

Mr. Michael Belveg, PE
Assistant Engineer (Environmental)
New York State Department of Environmental Conservation
Region 7
5786 Widewaters Parkway
Syracuse, New York 13214-1867

Arcadis U.S., Inc.
One Lincoln Center
110 West Fayette Street
Suite 300
Syracuse
New York 13202
Phone: 315 446 9120
Fax: 315 449 0017
www.arcadis.com

Date: October 20, 2023
Our Ref: 30141863 / 30152100
Subject: **Well Abandonment Completion Report**
Northern Cold Springs Terminal
Hillside Road, Lysander, New York

Dear Mr. Belveg:

On behalf of the Northern Terminal Group (NTG), Arcadis U.S., Inc. (Arcadis) is submitting this *Well Abandonment Completion Report* to summarize the abandonment activities of select monitoring wells at Northern Cold Springs Terminal, New York (Site) (see Figures 1 and 2).

As documented, the quarterly groundwater monitoring outlined by the Supplemental Characterization and Interim Remedial Action Work Plan (Arcadis, February 21, 2018) and the Northern Terminal Focused Investigation Summary Report (Arcadis, September 28, 2018), respectively approved by New York State Department of Environmental Conservation (NYSDEC), email dated February 23, 2018 and letter dated October 24, 2018, has been completed with the submission of the 1Q2020 quarterly monitoring report (Arcadis, June 12, 2020). In the 1Q2020 report Arcadis, on behalf of the Northern Terminal Group, concluded that the monitoring was completed and future monitoring of a group of 18 wells was no longer needed. These concepts were discussed in a Northern Terminal Group / NYSDEC meeting on June 29, 2020. During that meeting all participants agreed that monitoring was complete, would be halted, and that a group of 16 wells would be permanently abandoned.

This abandonment completion report provides a summary of the removal activities of the following wells: BMW2, BMW3, BMW7, BMW8, BMW9, MW-201, MW-202, MW-203, MW-205, MW-206, MW-207, MW-209, MW-210, MW-211, and PZ106S conducted by Arcadis on behalf of the NTG.

Well Abandonment Details

Arcadis personnel completed a preliminary site walk on March 13, 2023. Wells selected for abandonment were identified using orange flagging tape and current conditions were document. Figure 1 presents the Northern Terminal site location in Lysander, New York.

Figure 2 presents the locations of wells that were abandoned. Wells abandoned during the event included BMW2, BMW3, BMW7, BMW8, BMW9, MW-201, MW-202, MW-203, MW-205, MW-206, MW-207, MW-209, MW-210, MW-211, and PZ106S.

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Per the October 12, 2022, email request from the NYSDEC, BMW6 was removed from listed wells to be abandoned and would remain an active monitoring well on the Northern Terminal. This request is associated with the planned activities to be completed by the STG.

Vegetation clearing to facilitate well abandonment activities were conducted and then well abandonment took place from April 10 through April 13, 2023. The first day of activities included clearing vegetation around selected wells and clearing a path to each well using a skid steer and brush hog mowing attachment. After clearing vegetation Parratt-Wolff, subcontractor to Arcadis, began well abandonment activities and removed BMW7, BMW8, and MW-202. Well Casing and piping was completely removed using a vertical drill. Well materials were placed near the existing well location. Wells were then filled with a Portland cement and bentonite clay mixture. Abandonment of BMW3, MW-201, MW-203, MW-205, MW-206, MW-207, and MW-209 took place on the second day of activities, with complete removal of well casings and piping. Abandonment of BMW2, BMW9, MW-210, MW-211, and PZ106S took place on the third day of activities, with complete removal of well casings and piping.

In addition to the completion of well abandonment activities, abandonment details such as date of abandonment, length of casing removed, and the amount of fill added to each well is detailed in the table below:

Well ID	Date of Abandonment	Length of Casing Removed (ft)	Fill Added - Concrete (gals)	Fill Added - Bentonite (gals)
BMW2	4/12/2023	34	18	2
BMW3	4/11/2023	29	17	5
BMW7	4/10/2023	15	14	4
BMW8	4/10/2023	20	19	6
BMW9	4/12/2023	15	14	4
MW-201	4/11/2023	24	17	5
MW-202	4/10/2023	16.5	14	4
MW-203	4/11/2023	20	16	5
MW-205	4/11/2023	20	16	5
MW-206	4/11/2023	20	16	5
MW-207	4/11/2023	20	16	5
MW-209	4/11/2023	20	16	5
MW-210	4/12/2023	18	15	5
MW-211	4/12/2023	15	14	4
PZ106S	4/12/2023	15.5	14	4

As proposed in the work plan, all soil materials were spread at grade; no waste soil or water was containerized during this process. Well materials of construction were disposed of as general construction debris.

