FINAL ENGINEER'S REPORT AND CERTIFICATION

Active Industrial Uniform Company Site
Lindenhurst, New York
NYSDEC Site No. 1-52-125

30 September, 2002

Prepared for:

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7017

Prepared by:

ENVIRONMENTAL RESOURCES MANAGEMENT
520 Broad Hollow Road, Suite 210
Melville, New York 11747
72704.02.1744

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

Environmental Resources Management (ERM), has prepared this Final Engineer's Report and Certification for the groundwater recovery and remediation project for the Active Industrial Uniform Site, located in Lindenhurst, New York. The purpose of this report is to provide a brief project summary, describe all significant variations from the Contract Documents, aerial and vertical survey of the extent of excavations, and provide the as-built drawings.

1.2 SITE DESCRIPTION AND HISTORY

The Active Industrial Uniform Company site is situated on a one half acre parcel of land on the south side of Montauk Highway, in the Village of Lindenhurst, New York. The Site is located approximately 100 yards west of South Wellwood Avenue. The Great South Bay is approximately 4,200 feet to the south, and Little Neck Creek is approximately 800 feet to the southwest of the Site.

Initial investigations at the site began in 1987. In 1991 an Interim Remedial Measure (IRM) was implemented at the site while a Remedial Investigation/Feasibility Study (RI/FS) was started. The IRM chosen for this site was a Soil Vapor Extraction (SVE) system. Upon completion of the RI/FS it was determined that the groundwater between the site and Little Neck Creek was contaminated. The RI/FS identified a shallow plume with concentrations of tetrachloroethene (PCE) as high as 20 ppm and heading southwest toward Little Neck Creek (approximately 800 feet away). Little Neck Creek discharges into the Great South Bay, approximately 4,200 feet to the south. On March 26, 1997 NYSDEC issued a Record of Decision (ROD) that called for the following actions:

1) expansion of the SVE system; 2) installation of an air-sparging system; and 3) installation of a groundwater pump and treat system. The system was designed by Camp Dresser & McKee (CDM). It has since been determined that the groundwater pump and treat system will adequately remediate the spill, therefore the SVE and air-sparging systems will not be installed.

On July 28, 2000 NYSDEC awarded Contract No. 0004134 for remedial construction at the Active Industrial Uniform Site to Blue Water Environmental, Inc. (BWE). Construction oversight was to be performed by ERM.

A summary of project milestones and dates is provided below:

Pre-Bid Conference	June 8, 2000
Bids Received	June 27, 2000
Notice of Contract Award to BWE	July 28, 2000
Construction Kickoff Meeting	November 8, 2000
Notice to Proceed	November 13, 2000
Drywell Sediment/Soil Excavation	November 28 and 29, 2000
Transportation and Disposal of Waste Materials	January 25 and 26, 2001
Pre-Construction Meeting for Remediation System	April 18, 2001
Site Mobilization for System Construction	June 4, 2001
Substantial Completion of Construction	December 24, 2001
Commencement of Operations Phase	December 27, 2001

1.3 *REMEDIAL DESIGN DESCRIPTION*

This project requires the remediation of volatile organic compound (VOC) contaminated soil and groundwater located at Active Industrial Uniform Co. Site, Lindenhurst, New York. The project included excavation of existing dry wells and surrounding material, and ex-situ groundwater remediation. The groundwater treatment system was constructed by Blue Water Environmental, as shown on the as-built drawings (Appendix A) and as described herein.

The design indicated that the initial Work would consist of the removal of eight existing drywells and an approximately 64 cubic yards of drywell sediment. Blue Water Environmental, under the direction of NYSDEC and ERM excavated the contaminated sediments vertically until groundwater was encountered and laterally until clean soil was reached. A total of 12 drywells were found and 600 cubic yards of sediment was excavated and disposed of. The limits of the excavation are shown on drawing C-1 in Appendix A. The drywell sediments and contaminated soils were disposed at the CWM Chemical Services Facility in Model City, New York (EPA ID No.: NYD049836679).

The remedial system consists of two (2) groundwater recovery wells (RW-1, located on-site, and RW-2, located on Orchard Street), each furnished with a submersible Grundfos well pump. The Grundfos well pumps supply groundwater to two (2) Branch Environmental air stripping towers. The Grundfos well pumps are designed to operate continuously unless the pump controller detects a high backpressure or the well runs dry.

