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Streamlined Site Characterization & Closure

June 20, 2013

Mr. Gregory B. MacLean, P.E.
Environmental Engineer II
New York State Department of Environmental Conservation
Division of Environmental Remediation - Region 8
6274 East Avon-Lima Road
Avon, New York 14414

RE: Supplemental Remedial Investigation Activities at Carlson Park in Rochester, NY. (NYSDEC VCP Number V00514-8)

Dear Greg:

This letter addendum is intended to provide a description of supplemental Remedial Investigation (RI) activities that 100 Carlson Road, LLC is planning to conduct during the Summer of 2013 as part of ongoing RI activities being implemented at the Carlson Park Site (Site). The proposed supplemental RI activities addressed herein have been generally discussed with you during recent telephone conversations. These activities represent an expansion of the Scope of Work outlined in the Supplemental Work Plan for Initial Bedrock Evaluation Activities dated February 28, 2010 (Supplemental Work Plan), and other supplemental Work Plan Addendum letters dated September 2010, August 2011, November 2011, and June 2012. The Supplemental Work Plan, and subsequent addendum letters, are all addenda to the original Voluntary Cleanup Program Remedial Investigation Work Plan for Carlson Park, dated October 2004 (RI Work Plan). Accordingly, we request that this letter be considered an additional attachment to the Supplemental Work Plan.

The remainder of this letter provides an explanation of the purpose for, and a description of the additional on-site RI activities currently being proposed. .

Purpose of Proposed Supplemental RI Activities:

The proposed supplemental on-site RI activities are primarily intended to achieve two objectives. One objective is to better define shallow bedrock groundwater quality conditions beneath a limited area situated in the northwest portion of the Site in the general vicinity of MWBR-12A. The other objective is to help evaluate and determine the cause of persistent shallow groundwater quality impacts which have been observed to be present in the vicinity of MWBR-3OB in the northeast portion of the Site. The attached Figure indicates the approximate locations of the two areas to be evaluated as part of this proposed program.

Shallow Bedrock Groundwater Quality Conditions in the Northwest Portion of the Site (Vicinity of MWBR-12A).

Additional investigation activities are being proposed in the northwestern portion of the site in response to shallow bedrock groundwater quality information obtained at location BR-12 in July and September 2012. This location is situated close to the northern property boundary of the Site. Initial screening data obtained from groundwater samples collected within a bedrock borehole via packer-testing at this location in July 2012 indicated a dissolved trichloroethene (TCE) concentrations up to 57 mg/L (ppm). In addition, a small globule of non-aqueous phase liquid (NAPL) was recovered when groundwater was pumped from the initial core hole drilled at this location. The NAPL was subsequently confirmed through analysis to consist predominantly of TCE.

A shallow bedrock groundwater monitoring well (MWBR-12A) was subsequently installed at this location, with a screened interval of 15-20 feet below grade (approximately 9 to 14 feet below the bedrock surface). Analytical results from a groundwater sample collected from that well in September 2012 indicated a dissolved TCE concentration of 31 ug/L (ppb). This concentration is more than three orders of magnitude lower than the concentration measured in the groundwater sample previously collected from the open core hole using the packer-test equipment.

Based upon the inconsistent analytical data previously obtained from this location, it is not known if a localized elevated dissolved TCE anomaly was initially identified in shallow bedrock groundwater during packer-testing activities, or if there is a possibility of a more significantly impacted shallow bedrock groundwater zone situated nearby that was being drawn to this location during the packer-testing procedure. The primary objective of this supplemental RI activity is to help clarify this uncertainty. If a more significantly impacted shallow bedrock groundwater zone is identified in this area, an attempt will also be made to evaluate the source of any such impacts (i.e., NAPL).

Evaluate the Cause of Persistent Shallow Groundwater Quality Impacts in the Vicinity of Location BR-3.

