HydroTech Environmental
ENGINEERING AND GEOLOGY, DPC
231 West 29th Street, Suite 1104
New York, New York 10001 USA
Tel: (631) 462-5866
**Email:** Info@hydrotechenvironmental.com
WWW.HYDROTECHENVIRONMENTAL.COM
USA – Middle East – North Africa

November 05, 2026

Ms. Wendi Zheng, PE
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
47-20 21st Street,
Long Island City, New York 11101

**Re: Supplemental Groundwater Treatment Work Plan**
**1036 Manhattan Ave BCP Site**
**170 Freeman Street, Brooklyn, Kings County**
**Brownfield Cleanup Program # C224315**

Dear Ms. Zheng:

Hydro Tech Environmental Engineering and Geology, DPC (Hydro Tech) hereby submits this Supplemental Groundwater Treatment Work Plan (Work Plan) on behalf of 170 Freeman LLC and BK Corners LLC (collectively "the Participant"). This work Plan consists of additional treatment of groundwater contamination at the above referenced New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) Site #C224315 (the Site), as stipulated and in Section 4.5 of the Site Management Plan (SMP) dated October 2025 and in accordance with the requirements by NYSDEC in a letter dated July 27, 2026.

Specifically, this Work Plan is intended to address residual concentrations of chlorinated volatile organic compounds (CVOCs) which continue to be detected in groundwater beneath the northwest and north-adjacent sidewalks to the Site at concentrations above Ambient Water Quality Standards (AWQS), and also the decommissioning of existing off-Site monitoring wells that will be discontinued from further groundwater monitoring and sampling.

**1.0 Background for the Required Supplemental Groundwater Treatment**

Chlorinated VOCs (CVOCs) associated with the historic use of the Site as a drycleaner were documented in HydroTech's Remedial Investigation Report (RI) to be detected in groundwater beneath the Site and off-Site at concentrations exceeding AWQS. These CVOCs included tetrachloroethene (PCE) and its derivative compounds including cis-1,2-dichloroethylene (cis-1,2-DCE) methylene chloride, trans-1,2-dichloroethylene (trans-1,2-DCE) and vinyl chloride (VC) and their RI maximum concentrations were reported at 93.7 ug/L on-Site, and at 679 µg/L off-Site.

Interim remedial measures were implemented during Site development under the NYSDEC BCP and included source removal to below the saturated zone within the area of a partial basement between May 2022 and May 2024, and *in-situ* groundwater bioremedial treatment within an area approximately 3,600 square feet in the western portion of the Site during February 2024. Injected bioremedial agent consisted of 2,800 pounds of 3-D Microemulsion Factory Emulsified (3DME) mixed with 18 liters of additive identified as Bio-Dechlor Innoculum Plus (BDI Plus) and were applied in an 8-foot saturated zone through 18 injection points. A post IRM groundwater monitoring program which consisted of eight quarterly groundwater sampling events was implemented on a network of six (6) off-Site groundwater monitoring wells designated as MW-9, MW-10, MW-11 replaced with MW-11R, MW-13 replaced with MW-13R, MW-14 and MW-15. These six wells are currently present in four sidewalks located downgradient in the adjacent and across the northern and western vicinities of the Site. Post IRM groundwater sampling results indicated CVOCs have been undetected in four monitoring wells MW-10, MW-13R, MW-14 and MW-15. CVOCs have been detected in MW-11R below their AWQS, while their detected concentrations in MW-9 have consistently exceeded AWQS. The most recent detections of CVOCs in MW-9 included cis-1,2-DCE at 400 µg/L, trans-1,2-DCE at 24.4 µg/L, and vinyl chloride at 2.49 µg/L. Based on these findings, NYSDEC approved HydroTech's petition to discontinue the sampling of three off-Site monitoring wells MW-10, MW-14 and MW-15 and requested additional treatment of groundwater contamination in the vicinity of MW-9 and MW-11R consistent with the Section 4.5 of the Site Management Plan (SMP) dated October 2025. NYSDEC also requested the continuation of the quarterly groundwater monitoring and sampling in MW-9, MW-11R and MW-13R following this supplemental round of bioremedial injections.

**Figure 1** provides a Site map showing the location of the monitoring wells around the Site and the detected CVOCs in monitoring wells pre-and post IRM injections. **Attachment 1** provides NYSDEC correspondence.

## 2.0 Supplemental Groundwater Treatment

HydroTech is proposing a second round of *in-situ* bioremedial injections to treat residual PCE and its derivative compounds in groundwater beneath the sidewalk along Manhattan Avenue bounding the Site on the west, and the sidewalk along Freeman Street bounding the Site on the north. The injections will be performed through the application of a preset volume of 3-D Microemulsion (3DME) and BDI Plus solution. The bioremdial solution will be applied via 8 injections points located 10 feet apart as shown on attached **Figure 2**. The injection points will be installed to an anticipated depth of 17 feet below the sidewalk grade. The solution will be injected under pressure to the soil/groundwater interface at approximately 9 feet below grade surface, resulting in a treatment zone of approximately 8 feet in thickness. Consistent with manufacturer recommendations, a total of 144 gallons of 3DME and 18 liters of BDI Plus are recommended for this supplemental bioremedial injections. Approximately 18 gallons of 3DME and 2.25 liters of BDI Plus mixed with 364 gallons of water will be applied in each injection point. All injection points will be installed via direct push utilizing a

6620DT Geoprobe® rig, or equivalent, and the solution will be injected in each point utilizing VEVOR air-operated double diaphragm pneumatic transfer pump. All injection points will be abandoned following injections using No. 2 Fillpro sand and capped at surface with 6-inch concrete. Manufacturer's specification for the volume and density rates of bioremedial agents application is included as **Attachment 2**. **Attachment 3** provides No.2 Fillpro specification.

**3.0 Agencies Coordination for Fieldwork, Permitting, and Site Mobilization**

Prior to installing the injection points, a geophysical survey consisting of a Ground-Penetrating Radar (GPR) survey will be conducted at the injections points locations to avoid any sub grade utilities. Drilling activities will also require the submission of an addendum Application to the EPP Adjacencies with the MTA to upgrade the previously issued Letter of Approval by MTA for the previous IRM injections in 2024. DOT sidewalk opening permits will also be acquired for this drilling in the adjacent sidewalks to the Site. In addition, an Underground Injection Control (UIC) application will be filed on-line with the USEPA Region 2 for authorization of this application.

Mobilization will be conducted as necessary for each phase of work and includes field personnel orientation, equipment mobilization, marking and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

**4.0 Fieldwork Safety**

This supplemental groundwater treatment work plan will be implemented in accordance with Appendix 7 - Health and Safety Plan (HASP) and Appendix 8 - Community Air Monitoring Plan (CAMP) in the NYSDEC-approved SMP dated October 2025. CAMP data will be reported to the NYSDEC and NYSDOH via daily reports describing any CAMP exceedances and actions taken to correct the issue.

HydroTech will ensure that the health and safety procedures during injections will be considered from the start of this operation and will involve both technical and drilling personnel to ensure that all potential exposures to the injected solution by individuals including workers, pedestrians and nearby residents are prevented. These potential exposures would result from accidental splashes of the solution during mixing and from loose rod joints connections, or from unexpected daylighting discussed below. Safety measures will be implemented as needed such as physical barriers consisting of 6-mil polyethylene shields to protect individuals, containment measures to direct any splashes or surface runoff of the solution away from the sidewalk and the streets, and immediate cleaning and recovering spilled materials to be re-injected.

**5.0 Addressing Potential Daylighting**

Based on HydroTech's experience with injections in shallow groundwater setting of around 10 feet or less below grade, the aquifer will likely reject some of the injected solutions with

a high backpressure. As such, injected solution under excessive hydrostatic pressure will ultimately finds its way to the surface in a phenomenon referred to as daylighting (i.e., short-circuiting or surfacing), and thus reducing its contact with target contaminants within the treatment zone.

The ground surface around an injection point will be monitored to identify any occurrence of daylighting. Detection of daylighting will consist of visual observations of the solution at the surface of sidewalk in the vicinity of injection point or through cracks of adjacent property basement sidewalls and slabs that will likely be reported by adjacent property owners or operators, and also potential leaks into the adjacent MTA subway tube that will be monitored by the supervising MTA inspector of these activities. If daylighting is noted, HydroTech will halt the injections and make immediate field adjustment to the procedures for injecting the remainder of the solution into an injection point to eliminate any further daylighting. These field adjustments consist of controlling the injection parameters such as maintaining lower injection pressures, lower the flow rate and use smaller injection volumes per injection point, increase the distribution of the injections spatially and over time (implement a smaller lateral spacing between injection points) to allow the aquifer time to equilibrate, and also seal the injection point immediately after completion of injections to avoid material seeping out.

**6.0 Post Groundwater Treatment Monitoring and Sampling**

A groundwater monitoring program will be implemented on a quarterly basis following the supplemental groundwater injections. A total of eight quarterly monitoring and sampling events post groundwater treatment are anticipated. Groundwater sampling activities will be performed in accordance with Appendix 9 - Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) in the NYSDEC-approved SMP dated October 2025. During each quarterly event, a total of three groundwater samples will be collected from three (3) off-Site monitoring wells MW-9, MW-11R and MW-13R via low-flow sampling techniques and analyzed along with 2 matrix spikes duplicates, 1 equipment blank, and 1 trip blank for volatile organic compounds (VOCs) in accordance with EPA Method 8260 and following ASP protocol Category B deliverables.

Purge water will be temporarily contained in a 55-gallon drum that will be stored on-Site and will be disposed of off-Site as non-hazardous waste following a proper waste characterization sampling and pursuant to a Contained-In-Determination (CID) letter issued by NYSDEC.

**7.0 Monitoring Wells Decommissioning**

The three off-Site monitoring wells MW-10, MW-14 and MW-15 located in three sidewalks across the northwestern and western vicinities of the Site will be discontinued from the next quarterly groundwater monitoring program and will be properly abandoned pursuant to NYSDEC approval in the letter dated July 27, 2026. These three wells will be decommissioned consistent with NYSDEC-approved SMP dated October 2025 and in accordance with the NYSDEC CP-43 : Groundwater Monitoring Well Decommissioning

Policy. The decommissioning method will involve grouting the well casing in-place using Type I Portland cement slurry up to 5 feet below the surface. The uppermost 5 feet of the borehole will be filled with No.2 Fillpro and capped at surface with a 6-inch concrete.

## 8.0 GREEN AND SUSTAINABLE REMEDIATION EVALUATION

The work completed as part of this Wok Plan will comply with all NYSDEC guidance documents, including DER-31: Green Remediation (NYSDEC, 2011), and will incorporate best management practices to lower the environmental footprint consistent with the green remediation requirements during the implementation of the SMP. To ensure compliance with requirements of DER-31 and the October 2025 SMP, the bioremedial injections work and the pot-injections groundwater sampling will be completed using the best practices and techniques described below.

1. Limit the use and idling of generators and vehicles to reduce emissions.
2. Minimize truck travel for disposal of waste disposal during groundwater sampling by selecting local disposal facilities.
3. Manage onsite resources and materials efficiently.
4. Use local subcontractors to minimize vehicle emissions during commute.
5. Request that subcontractors use clean diesel equipment to reduce emissions.
6. Reduce the use of water used for decontamination of equipment.
7. Request project staff and subcontractors to use public transportation to the extent practicable.
8. Reduce waste, increasing recycling and increasing reuse of materials that would otherwise be considered waste.

All green and sustainable practices and techniques employed will be discussed in the subsequent PRR.

A preliminary analysis has been performed using SiteWise™ for the proposed injections and the implementation of two years of groundwater monitoring program following injections. Results of the analysis are included in **Attachment 4** indicate the majority of greenhouse gas emissions, potentially 5,087.4 tons, to be the product of injections which takes approximately 98% of the total emissions from the performed work in this Work Plan.

## 9.0 Reporting

A Quarterly Status Report (QSR) will be prepared following each quarterly sampling event. The QSR will describe the protocols involved in the performance of the fieldwork and document the overall findings of each monitoring and sampling event. The report will include all analytical data in standard tabulation form and will include all appropriate figures and tables. A Data Usability Summary Report (DUSR) and Electronic Data Deliverable (EDD) for analytical results will be produced for the samples Chain of Custody. These QSRs will be summarized in the annual PRR prepared for each reporting period in accordance with the SMP.

