REMEDIAL ACTION REPORT
GCL TIE & TREATING SUPERFUND SITE, SIDNEY, NY
EPA CERCLIS ID NUMBER NYD981566417
GROUNDWATER PUMP AND TREAT SYSTEM (OU2)

I. INTRODUCTION

This document presents the Remedial Action Report (RAR) for the groundwater pump and treat system (OU2), at the GCL Tie & Treating Superfund Site (the Site) in Sidney, New York. This report is consistent with the requirements of the U.S. Environmental Protection Agency (EPA) guidance documents entitled, "Remedial Action Report Documentation for Operable Unit Completion (June 1992)," and "Closeout Procedures for National Priorities List Sites (OSWER Directive 9320.2-09A-P, PB98-963223, January 2000)."

The RAR is based on the remedial action work completed at the Site by Conti Environmental Services Inc. pursuant to the EPA and U.S. Army Corps of Engineers (USACE) approved final remedial design (RD) for OU2, which was completed in October of 2001. The RD resulted in construction of a groundwater treatment plant and installation of seven extraction wells. The RD is consistent with EPA's March 1995 Record of Decision (ROD) for the Site.

This RAR was developed by USACE in consultation with EPA.

Site Description/History

The GCL Tie and Treating Site includes approximately 60 acres in an industrial/commercial area of Delaware County, New York. The Site includes two major areas, generally referred to as the "GCL property" and "non-GCL property." The GCL property is bordered on the north by a railroad line (formerly Delaware & Hudson, now CSX). A subsidiary of Mead Corporation, At-A-Glance, which manufactures time management products, and a municipal airport are located to the north of the railroad line. Route 8 and Delaware Avenue generally delineate the eastern and southern borders of the Site, respectively. A drainage ditch (known as Unalam Tributary) runs west to east across the Site and woodland areas exits in the southern portion of the Site. The western portion of the GCL property includes a wetlands area. The Site eventually drains via overland flow to the Susquehanna River, which is located within one mile of the Site. In general, groundwater in the area flows in the north-northwesterly direction, toward the Susquehanna River.

The 26-acre GCL property housed a wood-treating facility called GCL Tie & Treating, and included four structures. The primary building housed the wood pressure treatment

operations including two treatment vessels, an office, and a small laboratory. Wood (mostly railroad ties) and creosote were introduced into the vessels which were subsequently pressurized in order to treat the wood. The other three structures housed a sawmill and storage space. The non-GCL property includes two active light manufacturing companies (which did not conduct wood treatment operations) located on a parcel of land adjacent to the GCL property.

The Route 8 Landfill and the Hill Site (both of which are being addressed by the NYSDEC) , are nearby and have contributed to the groundwater contamination in the area. The Route 8 Landfill is located approximately 500 feet east of the GCL Site, and the Hill Site is approximately 1,600 feet southeast of the GCL Site.

Approximately 1,100 people are employed on the adjacent properties, about 5,000 people live within 2 miles of the Site, and the nearest residential well is within 0.5 miles of the Site. A shopping plaza is located within 300 feet of the Site; and a hospital, public schools, senior housing and a child-care center are within a 2-mile radius of the Site.

The GCL property was originally developed in 1940 by D&H as a railroad tie & treating (creosote) facility. D&H tie treating operations continued until the late 1950's. Railcon Wood Products/ Railcon Materials, Inc., acquired the property in 1979 and sold it to GCL Tie and Treating in 1983. GCL operated a wood processing and treating facility that cut and treated wood products, predominantly railroad ties, with creosote. In 1986, one of the two treatment vessels inside the GCL process building malfunctioned causing a release of an estimated 30,000 gallons of creosote. GCL representatives excavated the contaminated surface soil and placed it in a mound; no further action was taken at the time. Aerial photographs taken between 1963 and 1983 indicate a gradual expansion of Site operations from the eastern section of the property to the west. The greatest growth occurred between 1977 and 1983, with the clearing of vegetation and filing of wetland areas. Contaminants are known to have been released to the environment through direct contact with the surface soil as a result of open drip-drying of treated products and one documented spill. The practice of drip-drying creosote-soaked lumber with no containment safeguards contaminated the soil in numerous areas on Site. The owners filed for bankruptcy in 1987 and abandoned the property in 1988.

