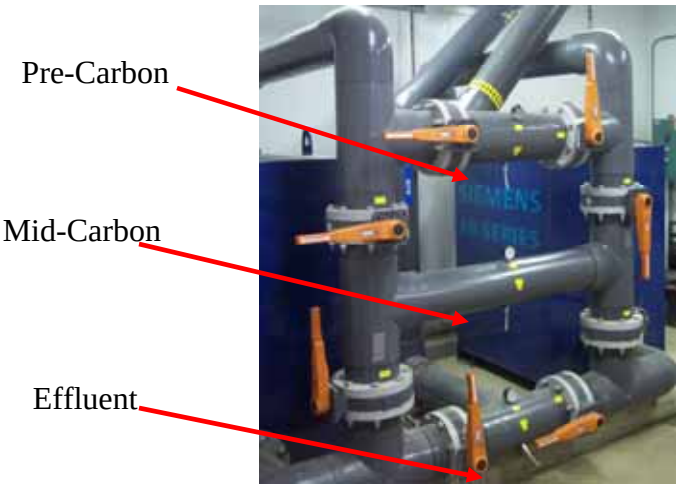

Photo 3: VPGAC Sampling Locations

6. Once sampling is complete the Summa canister should be labeled and placed back in boxes for shipping to the lab.

Contact Phone List

- **Project Manager:**
  Peter Milionis: (267) 685-1815
- **Task Manager:**
  Jeff Bonsteel: (518) 250-7300
- **Project Engineer:**
  Todd Carignan (518) 250-7300
- **Field Engineer:**
  Chris Davern (518) 250-7300

Safety Considerations

- This system removes contaminated groundwater and, once treated, discharges treated water to the municipal storm sewer. Therefore, it is **EXTREMELY IMPORTANT** that the operator be prepared to shut down the treatment system at any time there is question that the water is not receiving **FULL TREATMENT**.
- Follow all associated procedures as outlined in the Health and Safety Plan.

Related Documents

- Appendix D – OM&M Log Sheets

Lockheed Martin Corporation SOP GCTS – Critical Device Inspection/Testing

SOP Author:	ARCADIS-US
SOP #:	GCTS-09
Revision #:	2
Date Implemented:	3/16/11
Approval:	

Description

This SOP is to be used when performing the quarterly Critical Device / Alarm Testing.

Abbreviations

GCTS	Groundwater Collection and Treatment System
SOP	Standard Operating Procedure
PLC	Programmable Logic Controller
cfm	Cubic Feet Per Minute
In. W.C.	Inches of Water Column
VPGAC	Vapor Phase Granular Activated Carbon

Critical Device Inspection/Testing

The following devices should be tested quarterly or as needed. Refer to the Quarterly OM&M Log Sheet for a list of critical devices to be tested. Refer to the Critical Device Alarm Setpoints table (Table 3) for alarm setpoints, delays, and response types.

For any alarm to be indicated by the PLC, the system must be running in automatic mode. “AUTO” should be displayed in the lower right corner of the PLC display screen (Photo 1). If “MANUAL” is displayed, then an automatic system startup must be initiated (SOP GCTS-01).

Due to the repetitive nature of several alarms (i.e. air stripper sump high pressure alarm and low air stripper sump level alarm occur under the same conditions), the alarm setpoints may need to be temporarily adjusted to simulate the alarm subject to testing. Following testing, alarm setpoints must be returned to those indicated in the Critical Device Alarm Setpoints table (Table 3).

High & Low Air Stripper Sump Pressure Alarms

1. Both the high and low air stripper sump pressure alarms should be tested. These alarms are based on pressure transmitter PT-106.
2. Confirm that the system is operating in automatic mode by observing the PLC display screen. “AUTO” should be displayed in the lower right corner (see Photo 1).
3. Note that the system must be in the middle of a manhole pumpdown cycle (i.e. the blower must be running).
4. Press the “I/O” arrow buttons until “PT_106” is displayed in the upper left corner of the screen. The value shown represents the current value measured from PT-106.
5. To simulate a high air stripper sump pressure alarm, the high setpoint for PT-106 must be decreased. With “PT_106” displayed on the PLC, press the “Set Hi Lo” button on the keypad until “HIGH ALARM” is displayed. Using the “Up” and “Down” buttons to increase or decrease values, and the “Field” button to change characters from left to right, change the value to 25. Press the “Enter” button. Press “Set Hi Lo” until the current PT-106 value is again displayed. The high pressure alarm setpoint is now 25 in. W.C.
6. Wait for the time delay specified in the Critical Device Alarm Setpoints table (Table 3) to elapse.
7. Document the system response (shutdown, fax out, alarm light on air stripper blower control panel…etc) and verify consistency with that indicated on the Critical Alarm Setpoints table.
8. Confirm occurrence of the alarm by pressing the “I/O” arrows on the PLC keypad until “PA_106 OUTPUT” is displayed. If the alarm condition was recognized by the PLC, then “ON” should be displayed in the upper right corner of the PLC display screen.
9. Repeat Step 5, but return the high alarm setpoint to that indicated in Table 3.
10. Restart the system.

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11. To simulate a low air stripper sump pressure alarm, the low setpoint for PT-106 must be increased. With "PT_106" displayed on the PLC, press the "Set Hi Lo" button on the keypad until "LOW ALARM" is displayed. Using the "Up" and "Down" buttons to increase or decrease values, and the "Field" button to change characters from left to right, change the value to 32. Press the "Enter" button. Press "Set Hi Lo" until the current PT-106 value is again displayed. The low pressure alarm setpoint is now 32 in. W.C.

12. Wait for the time delay specified in the Critical Device Alarm Setpoints table (Table 3) to elapse.

13. Document the system response (shutdown, fax out, alarm light on air stripper blower control panel…etc) and verify consistency with that indicated on the Critical Alarm Setpoints table.

14. Confirm occurrence of the alarm by pressing the "I/O" arrows on the PLC keypad until "PA_106 OUTPUT" is displayed. If the alarm condition was recognized by the PLC, then "ON" should be displayed in the upper right corner of the PLC display screen.

15. Repeat Step 11, but return the low alarm setpoint to that indicated in Table 3.

16. Restart the system.

Photo 1: PLC Display Screen

Air Stripper Sump Level High & Low Alarms

1. Both the high and low air stripper sump level alarms should be tested. These alarms are based on level sensors LSL-100 and LSH-100.

2. Confirm that the system is operating in automatic mode by observing the PLC display screen. "AUTO" should be displayed in the lower right corner (see Photo 1).

3. Press the "I/O" arrow buttons until "LSL100" is displayed in the upper left corner of the screen. If the value shown is "ON," then the water level in the air stripper sump is above the sensor.

4. To simulate the air stripper sump low level alarm, slowly close the butterfly valve on the influent side of the lead VPGAC vessel (typically BFV-401 [if VPGAC-401 being used as lead vessel]) (Photo 4) until the water level indicated on the air stripper site gauge (see Photo 2) drops below the low level sensor (see Critical Alarm Setpoints table for site gauge level for LSL-100). The value for "LSL100" indicated on the PLC display screen should now be "OFF." Wait for the delay (specified in the table) to elapse.

5. Document the system response (shutdown, warning, air stripper control panel alarm light…etc) and verify consistency with the response indicated on the Critical Alarm Setpoints table.

6. Confirm occurrence of the low air stripper sump level alarm by pressing the "I/O" arrow buttons on the PLC keypad until "LA_100 OUTPUT" is displayed. If the alarm condition was recognized by the PLC, then "ON" should be displayed.

7. Return the butterfly valve on the influent side of the lead VPGAC vessel to the open position. Restart the system.

8. To test the high air stripper sump level alarm, wait until the system is not currently cycling (i.e. system is in AUTO but air stripper blower is not currently running).

9. Press the "I/O" arrow buttons until "LSH100" is displayed on the upper right corner of the PLC display screen.

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10. Plug in the building sump pump power cord.

Photo 2: Air Stripper Site Gauge

11. Begin filling the building sump with tap water via the hard-piped sink drain.

12. After the water level in the building sump rises above the sump pump's operational float, observe the liquid influent port of the air stripper to confirm that clean tap water from the sump is being pumped into the air stripper.

13. Observe the air stripper sump level rising until it is above the level of LSH-100 (see Critical Alarm Setpoints table for site gauge level). Confirm that the sump level is above LSH-100 by observing that the value of "LSH100" is "ON." Wait for the delay specified in the Critical Device Alarm Setpoints table to elapse.

14. Document system response (shutdown, fax out, air stripper control panel alarm light…etc). If an automatic shutdown has been initiated then "SHUTDOWN" and "MANUAL" will be displayed on the lower row of the PLC display screen.

15. Unplug the building sump pump power cord.

16. Restart the system.

High & Low Air Flow Alarms

1. Both the high and low air flow alarms should be tested. Both alarms are based on differential pressure / air flow transmitter FT-106.

2. Confirm that the system is operating in automatic mode by observing the PLC display screen. "AUTO" should be displayed in the lower right corner (see Photo 1).

3. Press the "I/O" arrow buttons until "FT_106" is displayed in the upper left corner of the screen. The value shown represents the current air flowrate measured from FT-106.

4. To simulate the high air flow alarm, the high setpoint for FT-106 must be decreased. With "FT_106" displayed on the PLC, press the "Set Hi Lo" button on the keypad until "HIGH ALARM" is displayed. Using the "Up" and "Down" buttons to increase or decrease values, and the "Field" button to change characters from left to right, change the value to 500 cfm. Press the "Enter" button. Press "Set Hi Lo" until the current FT-106 value is again displayed. The high flow alarm setpoint is now 500 cfm..

5. Wait for the delay specified in the Critical Device Alarm Setpoints table to elapse.

6. Document the system response (shutdown, warning…etc) and verify consistency with that indicated on the Critical Alarm Setpoints table.

7. Confirm occurrence of the high air flow alarm by pressing the "I/O" arrow buttons on the PLC keypad until "FA_106" is displayed. If the alarm condition was recognized by the PLC then "ON" should be displayed in the upper right screen.

8. Return the high setpoint to that indicated in Table 3.

9. Restart the system.

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10. To simulate the low air flow alarm, the low setpoint for FT-106 must be increased. With “FT_106” displayed on the PLC, press the “Set Hi Lo” button on the keypad until “LOW ALARM” is displayed. Using the “Up” and “Down” buttons to increase or decrease values, and the “Field” button to change characters from left to right, change the value to 900 cfm. Press the “Enter” button. Press “Set Hi Lo” until the current FT-106 value is again displayed. The low flow alarm setpoint is now 900 cfm.

11. Repeat steps 7 and 8 for the low air flow alarm.

12. Return the low setpoint to that indicated in Table 3.

High & Low Pre-Carbon Temperature Alarms

1. Both the high and low pre-carbon temperature alarms should be tested. Both alarms are based on temperature transmitter TT-400.

2. Confirm that the system is operating in automatic mode by observing the PLC display screen. “AUTO” should be displayed in the lower right corner (see Photo 1).

3. Note that the system must be in the middle of a manhole pumpdown cycle (i.e. the blower must be running).

4. Press the “I/O” arrow buttons until “TT_400” is displayed in the upper left corner of the screen (see Photo 1).

5. You will need to adjust the programmable high and low temperature setpoints for TT-400. Press the “Set Hi Lo” button until “HIGH ALARM” is displayed. Using the “field” button to move left to right, and the “Up” and “Down” arrow buttons increase or decrease values, change the high temperature setpoint to 80 °F. Press “enter” button.

6. Wait until the delay time elapses (found in Table 3 – Critical Device Alarm Setpoints) and observe system response.

7. Confirm occurrence of the high temperature alarm by pressing the “I/O” arrows on the PLC keypad until “TAH400” is displayed. If the alarm condition was recognized by the PLC, then “ON” should be displayed in the upper right corner of the PLC display screen.

8. Repeat Step 5 to return the high temperature setpoint to the value indicated in Table 3.

9. Restart the system.

10. Repeat step 5 to change the low TT-400 setpoint to 95 °F (press the “Set Hi Lo” button until “LO” is displayed). Wait until the time delay elapses (found in Table 3) and observe system response.

11. Confirm occurrence of the low temperature alarm by pressing the “I/O” arrows on the PLC keypad until “TAL400” is displayed. If the alarm condition was recognized by the PLC, then “ON” should be displayed in the upper right corner of the PLC display screen.

12. Repeat Step 5 to return the low temperature setpoint to the value indicated in Table 3.

13. Restart the system.

High & Low Pre-Carbon Pressure Alarms

1. Both the high and low pre-carbon pressure alarms should be tested. Both alarms are based on pressure transmitter PT-400.

2. Confirm that the system is operating in automatic mode by observing the PLC display screen. “AUTO” should be displayed in the lower right corner (see Photo 1).

3. Note that the system must be in the middle of a manhole pumpdown cycle (i.e. the blower must be running).

4. Press the “I/O” arrow buttons until “PT_400” is displayed in the upper left corner of the screen (see Photo 1).

5. The high alarm setpoint value must be adjusted. Press the “Set Hi Lo” button until “HIGH ALARM” is displayed. Using the “Up”

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and “Down” arrows to increase or decrease values, and the “Field” button to move characters from left to right, change the high alarm setpoint to 4. Press the “Enter” button.

6. Wait for the delay specified in Table 3 to elapse.

7. Confirm that the system response is consistent with that indicated in Table 3 (shutdown, fax out, delay).

8. Confirm occurrence of the alarm by pressing the “I/O” arrows on the PLC keypad until “PA_400 OUTPUT” is displayed. If the alarm condition was recognized by the PLC, then “ON” should be displayed in the upper right corner of the PLC display screen.

9. Repeat Step 5 to return the high alarm setpoint to the value indicated in Table 3.

10. Restart the system.

11. The low alarm setpoint value must be adjusted. Press the “Set Hi Lo” button until “LOW ALARM” is displayed. Using the “Up” and “Down” arrows to increase or decrease values, and the “Field” button to move characters from left to right, change the low alarm setpoint to 15. Press the “Enter” button.

12. Wait for the delay specified in Table 3 to elapse.

13. Confirm that the system response is consistent with that indicated in Table 3 (shutdown, fax out, time delay).

14. Confirm occurrence of the alarm by pressing the “I/O” arrows on the PLC keypad until “PA_400” is displayed. If the alarm condition was recognized by the PLC, then “ON” should be displayed in the upper right corner of the PLC display screen.