## 10.0 Schedule

**10.0 Schedule**

The anticipated project schedule for the tasks to be performed during implementation of this Work Plan is outlined in following table:

| **Tasks** | **Anticipated Schedule/Frequency** |
|---|---|
| NYSDEC Approval of Supplemental Groundwater Treatment Work Plan | November 2026 |
| Filing Underground Injection Control (UIC) application with USEPA | November 2026 |
| MTA Letter of Approval | December 2026 |
| Remedial injections and wells decommissioning | December 2026 to January 2027 |
| Post-remediation groundwater monitoring and sampling | Quarterly starting in April 2027 |

Very Truly Yours,
**Hydro Tech Environmental Engineering and Geology, DPC**



Paul I. Matli, PhD, PG
Senior Project Manager

cc: J. O'Connell - NYSDEC w/ Enc. (by email)
G. Duke, Esq. – Fox Rothschild LLP. w/ Enc. (by email)
M. Kesten - BK Corners LLC w/ Enc. (by email)
D. Greenberg - 170 Freeman LLC (by email)
T. Khouri, PE – HydroTech (by email)
Hydro Tech file 260055

## CERTIFICATION

I, Tarek Z. Khouri certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Supplemental Groundwater Treatment Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

| 086611 | 11-05-2026 | |
|---|---|---|
| NYS Professional Engineer # | Date | Signature |

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

## LIST OF ATTACHMENTS

**FIGURES**

1- Site Map and CVOCs in Groundwater Pre- and Post IRM
2- Supplemental Bioremedial Injection Points Locations

**ATTACHMENTS**

1- NYSDEC Correspondence
2- Bioremedial Agents Calculation and Manufacturer's Documentation
3- No.2 Fillpro Specification
4- Green and Sustainable Remediation Evaluation

# FIGURES

| Sample ID | MW-13 | | | | | | | | | | MW-13R | | | | | | | | | | GQS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | 9/20/2021 | | 1/2/2024 | | 8/6/2024 | | 11/7/2024 | | 2/26/2025 | | 5/23/2025 | | 8/27/2025 | | 11/17/2025 | | 2/27/2026 | | 5/5/2026 | | |
| 1,1-DCE | 0.200 | U | 0.327 | U | 0.327 | U | 0.327 | U | N | | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 5 |
| Cis-1,2-DCE | 0.28 | J | 1.35 | | 6.99 | | 0.48 | J | N | | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 5 |
| PCE | 0.200 | U | 0.239 | U | 0.239 | U | 0.239 | U | N | | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 5 |
| Trans-1,2-DCE | 0.200 | U | 0.279 | U | 0.279 | U | 0.279 | U | N | | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 5 |
| TCE | 0.200 | U | 0.249 | U | 0.249 | U | 0.249 | U | N | | 0.249 | U | 0.239 | U | 0.249 | U | 0.249 | U | 0.249 | U | 5 |
| VC | 0.47 | J | 5.36 | | 0.469 | U | 1.07 | | N | | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 2 |

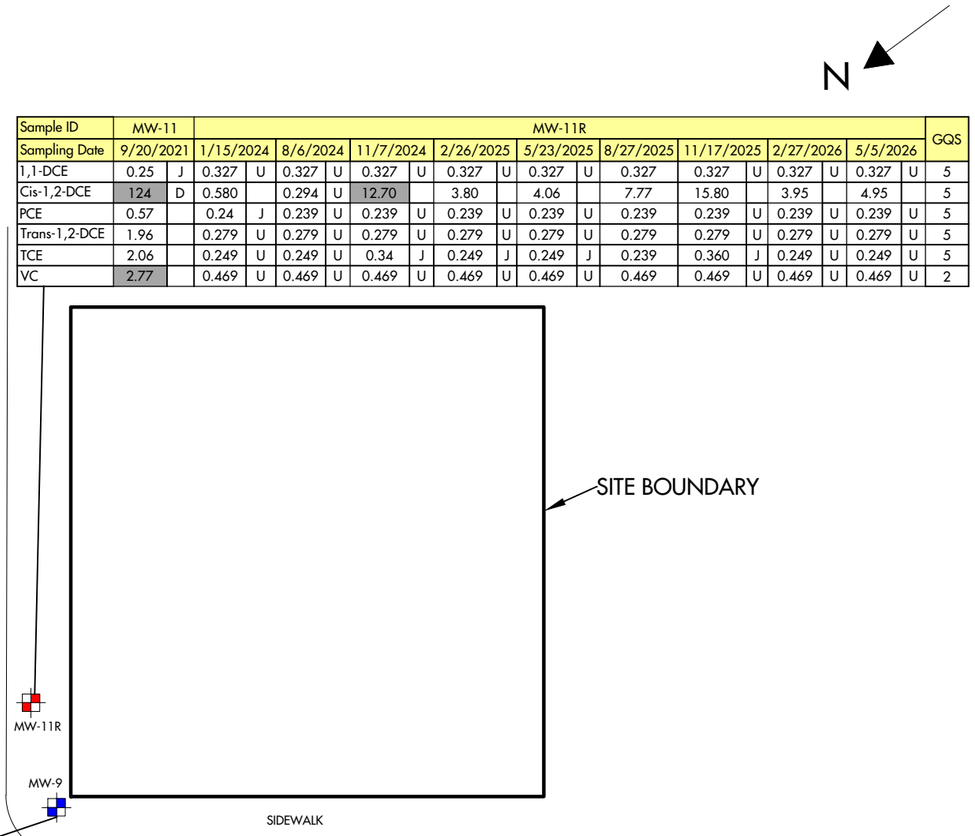
| Sample ID | MW-14 | | | | | | | | | | | | | | | | | | | | GQS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | 9/20/2021 | | 1/2/2024 | | 8/6/2024 | | 11/7/2024 | | 2/26/2025 | | 5/23/2025 | | 8/27/2025 | | 11/17/2025 | | 2/27/2026 | | 5/5/2026 | | |
| 1,1-DCE | 0.200 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 5 |
| Cis-1,2-DCE | 0.27 | J | 0.294 | U | 0.32 | J | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 5 |
| PCE | 0.200 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 5 |
| Trans-1,2-DCE | 0.200 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 5 |
| TCE | 0.200 | U | 0.249 | U | 0.249 | U | 0.249 | U | 0.249 | U | 0.249 | U | 0.239 | U | 0.249 | U | 0.249 | U | 0.249 | U | 5 |
| VC | 0.200 | U | 0.469 | U | 0.57 | | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 2 |

| Sample ID | MW-9 | | | | | | | | | | | | | | | | | | | | | | GQS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | 9/20/2021 | | 1/2/2024 | | 8/6/2024 | | 11/7/2024 | | 2/26/2025 | | 5/23/2025 | | 9/25/2025 [1] | | 11/17/2025 | | 2/27/2026 | | 5/5/2026 | | |
| 1,1-DCE | 0.200 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 5 |
| Cis-1,2-DCE | 679 | D | 84.70 | D | 144 | E | 190 | D | 296 | D | 412 | D | 246 | BD | 261 | D | 424 | D | 400 | D | 5 |
| PCE | 0.21 | J | 1.58 | | 0.77 | | 0.76 | | 0.31 | J | 0.43 | J | 0.37 | J | 0.32 | J | 0.31 | J | 0.239 | J | 5 |
| Trans-1,2-DCE | 21.60 | | 4.15 | | 6.13 | | 11.10 | | 18.50 | | 25.60 | | 12 | | 14.1 | | 23.3 | | 24.4 | | 5 |
| TCE | 0.76 | | 0.97 | | 0.69 | | 1.02 | | 1.03 | | 1.11 | | 0.37 | J | 0.79 | | 0.61 | | 0.63 | | 5 |
| VC | 23.40 | | 0.58 | | 2.75 | | 5.73 | | 2.16 | | 4.05 | | 0.78 | | 3.46 | | 0.469 | U | 2.49 | | 2 |

| Sample ID | MW-15 | | | | | | | | | | | | | | | | | | | | GQS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | 9/21/2021 | | 1/2/2024 | | 8/6/2024 | | 11/7/2024 | | 2/26/2025 | | 5/23/2025 | | 8/27/2025 | | 11/17/2025 | | 2/27/2026 | | 5/5/2026 | | |
| 1,1-DCE | 0.200 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 5 |
| Cis-1,2-DCE | 0.200 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 0.294 | U | 5 |
| PCE | 0.200 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 5 |
| Trans-1,2-DCE | 0.200 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 5 |
| TCE | 0.200 | U | 0.249 | U | 0.249 | U | 0.249 | U | 0.249 | U | 0.249 | U | 0.239 | U | 0.249 | U | 0.249 | U | 0.249 | U | 5 |
| VC | 0.200 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 2 |

| Sample ID | MW-11 | | MW-11R | | | | | | | | | | | | | | | | | | GQS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | 9/20/2021 | | 1/15/2024 | | 8/6/2024 | | 11/7/2024 | | 2/26/2025 | | 5/23/2025 | | 8/27/2025 | | 11/17/2025 | | 2/27/2026 | | 5/5/2026 | | |
| 1,1-DCE | 0.25 | J | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | | 0.327 | U | 0.327 | U | 0.327 | U | 5 |
| Cis-1,2-DCE | 124 | D | 0.580 | | 0.294 | U | 12.70 | | 3.80 | | 4.06 | | 7.77 | | 15.80 | | 3.95 | | 4.95 | | 5 |
| PCE | 0.57 | | 0.24 | J | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 5 |
| Trans-1,2-DCE | 1.96 | | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 5 |
| TCE | 2.06 | | 0.249 | U | 0.249 | U | 0.34 | J | 0.249 | J | 0.249 | J | 0.239 | | 0.360 | J | 0.249 | U | 0.249 | U | 5 |
| VC | 2.77 | | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 2 |

| Sample ID | MW-10 | | | | | | | | | | | | | | | | | | | | GQS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | 9/20/2021 | | 1/2/2024 | | 8/6/2024 | | 11/7/2024 | | 2/26/2025 | | 5/23/2025 | | 8/27/2025 | | 11/17/2025 | | 2/27/2026 | | 5/5/2026 | | |
| 1,1-DCE | 0.200 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 0.327 | U | 5 |
| Cis-1,2-DCE | 1.43 | | 0.294 | U | 166 | D | 0.294 | U | 0.294 | U | 1.24 | | 0.294 | U | 0.69 | | 0.294 | U | 0.294 | U | 5 |
| PCE | 0.200 | U | 0.239 | U | 0.74 | | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 0.239 | U | 5 |
| Trans-1,2-DCE | 0.200 | U | 0.279 | U | 6.03 | | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 0.279 | U | 5 |
| TCE | 0.200 | U | 0.249 | U | 0.67 | | 0.249 | U | 0.249 | U | 0.249 | U | 0.239 | U | 0.249 | U | 0.249 | U | 0.249 | U | 5 |
| VC | 0.200 | U | 0.469 | U | 2.68 | | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 0.469 | U | 2 |




LEGEND:

- SITE BOUNDARY
- MONITORING WELL (MW-) INSTALLED BY HYDROTECH DURING SEPTEMBER 2021
- REPLACEMENT MONITORING WELL INSTALLED BY HYDROTECH DURING JANUARY 2024 (MW-11R) AND DURING MAY 2025 (MW-13R)
- SHADED CONCENTRATION EXCEEDS GQS

NOTES:
ALL CONCENTRATIONS ARE REPORTED IN µg/L
U = ANALYTE NOT DETECTED AT OR ABOVE THE LEVEL INDICATED
D = RESULT IS FROM AN ANALYSIS THAT REQUIRED A DILUTION
J = ANALYTE DETECTED AT OR ABOVE THE MDL (METHOD DETECTION LIMIT) BUT BELOW THE RL (REPORTING LIMIT) - DATA IS ESTIMATED
E = RESULT IS ESTIMATED AND CANNOT BE ACCURATELY REPORTED DUE TO LEVELS ENCOUNTERED OR INTERFERENCES
9/20/2021 = SHALLOW DEPTH GROUNDWATER SAMPLING PERFORMED DURING THE REMEDIAL INVESTIGATION
1/2/2024 = SHALLOW DEPTH BASELINE GROUNDWATER SAMPLING PERFORMED PRIOR TO REMEDIAL INJECTIONS
8/6/2024 TO 5/5/26 =SHALLOW DEPTH GROUNDWATER SAMPLING PERFORMED FOLLOWING REMEDIAL INVESTIGATION
8/6/2024 = BOLD DATES REPRESENT SAMPLING POST GROUNDWATER REMEDIATION