EPA, responding to a request from the NYSDEC, initiated a removal action at the Site in March 1991. The immediate action resulted in Site stabilization, installation of fencing, identification and disposal of hazardous wastes (both containerized and non-containerized from drums, tanks and sumps), staging of contaminated soil and wood debris, as well as a pilot study to determine the effectiveness of using bio-remediation composting of the soils.

EPA proposed in February 1994, that the Site be added to the National Priorities List (NPL). The listing became final in May of 1994. The Site was also selected as a pilot project for the Superfund Accelerated Cleanup Model (SACM), which allowed Site investigations to proceed concurrently with the NPL evaluation process.

EPA conducted a remedial investigation/feasibility study (RI/FS) at the Site between 1993 and 1994. The results of the RI/FS indicated that soils, groundwater, and surface-water sediments were contaminated with creosote and creosote by-products such as anthracene, chrysene, benzo(a)anthracene, and benzo(a)pyrene. One of the structures had asbestos insulation, and mounds of contaminated soil (4,800 cubic yards (cy) and wood debris 3,000 cy) were also stockpiled on the Site. Several aboveground tanks and drums, holding approximately 20,000 gallons of creosote wastes and sludges were also on the Site. The results of the RI/FS led to the selection of a remedy for contaminated soils, sediments and groundwater. Long-term remediation is divided into two operable units (OU). Soil treatment via on-Site low temperature thermal desorption (OU1), and groundwater treatment by extraction and on-Site treatment (OU2). The remedy for OU1 was documented in the September 30, 1994, Record of Decision (ROD). A second RI/FS, which focused on the Site groundwater and sediment contamination served as the basis for the March 1995 ROD for these media. The remedy for OU2 was documented in March 1995 ROD, and is the subject of this report.

II. OPERABLE UNIT BACKGROUND

Site remediation activities are segregated into two OUs.

- Operable unit 1 (OU1) addresses the remediation of contaminated soils found on the GCL-property portion of the Site via on-Site low temperature thermal desorption.

  On March 31, 1995, a Record of Decision (ROD) was signed for OU1. The ROD included the excavation and treatment of contaminated sediments on-Site through a thermal desorption process. The OU1 remediation began in October 1998 and was completed in May 2000. The activities consisted of removal of all buildings and soil piles from the surface of the Site. Soils were excavated up to a depth of 19 feet below the surface and were treated on-Site in a low temperature thermal desorption unit. Several underground structures were removed from the Site.

- Operable unit 2 (OU2) addresses the contamination in the soils on the remainder of the Site (non-GCL property), and in the groundwater, surface water, and sediments by extraction and on-Site treatment.

Remedial Action for OU1

Construction activities for the OU1 remedial action began in September 1998 and were completed in August 2000. At the completion of remedial activities, approximately 109,000 tons of soil, sediment, and debris had been excavated and treated on-Site.

Excavations were backfilled with treated soil and clean soil brought from off-Site sources, graded and compacted. These activities included removal of all buildings and

soil piles from the surface of the Site. Soils were excavated to depths of up to 20 feet below the surface and thermally treated on-Site in a low temperature thermal desorption unit. In addition, several underground structures were located and removed from the Site.

A Remedial Action Report for OU1 was completed and approved in September 2000 describing the work done.

ROD for OU2

The remedy described in the ROD for OU2 included:

- Extraction, collection, and on-Site treatment of groundwater contaminated with organic compounds; discharge of treated groundwater to the surface water. The selected remedy provides two options for primary treatment of organics: carbon adsorption or biological treatment.