15. Repeat Step 11 to return the low alarm setpoint to the value as indicated in Table 3.

16. Restart the system.

Photo 4: VPGAC Manifold

Manhole & Aggregate Low Flow Alarms

1. Low flow alarms for each manhole should be tested. Each alarm is based on the corresponding flow transmitter (FT-101, FT-102, FT-103, and FT-105) (see Photo 5).

2. Check Table 3 for the low flow alarm setpoints for each of the flow transmitters.

3. Testing of the low flow alarms should be conducted with the system operating in automatic mode and with the desired pumping manhole online (i.e. if testing the low flow alarm for MH-1, then at least one of the pumps for MH-1 should be online automatically). The low flow alarm for the aggregate flow transmitter may be tested in parallel with testing of any of the other three low flow alarms.

4. When MH-1 is online, change the position of the HAND-OFF-AUTO switches for both MH-1 pumps to “OFF.” Confirm that no flowrate is currently being registered at the MH-1 flow transmitter (FT-101).

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5. Wait for the time delay (specified in Table 3) to elapse and observe system response. Confirm that the MH-1 low flow alarm has occurred by pressing the "I/O" arrow buttons on the PLC until "FA_101" is displayed. If the alarm condition is present, then "ON" should be displayed in the upper right corner of the PLC display screen.

6. Return the position of the MH-1 pump HAND-OFF-AUTO switches to "AUTO."

7. When MH-2 is online, change the position of the HAND-OFF-AUTO switches for both MH-2 pumps to "OFF." Confirm that no flowrate is currently being registered at the MH-2 flow transmitter (FT-102).

8. Wait for the time delay (specified in Table 3) to elapse and observe system response. Confirm that the MH-2 low flow alarm has occurred by pressing the "I/O" arrow buttons on the PLC until "FA_102" is displayed. If the alarm condition is present, then "ON" should be displayed in the upper right corner of the PLC display screen.

9. Return the position of the MH-2 pump HAND-OFF-AUTO switches to "AUTO."

10. When MH-3 is online, change the position of the HAND-OFF-AUTO switches for both MH-3 pumps to "OFF." Confirm that no flowrate is currently being registered at the MH-3 flow transmitter (FT-103).

11. Wait for the time delay (specified in Table 3) to elapse and observe system response. Confirm that the MH-3 low flow alarm has occurred by pressing the "I/O" arrow buttons on the PLC until "FA_103" is displayed. If the alarm condition is present, then "ON" should be displayed in the upper right corner of the PLC display screen.

Photo 5: Flow Transmitters

12. Return the position of the MH-3 pump HAND-OFF-AUTO switches to "AUTO."

13. Confirm that the low flow alarm for the aggregate flow transmitter has occurred by pressing the "I/O" arrow buttons on the PLC until "FA_105" is displayed. If the alarm condition is present, then "ON" should be displayed in the upper right corner of the PLC display screen.

Building Sump High Level Alarm

1. Press the "I/O" arrow buttons on the PLC keypad (see Photo 1) until "LSH106" is displayed. The current value should be

   "OFF," meaning that the level in the building sump is currently below the high level float.

2. Confirm that the building sump pump power cord is unplugged.

3. Begin filling the building sump with tap water via the hard-piped sink drain until the status of "LSH106" changes to "ON" on the PLC display screen.

4. Wait until the time delay specified in Table 3 elapses, and observe system response.

5. Confirm occurrence of the alarm by pressing the "I/O" arrow buttons until "LSH106 OUTPUT" is displayed. If the alarm was

recognized by the PLC, then the value should be "ON."

Building Wet Floor Sensor Alarm

1. Press the "I/O" arrow buttons on the PLC keypad (see Photo 1) until "WFS106" is displayed. The current value should be "OFF," meaning that the building wet floor sensor (WFS-106) is currently not indicating wet floor conditions.

2. Confirm that the building sump pump power cord is unplugged.

3. Begin filling the building sump with tap water via the hard-piped sink drain. Note that the building sump must become totally filled and begin to overflow onto the building floor to indicate the wet floor alarm. Continue adding water to the building sump until the status of "WFS106" changes to "ON" on the PLC display screen.

4. Wait until the time delay specified in Table 3 elapses, and observe system response.

5. Confirm occurrence of the alarm by pressing the "I/O" arrow buttons until "WFS106 OUTPUT" is displayed. If the alarm was recognized by the PLC, then the value should be "ON."

6. Plug in the building sump pump power cord to allow the clean tap water to be pumped into the air stripper.

7. Unplug the building sump pump power cord.

8. Restart the system.

Sequestering Agent Low Flow Alarm

1. Press the "I/O" arrow buttons on the PLC keypad until "FT_200" is displayed. Confirm that the current value is off, indicating that the low flow alarm signal is currently not being sent from the chemical metering pump (CMP-200).

2. The low sequestering agent flow alarm should be tested while the system is currently cycling (i.e. there is flow being registered at FT-105).

3. Confirm that the chemical metering pump is operating. If the pump is operating properly in external mode, the pump display should be switching back and forth between a mA value and (strokes) per minute value (see Photo 6).

Photo 6: Chemical Metering Pump

4. To simulate a low sequestering agent flow alarm, remove the suction tubing from the chemical supply drum.

5. The pump must be allowed to pulse until it runs dry. "E2" should become indicated on the pump display screen when the low flow alarm occurs. The status of "FT_200" on the PLC display screen should now be "ON." Observe system response.

6. Confirm occurrence of the alarm by pressing the "I/O" arrow buttons until "FA_200" is displayed. If the alarm was recognized by the PLC, then the value should be "ON."

7. Return the suction tubing to its original position in the chemical supply drum.

8. Restart and prime the pump as indicated in SOP GCTS-11.

Sequestering Agent Wet Spill Pallet Alarm

1. Press the “I/O” arrow buttons on the PLC keypad until “LSH200” is displayed. The current value should be “OFF,” meaning that the spill pallet wet sensor (LSH-200) is currently not indicating wet pallet conditions.

2. Remove the wet pallet sensor from the pallet by loosening the two horizontal screws which hold it against the pallet wall (Photo 7).

Photo 7: Wet Pallet Sensor

3. Fill a small container with tap water from the sink. To simulate the wet spill pallet alarm, submerge the two vertical screws on the base of the wet pallet sensor in the water.

4. The status of “LSH200” should now be “ON.” Observe system response.

5. Confirm occurrence of the alarm by pressing the “I/O” arrow buttons until “LSH200 OUTPUT” is displayed. If the alarm was recognized by the PLC, then the value should be “ON.”

6. Reinstall the wet pallet sensor to the wall of the spill pallet.

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Manhole High Level Alarms

1. The high level alarms for each manhole should be tested. The high level alarms for MH-1, MH-2, and MH-3 are based on the state of level floats LSHH-103, LSHH-104, and LSHH-105, respectively.

2. To simulate the high manhole level alarms, the high-high level floats will need to be manually lifted into the “on” position.

3. Press the “I/O” arrow buttons on the PLC keypad until “MH1_HH” is displayed. Confirm that the current state of the MH-1 high-high float is currently “OFF” (i.e. the water level in MH-1 is below LSHH-103).

4. Manually tip the high-high level float for MH-1 (LSHH-103) so that the bottom of the float is above the top of the float. Wait for the time delay specified in Table 3 to elapse and observe system response.

5. Confirm occurrence of the alarm by pressing the “I/O” arrow buttons until “LA_MH1 OUTPUT” is displayed. If the alarm was recognized by the PLC, then the value should be “ON.”

6. Gently lower the high-high level float to its natural position in MH-1.

7. Manually tip the high-high level float for MH-2 (LSHH-104) so that the bottom of the float is above the top of the float. Wait for the time delay specified in Table 3 to elapse and observe system response.

8. Confirm occurrence of the alarm by pressing the “I/O” arrow buttons until “LA_MH2 OUTPUT” is displayed. If the alarm was recognized by the PLC, then the value should be “ON.”

9. Gently lower the high-high level float to its natural position in MH-2.

10. Manually tip the high-high level float for MH-3 (LSHH-105) so that the bottom of the float is above the top of the float. Wait for the

time delay specified in Table 3 to elapse and observe system response.

11. Confirm occurrence of the alarm by pressing the "I/O" arrow buttons until "LA_MH3 OUTPUT" is displayed. If the alarm was recognized by the PLC, then the value should be "ON."

12. Gently lower the high-high level float to its natural position in MH-3.

Manhole Low Level Alarms

1. The low level alarms for each manhole should be tested. The low level alarms for MH-1, MH-2, and MH-3 are based on the state of level floats LSLL-103, LSLL-104, and LSLL-105, respectively.

2. The low level alarms for each manhole should be tested while that respective manhole is in the middle of a pumpdown cycle. If the manhole being tested is not currently in a pumpdown cycle, then the high-1 float for that manhole should be manually tipped to initiate a pumpdown sequence.

3. To simulate the low manhole level alarms, the tethers for the low-low level floats will need to be manually lifted so that the floats are in the "off" position (i.e. the floats are hanging freely).

4. Press the "I/O" arrow buttons on the PLC keypad until "MH1_LL" is displayed. Confirm that the current state of the MH-1 low-low float is currently "ON" (i.e. the water level in MH-1 is above LSLL-103).

5. Manually lift the tether for the low-low level float for MH-1 (LSLL-103) such that the float is in the "off" position. Wait for the time delay specified in Table 3 to elapse and observe system response.

6. Confirm occurrence of the alarm by pressing the "I/O" arrow buttons until "LA_MH1 OUTPUT" is displayed. If the alarm was recognized by the PLC, then the value should be "ON."

7. Confirm that both pumps for MH-1 have been automatically turned off.

8. Gently lower the low-low level float to its natural position in MH-1.

9. Press the "I/O" arrow buttons on the PLC keypad until "MH2_LL" is displayed. Confirm that the current state of the MH-2 low-low float is currently "ON" (i.e. the water level in MH-2 is above LSLL-104).

10. Manually lift the tether for the low-low level float for MH-2 (LSLL-104) such that the float is in the "off" position. Wait for the time delay specified in Table 3 to elapse and observe system response.

11. Confirm occurrence of the alarm by pressing the "I/O" arrow buttons until "LA_MH2 OUTPUT" is displayed. If the alarm was recognized by the PLC, then the value should be "ON."

12. Confirm that both pumps for MH-2 have been automatically turned off.

13. Gently lower the low-low level float to its natural position in MH-2.

14. Press the "I/O" arrow buttons on the PLC keypad until "MH3_LL" is displayed. Confirm that the current state of the MH-3 low-low float is currently "ON" (i.e. the water level in MH-3 is above LSLL-105).

15. Manually lift the tether for the low-low level float for MH-3 (LSLL-105) such that the float is in the "off" position. Wait for the time delay specified in Table 3 to elapse and observe system response.

16. Confirm occurrence of the alarm by pressing the "I/O" arrow buttons until "LA_MH3 OUTPUT" is displayed. If the alarm was recognized by the PLC, then the value should be "ON."

17. Confirm that both pumps for MH-3 have been automatically turned off.

18. Gently lower the low-low level float to its natural position in MH-3.

19. Since the low manhole level alarm for a given manhole turns off that manhole's pumps automatically, the system must be

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restarted. Initiate an automatic system shutdown (SOP GCTS-02). Wait for the blower to turn off. Initiate an automatic system startup (SOP GCTS-01).

Flow Transmitter Calibration / Validation

1. Flow transmitters FT-101, FT-102, FT-103, and FT-105 should be tested for accuracy (see Photo 5).

2. The accuracy of the aggregate flow transmitter (FT-105) may be tested in parallel with testing of any of the three manholes. The difference in total volume indicated by FT-105 should be compared to the actual difference in volume based on the change in water elevation in manhole being tested in parallel. Refer to Steps 41 through 52 for adjustment of the FT-105 K-factors, if needed.

3. With both MH-1 pumps offline, close the MH-1 groundwater collection line valve using the “tee bar” located onsite. Note that rotating the valve head clockwise should close the valve.

4. Measure the depth to water inside MH-1 using a tape measure or water level meter probe.

5. Record the permanent flow volume (totalizer) from FT-101

6. Manually lift the high level float (LSH1-103) to simulate an automatic pump-down of MH-1. When the water level inside the manhole drops below the low level float (LSL-103), the pump(s) should stop.

7. Measure the depth to water inside MH-1 using a tape measure or water level meter probe.

8. Calculate the difference in volume of water inside the manhole based on the change in water elevation in the manhole. Note that 1” of water inside the manhole is equal to approximately 17.6 gallons.

9. Again, record the permanent flow volume (totalizer) from FT-101. Calculate the difference in the permanent flow volume before and after the pump-down of MH-1.

10. Compare the actual, measured volume difference with the volume difference indicated by the FT-101 permanent flow totalizer. If the FT-101 volume is more than 7.5% different than the actual volume, (i.e. if actual volume pumped calculated using depth to water in manhole is 100 gallons, and volume pumped measured by FT-101 is 108 gallons), then the K-factor for FT-101 should be adjusted.

11. If needed, modify the FT-101 K-factor. Both of the K-factors (flow and total) should be adjusted equally. To modify the flow transmitter settings so that it reads a higher instantaneous flowrate and volume, the K-factor must be lowered (i.e. if a decrease in instantaneous flowrate / volume of 10% is desired, then the K-factor should be ***increased*** by 10%). Similarly, to modify flow transmitter setting so that it reads a lower instantaneous flowrate and volume, the K-factor must be increased.

12. If the K-factor is not in need of adjustment, skip ahead to Step 21.

13. If the K-factor for FT-101 needs to be adjusted, press and hold the up and down arrow buttons simultaneously. Tap the up arrow button three times, followed by the down arrow button once.

14. Then press the down arrow button until “K-factor” is displayed.

15. Press the right arrow button once to view the current K-factor.

16. Using the up/down arrows to change values, and the right arrow to change characters, change the K-factor to the desired new value. Press and hold the right arrow button to save the new value.

17. Tap the up and down arrow buttons simultaneously to exit the K-factor adjustment screen.

18. Tap the down arrow button until “K-total” is displayed.

19. Repeat Steps 14, 15, and 16 to adjust the “K-total” value.

20. Document any changes to the MH-1 flow transmitter K-factor.

21. Open the groundwater collection line gate valve for MH-1.

22. With both MH-2 pumps offline, close the MH-2 groundwater collection line valve using the “tee bar” located onsite. Note that rotating the valve head clockwise should close the valve.