Materials including well casings, grout, polyvinyl chloride (PVC) riser pipe / well screen, and high density polyethylene (HDPE) tubing removed during well abandonment were temporarily placed at the site of each well. Nearing the completion of the abandonment event, materials were collected by Parratt-Wolff and taken offsite for disposal.

On May 10, 2023, Arcadis conducted a post abandonment site walk and area inspection, in which one (1) former monitoring well (MW-211) of the 15 former monitoring wells previously abandonment required additional

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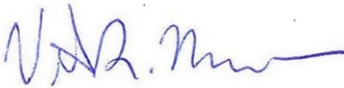
abandonment material. Parratt-Wolff was able to mobilize to the site the same day and successfully added additional Portland cement and bentonite clay mixture to former MW-211 location.

Pre and post abandonment photos of the abandoned wells are presented in Attachment A.

Pending NTG Activities

The submission of this well abandonment documentation completes the NTG's requirement for completion of the Site Assessment of the Northern Terminal Tank Farm.

Sincerely,
Arcadis U.S., Inc.



Vincent S. Maresco
Certified Project Manager

Email: vin.maresco@arcadis.com
Direct Line: 315.671.9256

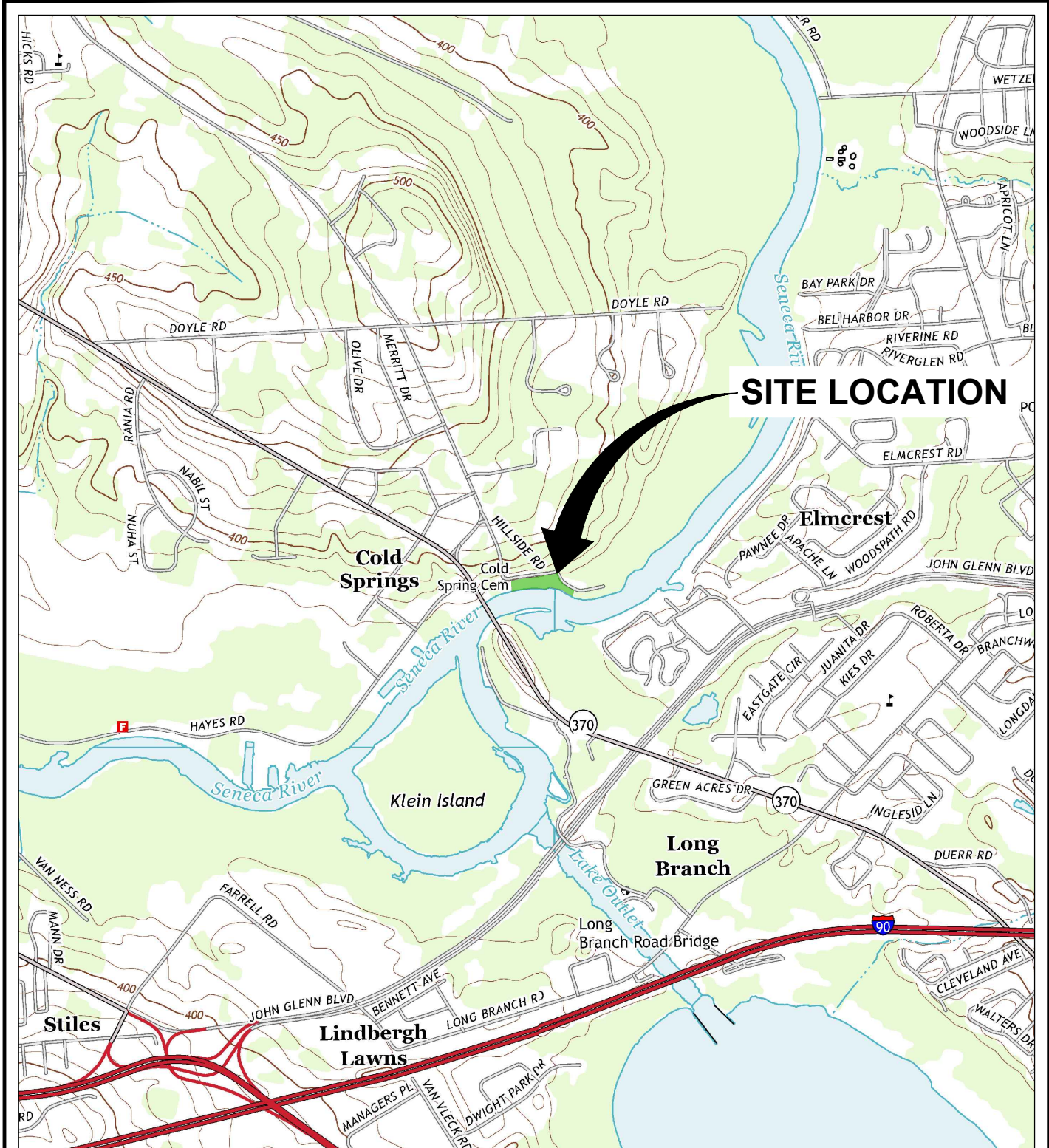
CC. Krista Manley, Buckeye Pipeline Company, L.P.
Paul Johnson, bp
Margaret A. Sheen Esq., NYSDEC