Two permanent nested groundwater monitoring wells have previously been installed at this location. One of these wells (MWBR-3 OB) is screened within the 2.5 to 3 feet of saturated overburden present just above the bedrock surface at a depth of 8.5 feet below grade, while the other well (MWBR-3A) is screened within shallow bedrock to a depth of 25-35 feet below grade. The outer steel casing installed for MWBR-3A was set at a depth of 13 feet below grade, thereby casing off the upper 4.5 feet of bedrock at this location. When the bedrock interval between the base of the outer steel casing (at a depth of 13 feet below grade), and the top of the well screen (at a depth of 25 feet below grade) was cored, minimal bedrock fracturing was observed over that interval. Additionally, an attempt to collect groundwater grab sampling with the use of packer-testing equipment over this interval indicated that the groundwater yield from this zone was relatively low.

The bedrock surface has been observed to drop about 4 feet in elevation (to a depth of 12.5 feet below grade) just north of the two nested wells installed at the BR-3 location. This drop in bedrock surface elevation may be creating a possible scenario where groundwater which may be present in very shallow, nearly horizontal bedding-parallel bedrock fractures that may exist within (and/or below) the bedrock interval that was cased-off during the installation of MWBR-3A, may be discharging groundwater into the overburden at this location. The thickness of saturated overburden was found to be about 6.5 to 7 feet thick where the bedrock surface drops.

Analytical results from groundwater samples collected from overburden well MWBR-3OB have persistently indicated the presence of dissolved TCE at a concentration of about 1,000 ug/L (ppb). Similar concentrations were measured in depth-discrete overburden groundwater grab samples collected just above the bedrock surface in a small area situated immediately north and south of this well. However, such elevated dissolved TCE concentrations were not observed to be present in the shallow overburden intervals (near the water table) overlying the area where the bedrock surface was found to drop and the saturated thickness of the overburden was greater. At that location only the deeper overburden groundwater intervals were found to contain similar elevated dissolved TCE concentrations. Conversely, analytical results from groundwater samples collected from the shallow bedrock well MWBR-3A, have persistently indicated the presence of dissolved TCE at concentrations ranging in single digit ug/L (ppb).

In addition to groundwater quality data obtained from samples collected from MWBR-3OB and MWBR-3A, a considerable amount of shallow groundwater (and limited soil) sampling has already been conducted in the immediate vicinity of BR-3 in an effort to help explain the cause of these localized impacts. Such sampling included very high density (i.e., closely spaced), depth-discrete overburden groundwater grab sampling. To date, the cause of this apparent localized impacted shallow groundwater zone has not been identified.

For a variety of reasons stated above and summarized below, it is believed that additional shallow bedrock evaluation (particularly in the upper five feet of bedrock) is warranted in the vicinity of location BR-3 to further assess a potential link between elevated concentrations of dissolved TCE in overburden groundwater in that area and potential contaminant transport in shallow bedrock underlying that area:

- A localized overburden source for the overburden groundwater quality impacts identified to be present in the vicinity of MWBR-3OB has not been identified;
- A 16.5-foot vertical separation between the bottom of the of the well screen for MWBR-3OB (at the bedrock surface) and the top of the well screen for MWBR-3A (16.5 feet into bedrock), raises a question as to how representative groundwater quality data obtained from well MWBR-3A is of shallow bedrock groundwater quality conditions in that area;
- The low groundwater yield displayed by shallow bedrock well MWBR-3A, screened from a depth of 25 to 35 feet below grade, raises a question as to how hydraulically connected that well is to the surrounding bedrock aquifer; and

- Although the bedrock at a depth of 13 to 25 feet below grade at location BR-3 was evaluated and found to have minimal bedrock fractures and displayed very low groundwater yield, to date there has been no evaluation conducted of the upper 4.5 feet of bedrock in that area (the zone which was sealed-off by the steel casing installed as part of the installation of MWBR-3A).

A number of Sub-Slab Depressurization Systems (SSDS) have been installed in residential homes situated hydraulically downgradient of the overburden groundwater quality impacts identified in the vicinity of MWBR-3OB. One of the primary objectives for conducting the proposed additional shallow bedrock evaluation RI activities in this area is to obtain additional groundwater quality information from the uppermost shallow bedrock in the vicinity of BR-3 to assess whether the elevated dissolved TCE concentrations present in the overburden may be caused by the discharge of impacted groundwater being transported through shallow bedrock in this area. It is hoped that such information will permit the development of an effective long-term remedial strategy which will ultimately negate the need for the existing residential SSDS in that area.

Description of Proposed Supplemental RI Activities:

Vicinity of Location BR-12.

