INTERIM REMEDIAL MEASURES REPORT
and
WORK PLAN

Jo Lyn Enterprises, Ltd.
21 Valley Street
Mayville, New York 14757

NYSDEC Designation & Identification
Standard Portable Site #C907030

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December 2006

1.0 INTRODUCTION

1.1 <u>Background Information</u>

Jo Lyn Enterprises Ltd. owns and operates the facility, which is located at 21 Valley Street, Village of Mayville, Chautauqua County, New York (Figure 1, Attachment 1). This parcel of land consists of approximately 1.06 acres of land located within the lake plain across Route 394 along the western side of Chautauqua Lake. Historically, the facility was operated as Wappat Saw Company. Later the facility was operated as Standard Portable Products, Inc. One or more of the prior owners reportedly performed various metal working operations, including vapor degreasing using a Trichloroethene (TCE) degreasing unit. It is understood that the spent TCE solvent from this unit was disposed of or stored in an exterior underground septic tank.

The current owner, Jo Lyn Enterprises Ltd. d/b/a Standard Portable ("Jo Lyn"), purchased certain assets including the facility in 1996 and began manufacturing operations. Pre-purchase due diligence investigations identified a septic tank historically believed to be used as storage/disposal for TCE waste generated by the vapor degreasing unit; a remedial program was conducted by Anderson International, Inc. on Jo Lyn's behalf. It should be noted that the septic tank was removed in 1996 at the time of Jo Lyn's purchase. The waste that Jo Lyn generated in association with the vapor degreaser was containerized and transported off-site for disposal. In late 2002, Jo Lyn sought to sell the subject site, and as part of the due diligence process, a Phase II ESA was performed on behalf of the potential buyer's financial lending institution. The results of that Phase II ESA indicated significant levels of TCE contamination in the soil and groundwater in the vicinity of former septic tank.

During May 2006, Jo Lyn retained Hazard Evaluations, Inc. (HEI) to perform a focused Subsurface Site Investigation (SSI) in order to obtain additional data and information concerning the subsurface condition of the site related to the historic, pre-purchase release of Trichloroethene. The goals of the SSI included obtaining: 1) a more thorough characterization of Volatile Organic Compounds (VOCs) within the on-site and off-site soil profile, both vertically and laterally; 2) water table elevations and the approximate on-site groundwater flow direction; 3) definition of the on-site shallow contaminant plume with respect to site boundaries; 4) condition of the subfloor soil/fill in the vicinity of the former degreaser; and 5) identification of any "hot spots" within the soil profile in the impacted area, including any areas exhibiting dense non-aqueous phase liquid (DNAPL) product. The results of the SSI revealed well-defined areas of soil and groundwater contaminated with TCE. In addition, recoverable free phase DNAPL was observed off-site in the vicinity of the southeastern border of the subject site. It is these results of the SSI which have formed the basis for a determination as to the technical and economic feasibility of Jo Lyn performing a voluntary on-site remediation in accordance with the New York State Brownfields Cleanup Program.

1.2 **Purpose**

The purpose of this Work Plan is to provide the NYSDEC with information required by the agency's Draft DER-10 "Technical Guidance for Site Investigation and Remediation", dated December 2002. Using the site data and information collected during the SSI, this document evaluates and identifies a plan for implementing an appropriate Interim Remedial Measure (IRM) that will address: 1) any free phase DNAPL (TCE) encountered on the site, or within the "Kick-out Area" (as defined in the Brownfield Cleanup Agreement), during the remedial activities along the southeast border of the subject site; 2) the contaminated groundwater and soil profile between the likely source area (the former septic tank), and the site boundary; and 3) the potential soil vapor issues within the facility. Per the terms of the Brownfield Cleanup Agreement, this document has been prepared to address on-site (and "Kick-out Area") TCE contamination.

1.3 **Responsibilities of Personnel**

Various personnel have been identified and assigned specific responsibilities for this IRM, as indicated below. All personnel with assigned responsibilities may be working at any location on the subject site, and therefore will receive appropriate instruction concerning the health and safety procedures related to all aspects of this IRM.

Technical Control and Project Oversight

HEI's Principal, C. Mark Hanna, CHMM, has the overall responsibility to commit any resources required to implement and execute the different phases of this IRM. This individual will have the authority to ensure that any aspect of this IRM is expedited and facilitated in accordance with both Jo Lyn's Brownfield Cleanup Agreement and the associated agreements between Jo Lyn and HEI. The resolution of all technical issues will be coordinated through HEI's Principal.

Project Management

General project management tasks will be the responsibility of Scott Overhoff, HEI's Project Manager for site investigation and remediation. The Project Manager's responsibilities will also include acting in a supervisory capacity over all HEI and subcontractor employees during the on-site activities related to this IRM. The Project Manager will also ensure all Quality Assurance/ Quality Control aspects of this project, including equipment decontamination, analytical blank preparation and sample custody procedures.

Health & Safety

All site related responsibilities for the health and safety of all HEI and subcontractor employees, agency personnel and any visitors to the subject site during any remedial activities will be assumed by the Project Manager.

Professional Engineer

Technical aspects of the IRM will be certified by John J. Frandina, PE.

Subcontractors

Various subcontractors to HEI will be utilized for specific aspects of this IRM, including, at a minimum, Zebra Environmental (soil probe and piezometer installation), Paradigm Environmental Services (analytical laboratory) and Frank's Vacuum Truck Service (liquid waste disposal). All subcontractors will be qualified for the tasks assigned to them by HEI, and will carry appropriate insurance.

