WORK PLAN

Remedial Design/Remedial Action

Maestri Site
Geddes, New York

Stauffer Management Company
Wilmington, Delaware

July 1995

O'BRIEN & GERE
ENGINEERS, INC.

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1. Introduction

1.1. General

This document is the Work Plan for Remedial Design/Remedial Action (RD/RA) activities to be conducted to address soils exhibiting volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) at the Maestri Site (site) in the Town of Geddes, New York. This Work Plan includes descriptions of the pre-design and design activities that will be completed, as well as a description of anticipated construction activities necessary to implement remedial actions at the site. These activities will be initiated according to the schedule presented as Table 1.

This section of the Work Plan presents background information pertaining to the site, the remedial action objectives (RAOs) and selected remedy for the site, and the purpose and scope of this Work Plan.

1.2. Background

This section presents a description of the site, a chronology of major site-related events, and a summary of current site conditions.

1.2.1. Site description

The Maestri site, located at 904 State Fair Boulevard in the Town of Geddes, New York, is approximately 3 miles northwest of Syracuse, New York. A site location map is included as Figure 1. The site, depicted in Figure 2, is approximately 6.9 acres in area and is covered by grass, brush, and wooded areas. Onondaga Lake,

located approximately 1,500 ft northeast of the site, is the nearest surface water body to the site. Topography of the site is characterized by gently sloping grades which fall to the northeast at slopes up to 5 percent. The site is bordered by State Fair Boulevard to the southwest and residences along Alhan Parkway to the northeast. The lots located northwest and southeast of the site are heavily wooded.

Presently, a 2.8 acre portion of the site near Alhan Parkway is cleared and secured with an 8-ft high chain-linked security fence and two locked gates. A gravel road extends from State Fair Boulevard to the secured portion of the site. A ground water treatment building, concrete pads, monitoring wells, recovery wells, piezometers, and former drum disposal areas at the site are shown in Figure 3.

1.2.2. Chronology of events

This section presents the general chronology of major activities and site related events, as follows:

- 1970's - Drums containing industrial waste materials, allegedly generated by Stauffer Chemical Company, were buried at the site.

- 1987 - Bert Maestri reportedly excavated soil and drums from an area of the site as depicted on Figure 3. Following characterization by the New York State Department of Health (NYSDOH), the excavated materials were disposed at the CECOS/CER landfill in Ohio.

- 1987 - Malcolm Pirnie, Inc. conducted a site investigation on behalf of the Onondaga County Health Department (OCHD) to evaluate the environmental effects of the former waste disposal area in the northeastern portion of the site.

- 1987 - NYSDEC placed the site on the NYS Registry of Inactive Hazardous Waste Sites (Registry Site #7-34-025).

- 1988 - The Stauffer Management Company (SMC) in cooperation with the NYSDEC, voluntarily agreed to conduct

a site investigation to evaluate the necessity for interim remedial measures (IRMs).

- October 4, 1988 - NYSDEC and SMC executed an Order on Consent (#A7-0139-88-01) for development and implementation of an IRM.

- June 1989 - Site investigations began, which included: soil vapor survey; geophysical survey; monitoring well installation; soil boring completion; air sampling; and sampling of surface soil, subsurface soil, and ground water. A geophysical anomaly discovered during the investigation was identified as buried drums.

- January 1990 - SMC submitted an *Interim Remedial Measure (IRM) - Anomaly Excavation and Removal Work Plan*, developed by O'Brien & Gere Engineers, to NYSDEC for review and approval.

- March 1990 - SMC submitted the *Site Investigation and Development of Interim Remedial Measures (SIDIRM) Initial Report* to NYSDEC, which documented the results of the site investigation.

- June 8, 1990 - SMC agreed to complete additional investigations necessary to fulfill the objectives of the IRM program.

- October 1990 - NYSDEC approved a modified Work Plan, submitted by OHM Corporation (OHM) on behalf of SMC, for anomaly (buried drums) excavation.

- December 1990 - OHM completed the anomaly excavation.

- February 1991 - An indoor air monitoring program was implemented, by O'Brien & Gere Engineers, Inc. on behalf of SMC, at selected residences located on Alhan Parkway which are hydraulically downgradient of the site.

- June 18, 1991 - SMC submitted the *Final Report for Excavation of Drums and Soil*, developed by OHM Corporation, to NYSDEC.

- January 1992 - SMC submitted the *Basis of Design Report*, developed by O'Brien & Gere Engineers, to NYSDEC for the ground water recovery and treatment system IRM.

- March 1992 - SMC submitted the *Yield Test Evaluation Report*, developed by O'Brien & Gere Engineers, to NYSDEC summarizing the aquifer performance tests of the recovery wells.

- April 1992 - SMC submitted a Focused *Remedial Investigation/Feasibility Study Work Plan*, prepared by O'Brien & Gere Engineers, to NYSDEC.

- May 1992 - Operation of the ground water recovery and treatment system began.

- September 1992 - Results of field investigations were presented in the *SIDIRM Final Report*, developed by O'Brien & Gere Engineers, which was submitted to the NYSDEC by SMC.

- December 16, 1992 - NYSDEC and SMC executed an Order on Consent (#A7-0226-90-03) for performance of an RI/FS at the site.

- December 1992 - NYSDEC approved the Focused *RI/FS Work Plan*.

- June 1993 - SMC submitted the *Ground Water Recovery Wells Effectiveness Report*, developed by O'Brien & Gere Engineers, to NYSDEC.

- December 1993 - Drums which were identified during the focused RI, containing industrial waste, were excavated by OBG Technical Services on behalf of SMC according to the IRM work plan.

- February 1994 - SMC submitted the *Focused Remedial Investigation Report*, developed by O'Brien & Gere Engineers, to NYSDEC.

- July 1994 - NYSDEC approved the *Focused Remedial Investigation Report*.

- August 1994 - SMC submitted the *Ground Water Recovery System Performance Test Report*, developed by O'Brien & Gere Engineers, to NYSDEC.

- September 1994 - SMC submitted the *Feasibility Study Report*, developed by O'Brien & Gere Engineers, to NYSDEC.

- December 1994 - NYSDEC finalized the *Proposed Remedial Action Plan* (PRAP). The public comment period was open from December 29, 1994 through February 11, 1995 to receive comments.

- January 19, 1995 - NYSDEC hosted a public meeting to present the results of the FS and PRAP for public comment.

- March 1995 - NYSDEC finalized the transcript of the January 19, 1995 public meeting and the Responsiveness Summary to the Public Meeting.

- March 1995 - NYSDEC issued the *Record of Decision* (ROD).