Enclosures:

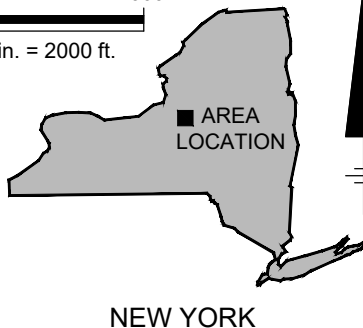
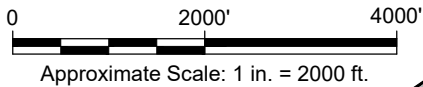
- Figure 1 – Site Location Map
- Figure 2 – Well Abandonment Locations
- Attachment A – Photo Log


Figures

CITY: SYRACUSE NY DIV/GROUP: EN/CAD DB: E:KRAHMER PIC: PM: V: MARESCO TR: R: HENSEL TR: N: GRIFFITH L/R: (OPTION)-OFF-REF
 C:\Users\sh22\BIM\360\Arcadis\ANA - BP AMOCO CORPORATION\Project Files\Buckeye Pipeline Company\2020\3000360801-DWG\202001_Fig_1_SLM.dwg LAYOUT: 1 SAVED: 4/7/2020 10:13 PM ACADVER: 23.15 (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 9/11/2020 11:45 AM BY: S. HARISH