2.0 INTERIM REMEDIAL MEASURES

2.1 Basis for Selection of Remedial Measures

The SSI identified the presence of: 1) Trichloroethene (TCE) at depth within the on-site soil profile (saturated zone) in an area extending generally from the former septic tank location outside the facility toward the southeast and extending beyond the property boundary; 2) TCE within the shallow groundwater shows a similar, but less widespread, migration pathway relative to the soil contamination; 3) Free phase DNAPL (TCE) was identified off-site at the SB1 location; and 4) TCE in the soil and groundwater beneath the southern warehouse area of the facility and a portion of the current manufacturing area (SB8 and SB13 locations). It should be noted that the 2002 Phase II ESA identified DNAPL in the vicinity of the former septic tank location; during the SSI, the former UST location (SB18), which is located directly upgradient from SB1, exhibited the highest soil TCE level, but no free product was observed. The SSI also confirmed that only soils within the groundwater saturated zone exhibited observable TCE impacts. Field screening results indicated positive VOCs detections in many soil samples collected from the 0'-4' depth interval. These results reflect the presence of impacted groundwater at an average depth of 2 to 3 feet below grade. Consequently, remedial measures for unsaturated soils do not appear to be needed.

2.2 Remedial Goal

The goal of the IRM is to mitigate any significant threats to human health and the environment presented by the existing on-site TCE contamination and to implement proactive measures to prevent off-site migration. This goal will be achieved through the proper application of product recovery (if necessary) and enhanced in-situ bioremediation technologies, as well as minimization of the potential for vapor intrusion into the facility. This goal is consistent with the current and future intended use of the subject site, and has taken into consideration site institutional controls, including prohibition of: 1) Installation of drinking or ancillary use water wells; 2) Construction and/or use of buildings for other than commercial or industrial purposes; and 3) a Site Management Plan.

2.3 Remedial Action Objectives

Remedial Action Objectives (RAOs) for the subject site have been established for four Operable Units (OU), which have been designated as follows: 1) The area on-site and within the "Kick-out Area" which may exhibit free product (OU-1); 2) The on-site shallow groundwater (OU-2); 3) The on-site impacted soils saturated with groundwater (OU-3); and 4) The on-site facility subfloor vadose zone air (OU-4). In OU-1, OU-2, and OU-3, a limited number of VOCs related to the historic, pre-purchase TCE release (including several degradation compounds) exceed either the potentially applicable NYSDEC Recommended Soil Cleanup Objectives for soil [Appendix A, Table 1 of TAGM HWR-94-4046, dated January 24, 1994 (TAGM 4046)] or the Ambient Water Quality Standards and Guidance Values (TOGS 1.1.1, dated June 1998). Potential public health and environmental exposure pathways and the corresponding RAOs which have been prepared to mitigate them for each OU are presented below. Additionally, a qualitative discussion regarding potential off-site human and environmental exposure pathways is provided.

OU-1 (On-Site and "Kick-out Area" Free Product) Exposure Pathways and RAOs

As indicated above, free product (DNAPL TCE) was observed off-site within the soil profile at 10'-13' below grade (bg) along the southeast property boundary. If free product is identified on-site, or within the "Kick-out Area", the potential for human exposure within OU-1 is highly unlikely. There are no known on-site underground utilities in this area of the subject site (based upon the utilities locations for the SSI) that would require Jo Lyn or utility employees to excavate soil from this area. Presuming the institutional controls set forth in Section 2.2 are implemented, the potential for human exposure to contaminants within OU-1 is negligible, based on the fact that OU-1, as defined, includes only the free product that is present at a depth of 10'-13' below grade.

If free product is present on-site, or within the "Kick-out Area", there is potential environmental exposure related to the presence of free product DNAPL in OU-1. Soil contacted by free product adsorbs varying amounts of the product into the soil structure pore spaces and becomes contaminated. In turn, groundwater that passes through the contaminated soils becomes contaminated through natural chemical dissolution or physical dispersion of those contaminants. Other than these on-site environmental media, there are no specific, on-site, sensitive environmental receptors such as streams, lakes or estuaries.

The RAO for OU-1 involves the investigation for and removal of any measurable free product from on-site, and the "Kick-out Area", along the southeastern edge of the site near SB-1. Additionally, the RAO involves the implementation of proactive measures to prevent migration of TCE off-site generally, thereby preventing migration of TCE to Chautauqua Lake.

OU-2 (On-Site Groundwater) Exposure Pathways and RAOs

As indicated in the SSI, groundwater contamination by TCE was identified migrating from the facility toward the southeast. The potential for human exposure to this highly contaminated groundwater within OU-2 is unlikely; however, low level TCE contamination was identified in the groundwater across most of the eastern and southern half of the subject site during the SSI. This area includes the utility off-site rights-of-way along Route 394; therefore, human exposure to contaminated groundwater could occur in the front of the property along the roadway. It should be noted that the contaminant concentrations in the groundwater in this area were determined to be very low (slightly above groundwater standards), and should not result in exposure at levels that would cause dermal contact impacts to utility workers. The ingestion and/or inhalation of these low levels of groundwater TCE in this area would not be anticipated. Assuming that the institutional controls set forth in Section 2.2 are implemented, the potential for human exposure via other exposure pathways within OU-2 is unlikely.