- April 24, 1995 - SMC agreed to undertake the remedial actions identified in the ROD in accordance with Order on Consent (#A7-0226-90-03).

- May 4, 1995 - SMC met with NYSDEC regarding the proposed content of the RD/RA Work Plan, implementation of the selected remedy, and schedule for remedial design and construction activities. At this meeting it was agreed that a RD/RA Work Plan would be presented to the NYSDEC during the first week of June.

A description of IRMs which have been conducted, as well as activities conducted during the Focused RI, are presented in the Focused Remedial Investigation Report (O'Brien & Gere, February 1994) and the Feasibility Study Report (O'Brien & Gere, September 1994). Presented in the following section is a summary of the data generated as a result of those activities.

1.2.3. Nature and extent of contamination

This section summarizes information generated as a result of the RI regarding the characteristics of the site geology and nature and extent of contamination. For convenience, the information regarding subsurface unsaturated soils and ground water are presented separately below.

Subsurface soils. As presented in Section 1.2.2, buried metal drums and contaminated soil were reportedly excavated in 1987 by Bert Maestri. In 1990 and 1993, additional buried metal drums and contaminated soils were excavated as IRMs from the locations depicted on Figure 3. Soil gas and geophysical survey data generated since then do not indicate the presence of additional buried drums on the site.

Soil sample analytical results generated during the RI indicate the presence of residual concentrations of site-related contaminants in subsurface soils near the former drum disposal areas. Based on site data, the soil contamination appears to be limited to those areas. Concentrations of site-related organic contaminants, predominantly xylene, were detected in the subsurface soils down to the ground water table (approximately 11 ft. below grade). Soil sample analytical results did not indicate the presence of metals at concentrations above levels of concern.

The organic constituents listed below were detected in subsurface soils, at the indicated concentration ranges and frequencies (aside from acetone, 2-butanone, methylene chloride, and phthalate esters, which were attributed to blank contamination):

Table 1-1. *Listing of organic constituents detected in subsurface soils.*

Constituent	Concentration range (mg/kg)	Frequency of detection (#detections/#samples)
xylene	0.002 - 9,700	20 / 21
toluene	0.002 - 47	8 / 21
ethylbenzene	0.002 - 20	9 / 21
tetrachloroethene (PCE)	0.097 - 250	3 / 21
2-methylphenol	0.076 - 4.8	7 / 22
2,4-dimethylphenol	1.9 - 48	5 / 22
benzoic acid	21 - 99	2 / 15

Naphthalene was detected in one surface soil sample and was considered an anomaly. Phenanthrene, fluoranthene, and pyrene were also detected in surface soils at the site, but were attributed in the Focused RI Report to anthropogenic background activities.

Ground water. The subsurface geology in the site area consists of unconsolidated fill, glaciolacustrine deposits, and glacial till overlying bedrock. Shale bedrock occurs at depths ranging from 6 ft in the southwestern portion of the site to 28 ft in the northeastern portion of the site.

Overlying the bedrock is a layer of glacial till consisting of a heterogeneous unsorted mixture of clay, silt, sand, and gravel. Unconsolidated sediments consist of silts and fine sands with lesser amounts of gravel and cobbles containing thin interbedded lenses of silty clay. Following the 1990 and 1993 excavation activities, clean tested low-permeability material was used as backfill.

Ground water at the site occurs in the unconsolidated soils and in the bedrock. Ground water elevations indicate that shallow ground water flows in a northeasterly direction toward Onondaga Lake. Shallow ground water is unconfined, and the static ground water table occurs at depths ranging from less than 1 ft at MW-18 to 16.9 ft at MW-14. The shallow overburden aquifer thickness decreases southwest of MW-10 and is not present at MW-5 (Figure 3). Bedrock ground water is confined and the potentiometric surface measured in the seven bedrock monitoring wells generally occurs at depths between 4.3 and 24.6 ft below grade.

Hydraulic conductivity values measured in the overburden deposits ranged from 0.02 ft/day at MW-6 to 136.1 ft/day at MW-16. These values indicate the non-homogeneous nature of the overburden deposits. The average ground water velocity was calculated to be 0.07 ft/day in the unconsolidated sediments, based on an average hydraulic conductivity of 0.53 ft/day, a hydraulic gradient of 0.05 ft/ft and a porosity of 0.39. Based on calculations performed in the *Ground Water Recovery Wells Effectiveness Report* (O'Brien & Gere Engineers, 1993), the average volume of water flowing across the site in the overburden aquifer is approximately 3,400 gallons per day, varying with the time of year.

Hydraulic conductivity values in the bedrock ranged from 0.009 ft/day to 22.1 ft/day. These values indicate the non-homogeneous nature of the bedrock. These values calculated average ground water

velocity in bedrock was 0.03 ft/day, based on an average hydraulic conductivity value of 5.24 x 10^{-2} ft/day, a hydraulic gradient of 0.03 ft/ft, and a porosity of 0.06.

Results of the ground water quality screening and ground water monitoring well sampling and analyses indicate the presence of site-related contaminants in the shallow overburden ground water. No site-related contaminants were detected in the bedrock ground water. The organic constituents listed below were detected in shallow ground water during the RI, at the following concentration ranges and frequencies (excluding 2-butanone and carbon disulfide which were attributed to blank contamination):

Table 1-2. *Listing of organic constituents detected in ground water.*

Constituent	Concentration range (mg/L)	Frequency of detection (#detections/#samples)
xylene	0.002 - 34	15 / 66
benzene	0.004	1 / 66
toluene	0.001 - 4.2	10 / 66
ethylbenzene	0.003 - 1.7	13 / 66
t-1,2-dichloroethene	0.005	1 / 66
2-methylphenol	0.011 - 0.16	5 / 25
4-methylphenol	0.003 - 0.004	5 / 52
2,4-dimethylphenol	0.013 - 0.053	4 / 25

To control the migration of contaminants in the ground water within the shallow overburden aquifer, an IRM was implemented. This consisted of operation of a ground water recovery and treatment system which was installed in 1991 and 1992 and began operation in May 1992. The system was initially composed of six ground water recovery wells screened to capture the saturated thickness of the shallow overburden aquifer and placed to capture the extent of the plume, five piezometers, and a ground water treatment facility. The recovered ground water is treated by filtration and activated carbon adsorption and is subsequently discharged to a local storm sewer in accordance with NYSDEC-established discharge limits. Monitoring requirements and maximum effluent concentrations for the ground water treatment system were established by the NYSDEC. The

effluent flow volume is monitored daily and sampled weekly for selected organic compounds and monthly for inorganic constituents. Monitoring results are reported to NYSDEC monthly.