...[1] = SAMPLE COLLECTED 7 DAYS FLOWING PHYSICAL AGITATION OF WELL BY AIR KNIFE NOZZLE TO REMOVE FALLEN DEBRIS FROM SIDEWALK REPAIR
CVOCs = CHLORINATED VOLATILE ORGANIC COMPOUNDS
PCE = TETRACHLOROETHYLENE
TCE = TRICHLOROETHYLENE
1.1-DCE = 1,1-DICHLOROETHYLENE
CIS-1,2-DCE = CIS-1,2-DICHLOROETHYLENE
TRANS-1,2-DCE = TRANS-1,2-DICHLOROETHYLENE
VC = VINYL CHLORIDE
NA = NOT SAMPLED DUE TO LIMITED ACCESS
GQS = NYSDEC TOGS STANDARDS AND GUIDANCE VALUES - GA
N = NOT SAMPLED - MONITORING WELL DESTROYED

0 20 40
APPROXIMATE SCALE IN FEET

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| DATE | DESCRIPTION | CHK |
|---|---|---|
| | | |
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| | | |

SEAL & SIGNATURE

HYDROTECH ENVIRONMENTAL ENGINEERING AND GEOLOGY, DPC

231 WEST 29TH STREET, SUITE 1104, NEW YORK, NY 10001

TEL: (631) 462-5866

BASE DRAWING PREPARED BY

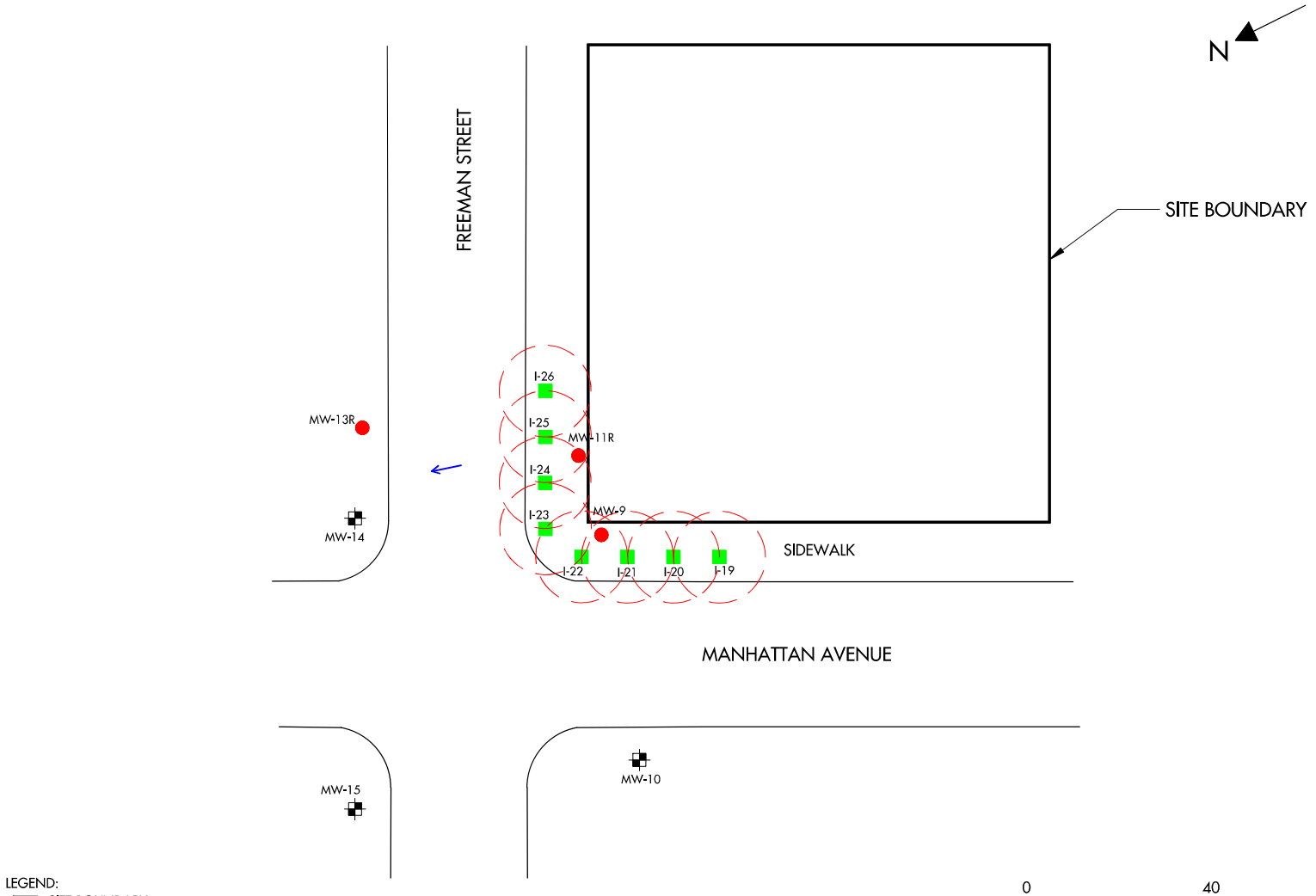
PROJECT NAME AND ADDRESS

170 FREEMAN STREET, BROOKLYN, NY

PROJECT FIGURE

FIGURE 1: SITE MAP AND CVOCs IN GROUNDWATER PRE- AND POST IRM INJECTIONS

| PROJECT NO. | DATE |
|---|---|
| 230051 | 09/04/2026 |
| DRAWN BY A.S. | REVIEWED BY P.M. |
| SCALE (11X17) AS NOTED | APPROVED BY P.M. |




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| DATE | DESCRIPTION | CHK |
|---|---|---|
| | | |
| | | |

SEAL & SIGNATURE

STATE OF NEW YORK
TAREK ZAKI KHOURI
086611
LICENSED PROFESSIONAL ENGINEER

HYDROTECH ENVIRONMENTAL ENGINEERING AND GEOLOGY, DPC

231 WEST 29TH STREET, SUITE 1104, NEW YORK, NY 10001

TEL: (631) 462-5866

BASE DRAWING PREPARED BY

PROJECT NAME AND ADDRESS

170 FREEMAN STREET, BROOKLYN, NY

PROJECT FIGURE

FIGURE 2: SUPPLEMENTAL BIOREMEDIAL INJECTION POINTS LOCATIONS

| PROJECT NO. | DATE |
|---|---|
| 230051 | 09/04/2026 |
| DRAWN BY | REVIEWED BY |
| A.S. | P.M. |
| SCALE (11X17) | APPROVED BY |
| AS NOTED | P.M. |

**ATTACHMENT 1**

NYSDEC Correspondence

July 27, 2026

Joshua Greenberg
170 Freeman LLC
228 Park Ave South PMD 53318
New York, NY 10003
joshua@greenstreet-group.com

Marshall Kesten
BK Corners LLC
49 Box Street Brooklyn, NY 11222
marshall@mkpropmanagement.com

**Re: 1036 Manhattan Ave BCP Site**
**170 Freeman Street, Brooklyn, Kings County**
**Brownfield Cleanup Program # C224315**
**Post Groundwater Monitoring Response**

Dear Joshua Greenberg and Marshall Kesten:

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the Quarterly Status Report # 8– March 2026 to May 2026 dated June 25, 2026 which was prepared by Hydro Tech Environmental Engineering and Geology, DPC on behalf of 170 Freeman LLC and BK Corners LLC (collectively "the Participant"). The letter requests to discontinue future groundwater monitoring for monitoring well ID Nos. MW-10, MW-13R, MW-14 and MW-15; in addition, a reduction in the frequency of sampling from quarterly to semi-annual for monitoring well ID Nos. MW-9 and MW-11R.

Based on NYSDEC's review of the letter, as well as the data obtained during previous groundwater monitoring events, the request to discontinue groundwater monitoring at monitoring well ID Nos. MW-10, MW-14 and MW-15 is approved. The monitoring wells must be properly decommissioned in accordance with the Site Management Plan (SMP) dated October 2025 and NYSDEC CP-43: Groundwater Monitoring Well Decommissioning Policy.

NYSDEC does not approve the request for discontinuing monitoring at MW-13R or a reduction in frequency from quarterly to semi-annual for monitoring well ID Nos. MW-9, MW-11R, and MW13R. Chlorinated volatile organic compounds (VOCs) continue to be detected in groundwater at concentrations above Ambient Water Quality Standards and Guidance Values (AWQS). Per Section 4.5 of the SMP, "in the event that chlorinated VOCs continue to be detected in groundwater at concentrations above NYSDEC

standards after the eighth round of quarterly sampling, a remedial design addressing these VOCs will be proposed via a second round of bioremedial injections". Please submit a Remedial Design for additional treatment within 30 days of this letter.

Should you have any questions regarding this letter or any other aspect of the project, please contact me at (718) 482-7541 or wendi.zheng@dec.ny.gov.

Sincerely,

Wendi Zheng

Wendi Zheng, PE
Project Manager

ec: J. O'Connell, A. Obligado, A. Levine – NYSDEC
S. McLaughlin, J. Kenney – NYSDOH
P. Matli. T. Khouri – Hydro Tech
G. Duke – Fox Rothschild LLP

# ATTACHMENT 2

Bioremedial Agents Calculation and Manufacturer's Documentation

REGENESIS®

PROJECT NAME

# 170 Freeman St

## Design and Application Proposal CrS71002




**PREPARED FOR**

Hydro Tech Environmental
Paul Matli
pmatli@hydrotechenvironmental.com

**PREPARED BY**

REGENESIS

Craig Sandefur
csandefur@regenesis.com

Elliot Maker
emaker@regenesis.com

July 29, 2026

# PROJECT SUMMARY

**REGENESIS is pleased to present Hydro Tech Environmental with this remedial design and cost estimate for the 170 Freeman St project. This summary section provides an overview of the project goals and the proposed solution. Subsequent sections detail the assumptions, figures, costs, technical overviews, and supporting materials pertinent to your project.**

## Project Drivers and Goals

The site, is located at 170 Freeman Street, is impacted by chlorinated ethenes, with contamination extending off-site. Regulatory agencies require furhter remediation to prevent further migration.

Key drivers and challenges for this remediation effort include :

- Plume Migration Risk—Groundwater flow transports contaminants toward an adjacent property, increasing liability and requiring mitigation.

## Proposed Solution

To meet your project goals, REGENESIS proposes an integrated strategy of biostimulation with bioagumentation to destroy contaminants. Our approach integrates 3-D Microemulsion® (3DME) paired with Bio-Dechlor Inoculum Plus® (BDI+) for accelerated bioremediation of solvents. This proven approach will effectively reduce contaminant mass for a multi-year remedy.

- **Biostimulation:** 3DME delivers hydrogen in three controlled-release stages—immediate, mid-range, and long-term—through esterified lactic acid and fatty acids, sustaining microbial activity for up to four years. Its micellar structure allows for self-distribution, reducing the need for multiple injection points and minimizing drilling costs while preventing pore clogging and maintaining aquifer permeability.
- **Bioaugmentation:** Specialized dechlorinating bacteria (BDI+) are introduced to shorten the lag phase for bioremediation at sites with insufficient dechlorinating bacteria (*Dehalococcoides sp.)*, ensuring comprehensive degradation of both parent and daughter contaminants.

3DME and BDI+ will be injected as a reactive barrier using direct push injection methods to treat solvent concentrations in the area of existing well MW-9 and MW-11R. The site figure and the design output tables show the proposed treatment location(s) and injection spacing, vertical injection intervals, injection volumes, and other details.

The technology overview section provide more specific information on the proposed technologies.

# Key Project Assumptions

## Design Assumptions

- Hydro Tech Environmental is responsible for determining the groundwater flow direction, which guides the placement/orientation of the proposed barrier to ensure it is perpendicular to flow throughout the hydrologic cycle. The PRB's location and orientation, as presented in this proposal, are to be confirmed by Hydro Tech Environmental
- *TECHNICAL NOTE:* Based on the recently provided groundwater gradient map and the desired PRB placement location it appears that the PRB is oriented downgradient of the desired performance monitoring wells. It is likley that these wells will receive less reagent than if they were positioned downgradient of the injection array.
- Seepage velocity/mass flux is a primary driver in determining the required PlumeStop dosing of a treatment zone. Hydro Tech Environmental is responsible for confirming the extent of the flux zone(s) and mass flux rates. Without this information, REGENESIS will make our best assumptions on site variables based on available data.
    - Seepage velocity is assumed to be towards the north at ~135 ft/year based on available site data.
- Contaminants located beyond the proposed barrier before implementation may be left untreated. Areas downgradient of the barrier are subject to matrix back-diffusion of contaminants, subsurface heterogeneities, and groundwater flow anomalies.
- This design assumes that the overall trend in contaminants of concern (COC) concentration is not increasing.
- This design assumes neutral background pH (pH = 6-8). We also assume that baseline sulfate and nitrate levels are below 50 mg/L and 5 mg/L, respectively.
- This design assumes that there is not a significant amount of soil-bound mass near the target area.
- This design assumes that no other incompatible treatments have been or will be applied near this barrier in the future.

