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December 13, 2022  
File No. 21.0056855.20

Mr. Benjamin McPherson, P.E.  
New York State Department of Environmental Conservation (NYSDEC)  
Division of Environmental Remediation  
700 Delaware Avenue  
Buffalo, New York 14209  
via email: benjamin.mcpherson@dec.ny.gov

Re: Huntley Power South Parcel  
Groundwater Sampling and Analysis Plan and Hydraulic Conductivity Testing  
Brownfield Cleanup Program Site Number C915337  
Tonawanda, New York

Mr. McPherson:

GZA GeoEnvironmental of New York (GZA), on behalf of our Client Huntley Power, LLC (Huntley) submits this scope of work for groundwater sampling and analysis and hydraulic conductivity testing on the above referenced BCP site. The proposed work is anticipated to provide supplemental data pertaining to the mobility of arsenic in groundwater at the Site and its effects on potential remedial alternatives.

### **Task 1: Groundwater Sampling and Analysis**

GZA and Huntley's environmental subcontractor, Frontier Environmental (Frontier), will conduct low flow groundwater sampling at select wells on and adjacent to the BCP Site. Frontier will conduct the sampling in accordance with standard Environmental Protection Agency (EPA) low flow methodologies and the Remedial Investigation Work Plan (RIWP). Top of groundwater measurements will be collected prior to purging/sampling to develop a groundwater contour map. Water quality parameters including pH, oxygen reduction potential (ORP), dissolved oxygen (DO), specific conductance, temperature, and turbidity will be collected until stabilization prior to sampling. Collected groundwater samples will be submitted for analysis that includes total and dissolved arsenic, total and dissolved iron, sulfate, and sulfides. This data will be useful to evaluate the mobility of arsenic in groundwater and its effects on potential remedial alternatives. The additional iron, sulfate, and sulfide data will be useful in that such is known to immobilize arsenic.

We propose sampling wells identified as CCR-1, -2, -3, -7, -8, -9, -10, and -11 (see attached **Figure 1-2** from the Remedial Action Work Plan (RAWP)). These wells represent conditions upgradient of the south settling pond and equalization basins (CCR-3), wells between the pond and equalization basins (CCR-7 and CCR-8), and downgradient of the equalization basins (CCR-1, CCR-2, CCR-9, CCR-10 and CCR-11).



**Task 2: Hydraulic Conductivity Testing**

Frontier will conduct in-situ hydraulic conductivity testing via slug tests at wells CCR-2, -3, -7, -8 and -10. This information will be useful to estimate Site hydraulic conductivities to further evaluate remedial alternatives. Hydraulic conductivity testing will be conducted in conformance with the methods detailed in “A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells” by Bouwer and Rice and the attached Work Plan provided by Frontier.

Static depth to water and bottom of well measurements will be collected prior to the installation of any equipment into the wells. Pressure transducers will be installed at the bottom of each well and the depth of the transducer relative to grade will be documented. The pressure transducers will be set to collect data in quarter, half, or one second intervals, as appropriate.

Following installation of the pressure transducer, Frontier will collect at least two minutes of readings prior to slug installation. The slug will then be installed into the well and a slug-in test will be performed. If the water level response to the slug-in test is slow, the test/data collection will be continued for 10 minutes following slug removal. If the water level recovers to static conditions within 10 minutes of slug installation, then a second slug test will be performed by removing the slug (slug-out method).

**Task 3: Reporting**

GZA will provide a letter report summarizing the work conducted and will include supplementary figures, tables, and collected data. Information obtained by this assessment is anticipated to further inform a site remedy and will also be incorporated into the revised RAWP.

**Schedule**

This scope of work is anticipated to take two field days. As discussed, GZA respectfully requests your timely review, as we hope to conduct the sampling in above-freezing conditions.

Thank you for your time and consideration. If you have any questions or require additional information, please contact Thomas Bohlen at (716) 570-5983.

Sincerely,

GZA GEOENVIRONMENTAL OF NEW YORK

Thomas Bohlen, P.G.  
Project Manager

Daniel J. Troy, P.E.  
Consultant Reviewer

Bart A. Klettke, P.E.  
Principal

Attachments: Figure 1-2 – Site Plan from the RAWP, Frontier Hydraulic Testing Work Plan

© 2022 - GZA GeoEnvironmental, Inc. K:\PROJECTS\568005\56855.20 Huntley Power R\GIS\Figures\AAR-RAWP Report\Fig 1-2.mxd, 5/26/2022, 1:16:05 PM, ernest.thalhammer