- Information will be obtained during the remedial design to reassess the time frame and technical practicability of achieving State and Federal drinking water standards in the aquifer. Should the remedial design data indicate that groundwater restoration through extraction and treatment is feasible and practical, additional work will be conducted to determine which groundwater treatment option (carbon adsorption or biological treatment) is more appropriate and cost-effective. If groundwater restoration is not feasible or practical, the remedy will focus on containing the groundwater contamination within the GCL-property boundaries in which case chemical-specific ARARs may be waived for all or some portions of the aquifer based on the technical impracticability of achieving further contamination reduction within a reasonable time frame. Under such a scenario, it may be determined that natural attenuation or enhanced biodegradation (e.g., introduction of air to increase the rate of biodegradation) would be able to reduce the concentration of contaminants in the aquifer groundwater to levels which are similar to those achievable under extraction and treatment, but at a lower cost. Such information would be utilized during the remedial design to maximize the effectiveness and efficiency of the system; and,

- Excavating and treating contaminated sediments on-Site through a thermal desorption process along with the GCL-property soils. The selected remedy will also provide for the mitigation of damages to the aquatic environment which may occur during implementation (i.e., revegetation).

- In addition, EPA will recommend to local agencies that institutional control measures be undertaken to ensure that future land use of the property continues to be industrial/commercial, and precludes the use of Site groundwater for human consumption until drinking water quality is restored in the aquifer.

Subsequent to the issuance of the OU2 ROD, EPA determined it would be more efficient

and cost effective to address the OU2 sediments as part of the OU1 remedial action.

Remediation Goals

The cleanup goals specified in the 1995 ROD are federal and drinking water standards. Contaminants associated with the GCL groundwater plume are benzene, toluene, ethyl benzene, and xylene (BTEX) and polynuclear aromatic hydrocarbons (PAHs). Contaminants are found in the dissolved phase, but dense nonaqueous phase liquid (DNAPL) is also present in the shallow, intermediate and bedrock zones. The contaminants migrate from the Site to the north towards the Mead property and as it moves off the Site it moves downward. Chlorinated volatile organic compounds (VOCs) have also been detected in on-Site monitoring wells but these contaminants have been attributed to other Sites in the region.

The primary objective of the treatment system is to treat the groundwater contaminated with PAHs, BTEX and DNAPL to levels acceptable for discharge to surface water as stipulated by NYSDEC.

A pre-engineered metal building approximately 60 feet by 80 feet was designed to accommodate the equipment used to treat the contaminants. The pump and treat system was designed to treat a flow rate varying between 40 gallons per minute and 100 gallons per minute generated by seven on-Site wells and to comply with NYSDEC effluent discharge standards.

III. CONSTRUCTION ACTIVITIES

Permits and Property Access

Permits for well installation and construction of the groundwater treatment plant were not required by the village of Sidney. Access and easements for installation of wells on the Mead property were obtained by the EPA. In addition, an easement was obtained for the D&H/Canadian Pacific Railroad to place piping and conduit beneath the railroad tracks to access the wells on the Mead property from the GCL Site.

Site Preparation

The contractor mobilized to the Site on October 28, 2002. The activities that were performed were delivery of the Site trailer, electrical hookup to the trailer and delivery of the frac tanks for the well installations. There was no clearing and grubbing required since this had been performed during OU1 construction. Two truck-loads of gravel material were placed on-Site for roadways to gain better access of the drilling rigs to the well locations.

Site Activities

The OU2 remedial construction was separated into two phases and was performed by Conti Environmental Inc.

Phase I

Site activities for Phase I began on October 29, 2002. It consisted of the drilling, installation and development of six extraction wells. Installation started with extraction well EW-3I followed by 1I, 2I, 5I, 1B and 2B. Three overburden extractions wells and two bedrock extraction wells were installed on the GCL property. Aquifer testing was performed to determine the size of the plant equipment. The aquifer testing of the wells yielded 2 gallons per minute (GPM) for EW-1I, 10 GPM for EW-1B, 16 GPM for EW-2I, 16 GPM for EW-2B and 0.8 GPM for EW-3I. Well EW-5I yielded little or no flow; therefore it was not connected to the groundwater treatment plant. Instead it was used as a monitoring well. Approximately 40,000 gallons of water were collected during the development and aquifer testing stages of the project. The water was sampled and discharged to the drainage swale upon complying with NYSDEC discharge standards. Based on the aquifer tests, the plant was designed for a minimum flow rate of 40 GPM and a maximum flow rate of 100 GPM with an average rate of 70 GPM. The equipment primarily used for this phase included drill rigs, pumps and frac tanks. Site activities for Phase I were completed on March 29, 2003.