Analysis of off-site monitoring wells during the RI indicated effectiveness of the ground water recovery system in preventing further off-site migration of ground water contaminants. To enhance the operation of the system, new pump controls have been installed within the six recovery wells. These devices are expected to improve the effectiveness of the ground water capture in the vicinity of the wells. Fourteen additional piezometers were installed in 1994 for testing of the ground water recovery system. Further study of the ground water recovery system performance in 1994 demonstrated that the system is effectively capturing the VOC plume (O'Brien & Gere Engineers, 1994[b]). To maintain well efficiencies, maintenance and redevelopment of the recovery wells will be implemented as needed.

SMC will continue to monitor the quality of ground water and ground water levels to enable quarterly performance evaluations of the recovery and treatment system. Quarterly performance reports will be submitted to NYSDEC and will contain the following elements:

- Biweekly water level data.
- Quarterly water quality results.
- Laboratory reports including Chain of Custody records and QA/QC comments.
- Quarterly ground water level contour mapping.
- Precipitation data available from the National Weather Service.
- Hydraulic effectiveness evaluation.
- Effluent monitoring results.

1.3. Remedial Action Objectives

The RAOs for the remedial program have been established by the NYSDEC and are presented in the ROD. The general goals selected for this site are:

- Reduce, control or eliminate the contamination present within the soils on site.
- Eliminate the potential for direct human or animal contact with the contaminated soils on site.
- Prevent, to the extent possible, migration of contaminants in on-site soils to ground water.
- Provide for attainment of Standards, Criteria and Guidelines for ground water quality at the limits of the existing site boundary.
- Minimize to the maximum extent practicable long-term restrictions to future site usage.

Specific goals for the site are presented in Table 1-3 and are based on the New York State Ambient Water Quality Standards and Guidance Values (9/25/90), and the soil clean-up objectives presented in the Technical and Administrative Guidance Memorandum (TAGM) HWR-92-4046 dated November 16, 1992.

Table 1-3. *Remedial action clean-up objectives.*

Parameter	Soil clean-up level (mg/kg, dry weight)	Ground water clean-up level (ug/l)
Volatile organic compounds (VOCs)		
xylene	1.2	5
toluene	1.5	5
ethylbenzene	5.5	5
benzene	0.06	0.7
tetrachloroethene	1.4	5
t-1,2dichloroethene	0.3	5
total VOCs	10	100

Table 1-3. *Remedial action clean-up objectives (Continued).*

Parameter	Soil clean-up level (mg/kg, dry weight)	Ground water clean-up level (ug/l)
Semi-volatile organic compounds (SVOCs)		
2-methylphenol	0.1	5
2,4-dimethylphenol	–	–
benzoic acid	2.7	50
4-methylphenol	0.9	50
Total SVOCs	500	–

Notes: "–" indicates that objectives are not established.

1.4. Selected remedial alternative

Based upon the results of the RI/FS, the NYSDEC has selected that soils with contaminant concentrations in excess of the RAOs will be excavated and treated on-site. The soils will be screened to remove oversized debris and processed to amend the soils for treatment using *ex situ* biological and vapor extraction. Soils meeting the RAs will subsequently be used to backfill the excavation.

The elements of the selected remedy, as presented in the ROD and discussed during the meeting between NYSDEC and the SMC of May 4, 1995, are as follows:

- Preparation of any remedial pre-design program needed to verify the conclusions of the RI.
- A remedial design program to verify the conclusions of the conceptual design, and provide the details necessary for construction, operation, maintenance and monitoring of the remedial program.
- Excavation and preparation for treatment of soils that contain contaminants in excess of soil cleanup objectives. This may involve an estimated 8,000 cubic yards of contaminated soil.

- Screening of soil to remove cobbles, rocks, and break up the more cohesive soils.

- Addition of material to the soils to control moisture.

- Confirmatory sampling to assess VOC and SVOC residue levels. Soils exhibiting concentrations above the RAOs will be placed into an *ex situ* cell constructed on-site for treatment using *ex situ* biological and vapor extraction processes. Soils meeting the RAOs will be redeposited on-site.

- Redeposition of treated soils on site. Placement of 6 inches of clean top soil over the soil redeposition areas, site regrading, and restoration.

- Collection and treatment of ground water and contaminated surface water during remediation.

- Continued operation of the on-site ground water collection and treatment system with an evaluation annually until site contaminants can no longer be effectively removed or cleanup objectives are met. Ground water treatment will continue to be by carbon adsorption with discharge to a nearby storm sewer in accordance with NYSDEC established discharge limits.

- Monitoring of the soil treatment, water treatment, air discharges and ground water to document compliance with clean-up objectives.

1.5. Purpose of the RD/RA work plan

The purpose of this Work Plan is to present a description of the remedial design and remedial action tasks to be completed to implement the selected remedy for the Site. The remedial project will be implemented in four separate phases. The four phases are:

- pre-design phase
- design phase
- remedial action construction phase

- post-remedial construction phase

Each of these phases are briefly described in the following sections (sections 2 through 5). This Work Plan provides details of the design phase of the remedial project. The remedial action construction and post-remedial construction operation, maintenance, monitoring and reporting phases of the remedial project are addressed as well but specifics of these phases will be provided in the Remedial Design documents.

Presented in Section 6 are the personnel assigned to manage implementation of this work plan and a description of their respective responsibilities. Also presented as part of Section 6 is a Progress and Reporting Plan which:

- Describes the actions that will be taken to apprise the NYSDEC of activities completed and those proposed.
- Identifies the individuals responsible for providing project status updates.
- Provides samples of the forms and format that will be utilized to document project progress.
- Provides the procedures by which the NYSDEC and SMC will be apprised of emergency or unforseen conditions at the site.

2. Pre-design phase

In order to effectively plan and implement remedial activities consistent with the remedy described in Section 1.4, additional investigations and other pre-design activities have been or will be undertaken at the site. At the request of the NYSDEC and the SMC, these investigations and activities are described in a separate abbreviated Work Plan. The information generated as a result of those investigations and activities will be utilized during the design phase described in the next section.

3. Design phase

3.1. General

This section presents the remedial design activities that are to be completed prior to and as part of design of the soils treatment processes for the site. A Basis of Design Report will be generated upon completion of the pre-design investigations. Once the Basis of Design Report has been approved by the NYSDEC, a remedial design will be completed.

3.2. Basis of design report (preliminary design)

A soil treatment Basis of Design Report will be prepared and submitted to the NYSDEC. The Basis of Design Report will present the results and conclusions of the data generated during the RI/FS, and will include the results and conclusions of any pre-design soils sampling and analyses.

