NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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MEMORANDUM

TO: Michael Cruden, Remedial Bureau Director

FROM: Bernette Schilling, RHWRE
BY: Danielle Miles, Project Manager

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Date: 2016.08.30 08:32:23 -04'00'

SUBJECT: **Minor Amendment to the ROD**
Old Erie Canal – Village of Clyde Section
NYSDEC Site #859015
Clyde (V), Galen (T), Wayne County

DATE: August 30, 2016

This memorandum serves to document a minor change to the remedy for the Old Erie Canal Site.

Description of the Minor Change to the Remedy

On April 4, 2013 the NYSDEC signed a Record of Decision (ROD) which selected a remedy for the Old Erie Canal – Village of Clyde Site. The soil vapor intrusion remedy detailed in the ROD included the installation and maintenance of a sub-slab depressurization system (SSDS) within the existing building. In the Remedial Design / Remedial Action Work Plan dated April 19, 2016, the responsible party proposed the use of a positive pressure environment within the existing manufacturing area as a replacement for the selected SSDS remedy. The manufacturing area presently operates under a 10-Pascal positive pressure environment to control the indoor temperature and humidity and to limit dust and outside air from entering the building. The pressure differential from the outside air pressure is computer controlled based on pressure readings from a manometer centrally located within the manufacturing building.

The NYSDEC and NYSDOH have determined that the existing positive pressure system meets the intent of the remedy and is sufficiently protective with regard to the potential exposure to vapors as long as the system is maintained anytime the building is occupied and demonstrated to be effective through testing and monitoring. Therefore, NYSDEC finds the positive pressure system to be an acceptable alternative for the soil vapor intrusion remedy.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
Site Briefing Report

Site Code	859015	**Site Name**	Old Erie Canal -Village of Clyde		
Classification	02	**Address**	Columbia Street		
Region	8	**City**	Clyde	**Zip**	14433
Latitude	43.0839	**Town**	Galen		
Longitude	-76.8768	**County**	Wayne	**Project Manager**	Danielle Miles
Site Type	Landfill			**Estimated Size**	1.0000

Site Description

The Old Erie Canal site is located at 124 Columbia Street in a residential section of the Village of Clyde, Town of Galen, Wayne County. The site is approximately 0.25 miles west of the intersection of Columbia Street and State Route 414.

The approximately 10 acre site includes the Parker Hannifin property, which contains the manufacturing building, and adjacent parcels to the west and southwest. The properties to the west/southwest are an open area that includes a filled-in section of the former Erie Canal and a section that was utilized as a barge turnaround. The site is bounded to the north by Columbia Street and residential properties, to the east by a commercial property, and to the west by residential properties. The adjacent residential properties are on public water. An active rail line and the New York State Barge Canal border the site to the south. A drainage channel passes to the west of the manufacturing building and eventually drains to the Barge Canal.

The site is currently zoned industrial. Parker Hannifin manufacturing operations are currently active. The former barge turnaround area is undeveloped.

Manufacturing operations have occurred at the site since the early 1800s. Glass manufacturing dominated Site operations into the early 1930s. The Acme Electric Company (Acme Electric) purchased the property in 1941 for production of transformers. The current facility was built in 1941. Acme Electric manufactured electrical equipment, transistors, radar components and transformer components for use by the United States Navy during World War II. These manufacturing activities are thought to have generated some chlorinated solvents (volatile organic compounds – VOCs), spent stripping solutions, plating bath sludges, polychlorinated biphenyl (PCB) capacitors, and paint sludges.

General Electric (GE) purchased the facility in 1945 for the manufacture of electrical equipment, including fluorescent light ballasts, rectifiers, transistors, and diodes. Parker Hannifin purchased the facility from GE in 1965 initially for the manufacture of automobile air conditioning systems. Historical GE and Parker Hannifin manufacturing processes included the use of VOC degreasers as well as miscellaneous metal fabricating activities which would also utilize VOCs. The manufacturing facility currently manufactures gas turbine fuel systems.

The Old Erie Canal was excavated through the southern portion of the site between 1817 and 1825. Initially, the canal was 40 feet wide and 4 feet deep. Between 1836 and 1862, the canal was enlarged to a width of 70 feet and a depth of 7 feet. The enlarged canal included the former Barge Turnaround located in the southwestern portion of the Site. The present day Barge Canal was constructed beginning in 1908 utilizing a portion of the Clyde River south of the site. The portion of the Old Erie Canal adjacent to the Site was abandoned in 1917.