23. Measure the depth to water inside MH-2 using a tape measure or water level meter probe.

24. Record the permanent flow volume (totalizer) from FT-102.

25. Manually lift the high level float (LSH1-104) to simulate an automatic pump-down of MH-2. When the water level inside the manhole drops below the low level float (LSL-104), the pump(s) should stop.

26. Measure the depth to water inside MH-2 using a tape measure or water level meter probe.

27. Calculate the difference in volume of water inside the manhole based on the change in water elevation in the manhole. Note that 1” of water inside the manhole is equal to approximately 17.6 gallons.

28. Again, record the permanent flow volume (totalizer) from FT-102. Calculate the difference in the permanent flow volume before and after the pump-down of MH-2.

29. Compare the actual, measured volume difference with the volume difference indicated by the FT-102 permanent flow totalizer. If the FT-102 volume is more than 7.5% different than the actual volume, (i.e. if actual volume pumped calculated using depth to water in manhole is 100 gallons, and volume pumped measured by FT-102 is 108 gallons), then the K-factor for FT-102 should be adjusted.

30. If needed, modify the FT-102 K-factor. Both of the K-factors (flow and total) should be adjusted equally. To modify the flow transmitter settings so that it reads a higher instantaneous flowrate and volume, the K-factor must be lowered (i.e. if a decrease in instantaneous flowrate / volume of 10% is desired, then the K-factor should be ***increased*** by 10%). Similarly, to modify flow transmitter setting so that it reads a lower instantaneous flowrate and volume, the K-factor must be increased.

31. If the K-factor is in need of adjustment, repeat Steps 13 through 20 for MH-2 (FT-102).

32. Open the groundwater collection line gate valve for MH-2.

Photo 8: MH-3 Collection Line Gate Valve

33. With both MH-3 pumps offline, close the MH-3 groundwater collection line valve using the “tee bar” located onsite. Note that rotating the valve head counter-clockwise should close the valve (Photo 8).

34. Measure the depth to water inside MH-3 using a tape measure or water level meter probe.

35. Record the permanent flow volume (totalizer) from FT-103.

36. Manually lift the high level float (LSH1-105) to simulate an automatic pump-down of MH-2. When the water level inside the manhole drops below the low level float (LSL-105), the pump(s) should stop.

37. Measure the depth to water inside MH-3 using a tape measure or water level meter probe.

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38. Calculate the difference in volume of water inside the manhole based on the change in water elevation in the manhole. Note that 1" of water inside the manhole is equal to approximately 17.6 gallons.

39. Again, record the permanent flow volume (totalizer) from FT-103. Calculate the difference in the permanent flow volume before and after the pump-down of MH-3.

40. Compare the actual, measured volume difference with the volume difference indicated by the FT-103 permanent flow totalizer. If the FT-103 volume is more than 7.5% different than the actual volume, (i.e. if actual volume pumped calculated using depth to water in manhole is 100 gallons, and volume pumped measured by FT-103 is 108 gallons), then the K-factor for FT-103 should be adjusted.

41. If needed, modify the FT-103 K-factor. Both of the K-factors (flow and total) should be adjusted equally. To modify the flow transmitter settings so that it reads a higher instantaneous flowrate and volume, the K-factor must be lowered (i.e. if a decrease in instantaneous flowrate / volume of 10% is desired, then the K-factor should be ***increased*** by 10%). Similarly, to modify flow transmitter setting so that it reads a lower instantaneous flowrate and volume, the K-factor must be increased.

42. If the K-factor does not need to be adjusted, then skip ahead to Step 52.

43. If the K-factor needs to be adjusted, press and hold the "Enter" button on the FT-103 keypad.

44. Tap the up arrow button three times, followed by the down arrow button once.

45. Press the down arrow button until "Flow K-factor" is displayed.

46. Press the right arrow button to access the K-factor adjustment screen.

47. Using the up and down arrow buttons to change values, and the right arrow to change characters, change the K-factor to its desired new value.

48. Press and hold the "ENTER" button to save the new K-factor.

49. Press the down arrow button until "Total K-factor" is displayed.

50. Repeat Steps 46, 47, and 48 to adjust the "Total K-factor" as desired.

51. Document any changes to the MH-3 flow transmitter K-factor.

52. Open the groundwater collection line gate valve for MH-3.

High & Low Building Temperature Alarms

1. Both the high and low building temperature alarms should be tested. Both alarms are based on temperature transmitter TT-100 (Photo 9).

2. Press the "I/O" arrow buttons until "TT_100" is displayed in the upper left corner of the screen (see Photo 1).

3. You will need to adjust the programmable high temperature setpoint for TT-100. Press the "Set Hi Lo" button until "HIGH ALARM" is displayed. Using the "field" button to move left to right, and the "Up" and "Down" arrow buttons increase or decrease values, change the high temperature setpoint to 55 °F. Press the "enter" button.

4. Wait until the delay time elapses (found in Table 3 – Critical Device Alarm Setpoints) and observe system response.

5. Confirm occurrence of the high temperature alarm by pressing the "I/O" arrows on the PLC keypad until "TA_100" is displayed. If the alarm condition was recognized by the PLC, then "ON" should be displayed in the upper right corner of the PLC display screen.

6. Repeat Step 3 to return the high temperature setpoint to its value as indicated in Table 3.

7. Restart the system.

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Photo 9: Building Temperature Transmitter

8. Repeat step 3 to return the high TT-100 setpoint to its original value.

9. To simulate the low building temperature alarm, crushed ice will be needed.

10. Surround the TT-100 probe with crushed ice until the TT-100 value drops below the low temperature setpoint as indicated in Table 3. Wait until the time delay elapses (found in Table 3) and observe system response.

11. Confirm occurrence of the low temperature alarm by pressing the "I/O" arrows on the PLC keypad until "TA_100" is displayed. If the alarm condition was recognized by the PLC, then "ON" should be displayed in the upper right corner of the PLC display screen.

12. Restart system.

Safety Considerations

- This system removes contaminated groundwater and, once treated, discharges treated water to the municipal storm sewer. Therefore, it is **EXTREMELY IMPORTANT** that the operator be prepared to shut down the treatment system at any time there is question that the water is not receiving **FULL TREATMENT**.
- Follow all associated procedures as outlined in the Health and Safety Plan.

Related Documents

- SOP GCTS-01 – System Startup
- SOP GCTS-02 – System Shutdown
- SOP GCTS-11 – Sequestering Agent Change-Out
- Quarterly OM&M Log Sheet
- Table 3 – Critical Device Alarm Setpoints

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- **Project Manager:**

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- **Project Engineer:**

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Lockheed Martin Corporation
SOP GCTS – Carbon Changeout

Description

This SOP is to be used when performing a Carbon Changeout at the GCTS.

Abbreviations

GCTS	Groundwater Collection and Treatment System
SOP	Standard Operating Procedure
VPGAC	Vapor Phase Granular Activated Carbon
VOCs	Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
QAPP	Quality Assurance Project Plan
OM&M	Operation Monitoring and Maintenance

Carbon Changeout

1. Inspect the vendor's delivery bill of lading to ensure that the correct type and amount of VPGAC has been delivered. Ask the vendor to fill 2 1-gallon zip lock bags with samples of the fresh VPGAC as a quality assurance check on the fresh VPGAC. Inspect VPGAC material to ensure that it is dry and free-flowing.

2. Shutdown the system as outlined in SOP GCTS-02 System Shutdown (**INSTALL LOTO DEVICES TO PREVENT BLOWER FROM INADVERTAINTLY STARTING UP)**.

3. Vendor will access the vessel(s) through the top lid. Open top access hatch by removing split ring seal **(WARNING SPLIT RING IS UNDER PRESSURE USE EXTREME CAUTION WHEN REMOVING SECURING BOLT)** and hatch cover plate from each carbon vessel.

Photo 1: VPGAC Vessels

4. Prior to the removal of the VPGAC, measure and record the level of the VPGAC in the vessel from the top of the vessel.

5. Remove (Note: A vacuum assembly is typically utilized by the vendor for handling the VPGAC removal and installation). Spent carbon will be removed and handled by an authorized subcontractor.

6. Make sure the operators establish a work zone and equipment is arranged in locations that leave room for entrance and exit from the building if necessary.

7. The vendor will remove the spent VPGAC and package it in super sacks for transport and disposal or regeneration. Observe vendor operations to ensure proper handling of VPGAC, minimizing VPGAC spillage or overfilling of packaging. Record the number of super sacks filled with spent VPGAC for offsite disposal.

8. After the VPGAC has been removed, inspect the condition of the vessel internals, plenum, and screen for damage and degradation Photograph any corrosion/wear inside the vessels. Document conditions with photos and in the Log book.

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9. Replace spent carbon with virgin granular activated carbon, Siemens VOCARB 36C or equivalent (mesh size, 3X6 U.S. Sieve) and close up and secure vessel then inspect for vessel body, lid, and gasket for any apparent damage.

10. After the VPGAC vessel is full, the vendor will also level off the VPGAC bed surface using a rake. Inspect the bed surface, and measure the bed level relative to the top of the vessel to confirm that the VPGAC bed has been raked level. Record these measurements on the log book.

11. If both the carbon in both VPGAC vessels were replaced then the manifold valve configuration shall remain unchanged. If only the carbon in the lead VPGAC vessel was changed out then move previous lag VPGAC vessel to the lead position and the previous lead VPGAC vessel (with the new carbon) to the lag position (Note: this may be completed by re-arranging the valve configuration,).

12. Remove the LOTO device from the blower. Restart the system as outlined in SOP GCTS-01 System Start-Up.

13. Following system startup VPGAC access hatch shall be tested for possible leaks with a two-equal part solution of dish wash detergent and potable water.

14. To test for leaks, apply the test solution liberally to the VPGAC hatch split ring seal using a spry bottle. If bubbles appear at any point, there is a gas leak.

15. Inspect gasket and re-tighten the connections and retest.

16. If you still see bubbles at any of the tested connections, repair the leaking component and replace if necessary**.**

Safety Considerations

This system removes contaminated vapor and, once treated, discharges the clean vapor into the atmosphere. Therefore, it is **EXTREMELY IMPORTANT** that the operator be prepared to shut down the treatment system at any time there is question that the vapor is not receiving **FULL TREATMENT**.

- Follow all associated procedures as outlined in the Health and Safety Plan.
- **WARNING**: **NO DUST** should be allowed to generate during VPGAC change-out or the activity must stop. Visible emissions of dust must not be tolerated.
- The MSDS sheet for the VPGAC should be reviewed prior to the delivery and change-out activity.

Related Documents

- SOP GCTS-01 – System Startup
- SOP GCTS-02 – System Shutdown
- ARCADIS QAPP

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Lockheed Martin Corporation
SOP GCTS-11– Sequestering Agent Changeout

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Description

This SOP is to be used when performing a standard sequestering agent changeout while the system is online.

Abbreviations

GCTS	Groundwater Collection and Treatment System
SOP	Standard Operating Procedure
LMC	Lockheed Martin Corporation
MSDS	Material Safety and Data Sheet
PPE	Personal Protective Equipment

Sequestering Agent Change Out

NOTE: IT IS IMPORTANT THAT PERSONNEL HANDLING THE SEQUESTERING AGENT REVIEW THE MSDS FOR THE ARIES 2908 CHEMICAL AND WEAR THE PROPER PPE FOR CONDUCTING THIS TASK.

1. Temporarily shut down the chemical metering pump (CMP-200) by unplugging it.
2. Remove both tapped bung plugs from the empty drum.
3. Remove the metering pump suction tubing/foot valve and air bleed return tubing and place in a 5 gallon bucket to prevent unnecessary dripping of any excess agent from entering the containment pad.
4. Remove ratchet straps from empty drum and remove empty drum from spill pallet. Place new drum on spill pallet and secure in place with ratchet straps.
5. Place a funnel in the new drum and empty the last of the existing drum into the new drum. If there is potential to overfill the drum stop this step and place the near empty drum back on the pallet and repeat procedures upon next monthly visit to completely empty drum.
6. Insert suction tubing into tapped bung plug and install foot valve.
7. Place foot valve back in the new drum. Install air bleed return tubing into tapped bung plug.
8. Screw bung plug with drum vent hole into new drum.
9. Plug the chemical metering pump back in. Monitor the pump for 5-10 minutes to confirm that it does not require priming. If “E2” message appears on display of pump, then the pump will require priming. See Steps 7 through 14 if the pump requires priming.

Photo 1: Chemical Metering Pump Controls

10. Use a flathead screwdriver to rotate the gray screw on the bleed valve 1 full turn counter-clockwise.
11. Make sure that the bleed return tubing is vented to the inside of the drum.
12. Put the pump into internal mode by pressing the “INT-MODE-EXT” button on the lower left corner of the control face (Photo 1).
13. Press the start button.

14. Use the up arrow buttons to increase the stroke speed to 100 strokes per minute.

15. Note that the pump may require several restarts in the event that the low flow alarm occurs and causes the pump to turn off.

16. Let the pump run until chemical is consistently dripping from the bleed return tubing with every pump pulse and there are no visible bubbles inside of the suction or bleed return tubing.

17. Close the bleed valve so that it is ¼ turns open. The pump is now primed.

Photo 2: Sequestering Agent Drums and Pump

18. Return the pump to external mode by pressing the “INT-MODE-EXT” button again.

19. Empty drums shall be rinsed out into the sump using a hose by spraying water in one bung and draining the drum out the other bung. If necessary the sump shall be filled with city water to dilute the water as much as possible and then the sump shall be allowed to drain while the system is operating with at least one manhole pump in operation.

New Shipments

20. Record the company information and license plate number of the delivery truck in the Log Book.

21. Conduct a health and safety tailgate with everyone onsite.

22. Inspect the delivery bill of lading to ensure that the correct type and quantity of sequestering agent. Inspect the drums for any potential damage causing leaks.

NOTE: IT IS IMPORTANT THAT PERSONNEL HANDLING THE SEQUESTERING AGENT REVIEW THE MSDS FOR THE ARIES 2908 AND WEAR THE PROPER PPE FOR CONDUCTING THIS TASK.

23. The shipping company then shall unload the drums via lift gate and ARCADIS shall bring them into the GCTS enclosure via the personnel door.

24. Drums shall be transferred from the concrete pad located inside the personnel door entrance to the secondary containment pallet.

