S2C2 inc.

Streamlined Site Characterization & Closure

September 30, 2020

Mr. Adam T. Morgan
Project Manager/Assistant Engineer
New York State Department of Environmental Conservation
Division of Environmental Remediation - Region 8
6274 East Avon-Lima Road
Avon, New York 14414

RE: Voluntary Off-Site Bedrock Groundwater Evaluation Activities adjacent to the Carlson Park Site (NYSDEC BCP Site ID# C828199), in Rochester, NY.

Dear Adam:

This letter Work Plan addendum is intended to provide a description of the bedrock groundwater evaluation activities that 100 Carlson Road, LLC (Carlson Road) is prepared to conduct on a voluntary basis at off-site locations adjacent to the Carlson Park Site (Site) in order to supplement information obtained from similar activities previously conducted on-site. The proposed voluntary evaluation activities addressed herein have been discussed with representatives of the New York State Department of Environmental Conservation (NYSDEC) during past telephone conversations and a site visit conducted on March 11, 2020. The approach and procedures presented herein are similar to those presented in the initial supplemental Work Plan for on-site bedrock evaluation activities dated February 28, 2010, and other supplemental on-site bedrock evaluation Work Plan addendum letters dated September 2010, August 2011, November 2011, June 2012, June 2013, June 2014, September 2014, and May 2016. We request that applicable general activities addressed in those on-site Plans be included in this off-site voluntary bedrock evaluation program by reference.

The remainder of this letter provides an explanation of the rational for, and detailed descriptions of, the specific voluntary off-site bedrock groundwater evaluation activities currently being proposed. It is hoped that information obtained from these off-site evaluation activities can be used to help assess groundwater quality conditions in off-site downgradient areas adjacent to the Site.

Rational for Proposed Off-Site Bedrock Groundwater Evaluation Activities:

Information obtained during the completion of on-site bedrock RI activities conducted between 2010 and 2016 indicated the presence of Chlorinated Volatile Organic Compounds

(CVOCs), consisting primarily of Trichloroethene (TCE) and/or related breakdown products (i.e., cis-1,2-DCE and Vinyl Chloride) in bedrock groundwater generally along downgradient portions of the Site property boundaries (e.g., to the north, northeast, east, and southeast) of the Site. The most significant on-site TCE concentrations identified in groundwater close to the property boundary were generally identified in intermediate depth bedrock in the southeast portion of the Site, where overlying shallow bedrock and overburden groundwater was not found to be impacted. The highest concentrations of dissolved breakdown products of TCE were generally identified in shallow bedrock along the northeastern Site property boundary where shallow overburden groundwater is not present. Based upon this on-site bedrock groundwater quality information, the NYSDEC indicated they intended to conduct groundwater investigation activities at adjacent off-site locations. Carlson Road was offered an opportunity to voluntarily conduct the initial off-site groundwater evaluation activities under NYSDEC oversight and accepted that opportunity.

The primary purpose for conducting the currently proposed voluntary off-site groundwater evaluation activities is to obtain an initial understanding of whether site-related constituents are present in bedrock groundwater at downgradient off-site locations adjacent to the site, and the vertical distribution of these constituents, if present. Additionally, previous information obtained from on-site bedrock evaluation activities identified the presence of a low permeability bedrock zone, which is underlain by pressurized natural gas. These features are believed to represent a viable barrier to downward groundwater migration within the bedrock. Accordingly, a secondary objective for conducting these activities is to verify that the low permeable bedrock zone extends beyond the Site boundary. A third objective of this program is to obtain additional groundwater elevation data to help refine our overall understanding of groundwater flow patterns in this area.

It should be noted that additional voluntary off-site Soil Vapor Intrusion (SVI) evaluation activities are planned for the upcoming heating season under a separate Work Plan addendum. Based upon information obtained during the completion of this voluntary off-site bedrock groundwater evaluation program, NYSDEC and the New York State Department of Health (NYSDOH) may determine that additional off-site environmental evaluation activities are warranted (e.g., groundwater, soil vapor, SVI, etc.). If needed, separate Work Plan addendum will be prepared as necessary.

Description of Proposed Voluntary Off-Site Bedrock Groundwater Evaluation Activities:

Please note that all of the currently proposed off-site bedrock groundwater evaluation activities will be conducted using methods and procedures similar to those previously approved and used as part of the on-site bedrock evaluation activities. The approximate

locations of all currently proposed off-site bedrock groundwater evaluation activities were discussed with a representative of NYSDEC in March 2020, and are presented on Figure 1. The currently proposed off-site bedrock evaluation activities will be completed as part of two separate field events. As described in more detail below, the specific scope of work and the specific sequencing of activities will be somewhat dependent upon observations and/or information generated in the field. Accordingly, an element of the work scope associated with this program will be somewhat dynamic in nature.