There is potential environmental exposure related to the presence of VOCs in OU-2. However, since the groundwater on-site is already contaminated by TCE, further on-site environmental exposure in not likely.

The RAO for OU-2 includes the reduction of TCE and related VOCs concentrations in on-site groundwater to levels below site-specific cleanup criteria. Additionally, the RAO includes the implementation of proactive measures to prevent migration of TCE off-site generally, thereby preventing migration of TCE to Chautauqua Lake.

OU-3 (On-Site Impacted Soils Saturated with Groundwater) Exposure Pathways and RAOs

As indicated in the SSI, soil profile contamination by TCE was identified in a plume from the facility toward the southeast. The potential for human exposure to the area of impacted soil within OU-3 is unlikely; however, lower level TCE contamination was identified at depth within the soil profile toward eastern property boundary along Route 394 during the SSI. This area may include the utility rights-of-way along Route 394; therefore, human exposure to contaminated saturated soil could occur in the front of the property along the roadway. It should be noted that the contaminant concentrations in the soil near the roadway, possibly in the area of these utilities, was determined to be low (below RSCOs), and should not result in exposure at levels that would cause dermal contact impacts to utility workers. The ingestion and/or inhalation of these low levels of TCE in the saturated soils of this area of OU-3 would not be anticipated. Presuming the institutional controls set forth in Section 2.2 are implemented, the potential for human exposure to contaminants within OU-3 is low.

There is potential environmental exposure related to the presence of TCE and related VOCs in site soils. However, since the soil profile on-site is already contaminated by TCE, further on-site environmental exposure in not likely.

The RAO for OU-3 includes the reduction of TCE and related VOCs concentrations in on-site soils to levels below the Site-Specific Cleanup Levels.

OU-4 (On-Site Subfloor Air/Interior Structure Air) Exposure Pathways and RAOs

As indicated in the SSI, soil and groundwater contamination by TCE were identified under the southern portion of the warehouse floor and adjacent manufacturing areas. The potential human exposure to volatile organic compound vapors may exist within the site structure during occupancy (i.e., work shifts), which currently is approximately 40 hours per week. The magnitude of exposure is likely to be low, given that the building has a moderate level of air exchange (i.e., via drafts) due to its age and condition (i.e., limited deterioration).

The RAO for OU-4 involves the installation of an active sub-slab vapor extraction system to address any concerns relative to soil vapor intrusion into the buildings.

Discussion of Potential Off-Site Exposure Pathways

A number of potential off-site exposure pathways exist that could be affected by potential TCE migration from the site, in the event of a complete exposure pathway. The likelihood of exposure is based on two factors, including: 1) Whether TCE migration has occurred; and 2) The nature of the receptor itself.

Potential off-site human exposure pathways could include exposure to: 1) TCE vapors within nearby residential dwellings due to vapor migration; 2) Dissolved phase TCE or DNAPL from use of ancillary water wells; 3) TCE in soil or groundwater at off-site locations during construction activities; 4) TCE vapors in off-site utility trenches by utility workers; 5) TCE impacted sediments or DNAPL along the shore of Chautauqua Lake.

Potential environmental exposure pathways include exposure to: 1) Off-site soils to TCE impacted groundwater or DNAPL; 2) Exposure of water, sediments, plants and wildlife of Chautauqua Lake to TCE impacted groundwater or DNAPL.

The magnitude of potential exposures identified above could range from very minor (i.e., exposures to dissolved levels below drinking water standards) to very serious (i.e., physical contact of DNAPL by a utility worker). Currently there is insufficient information available regarding the magnitude and extent of the off-site contamination to quantify the magnitude of potentially complete exposure pathways.

2.4 IRM Implementation-Interior

HEI proposes to address the potential for vapor intrusion of TCE and related VOCs into the interior of the portions of southern warehouse and adjacent manufacturing areas of the facility. This IRM will involve the installation of an active sub-slab depressurization and vapor extraction system that will vent to exterior atmosphere. This vapor extraction system will consist of 3" diameter, Schedule 40 PVC piping that extends from beneath the concrete floors of the facility within the selected areas through the roof of the facility for exterior venting. An estimated eight separate extraction points will be selected around the perimeters of both the southern warehouse and the adjacent manufacturing area. Each pipe riser for this system will be installed down through a 6" diameter hole cored through the concrete floor and will be seated onto a small volume of clean 2" diameter clean stone to protect the opening of the pipe and allow adequate vapor flow. The coreholes will then be sealed around the PVC pipe risers with quick-set cement. Each riser will be secured to the inside of the exterior walls of the facility at several locations all the way to the ceiling, and will exit the roof with at least two feet extending above the roof line to allow adequate drafting. A pipe cap will be installed on top of the riser.

The roof will be sealed appropriately to prevent leakage. Appropriately sized vapor extraction blowers will be installed on each pipe or manifolded to multiple pipes, depending on performance and cost. Sampling ports will be installed in each riser to allow the collection of air samples, if necessary.

2.5 IRM Implementation-Exterior

This portion of the IRM will involve the installation of four to eight (depending on the site conditions encountered) 1" diameter piezometers along the border of the site in the vicinity of SB1 in order to: 1) Identify any on-site or "Kick-out Area" free phase DNAPL TCE mass in this area; 2) Perform free phase DNAPL TCE recovery if DNAPL is found on-site or within the "Kick-out Area"; and 3) Provide observation “wells” during a limited pilot test to determine both water yield from each well and the effectiveness of low-flow vacuum extraction of free phase DNAPL.