Phase II

Site activities for Phase II began on October 28, 2003. The work for Site preparation consisted of removing part of the chain link fence along the access road, installation of silt fencing for erosion control, removal of an old electrical line, clearing and grubbing of the Site, removal of soil in the location of the water treatment plant building and layout of the building area.

Construction activities performed by Conti in Phase II included the construction of the plant, installing six additional monitoring wells and two additional extraction wells for the adjacent Mead property.

During this phase, six monitoring wells were installed on the Mead property beginning on November 17, 2003. They consisted of wells 13I, 13B, 14I, 14B, 15I and 15B. These wells were completed on November 23, 2003 and are used to monitor the groundwater flow east of the GCL property. Two extraction wells (EW-4I and EW-4B) on the Mead property were installed in this phase. This work began on May 6, 2004 and finished on June 4, 2004 with aquifer testing yielding 7 GPM for EW-4I and 31 GPM for EW-4B. These two wells were connected to the groundwater treatment plant.

A 60-foot by 80-foot metal building with a height of 22.5 feet on a concrete foundation was constructed. Water piping and electrical conduits were installed to connect the extraction wells to the treatment plant building. An 18-inch steel pipe was installed

beneath the D&H /Canadian Pacific Railroad to enable the two extraction wells on the Mead property to connect to the treatment plant building. The treatment schematic for the GCL pump and treat system was based on the estimated inflow rate, water quality, discharge requirements and off-gas emission limits. The unit processes that are included in the pump and treat system consist of DNAPL separation/removal, oil/water separation, flow equalization, iron and manganese removal, air stripping, pH adjustment, mechanical filtration, liquid-phase carbon polishing and vapor-phase granular activated carbon treatment. The GCL groundwater extraction and treatment system operation is completely automatic and is equipped with the process instrumentation and controls that provide alarms and automatic shutoff controls for systems that malfunction or cause an alarm condition during operation.

This construction phase was completed in July 2004. The pump and treat system underwent startup and performance testing for a brief period to ensure proper operation. The construction of Phase II including all punch list items was completed on September 13, 2004.

Unit process

The groundwater treatment system is capable of removing DNAPL, VOCs, PAHs and metals to the design effluent concentrations. Each extraction well pipe entering the groundwater treatment facility is metered. Then it is combined into a common header which then flows directly into a 6000-gallon, DNAPL separation/removal tank, where settled DNAPL products can be manually drawn off the bottom. The process flow then passes through an oil/water separator unit, where light product is continuously skimmed off the top and drained into a 55-gallon tank. The water is pumped from the oil/water separator to the flow equalization tank. From the equalization tank, the water is pumped through green sand filter vessels and bag filters for iron and manganese removal, followed by a shallow tray air stripper to remove VOCs. Water from the air stripper reservoir is pumped through liquid-phase granular activated carbon (LPGAC) vessels, where residual VOC contaminants are adsorbed. Effluent from the LPGAC vessels is transferred to the effluent tank. Finally, the treated water drains by gravity from the effluent tank to a surface discharge. The off-gas from the air stripper is passed through an air heater and vapor-phase granular activated carbon, and treated air is released through the discharge stack.

Equipment

The equipment used for this phase included: drill rigs, backhoe, loader, man-lift machine and hand tools. The equipment installed in the building consisted of a DNAPL separation and removal tank, an equalization tank, a product tank, an effluent tank, pumps, an oil/water separator tank, an air stripper unit, a blower unit for the air stripper, a pH adjustment system, two green sand filter and two bag filter units, two liquid phase and two-vapor phase carbon units and a potassium permanganate tank. High- density polyethylene pipe was used to connect the treatment plant equipment.

