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# Memorandum

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| | |
|---|---|
| **Subject** | **Interim Operations and Maintenance Plan/Periodic Review Report 2018, Gorham Street Area, Gabion Wall, and SWMU-1** |
| **Project Name** | Former Hampshire Chemical Corp. Facility, Waterloo, New York—Site No. 850001A |
| **Attention** | Hampshire Chemical Corp. |
| **From** | Jacobs Engineering Group Inc. |
| **Date** | December 2018 |

## 1. Introduction

This technical memorandum presents an interim operations and maintenance (O&M) periodic review for the Gorham Street Area, gabion wall, and Solid Waste Management Unit (SWMU)-1 at the former Hampshire Chemical Corp. Facility in Waterloo, New York (facility). Evans Chemetics, a wholly owned subsidiary of Bruno Bock, currently owns and operates the facility.

At the Gorham Street Area, interim corrective measures (ICMs) were completed in fall 2013, and restoration activities including grading adjustments, erosion repairs, and additional vegetation planting were completed in spring 2014. The gabion wall installation was completed in June 2015. The SWMU-1 combination asphalt and soil cap was completed in fall 2016, but because of its late season completion, additional restoration was completed in spring 2017 to address minor winter impacts.

The activities included in this periodic review report will become a part of the site management plan (SMP) after the sitewide corrective measures study (CMS) is completed. This report serves to bridge the gap in time between remedy completion and implementation of the SMP so that the cover systems are maintained and performing as designed.

## 2. Site Description

The facility is located at 228 East Main Street in Waterloo, New York, and is bordered to the north by East Main Street, to the east by residential properties, to the west by East Water Street, and to the south by the Cayuga-Seneca Canal. South of the canal are some residences and warehouses, and further downstream is the Village of Waterloo Wastewater Treatment Plant (WWTP). The facility also includes property on the eastern side of Gorham Street, where the employee parking lot for the facility is located.

The area around the parking lot was the subject of the ICM as described in more detail below. The gabion wall was installed along a portion of the southern edge of the facility property where a sediment removal project was performed. The gabion wall and associated restoration activities were performed to stabilize this portion of the canal bank. SWMU-1 is on the western edge of the facility property and is positioned between the Cayuga-Seneca Raceway and Canal system (northern and southern edges) with East Water Street forming the western extent and the Evan Chemetics WWTP east of SWMU-1. The facility entry from East Water Street crosses SWMU-1 and is used as the asphalt portion of the cover system; the areas north and south of the road are covered with a soil cap system.

## 2.1 Gorham Street Area Description

The Gorham Street Area is defined as two areas with engineered soil caps and covers; one larger area is east of Gorham Street and one smaller area is west of Gorham Street. The portion east of Gorham Street is approximately 1.8 acres of land that extends approximately 365 feet east of Gorham Street and terminates at the adjacent residential parcel (Figure 1). The area extends from the northern property boundary to the canal located to the south. The New York State Canal Corporation owns a thin right-of-way extending along the canal. A thin right-of-way owned by the Village of Waterloo also extends along each edge of Gorham Street. The area on the western side of Gorham Street encompasses approximately 0.04 acre of land that is owned by Evans Chemetics. The Evans Chemetics' employee parking lot covers most of the portion of the parcel east of Gorham Street. Before Gorham Street corrective measures construction activities commenced, the remaining area was wooded or covered by grass/undergrowth (CH2M HILL, Inc. [CH2M] 2014a).

## 2.2 Gorham Street Area Topography

Before Gorham Street corrective measures construction activities began, the parcel west of Gorham Street sloped gently southeasterly toward the bridge abutment embankment and south toward the canal. East of Gorham Street, the land surface gently graded eastward across the parking lot and the adjacent wooded area to the eastern boundary of the facility.

The top of the canal bank was approximately 1 to 3 feet below the average grade of the parking lot, and a drainage swale trending west-east was present between the top of the canal bank and the parking lot. Beyond the swale, the grade dropped steeply to the canal where the bank was overgrown by vegetation and trees.

General overland flow from the parking lot and the extension area east of the parking lot was either south toward the canal or to the east. However, the canal bank berm was slightly higher in elevation than the grassy and formerly wooded area to the north and may limit some overland flow moving north to south. Precipitation that fell on the canal bank would potentially flow south toward the canal or north toward the grassy/vegetated area between the canal bank and the parking lot.