Four proposed additional 1” diameter PVC piezometers will initially be installed on-site or within the "Kick-out Area" in the vicinity of SB1 along the southeastern border of the site at an approximate distance of fifteen feet apart. Depending on whether free product is encountered in any of these wells, up to four additional 1” diameter PVC piezometers will be installed in this same area in specific locations that reflect the field conditions encountered. All of these wells will be installed using a direct-push drilling rig equipped with a dual-tube system, which will minimize boring cave-in and allow the installation of a complete sand pack. Well screen will consist of 0.030-slotted PVC screen installed to the top of the silty clay confining layer which will extend to approximately one foot above the groundwater surface encountered in each well. The larger slot size in the screen will enhance product flow into the piezometers. It should be clarified that recover piezometers will be placed in optimal locations within Jo Lyn’s property line and the “Kick-out Area” based on field observations made during the installation work.

The area of the site containing the newly installed piezometers will be secured using orange plastic safety fence during the initial IRM activities. If free product is found on-site or within the "Kick-out Area", HEI proposes to test two different low-flow pumping methods to determine which is most effective in recovering product at the subject site. These two methods will include peristaltic pumping and direct vacuum pumping using an air pump and knockout vessel. Initially, a limited pilot test will be conducted over a four day period, with each pumping system being tested for two consecutive workday shifts. The selection of the optimal system will be based on this pilot test based on the best product recovery capability.

Following the selection of the pumping system, if necessary, the selected system pumps will be run at various, manually-controlled, pumping rates with the discharge into clear plastic transfer vessels which will allow HEI to observe both the total fluid recovery and product recovery. This approach will permit the comparison of these recovery relationships. When the transfer vessels are nearly full, the recovered fluids will be transferred into a temporarily staged 1,000 gallon polyethylene product recovery tank equipped with a secondary containment structure. HEI will routinely monitor the groundwater surface levels and product thicknesses in each of these additional piezometers using a dual phase interface probe to determine if any hydraulic influence can be detected during the pumping. The data collected during this limited pilot test will be examined and will be used to determine the appropriate equipment for the proposed IRM [i.e., pump sizes, knockout vessel sizes, product recovery tank(s) size(s), etc.].

The presence of fine sand soils with an apparent moderate hydraulic conductivity, coupled with the relatively shallow clay confining layer, will likely allow a low-flow pumping system approach to achieve hydraulic control and plume remediation. In addition, the presence of cis-1, 2-Dichloroethene (DCE) and Vinyl chloride (VC) in the soil and groundwater analytical results demonstrate that naturally-occurring biodegradation is taking place. Finally, the presence of a relatively deep saturated zone (relative to the unsaturated zone) will facilitate the use of in-situ, enhanced biodegradation technologies.

In order to accomplish the NYSDEC's ultimate goals and objectives for this site, this portion of the IRM will include the following activities:

- Active free product recovery, if free product is identified on-site or within the "Kick-out Area".

- Enhanced biodegradation (using sequentially performed anaerobic and aerobic processes) will be implemented through groundwater extraction, electron acceptor/donor control, nutrient addition, augmentation (if necessary), and reinjection. For case studies which present technological basis supporting this approach, please refer to EPA 542-R-04-16 "DNAPL Remediation; Selected Projects Approaching Regulatory Closure", dated December 2004, EPA 542-R-00-008 "Engineered Approaches to In Situ Bioremediation of Chlorinated Solvents; Fundamentals and Field Applications", dated 2000, and "Sequential Anaerobic/Aerobic Biodegradation of Chlorinated Solvents; Pilot-Scale Field Demonstration" written be Ronald F. Lewis (USEPA, Cincinnati, Ohio).

- Physical contaminant mass source removal will be performed as an ancillary function of the enhanced biodegradation system and will consist of carbon treatment of the extracted groundwater.

<u>DNAPL Recovery</u>

If DNAPL is found on-site or within the "Kick-out Area", and after a determination has been made regarding which pumping method proves most effective for on-site DNAPL TCE recovery, HEI will implement the IRM by selecting the appropriate equipment and refining the operational parameters. For the purpose of this IRM Work Plan, HEI has estimated that the product recovery portion of the IRM, if necessary, will include the following specifications:

- Product recovery will be performed using four to eight (depending upon the number of wells that encounter free product) individual peristaltic pumps which will extract fluids from four to eight, one-inch diameter PVC piezometers. At each extraction point location, 3/8-inch ID HDPE tubing will be inserted to the bottom of the piezometer and will exit the top of the piezometer annulus and into a four-inch diameter Schedule 40 PVC protective pipe casing. This PVC piping will be installed into the ground surface, initially as a manifold system from the individual piezometer locations, with single or double pipe extending to the facility structure where the pumps will be installed.

- The four-inch diameter PVC protective pipe casing will be installed such that it can facilitate system expansion. Individual extraction tubing will be extended through the PVC pipe casing and manifold as it is constructed to reach each extraction point location. Each extraction point, including the PVC pipe, will then be covered with a 12" x 12" limited access roadbox that will be set in concrete. This large roadbox will be of a sufficient size to allow system adjustment and/or replacement of extraction tubing, if necessary.