The two (2) Branch Environmental Stripper Towers, Model 48T25H, have been installed to remove dissolved chlorinated compounds from the recovered ground water. A blower pulls air through the recovered groundwater in order to strip (volatilize) out the contaminants. The towers are piped so that they may be run in series, parallel, or independently depending on contaminant levels, required flow rates, or maintenance activities. The Valve Schedule in the systems Operation and Maintenance (O&M) manual shows the settings for each valve depending on the mode of operation. The air stripping tower system is equipped with an acid circulation system to periodically remove iron fouling from the media. Each tower is connected to a Goulds model 8SH1M5D3 end suction pump to discharge the treated groundwater through a Harmsco 10-micron triple cartridge filter, and then through 4-inch diameter underground High Density Polyethylene (HDPE) piping to the existing storm sewer catch basin along Shore Road. The system's air discharge passes through two 5,000 pound vapor phase granular activated carbon vessels prior to discharge to the emissions stack and to the atmosphere. Copies of emission equivalency permits are included in the O&M manual.

2.0 FINAL REMEDIATION SYSTEM

2.1 SUMMARY

The remediation system was installed in accordance with design drawings and specifications except as noted below. Items that were added or deleted from the initial Scope of Work are outlined in Section 2.2

2.2 DESCRIPTION OF CHANGES

2.2.1 *Removal of Air Sparge/Soil Vapor Extraction System*

It is believed that during the excavation of the 600 cubic yards of contaminated soil the source of the contamination was removed. The Air Sparge/Soil Vapor Extraction System would not remove the anticipated quantity of VOCs (as intended by the design) from the soil due to the change in the existing site conditions caused by the additional excavation. Laboratory analysis of soil borings, taken at locations just outside the excavated area, showed no VOC contamination. In a letter dated February 14, 2001, NYSDEC concluded that if any soil contamination exists, the amount is small, and that RW-1 pumping at a rate of 100 gpm will have sufficient radius of influence to include the area where the Air Sparge/Soil Vapor Extraction System would have been located.

2.2.2 *Redesign of System Piping*

The initial design of the system piping did not allow for the stripper towers to be acid washed independently. Additional piping was added to the design to give more flexibility in the operation and acid washing of the towers. Each tower can now be isolated and washed while the other tower is in full operation.

2.2.3 *Electrical Service Upgrade*

The specifications stated that 480-volt service would be available. The electric utility company, LIPA, determined that only 208 volt and 110 volt services were available. Therefore, the equipment needed to be resized for 208 volt service. The wiring change affected all service runs except for RW-2.

2.2.4 *Pump Resizing*

The pumps for RW-2, P-1, P-2, and P-5 were resized due to changes in piping and and valve changes. Below is a list of the pumps and the old/ new horsepower ratings.

Pump	Old Rating	New Rating
RW-2	15 hp	10 hp
P-1	7.5 hp	15 hp
P-2	10 hp	15 hp
P-5	1 hp	0.5 hp

During system start-up in December 2001, it was determined that 7.5 hp submersible pump in RW-1 was oversized for actual yield of the well. To resolve the issue, two of the four impellers were removed to essentially operate the pump on the 5 hp pump curve. RW-1 yields approximately 80 gpm.

2.2.5 *Miscellaneous Changes*

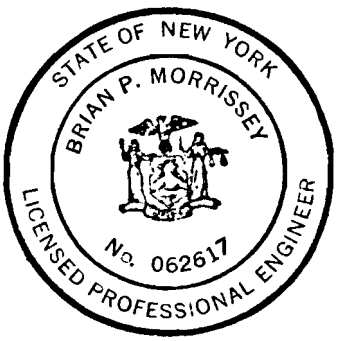
Below are a list of changes requested by NYSDEC in a letter dated April 23, 2001 that were added to BWE's construction contract.

- A "push to test" feature was added to all panels to test for burned out lights.
- The building sump and concrete floor was painted with an epoxy coating to ensure impermeability in the event of a spill.
- The air stripping towers were piped to allow the more flexibility in operation. Towers can now be run in series, parallel, or independently depending on acid washing activities.

3.0 *ENGINEER'S CERTIFICATION*

There have been no significant process changes made to the remedial design and the proposed recovery and treatment method, with the exception of the removal of the Air Sparge/Soil Vapor Extraction portion of the system, as described in Section 2.2. Field changes that were made were consistent with the intent of the Remedial Design Report

ERM hereby certifies that the construction of the groundwater recovery and treatment system has been completed in accordance with the approved Remedial Design Contract Documents, dated March 2000, with the exceptions noted above.



Brian P. Morrissey, P.E.
Senior Project Manager