Additional bedrock evaluation, and bedrock groundwater monitoring well installation.

The first field event to be completed as part of the currently proposed off-site bedrock evaluation program work will include the completion of detailed bedrock evaluation activities followed by the installation of bedrock groundwater monitoring wells. In order to meet the objectives of this program, it is proposed that bedrock evaluation activities will be conducted at seven (7) locations as approximately depicted on Figure 1. Of these, three (3) locations have been identified along Hampden Road and another three (3) locations have been identified on side streets just north of Humboldt Street. A seventh location will be situated in the vicinity of the intersection of Humboldt Street with Amsterdam and Hampden Roads, as depicted with the red hash marks on Figure 1. The reason a more specific location could not yet be identified at this area is due to considerable access considerations that need to be addressed with the selected drilling contractor regarding underground and overhead utilities. The actual final locations of all the proposed bedrock evaluation activities may be adjusted in the field based on surface or subsurface features/utilities and/or man-made obstructions along with input from the drilling contractor. Information obtained regarding the location of subsurface utilities near the intersection of Hampden Road and Humboldt Street will be provided at the conclusion of this program.

As described in detail herein, specific bedrock evaluation activities are anticipated to include: bedrock coring and packer-testing, to be followed by borehole geophysical logging. The suite of borehole geophysical logging tools will consist of single-point resistance, spontaneous potential, natural gamma, caliper, temperature, and fluid resistivity. This complete suite of geophysical logging tools will be utilized at individual borehole locations where the final depth of the open borehole is sufficient to warrant such logging and borehole conditions are conducive to the successful operation and functionality of all these geophysical logging tools. It should be noted that very shallow bedrock surfaces are anticipated to be present at all locations situated close to Humboldt Street. In the event that the length of open borehole at any given location is too short to allow the full suite of geophysical logging to be conducted, then limited geophysical logging consisting of natural gamma may be conducted after the groundwater monitoring wells have been installed at any such locations. [Natural gamma

logging can be used in a well to obtain data on the formation outside the well casing, whereas the other geophysical logging tools require an open hole (i.e., no casing) to obtain data.]

At each bedrock evaluation location, a permanent 6" diameter steel casing will be installed to a depth of approximately one to two feet below the bedrock surface and grouted in place prior to initiating any bedrock evaluation activities, provided the bedrock surface is greater than four to five feet below grade. The bedrock surface at the proposed bedrock evaluation locations are expected to range from a maximum depth of approximately 40 feet below grade near the southern portion of Hampden Road, to depths of approximately 10 feet below grade or less along Humboldt Street. It is unlikely that overburden groundwater will be encountered above the bedrock surface at most of the proposed bedrock evaluation locations. A significant saturated overburden thickness may be encountered along the southern half of Hampden Road. It is not anticipated that the environmental quality of any such overburden groundwater has been significantly impacted. However, observations and PID measurements of the overburden drill cuttings will be made during the installation of the 6" steel casings as a precaution to screen for possible Volatile Organic Compound (VOC) impacts. In the unlikely event that these observations suggest the presence of substantial environmental quality impacts above the bedrock surface, then additional measures may be taken as part of the packer-testing activities to reduce the potential for overburden conditions to affect packer-testing results near the bedrock surface. Such measures could include advancing and sealing the 6" steel casing slightly deeper below the bedrock surface to help assure that overburden conditions do not impact surficial bedrock conditions via the borehole being advanced.

Once all of the permanent steel casings have been set, the bedrock coring and packer-testing activities will be initiated. At all bedrock evaluation locations, the initial corehole will be considered a pilot hole within which a permanent bedrock groundwater monitoring well will subsequently be installed. Bedrock coring will be accomplished with the use of a triple core barrel configuration. This configuration reduces the chance of causing man-made breaks in the core, and also maximizes bedrock core recovery. Bedrock coring will be advanced at approximate five to 10-foot intervals. Once the rock core obtained from each interval has been evaluated by a geologist, a determination will be made as to the value of conducting packer-testing within that interval. Such determination will primarily be based upon the presence of potential water-bearing fractures.