25. Return to Step 1.

26. ARCADIS shall then load the empty drums back on the lift gate.

27. The empty drums shall be sent offsite with the delivery company back to Aries.

Lockheed Martin Corporation
SOP GCTS-11– Sequestering Agent Changeout

SOP Author:	ARCADIS-US
SOP #:	GCTS-11
Revision #:	1
Date Implemented:	3/21/11
Approval:	

Safety Considerations

This system removes contaminated groundwater and, once treated, discharges treated water to the municipal storm sewer and vapor containing the stripped VOCs is treated and then vented to the atmosphere. Therefore, it is **EXTREMELY IMPORTANT** that the operator be prepared to shut down the treatment system at any time there is question that the water is not receiving **FULL TREATMENT**.

- Follow all associated procedures as outlined in the Health and Safety Plan.

Contact Phone List

- **Project Manager:**

  Peter Milionis: (267) 685-1815

- **Task Manager:**

  Jeff Bonsteel: (267) 685-1874

- **Project Engineer:**

  Todd Carignan (518) 250-7300

- **Field Engineer:**

  Chris Davern (518) 250-7300

Necessary Equipment

- Level D PPE Including:
  - Steel Toe Boots
  - Safety Glasses
  - Face Shield
  - Chemical Resistant Gloves
  - Long Sleeve Shirt
- Funnel
- 5-Gallon Bucket

Associated SOPs

- None

Lockheed Martin Corporation

SOP GCTS – Manhole Inspection Checklist

SOP Author:	ARCADIS-US
SOP #:	GCTS-12
Revision #:	0
Date Implemented:	4/13/12
Approval:	

Description

This SOP is to be used when a confined space entry is completed for any of the pumping manholes. This SOP shall be implemented at each of the three manholes (MH-1, MH-2, and MH-3) while a confined space crew is onsite performing routine or non-routine maintenance activities.

Abbreviations

GCTS	Groundwater Collection and Treatment System
SOP	Standard Operating Procedure
OSHA	Occupational Safety and Health Administration
MCP	Main Control Panel
PID	Photo Ionization Detector
NFPA	National Fire Protection Association
PPE	Personal Protective Equipment
LEL	Lower Explosive Limits
VOC	Volatile Organic Compounds

NOTE: THIS PROCEDURE REQUIRES COMPLIANCE WITH CONFINED SPACE ENTRY REQUIREMENTS ANDCOORDINATION WITH AN AUTHORIZED GCTS OPERATOR TO CONTROL MANHOLE PUMPING.

Pre-Manhole Inspection Tasks

1. Perform Steps 1 through 11 in SOP GCTS-05.

Photo 1: MH-1 Control Panel

Photo 2: Tripod Set Up For Confined Space Entry

Exercise Ball Valves

1. Each manhole contains two PVC ball valves in the discharge pipe from each pump. Each ball valve is to be exercised by closing and opening several times.

2. If a ball valve cannot be completely closed or opened, then the ball valve shall be removed in order to be cleaned. Prior to removing, the upgradient check valve nut-union (closest to GCTS building) shall be loosened (using strap wrenches) first to drain out the standing water within the line. Once all water has been drained the nut-union(s) can be retightened. Now remove the ball valves by uncoupling the nut-unions, being careful not to lose the O-ring seal of the nut-union.

3. If the ball valve doesn't have any apparent physical damage or deformation, then clean it in the slop sink located in the GCTS building and remove any bio-film or hardened mineral scale that may be present. Note: If the confined space attendant and supervisor leave the manhole during this time the hatch shall be securely closed prior to leaving.

SOP Author:	ARCADIS-US
SOP #:	GCTS-12
Revision #:	0
Date Implemented:	4/13/12
Approval:	

4. If a ball valve cannot be cleaned to a point which will return its full range of motion, then ball valve shall be replaced.

5. Reinstall ball valves in the open position.

Photo 3: Ball Valve

Check Valve Inspection and Cleaning

1. Prior to removing, the upgradient check valve nut-union (closest to GCTS building) shall be loosened (using strap wrenches) first to drain out the standing water within the line. Once all water has been drained completely uncouple the nut-union for both check valves, careful not to lose the O-ring seal of the nut-union.

2. Remove check valve body and ball, inspect for excessive wear. If ball and body do not have any physical damage or deformation, then clean both parts in the slop sink located in the GCTS building and remove any bio-film or hardened mineral scale that may be present. Note: If the confined space attendant and supervisor leave the manhole during this time the hatch shall be securely closed prior to leaving.

3. Reinstall both check valves. Ensure that both ball valves are positioned in the correct flow direction prior to exiting the manhole.

Photo 4: Check Valve (Ball Type)

Pump Inspection

1. With the manhole completely dewatered both submersible pumps shall be inspected for any visual damage, including verifying that the coolant oil fill plugs are securely in place and not leaking.

2. Inspect both pump riser pipes for any visual damage including degradation or deformation of the plastic.

3. If a pump is found to be defective it shall be removed and replaced by following the steps provided in SOP GCTS-05.

Float Cleaning and Inspection

1. Each of the five mechanical float switches and associated tethers shall be cleaned by removing bio-film or hardened scale from the surface.

2. After cleaning each float level switch, each switch shall be tested manually.

3. Testing of the Low-Low level switch shall be conducted while the manhole is completely dewatered and with the level switch in the downward position. With the level switch in the downward position the input into the PLC should be “off”, confirming the switch is functioning properly.

4. The High-High switch shall be lifted manually into the upright position. With the level switch in the upward position the input

Lockheed Martin Corporation
SOP GCTS – Manhole Inspection Checklist

SOP Author:	ARCADIS-US
SOP #:	GCTS-12
Revision #:	0
Date Implemented:	4/13/12
Approval:	

into the PLC should be "on", confirming the switch is functioning properly.

5. The inputs for the Low, High, High-2 level switches shall also be tested using the same methods noted above for the High-High switch.

Post-Manhole Inspection Tasks

1. Reopen the gate valve to the collection drain using the valve key to allow water to flow into the manhole.

2. At the GCTS building the lockout/tag out can be removed at the MCP. Turn the power back on to the manhole.

3. Perform a system startup as outlined in SOP GCTS-01.

4. Return to the manhole and check for proper operation, and check the manhole for leaks. Verify flow rates at the GCTS PLC and local transmitters located within the GCTS building.

Safety Considerations

This system removes contaminated groundwater and, once treated, discharges treated water to the municipal storm sewer. Therefore, it is **EXTREMELY IMPORTANT** that the operator be prepared to shut down the treatment system at any time there is question that the water is not receiving **FULL TREATMENT**.

- Follow all associated procedures as outlined in the Health and Safety Plan.
- Confined space entry procedures must be conducted in accordance with OSHA regulations.
- All electrical work must be conducted as outlined in NFPA 70E. Proper PPE must be worn when performing electrical work.

Related SOPs

- SOP GCTS-01 – System Startup
- SOP GCTS-02 – System Shutdown
- SOP GCTS-05 – Manhole Pump Removal and Replacement

Related Documents

- Health and Safety Plan, Job Safety Analysis for Confined Space Analysis
- ARCADIS Health and Safety Standard, ARC HSFS003 – Confined Space Entry

Contact Phone List

- **Project Manager:**

  Peter Milionis: (267) 685-1815

- **Task Manager:**

  Jeff Bonsteel: (518) 250-7300

- **Project Engineer:**

  Todd Carignan (518) 250-7300

- **Field Engineer:**

  Chris Davern (518) 250-7300

ARCADIS

Appendix D

Alarm-Response Log Sheets

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/9/2012
Time: 13:30
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 4/6/12 Time: 5:49:24

Alarm Condition:

Process 57 - FA-105

Low Flow Alarm Aggregate Flowmeter FT-105 with MH-3 Pump 1 online

Non-Fatal Alarm

Cause of Alarm:

Possible air pockets causing turbulent flow within the 3" dia. Manifold.

Lower flow velocity is occurring within the 3-inch diameter header pipe when only one pump is batching (MH-3, Pump 1 at 16 gpm), thus resulting in a flow of less than 3 gpm for a period greater than 30 seconds (alarm time delay set point) during the initial startup of batch cycle.

Corrective Action:

Paddle wheel flow sensor to be replaced with a more accurate/high sensitivity magmeter type, pending approval from Lockheed

Specified replacement magmeter flow sensor (GF Signet, Model 3-2551-P0-11) is attached for reference.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 05:49:24 ON 04/06/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P57 : LAST SHUTDOWN @ 14:14:07 ON 04/04/2012 BY KEYPAD
FAX REPORT INITIATED BY PROCESS 57

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is ON	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is ON	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is ON	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	54450711	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9635345	GAL				
FT_103 is 16.41	GPM	TOTAL FLOW is	1773236	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	6206370	GAL				
PT_106 is 27.84	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 75.4	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 13.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 57.6	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 923.1	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Signet 2551 Magmeter Flow Sensor

LMC Utica GCTS
Aggregate Flow Meter
3-2551-P0-11

Available in a variety of wetted materials and ideal for pipe sizes up to DN900 (36 in.)

The Signet 2551 Magmeter is an insertion style magnetic flow sensor that features no moving parts. The patented* sensor design is available in corrosion-resistant materials to provide long-term reliability with minimal maintenance costs. Material options include PP with stainless steel, PVDF with Hastelloy-C, or PVDF with Titanium. Utilizing the comprehensive line of Signet installation fittings, sensor alignment and insertion depth is automatic. These versatile, simple-to-install sensors deliver accurate flow measurement over a wide dynamic range in pipe sizes ranging from DN15 to DN900 (½ to 36 inches), satisfying the requirements of many diverse applications.

Signet 2551 Magmeters offer many output options of frequency/digital (S^3L) or 4 to 20 mA which are available on both the blind and display versions. The frequency or digital (S^3L) sensor output can be used with Signet's extensive line of flow instruments while the 4 to 20 mA output can be used for a direct input to PLCs, chart recorders, etc. Both the 4 to 20 mA output and digital (S^3L) sensor interface is available for long distance signal transmission. An additional benefit is the empty pipe detection which features a zero flow output when the sensors are not completely wetted. Also, the frequency output is bi-directional while the 4 to 20 mA output can be set for uni- or bi-directional flow using the display or the 3-0250 USB to Digital (S^3L) Configuration/Diagnostic setup tool which connects to PCs for programming capabilities.

In addition the display version of the 2551 Magmeter is available with relays and features permanent and resettable totalizer values which can be stored and seen on the display. Also, the display contains multi-languages with English, Spanish, German, French, Italian and Portuguese menu options.

Features

- **Test certificate included for -X0, -X1**
- **Patented Magmeter technology**
- **No moving parts**
- **Bi-directional flow**
- **Empty pipe detection**
- **Installs into pipe sizes DN15 to DN900 (0.5 to 36 in.)**
- **Operating range 0.05 to 10 m/s (0.15 to 33 ft/s)**
- **Accurate measurement even in dirty liquids**
- **Blind 4 to 20 mA, digital (S^3L), frequency, relay output**
- **No pressure drop**
- **Corrosion resistant materials; PP or PVDF with SS, Hastelloy-C, or Titanium**
- **Multi-language display menu available**

CE c UL us LISTED MEASURING EQUIPMENT 77CJ — LEAD FREE RoHS COMPLIANT — 25

Applications

- **Chemical Processing**
- **Water and Wastewater Monitoring**
- **Metal Recovery and Landfill Leachate**
- **Commercial Pools, Spas, and Aquariums**
- **HVAC**
- **Irrigation**
- **Scrubber Control**
- **Neutralization Systems**
- **Industrial Water**
- **Distribution**

* U.S. Patent No: 7,055,396 B1

Specifications

General			
Operating Range	0.05 to 10 m/s	0.15 to 33 ft/s	
Pipe Size Range	DN15 to DN900	½ in. to 36 in.	
Linearity	±1% reading plus 0.01 m/s (0.033 ft/s)		
Repeatability	±0.5% of reading @ 25 °C (77 °F)		
Minimum Conductivity	20 µS/cm		
Wetted Materials			
Sensor Body/Electrodes and Grounding Ring	-P0, -P1, -P2: PP/316L SS		
	-T0, -T1, -T2: PVDF/Titanium		
	-V0, -V1, -V2: PVDF/Hastelloy-C		
O-rings	FPM (standard) EPR (EPDM), FFPM (optional)		
Case	PBT		
Display Window	Polyamide (transparent nylon)		
Protection Rating	NEMA 4X/IP65		
Electrical			
Power Requirements	4 to 20 mA	24 VDC ±10%, regulated, 22.1 mA max.	
	Frequency	5 to 24 VDC ±10%, regulated, 15 mA max.	
	Digital (S^3L)	5 to 6.5 VDC, 15 mA max.	
Auxiliary (only required for units with relays)		9 to 24 VDC, 0.4 A max.	
Reverse Polarity and Short Circuit Protected			
Current Output 4 to 20 mA	Loop Accuracy	32 µA max. error (25 °C @ 24 VDC)	
	Isolation	Low voltage ‹ 48 VAC/DC from electrodes and auxiliary power	
	Maximum Cable	300 m (1000 ft)	
	Error condition	22.1 mA	
	Max. Loop Resistance	300 Ω	
	Compatible with PLC, PC or similar equipment		
	4 to 20 mA load needed		
Frequency Output	Output Modes	Freq., or Mirror Relay (display version only)	
	Max. Pull-up Voltage	30 VDC	
	Max. Current Sink	50 mA, current limited	
	Maximum Cable	300 m (1000 ft)	
	Compatible with Signet Model 5075, 5500, 5600, 8550, 8900, 9900		
Digital (S^3L) Output	Serial ASCII, TTL level 9600 bps		
	Compatible with Model Signet 8900 controller		
Relay Specifications			
#1, #2 Type	Mechanical SPDT		
Rating	5 A @ 30 VDC max., 5 A @ 250 VDC max.		
#3 Type	Solid State		
	50 mA @ 30 VDC, 50 mA @ 42 VAC		
Hysteresis	User adjustable for exiting alarm condition		
Alarm On Trigger Delay	Adjustable (0 to 9999.9 sec.)		
Relay Modes	Off, Low, High, Window, and Proportional Pulse		
Relay Source	Flow Rate, Resettable Totalizer		
Error Condition	Selectable; Fail Open or Closed		
Display			
Characters		2 x 16	
Contrast		User-set in four levels	
Backlighting (only on relay versions)		Requires external 9-24 VDC, 0.4 mA max.	
Max. Temperature/Pressure Rating			
Storage Temperature		-20 °C to 70 °C	-4 °F to 158 °F
Relative Humidity		0 to 95% (non-condensing)	
Operating Temperature	Ambient	-10 °C to 70 °C	14 °F to 158 °F
	Media	0 °C to 85 °C	32 °F to 185 °F
Maximum Operating Pressure		10.3 bar @ 25 °C	150 psi @ 77 °F
		1.4 bar @ 85 °C	20 psi @ 185 °F
Standards and Approvals			
	CE, UL, CUL (for display versions with relays)		
	RoHS compliant, China RoHS		
	NEMA 4X / IP65 Enclosure (with cap installed)		
	U.S. Patent No. 7,055,396 B1		

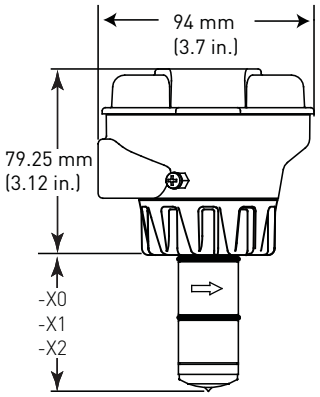
See Temperature and Pressure graphs for more information.