**LEGEND**

-  NEW MONITORING WELL
-  EXISTING GROUNDWATER MONITORING WELLS
-  SITE FEATURES
-  BCP SITE BOUNDARY

**SOURCE**

- 1) THIS MAP CONTAINS THE ESRI ARCGIS ONLINE BING MAPS AERIAL LAYER PACKAGE, PUBLISHED NOVEMBER 25, 2013 BY ESRI ARCGIS SERVICES AND UPDATED MONTHLY. THIS SERVICE USES UNIFORM NATIONALLY RECOGNIZED DATUM AND CARTOGRAPHY STANDARDS AND A VARIETY OF AVAILABLE SOURCES FROM SEVERAL DATA PROVIDERS.
- 2) THE BASE MAP FEATURES WERE LOCATED FROM A "PRELIMINARY" UNTITLED ELECTRONIC CAD FILE PREPARED BY WENDEL COMPANIES, RECEIVED VIA EMAIL ON 07-01-2018, FILE: 419418-BOUNDARY.DWG, AND FROM A PDF PREPARED BY WENDELL COMPANIES ENTITLED "180816 HUNTLEY BCP PARCEL - SIGNED.PDF", DATED: 06-04-2018, ORIGINAL SCALE: 1" = 100 FEET, PROJECT NUMBER: 419418.
- 3) THE HISTORICAL UTILITY DATA WAS REFERENCED FROM ELECTRONIC FILES PROVIDED BY HUNTLEY POWER LLC., RECEIVED VIA EMAIL ON 09-06-2019, FILES: 34735SH01.CIT, 34736SH02.CIT, 34737SH03.CIT, 34738SH04.CIT, 34739SH05.CIT, 34740SH06.CIT, 34741SH07.CIT, 34742SH08.CIT AND FROM A PDF PREPARED BY NIAGRA MOHAWK POWER CORPORATION ENTITLED "STATION SITE PLAN, ENLARGED COMPOSITE OF STRUCTURES, AND YARD PIPING" DATED: 03-23-1977, ORIGINAL SCALE: 1" = 20 FEET.
- 4) THE ADDITIONAL UTILITY DATA AND SITE EASEMENTS WERE REFERENCED FROM ELECTRONIC FILES PROVIDED BY HUNTLEY POWER LLC., RECEIVED VIA EMAIL ON 09-17-2019, FILE: NRG HUNTLEY - EASEMENT FIGURE - STANDARD.ZIP
- 5) LOCATIONS OF MONITORING WELLS WERE REFERENCED FROM MONITORING WELL AS-BUILTS SURVEYED BY WENDEL ON NOVEMBER 18TH 2020. ALL OTHER SITE FEATURES ARE APPROXIMATE PENDING RECEIPT OF FINAL AS-BUILTS.

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**HUNTLEY POWER SOUTH PARCEL**  
**3500 RIVER ROAD**  
**TONAWANDA, NEW YORK**

**SITE PLAN**

PREPARED BY:  <b>GZA GeoEnvironmental, Inc.</b> Engineers and Scientists www.gza.com		PREPARED FOR: <b>NRG HUNTLEY POWER, LLC</b>	
PROJ MGR: JJR	REVIEWED BY: DJT	CHECKED BY: BK	<b>FIGURE</b> <b>1-2</b>
DESIGNED BY: JJR	DRAWN BY: EMD / SMW	SCALE: 1" = 150 FEET	
DATE: 05/26/2022	PROJECT NO: 21.0056855.20	REVISION NO.	

**WORK PLAN FOR THE  
DETERMINATION OF IN-SITU HYDRAULIC CONDUCTIVITY  
AT SELECTED WELLS  
AT HUNTLEY POWER STATION**

**GENERAL**

This Work Plan presents the scope and method for the determination of Hydraulic Conductivity in select wells at the Huntley Power Station. The conventional "slug test" method as detailed by Bouwer and Rice will be used to estimate the hydraulic conductivity (transmissibility) of the groundwater at the selected wells.

**SCOPE**

The scope of the evaluation is as follows:

- Review the existing well logs.
- Assemble all the necessary equipment.
- Pre-clean the equipment.
- Establish a means to clean the equipment between wells.
- Install the data logger in the bottom of the wells.
- Rapidly place the slug in the wells and begin recording the data.
- Analyze the data and determine the Hydraulic Conductivity for each well.
- Submit the results to the NYSDEC.

**WELLS TO BE EVALUATED**

The wells to be evaluated are CCR-2, CCR-3, CCR-7, CCR-8, and CCR-10. The well logs for these wells are available, detailing the construction, depth and other key factors to be used in the determination of Hydraulic Conductivity. The location of these wells are shown on the attached aerial photograph.

**EVALUATION PERSONNEL**

The personnel for this project are Mr. David Harty, P.E. and Mr. David Steiner, P.G. Mr. Harty was the Project Engineer who directly oversaw the installation of the wells and Mr. David Steiner is a Geologist with over 40 years experience in this type of work.

## **METHOD**

The slug test method to be used is the method detailed in the paper "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells" by Herman Bouwer and R.C. Rice. The USG has a published an Excel version of this method to aid in the computation of the Hydraulic Conductivity. The procedure is as follows:

- A pressure transducer/data logger is placed in the bottom of the well.
- A slug (weighted bailer) is rapidly placed in the well causing the water the local groundwater level to rise.
- Measurements of water level with time and well characteristics are used to calculate the hydraulic conductivity.

## **EQUIPMENT NEEDED**

Equipment Needed:

- Solinst Water Level Meter
- Distilled Water (cleaning)
- Weighted PVC Slug
- Rope
- In-Situ Aqua Troll 200 Data Logger
- Rugged Data Reader
- Down-Hole Pumps and Tubing (if water withdrawal method is used)
- Support Equipment

## **EQUIPMENT DECONTAMINATION**

The wells have all been sampled numerous times and level of potentially transferable contamination is quite low. All equipment to be used are inert materials. New rope will be used for each well. Therefore, the equipment will be wiped down (paper towels) and triple rinsed with distilled water between holes and air dried. The equipment will be stored in polyethylene bags between wells.

## **REPORT**

A summary report with a tabulation of the data and hydraulic conductivities will be prepared and after internal review will be submitted to the NYSDEC.