## Application Assumptions

- All injection points are accessible, and subsurface obstructions are not expected.
- Injection flow rates will be maintained to prevent surfacing or unintended migration.
- The target treatment zone is confirmed to be hydraulically conductive, allowing for uniform reagent distribution.

## Performance Assumptions

- The designation of In-Area Performance Monitoring Wells assumes they will be positioned about five (5) feet and *downgradient* of the PRB.
- Assuming optimal field conditions, the expected contaminant reduction timeline is 3-6 months.
- Performance monitoring will be based on 2 compliance wells, sampled at quarterly intervals (e.g., 1, 3, 6 months).

# SCOPE OF WORK

We are committed to the success of your project. We have outlined essential activities below to support a successful final design and implementation. These activities are crucial to your project, particularly in two key areas:

1. Refining and finalizing your remedial cost estimate leading up to project authorization.
2. Pre-application tasks, including securing necessary site permits, conducting pre-application planning calls, and coordinating product shipments.

By addressing these elements proactively, we help ensure a smooth and efficient project execution.

| FINALIZING DESIGN AND COST ESTIMATE |
| --- |
| ☐ **Establish Performance Expectations and Monitoring Requirements**<br>• Performance monitoring well network, regulatory targets, and remedial timeframes shall be established before developing a final scope of work. |
| ☐ **Baseline Sampling**<br>• Client to conduct a baseline sampling event to confirm contaminant concentrations in key performance monitoring wells before injection.<br>• Client to collect geochemical parameters outlined in the performance monitoring section. |
| ☐ **Finalize Design and Cost Estimate**<br>• REGENESIS submits the final design and cost estimate. |
| ☐ **Project Authorization**<br>• Sign acceptance of the proposal.<br>• Finalize contract documents<br>• Confirm account credit status |
| ☐ **Regulatory & Permitting Compliance**<br>• Client to ensure all necessary permits (e.g., UIC permits, discharge permits) are obtained before mobilization. |
| ☐ **Site Application Planning**<br>• The client will confirm product storage, water accessibility, logistics, etc.<br>• Coordinate project responsibilities and site access requirements.<br>• If **Regenesis Remediation Services (RRS)** performs the work, these activities will be coordinated with a site application planning call. |

## PRE-APPLICATION PLANNING

- [ ] **Injection Point Survey & Site Preparation**
  - Conduct utility locates to confirm the absence of underground conflicts.
  - Mark injection locations and staging areas.
  - Coordinate drilling schedules, water supply access, and site logistics.
  - If RRS performs the work, these activities will be coordinated with a site application planning call.

- [ ] **Product Shipping and Mobilization**
  - Confirm delivery address and date
  - Schedule application and ship product
  - If RRS performs the work, these activities will be coordinated with a site application planning call. Complete an RRS logistics evaluation.

# Performance Objectives and Monitoring

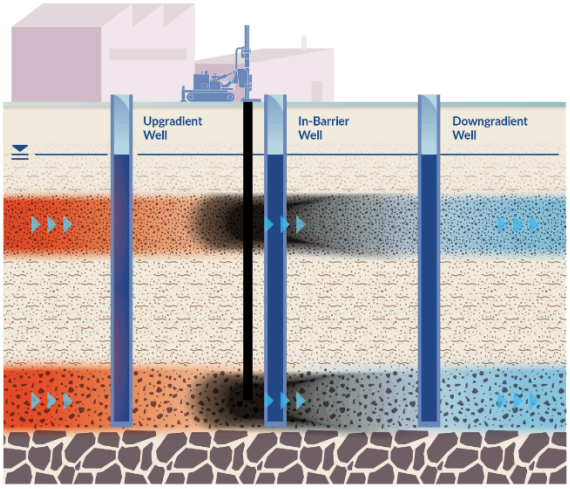
## Purpose & Objectives

This remedial strategy is designed to reduce **PCE, TCE, DCE, and VC** below regulatory standards at compliance wells.

## Monitoring Well Network

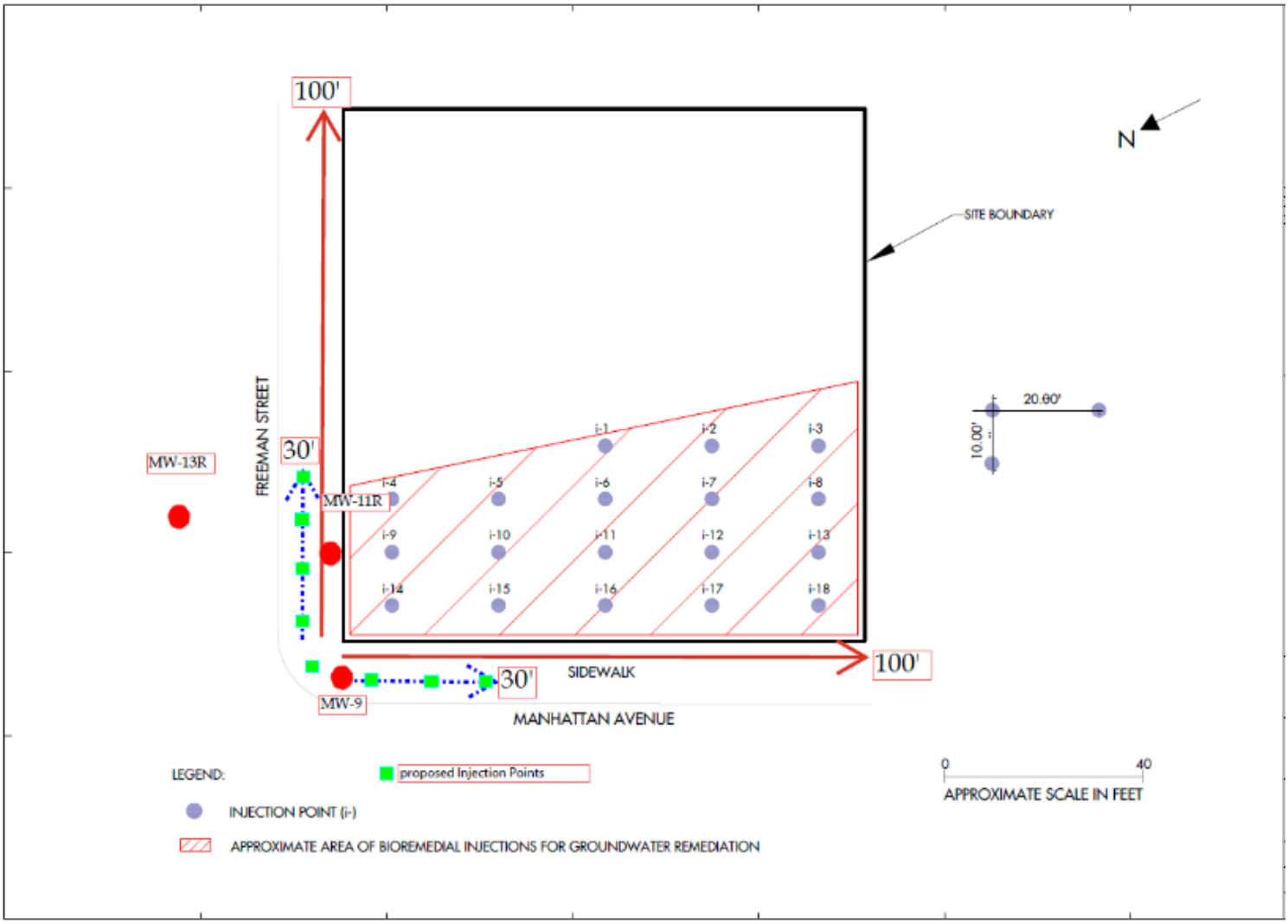
Monitor suggested wells **monthly for the first 3 months and then quarterly** thereafter:

- **Upgradient Well** – Establish background water quality.
- **Grid or Barrier Wells** – Located ≤ **5 feet** from injection zone to monitor in-situ treatment effects.
- **Downgradient Well** – Assesses contaminant reductions post-treatment.




## Key Analytical Parameters

| Parameter | Method |
|---|---|
| COCs (PCE, TCE, DCE, VC) | The same method that has been used to analyze contaminants should be used. |
| pH, DO, ORP | Field Meter |
| Sulfate, Nitrate, Alkalinity, Chloride | EPA 300/400/9000 |
| Total Organic Carbon (TOC) | EPA 415.1 or 9060 |
| Methane, Ethane, Ethene, $CO_2$ | ASTM D1945 |




170 Freeman St
Hydro Tech Environmental
July 29, 2026

**Figure 1-Treatment Area Map**

# REMEDIAL DESIGN SUMMARY

| PRB Application Information | | |
|---|---|---|
| 170 Freeman Street | | |
| Brooklyn, NY | | |
| Saturated Zone | | |
| Prepared For: | | |
| Paul Matli-HydroTech | | |
| **Target Treatment Zone (TTZ) Info** | **Unit** | **Value** |
| Barrier Length | ft | 60 |
| Top Treatment Depth | ft | 8.0 |
| Bottom Treatment Depth | ft | 25.0 |
| Vertical Treatment Interval | ft | 17.0 |
| Treatment Zone Volume | $ft^3$ | 10,200 |
| Treatment Zone Volume | cy | 378 |
| Soil Type | --- | silty sand |
| Porosity | $cm^3/cm^3$ | 0.40 |
| Effective Porosity | $cm^3/cm^3$ | 0.20 |
| Treatment Zone Pore Volume | gals | 30,521 |
| Treatment Zone Effective Pore Volume | gals | 15,260 |
| Soil Density | $g/cm^3$ | 1.6 |
| Hydraulic Conductivity | ft/day | 15.0 |
| Hydraulic Gradient | ft/ft | 0.005 |
| GW Velocity | ft/yr | 137 |
| **Application Design Summary** | | |
| Barrier Length | ft | 60 |
| Top Treatment Depth | ft bgs | 8.0 |
| Bottom Treatment Depth | ft bgs | 25.0 |
| Treatment Type | - | Barrier |
| Spacing Within Rows | ft | 10.0 |
| Number of Rows | - | 1.0 |
| DPT Injection Points | - | 6 |
| 3DME to be Applied | lbs | 1,200 |
| 3DME to be Applied | gals | 144 |
| 3DME Mix % | % | 5.0% |
| Volume Water | gals | 2,732 |
| 3DME Mix Volume | gals | 2,876 |
| | lbs | 0 |
| | gals | 0 |
| BDI Plus to be Applied | L | 18 |
| BDI Plus Mix Water Volume | gals | 180 |
| Total Application Volume | gals | 3,056 |
| Volume per Point | gals | 509 |
| Injection Volume per Foot | gals | 30 |
| **Application Dosing** | | |
| 3-D Microemulsion to be Applied | lbs | 1,200 |
| BDI Plus to be Applied | liters | 18 |
| Prepared By: | Craig Sandefur \| VP | |
| Date: | 7/28/2026 | |

# Terms & Conditions

1. **PAYMENT TERMS.** Net 30 Days. Accounts outstanding after 30 days will be assessed 1.5% monthly interest. Volume discount pricing will be rescinded on all accounts outstanding over 90 days. An early payment discount of 1.5% Net 10 is available for cash or check payments only. We accept Master Card, Visa and American Express.
2. **RETURN POLICY.** A 15% re-stocking fee will be charged for all returned goods. All requests to return product must be pre-approved by seller. Returned product must be in original condition and no product will be accepted for return after a period of 90 days.
3. **FORCE MAJEURE.** Seller shall not be liable for delays in delivery or services or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor, materials, components or services through seller's usual and regular sources at usual and regular prices. In any such event Seller may, without notice to buyer, at any time and from time to time, postpone the delivery or service dates under this contract or make partial delivery or performance or cancel all or any portion of this and any other contract with buyer without further liability to buyer. Cancellation of any part of this order shall not affect Seller's right to payment for any product delivered or service performed hereunder.
4. **LIMITED WARRANTY.** Seller warrants the product(s) sold and services provided as specified on face of invoice, solely to buyer. Seller makes no other warranty of any kind respecting the product and services, and expressly DISCLAIMS ALL OTHER WARRANTIES OF WHATEVER KIND RESPECTING THE PRODUCT AND SERVICES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND NON-INFRINGEMENT.
5. **DISCLAIMER.** Where warranties to a person other than buyer may not be disclaimed under law, seller extends to such a person the same warranty seller makes to buyer as set forth herein, subject to all disclaimers, exclusions and limitations of warranties, all limitations of liability and all other provisions set forth in the Terms and Conditions herein. Buyer agrees to transmit a copy of the Terms and Conditions set forth herein to any and all persons to whom buyer sells, or otherwise furnishes the products and/or services provided buyer by seller and buyer agrees to indemnify seller for any liability, loss, costs and attorneys' fees which seller may incur by reason, in whole or in part, of failure by buyer to transmit the Terms and Conditions as provided herein.
6. **LIMITATION OF SELLER'S LIABILITY AND LIMITATION OF BUYER'S REMEDY.** Seller's liability on any claim of any kind, including negligence, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair or use of any goods or performance of any services covered by or furnished hereunder, shall in no case exceed the lesser of (1) the cost of repairing or replacing goods and repeating the services failing to conform to the foregoing warranty or the price of the goods and/or services or part thereof which gives rise to the claim. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, OR FOR DAMAGES IN THE NATURE OF PENALTIES.
7. **INDEMNIFICATION.** Buyer agrees to defend and indemnify seller of and from any and all claims or liabilities asserted against seller in connection with the manufacture, sale, delivery, resale or repair or use of any goods, and performance of any services, covered by or furnished hereunder arising in whole or in part out of or by reason of the failure of buyer, its agents, servants, employees or customers to follow instructions, warnings or recommendations furnished by seller in connection with such goods and services, by reason of the failure of buyer, its agents, servants, employees or customers to comply with all federal, state and local laws applicable to such goods and services, or the use thereof, including the Occupational Safety and Health Act of 1970, or by reason of the negligence or misconduct of buyer, its agents, servants, employees or customers.