The Old Erie Canal and former Barge Turnaround were used as historical disposal/fill sites. In the Village of Clyde, local contractors reportedly used the abandoned canal for the disposal of construction and demolition debris. The section of the Old Erie Canal along the southern portion of the Parker Hannifin property was reportedly filled by Parker Hannifin between 1968 and 1979.

The Village of Clyde sanitary sewer system historically discharged to a septic tank located at the confluence of the former Barge Turnaround and the Old Erie Canal. Waste was discharged from the septic tank to a catch basin located in the unfilled portion of the Old Erie Canal and, ultimately, to the Clyde River. The Village abandoned and subsequently demolished the septic tank as part of sanitary sewer system improvements completed between 1968 and 1972.

Site Geology and Hydrogeology:
Groundwater flow in the area is generally to the south. There are overburden and bedrock groundwater aquifers present. Groundwater has been measured at depths ranging from 2 to 10 feet below the ground surface. Bedrock is encountered approximately 25 feet below ground surface. This is overlain by a layer of glacial till 10 to 20 feet thick. This till is overlain by layers of sand and gravel. A layer of fill material comprises the uppermost layer and is of greater depth in the barge turnaround section.

Contaminants of Concern (materials disposed at site)	**Quantity Disposed**
1,1 dichloroethene	
Arsenic	Unknown
Benzo(a)anthracene	
Benzo(a)pyrene	
Benzo(b)fluoranthene	
Benzo(k)fluoranthene	
Cadmium	
Chrysene	
Dibenz(a,h)anthracene	
Fluoranthene	
Indeno(1,2,3-CD)pyrene	
Toluene	
Trichloroethene (TCE)	
Vinyl chloride	
Xylene (mixed)	

Analytical Data Available for : Air, Groundwater, Surface Water, Soil, Soil Vapor, Indoor Air

Applicable Standards Exceeded for: Groundwater, Surface Water

Assessment of Environmental Problems

Based upon investigations conducted to date, the primary contaminants of concern at the site include chlorinated volatile organic compounds (CVOCs) in soil, groundwater, and soil vapor. Semi-volatile organic compounds and metals have been identified as contaminants of concern in on-site soils. CVOC contamination attributable to the site has been found in the basement sump water, soil vapor, and indoor air of adjacent off-site properties.

Concentrations of trichloroethene (TCE) up to 580,000 parts per billion (ppb), cis-1,2-dichloroethene up to 180,000 ppb , and vinyl chloride up to 73,200 ppb were detected on-site. The highest concentrations of CVOCs in groundwater were detected at a location under the manufacturing building and in overburden and bedrock groundwater from monitoring wells installed within the barge turn-around area.

CVOCs were detected at concentrations up to 130,000 ppb in sub-surface soil samples collected from beneath the manufacturing building. Surface soil samples collected from the drainage swale located to the west and southwest of the manufacturing building contained semi-volatile organic compounds, arsenic, and cadmium above 6 NYCRR Part 375 soil cleanup objectives for industrial use.

Sub-slab soil vapor samples collected from beneath the manufacturing building detected elevated levels of CVOCs. TCE was detected at concentrations up to 75,000 micrograms per cubic meter (ug/m3).

Soil vapor intrusion sampling was conducted at eight structures located to the north of the facility, across Columbia Street. Based on the concentrations of site-related chemical detected in soil vapor samples collected near one structure and the corresponding indoor air levels at that structure, a sub-slab depressurization system was recommended and installed. In addition, no further action was recommended for the remaining seven (7) homes evaluated.

Assessment of Health Problems

People are not drinking contaminated groundwater associated with the site because the area is served by a public water supply that is not affected by this contamination. Access to the site is not restricted and people who enter the site may directly contact contaminants in the soil by digging or otherwise disturbing the soil. Volatile organic compounds in the groundwater may move into the soil vapor (air between soil particles), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Environmental sampling has identified impacts associated with soil vapor intrusion to one on-site and one off-site building and actions have been taken to address those impacts.

Remedy Description and Cost

Remedy Description for Operable Unit 01

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principals and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

a) Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
b) Reducing direct and indirect greenhouse gas and other emissions;
c) Increasing energy efficiency and minimizing use of non-renewable energy;
d) Conserving and efficiently managing resources and materials;
e) Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
f) Maximizing habitat value and creating habitat when possible
Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
g) Integrating the remedy with the end use where possible and encouraging green and sustainable re-development

2. Groundwater contamination will be addressed by utilizing Enhanced Biodegradation.

Enhanced Bioremediation
In-situ enhanced biodegradation will be employed to treat chlorinated volatile organic compounds at three locations under the southern section of the manufacturing building, outside the southern end of the manufacturing building, and within the former barge turnaround area. Specific injection locations will be determined during the remedial design. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by injecting a solution of sodium lactate and soybean oil, or similar materials into the subsurface to promote microbe growth. The method and depth of injection will be determined during the remedial design. Groundwater will be monitored for site related contamination and also for natural attenuation indicators which will provide an understanding of the biological activity breaking down the contamination. It is anticipated that contamination will decrease by a magnitude deemed acceptable to NYSDEC within a reasonable period of time (5 to 10 years). Groundwater monitoring will be performed as needed, and additional active remediation will be proposed if it appears that biodegradation processes alone will not address the contamination. The contingency remedial action will depend on the information collected, and will be detailed further during the remedial design.