## 2.3 Canal Bank - Gabion Wall Description

The gabion wall was constructed on the canal bank south of the facility and north of the North Shore Deposit. The gabion wall was constructed with two layers of 3-foot by 3-foot by 6-foot galvanized wire mesh baskets with a polyvinyl chloride coating. The gabion baskets are filled with 3- to 5-inch-diameter stone. An 8-ounce geotextile fabric was placed in the over-excavated area and filled with self-compacting pea stone to provide a more stable subgrade. The canal bank side of the gabion wall was shaped, and an 8-ounce geotextile fabric was placed and filled with pea stone backfill to support the backside of the gabion wall.

Before intrusive work was performed, a comparison with the construction drawings was made, and adjustments to the gabion wall alignment were made to compensate for site conditions. Riprap was placed on the canal bank in areas where construction of the gabion wall was determined not feasible. These areas include the eastern end of the gabion wall from approximately Station 22+30 to the east and the western end of the gabion wall from approximately Station 20+30 (Figure 2) to the west in an area commonly referred to as the "horseshoe area" located south of the Evans Chemetics facility.

## 2.4 SWMU-1 Description

SWMU-1 comprises an area of waste and debris with an approximate extent of 2.3 acres and is west of the facility WWTP, east of East Water Street, north of the Cayuga-Seneca Canal, and south of the Cayuga-Seneca Raceway that supplies cooling and process water to the facility (Figure 3). A paved access road runs from East Water Street through SWMU-1 and east into the facility. The access road is used by large haul trucks for Evans Chemetics product transportation and has been expanded as part of the capping project. In this area, several pole barn structures house Evans Chemetics chemical and

equipment storage areas. West of the structures, the expanded asphalt area is used for large haul trucks to pull to the side of the access road and idle before entering the facility, as needed.

A combination soil and asphalt cap was installed over the 2.3-acre SWMU-1 area. This capping system included placing a geosynthetic clay liner (GCL) cap system over approximately 1.4 acres, using the existing asphalt cap (approximately 0.65 acre), and an asphalt expansion area that encompasses approximately 0.25 acre. The GCL cap system was placed over a leveling layer and demarcation layer that separate the waste and cover materials. The overlying cap materials consist of a granular sodium bentonite GCL layer, a geocomposite drainage layer, an 18-inch-thick protective soil layer, and a 6-inch-thick topsoil layer to support vegetation.

The asphalt cap was constructed by milling and reworking the existing road surface and placing a 6-inch-thick asphalt layer consisting of a 4-inch-thick Type 3 binder course and a 2-inch-thick Type 6 top course. In areas where the asphalt road was expanded north of the original road surface, materials were excavated to allow the 8-inch gravel and 6-inch asphalt layer to be installed and match the elevation of the existing asphalt and overlay. The excavated material was used as leveling layer below the cap. In the area north of the access road, cover soil was placed over the existing ground surface to a depth of at least 6 inches and revegetated.

### 2.5 SWMU-1 Topography

Before construction, elevation across the site varied from approximately 453 feet above mean sea level (amsl) at the elevated mound area in the center of SWMU-1 to approximately 436 feet amsl in the southern and southeastern areas of SWMU-1. The placement of the cap followed a similar configuration, but the area toward the canal was reshaped to promote positive drainage to the perimeter and intermediate swale. The final elevation of the capped SWMU-1 ranges from 457 feet amsl to 440 feet amsl in the drainage swales. The elevation along the canal beyond the cap grades sharply to the canal pool elevation of approximately 429 feet amsl.

## 3. Site Inspections

### 3.1 Inspection Frequency

Inspections are conducted at the frequency specified in the interim O&M plan submitted in 2014 (CH2M 2014b). Accordingly, annual cover inspections and biennial gabion inspections will be performed until the SMP is in place as part of the sitewide CMS.

### 3.2 Inspection Forms, Sampling Data, and Maintenance Reports

For 2018, the inspections were performed on July 31, 2018 in conjunction with a mowing event at SWMU-1 and a second visit on August 21, 2018 to confirm corrective actions were completed at each unit. A second mowing event was conducted on October 19, 2018. The inspections and corrective actions are shown on the inspection forms in Attachment 1. Attachment 2 contains photographs of the site taken during the August follow-up visit and October 2018 inspection. Deficiencies were noted and reported, and appropriate corrective actions were taken to remedy the deficiency.