Batch Test

A first six-hour batch test to test the plant was conducted on July 19, 2004 but failed due to a high manganese concentration. A second six-hour batch test was done on July 27, 2004 and met NYSDEC discharge standards. A seven-day operational test began on August 3, 2004 and failed due again to a high manganese concentration. A second operational test passed for manganese but yielded high readings of Total Dissolved Solids. This water was re-circulated, re-tested and the effluent results met NYDEC discharge standards. The water was discharged from the frac tanks and Conti Environmental began full-time operation on August 30, 2004 for a one-year period.

Operation

The first month of operation required weekly sampling. The first three weekly sampling results showed TDS results of 590 parts per million (ppm), 640 ppm, 550 ppm exceeding the 500 ppm requirement. The fourth test passed the TDS requirement but exceeded the manganese and naphthalene criteria although the retest showed only manganese failing the discharge criteria. After the first month of operation, the sampling frequency was changed to monthly. The October 2004 results met the discharge requirements for all parameters except TSS (30 ppm versus the 15 ppm criteria). The retest met the TSS requirement. All monthly testing results from November 2004 though the present have passed all NYSDEC discharge criteria. It appears the reason for the failures of TDS and manganese is due to higher actual influent concentrations than were anticipated. More frequent backwashing of the green sand filters and changing of the green sand and air stripper filter bags have corrected the effluent problem.

The groundwater treatment system began operation on August 30, 2004 and Conti Environmental and has operated the treatment plant for the past year.

IV. CHRONOLOGY OF EVENTS

Date		Event
Sep	1994	ROD for OU2 signed
Oct	2001	Remedial design completed
Oct	2002	Well Installation/aquifer testing of six wells begun
Mar	2003	Well Installation/aquifer testing completed
Oct.	2003	Groundwater treatment plant construction and well installation/aquifer testing of two wells begun
Jul	2004	Treatment plant and well installation completed

Aug	2004	One-year operation and maintenance period begun
Sep	2004	Final Inspection with EPA and NYSDEC of completed RA
Sep	2004	Punchlist item (grass seed) completed

V. PERFORMANCE STANDARDS & CONSTRUCTION QUALITY CONTROL

Remediation Objectives/ Cleanup Goals	**Performance Results**
Construction of groundwater treatment plant	Comply with NYSDEC discharge standards
Restore Site to positive drainage, re-vegetate	Restored positive drainage, re-vegetated, Minimized impacts to wetlands
Complete OU2 by Sept 30, 2004	Completion reached August 30, 2004 Final inspection on September 9, 2004

A baseline sampling event was conducted from June 22 through June 30, 2004 for 14 monitoring wells, eight extraction wells and two piezometers on the GCL and Mead properties using the EPA Region II Low-Stress (Low-Flow) Purging and Sampling. The analyses included BTEX and PAH compounds. This baseline sampling was conducted before treatment plant operations began and will be used to evaluate the future effectiveness of the plant and plume containment/capture.

As previously stated, the work at the Site entailed construction of a 60 by 80 foot metal building on a concrete slab with the associated water treatment equipment, piping, process instrumentation and controls including automatic shutoff controls in the event of systems that malfunction, six extraction wells on the GCL property and two wells on the Mead property. Other construction work included installation of water and electrical conduits for the extraction wells, water line installation from the plant to the Sidney water supply, Site grading, fencing, railroad jacking and additional well sampling. Quality assurance of the project was performed by the New England District Construction Division. Submittals for the project consisted of drawings for the building and its appurtenances, Site work, and electrical, mechanical, and civil components, well design, a Quality Control Plan, an Environmental Protection Plan and a Quality Assurance Project Plan. All work met the Federal and state requirements and local building codes and was completed on schedule.