The Basis of Design Report will provide a detailed description of the RAOs and the proposed means by which these objectives will be achieved and verified, including the plans for collection, destruction, treatment and/or disposal of wastes generated, as necessary.

The Basis of Design Report will present the details of the soil treatment processes including the anticipated horizontal and vertical limits of soil excavation; the screening of soils; the potential treatability of soils by biodegradation and treatment requirements, *ex situ* biodegradation/soil vapor extraction cell components, construction, and size; air treatment system components and sizing; the backfilling of processed soils to the excavation; and, placement of cover. The Basis of Design Report will also present the details of

modifications that may be made to enhance recovery and treatment of ground water on-site.

3.3. Remedial design

Once the Basis of Design has been approved by NYSDEC, a remedial design will be completed consistent with this Work Plan and the Basis of Design Report. The remedial design will include the elements described in Sections 3.3.1 through 3.3.10.

3.3.1. Technical specifications

Technical specifications for the soils treatment processes which will be included as part of remedial design are anticipated to include: site security; earthwork; backfill; soils handling and processing; erosion and sediment controls; cell liners; piping, valves, air treatment system, electrical instrumentation and controls; conductors and conduit; and restoration of surfaces.

3.3.2. Construction drawings

Final engineered design drawings will be included as part of the remedial design and will be prepared on computer aided drafting (CAD) systems utilizing Auto CAD Release 12. All final contract drawings will be plotted on D-size (24" x 36") sheets and signed by a New York State registered professional engineer. It is anticipated that the design will include the following drawings:

- Cover Sheet and Index to Drawings
- Site Plan
- Excavation Plan
- Bioremediation treatment cell plan and details
- Verification Sampling Plan

- Soil conditioning plan
- Flow and mass balance schematic
- wastewater collection & treatment
- Air treatment system
- Final Grading Plan
- Electrical

3.3.3. Construction quality assurance plan

The Construction Quality Assurance Plan (CQAP) for remedial action activities will describe the procedures for monitoring and documenting compliance with the requirements of the Remedial Design. The CQAP will include a delineation of the responsibilities for the Quality Assurance (QA) management organization, a description of the experience and training requirements for Contractor and QA personnel, a description of QA sampling and testing, identification of corrective measures for failed tests, and an outline of the forms used to summarize daily construction activities and to document QA/QC data. A draft outline of the remedial action CQAP is included as Appendix A.

3.3.4. Draft operation and maintenance plan

A draft Operation and Maintenance (O&M) Plan will be prepared describing the operation, monitoring and maintenance requirements of the *ex situ* bioremediation/vapor extraction cell. A draft O& M plan outline is provided as Appendix B. The draft O&M Plan will be added to and revised during the construction phase so that it accurately describes the remedial processes, including NYSDEC approved changes to the design, and provides reference to O&M instructions provided by equipment manufacturers. The draft O&M plan will be finalized as part of the post-remedial construction phase.

3.3.5. Health and safety plan

Prior to initiating remedial actions at the site, the Contractor will be required to prepare a site-specific HASP to provide guidance for personnel on-site during remedial action activities. This document also will include an air monitoring plan describing procedures to be implemented during construction. The HASP will be prepared in accordance with the Federal Occupational Safety and Health Administration guidelines (29 CFR 1910.120) utilizing data generated during the RI and the pre-design investigation, including Site history and subsurface conditions, available from SMC. The site-specific HASP to be developed by the Contractor will, at a minimum, address the following elements:

- health and safety risk or hazard analysis for each site task and operation;
- employee training;
- required Personal Protective Equipment (PPE) for each site task and operation;
- medical surveillance requirements;
- frequency and type of air monitoring, personnel monitoring, and environmental sampling techniques and instruments to be used;
- site control measures;
- decontamination measures;
- Emergency Response Plan;
- spill containment program; and
- exclusion zone security and entry procedures.

The Contractor selected to implement the remedial design will be responsible for the implementation and enforcement of the HASP while remedial activities are conducted on the Site.

3.3.6. Air monitoring plan

Specific air monitoring procedures to be implemented during construction of the remedial action and community action levels will be developed by SMC during the design phase with input from the NYSDEC and NYSDOH, and will be described in the remedial action HASP prepared by the selected Contractor. However, as a requirement of the Remedial Design Contract Documents, the Contractor will be required to, at a minimum, perform the following and address these items in the HASP:

- Wind direction will be monitored each day of excavation activities, and whenever soils are being exposed, by using a portable wind indicator.

- Real-time monitoring for volatile compounds and particulate levels will be performed at the perimeter of the work area.

3.3.7. Sampling, analysis, and monitoring plan

A Sampling, Analysis, and Monitoring Plan will be prepared that delineates requirements for obtaining and analyzing samples of soil from the base and walls of the excavation, and from the processed soils to document VOC/SVOC levels for comparison to RAOs. The plan will also delineate requirements for monitoring performance of the *ex situ* bioremediation/vapor extraction cell and for monitoring the impacts, if any, to the ground water and existing ground water treatment system.

3.3.8. Construction implementation plan

A Construction Implementation Plan will be developed and will provide a description of how O'Brien & Gere anticipates the Contractor will accomplish the various construction phases necessary to complete the soil remedial activities on-site. The Plan will address issues such as the staging and handling of soils, materials and equipment, and the decontamination of tools and equipment. The plan would be utilized for planning purposes, to inform the community of proposed activities, and for evaluating Contractor proposed methods.

3.3.9. Draft construction schedule

An anticipated construction schedule will be prepared by O'Brien & Gere for planning purposes, and for comparison to the actual construction schedule to be provided by the Contractor prior to implementing remedial activities on-site. The schedule will identify major tasks (e.g., mobilization, preparation of the *ex situ* soils treatment cell, excavation activities, sampling and analyses, soils treatment start-up and completion, backfilling, and restoration) and key milestones. The schedule will also note items expected to have long purchase lead times.

3.3.10. Permit applications

An application for a Process Exhaust or Ventilation System Permit for operation of the *ex situ* bioremediation/soil vapor extraction cell will be provided to the NYSDEC for review. An application for modification of the existing State Pollutant Discharge Elimination System (SPDES) permit will also be provided, if necessary, for excavation dewatering. Consistent with past local remedial projects, the Contractor selected to implement the design will be required to complete the necessary applications for a building permit.

4. Remedial action construction phase

4.1. General

Upon NYSDEC's approval of the construction drawings, technical specifications, and CQAP, the remedial action construction phase of the project will be initiated. This phase will commence upon approval of the Remedial Design and it will be completed upon NYSDEC's certification of completion of construction work and the successful start-up of the soil bioremediation/vapor extraction treatment system, if required to treat SVOCs.