#### 3.2.1 Gorham Street

The following areas were inspected for the Gorham Street Area:

- Soil cover
  - Stressed or dead vegetation
  - Observation as to whether mowing of vegetation is being performed at a suitable frequency
  - Erosion, furrows, ruts, penetrations, cracking, or animal burrows
  - Areas of ponding water
  - Evidence of vandalism to the cover
  - Evidence of slope movement along the canal

  - Signs of traffic on the soil cover area other than from mowing equipment

- Asphalt cap
  - Signs of erosion, furrows, ruts, penetrations, cracking, or animal burrows
  - Vegetation growth through the asphalt
  - Areas of ponding water
  - Evidence of vandalism to the cap

- Drainage swales
  - Observation as to whether drainage swales are still allowing for adequate flow toward the canal
  - Signs of erosion, furrows, ruts, penetrations, cracking, or animal burrows
  - Condition of check dams
  - Confirm flow is not bypassing check dams
  - Erosion issues at down chutes

- Perimeter security (fences and gates)
  - Gates are locked
  - Fence condition
  - Signs of vandalism
  - Signs of vegetation growing on fence or gates

#### 3.2.2 Gabion Wall

The following gabion wall areas were inspected:

- Confirm that eroded soil has not built up on top of the wall; remove materials as necessary.
- Inspect for visual signs on vertical or horizontal alignment changes, bulging, or other changes since the last inspection. Take photographs for similar locations and directions for comparison over time.
- Inspect face of wall for broken or separated sections of the wire gabions and plant growth; large vegetation/trees should be removed.

#### 3.2.3 SWMU-1

The following areas were inspected at the SWMU-1 area:

- Soil cover
  - Stressed or dead vegetation
  - Observation as to whether mowing of vegetation is being performed at a suitable frequency
  - Erosion, furrows, ruts, penetrations, cracking, or animal burrows
  - Areas of ponding water
  - Evidence of vandalism to the cover
  - Evidence of slope movement along the canal
  - Signs of traffic on the soil cover area other than from mowing equipment
  - Signs of damage to monitoring wells

- Asphalt cap
  - Signs of erosion, furrows, ruts, penetrations, cracking, or animal burrows
  - Vegetation growth through the asphalt
  - Areas of ponding water
  - Evidence of vandalism to the cap

- Drainage swales
  - Observation as to whether drainage swales are still allowing for adequate flow toward the canal
  - Signs of erosion, furrows, ruts, penetrations, cracking, or animal burrows
  - Exterior clean-out locations intact
  - Condition of check dams

  - Confirm flow is not bypassing check dams
  - Erosion issues at drainage layer outfall pipes or down chutes
- Perimeter security (fences and gates)
  - Gates are locked
  - Fence condition
  - Signs of vandalism
  - Signs of vegetation growing on fence or gates

Attachment 1 contains applicable inspection forms and other records generated for the site during the reporting period.

## 4. Corrective Measures Completed

Any deficiencies noted during inspections were corrected as noted in the inspection reports (Attachment 1). Each deficiency was addressed within 90 days as stipulated in the O&M plan (CH2M 2014b), however, as noted later in this report, eradication of Japanese knotweed (*Fallopia japonica var. japonica*) will be performed in spring 2019. In general, the issues that occurred in 2018 were associated with vegetation management.

Evans Chemetics performed the requested cutting vegetation along the eastern portion of the Gorham Street canal bank segment, and the Japanese knotweed was cut within the power pole guide wires as documented during the follow-up visit in August 2018. It was requested that the gates remain locked at the Gorham Street Area.

Japanese knotweed also was observed near the entry to SWMU-1 and near the tote storage area. An herbicide company was engaged during the August 2018 site visit, and it was recommended that the vegetation be addressed during the fall as it natural dies off for the season or in the spring as it emerges. This work could not be scheduled in the fall but will be implemented in spring 2019 at each area. It should be noted that Japanese knotweed is a very hardy invasive species, and it likely will take at least two seasons to eradicate. Minor grapevine growth along the western edge of the gabion wall was observed during the site inspection and had been addressed before the follow-up visit in August 2018.