Packer-testing will commence with the use of a straddle-packer assembly utilizing only the top packer. Groundwater grab sampling will then be conducted within the bedrock borehole beneath the packer. The approximate yield/rate and volume of water extracted from each packer test interval will be recorded. Subsequent bedrock coring and packer-testing will

continue in an iterative pattern until the vertical extent of evaluation has been achieved at each location. It is anticipated that bedrock coring and packer-testing will extend to a depth where minimal to no impacts are observed, or to a depth approaching the underlying low permeability bedrock zone and underlying natural gas accumulations as previously encountered, whichever is shallower. However, in the event that Dense Non-Aqueous Phase Liquid (DNAPL) is encountered/observed, or even strongly suspected of being present in the bedrock at any of the proposed bedrock evaluation locations (prior to obtaining analytical results), drilling will be terminated at that depth/location in order to limit the potential for introducing DNAPL into deeper parts of the formation via the corehole. The suspected presence of DNAPL will initially be determined through a combination of visual observations, photo ionization detector (PID) readings of drill cuttings/water, and/or VOC screening of groundwater grab samples collected during the packer-testing activities. Such information will be considered in deciding whether to suspend or terminate deeper drilling at a corehole location until the analytical results of more formal analysis can be reviewed. For the purpose of this program, analytical results indicating dissolved TCE concentrations in excess of about 20 percent of the solubility of TCE (i.e., approximately 200 mg/L) will be considered sufficient to terminate further advancement of coring/drilling at that location.

Please note that a Community Air Monitoring Plan (CAMP) will be implemented in accordance with Appendix 1A of the 2010 NYSDEC Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation (DER-10), as prescribed by the New York State Department of Health (NYSDOH). The CAMP will be accomplished with the use of real-time air monitoring for total VOCs and particulate matter 10 microns or less in diameter. Such monitoring will be conducted just downwind of all bedrock coring, packer-testing, and all subsurface drilling activities, as well as at upwind locations. Monitoring Action Levels for VOCs and/or particulate levels will be in accordance with threshold values provided in DER-10**.**

All groundwater grab samples collected to undergo VOC screening as part of the packer-testing program will be accomplished using rapid turnaround at a fixed-base laboratory in accordance with USEPA SW-846 Method 8260C. As mentioned above, preliminary on-site field screening of all groundwater grab samples will be conducted on groundwater collected in Volatile Organic Analysis (VOA) vials with the use of a hand-held PID. This preliminary screening will help the field personnel determine if the continued vertical advancement of the packer-testing activities should be halted prior to the receipt fixed-base lab analytical screening results.

Once all packer-testing and geophysical logging activities have been completed, a single permanent bedrock groundwater monitoring well will be installed within the corehole

advanced at each of the bedrock evaluation locations. Observation made and the results obtained during the above-described field evaluations will be used to select the optimal well screen interval for each bedrock groundwater monitoring well. Any portion of the initial corehole which may have been drilled deeper than the selected well screen setting at each location will be sealed prior to well installation. The remaining portion of the borehole will then be reamed to 6" in diameter for groundwater monitoring well installation. Corehole reaming will be accomplished with the use of roller bit drilling using water as the drilling fluid. Care will be taken to prevent all coring, packer-testing, and drilling fluids from reaching the ground surface. Such liquids will temporarily be held in 55-gallon drums or water tanks until it can be transferred to the existing on-site carbon treatment system.

Furthermore, a single overburden groundwater monitoring well will also be installed adjacent to each of the two bedrock groundwater monitoring wells to be installed at the southernmost bedrock evaluation locations along Hampden Road. This will result in the formation of wells "nests" at those two locations. The primary purpose for installing these two overburden wells is to obtain vertical hydraulic gradient information between the overburden and bedrock groundwater in that area, and to obtain data to assist with the overall determination groundwater flow patterns in the vicinity of the Site. Groundwater quality data obtained from these wells is anticipated to confirm the absence of VOC impacts within saturated overburden at these locations.

Overburden groundwater monitoring wells will be installed with the use of hollow-stem auger drilling. Given logistical considerations in that area, continuous soil sampling is not being planned as part of the overburden groundwater monitoring well installation activities. Instead, soil cuttings from hollow-stem auger drilling will be observed and monitored with a PID prior to being containerized.

All permanent groundwater monitoring wells to be installed as part of this program will be constructed of 2" diameter PVC screen and riser. The actual depth of well screen settings will be dependent upon observations made and information obtained in the field. Once installed, the new monitoring wells will be developed. Development and/or purge water will be placed into the on-site carbon treatment system. The locations and elevations of all permanent groundwater monitoring wells installed during this program will subsequently be surveyed by a NYS-licensed surveyor.