4.2. Requirements

Within 60 calendar days of NYSDEC's written approval of the Final Design, a Contractor will be selected by SMC. Within 30 days of award of the Contract, or other time period specified, the Contractor will mobilize equipment on-site. Also within 30 calendar days of award of the Contract, the following items will be submitted to NYSDEC:

- A construction schedule of sufficient detail to monitor the progress of key project phases and tasks on the Contractor's critical path. The schedule will be maintained by the Contactor and the Contractor will provide a letter detailing the circumstances of any changes to or delays of this schedule.

- Requests for modification of the approved Final Design based on construction methods identified by the Remedial Action Contractor.

4.3. Performance of remedial action construction

Upon receipt of NYSDEC's written approval of the construction schedule, as well as the written approval or disapproval of any requests for modification of the final design, remedial action construction activities will be initiated in accordance with this Work Plan and the approved Remedial Design.

5. Post-remedial construction phase

5.1. General

This section identifies the documents that are to be submitted to the NYSDEC following completion of the remedial actions described within this Work Plan and shown or specified in the NYSDEC approved Remedial Design.

5.2. Notices of completion

Within 30 calendar days of screening, construction and start-up of the *ex situ* bioremediation/vapor extraction cell as necessary to further treat soils, a Notice of Substantial Completion for Remedial Action Construction will be submitted to the NYSDEC.

A Notice of Final Completion for Remedial Action Construction will later be submitted within 30 calendar days of completing *ex situ* bioremediation/vapor extraction treatment of soils, as necessary, and final backfilling, covering, and restoration of surfaces.

5.3. Operation and maintenance plan

Within 60 calendar days of completing construction and initiating operation of the *ex situ* bioremediation/vapor extraction cell, a final Operation and Maintenance Plan will be submitted to the NYSDEC for approval.

5.4. Record drawings and certification

Within 60 calendar days of completing construction and initiating operation of the *ex situ* bioremediation/vapor extraction treatment cell, a set of Record Drawings depicting the construction of the cell will be submitted to the NYSDEC. The Record Drawings will accompany a letter, signed and stamped by an engineer licensed to practice in New York State, certifying that the soil treatment cell was completed in accordance with the NYSDEC-approved Remedial Design, and the NYSDEC-approved modifications thereto.

Record Drawings depicting the limits of excavations made will also be provided accompanied by the results of clean-up verification sampling analyses.

5.5. Post-Construction summary report

Within 60 calendar days of completing screening of soils, *ex situ* bioremediation/vapor extraction treatment of soils as necessary, and backfilling, covering, and restoration of surfaces, a Post-Construction Summary Report will be submitted to the NYSDEC. The Post-Construction Summary Report will present an overview of the remedial actions completed at the site. The summary report will document construction-related activities, including locations, depths, and volumes of soils excavated and verification sampling results for excavations, for submittal to the NYSDEC.

The Post-Construction Summary Report will be accompanied by Record Drawings depicting the final grades after surfaces are restored.

5.6. Remedial actions contingency plan

If it becomes apparent that the remedial actions completed in accordance with this Work Plan are not effectively remediating the site, a Remedial Actions Contingency Plan will be prepared and submitted to the NYSDEC. A Contingency Plan would include a description of the status of remedial efforts, present data obtained as a result of the monitoring efforts, and present practicable and feasible measures that may be implemented to facilitate remediation. In the event that practicable measures are not available, the Contingency Plan would present the data and conclusions that may warrant a revision of the RAOs for the site.

5.7. Site monitoring plan

A Site Monitoring Plan will be submitted to the NYSDEC within 60 calendar days of completing screening of soils, *ex-situ* bioremediation/vapor extraction treatment of soils, as necessary, and backfilling, covering and restoration of surfaces. The Site Monitoring Plan will present a summary of the RAOs and closure requirements, and will present procedures for monitoring the site and documenting levels achieved as a result of the remedial action.

6. Progress monitoring and reporting

6.1. General

This section describes the methods to be used to monitor and document the progress of the remedial action activities. The progress will be monitored by various members of the project management team, will be documented, and will be presented at progress meetings. This section also presents procedures for notification of appropriate parties of unforeseen and emergency conditions and of field changes.

6.2. Project management and responsibilities

A project management team from O'Brien & Gere has been assembled to plan, implement, and monitor the progress of remedial design and remedial activities at the Site. O'Brien & Gere also will be responsible for preparing the monthly progress reports, incorporating data provided by the Contractor, for submittal to SMC and the NYSDEC.

The individuals assigned to this program, as well as a description of their respective roles and responsibilities, are defined below.

6.2.1. Project officer

David G. Van Arnam, P.E. will serve as Project Officer for this project. As the Project Officer, Mr. Van Arnam will be responsible for providing technical guidance and critique of work products. Mr. Van Arnam will also be the individual who will sign and seal the design documents descried within this Work Plan.

6.2.2. Project manager

Deborah Y. Wright, C.P.G., will serve as the project manager for this project. As the manager, Ms. Wright will make project assignments and direct and coordinate the efforts of the project team.

6.2.3. Task coordinator

David S. Towers, P.E., will be responsible for coordinating the remedial design and remedial action tasks. Mr. Towers will also serve as the liaison between the NYSDEC, SMC, and O'Brien & Gere Engineers, Inc. for this project.

6.2.4. NYSDEC project manager

Mr. Gary E. Kline, P.E., will serve as the project manager for the NYSDEC. Mr. Kline will provide technical review of project deliverables and serve as the liaison between other divisions within the NYSDEC, NYSDOH, the community, and SMC. Mr. Kline will also be responsible for coordinating the review of submittals made by SMC to the NYSDEC and NYSDOH.

6.2.5. NYSDOH project manager

Mr. Ron Herkins will serve as the project manager for the NYSDOH. Mr. Herkins will review submittals made by SMC for compliance with NYSDOH requirements and will provide comments to any submittals to Mr. Gary Kline.

6.2.6. Stauffer Management Co., project manager

Joseph A. MacArthur will serve as the project manager for SMC. He will be responsible for implementation of this project and will be the primary contact with OB&G and the NYSDEC.

6.2.7. Stauffer Management Co., project engineer

Christopher Goddard will serve as the project engineer for SMC. He will be responsible for reviewing the detailed design of the project and moving it into the construction and operational phase.

6.3. Progress monitoring and documentation

Progress reports, using the format presented in Appendix C, will be prepared for submittal to NYSDEC each month, starting one month after the approval of this Work Plan and the effective date of the Consent Order, and continuing until the tasks described within this Work Plan are complete. These progress reports, which will be submitted to the NYSDEC by the 15th day of each month, will present a summary of the activities performed during the proceeding month and a summary of the activities proposed to be undertaken within the next 45 calendar days.