- Based on the existing data related to the DNAPL, the estimated rate of product and/or groundwater extraction will be 0.25 gallons per hour for each extraction point. This rate will yield approximate system recovery volumes of up to 2.0 gallons per hour, 48 gallons per day and 1,440 gallons per month. The recovered fluid will be pumped into a 3,000-gallon MDPE tank located within a fenced area outside and adjacent to the closest facility wall, in the immediate vicinity of the recovery pumps. This tank will be equipped with a secondary containment structure capable of holding 110% of the volume of the tank. An XP, high-level cut off switch will be installed in the tank which will cut the power to all of the peristaltic pumps in the event that the maximum allowable tank capacity is reached.

- Twice each month, HEI will inspect the recovery system for proper operation. At this time, the volume of recovered product and water will be measured and/or calculated. Groundwater that has been recovered and is observed to be a separate phase will be decanted by an HEI technician, directed through a 55 gallon drum of activated carbon, and injected into the ground surface within original source area (SB18 location). The technician will be careful to ensure that only water and no DNAPL is decanted to the carbon vessel. The filtered water will be sampled, prior to initial reinjection, to ensure all parameters of concern have been adequately reduced in concentration to meet applicable groundwater standards. In addition, periodic sampling will be performed depending on the recovery volumes experienced. Depending on the actual volume of product recovered each month, and over time, HEI will either transfer the product into drums for off-site disposal (in the event of a low volume recovery proportionally) or continue to decant the recovered water monthly until greater than 2,000-gallons of product are contained in the recovery tank, at which time a bulk load of product will be removed for off-site disposal. HEI will prepare and submit Monthly IRM Progress Reports to track the progress of the IRM.

Please Note: HEI has preliminarily calculated the approximate useful life of the drum of activated carbon to be used for decanting by taking the highest VOC concentration of water sampled from the site (~200 ppm from SB9) and the specific retention capacity of the activated carbon (5# carbon per 1,000 gallon water), and included a safety factor that estimates breakthrough at 28% of the activated carbon's retention capacity. In this manner, HEI determined that a 55-gallon activated carbon drum will adequately treat (to below 5 ppm) 10,000 gallons of decanted water with influent VOCs levels (assumed to be TCE) up to 400 ppm. Drums of spent activated carbon will be appropriately labeled and transported off-site for proper regeneration or disposal.

Enhanced Bioremediation

The primary means of remediating the impacted soil and groundwater at the site will be the implementation of enhanced bioremediation technology. Initially, information collected as part of the limited pilot test performed for the IRM will be used to determine both the estimated total water yield from site wells and the limits of the effective zone of influence under variable pumping conditions. This information will assist in determining the number and spacing of the groundwater extraction points. As stated above, the data generated during DNAPL recovery will be used to implement the enhanced bioremediation technology. If DNAPL is not found on-site and these data are not generated, a limited pilot test will be performed to determine the total water yield from site wells and the limits of the effective zone of influence under variable pumping conditions prior to implementation of the enhanced bioremediation technology. System modifications will be performed as necessary based on conditions encountered during installation, as well as the observed response of contaminant concentrations to the applied remedial activities. Such modifications could include extraction or injection point spacing, extraction or injection locations (i.e., each point could be used of either), extraction or injection rates, augmentation products, augmentation rates, use of aerobic or anaerobic conditions, etc.

Subsequently, a row of 15 low-flow extraction piezometers will be located along the southeast property boundary downgradient from the on-site source area (former septic tank). The piezometers will be placed in optimal locations within Jo Lyn's property line and the "Kick-out Area" based on observations made during the installation field work. SB16, one of the existing wells installed during the SSI will be incorporated into the boundary extraction piezometers. Please Note: If any wells are identified as containing free product they will be incorporated into an on-site DNAPL recovery system, this can be accomplished through appropriately designed and installed valve configurations. If wells that are installed do not yield free product they will be incorporated as boundary extraction wells. The fourteen newly installed piezometers will be installed as described above for the recovery piezometers. All wells will be developed using vacuum extraction methods prior use for extraction. Each extraction point will then be covered with a 12" x 12" limited access roadbox that will be set in concrete. This large roadbox will be of a sufficient size to allow system adjustment and/or replacement of extraction tubing, if necessary.

Two rows of moderately spaced injection point piezometers (10 per row) will be installed in an arched orientation similar in shape to the observed contaminant plume. The first row will be upgradient of the source area and the second row will be just within the estimated boundary of the plume. Each injection point will be installed similarly to the extraction points. When the system is operational, this orientation will promote groundwater flow through the soil profile contaminant plume and into the groundwater plume toward the center of the most highly impacted area in an effort to prevent further off-site migration through hydraulic control. Figure 2 presents the proposed recovery, extraction and injection system layout.

The following site monitoring wells installed during the SSI will be fitted with 8-inch diameter limited access manways encased in concrete, and will be developed using vacuum extraction methods to serve as observation wells: SB2, SB6, SB8, SB11, SB13, SB14, SB17, SB18 and SB19. These wells will be used for monitoring groundwater elevations and tracking indicator parameters and contaminant concentrations throughout the duration of the IRM. Monitoring wells will be gauged on a monthly basis for at least the first year of operation.

During the installation of the extraction points, a soil sample representative of the site's impacted soil will be collected and submitted for a bioremedial assay to explore advanced augmentation options. Data obtained from this assay will also be used to assist in determining the most appropriate additives, nutrients and pH adjustments for the bioaugmentation. Baseline data will be collected from the nine observation wells listed above prior to system startup, and will include the following parameters: Selected chlorinated solvents (TCE and daughter compounds), Dissolved oxygen, REDOX potential, pH, Methane, Ferrous iron, Sulfates, Nitrates, Chlorides, Total Organic Carbon (TOC) and Volatile Acids. Quarterly monitoring will be conducted during the first year of the IRM to monitor the progress of the system, after which (depending upon the progress of the remedial system) monitoring will be reduced to a semi-annual frequency throughout the duration of the IRM.