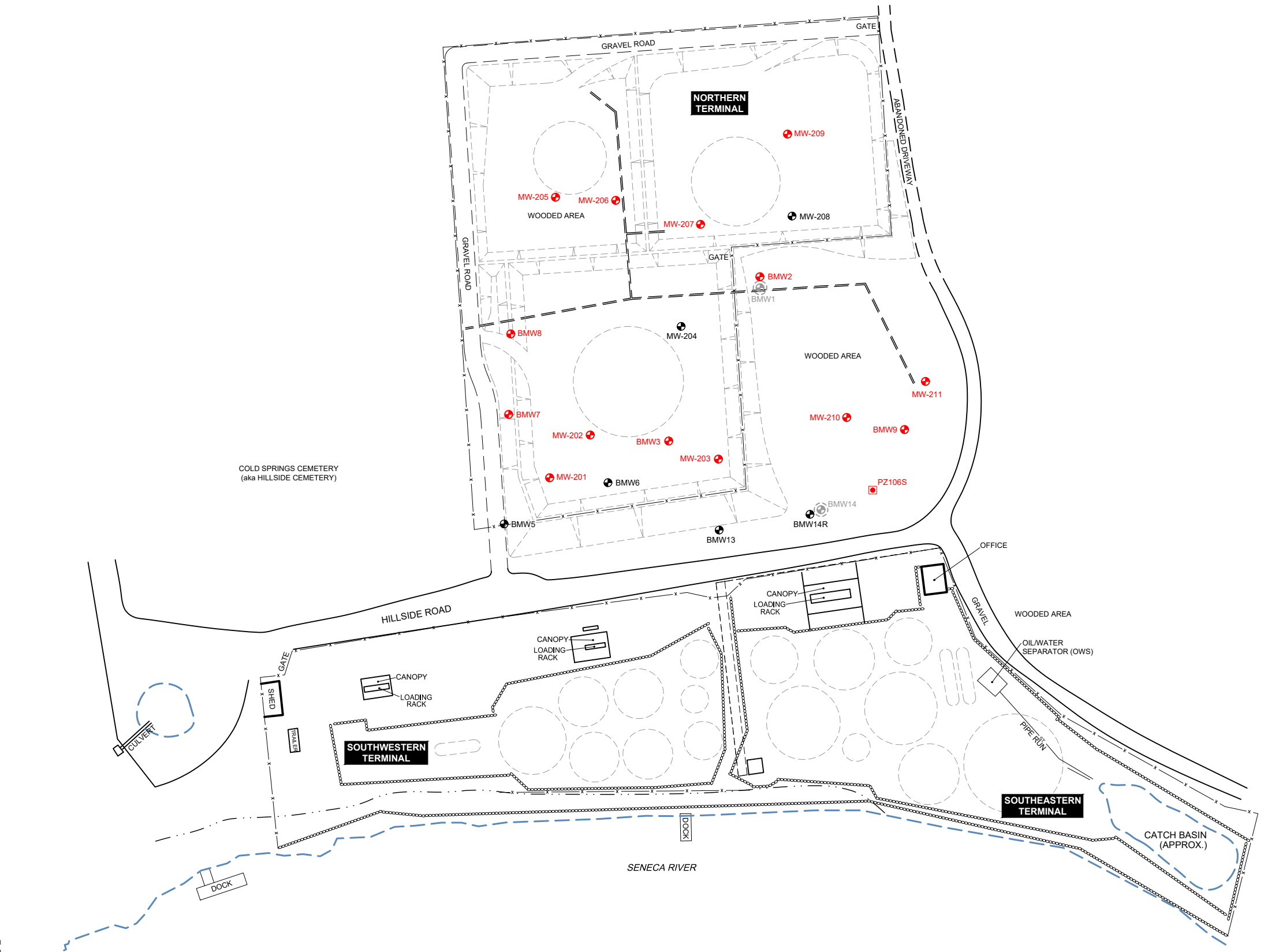


REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., BALDWINVILLE, BREWERTON, CAMILLUS & SYRACUSE WEST, NY, 2013.



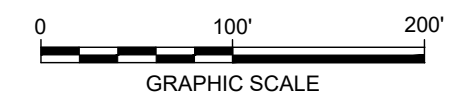
NORTHERN COLD SPRINGS TERMINAL LYSANDER, NEW YORK WELL ABANDONMENT WORK PLAN	
SITE LOCATION MAP	
	Design & Consultancy <i>for natural and built assets</i>
FIGURE 1	

PROJECTNAME: ----
 XREFS: 202001-Title Block



- LEGEND:**
- MONITORING WELL
 - PREVIOUSLY DECOMMISSIONED MONITORING WELL
 - ABANDONED MONITORING WELL
 - ABANDONED PIEZOMETER
 - FORMER SITE FEATURE
 - FENCE
 - RETAINING WALL
 - EDGE OF WATER
 - EDGE OF BANK

- NOTES:**
1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED SEPTEMBER 30, 2015.
 2. LOCATION OF PIEZOMETER (PZ106S) WAS SURVEYED ON APRIL 26, 2016 BY C.T. MALE. LOCATION OF MONITORING WELLS MW-201 - MW-210 WERE SURVEYED ON JUNE 7, 2018.
 3. AST = ABOVE GROUND STORAGE TANK.



NORTHERN COLD SPRINGS TERMINAL
 LYSANDER, NEW YORK
WELL ABANDONMENT COMPLETION REPORT

WELL ABANDONMENT LOCATIONS

FIGURE
2

Attachment A

Photo Log



Photograph No. 1: BMW2 Pre abandonment 04/12/2023



Photograph No. 2: BMW2 Post abandonment 05/09/2023



Photograph No. 3: BMW3 Pre abandonment 04/11/2023



Photograph No. 4: BMW3 Post abandonment 05/09/2023



Photograph No. 5: BMW7 Pre abandonment 04/12/2023



Photograph No. 6: BMW7 Post abandonment 05/09/2023



Photograph No. 7: BMW8 Pre abandonment 04/10/2023



Photograph No. 8: BMW8 Post abandonment 05/09/2023



Photograph No. 9: BMW9 Pre abandonment 04/12/2023



Photograph No. 10: BMW9 Post abandonment 05/09/2023



Photograph No. 11: MW-201 Pre abandonment 04/11/2023



Photograph No. 12: MW-201 Post abandonment 05/09/2023



Photograph No. 13: MW-202 Pre abandonment 04/10/2023



Photograph No. 14: MW-202 Post abandonment 05/09/2023



Photograph No. 15: MW-203 Pre abandonment 04/11/2023



Photograph No. 16: MW-203 Post abandonment 05/09/2023



Photograph No. 17: MW-205 Pre abandonment 04/11/2023



Photograph No. 18: MW-205 Post abandonment 05/09/2023



Photograph No. 19: MW-206 Pre abandonment 04/11/2023



Photograph No. 20: MW-206 Post abandonment 05/09/2023



Photograph No. 21: MW-207 Pre abandonment 04/11/2023



Photograph No 22: MW-207 Post abandonment 05/09/2023



Photograph No. 23: MW-209 Pre abandonment 04/11/2023



Photograph No. 24: MW-209 Post abandonment 05/09/2023



Photograph No. 25: MW-210 Pre abandonment 04/12/2023



Photograph No. 26: MW-210 Post abandonment 05/09/2023



Photograph No. 27: MW-211 Pre abandonment 04/12/2023



Photograph No. 28: MW-211 Post abandonment 05/09/2023



Photograph No. 29: PZ106S Pre abandonment 04/12/2023



Photograph No. 30: PZ106S Post abandonment 05/09/2023