Dimensions

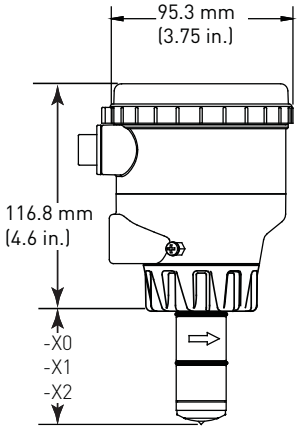
Pipe Range	
1/2 to 4 in.	-X0 = 58 mm (2.3 in.)
5 to 8 in.	-X1 = 91 mm (3.6 in.)
10 to 12 in.	-X2 = 167 mm (6.6 in.)

X = Sensor Body P, T, or V

Blind version

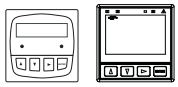


Display version



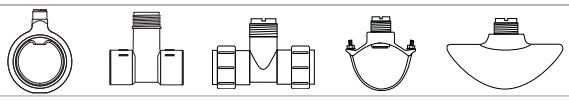
System Overview

Stand-Alone	Panel Mount	Field Mount - Pipe, Tank, Wall	4 to 20 mA Input
Signet Model 2551 Magmeter	Signet Instruments 5075 5500 5600 8550 8900 9900	Signet Instruments 8550 9900 with 3-8050 Universal Mount Kit	Customer Supplied Chart Recorder or Programmable Logic Controller



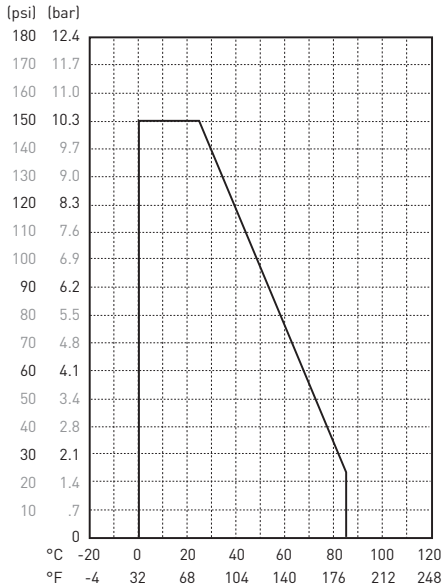
Signet 2551 Magmeter

Signet Fittings



All sold separately

Operating Temperature/Pressure Graphs

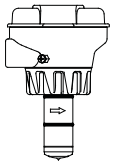
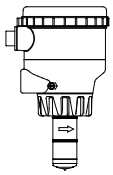
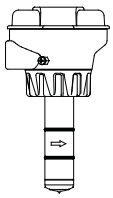
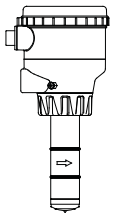
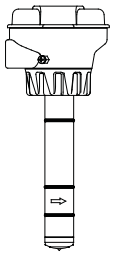
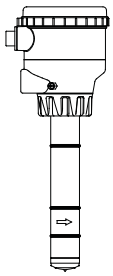


Note:
The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.

Application Tips
- Note minimum process liquid conductivity requirement is 20 µs/cm
- Install sensor using standard Signet installation fittings for best results
- Sensor is capable of retrofitting into existing 515 and 2536 fittings.

Please refer to Wiring, Installation, and Accessories sections for more information.

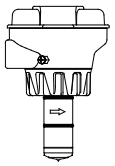
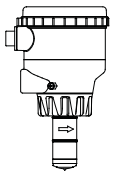
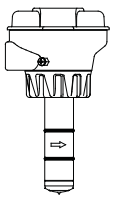
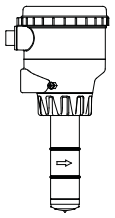
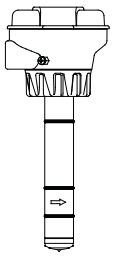
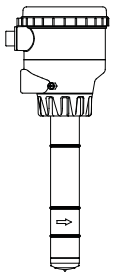
Ordering Information

Pipe Size	Mfr. Part No.	Code	Sensor Body
Frequency or Digital (S^3L) output programmable open collector for use with any Signet Flow Instrument or the 8900 or 9900 Instruments**			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-11	**159 001 105**	Polypropylene and 316L SS
	3-2551-T0-11	**159 001 108**	PVDF and Titanium
	3-2551-V0-11	**159 001 257**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-21	**159 001 267**	Polypropylene and 316L SS
	3-2551-T0-21	**159 001 436**	PVDF and Titanium
	3-2551-V0-21	**159 001 269**	PVDF and Hastelloy-C
with display			
	3-2551-P0-41	**159 001 261**	Polypropylene and 316L SS
	3-2551-T0-41	**159 001 433**	PVDF and Titanium
	3-2551-V0-41	**159 001 263**	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-11	**159 001 106**	Polypropylene and 316L SS
	3-2551-T1-11	**159 001 109**	PVDF and Titanium
	3-2551-V1-11	**159 001 258**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-21	**159 001 268**	Polypropylene and 316L SS
	3-2551-T1-21	**159 001 437**	PVDF and Titanium
	3-2551-V1-21	**159 001 270**	PVDF and Hastelloy-C
with Display			
	3-2551-P1-41	**159 001 262**	Polypropylene and 316L SS
	3-2551-T1-41	**159 001 434**	PVDF and Titanium
	3-2551-V1-41	**159 001 264**	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-11	**159 001 107**	Polypropylene and 316L SS
	3-2551-T2-11	**159 001 448**	PVDF and Titanium
	3-2551-V2-11	**159 001 450**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-21	**159 001 435**	Polypropylene and 316L SS
	3-2551-T2-21	**159 001 454**	PVDF and Titanium
	3-2551-V2-21	**159 001 456**	PVDF and Hastelloy-C
with Display			
	3-2551-P2-41	**159 001 432**	Polypropylene and 316L SS
	3-2551-T2-41	**159 001 460**	PVDF and Titanium
	3-2551-V2-41	**159 001 462**	PVDF and Hastelloy-C

**This option is a programmable open collector output that is available with display versions only.

Ordering Information (continued)

Pipe Size	Mfr. Part No.	Code	Sensor Body
4 to 20 mA output for use with PLC, PC or similar equipment			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-12	**159 001 110**	Polypropylene and 316L SS
	3-2551-T0-12	**159 001 113**	PVDF and Titanium
	3-2551-V0-12	**159 001 259**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-22	**159 001 273**	Polypropylene and 316L SS
	3-2551-T0-22	**159 001 439**	PVDF and Titanium
	3-2551-V0-22	**159 001 275**	PVDF and Hastelloy-C
with Display			
	3-2551-P0-42	**159 001 279**	Polypropylene and 316L SS
	3-2551-T0-42	**159 001 442**	PVDF and Titanium
	3-2551-V0-42	**159 001 281**	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-12	**159 001 111**	Polypropylene and 316L SS
	3-2551-T1-12	**159 001 114**	PVDF and Titanium
	3-2551-V1-12	**159 001 260**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-22	**159 001 274**	Polypropylene and 316L SS
	3-2551-T1-22	**159 001 440**	PVDF and Titanium
	3-2551-V1-22	**159 001 276**	PVDF and Hastelloy-C
with Display			
	3-2551-P1-42	**159 001 280**	Polypropylene and 316L SS
	3-2551-T1-42	**159 001 443**	PVDF and Titanium
	3-2551-V1-42	**159 001 282**	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-12	**159 001 112**	Polypropylene and 316L SS
	3-2551-T2-12	**159 001 449**	PVDF and Titanium
	3-2551-V2-12	**159 001 451**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-22	**159 001 438**	Polypropylene and 316L SS
	3-2551-T2-22	**159 001 455**	PVDF and Titanium
	3-2551-V2-22	**159 001 457**	PVDF and Hastelloy-C
with Display			
	3-2551-P2-42	**159 001 441**	Polypropylene and 316L SS
	3-2551-T2-42	**159 001 461**	PVDF and Titanium
	3-2551-V2-42	**159 001 463**	PVDF and Hastelloy-C

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
O-Rings		
1220-0021	**198 801 186**	O-ring, FPM (2 required per sensor)
1224-0021	**198 820 006**	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	**198 820 007**	O-ring, FFPM (2 required per sensor)
Replacement Transducers		
3-2551-P0	**159 001 211**	PP/316L SS, DN15 to DN100 (½ to 4 in.) pipe
3-2551-P1	**159 001 212**	PP/316L SS, DN125 to DN200 (5 to 8 in.) pipe
3-2551-P2	**159 001 444**	PP/316L SS, DN250 to DN900 (10 to 36 in.) pipe
3-2551-T0	**159 001 213**	PVDF/Titanium, DN15 to DN100 (½ to 4 in.) pipe
3-2551-T1	**159 001 214**	PVDF/Titanium, DN125 to DN200 (5 to 8 in.) pipe
3-2551-T2	**159 000 445**	PVDF/Titanium, DN250 to DN900 (10 to 36 in.) pipe
3-2551-V0	**159 001 376**	PVDF/Hastelloy-C, DN15 to DN100 (½ to 4 in.) pipe
3-2551-V1	**159 001 377**	PVDF/Hastelloy-C, DN125 to DN200 (5 to 8 in.) pipe
3-2551-V2	**159 000 446**	PVDF/Hastelloy-C, DN250 to DN900 (10 to 36 in.) pipe
Replacement Electronics Module		
3-2551-11	**159 001 215**	Magmeter electronics, frequency or digital (S^3L) output
3-2551-12	**159 001 216**	Magmeter electronics, 4 to 20 mA output
3-2551-21	**159 001 372**	Magmeter display electronics, frequency or digital (S^3L) output, with relays
3-2551-22	**159 001 373**	Magmeter display electronics, 4 to 20 mA output w/relays
3-2551-41	**159 001 374**	Magmeter display electronics, frequency or digital (S^3L) output
3-2551-42	**159 001 375**	Magmeter display electronics, 4 to 20 mA output
Other		
P31536	**198 840 201**	Sensor plug, Polypropylene
7300-7524	**159 000 687**	24 VDC power supply 7.5W, 300 mA
7300-1524	**159 000 688**	24 VDC power supply 15W, 600 mA
7300-3024	**159 000 689**	24 VDC power supply 30W, 1.3 A
7300-5024	**159 000 690**	24 VDC power supply 50W, 2.1 A
7300-1024	**159 000 691**	24 VDC power supply 100W, 4.2 A
3-8050.390-1	**159 001 702**	Retaining nut replacement kit, Valox K4530
3-8050.391	**159 001 703**	Retaining nut replacement kit, Stainless Steel
3-8551.521	**159 001 378**	Clear plastic cap for display
1222-0042	**159 001 379**	O-ring for clear plastic cap, EPR (EPDM)
3-0250	**159 001 538**	USB to digital (S^3L) Configuration/Diagnostic tool

3-2551.099 Rev C (10/11)

3401 Aerojet Avenue, El Monte, CA 91731-2882 U.S.A. • Tel. (626) 571-2770 • Fax (626) 573-2057 • www.gfsignet.com • e-mail: signet.ps@georgfischer.com

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/18/2012
Time: 9:40
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 1/14/12 Time: 19:46:00

Alarm Condition:

Process - 32 - LA-100 (Low water level in air stripper sump)

Cause of Alarm:

Slight increase in back pressure in sump due to slight fouling of air stripper trays.

Corrective Action:

TMC logs in remotely on1/15/12 at 8:10 am and inspects system data logger, restart system and alarm condition reoccurs within ~1 min.

TMC logs in remotely on 1/15/12 several times throughout the day to manual run system to maintain groundwater levels below high float elevations.

Dan Zuck onsite 1/16/12 to inspect and verify sump pressure read by pressure transmitter versus pressure gauge. TMC has Dan close the blower damper slightly to reduce air flow from 800 cfm to ~650-700 cfm. Restart system, sump pressure appears to have settled back to within a range to maintain the water level above LSL-100.

Schedule air stripper cleaning and float replacement for week of 1/23/12.

ProControl Series II+

EOS Research Ltd.

Fax Report

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 06:30:00 ON 01/15/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

MANUAL : LAST SHUTDOWN @ 19:56:28 ON 01/14/2012 BY LSL100

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is ON	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is ON
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is ON	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is ON
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	53746038	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9522668	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	1521830	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	5179466	GAL				
PT_106 is 0.03	IWC	LIMITS are	L: 8.00	IWC	H: 34.00	IWC		
TT_400 is 98.9	DEG	LIMITS are	L: 60.0	DEG	H: 110.0	DEG		
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H: 25.0	IWC		
TT_100 is 57.3	DEG	LIMITS are	L: 40.0	DEG	H: 110.0	DEG		
FT_106 is 0.0	CFM	LIMITS are	L: 400.0	CFM	H:	CFM		

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/18/2012
Time: 9:40
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 1/17/12 Time: 12:27:00

Alarm Condition:

Process - 57 - FA-105 (Low Flow Alarm Aggregate Flowmeter FT-105 with MH-3 online)

Cause of Alarm:

Possible air pockets causing turbulent flow within the 3" dia. Manifold.