Both cover systems and the gabion wall appear to be performing as designed. Dry conditions had prevailed in the height of summer (albeit briefly during an otherwise wet year), so the SWMU-1 cover appeared brown during the first cutting event in July 2018. The cover had rebounded by the October 2018 cutting event, and photographs reflect this observation (Attachment 2).

## 5. Report Submission

The periodic review report will continue to be submitted annually in hard copy and electronic format to the New York State Department of Environmental Conservation Central and Region 8 Office and the New York State Department of Health Central Office.

## 6. References

CH2M HILL, Inc. (CH2M). 2014a. *Construction Completion Report, Former Hampshire Chemical Corp., Gorham Street Corrective Measures, Waterloo, New York*.

CH2M HILL, Inc. (CH2M). 2014b. *Interim Operations and Maintenance Plan for Gorham Street Area, Former Hampshire Chemical Corp. Facility, Waterloo, New York*.

New York State Department of Environmental Conservation. 2011. *Second Amended Order on Consent between Hampshire Chemical Corp. and NYSDEC* (Index Number CO 8-20000218-3281). August 12.

# Figures


N

0 50 100

Feet

**Figure 1**
Interim Operations and Maintenance Plan / Periodic Review Inspection Area
Periodic Review Report for Gorham Street Area
*Former Hampshire Chemical Corp. Facility*
*Waterloo, New York*

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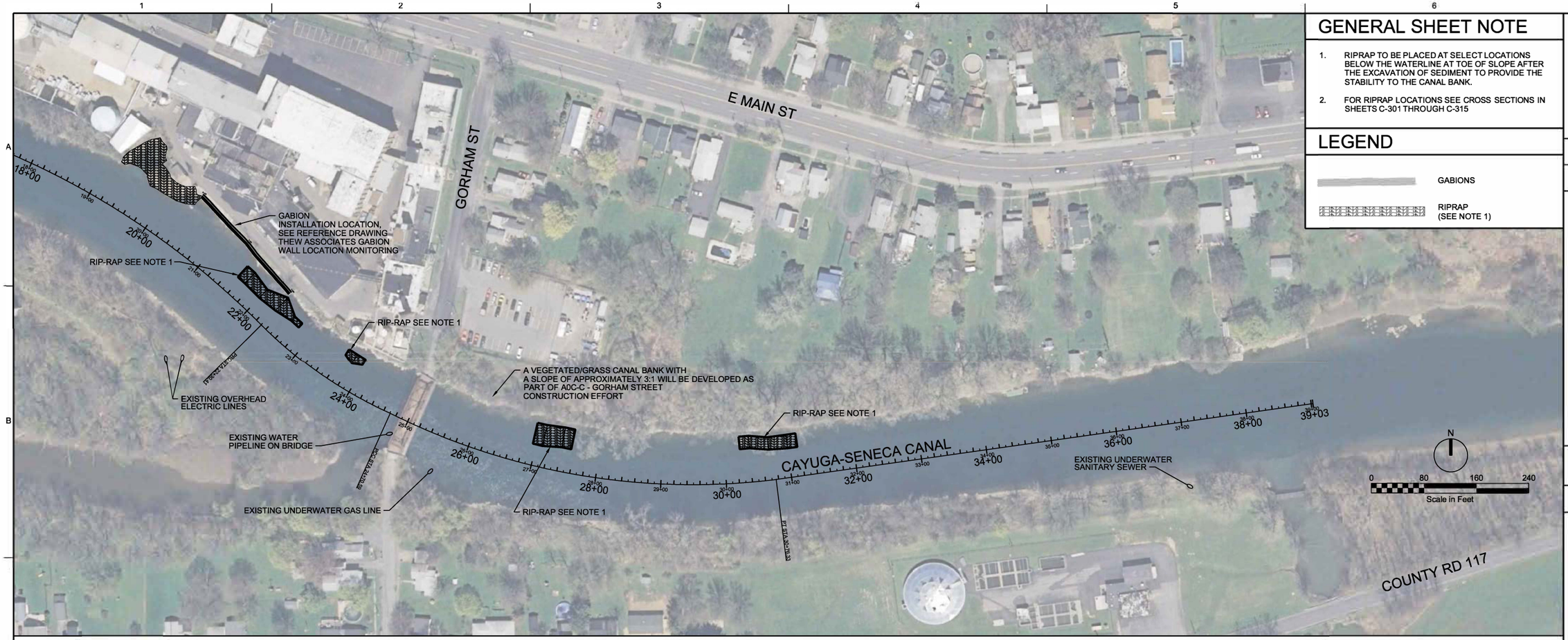
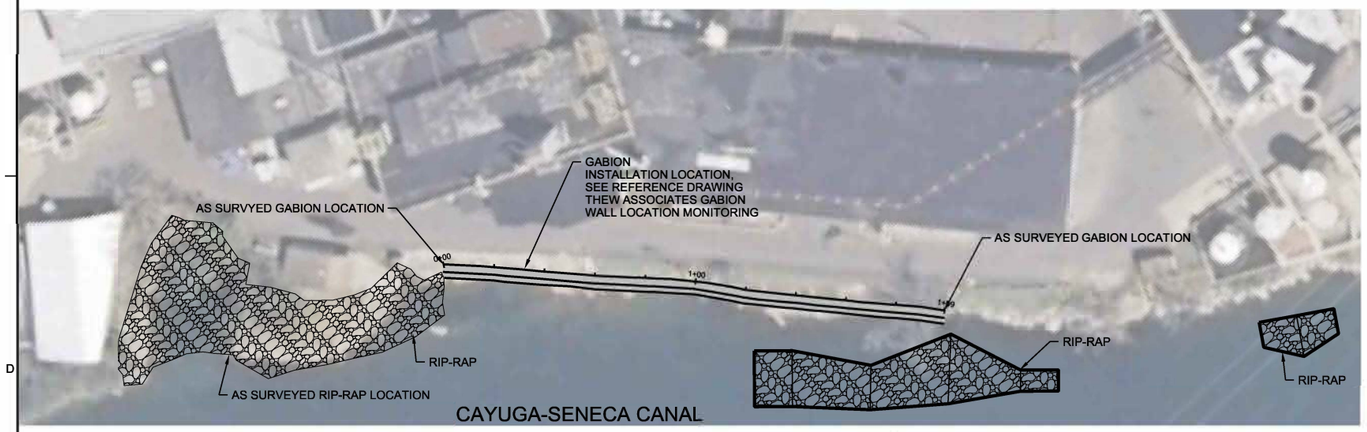
\\LAKEFRONT\PROJ\GIS\DOW\WATERLOO\REPORTS\2014\MISC\MAPFILES\FIGURE 01 - INTERIM OPS AND MAINTENANCE PLAN REVIEW INSPECTION AREA.MXD JHANSEN1 11/6/2017 1:34:30 PM