VI. OPERATION AND MAINTENANCE

The groundwater treatment system began operation on August 30, 2004 and Conti Environmental has operated the treatment plant for the past year. EPA has determined that the groundwater and pump and treat system is operational and functional. The water treatment plant's influent flow averages from 60 to 80 gallons per minute and is pumped from contaminated groundwater on the GCL and Mead properties. The plant operates at approximately 55 gallons per minute or approximately 2.6 million gallons a month. The green sandfilters are backwashed on the average of every 10 to 12 hours and the air stripper and green sand filter bags are changed on the average of every other day. After experiencing difficulty in meeting the early discharge effluent standards in September and October 2004 due to higher than expected influent concentrations for TDS and manganese, the system has met all discharge criteria. A full-time treatment plant operator is available to perform frequent maintenance to ensure the plant continues to operate as designed. Currently, the plant is sampled once a month as directed by NYSDEC.

VII. FINAL INSPECTION & CERTIFICATION

Inspections

The final inspection was held at the Site on September 9, 2004 with EPA, USACE and NYSDEC representatives attending. The only outstanding item was grass seeding of the property and this was performed on September 13, 2004. Remedial action activities at the Site were consistent with the OU1 and OU2 RODs, and the final design documents, as modified and approved by the USACE and EPA. The system is operating properly and is extracting contaminated groundwater at the expected flow rates and treating the groundwater to meet discharge requirements for the Site-related contaminants.

Health and Safety

During construction, no health or safety problems were encountered during construction or operation of the groundwater extraction and treatment system. Modified Level D personal protective equipment (PPE) was required for all Site personnel. Level C was not needed or used for the well drilling/installation or construction of the groundwater treatment plant.

Site Oversight Summary

Based upon the tests and observations, as documented in previous letters and reports, it has been determined that the remedial design and subsequent remedial action for the GCL Tie and Treating Site OU2, Village of Sidney, Delaware County, New York, has been completed in substantial conformance with the project plans and specifications. The approved remedial design and remedial action documents were based upon the RA Scope of Work. The level of remediation conforms to that specified in the remedial design reports, as updated during remedial construction, and has been completed in substantial accordance with the stipulated performance standards. The Site activity reports document the GCL Tie and Treating Site activities and actions taken to monitor field activities

during the remedial action. While on-Site, the USACE engineer reviewed submittals, payrolls, record keeping, health and safety, sampling and quality assurance/quality control procedures as they related to the daily activities at the GCL Tie and Treating Site. Any deviations from the remedial design/remedial action documents were noted on the activity reports.

U.S. Army Corps of Engineers, New England District

Name: _____ 9/28/05

James Doucakis, P.E. Date
Resident Engineer

VIII. SUMMARY OF PROJECT COSTS*

The following list provides a summary of the costs for each major cost element for the project.

Cost Element	***Cost***
Design of Well Installation	$ 9,699
General Requirements Work Plans Health & Safety Temporary Facilities Surveying Erosion & Dust Control Decontamination	$ 1,551,160
Site Work Site Preparation Yard Piping Well Vaults Earthwork Access Roads Fencing	$ 330,106
Well Installation & Development Wells EW-1I, EW-1B, EW-2I, EW-2B, EW-3I, EW-5I, Monitoring Wells	$ 495,061
Well Testing	$ 327,113
Groundwater Treatment System	$ 924,671
Pre-Engineered Metal Building	$ 627,882
Treatment System Operation & Maintenance	$ 482,318
Well EW-4I Site Work	$ 151,047
Well EW-4I Installation	$ 294,557
Baseline Groundwater Sampling	$ 116,572
Well EW-4B Site Work	$ 75,928
Well EW-4B Installation	$ 199,480
Treatment System Startup & Testing	$ 203,455

*As of April 2005

IX. OBSERVATIONS AND LESSONS LEARNED

A firm-fixed price contract was used for the OU2 remediation. Early identification of issues and cooperation between the Corps, EPA, NYSDEC, Conti Environmental and their subcontractor's allowed the project to be completed in less than one year with minimal change orders.

X. CONTACT INFORMATION

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