Lower velocity in 3" diameter header pipe when only one MH-3 pump is batching (18-19 gpm), thus resulting in a flow of less than 3 gpm for a period greater than 30 seconds (alarm time delay set point) during the initial startup of batch cycle.

Corrective Action:

Consider replacing paddle wheel flow sensor with a more accurate/high sensitivity magmeter type (see attached spec sheet).

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 12:27:37 ON 01/17/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P57 : LAST SHUTDOWN @ 07:14:53 ON 01/16/2012 BY LSL100
FAX REPORT INITIATED BY PROCESS 57

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is ON	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	53770304	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9525881	GAL				
FT_103 is 17.48	GPM	TOTAL FLOW is	1529437	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	5214246	GAL				
PT_106 is 28.02	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 90.4	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 9.2	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 60.0	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 694.9	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date:	1/31/2012
Time:	21:15
Technician:	TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 1/30/12 Time: 20:03:00

Alarm Condition:

Process - 32 (Low level alarm via LSL-100)

Cause of Alarm:
The LSL-100 was tripped during a automated startup when MH-3 called to pumped. The data logger inidcated that the LSL-100 was toggling back and forth during the first few seconds of blower operation and latched long enough (5 second set point) to trigger the alarm. The low level alarm is most likely a result of the blower damper re-adjustment that was made on 1/27/12 while performing the quarterly critical device testing.

Corrective Action:
TMC logged in remotely on 1/31/12 to review the data logger. The system was restarted @ 8:59 am on 1/31/12.

Jason Gutkowski scheduled to be onsite on 2/2/12 to close the damper slightly to reduce the sump pressure (with one manhole online) from 33 in.W.C. to 30 in.W.C. (historical range which allowed for gravity discharging without evacuating too much water from the sump).

ARCADIS will continue to monitor the sump water level and if needed may increase the alarm time delay from 5 seconds to 15 seconds to help eliminate nuisance alarms during startup or shutdown.

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 20:03:17 ON 01/30/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD : LAST SHUTDOWN @ 13:11:45 ON 01/27/2012 BY REMOTE
FAX REPORT INITIATED BY PROCESS 32

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is ON
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	53935069	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9559585	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	1581607	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	5458038	GAL				
PT_106 is 30.46	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 83.9	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 13.6	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 60.7	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 967.9	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/23/2012
Time: 15:30
Technician: TC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	10/11/12	Time:	6:15
	10/12/12		12:10
	10/13/12		5:37

Alarm Condition:

Process 45

Low air stripper air flow rate FT-106 with MH-3 online.

Fatal alarm.

Cause of Alarm:

Possible 4-20 mA signal drift or excessive moisture on the pitot tube low/high pressure ports or within the tubing between the transmitter and pitot tube low/high pressure ports.

Corrective Action:

Mobilize to site on 10/11/12 to inspect and restart the system. Following an inspection of the PLC and other major system components the system was restarted at approximately 14:00 and monitored for proper operation. The air flow rate was noted at approximately 800 cfm with MH-3 Pump A online.

Re-Mobilize to site on 10/12/12 to inspect and restart the system. Following an inspection of the PLC and other major system components. The pitot tube was removed and inspected for the presence of condensation. A small amount of condensation was noted in the low/high pressure ports, the pitot tube was dried out and reinstalled. Additionally prior to installing the pitot tube the system was started in manual and the air stream at the location of the pitot tube was inspected for moisture droplets, none were detected after a few minutes of operations. Review of the data logger indicated that both of the low air flow alarms occurred about 10 minutes after a cycle startup, both of which happened to be for MH-3. No odd pressures were observed. The system was restarted on 10/12/12 at approximately 15:00 and monitored for proper operation. The air flow rate was noted at approximately 800 cfm with MH-1 Pump A online.

Re-Mobilize to site on 10/14/12 to inspect and restart the system. When the system was restarted each MH called to pump and the total liquid flow through the air stripper as approximately 65 gpm and the corresponding air flow rate was 680 cfm. The system was monitored for 15 minutes in which time the air flow rate remained relatively constant.

Following a call with CDM Smith it was decided that the time delay for the low air flow alarm be increased from the current 5 second set point to a 5 minute set point. This change will be made the week of 10/22/12 during the quarterly critical device testing event.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 06:15:30 ON 10/11/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD P-3 : LAST SHUTDOWN @ 18:16:23 ON 07/17/2012 BY LSH100
FAX REPORT INITIATED BY PROCESS 45

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is ON	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is ON	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55389588	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9822360	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2293686	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7788885	GAL				
PT_106 is 27.14	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 80.6	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.8	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 63.4	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 410.9	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 12:10:23 ON 10/12/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD P-3 : LAST SHUTDOWN @ 06:25:30 ON 10/11/2012 BY FT_106
FAX REPORT INITIATED BY PROCESS 45

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is ON	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55394543	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9822381	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2297097	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7797076	GAL				
PT_106 is 26.92	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 81.3	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.8	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 64.4	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 810.9	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 13:13:47 ON 10/15/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO : LAST SHUTDOWN @ 05:37:12 ON 10/13/2012 BY FT_106
FAX REPORT INITIATED BY KEYPAD

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55418970	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9827953	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2310594	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7834520	GAL				
PT_106 is 0.12	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 92.9	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 67.3	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 0.0	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/23/2012
Time: 16:30
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 10/19/12 Time: 16:50

Alarm Condition:

Process 53

Low Flow Sequestering Agent - FA-200.

Non-Fatal Alarm

Cause of Alarm:

Sequestering agent drum #4 ran out of solution.

Corrective Action:

ARCADIS onsite during alarm and placed new full drum (Drum #5) of sequestering agent into service at approximately 17:00.

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 16:50:26 ON 10/19/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P53 : LAST SHUTDOWN @ 13:14:02 ON 10/18/2012 BY FT_106
FAX REPORT INITIATED BY PROCESS 53

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is ON	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is ON	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is ON	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is ON	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is ON	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is ON	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 32.94	GPM	TOTAL FLOW is	55444091	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9832600	GAL				
FT_103 is 18.12	GPM	TOTAL FLOW is	2326582	GAL				
FT_105 is 48.50	GPM	TOTAL FLOW is	7876735	GAL				
PT_106 is 28.66	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 81.6	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 9.2	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 64.9	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 664.1	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT MAN

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/9/2012
Time: 7:30
Technician: TC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	11/4/12	Time:	3:37
	11/7/12		11:07
	11/8/12		19:16

Alarm Condition:

Process 45, FA-106

Low and High air stripper air flow rates, FT-106.

Fatal alarm (11/4 and 11/7) and Non-Fatal (11/8).

Cause of Alarm:

4-20 mA signal drift from the pressure transmitter FT-106 to the PLC.

Corrective Action:

Log into system remotely on 11/5/12 at 20:44. Following an inspection of the PLC data logger files the system was restarted and monitored for proper operation. The air flow rate was noted at approximately 550-600 cfm with all three manholes online pumping at a total flow rate of 70 gpm with a corresponding air stripper sump pressure of ~32 in.W.C., which confirmed that sufficient air flow was flowing through the air stripper.

On 11/6/12 ARCADIS mobilized to the site at 12:30 and reconfigured the Process 45 alarm delay from 5 seconds to 5 minutes, as previous discussed with CDM Smith.

Following receiving the alarm again on 11/7/12 at 5:03 ARCADIS mobilized to site that morning at 9:08 to inspect the system. Following an inspection of the PLC and other major system components, and confirming that the system was operating as intended the Process 45 alarm was changed from a fatal to non-fatal. The system was restarted at 9:23.

The Process 45 "low and high air flows" non-fatal alarm was received again on 11/8/12 at 19:16. Upon review of the data logger, all other analog inputs were confirmed to be operating within their respective ranges for the liquid flow rate running through the system at that time (see attached snap shot of analog data file). Therefore, the replacement of the pressure transmitter FT-106 is recommended.

ProControl Series II+

EOS Research Ltd.

Fax Report

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 06:30:00 ON 11/04/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

MANUAL : LAST SHUTDOWN @ 03:37:51 ON 11/04/2012 BY FT_106

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is ON
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is ON	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55527082	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9848876	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2375160	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	8024398	GAL				
PT_106 is 0.09	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 83.2	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 64.9	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 0.0	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 05:08:44 ON 11/07/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD P-3 : LAST SHUTDOWN @ 03:37:51 ON 11/04/2012 BY FT_106
FAX REPORT INITIATED BY PROCESS 45

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is ON	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55539700	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9852388	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2380898	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	8044598	GAL				
PT_106 is 29.49	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 82.9	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.9	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 62.6	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 19:16:59 ON 11/08/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P45 : LAST SHUTDOWN @ 05:18:45 ON 11/07/2012 BY FT_106
FAX REPORT INITIATED BY PROCESS 45

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

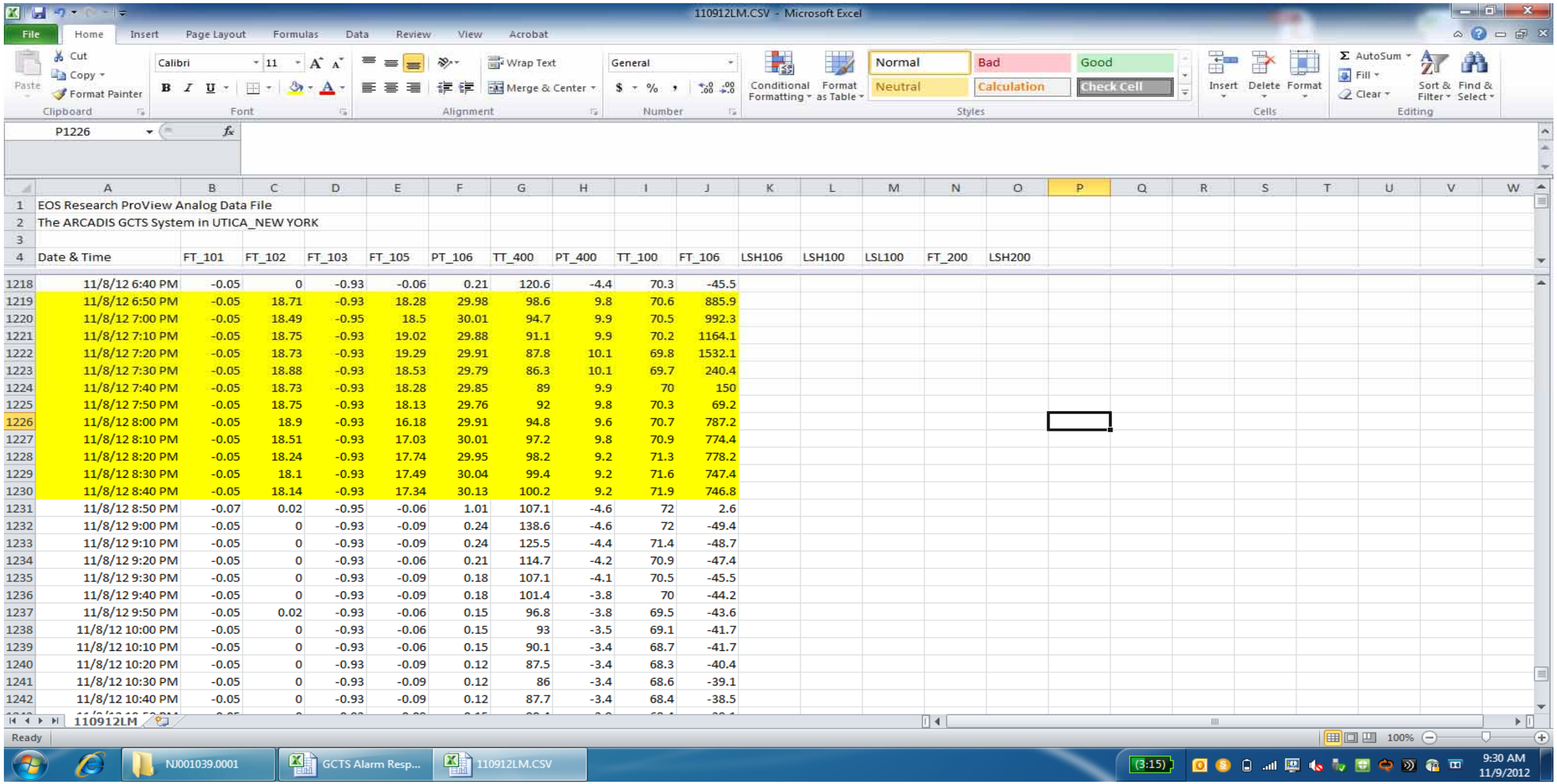
MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is ON	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is ON	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55544447	GAL				
FT_102 is 19.00	GPM	TOTAL FLOW is	9853101	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2384023	GAL				
FT_105 is 18.28	GPM	TOTAL FLOW is	8053445	GAL				
PT_106 is 29.95	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 88.1	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 10.1	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 70.0	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 2.8 PCT PRO