Groundwater extraction will be performed using multi-head peristaltic pumps equipped with flow control for each extraction point. The estimated extraction rate for each piezometer will be 1.5 gallons per hour (36 gallons per day or 1,080 gallons per month) which will result in an extraction rate of approximately 16,000 gallons per month from the entire row of extraction points. Extraction locations that are being used for product recovery will continue to be pumped directly to the 3,000-gallon storage tank. Caution will be exercised to ensure that the overall pumping rate of the product recovery area (OU-1) will not be less than the extraction rate of adjacent areas which could cause a flattening effect of the product layer.

Extraction from wells that have not exhibited free product will be pumped directly into a 1,000 lb. capacity activated carbon vessel. Taking a very conservative approach assuming breakthrough at 28% of carbon saturation, this carbon vessel should treat approximately 55,000 gallons of water with TCE concentrations between 300 to 400 ppm. The testing of the discharge will be performed for TCE after the second month of operation to verify that breakthrough has not occurred, and will be performed monthly thereafter to determine when breakthrough does occur. If free product is found to ensure that free product does not inadvertently get pumped into the carbon vessel, the extraction tubing inlet in the extraction points that are being pumped directly to the carbon vessel will be installed at approximately four feet above the bottom of the well to allow an appreciable amount of DNAPL to collect within a given extraction point, thereby raising the probability free product would be detected during the quarterly groundwater gauging events.

Prior to reinjection, the appropriate amendments needed for the specific phase of the project being performed will be added to the filtered water using chemical metering pumps. Initially, for an estimated six months (Phase I), extracted water will be amended with Lactic acid at a rate that will result in a Lactic acid concentration of 100 mg/l. Nutrients may be added depending on the findings of baseline data collection, and the amendment rates will be adjusted as necessary. The intent of this phase of the remediation is to promote reductive dechlorination of the TCE to DCE and VC. It should be noted that the length of time that anaerobic conditions are maintained will depend on the observed concentrations of DCE and VC. After appreciable increases in DCE and VC concentrations are measured, activities to enhance aerobic conditions will begin.

Phase II of the Sustained IRM will involve the development of an aerobic environment in the subsurface to promote aerobic biodegradation of DCE and VC. This will be accomplished by introducing oxygen into extracted water prior to its reinjection. The Oxygen source will most likely consist of a 65,000 cubic foot compressed liquid Oxygen bulk cylinder. Within the cylinder, liquid Oxygen is converted to a gas and which maintains a tank pressure of approximately 235 psi. This source of Oxygen requires no electric power for compression, generation or air drying. This concept takes advantage of the large economies of scale realized by large Oxygen generation facilities to provide a very low cost Oxygen source. The Oxygen will be regulated to an appropriate pressure as it exits the tank and is delivered into the water to be reinjected.

Reinjection will be performed sequentially, one row at a time, for a specified time period for each row. The initial plan is to inject for a period of 2 hours into the upgradient row and then 1 hour into the plume area row. The intent of this injection scheme is to produce a slight gradient toward the plume center while also providing the benefit of immediate treatment of the interior of the plume. In contrast, the effectiveness of an injection point at only an upgradient location would be limited (in part) by the hydraulic conductivity of the soil profile.

3.0 INTERIM REMEDIAL MEASURES REPORTS

At the completion of the construction of the remedial systems associated with the IRMs, a Preliminary Interim Remedial Measure Report will be prepared which presents and discusses all data and information collected to that point in the remedial program. The following will be included, at a minimum:

- summary of each individual IRM system;
- descriptions of problems encountered during construction and operation;
- description of any changes to the initially proposed specifications;
- quantities and characteristics of any contaminants identified and removed;
- tabulations of data collected during the individual IRM implementation; and
- disposal documentation for any wastes managed as part of the IRM.

Subsequently, Monthly Interim Remedial Measure Progress Reports will be prepared which present and discusses all data and information collected. Each report will be submitted 30 days after the end of the month. The following information will be will be included in the progress reports, at a minimum:

- description of any changes to the initially proposed specifications;
- quantities and characteristics of any contaminants identified and removed;
- tabulations of data collected during the individual IRMs implementation;
- disposal documentation for any wastes managed as part of the IRMs; and
- groundwater monitoring data will be included on a quarterly basis.

Following the completion of the remedial program, a Remedial Measure Summary Report will be prepared which provides an overall synopsis of all previous reports (which will be appended for reference).