ENLARGED GABION PLAN
1"= 20'

## GABION COORDINATE TABLE

| STATION | NORTHING | EASTING |
|---|---|---|
| 0+00.00 | 1057258.29 | 747770.49 |
| 0+20.00 | 1057244.05 | 747784.50 |
| 0+40.00 | 1057229.29 | 747797.99 |
| 0+60.00 | 1057214.63 | 747811.60 |
| 0+80.00 | 1057200.41 | 747825.65 |
| 1+00.00 | 1057185.88 | 747839.38 |
| 1+20.00 | 1057170.08 | 747851.63 |
| 1+40.00 | 1057155.06 | 747864.83 |
| 1+60.00 | 1057140.09 | 747878.09 |
| 1+80.00 | 1057125.29 | 747891.54 |
| 1+99.28 | 1057110.72 | 747904.13 |

NOTE:
FOR GABION INSTALLATION LOCATION SEE REFERENCE DRAWING THEW ASSOCIATES GABION WALL LOCATION MONITORING

**Figure 2**
Gabion Wall Record Drawing
Periodic Review Report for Gorham Street Area and Gabion Wall
*Former Hampshire Chemical Corp. Facility*
Waterloo, New York

| NO. | DATE | REVISION | DR | CHK | APVD | BY |
|---|---|---|---|---|---|---|
| DSGN | S RAMAMURTHY | D.SCHAUER | | W ANDRAE | | G COLVIN |