110912LM.CSV - Microsoft Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
Cut
Copy
Format Painter
Paste
Clipboard
Calibri
11
Font
Wrap Text
Merge & Center
Alignment
General
Number
Conditional Formatting
Format as Table
Normal
Bad
Good
Neutral
Calculation
Check Cell
Styles
Insert
Delete
Format
Cells
AutoSum
Fill
Clear
Sort & Filter
Find & Select
Editing
P1226
EOS Research ProView Analog Data File
The ARCADIS GCTS System in UTICA_NEW YORK
Date & Time
FT_101
FT_102
FT_103
FT_105
PT_106
TT_400
PT_400
TT_100
FT_106
LSH106
LSH100
LSL100
FT_200
LSH200
11/8/12 6:40 PM -0.05 0 -0.93 -0.06 0.21 120.6 -4.4 70.3 -45.5
11/8/12 6:50 PM -0.05 18.71 -0.93 18.28 29.98 98.6 9.8 70.6 885.9
11/8/12 7:00 PM -0.05 18.49 -0.95 18.5 30.01 94.7 9.9 70.5 992.3
11/8/12 7:10 PM -0.05 18.75 -0.93 19.02 29.88 91.1 9.9 70.2 1164.1
11/8/12 7:20 PM -0.05 18.73 -0.93 19.29 29.91 87.8 10.1 69.8 1532.1
11/8/12 7:30 PM -0.05 18.88 -0.93 18.53 29.79 86.3 10.1 69.7 240.4
11/8/12 7:40 PM -0.05 18.73 -0.93 18.28 29.85 89 9.9 70 150
11/8/12 7:50 PM -0.05 18.75 -0.93 18.13 29.76 92 9.8 70.3 69.2
11/8/12 8:00 PM -0.05 18.9 -0.93 16.18 29.91 94.8 9.6 70.7 787.2
11/8/12 8:10 PM -0.05 18.51 -0.93 17.03 30.01 97.2 9.8 70.9 774.4
11/8/12 8:20 PM -0.05 18.24 -0.93 17.74 29.95 98.2 9.2 71.3 778.2
11/8/12 8:30 PM -0.05 18.1 -0.93 17.49 30.04 99.4 9.2 71.6 747.4
11/8/12 8:40 PM -0.05 18.14 -0.93 17.34 30.13 100.2 9.2 71.9 746.8
11/8/12 8:50 PM -0.07 0.02 -0.95 -0.06 1.01 107.1 -4.6 72 2.6
11/8/12 9:00 PM -0.05 0 -0.93 -0.09 0.24 138.6 -4.6 72 -49.4
11/8/12 9:10 PM -0.05 0 -0.93 -0.09 0.24 125.5 -4.4 71.4 -48.7
11/8/12 9:20 PM -0.05 0 -0.93 -0.06 0.21 114.7 -4.2 70.9 -47.4
11/8/12 9:30 PM -0.05 0 -0.93 -0.09 0.18 107.1 -4.1 70.5 -45.5
11/8/12 9:40 PM -0.05 0 -0.93 -0.09 0.18 101.4 -3.8 70 -44.2
11/8/12 9:50 PM -0.05 0.02 -0.93 -0.06 0.15 96.8 -3.8 69.5 -43.6
11/8/12 10:00 PM -0.05 0 -0.93 -0.06 0.15 93 -3.5 69.1 -41.7
11/8/12 10:10 PM -0.05 0 -0.93 -0.06 0.15 90.1 -3.4 68.7 -41.7
11/8/12 10:20 PM -0.05 0 -0.93 -0.09 0.12 87.5 -3.4 68.3 -40.4
11/8/12 10:30 PM -0.05 0 -0.93 -0.09 0.12 86 -3.4 68.6 -39.1
11/8/12 10:40 PM -0.05 0 -0.93 -0.09 0.12 87.7 -3.4 68.4 -38.5
110912LM
Ready
100%
NJ001039.0001
GCTS Alarm Resp...
110912LM.CSV
(3:15)
9:30 AM
11/9/2012

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/1/2013
Time: 12:00
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	Time:
12/19/12	6:30
12/21/2012	6:30
12/23/2012	6:30
1/1/2013	6:30

Alarm Condition:

Daily scheduled fax Log not received at 6:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

12/19/12 - Chris Davern performed a site inspection on 12/19/12 and confirmed that the system was online in auto. A "fax now" was successfully initiated locally from the PLC.

12/21/12 - Chris Davern performed a site inspection on 12/21/12 and confirmed that the system was online in auto. A "fax now" was successfully initiated locally from the PLC.

12/23/12 - Dan Zuck performed a site inspection on 12/24/12 and confirmed that the system was online in auto. A "fax now" was initiated locally from the PLC but was not received.

1/1/13 - Todd Carignan successfully logged into the system remotely on 1/1/13, confirmed the system was in "Auto", and successfully initiated a "fax now".

Following discussion with CDMSmith and Lockheed ARCADIS prepared a RFA for installing a wireless cellular auto dialer, the RFA is currently under review.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 12:26:39 ON 12/19/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P06 : LAST SHUTDOWN @ 13:43:47 ON 12/06/2012 BY MEMORY 03
FAX REPORT INITIATED BY KEYPAD

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55779909	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9896730	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2491791	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	8449948	GAL				
PT_106 is 0.15	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 106.7	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 70.0	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 0.0	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 12:28:13 ON 12/21/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P05 : LAST SHUTDOWN @ 13:43:47 ON 12/06/2012 BY MEMORY 03
FAX REPORT INITIATED BY KEYPAD

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55806300	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9900383	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2502974	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	8491203	GAL				
PT_106 is 28.17	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 95.4	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 9.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 70.7	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 788.5	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 09:22:47 ON 01/01/2013
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P06 : LAST SHUTDOWN @ 04:34:55 ON 12/26/2012 BY LSL100
FAX REPORT INITIATED BY REMOTE

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55921759	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9916659	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2557119	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	8675549	GAL				
PT_106 is 0.12	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 134.0	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 68.4	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 0.0	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/3/2013
Time: 12:00
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	12/26/2012	Time:	4:24:00
	1/2/2013		20:24:00

Alarm Condition:

Process - 32 (Low level alarm via LSL-100) - Fatal Alarm

Cause of Alarm:
The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.

Corrective Action:
TMC logged in remotely on 12/26/12 to review alarm condition and the datalogger. The system was restarted on 12/26/12 at 12:24.

Chris Davern onsite on 1/3/13 at 11:45 to inspect the alarm condition pressure. The following observations/testing/adjustments were conducted:

Height of water in AS sump with system off= 16.875"
Startup system and record the following data.
Q = 61 gpm, 730-800 cfm, 31.8 in.W.C, 15.25-15.75", damper nut 2 7/16"
Closed AS blower damper roughly 1/16" to reduce sump back pressure.
Q = 61 gpm, 690-770 cfm, 30.9 in.W.C, 16.25-16.75"
Q = 40 gpm, 770-820 cfm, 29.2 in.W.C, 15.375"
Q = 20 gpm, 780-860 cfm, 28.3 in.W.C, 15-15.125"
Q = 63 gpm, 685-720 cfm, 31.0 in.W.C, 15.75-16.5"
Initiate shutdown.
Height of water in AS sump steadies at 14.875" during 10 minute shutdown period with blower on, and then steadies at 18.25" following blower shutdown.

Following the adjustment of the blower damper the gravity discharge was working properly and the water level sump stayed within the historical range noted during both normal operation and during a shutdown period.

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 04:24:54 ON 12/26/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD : LAST SHUTDOWN @ 13:43:47 ON 12/06/2012 BY MEMORY 03
FAX REPORT INITIATED BY PROCESS 32

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is OFF
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is OFF
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is ON
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55870218	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9910004	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2534499	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	8595807	GAL				
PT_106 is 30.34	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 99.3	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.4	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 66.5	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 20:24:19 ON 01/02/2013
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD : LAST SHUTDOWN @ 04:34:55 ON 12/26/2012 BY LSL100
FAX REPORT INITIATED BY PROCESS 32

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is ON
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55934493	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9918885	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2561500	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	8695109	GAL				
PT_106 is 30.92	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 92.9	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.7	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 65.4	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/7-11,14/2012
Time: 6:30
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	12/7-11/2012	Time:	6:30
	12/14/2012		6:30

Alarm Condition:

Daily scheduled fax Log not received at 6:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

12/7/12 - Dan Zuck performed a site inspection and confirmed that the system was online in auto. A "fax now" was initiated locally from the PLC but was not received.

12/8/12 - Dan Zuck performed a site inspection and confirmed that the system was online in auto. A "fax now" was initiated locally from the PLC but was not received.

12/10/12 - Jason Gutkowski performed a site inspection and confirmed that the system was online in auto. A "fax now" was initiated locally from the PLC but was not received.

12/11/12 - Todd Carignan performed a site inspection at approximately 19:00. The system was in "manual" mode. After attempting to log in locally with a laptop unsuccessfully the PLC was rebooted, after reboot a local connection was successfully made and the data logger files were downloaded. The system shutdown at approximately 19:00 on 12/10/12. The only apparent reason would be a power failure. The system was restarted and a "fax now" was successfully initiated locally from the PLC.

12/14/12 - Jason Gutkowski performed a site inspection and confirmed that the system was online in auto. A "fax now" was initiated locally from the PLC but was not received. The PLC was rebooted and a "fax now" was successfully initiated locally from the PLC.

The PLCs modem may need to be replaced, ARCADIS to discuss option with EOS along with other communication options including wireless.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/7/2012
Time: 17:00
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 2/6/12 Time: 16:45

Alarm Condition:
Process - 42 (High level alarm via LSH-100)

Cause of Alarm:
The LSH-100 was tripped during a automated startup when MH-1 was called to pumped. The data logger indicated that the LSH-100 went into alarm several seconds after one of the pumps turned on. The high level alarm is most likely a result of the new level float being set with too short of tether during the initial install.

Corrective Action:
TMC logged in remotely on 2/6/12 to review the data logger and restart system. The system was unable to be restarted due to the high level float switch still being latched in the on position.

Jason Gutkowski was onsite on 2/7/12 and manually drained enough water from the air stripper sump in order to clear (un-latch) the high level alarm. The length of the high level float tether was increased 3-inches. TMC logged into the system remotely and restarted the system at 11:00.

ARCADIS will continue to monitor the sump water level and if needed may further modify (shorten or lengthen) the high float tether length fine tune the level alarm and reduce/eliminate nuisance alarms during startup or shutdown.

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 16:45:37 ON 02/06/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD P-6 : LAST SHUTDOWN @ 20:13:17 ON 01/30/2012 BY LSL100
FAX REPORT INITIATED BY PROCESS 42

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is ON	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is ON	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is ON
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	54011599	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9574338	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	1613924	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	5576189	GAL				
PT_106 is 27.47	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 82.4	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.8	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 62.0	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 835.3	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/27/2012
Time: 12:10
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 3/7/12 Time: 22:39:00

Alarm Condition:

Process - 56 - FA-105 (Low Flow Alarm Aggregate Flowmeter FT-105 with MH-2 Pump 1 online)

Cause of Alarm:

Possible air pockets causing turbulent flow within the 3" dia. Manifold.

Lower velocity in 3" diameter header pipe when only one pump is batching (MH-2, Pump 1 at 18 gpm), thus resulting in a flow of less than 3 gpm for a period greater than 30 seconds (alarm time delay set point) during the initial startup of batch cycle.

Corrective Action:

Consider replacing paddle wheel flow sensor with a more accurate/high sensitivity magmeter type.

Specified replacement magmeter flow meter (GF Signet, Model 3-2551-P0-11) provided to CDM for review and comment.

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 22:39:53 ON 03/07/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P56 : LAST SHUTDOWN @ 17:34:01 ON 02/06/2012 BY B_100
FAX REPORT INITIATED BY PROCESS 56

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is ON	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	54243975	GAL				
FT_102 is 18.00	GPM	TOTAL FLOW is	9608013	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	1696347	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	5912953	GAL				
PT_106 is 28.05	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 76.6	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 10.8	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 65.2	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 754.5	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/12/2012
Time: 12:00
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 4/12/12 Time: 5:00

Alarm Condition:

Process 57 - FA-105

Low Flow Alarm Aggregate Flowmeter FT-105 with MH-3 Pump 1 online

Non-Fatal Alarm

Cause of Alarm:

Possible air pockets causing turbulent flow within the 3" dia. Manifold.

Lower flow velocity is occurring within the 3-inch diameter header pipe when only one pump is batching (MH-3, Pump 1 at 16 gpm), thus resulting in a flow of less than 3 gpm for a period greater than 30 seconds (alarm time delay set point) during the initial startup of batch cycle.

Corrective Action:

Paddle wheel flow sensor to be replaced with a more accurate/high sensitivity magmeter type, pending approval from Lockheed

Specified replacement magmeter flow sensor (GF Signet, Model 3-2551-P0-11) is attached for reference.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 05:00:48 ON 04/12/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P57 : LAST SHUTDOWN @ 13:45:00 ON 04/09/2012 BY KEYPAD
FAX REPORT INITIATED BY PROCESS 57

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is ON	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	54479092	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9639828	GAL				
FT_103 is 16.51	GPM	TOTAL FLOW is	1782238	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	6244798	GAL				
PT_106 is 28.75	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 84.8	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.8	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 58.1	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 823.7	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/16/2012
Time: 12:00
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 4/16/12 Time: 7:30

Alarm Condition:

Daily scheduled fax Log not received at 7:30.

Unable to communicate with the PLC remotely.

Cause of Alarm:

PLC power failure.

Data logger files indicate that the system was online 4/16/12 up until approximately 9:30, then at which point no data was logged until 16:01 that day at which point the data logger indicated that PLC was reset.

Corrective Action:

Jason Gutkowski was onsite 4/17/12 at approximately 13:00 to inspect the system. The building had power upon Jason's arrival, however, the PLC and the building outlets did not have any power. The first GFCI at one of the outlets (wired in series) was tripped. Note: It should be noted that the Duct Heater did not require resetting, which would have indicated a building power outage.

Jason checked to low voltage panel to see if the outlet breakers had tripped, they had not. Jason then reset the local GFCI's that were tripped. At which time the chemical dosing pump regained power.

The UPS's audible alarm was also a constant tone which indicates one of the following; the battery is disconnected, battery needs to be replaced, or a overload shutdown occurred (i.e., during on battery operation a battery power supplied outlet overload was detected. Todd Carignan had Jason de-energize the panel where the UPS is installed in order to safely visually inspect the UPS. Upon opening the panel door the UPS's audible alarm was still present and the visual indicator was flashing red which indicates that the battery is disconnected (per the UPS user guide). It should be noted that the UPS line side circuit breaker was not tripped and did not require resetting.

The UPS was shutoff using the power button located on the front of the unit, then turned back on, following that sequence the UPS audible alarm turned off, the UPS green run light turned on, and the PLC rebooted.

After performing the above inspections it was still unclear of what caused the complete power failure to the PLC since the battery was not disconnected and was just recently tested during the quarterly critical device testing.

Chris Davern logged into the system remotely with Jason onsite on 4/17/12 and restarted the GCTS and observed it for proper operation.

On 4/23/12 Chris Davern was onsite and tested the UPS by turning off the main breaker to the building (simulating a building power outage). Upon doing this the PLC remained energized and the UPS's audible alarm indicated that the unit was on battery backup (i.e., beeping 4 times every 30 seconds). The PLC immediately dialed out a Process 36 alarm (level sensor low low alarm at MH-1). The system eventually then went into a shutdown mode as a result of Process 32, low level in air stripper sump (as a result of losing power to that discrete input). The battery backup provided power to PLC for approximately 60-70 minutes. Therefore, it appears that the UPS is functioning properly. ARCADIS spoke with the APC, the manufacturer of the UPS and discussed our observations and when through their troubleshooting guide. The technical support suggested two possible scenarios, the UPS has an internal fault or an outlet overload occurred on the battery side which disabled power to the battery backup outlets. At this point ARCADIS will continue monitoring the UPS, and if required may elect to replace the unit, which was installed in December 2007.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/24/2012
Time: 14:05
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 4/24/12 Time: 11:35

Alarm Condition:

Process 56 - FA-105

Low Flow Alarm Aggregate Flowmeter FT-105 with MH-2 Pump 2 online

Non-Fatal Alarm

Cause of Alarm:

Possible air pockets causing turbulent flow within the 3" dia. Manifold.