4.0 PROPOSED IMPLEMENTATION SCHEDULE

The proposed implementation schedule for the IRM at the subject site includes the following milestones from the date of approval of this Work Plan:

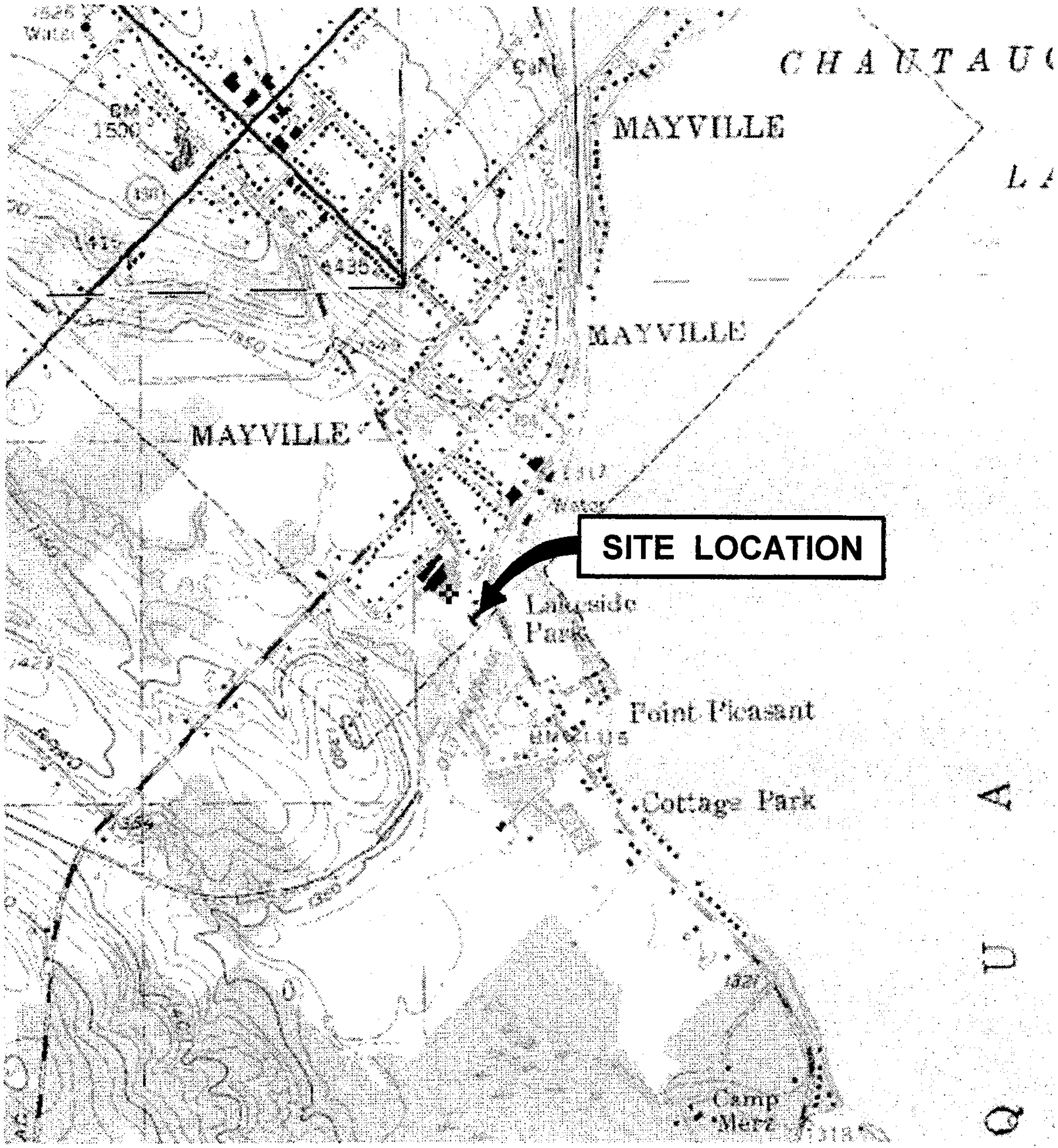
- Initiate IRM pilot testing and subfloor extraction system (0U-4) within four weeks.

- Assuming free product is found on-site, install and implement the IRM product recovery system within eight weeks of agency approval (0U-1).

- Install enhanced bioremediation system after the product recovery system has operated for approximately six months (0U-2 and 0U-3). The implementation of this remedial measure will take place during the Spring of 2007 after the frost has melted and ground temperatures are suitable.