A significant amount of site characterization work has previously been conducted in the overburden in this general area. The environmental quality of the overburden groundwater throughout the currently proposed shallow bedrock evaluation area is fairly well defined, as is the depth to bedrock. It is known that the bedrock surface is generally situated at a depth of approximately five feet below grade along the property boundary in this area, and gradually deepens towards the south. Based upon observations made during overburden groundwater grab sampling and bedrock evaluation activities previously conducted in this area, the overburden above this bedrock appears to be unsaturated close to the northern property boundary, and begins to become saturated towards the south. Shallow overburden groundwater grab sampling previously conducted with direct-push equipment between Humboldt Street and Building 6 (see figure) have indicated very low dissolved TCE concentrations in overburden groundwater. Limited historic groundwater grab sampling conducted in a small portion of the courtyard area between Buildings 8 and 6 indicated dissolved TCE in groundwater at the bedrock/overburden interface at concentrations as high as approximately 1 mg/L (ppm). Based upon this information and the shallow bedrock groundwater quality information obtained from the core hole drilled at the BR-12 location in July 2012, as described above, the primary focus of the subject activities will be on the top 10 feet of bedrock in this area.

In order to evaluate such shallow bedrock groundwater, it is proposed that similar activities be used to those previously conducted in the vicinity of BR-6 in November/December 2011 and in June 2012. The approximate area where these supplemental RI activities are proposed to occur are presented on the attached Figure. It is anticipated that initial supplemental

shallow bedrock evaluation activities to be conducted in this area will take place just east and west of existing bedrock groundwater monitoring well MWBR-12A close to the northern property boundary and parallel to Humboldt Street. The specific scope of work and subsequent associated sampling locations will be somewhat dependent upon observations and/or information generated in the field. Accordingly, an element of the work scope associated with the subject RI activities will be dynamic in nature.

Prior to the initiation of any subsurface evaluation activities in this area, careful consideration will be given to the potential presence of underground piping. Such information will be valuable in helping to avoid drilling through current and/or past underground piping, and will also help identify locations which may have, and possible still could be, acting as potential conduits of contaminant migration. A thorough underground utility survey will be conducted in this area. Such survey will focus on verifying the presence of underground utilities which have been identified on historic facility engineering drawings, as well as locating other underground piping which may be present in this area.

Once the underground utility survey has been completed, the actual initial shallow bedrock evaluation locations to be situated close to the northern Site property boundary, and parallel to Humboldt Street, in this area will be selected. Subsequent shallow bedrock evaluation locations will be selected based upon the findings obtained from previous locations. Supplemental shallow bedrock evaluation activities to be conducted at each location will be initiated by advancing a 6-inch inside diameter hollow-stem auger from the ground surface to refusal at the bedrock surface. [Based upon previous drilling experience in this general portion of the Site, the absence of a highly weathered bedrock zone at the bedrock surface will preclude hollow-stem augering from penetrating the bedrock surface.]

As stated above, environmental quality conditions of the overburden within this evaluation area have been significantly characterized during previous RI activities. Consequently, the presence of NAPL or other significant impacts are not expected to be present within the overburden in this area. Accordingly, overburden soils will be evaluated by visual observation and PID screening of the auger cuttings to confirm the absence of NAPL or other significant impacts in the overburden soils. The soil cuttings will also be examined to assess water saturation above bedrock at each location. In the unlikely event that significant overburden impacts are observed within the very thin zone between the ground surface and the bedrock surface, soil samples will be collected to undergo analytical screening for volatile organic compounds (VOCs). If necessary, more precise depth-discrete split-spoon sampling may be conducted as determined in the field. If NAPL or other significant overburden impacts are found to be present, the intended shallow bedrock evaluation location will be relocated, and the proposed scope of this supplemental RI program will be modified to include additional overburden soil and/or groundwater delineation activities (this is not anticipated to be the case).