8. **EXPENSES OF ENFORCEMENT.** In the event seller undertakes any action to collect amounts due from buyer, or otherwise enforce its rights hereunder, Buyer agrees to pay and reimburse Seller for all such expenses, including, without limitation, all attorneys and collection fees.
9. **TAXES.** Liability for all taxes and import or export duties, imposed by any city, state, federal or other governmental authority, shall be assumed and paid by buyer. Buyer further agrees to defend and indemnify seller against any and all liabilities for such taxes or duties and legal fees or costs incurred by seller in connection therewith.
10. **ASSISTANCE AND ADVICE.** Upon request, seller in its discretion will furnish as an accommodation to buyer such technical advice or assistance as is available in reference to the goods and services. Seller assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at buyer's risk.
11. **SITE SAFETY.** Buyer shall provide a safe working environment at the site of services and shall comply with all applicable provisions of federal, state, provincial and municipal safety laws, building codes, and safety regulations to prevent accidents or injuries to persons on, about or adjacent to the site.
12. **INDEPENDENT CONTRACTOR.** Seller and Buyer are independent contractors and nothing shall be construed to place them in the relationship of partners, principal and agent, employer/employee or joint ventures. Neither party will have the power or right to bind or obligate the other party except as may be expressly agreed and delegated by other party, nor will it hold itself out as having such authority.
13. **REIMBURSEMENT.** Seller shall provide the products and services in reliance upon the data and professional judgments provided by or on behalf of buyer. The fees and charges associated with the products and services thus may not conform to billing guidelines, constraints or other limits on fees. Seller does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where seller may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by seller, it is the sole responsibility of the buyer or other entity seeking reimbursement to ensure the products and services and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from the Government, seller does not knowingly present or cause to be presented any claim for payment to the Government.
14. **APPLICABLE LAW/JURISDICTION AND VENUE.** The rights and duties of the parties shall be governed by, construed, and enforced in accordance with the laws of the State of California (excluding its conflict of laws rules which would refer to and apply the substantive laws of another jurisdiction). Any suit or proceeding hereunder shall be brought exclusively in state or federal courts located in Orange County, California. Each party consents to the personal jurisdiction of said state and federal courts and waives any objection that such courts are an inconvenient forum.
15. **ENTIRE AGREEMENT.** This agreement constitutes the entire contract between buyer and seller relating to the goods or services identified herein. No modifications hereof shall be binding upon the seller unless in writing and signed by seller's duly authorized representative, and no modification shall be effected by seller's acknowledgment or acceptance of buyer's purchase order forms containing different provisions. Trade usage shall neither be applicable nor relevant to this agreement, nor be used in any manner whatsoever to explain, qualify or supplement any of the provisions hereof. No waiver by either party of default shall be deemed a waiver of any subsequent default.

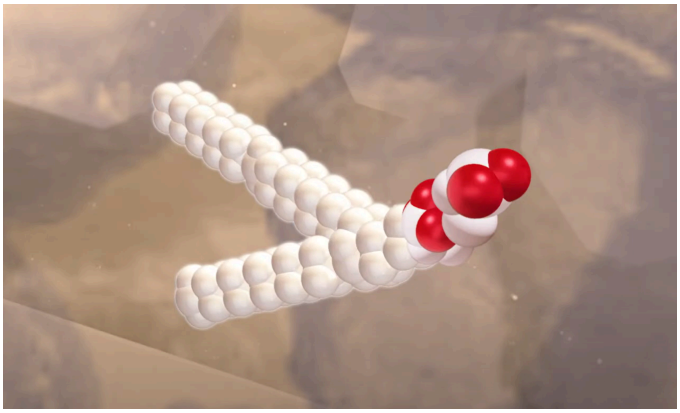
# 3-D Microemulsion® (3DME) Technology Overview

3DME is an advanced, controlled-release electron donor designed to optimize the anaerobic biodegradation of contaminants in groundwater. 3DME provides a unique blend of esterified lactic acid and fatty acids to provide superior transport in the aquifer and multi-year controlled-release capabilities. Unlike emulsified oils, which tend to coalesce and limit distribution, 3DME remains mobile, ensuring long-distance transport while maintaining reactivity. Its advanced micelle formation increases the radius of influence and allows for creative applications that can reduce the number of application points needed.

## Features and Benefits

- **Immediate and Long-Term Hydrogen Release:** Provides rapid fermentation and hydrogen generation from esterified lactic acid and long-term hydrogen generation from fatty acids for over 4 years, ensuring continuous microbial stimulation.
- **Optimized Subsurface Transport:** Forms micelles upon injection, allowing superior distribution compared to emulsified oils, increasing the radius of influence.
- **Minimizes Aquifer Impact:** Does not clog pore spaces or significantly reduce hydraulic conductivity, unlike emulsified vegetable oils.
- **Enhanced Abiotic and Biotic Compatibility:** Works synergistically with S-MicroZVI® (SMZVI) or Bio-Dechlor Inoculum Plus® (BDI+) to promote complete abiotic or biotic reductive dechlorination, ensuring more effective contaminant breakdown.
- **Lower Injection and Maintenance Costs:** Long-lasting performance minimizes the need for frequent reapplications, reducing overall project costs.

**Hyperlinked YouTube Video Overview of 3DME**



# 3DME Resources

**Media:**

- **85+ 3DME Case Studies:** Over 85 case studies showing performance in varied conditions. Use search or pull-downs on this weblink to identify case studies of interest.
- **3DME Webinars**: Webinars highlighting performance and best practices at 3DME sites.
- **Animated Overview of 3DME:** The steps and processes involved in the in-situ groundwater remediation of chlorinated solvent contamination using enhanced reductive dechlorination (ERD) with 3DME.

**Product Literature:**

- **3DME Specification Sheet**: Summary of specifications and properties of 3DME.
- **3DME Technical Description**: Detailed description of the composition and functionality of 3DME.

**Application Instructions:**

- **3DME Application Instructions**: Guidelines for the practical application of 3DME in remediation projects.

**Safety Data Sheets:**

- **3DME Safety Data Sheet**: Safety information for handling and using 3DME.

**Technical Bulletins:**

- **Technical Bulletin 1.0: Introduction to 3DME**: Introduction to the science and application of 3DME.
- **Technical Bulletin 2.0: Subsurface Transport Mechanisms**: How 3DME is differentiated from emulsified vegetable oils.
- **Technical Bulletin 3.0: Micelles and Microemulsions**: Discussion on the role of micelles and microemulsions in 3DME performance.

Research Papers:

- **A study of 100 wells where 3DME and divalent iron were co-applied**: Assess the effectiveness of adding soluble iron to 3DME mixtures to promote biogeochemical destruction of chlorinated ethenes.

# Bio-Dechlor Inoculum Plus® (BDI+) Technology Overview

BDI+ is an enriched microbial consortium containing species of Dehalococcoides (DHC), which are highly effective in breaking down persistent pollutants such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC) during in situ anaerobic bioremediation processes. BDI+ is particularly useful in sites where natural microbial populations are insufficient to achieve complete dechlorination, offering a cost-effective and efficient means to accelerate biodegradation.

## Features and Benefits:

- **Specialized Dechlorinating Bacteria:**
  - Contains enriched microbial cultures specifically selected for their ability to degrade chlorinated solvents, including PCE, TCE, DCE, and VC, to benign end-products like ethene.
- **Ready-to-Apply Liquid Formulation:**
  - Easily injected into the subsurface through wells or direct-push methods, ensuring minimal disruption to site activities.
- **Compatibility with Other Technologies:**
  - Complements hydrogen-releasing electron donors, such as 3-D Microemulsion® (3DME) and AquiFix™, to establish optimal conditions for biodegradation.

## Resources

**Media:**

- **BDI+ Case Studies:** Over 40 case studies highlight performance when used with other technologies at various sites. Use search or pull-downs on this weblink to identify case studies of interest.
- **BDI+ Product Page**: This page provides an overview of BDI+, including its features and benefits.

**Application Instructions:**

- **BDI+ Application Instructions**: Provides step-by-step guidance on the proper application procedures for BDI+.

**Safety Data Sheets:**

- **BDI+ Safety Data Sheet**: Safety information for handling and using BDI+.




# Acknowledgement

Signature below confirms signee has reviewed the proposal and agrees with all outlined responsibilities and assumptions/qualifications. Please also review our terms and conditions.

Here is a list of next steps toward implementation of this project. Please note these steps may take 4-6 weeks to complete depending upon the complexity of the project and previous experience with your company. RRS will contact you soon to begin the implementation process.

## Steps to Project Implementation

1. Sign acceptance of proposal
2. Finalize contract documents incorporating this proposal or formal REGENESIS Subcontract Agreement
3. Confirm account credit status
4. Complete remediation services logistics evaluation
5. Confirm delivery address and date
6. Schedule application

Please sign below to acknowledge acceptance of proposal Final 3DMe cVOC 2025 for the 170 Freeman St Site and authorize REGENESIS to proceed with a final contract and work authorization:

SIGNATURE
Paul Matli

Not yet accepted

**Hydro Tech Environmental** | Paul Matli, Project Manager

**ATTACHMENT 3**

No.2 Fillpro Specification

(/)

Search for products

# #2 FILPRO® Sand - 50lb Plastic Bag




Please log in (/app/checkout.ssp?is=login&login=T&origin=home&origin_hash=%2F2-Sand-50lb-FILPRO) to see price or purchase this item

SKU: 3501204

Tax Amount

Quantity

MENU



# FILPRO® FILTRATION SANDS AND GRAVEL

*Ask us about our AWWA, ANSI and NSF-compliant sands*

REQUEST A QUOTE

## OVERVIEW

### Durable sands resist degradation, reduce detention time and optimize flow rates

Produced from hard ore quartz sands, these heavy-duty materials stand up to the physical demands of handling and backwashing while complying with industry-leading standards for purity, consistency and uniformity. They've been specially sized to optimize the performance of air scour potable water filters and tertiary filtration systems.

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OK

- Multiple gravel sizes available from 3/8" X 3/16" to 1" X ½"
- Multiple sand sizes from .35 mm to 2.25 mm
- Custom sizes available to meet exacting specifications

Contact us about our AWWA, ANSI and NSF certified sands.

## APPLICATIONS

- Municipal and industrial waste water treatment
- Drinking water systems
- Geothermal applications
- Residential and commercial well drilling
- Pool and spa applications

# HOW CAN WE HELP?

REQUEST A QUOTE REQUEST A SAMPLE

First Name

Last Name

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# ATTACHMENT 4

Green and Sustainable Remediation Evaluation

**ENVIRONMENTAL FOOTPRINT ANALYSIS**
**FOR**
**Supplemental Groundwater Treatment Work Plan**

**1036 Manhattan Ave BCP Site**
**170 Freeman Street, Brooklyn, Kings County**
**Brownfield Cleanup Program # C224315**

HydroTech Environmental, Engineering and Geology, DPC has conducted the following Environmental Footprint Analysis in accordance with EPA 542-R-12-002 for Supplemental Groundwater Treatment Work Plan (Work Plan) at 170 Freeman Street in Brooklyn, New York (the "Site").