Groundwater Monitoring Well Sampling and Analysis.

The second field event to be conducted as part of the currently proposed voluntary off-site bedrock evaluation program will consist of sampling and the subsequent analyses of groundwater samples collected from each of the nine (9) permanent off-site groundwater

monitoring wells to be installed as part of this program (i.e., 7 bedrock groundwater monitoring wells and 2 overburden groundwater monitoring wells). Each of these wells will be allowed to stabilize and equilibrate for a minimum of one month from the time all such wells have been installed and developed prior to being sampled.

Prior to groundwater sample collection, water levels in each well will be measured and recorded. Groundwater sampling will be accomplished with the use of passive diffusion bags (PDBs). PDBs will be installed in these wells at least two weeks prior to sample collection. A single PDB, measuring 18 inches in length, will initially be installed for every five feet of saturated screened interval in any given well. The use of a multiple PDB configuration will help provide potential vertical groundwater quality profiling within the wells. Based upon the analytical results from this initial PDB sampling event, it is anticipated that subsequent groundwater sampling events will be accomplished with the use of a single PDB in each well. Each PDB will be placed at the optimal sampling depth (i.e., the highest CVOC concentration) identified by the groundwater quality profiling data initially obtained from the use of multiple PDBs.

In addition, subsequent to the PDB sampling, the new off-site bedrock groundwater monitoring wells to be installed as part of this program will also be sampled in general accordance with the "Low Flow" sampling methodology as outlined in USEPA-Region I "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples From Monitoring Wells", EQASOP-GW4, September 19, 2017. This methodology is similar to that utilized in previous groundwater sampling events conducted at the Site and as described in previous on-site Work Plan addendums. Accordingly, initial purging will be accomplished with the use of a submersible bladder pump. The pump intake will typically be set in the center of the screened interval, unless a specific water-bearing fracture interval has been identified based on packer-testing, coring and geophysical logging activities, in which case the depth of that fracture will be targeted. Water level drawdown will be monitored during purging activities. In addition, purged water will pass through a low-flow cell and will be monitored for a variety of field parameters. Such field parameters will include: temperature, pH, specific conductance, dissolved oxygen (DO), and oxidation-reduction potential (ORP). Purge water will be containerized and subsequently treated on-site with the existing carbon treatment system.

In an effort to obtain representative low flow groundwater samples, an attempt will be made to allow all the above field parameters to stabilize to within specific variance ranges for three consecutive readings prior to initiating groundwater sample collection. Such ranges include: <0.3' for water level drawdown; +/- 3% for temperature and specific conductivity; +/- 0.1 unit for pH; +/- 10% for DO; and +/- 10 millivolts for ORP.

In the event that well yields in any of the new off-site bedrock groundwater wells targeted to undergo low-flow sampling are too low to accommodate this sampling technique, only the above-mentioned PDB sampling will be conducted in that well.

All groundwater samples collected as part of this event will be analyzed for the presence of VOCs by a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory in accordance with USEPA SW-846 Method 8260C. QA/QC samples consisting of field duplicates, field and trip blanks, will be included with the sampling event. Analytical results will be validated and a Data Usability Summary Report (DUSR) will be prepared.

Schedule

Following the approval of this Work Plan addendum letter by the NYSDEC and the NYSDOH, an attempt will be made to conduct the subject off-site bedrock evaluation activities as soon as practicable. However, given the considerable logistical considerations associated with this scope of work, coupled with the added uncertainty associated with the ongoing COVID-19 Pandemic, a specific schedule can not reasonably be determined at this time. Such logistical considerations include, but are not limited to: obtaining City of Rochester permits, scheduling with the drilling contractor, potential travel restrictions, access considerations within the residential neighborhoods, utility clearance, etc. In addition, the required duration of the field activities under these conditions is less certain than typical. Accordingly, it is currently anticipated that this field program will be implemented in the Spring of 2021.

As mentioned above, all of the field activities proposed in this Work Plan addendum will be completed in a similar manner as previously conducted during on-site bedrock evaluation activities, and are consistent with the methodologies presented in prior Work Plans and/or addendums as previously approved by NYSDEC for this Site.

Please feel free to contact either of us at (908) 625-3192 or (908) 256-2710, respectively, if you have any questions or comments concerning this matter, or if you require any additional information.