The progress reports will also include information regarding estimated task completion dates, and provide a description of unresolved delays encountered or anticipated that may affect the future schedule for implementation of the remedial design and remedial action activities and efforts made to mitigate those delays or anticipated delays.

6.4. Unforeseen and emergency condition notification

In the event of a potentially significant unforeseen or emergency condition, the Contractor will be required to immediately notify O'Brien & Gere and the SMC. O'Brien & Gere, on behalf of SMC, will subsequently notify the NYSDEC by telephone, with follow-up notification provided in writing. Notices given will apprise the recipient of the nature of the unforeseen or emergency condition, the potential impact to the project schedule, and the measures taken or initiated to remedy the situation or to minimize impacts.

For no unforeseen or emergency condition shall the NYSDEC require advance notice, or penalize SMC or O'Brien & Gere for failure to provide advance notification.

6.5. Field changes

During performance of the Remedial Actions described in this Work Plan or shown or specified in the design documents, conditions on site may necessitate changes to the NYSDEC approved design and/or associated work plans. Such requests will be submitted to the NYSDEC and include a description of the situation/conditions necessitating a field change, and a description of the modifications proposed and the potential impact to the completion of the remedial actions. Except for emergency conditions requiring immediate action, field changes will not be implemented without written approval by SMC and the NYSDEC.

6.6. Project schedule

A project schedule for pre-design and design activities, and for initiation of remedial activities on site is included as Table 1. The schedule identifies significant pre-design and design milestones including construction contract award and will be periodically updated, as required, to reflect actual or anticipated performance of the activities.

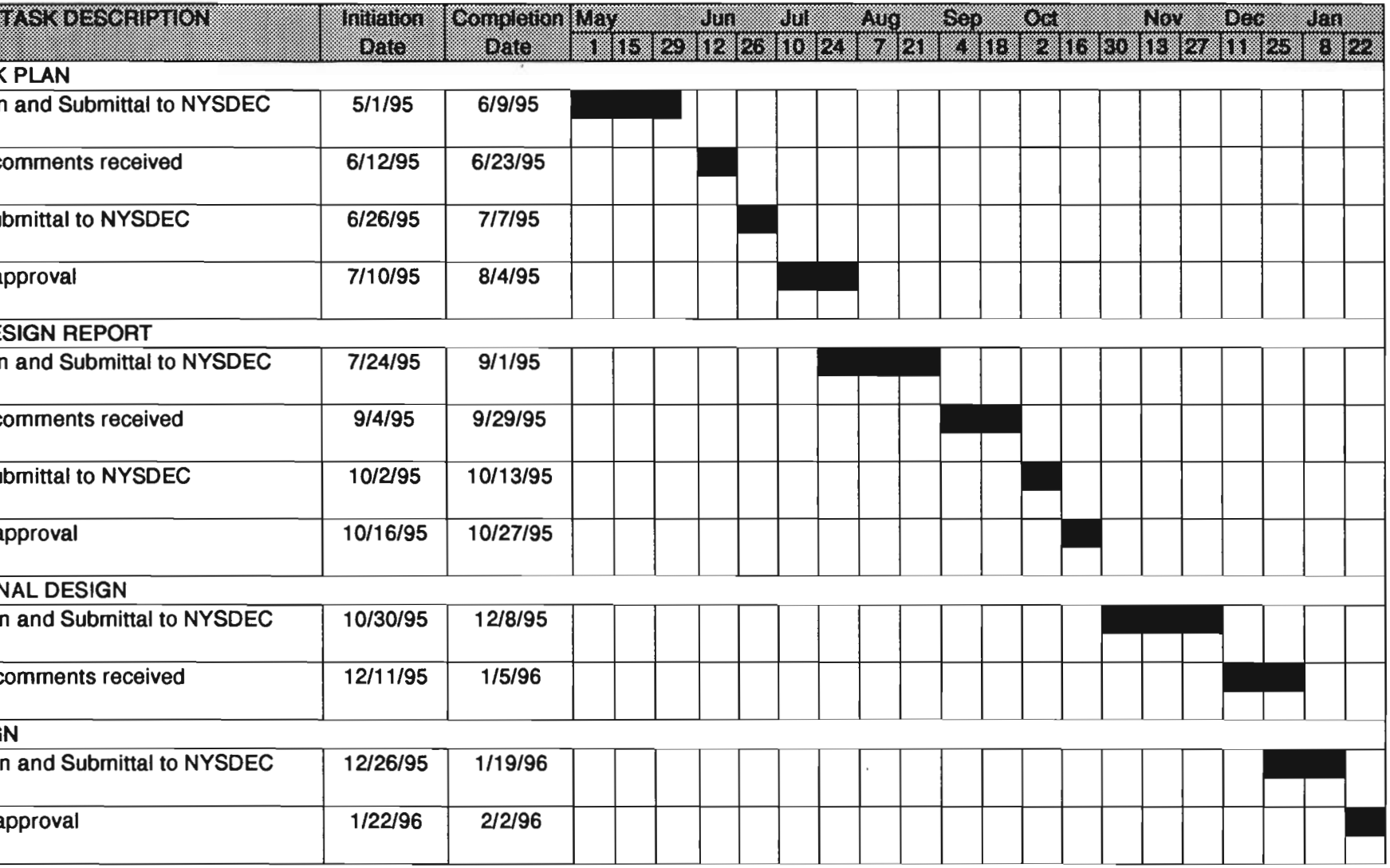
A separate construction schedule will be submitted, within 30 days of award of the Construction Contract, identifying key project phases and milestones established by the remedial Contractor selected by SMC. Also, separate schedule for routine sampling and maintenance will be included as part of the Operations and Maintenance Plan.