As presented in the results of the Environmental Footprint Analysis, the proposed corrective actions will potentially result in the following energy usage and emissions:

- 23,488.3 Metric Million British Thermal Unit (MMBtus) of total energy for proposed activities;
- 5,087.4 tons of total greenhouse gas (GHG) emissions in CO2e include consideration of carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$) emissions;
- 26,295.5 pounds of nitrogen oxide ($NO_X$), sulfur oxides ($SO_X$) and particulate matter (PM) emissions; and
- 15.2 pounds of hazardous air pollutant (HAP) emissions.

The energy usage is anticipated to be resulted from the following activities:

- 876 MMBtus used for injections and well decommissioning activities;
- 0.00 MMBtus used for grid electricity generation;
- 16 MMBtus used for transportation of personnel and materials; and
- 22,597 MMBtus used for off-site activities.

The GHG emissions is anticipated to be resulted from the following activities:

- 141,750 tons from on-site activities;
- 0.00 tons from grid electricity generation;
- 2,558 tons from transportation of personnel and materials; and
- 10,030.4 tons from off-site activities.

In sum, the footprint of proposed activities in this Work Plan is anticipated to be dominated by the projected injection activities including injections material deliveries and drilling, which typically involves potential long-distance transportation and is anticipated taking up to 96% of the total energy usage and 98 % of the total GHG emissions.

***Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019***

1036 Manhattan Ave BCP Site - NYSDEC BCP SIte #C224315 - Supplemental Groundwater Treatment Work Plan

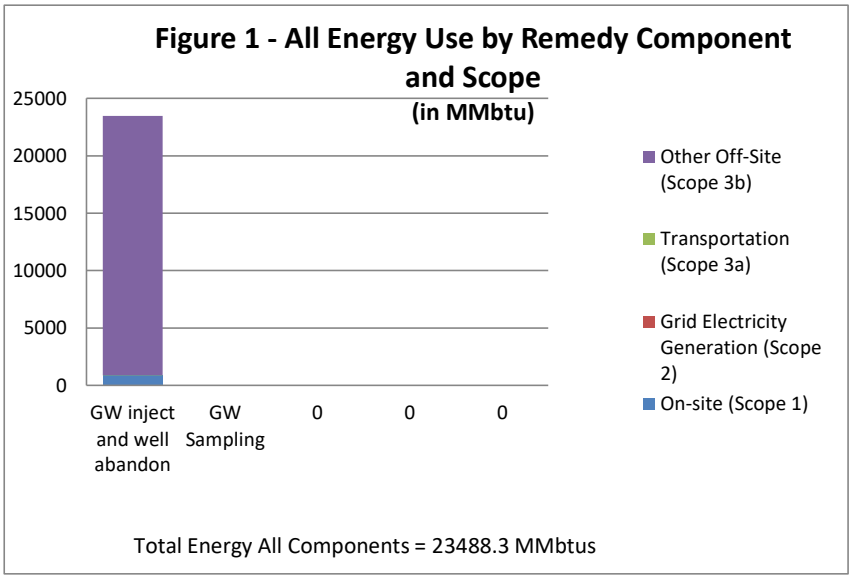
## Environmental Footprint Summary

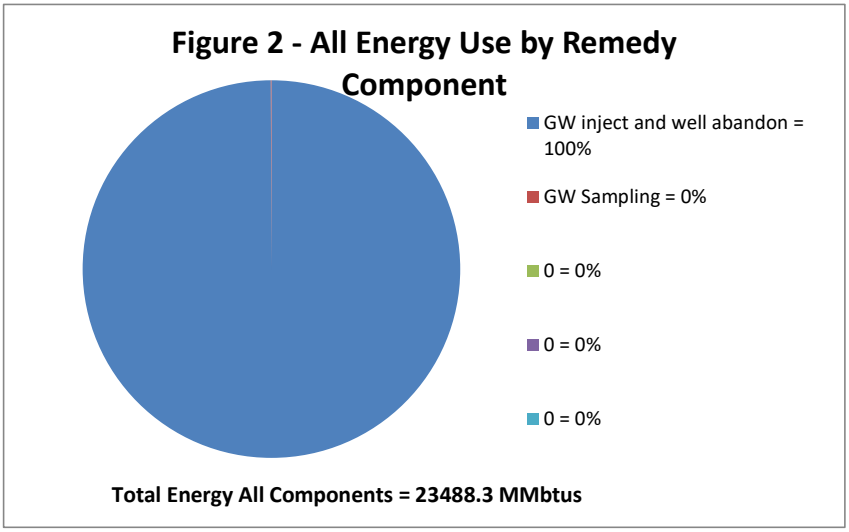
| Core Element | Metric | | Unit of Measure | Footprint | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | GW inject and well abandon | GW Sampling | | | | | Total |
| Materials & Waste | M&W-1 | Refined materials used on-site | Tons | 1,469.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1,469.3 |
| | M&W-2 | % of refined materials from recycled or reused material | % | 0.0% | | | | | | 0.0% |
| | M&W-3 | Unrefined materials used on-site | Tons | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.0 |
| | M&W-4 | % of unrefined materials from recycled or reused material | % | | | | | | | |
| | M&W-5 | On-site hazardous waste disposed of off-site | Tons | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | M&W-6 | On-site non-hazardous waste disposed of off-site | Tons | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 |
| | M&W-7 | Recycled or reused waste | Tons | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | M&W-8 | % of total potential waste recycled or reused | % | | 0.0% | | | | | 0.0% |
| Water (used on-site) | W-1 | Public water use | MG | 5.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.0 |
| | W-2 | Groundwater use | MG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | W-3 | Surface water use | MG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | W-4 | Reclaimed water use | MG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | W-5 | Storm water use | MG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | W-6 | User-defined water resource #1 | MG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | W-7 | User-defined water resource #2 | MG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | W-8 | Wastewater generated | MG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Energy | E-1 | Total energy used (on-site and off-site) | MMBtu | 23,476.7 | 11.6 | 0.0 | 0.0 | 0.0 | 0.0 | 23,488.3 |
| | E-2 | Energy voluntarily derived from renewable resources | | | | | | | | |
| | E-2A | On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation | MMBtu | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | E-2B | Voluntary purchase of renewable electricity | MWh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | E-3 | Voluntary purchase of RECs | MWh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | E-4 | On-site grid electricity use | MWh | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.0 |
| Air | A-1 | On-site NOx, SOx, and PM emissions | Pounds | 1,126.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1,126.4 |
| | A-2 | On-site HAP emissions | Pounds | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | A-3 | Total NOx, SOx, and PM emissions | Pounds | 26,277.5 | 18.0 | 0.0 | 0.0 | 0.0 | 0.0 | 26,295.5 |
| | A-3A | Total NOx emissions | Pounds | 20,350.6 | 8.7 | 0.0 | 0.0 | 0.0 | 0.0 | 20,359.3 |
| | A-3B | Total SOx emissions | Pounds | 5,690.3 | 7.8 | 0.0 | 0.0 | 0.0 | 0.0 | 5,698.0 |
| | A-3C | Total PM emissions | Pounds | 236.6 | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 238.2 |
| | A-4 | Total HAP emissions | Pounds | 14.2 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.2 |
| | A-5 | Total greenhouse gas emissions | Tons CO2e* | 5,086.5 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 5,087.4 |
| Land & Ecosystems | Qualitative Description | | | | | | | | | |

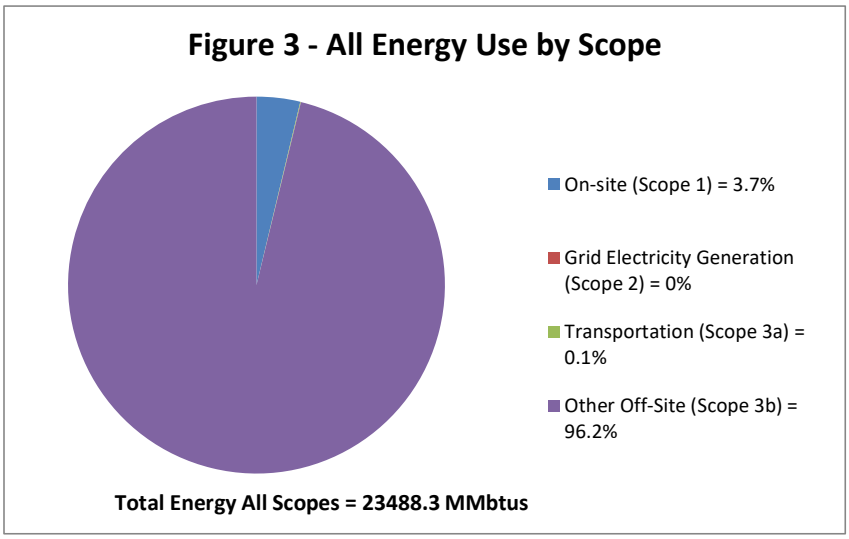
** Total greenhouse gases emissions (in CO2e) include consideration of CO2, CH4, and N2O (Nitrous oxide) emissions.*
*"MMBtu" = millions of Btus*
*"MG" = millions of gallons*
*"CO2e" = carbon dioxide equivalents of global warming potential*
*"MWh" = megawatt hours (i.e., thousands of kilowatt-hours or millions of Watt-hours)*
*"Tons" = short tons (2,000 pounds)*

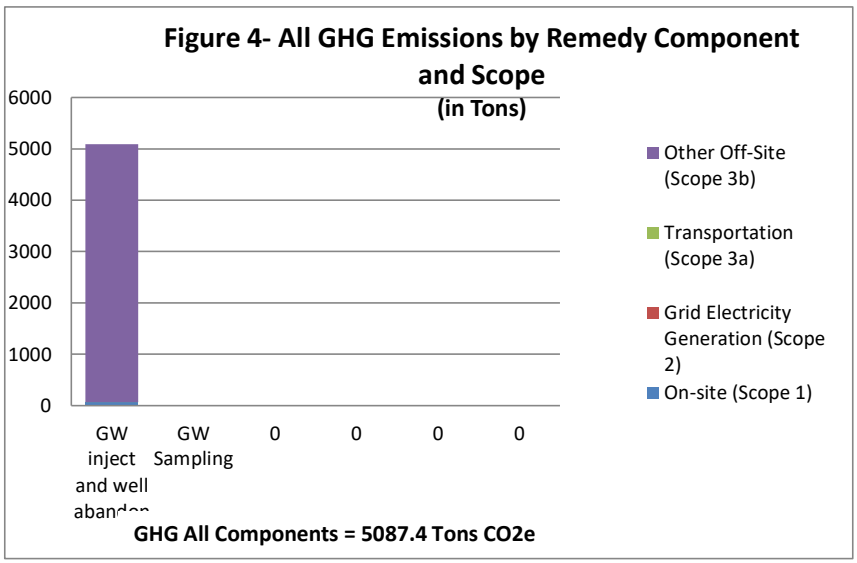
*The above metrics are consistent with EPA's Methodology for Understanding and Reducing a Project's Environmental Footprint (EPA 542-R-12-002), February 2012*

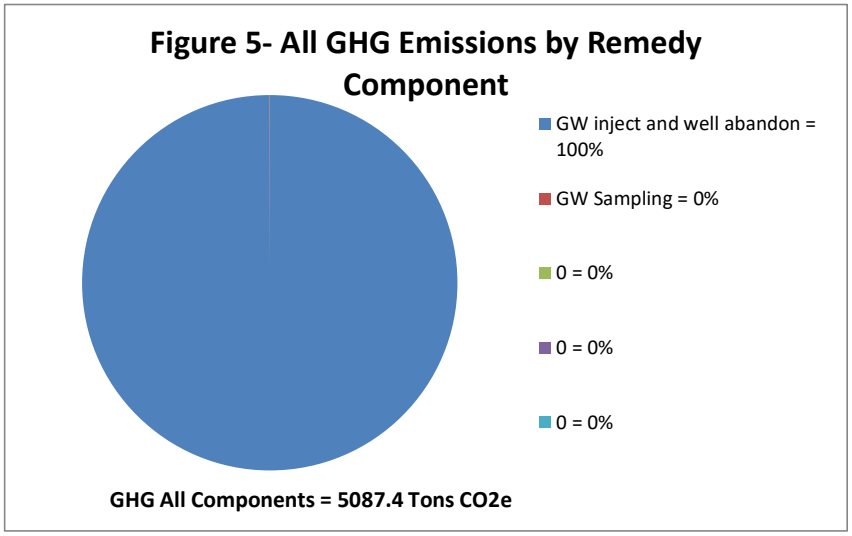
Notes:

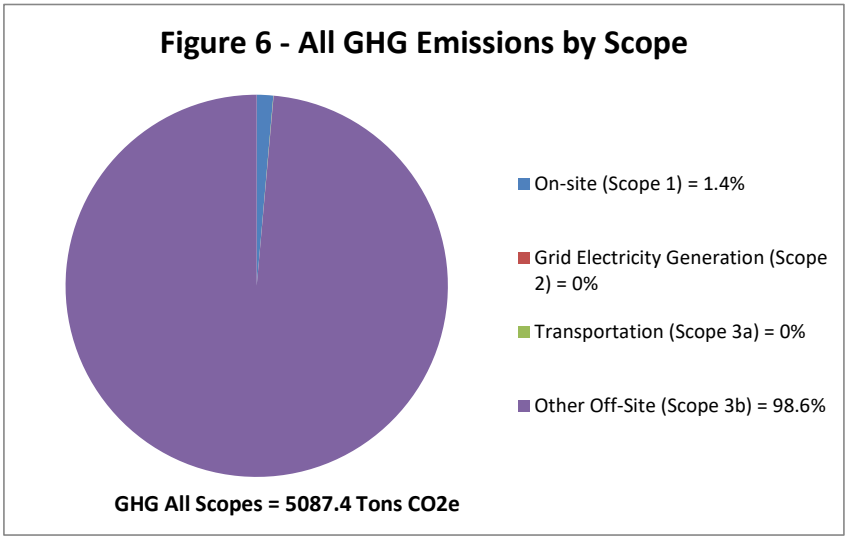

Figure 1 - All Energy Use by Remedy Component and Scope
(in MMbtu)
25000
20000
15000
10000
5000
0
GW inject and well abandon
GW Sampling
0
0
0
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
Total Energy All Components = 23488.3 MMbtus

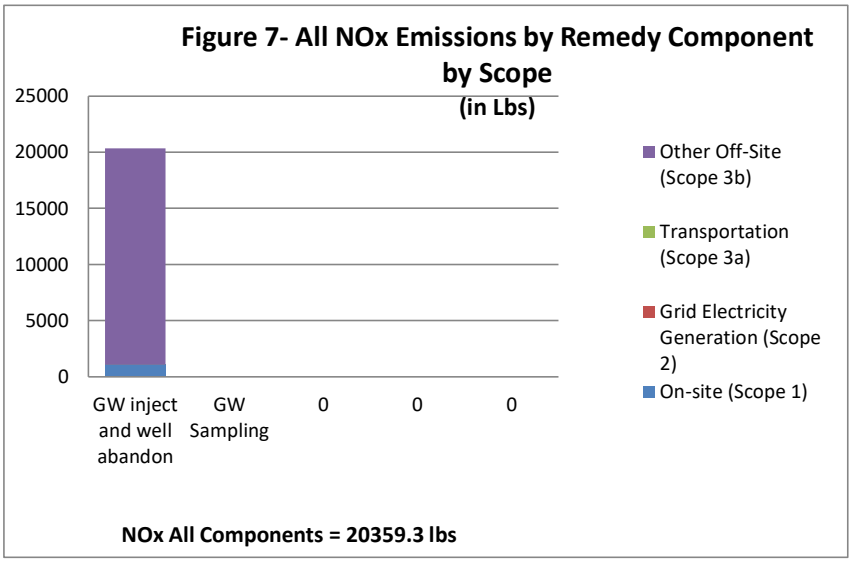

Figure 2 - All Energy Use by Remedy Component
GW inject and well abandon = 100%
GW Sampling = 0%
0 = 0%
0 = 0%
0 = 0%
Total Energy All Components = 23488.3 MMbtus

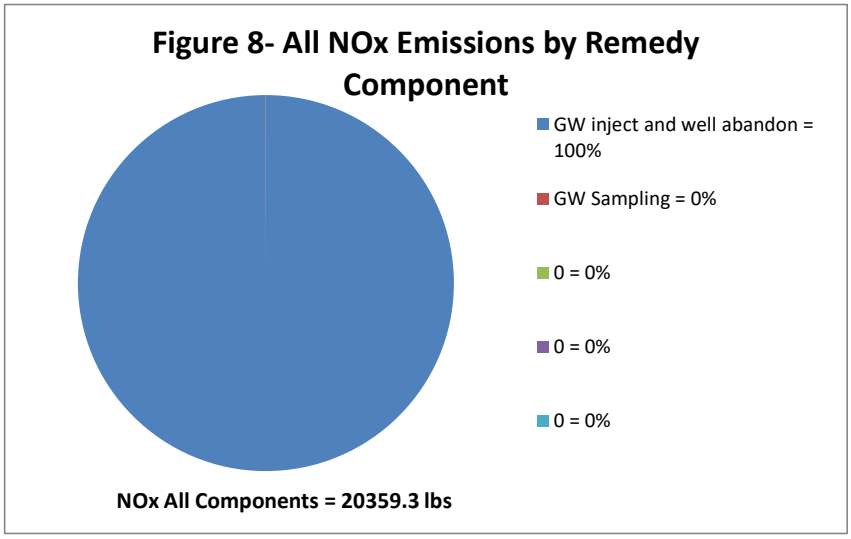

Figure 3 - All Energy Use by Scope
On-site (Scope 1) = 3.7%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0.1%
Other Off-Site (Scope 3b) = 96.2%
Total Energy All Scopes = 23488.3 MMbtus

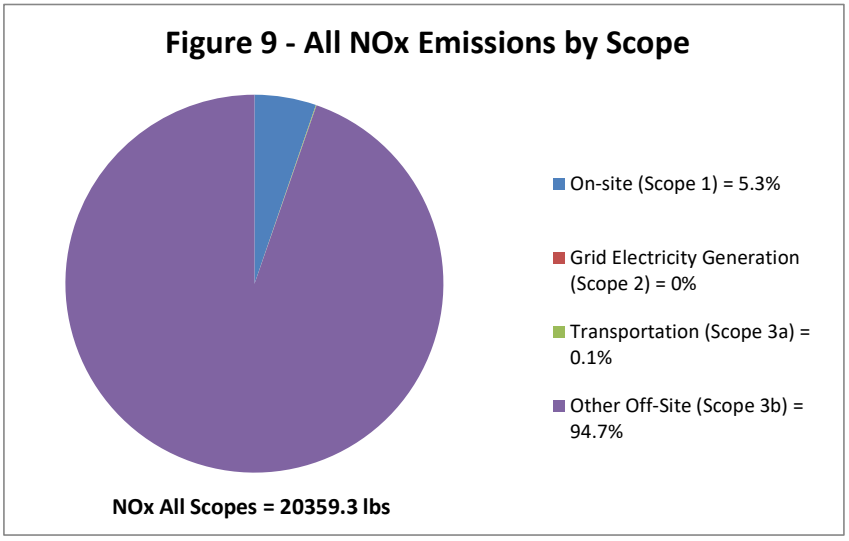

Figure 4- All GHG Emissions by Remedy Component and Scope (in Tons)
6000
5000
4000
3000
2000
1000
0
GW inject and well
GW Sampling
0
0
0
0
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
GHG All Components = 5087.4 Tons CO2e

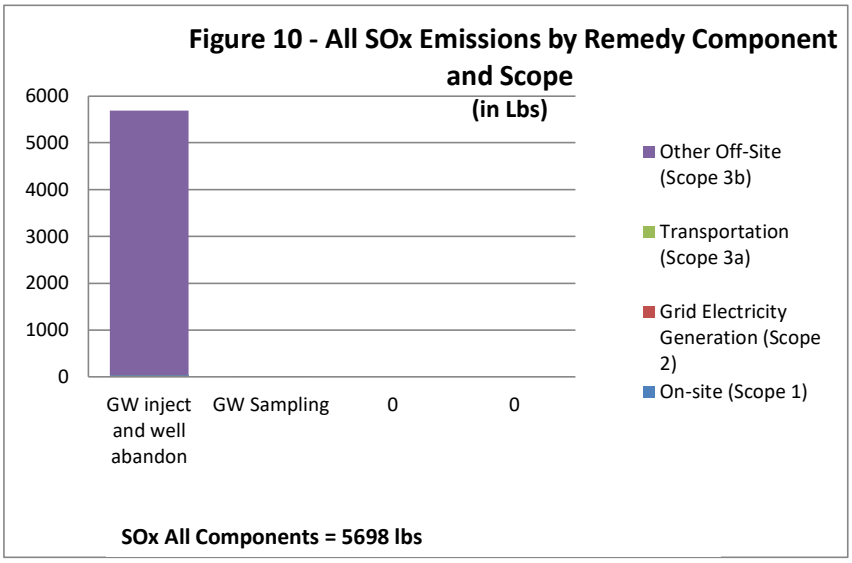

Figure 5- All GHG Emissions by Remedy Component
GW inject and well abandon = 100%
GW Sampling = 0%
0 = 0%
0 = 0%
0 = 0%
GHG All Components = 5087.4 Tons CO2e

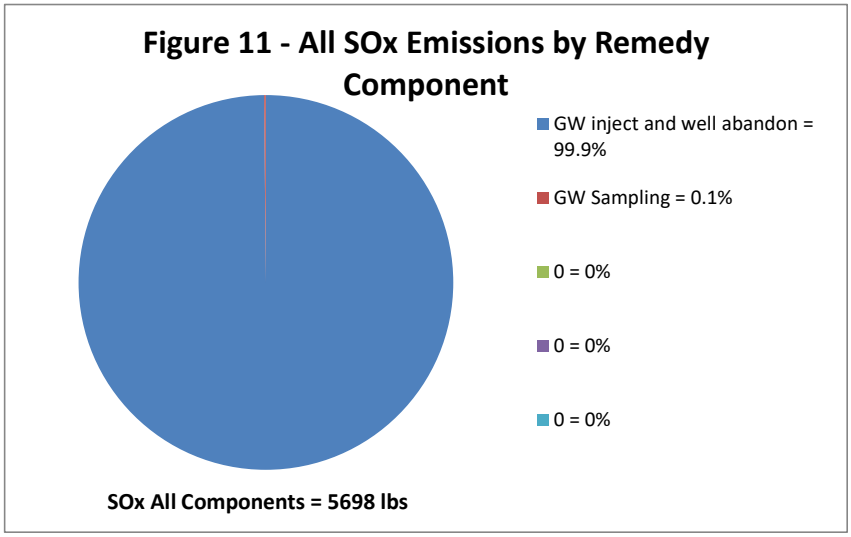

Figure 6 - All GHG Emissions by Scope
On-site (Scope 1) = 1.4%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0%
Other Off-Site (Scope 3b) = 98.6%
GHG All Scopes = 5087.4 Tons CO2e

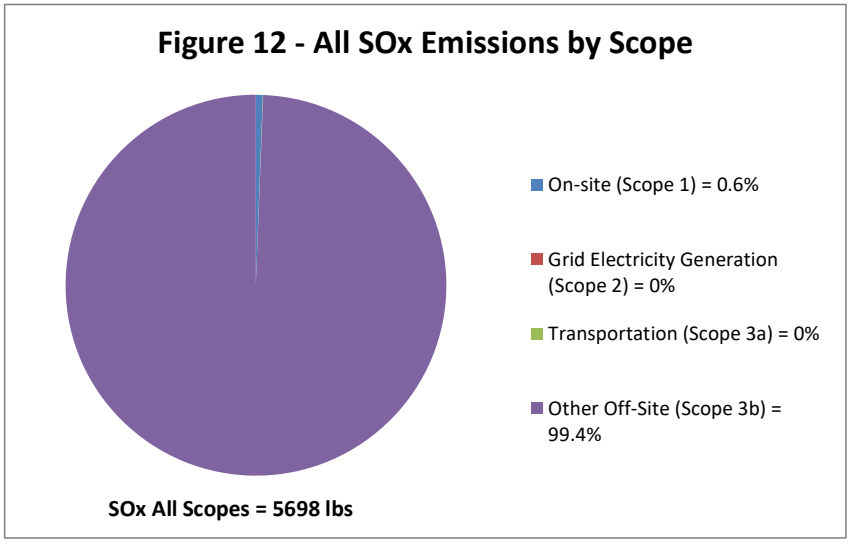

Figure 7- All NOx Emissions by Remedy Component by Scope (in Lbs)
25000
20000
15000
10000
5000
0
GW inject and well abandon
GW Sampling
0
0
0
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
NOx All Components = 20359.3 lbs