Attachment 1

Figures

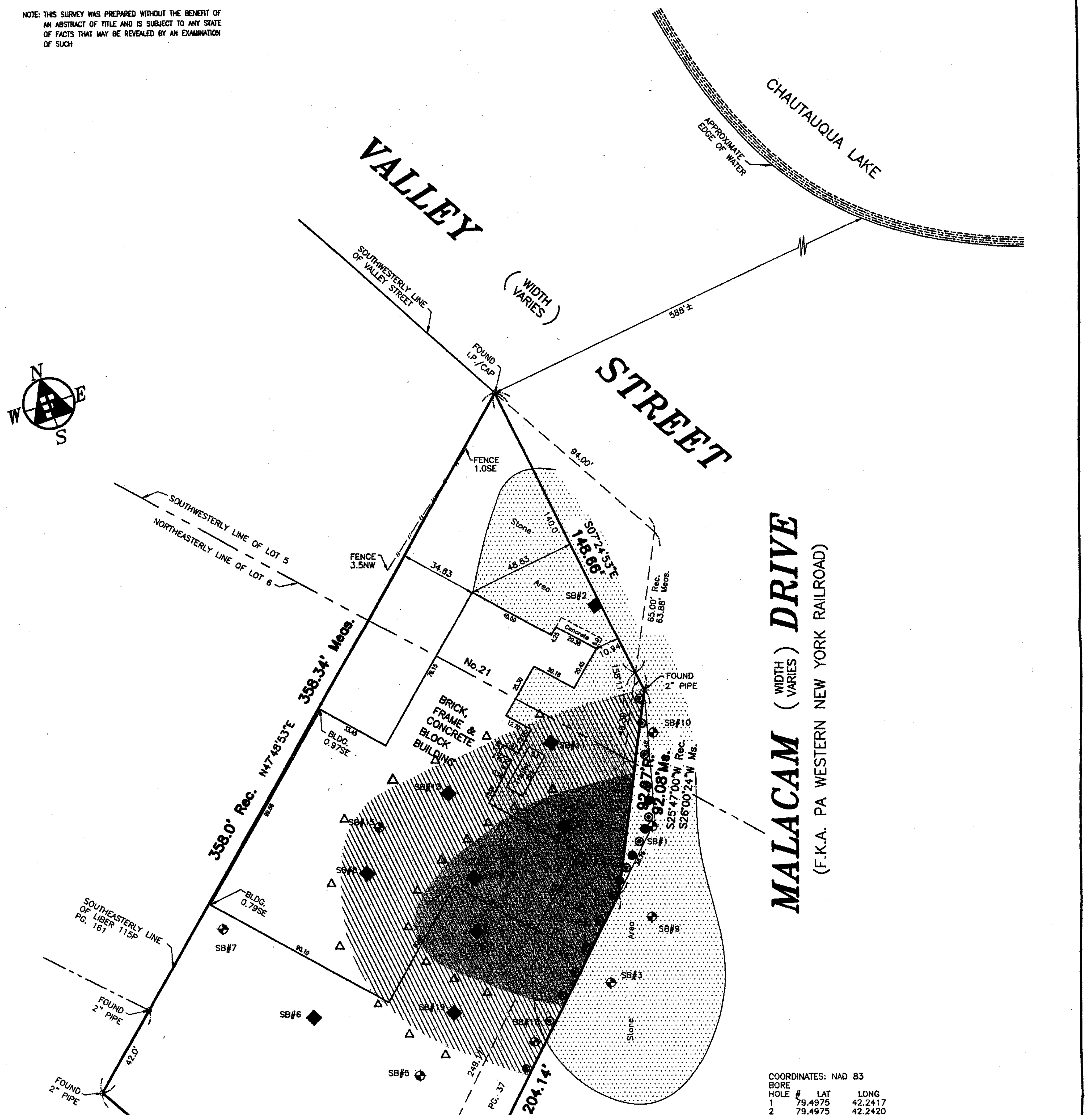


THIS DRAWING IS FOR ILLUSTRATIVE AND INFORMATIONAL PURPOSES ONLY AND WAS ADAPTED FROM USGS, ANGOLA, NEW YORK QUADRANGLE (TOPOZONE.COM).

HAZARD EVALUATIONS, INC.		
Phase I/II Audits - Site Investigations - Facility Inspections		
SITE LOCATION PLAN JO LYN ENTERPRISES, LTD. MAYVILLE, NEW YORK		
DRAWN BY: DLW	SCALE: NOT TO SCALE	PROJECT: 15208
CHECKED BY: CMH	DATE: 12/06	DRAWING NO: 1

Feet	Inches
0.08 –	1 inch
0.17 –	2"
0.25 –	3"
0.33 –	4"
0.42 –	5"
0.50 –	6"
0.58 –	7"
0.67 –	8"
0.75 –	9"
0.83 –	10"
0.92 –	11"
1.00 –	12"

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH



COORDINATES: NAD 83

BORE HOLE #	LAT	LONG
1	79.4975	42.2417
2	79.4975	42.2420
3	79.4975	42.2415
4	79.4978	42.2414
5	79.4980	42.2415
6	79.4981	42.2416
7	79.4982	42.2417
8	79.4980	42.2418
9	79.4975	42.2416
10	79.4974	42.2418
11	79.4976	42.2419
12	79.4976	42.2417
13	79.4978	42.2418
14	79.4978	42.2417
15	79.4979	42.2418
16	79.4978	42.2415
17	79.4976	42.2416
18	79.4978	42.2416
19	79.4979	42.2416

LEGEND

- STONE AREA
- HEAVILY IMPACTED GROUNDWATER PLUME
- HEAVILY IMPACTED SOIL PLUME
- SOIL BORINGS (FROM SSI)
- EXTRACTION POINT
- PRODUCT RECOVERY WELL
- INJECTION POINT
- OBSERVATION WELL

HAZARD EVALUATIONS, INC. HAS RECEIVED PERMISSION FROM FOIT-ALBERT ASSOCIATES TO USE THIS BASE DRAWING, JOB NO. 06-31317, DATED JUNE 30, 2006; FOR THE PURPOSE OF THIS INTERIM REMEDIAL MEASURES REPORT AND WORK PLAN.

HAZARD EVALUATIONS, INC.		
Phase I/II Audits - Site Investigations - Facility Inspections		
IRM LAYOUT JO LYN ENTERPRISES, LTD. MAYVILLE, NEW YORK		
DRAWN BY: DLW	SCALE: 1" = 30'	PROJECT: 15208
CHECKED BY: CMH	DATE: 12/06	DRAWING NO: 2

LOCATION: VILLAGE OF MAYVILLE	SCALE:
COUNTY OF CHAUTAUQUA, STATE OF NEW YORK	1"=30'
PART OF LOTS 5 & 6	DRAWN BY:
OF THE HOLLAND LANDS COMPANY'S SURVEY	O. A. REYES
MAP COVER:	CHECKED BY:
SUBLOT(S):	B. E. WELLS
REVISIONS: 9/28/06 COORDINATES ADDED	RESURVEY
DATE: JUNE 30, 2006 JOB No.: 06-31317	NO COR. MON. SET

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