3. Surface soil that exceeds 6 NYCRR Part 375 soil cleanup objectives for industrial use in the drainage swale at the south end of the site would be addressed by construction of a soil cover over approximately 0.1 acres, to prevent exposure to contaminated soils. The cover will be a minimum thickness of one foot and consist of clean soil underlain by a demarcation layer to delineate the cover soil from the subsurface soil. The top six inches of soil must be of sufficient quality to support vegetation. The site building currently serves as a site cover. This site cover will be maintained to allow for industrial use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable SCOs. Where a soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d). The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

4. Indoor air/sub-slab soil vapor will be addressed by the installation of a sub-slab vapor depressurization system in the manufacturing building on-site.

5. Institutional Control
Imposition of an institutional control in the form of an environmental easement for the controlled property that:

a)requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3).
b) allows the use and development of the controlled property for industrial use as defined by Part 375-1.8(g), though land use is subject to local zoning laws;
c) restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH or County DOH;
d) prohibits agriculture or vegetable gardens on the controlled property; and
e) requires compliance with the Department approved Site Management Plan;

6) Site Management Plan
Since the remedy results in contamination remaining at the site that does not allow for unrestricted use, a Site Management Plan is required, which includes the following:

a) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

The Environmental Easement discussed in Paragraph 5 above.

Engineering Controls:
The soil cover discussed in Paragraph 3, the existing sub-slab depressurization system installed off-site, and the sub-slab depressurization system discussed in Paragraph 4 above.

This plan includes, but may not be limited to:

a) Soil Management Plan which details the provisions for management of future excavations in areas of remaining contamination;
b) descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
c) a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion.
d) provisions for the management and inspection of the identified engineering controls;
e) maintaining site access controls and Department notification; and
f) the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls;
g) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
1) monitoring of groundwater and surface water to assess the performance and effectiveness of the remedy;
2) a schedule of monitoring and frequency of submittals to the Department; and
3) monitoring for vapor intrusion for any buildings occupied or developed on the site, as may be required pursuant to item 3 above.
h) an Operation and Maintenance Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of for any mechanical or physical components of the remedy. The plan includes, but is not limited to:
1) compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
2) maintaining site access controls and Department notification; and
3) providing the Department access to the site and O&M records.

Total Cost $1,700,000
Capital Cost $740,000
OM&M Cost $44,000

Issues / Recommendations

Based upon investigations conducted to date, the primary contaminants of concern at the site include chlorinated volatile organic compounds (CVOCs) in soil, groundwater, and soil vapor. Semi-volatile organic compounds and metals have been identified as contaminants of concern in on-site soils.

Remedy Description for Operable Unit 01A

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Storm Sewer Closures
The results of storm water sampling (Figure 5) conducted during the RI, revealed the presence of volatile organic compounds (VOCs) in storm water discharging to catch basin CB-3 and in two upgradient manholes (MH-3A and MH-3B). . Based on the results of the storm water sampling and subsequent evaluations of the site storm sewers, an IRM was completed in November 2003 consisting of:

- Decommissioning of storm sewer lines 3 and 4 by filling them with flowable fill. Flowable fills contains much less cement and higher proportions of fly ash and water than concrete, and they can be excavated if necessary.
- Decommissioning of manholes MH-3A and MH-3B and catch basins CB-3E and CB-3 by filling them with concrete.
- Installation of concrete water-stops on abandoned storm sewer lines 3 and 4, to minimize potential migration of groundwater along the sewer trenches. The water-stops are concrete barriers installed within the drainage system.
- Re-grading and paving a portion of the parking lot behind the manufacturing building to direct surface water away from the locations of the abandoned catch basins and storm sewer lines.

Off-site Soil Vapor Intrusion Mitigation
As a result of soil vapor intrusion investigations, mitigation measures were implemented at an off-site residence based on the levels of VOCs in the soil vapor samples collected near the structure and the corresponding indoor air levels at that structure.