Lower flow velocity is occurring within the 3-inch diameter header pipe when only one pump is batching (MH-2, Pump 2 at 19 gpm), thus resulting in a flow of less than 3 gpm for a period greater than 30 seconds (alarm time delay set point) during the initial startup of batch cycle.

Corrective Action:

Paddle wheel flow sensor to be replaced with a more accurate/high sensitivity magmeter type, pending approval from Lockheed

Specified replacement magmeter flow sensor (GF Signet, Model 3-2551-P0-11) is attached for reference.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 11:35:24 ON 04/24/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P56 : LAST SHUTDOWN @ 12:37:49 ON 04/23/2012 BY LSL100
FAX REPORT INITIATED BY PROCESS 56

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is OFF
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is ON
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	54545900	GAL				
FT_102 is 18.93	GPM	TOTAL FLOW is	9653539	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	1812090	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	6351441	GAL				
PT_106 is 27.72	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 78.8	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 10.4	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 62.8	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 773.1	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/25/2012
Time: 13:55
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 5/18-23/2012 Time: 7:30

Alarm Condition:

Daily scheduled fax Log not received at 7:30.

Unable to communicate with the PLC remotely.

Cause of Alarm:

5/23/2012 - Discover that ConMed disconnected the local GCTS fax/autodialer line in adjacent building.

Corrective Action:

Dan Zuck was onsite 5/21 at approximately 18:00, verified that the system was online in auto and initiated a "fax now" - not received.

Daily faxes not received on 5/21, 5/22, or 5/23.

Dan Zuck back onsite 5/23, check in with ConMed to discuss GCTS fax line issue and discovered that local line was disconnected/unplugged at adjacent building and local fax machine was plugged into data/voice port. Dan Zuck unplugs fax machine and plugs in GCTS fax line - successfully tested with "fax now". ARCADIS contacts Rick Zigenfus (on vacation) and then Kevin Duschanl (Rick's backup contact) to inform him of our findings and corrective actions. Kevin indicated that the local ConMed staff must have unknowingly disconnected the GCTS fax line and indicated that it wouldn't happen again.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/12/2012
Time: 12:15
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 5/28/12 Time: 7:30

Alarm Condition:

Daily scheduled fax Log not received at 7:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

Daily scheduled fax log received on schedule on 5/29/12.

Todd Carignan reviews data logger files which indicated that the system was online in "auto" on 5/28/12.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/12/2012
Time: 12:30
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 5/29/12 Time: 18:53

Alarm Condition:
Process - 29 - FA-101 (Low Flow Alarm Aggregate Flowmeter FT-101) with MH-1 Pump #2 online

Cause of Alarm:
Suspect alarm conditions caused by stuck check valve located within MH-1 Pump #2 riser pipe.

Corrective Action:
Chris Davern logged into system remotely on 5/30 at 8:30 to inspect system and pump operation. The data logger file indicated that since 20:00 (5/29) pump 2 had been running. No flow had been registered at FT-101, and the flow change at FT-105 indicates that in actuality only MH-3 has pumped into the system overnight (delta for FT-101 = 0, delta for FT-103 = 2,963 gal and delta for FT-105 = 2,959 gal). Therefore eliminating the possibility that FT-101 simply needs to be cleaned.

MH-1 pump 1 was briefly turned on in manual, immediately following this action MH-1 pump 2 began to register flow. Based on these observations it is most likely that the check valve on the MH-1 pump 1 riser pipe was stuck in the open (up) position again and that by turning pump 1 on briefly dislodged the ball.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 18:53:10 ON 05/29/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P29 : LAST SHUTDOWN @ 12:37:49 ON 04/23/2012 BY LSL100
FAX REPORT INITIATED BY PROCESS 29

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is ON	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is ON	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is ON	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	54847353	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9700653	GAL				
FT_103 is 16.41	GPM	TOTAL FLOW is	1946829	GAL				
FT_105 is 15.57	GPM	TOTAL FLOW is	6812657	GAL				
PT_106 is 23.44	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 75.4	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.3	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 73.2	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 841.0	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 2.3 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/12/2012
Time: 12:00
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 6/11/12 Time: 7:30

Alarm Condition:

Daily scheduled fax Log not received at 7:30.

Unable to communicate with the PLC remotely.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

ARCADIS attempted to log in remotely several times unsuccessfully on 6/11/12.

Jason Gutkowski onsite 6/11/12 at 15:30 and confirms that the system is online and in "auto".

Jason confirms that phone line is working by plugging in a analog phone. Chris Davern has Jason re-boot the PLC. Following the rebooting of the PLC a "fax now" is successfully initiated.

Daily fax received on 6/12/12 at 7:30. Todd Carignan successfully logs in remotely on 6/12/12 to test remote connectivity.

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 16:02:36 ON 06/11/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P23 : LAST SHUTDOWN @ 09:11:31 ON 06/07/2012 BY KEYPAD
FAX REPORT INITIATED BY KEYPAD

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is ON	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	54924010	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9715481	GAL				
FT_103 is 15.09	GPM	TOTAL FLOW is	1986522	GAL				
FT_105 is 6.96	GPM	TOTAL FLOW is	6935434	GAL				
PT_106 is 26.13	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 78.7	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 8.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 78.8	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 641.7	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 1.1 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/2/2012
Time: 11:30
Technician: CD/TC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 6/30/12 Time: 9:25

Alarm Condition:

Process 31 - FA-103

Low Flow Alarm Flowmeter FT-103, MH-3 with Pump 1 online

Non-Fatal Alarm

Cause of Alarm:

FT-103 did not register flow when MH-3 was online within the time allowed (30 second delay).

Corrective Action:

Upon review of the alarm fax, MH-3 pump 1 was onlinne and the aggregate flow meter was registering the proper flow rate for that MH. It appears that FT-103 was not registering flow for a short period. This is supported by that fact that MH-3 was pumping water and the air stripper sump pressure and flow rate are representative of conditions when there is water in the trays (i.e.,air flow would be greater than 700 cfm and sump pressure would be less than 26 in.W.C. if the blower was on and no water was coming in).

CD logged in remotely on 7/2/12 and both pump 1 and 2 for MH-3 triggered flow readings at FT-103 and FT-105.

MH-3 paddwheel to be cleaned during the next monthly OM&M visit.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 09:25:27 ON 06/30/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P31 : LAST SHUTDOWN @ 12:05:30 ON 06/22/2012 BY KEYPAD
FAX REPORT INITIATED BY PROCESS 31

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is ON	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is ON	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55006301	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9731333	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2030030	GAL				
FT_105 is 16.30	GPM	TOTAL FLOW is	7069963	GAL				
PT_106 is 26.25	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 79.6	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 8.4	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 74.8	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 678.8	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 2.3 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/2/2012
Time: 12:00
Technician: CMD

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/1/12 Time: 7:30

Alarm Condition:

Daily scheduled fax Log not received at 7:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

Daily fax received on 7/2/12 at 7:30. Chris Davern successfully logs in remotely on 7/2/12 to test remote connectivity.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/11/2012
Time: 17:00
Technician: CD

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/11/12 Time: 16:19

Alarm Condition:

Process 43, LSH-106.

Building sump high liquid level.

Non-Fatal Alarm

Cause of Alarm:

Building sump being used for groundwater generated during monitoring activities.

Corrective Action:

Confirm with field staff that sump will be manually dewatered while system is cycling automatically.

Confirm via next daily fax that sump has been dewatered by viewing status of LSH-106 input.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 16:19:20 ON 07/11/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P43 : LAST SHUTDOWN @ 12:05:30 ON 06/22/2012 BY KEYPAD
FAX REPORT INITIATED BY PROCESS 43

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is ON	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is ON	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55038684	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9738010	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2048125	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7127347	GAL				
PT_106 is 0.31	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 86.4	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 80.0	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 0.0	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/16/2012
Time: 13:00
Technician: CD

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/16/12 Time: 5:57

Alarm Condition:

Process 47

Low pre-carbon temperature TT-400.

Fatal alarm.

Cause of Alarm:

Critical device testing conducted on 7/13/12 resulted in occurrence of high internal temperature alarm for duct heater. This alarm turns off duct heater and requires local, manual resetting of unit. Not conducted by field staff on 7/13/12.

Corrective Action:

Mobilize to site and manually reset duct heater. Restart system at 12:12 on 7/16/12. Confirm proper operation of duct heater and expected TT-400 temperature.

ALARM Fax Report

EOS Research Ltd. ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 05:57:13 ON 07/16/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD P-1 : LAST SHUTDOWN @ 12:28:21 ON 07/13/2012 BY FT_106
FAX REPORT INITIATED BY PROCESS 47

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is ON	MOTION is OFF	TAH400 is OFF
TAL400 is ON	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55050231	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9739727	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2054699	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7146508	GAL				
PT_106 is 25.64	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 59.4	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 9.8	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 74.5	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 823.1	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/18/2012
Time: 13:00
Technician: CD

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/17/12 Time: 18:06

Alarm Condition:

Process 42

High air stripper sump level LSH-100.

Fatal alarm.

Cause of Alarm:

Liquid level in air stripper sump following ending of manhole pumpdown (i.e., batch) exceeds high level float. No manual changes in system settings or observed changes in operational parameters.

Corrective Action:

Mobilize to site and manually evacuate air stripper sump to drop tethered high float LSH-100 to off position. Evacuation done by partially closing pre-carbon butterfly valve while blower running until air stripper sump level drops sufficiently. System returned to automatic mode at 12:16 on 7/18/12. Opened blower intake damper slightly to lower operating and shutdown liquid level elevation of air stripper sump.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 18:06:22 ON 07/17/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

SHUTD P-6 : LAST SHUTDOWN @ 06:07:13 ON 07/16/2012 BY TT_400
FAX REPORT INITIATED BY PROCESS 42

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is ON	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is ON	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is ON
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is ON	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55054936	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9741959	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2056647	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7154747	GAL				
PT_106 is 21.98	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 79.5	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 9.9	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 81.8	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 841.7	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/24/2012
Time: 9:45
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/24/12 Time: 6:30

Alarm Condition:

Daily scheduled fax Log not received at 6:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

Todd Carignan successfully logged into the system remotely on 7/24/12 at approximately 9:45. The system was in "auto" mode. A fax now was successfully performed indicating that PLC autodialer was functioning properly.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 09:45:39 ON 07/24/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P06 : LAST SHUTDOWN @ 18:16:23 ON 07/17/2012 BY LSH100
FAX REPORT INITIATED BY REMOTE

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55071810	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9746426	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2068088	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7187352	GAL				
PT_106 is 0.21	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 80.4	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 76.4	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 0.0	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/25/2012
Time: 13:00
Technician: CD

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/24/12 Time: 23:10-23:15

Alarm Condition:

Processes 29 and 55.

Low flow alarms for FT-101 (manhole MH-1) and FT-105 (aggregate flow), respectively.

Non-fatal alarms.

Cause of Alarm:

Flow transmitters FT-101 and FT-105 not recording flow despite MH-1-pump-2 being called for. Suspected cause is check valve on MH-1-pump-1 leg of MH-1 piping being stuck in open position, allowing flow from pump-2 to recirculate back into manhole.

Corrective Action:

Log in remotely to system. Manually turn on MH-1-pump-1. Observe flow at both FT-101 and FT-105 at expected rates. Turn off MH-1-pump-1 and confirm that MH-1-pump-2 alone causes flow to be recorded at FT-101 and FT-105. Will monitor for low flow alarm at FT-101 and consider replacement of check valve on MH-1-pump-1 if needed, or during next confined space manhole inspection.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 23:10:44 ON 07/24/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P55 : LAST SHUTDOWN @ 18:16:23 ON 07/17/2012 BY LSH100
FAX REPORT INITIATED BY PROCESS 29

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is ON	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is ON	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is ON	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55071811	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9746426	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2069595	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7188879	GAL				
PT_106 is 23.41	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 76.9	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.9	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 74.8	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 23:15:00 ON 07/24/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P55 : LAST SHUTDOWN @ 18:16:23 ON 07/17/2012 BY LSH100
FAX REPORT INITIATED BY PROCESS 55

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is ON	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is ON	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is ON	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is ON
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55071811	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9746426	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2069595	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7188879	GAL				
PT_106 is 23.38	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 78.8	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 11.9	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 74.8	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/30/2012
Time: 8:00
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/28-29/2012 Time: 6:30

Alarm Condition:

Daily scheduled fax Log not received at 6:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail", or ConMed performing phone maintenance over weekend.

Corrective Action:

Todd Carignan attempted to log into the system remotely, but was unsuccessful in doing so. Schedule field staff to visit site Monday 7/30/12 to confirm the system is online.

Daily fax received on Monday 7/30/12 and Tuesday 7/31/12 at 6:30, as scheduled.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/31/2012
Time: 9:40
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 7/31/12 Time: 6:30

Alarm Condition:

Daily scheduled fax Log not received at 6:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

Todd Carignan successfully logged into the system remotely on 7/31/12 at approximately 9:40. The system was in "auto" mode. A fax now was successfully performed indicating that PLC autodialer was functioning properly.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 09:42:56 ON 07/31/2012
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P22 : LAST SHUTDOWN @ 18:16:23 ON 07/17/2012 BY LSH100
FAX REPORT INITIATED BY REMOTE

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is OFF	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is ON	DH_300 is ON
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	55103076	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9753200	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2092779	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	7248015	GAL				
PT_106 is 25.09	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 78.9	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 9.6	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 78.2	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 824.4	CFM	LIMITS are	L: 400.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 9/24/2012
Time: 13:00
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 9/24/12 Time: 6:30

Alarm Condition:

Daily scheduled fax Log not received at 6:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

Todd Carignan successfully logged into the system remotely on 9/24/12 at approximately 13:00. The system was in "auto" mode. A fax now was successfully performed indicating that PLC autodialer was functioning properly.