SEDIMENT REMOVAL CORRECTIVE MEASURES
FORMER HAMPSHIRE CHEMICAL CORPORATION FACILITY
WATERLOO, NEW YORK

JACOBS®
CIVIL

BANK STABILIZATION PLAN
RESTORED BANK

1" = 60'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

| | |
|---|---|
| DATE | JULY 2014 |
| PROJ | 428287 |
| DWG | C-212 |
| SHEET | 14 of 14 |

FILENAME: 005-C-2012_428287.dgn PLOT DATE: 2016\01\14 PLOT TIME: 2:24:22 PM

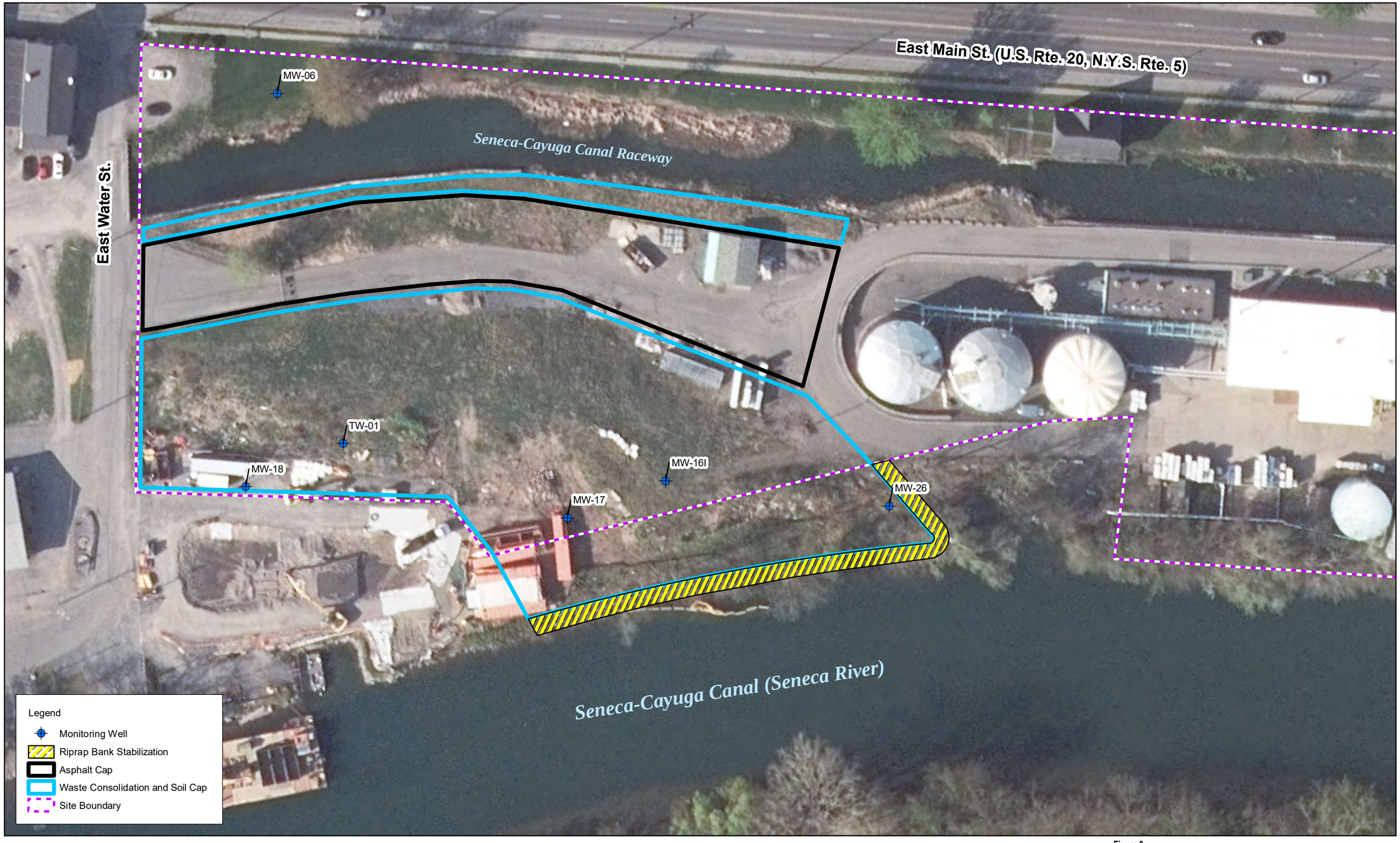



**Figure 3**
Interim Operations and Maintenance Plan/Periodic Review Inspection Area
Periodic Review Report for SWMU-1
*Former Hampshire Chemical Corp. Facility*
*Waterloo, New York*