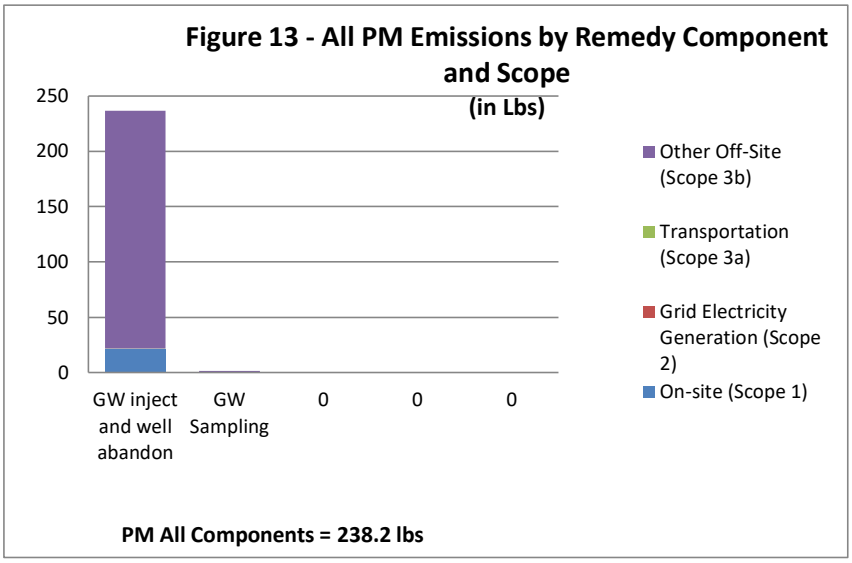

Figure 8- All NOx Emissions by Remedy Component
GW inject and well abandon = 100%
GW Sampling = 0%
0 = 0%
0 = 0%
0 = 0%
NOx All Components = 20359.3 lbs

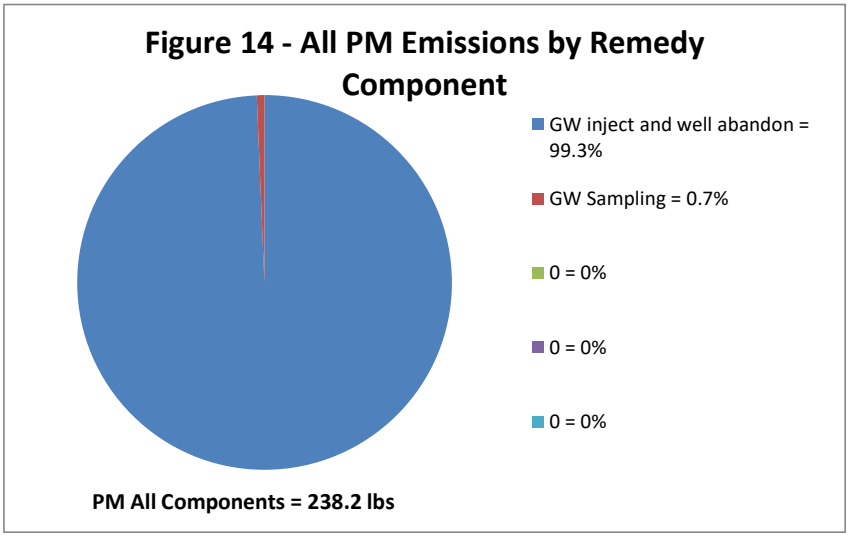

Figure 9 - All NOx Emissions by Scope
On-site (Scope 1) = 5.3%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0.1%
Other Off-Site (Scope 3b) = 94.7%
NOx All Scopes = 20359.3 lbs

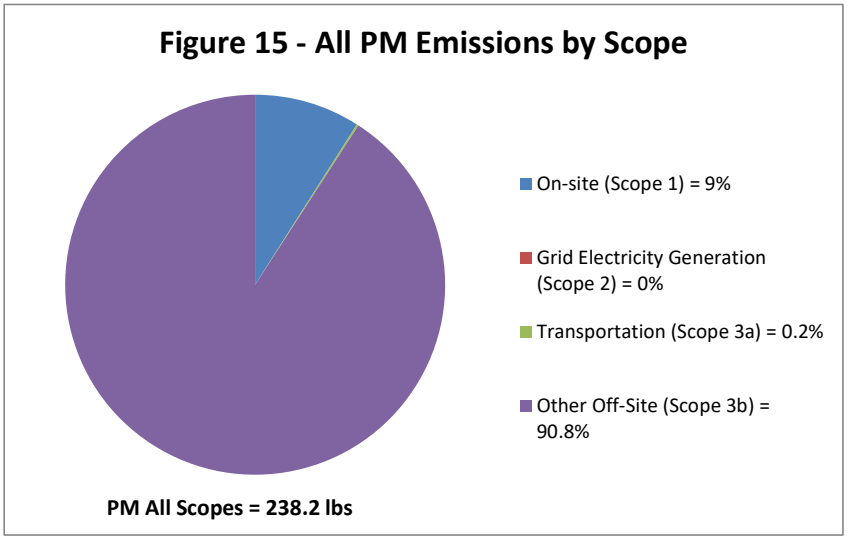

Figure 10 - All SOx Emissions by Remedy Component and Scope
(in Lbs)
6000
5000
4000
3000
2000
1000
0
GW inject and well abandon
GW Sampling
0
0
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
SOx All Components = 5698 lbs

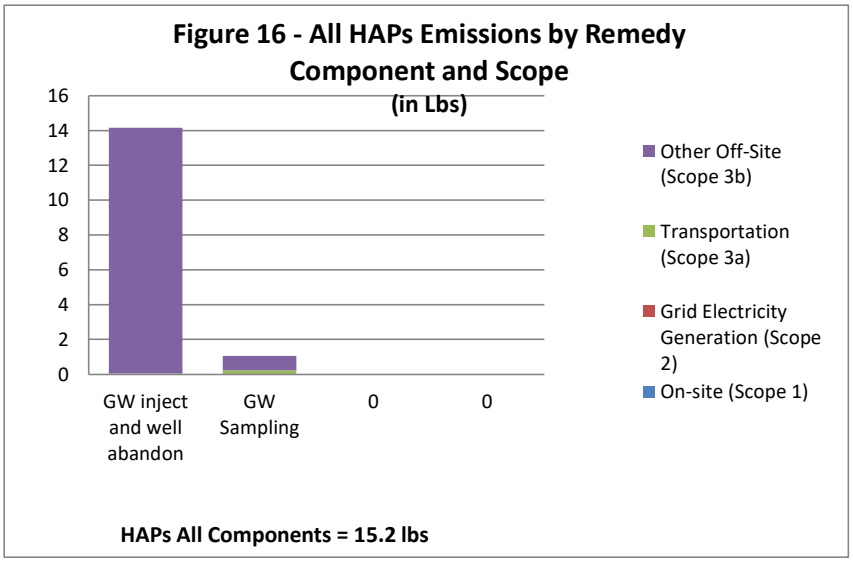

Figure 11 - All SOx Emissions by Remedy Component
GW inject and well abandon = 99.9%
GW Sampling = 0.1%
0 = 0%
0 = 0%
0 = 0%
SOx All Components = 5698 lbs

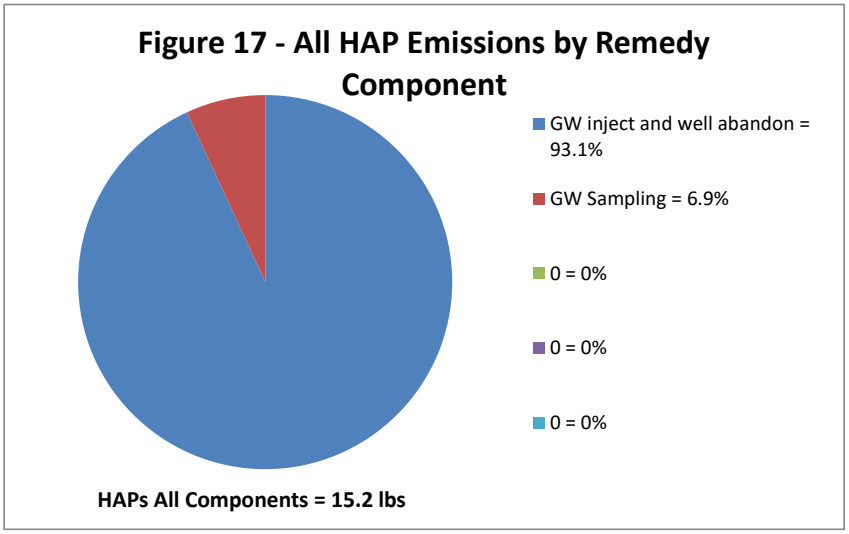

Figure 12 - All SOx Emissions by Scope
On-site (Scope 1) = 0.6%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0%
Other Off-Site (Scope 3b) = 99.4%
SOx All Scopes = 5698 lbs

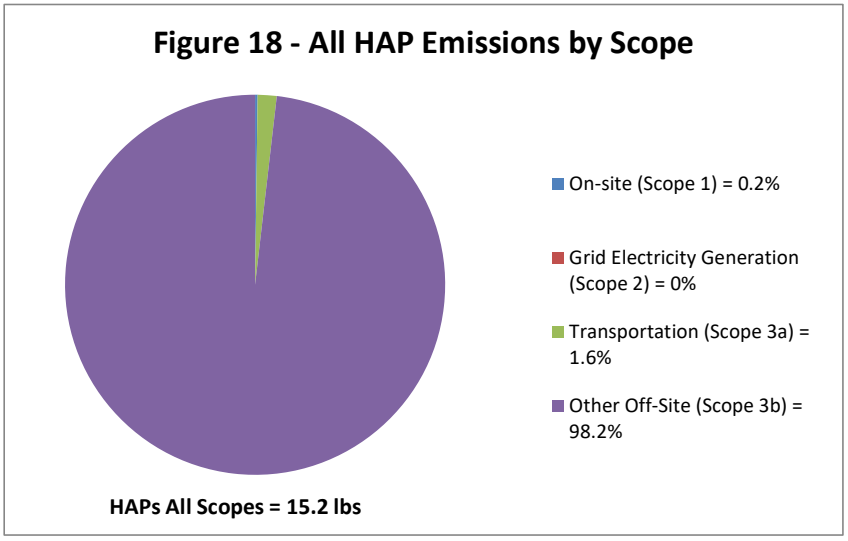

Figure 13 - All PM Emissions by Remedy Component and Scope
(in Lbs)
250
200
150
100
50
0
GW inject and well abandon
GW Sampling
0
0
0
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
PM All Components = 238.2 lbs


Figure 14 - All PM Emissions by Remedy Component
GW inject and well abandon = 99.3%
GW Sampling = 0.7%
0 = 0%
0 = 0%
0 = 0%
PM All Components = 238.2 lbs


Figure 15 - All PM Emissions by Scope
On-site (Scope 1) = 9%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0.2%
Other Off-Site (Scope 3b) = 90.8%
PM All Scopes = 238.2 lbs


Figure 16 - All HAPs Emissions by Remedy Component and Scope (in Lbs)
16
14
12
10
8
6
4
2
0
GW inject and well abandon
GW Sampling
0
0
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
HAPs All Components = 15.2 lbs


Figure 17 - All HAP Emissions by Remedy Component
GW inject and well abandon = 93.1%
GW Sampling = 6.9%
0 = 0%
0 = 0%
0 = 0%
HAPs All Components = 15.2 lbs


Figure 18 - All HAP Emissions by Scope
On-site (Scope 1) = 0.2%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 1.6%
Other Off-Site (Scope 3b) = 98.2%
HAPs All Scopes = 15.2 lbs

# All - Energy & Air Compiled Results

| Category | Total Energy | GHG | NOx | SOx | PM | NOx + SOx + PM | HAPs |
|---|---|---|---|---|---|---|---|
| | MMbtus | lbs CO2e | lbs | lbs | lbs | lbs | lbs |
| | | | | | | | |
| **On-site (Scope 1)** | **876** | **141,750** | **1,071** | **34** | **21** | **1,126** | **0** |
| **Grid Electricity Generation (Scope 2)** | **0.000** | **0** | **0** | **0** | **0** | **0** | **0** |
| **Transportation (Scope 3a)** | **16** | **2,558** | **15** | **0** | **0** | **16** | **0** |
| **Other Off-Site (Scope 3b)** | **22,597** | **10,030,428** | **19,273** | **5,664** | **216** | **25,153** | **15** |
| **Remedy Totals** | **23,488** | **10,174,736** | **20,359** | **5,698** | **238** | **26,295** | **15** |

*Values that are forwarded to the "Summary" tab are indicated in orange.*

| Voluntary Renewable Energy Use | Unit | Quantity | |
|---|---|---|---|
| On-site renewable energy generation or use | MMBtu | **0** | |
| On-site biodiesel use | MMBtu | **0** | |
| Biodiesel and other renewable resource use for transportation | MMBtu | **0** | |
| On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation | MMBtu | **0** | *(This value is the sum of the three rows above)* |
| Voluntary purchase of renewable electricity | MWh | **0** | |
| Voluntary purchase of RECs | MWh | **0** | |

*This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:*
*SEFA_calculations_(121718).xlsx*