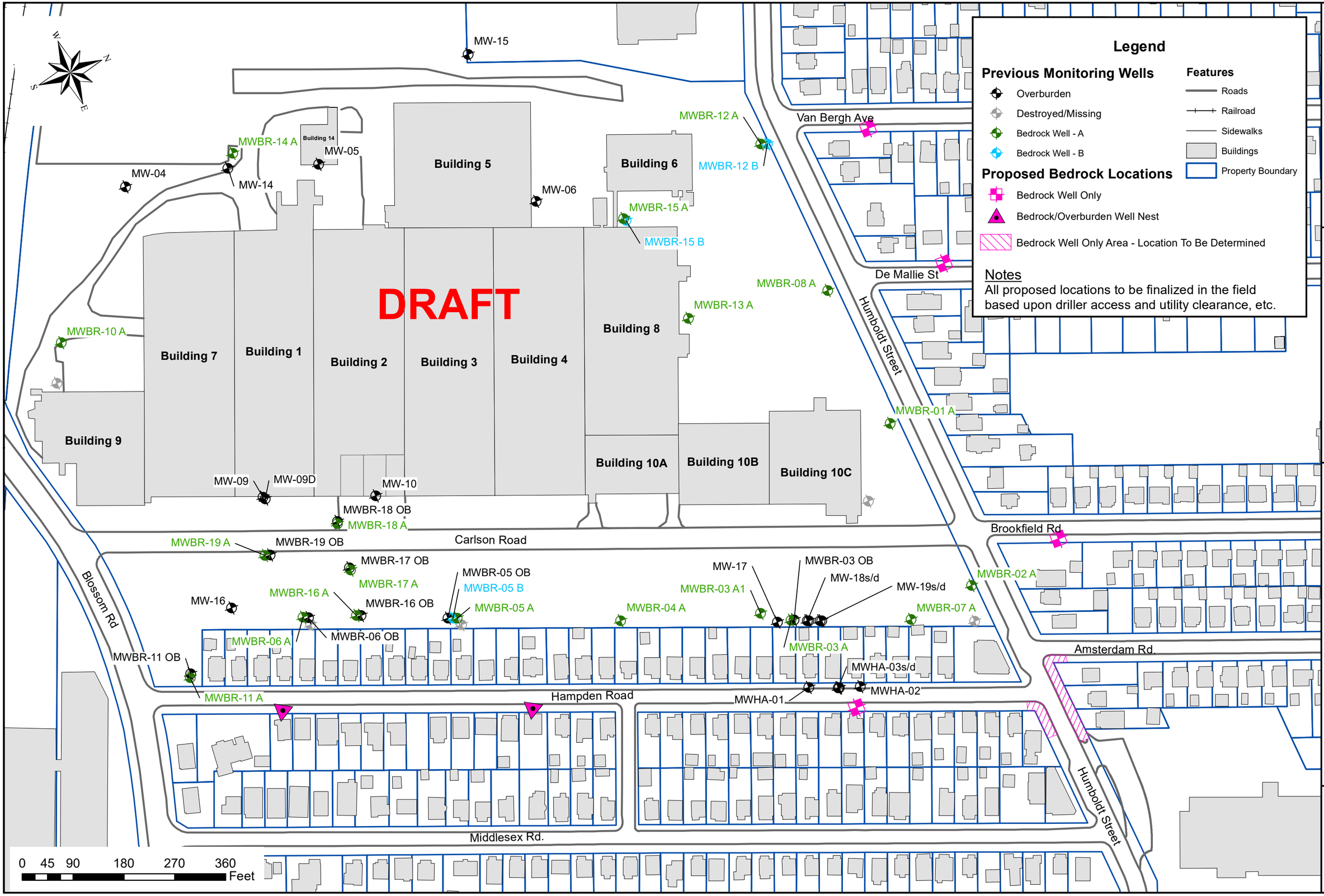
Sincerely,
S2C2 Inc.

Steven B. Gelb
Project Manager

Jason C. Ruf, P.G. (NYS License No. 000526)
Project Geologist & Database/3DVA Manager

I Jason C. Ruf, P.G. certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this 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).

CC: Jim Goff
Frank Sowers (NYSDEC)
Angela Martin (NYSDOH)



S² C² inc.

CARLSON PARK FACILITY
CARLSON ROAD
ROCHESTER, NEW YORK

PROPOSED OFF-SITE
BEDROCK EVALUATION LOCATIONS

TITLE

FIGURE 1

DATE 7/31/2020

SCALE 1:1,800

W:\Projects\Rochester\ArcMap\2018OffSite\mv\Carlson Draft Figure 1 Proposed Off-Site Bedrock Evaluation Locations July 2020.mxd