Tables

TABLE 1
REMEDIAL DESIGN SCHEDULE

REMEDIAL DESIGN/REMEDIAL ACTION WORK PLAN
MAESTRI SITE

TASK DESCRIPTION	Initiation Date	Completion Date
RD/RA WORK PLAN		
Preparation and Submittal to NYSDEC	5/1/95	6/9/95
NYSDEC comments received	6/12/95	6/23/95
Revised submittal to NYSDEC	6/26/95	7/7/95
NYSDEC approval	7/10/95	8/4/95
BASIS OF DESIGN REPORT		
Preparation and Submittal to NYSDEC	7/24/95	9/1/95
NYSDEC comments received	9/4/95	9/29/95
Revised submittal to NYSDEC	10/2/95	10/13/95
NYSDEC approval	10/16/95	10/27/95
95% PRE-FINAL DESIGN		
Preparation and Submittal to NYSDEC	10/30/95	12/8/95
NYSDEC comments received	12/11/95	1/5/96
FINAL DESIGN		
Preparation and Submittal to NYSDEC	12/26/95	1/19/96
NYSDEC approval	1/22/96	2/2/96



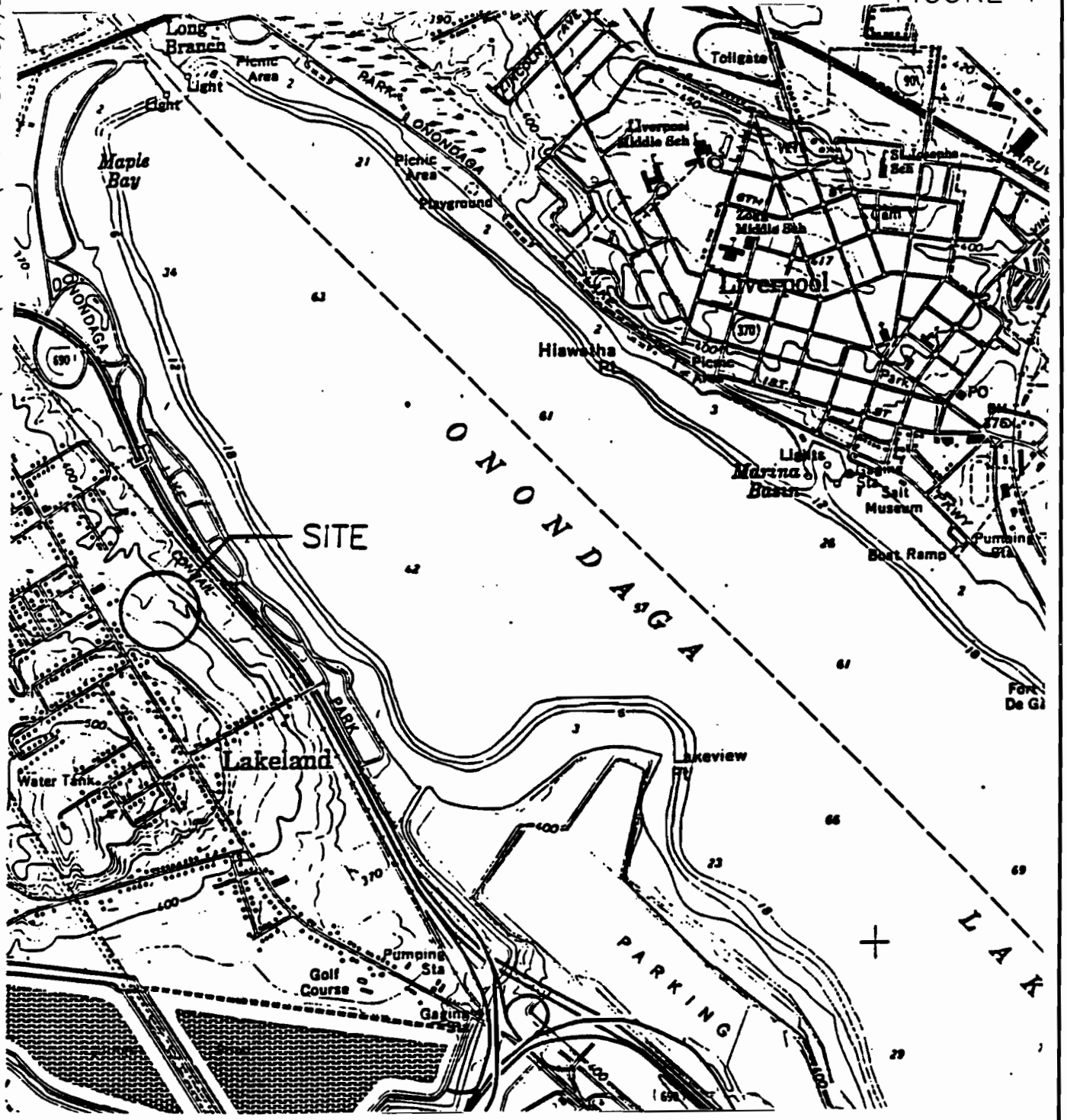
Notes: (1) Shading indicates the approximate range of dates the task is expected to be completed.
(2) Schedule does not include the performance of additional design investigations that may be required by the NYSDEC.