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\\LAKEFRONT\PROJ\GIS\DOW\WATERLOO\REPORTS\2017\MAINTENANCE_PLAN_REVIEWREPORT\FIGURE 3 - SWMU 1 INTERIM OPERATIONS AND MAINTENANCE PLAN.MXD JHANSEN1 11/7/2017 8:48:10 AM

# Attachment 1
# Inspection Forms

**Attachment 1: Annual Inspection Form**
**Interim Operations and Maintenance Plan for SWMU 1**
**Former Hampshire Chemical Corp. Facility, Waterloo, New York**

**Inspection Date:** 7/31/18 **Inspector Name:** C. Lettick

| Soil Cover | Yes | No | N/A | Comments & Deficiencies Noted (Required if Shaded Area Selected) | CA Completion (Date/Initials) |
|---|---|---|---|---|---|
| Are there signs of stressed or dead vegetation? | X | | | Vegetation brown/dry due to low rain | |
| Is mowing of vegetation being performed at a suitable frequency? | X | | | Tall bamboo growth northern area near former MW19 and tote storage | Planned herbicide application for Fall 2018 BSC 8/21/18 |
| Are there signs of erosion, furrows, ruts, penetrations, cracking or animal burrows? | | X | | | |
| Are there any areas of ponding water? | | X | | | |
| Any evidence of vandalism to the cover? | | X | | | |
| Is there evidence of slope movement along the canal? | | X | | | |
| Are there signs of traffic on the soil cover area other than from mowing equipment? | X | | | one 3' x 3" track observed northern margin near portable loading dock. Possible fork lift | No evidence on 8/21/18 BSC |
| Are the monitoring wells damaged? | | X | | | |

| Asphalt Cap | Yes | No | N/A | Comments & Deficiencies Noted (Required if Shaded Area Selected) | CA Completion (Date/Initials) |
|---|---|---|---|---|---|
| Are there Signs of Erosion, Furrows, Ruts, Penetrations, Cracking or Animal Burrows? | | X | | | |
| Is there any vegetation growth through the asphalt? | | X | | | |
| Are there any areas of ponding water? | | X | | | |
| Any evidence of vandalism to the cap? | | X | | | |

| Drainage Swales | Yes | No | N/A | Comments & Deficiencies Noted (Required if Shaded Area Selected) | CA Completion (Date/Initials) |
|---|---|---|---|---|---|
| Are the drainage swales still allowing for adequate flow towards the canal? | X | | | | |
| Are there any signs of erosion, furrows, etc? | | X | | | |
| Are exterior cleanout locations able to be located? | X | | | | |
| Are check dams in good condition? | X | | | | |
| Is flow bypassing the check dams? | | X | | Flow not observed. No signs bypassing | |
| Any signs of excessive erosion from drainage layer outfall pipe and at down chutes? | | X | | | |
| Are there any signs of erosion, furrows, etc? | | X | | | |

| Perimeter Security (Fences & Gates) | Yes | No | N/A | Comments & Deficiencies Noted (Required if Shaded Area Selected) | CA Completion (Date/Initials) |
|---|---|---|---|---|---|
| Are all gates locked? | X | | | | |
| Is fence in good condition? | X | | | | |
| Are there signs of vandalism? | | X | | | |
| Is vegetation growing on fence or gates? | | X | | | |

CA - Corrective Actions

**Attachment 1: Semi-Annual Inspection Form**
**Interim Operations and Maintenance Plan for Gorham Street**
**Former Hampshire Chemical Corp. Facility, Waterloo, New York**