tab6RD

Figures

FIGURE 1

MWH H:\DIVISION\71\MAESTRI\04F.DWG SF:1 6/1/95



ADAPTED FROM 7.5 MIN. U.S.G.S. SYRACUSE WEST QUAD MAP, SYRACUSE, NEW YORK

REMEDIAL DESIGN / REMEDIAL ACTION
MAESTRI SITE
GEDDES, NEW YORK

SITE LOCATION PLAN

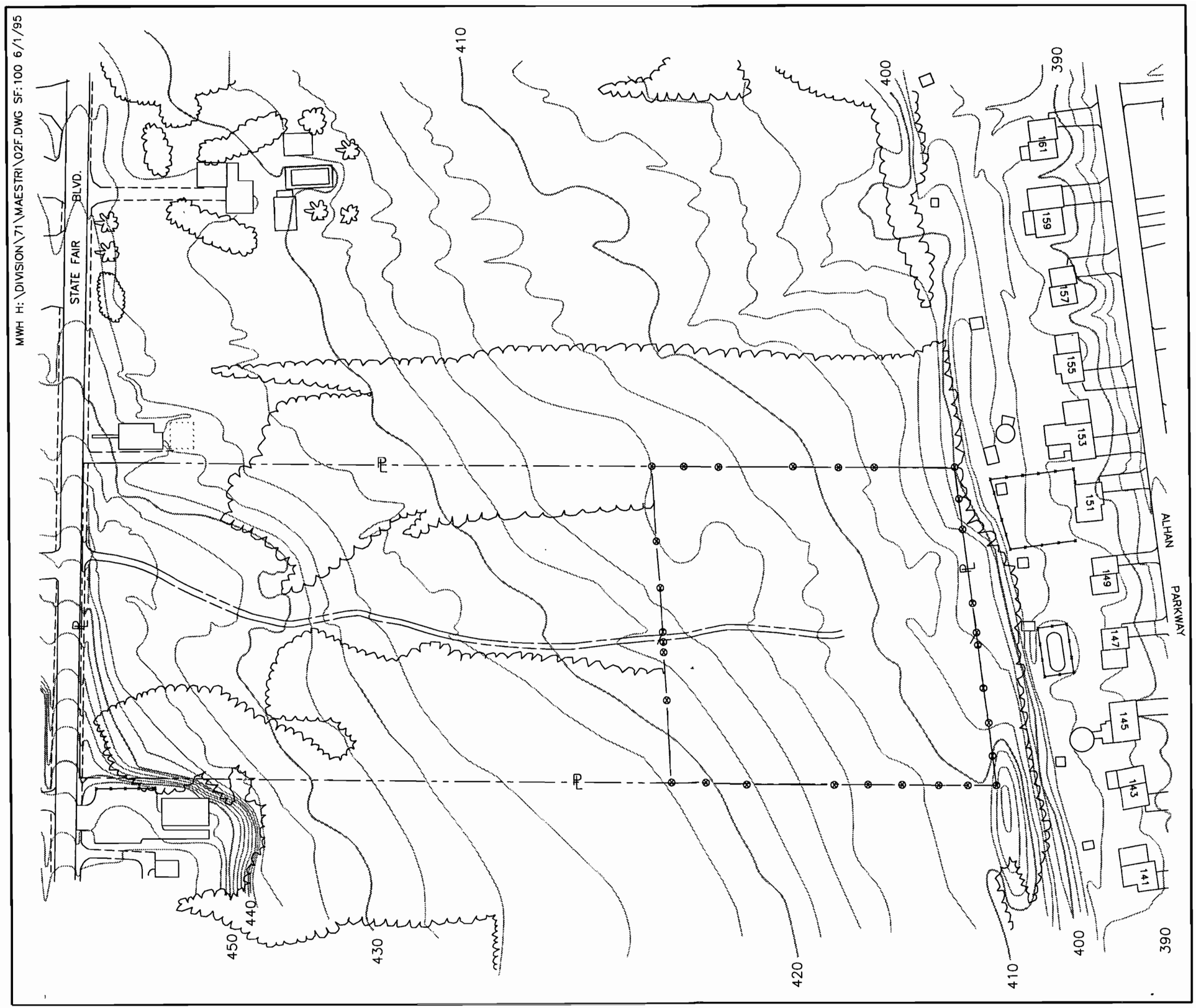
0 2000 4000

APPROX. SCALE IN FEET

FILE NO. 5618.005-04F

O'BRIEN & GERE ENGINEERS INC.

FIGURE 2



LEGEND

- TREE LINE
- ACCESS ROAD
- FENCE
- 8' HIGH SECURITY FENCE
- MAESTRI SITE PROPERTY BOUNDARY
- 150 RESIDENCE

REMEDIAL DESIGN/
REMEDIAL ACTION
MAESTRI SITE
GEDDES, NEW YORK

SITE TOPOGRAPHIC MAP

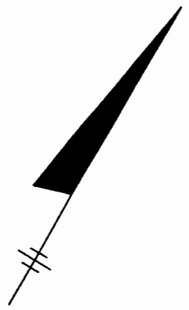
0 100 200

APPROX. SCALE IN FEET

FILE NO. 5618.005-02F

O'BRIEN & GERE ENGINEERS INC.

FIGURE 3



LEGEND

- TREE LINE
- ACCESS ROAD
- MAESTRI SITE PROPERTY BOUNDARY
- FENCE
- 8' HIGH SECURITY FENCE
- MONITORING WELL
- RECOVERY WELL
- PIEZOMETER
- APPROXIMATE LIMITS OF 1987 EXCAVATION
- APPROXIMATE LIMITS OF 1990 EXCAVATION
- APPROXIMATE LIMITS OF 1993 EXCAVATION

REMEDIAL DESIGN/ REMEDIAL ACTION MAESTRI SITE GEDDES, NEW YORK

SITE MAP (ENLARGED)

0 50 100

APPROX. SCALE IN FEET

FILE NO. 5618.005-03F

O'BRIEN & GERE ENGINEERS INC.

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Appendices

O'BRIEN & GERE
ENGINEERS, INC.

APPENDIX A

CONSTRUCTION QUALITY ASSURANCE PLAN (CQAP) OUTLINE

Construction Quality Assurance Plan Outline

1. Quality Assurance Management Organization Responsibilities and Qualifications

2. Identification of Appropriate Lines of Communication

3. Contractor and Quality Assurance Personnel

4. Determination of the Quality of the Soils Treatment

    4.1 Inspections
    4.2 Verifications
    4.3 Audits
    4.4 Evaluations of Materials and Workmanship

5. Documentation of Construction Quality Assurance Activities

    5.1 Daily Construction Activities Summary
    5.2 Inspection and Testing Reports
    5.3 Problem Identification and Corrective Measures Reports
    5.4 As-built Drawings

APPENDIX B

OPERATIONS AND MAINTENANCE PLAN OUTLINE

Operations and Maintenance Plan Outline

1. Process Narrative

2. System Operations

   2.1 Inspections
   2.2 Regulatory Compliance
   2.3 Operation Efficiency
   2.4 Emergency Response
   2.5 Data Acquisition and Documentation
   2.6 Schedules
   2.7 Operational Alternatives

3. Treatment Systems Maintenance

   3.1 Preventative Maintenance Program
   3.2 Spare Parts
   3.3 Treatment System Shutdown Response
   3.4 Site Maintenance

4. Regulatory Compliance and Public Relations

   4.1 Permits
   4.2 Public Relations

5. Performance Monitoring

   5.1 Monitoring Sampling and Analysis
   5.2 System Performance Monitoring
   5.3 Data Acquisition and Documentation

6. Quality Assurance and Quality Control

7. Vendor O & M Instruction Manuals

APPENDIX C

PROGRESS REPORT FORMAT

MAESTRI SITE
GEDDES, NEW YORK
(Site #7-34-025)

Monthly Progress Report for: _____

(a) Activities Performed

This section will provide a brief description of the activities completed and the documents submitted to or received from the NYSDEC during the month for which this report was prepared. For activities not complete, an estimated percentage of completion will be provided.

(b) Sampling and Test Results

This section will present the non-privileged data generated pursuant to the RD/RA Order on Consent obtained during the month as a result of sampling and test efforts. However, an interpretation of the data, and conclusions made based on the data, may not be presented in this Report. Interpretations and conclusions will be presented within the documents proposed within the RD/RA Plan.

(c) Projected Activities

This section will present a brief description of the activities proposed to be undertaken during the next 45 days.

(d) Project Schedule

This section will identify if there have been any conditions encountered that may delay completion of the project. Included will be a brief description of the condition, the measures taken to remedy it, and the anticipated impact to the completion of the remedial efforts.

(e) Work Plan Modifications

This section will identify NYSDEC approved modifications made during the month, and identify proposed modifications that may be necessary in the future.

(f) Activities in Support of Citizen Participation Plan

This section will identify activities performed and proposed in support of the Citizen Participation Plan.