**Inspection Date:** 7/31/18 **Inspector Name:** C. Lettich

| Soil Cover | Yes | No | Comments & Deficiencies Noted (Required if Shaded Area Selected) | CA Completion (Date/Initials) |
|---|---|---|---|---|
| Are there signs of stressed or dead vegetation? | | X | ~10' high bamboo beneath powerline stanchion. Grass eastern canal bank | Bamboo Cut and Eastern bank cut before 8/21/18 Visit BSC |
| Is mowing of vegetation being performed at a suitable frequency? | X | | | |
| Are there signs of erosion, furrows, ruts, penetrations, cracking or animal burrows? | X | | Burrow observed near boulder. However, cob webs at mouth suggest old/unused | No digging observed during 8/21/18 Visit BSC 8/21/18 |
| Are there any areas of ponding water? | | X | | |
| Any evidence of vandalism to the cover? | | X | | |
| Is there evidence of slope movement along the canal? | | X | | |
| Are there signs of traffic on the soil cover area other than from mowing equipment? | | X | | |
| **Asphalt Cap** | **Yes** | **No** | **Comments & Deficiencies Noted (Required if Shaded Area Selected)** | **CA Completion (Date/Initials)** |
| Are there Signs of Erosion, Furrows, Ruts, Penetrations, Cracking or Animal Burrows? | | X | | |
| Is there any vegetation growth through the asphalt? | | X | | |
| Are there any areas of ponding water? | | X | | |
| Any evidence of vandalism to the cap? | | X | | |
| **Drainage Swales** | **Yes** | **No** | **Comments & Deficiencies Noted (Required if Shaded Area Selected)** | **CA Completion (Date/Initials)** |
| Are the drainage swales still allowing for adequate flow towards the canal? | X | X (CA) | | |
| Are there any signs of erosion, furrows, etc? | | X | | |
| **Perimeter Security (Fences & Gates)** | **Yes** | **No** | **Comments & Deficiencies Noted (Required if Shaded Area Selected)** | **CA Completion (Date/Initials)** |
| Are all gates locked? | | X | | Requested that gates remain locked BSC 8/21/18 |
| Is fence in good condition? | X | | | |
| Are there signs of vandalism? | | X | | |
| Is vegetation growing on fence or gates? | | X | | |

CA - Corrective Actions

# Former Hampshire Chemical Corp.

***AOC A Sediment Removal Project***

## Gabion Wall Inspections

The gabion wall located on the Cayuga-Seneca Canal should be assessed and inspected bi-annually. The following items will be included in these routine visual inspections:

- Confirm that eroded soil has not built up on the top of the wall; remove materials as necessary
- Inspect for visual signs on vertical or horizontal alignment changes, bulging, or other changes since the last inspection. Take photos for similar locations and directions for comparison over time
- Inspect face of wall for broken or separated sections of the wire gabions and plant growth; large vegetation/trees should be removed.

If during inspections, individual wires or sections of the gabions are found to be broken, they must be repaired as soon as possible because they are structural elements of the wall. Repairs should include gabion wire repair materials (welded wire mesh, binding wire, rings, etc.) recommended by a reputable gabion manufacturer and supplier. All repairs will be performed in strict conformance to gabion manufacturer recommendations.

| Inspection | Comments |
|---|---|
| Erosion at top or back of gabion wall | None |
| Horizontal alignment (bulging) | None |
| Vertical alignment (drop or deflection of top of wall) | None |
| Gabion basket wire (damage or breaks) | None |
| Vegetation (on face or top of wall) | Grape groundcover near western outfall. Grapevine removed prior to 8/21/18 visit |

**Inspection Completed by:** C. LeHich

**Inspection Date:** 7/31/2018

B S
8/21/18

# Attachment 2
# Photo Log

# Photo Log

Interim Operations and Maintenance Plan/Periodic Review Report 2018, Gorham Street Area, Gabion Wall, and SWMU 1
December 2018

| | |
|---|---|
| **Project Title** | **Interim Operations and Maintenance Plan/Periodic Review Report 2018, Gorham Street Area, Gabion Wall, and SWMU 1** |
| **Location** | Former Hampshire Chemical Corp. Facility, Waterloo, New York—Site No. 850001A |
| **Date** | December 2018 |

## Gorham Street

**Photograph 1: Gorham Street**

**Photograph 2: Gorham Street**

**Photograph 3: Gorham Street**

**Photograph 4: Gorham Street**

**Photograph 5: Gorham Street**

**Photograph 6: Gorham Street**

**Solid Waste Management Unit 1**

**Photograph 7: SWMU-1**

**Photograph 8: SWMU-1**

**Photograph 9: SWMU-1**

**Photograph 10: SWMU-1**

**Photograph 11: SWMU-1**

**Photograph 12: SWMU-1**

**Photograph 13: SWMU-1**

**Photograph 14: SWMU-1**

## Gabion Wall

**Photograph 15: Gabion Wall**

**Photograph 16: Gabion Wall**