As also stated above, the bedrock surface is anticipated to be present at depths typically ranging between five and eight feet below grade in this portion of the Site. Temporary 4" PVC or steel casing will be set at the bedrock surface at each location. The temporary casing

will be sealed with bentonite (as was successfully done in the vicinity of BR-6), to limit the possibility of minimally impacted overburden water from mixing with shallow bedrock groundwater during the collection of grab groundwater samples from the rock borehole, and to limit the leakage of drilling fluid into the overburden during rock borehole advancement. Limiting the potential for minimally impacted overburden groundwater from entering the rock borehole is particularly important in this situation order to reduce the potential for diluting the shallow bedrock groundwater, and thereby masking the possible presence of highly impacted shallow bedrock groundwater.

Once the temporary casing has been set and sealed, a 4" borehole will be advanced through the casing. Borehole advancement will be conducted with the use of roller bit drilling (using water as the drilling fluid). It is anticipated the boreholes will be extended into bedrock to a total depth of approximately 10 feet below the base of the temporary casing at approximate five-foot increments. The actual depth of evaluation into the bedrock may be modified based upon observations made in the field. Short drilling increments will be utilized in the event that significant impacts are observed just below the bedrock surface. In such instances, there will be no need or desire to advance the borehole any further as part of this program, and risk the potential for introducing NAPL deeper into the rock via migration within the borehole. Bedrock groundwater grab sampling will then be conducted within the temporary shallow bedrock borehole after purging with the use of submersible and/or peristaltic pumps. In the event that minimal or no groundwater quality impacts are observed in the initial approximate five-foot interval drilled just below the temporary steel casing, it is possible that inflatable packers may be used to collect isolated groundwater grab samples from the deeper interval. The need for the use of packers in this situation will be largely based upon conditions observed in the field. It is important not to pack off fractures which may yield groundwater that needs to be evaluated, while also preventing the potential for minimally impacted groundwater from overlying high yield fractures from diluting the groundwater grab samples to be collected from underlying intervals. Groundwater samples will either be analyzed/screened for VOCs using rapid turnaround at a fixed-base laboratory or within an on-site mobile laboratory.

Once bedrock groundwater grab sampling has been completed at each temporary shallow bedrock evaluation location, the boreholes will be decommissioned by grouting and the temporary casings will be removed.

Following the completion of this shallow bedrock evaluation program, it is anticipated that one or more permanent bedrock groundwater monitoring well may be installed at a location(s) to be determined and agreed upon with the Agencies. Such well installation will be preceded by bedrock coring and packer-testing as has previously been done at each bedrock groundwater monitoring well location at the Site. Depending upon the number of permanent wells which may be installed, and the depths to which such wells may be advanced, a decision will be made as to whether or not downhole geophysical logging will also be conducted.

Vicinity of Location BR-3.

As stated above, a considerable amount of overburden groundwater quality evaluation has previously been conducted in the vicinity of location BR-3. A fairly localized lateral area of limited saturated thickness of overburden groundwater quality impacts has been defined. The proposed supplemental RI activities at this location will be focused on the upper 5 to 10 feet of bedrock underlying impacted overburden groundwater.

Initially, a single location situated just south-southwest of MWBR-3A will be selected to undergo this very shallow bedrock groundwater evaluation activity. This location will be selected to be close, but not directly within the most highly impacted overburden groundwater zone. This will be done to minimize the risk of impacting very shallow bedrock groundwater with overlying impacted overburden groundwater. This is a particularly big concern at this location given the desire to evaluate very shallow bedrock groundwater quality (i.e., within the upper five feet of the bedrock) in an area with known overburden groundwater quality impacts. This concern is exacerbated by the fact that the very shallow bedrock target zone precludes the ability to establish a casing seal set into the rock. Accordingly, although a similar drilling procedure will be utilized as described above for location BR-12, extra attention must be given to carefully sealing the temporary 4" casing at the bedrock surface in order to prevent overburden groundwater from entering the bedrock during shallow bedrock drilling and sampling activities.

Based upon the yield of the shallow bedrock at the initial evaluation location, and/or the analytical results obtained from the shallow bedrock groundwater grab sampling, a field decision will be made as to the need to evaluate additional nearby locations. Based upon this same information, it is also possible that a decision will be made to complete one (or more) shallow bedrock evaluation location(s) as a permanent very shallow bedrock groundwater monitoring well. If it is decided that a permanent very shallow bedrock well will be installed, such well will be installed within the 4" borehole drilled as part of this program. Careful attention must be given to creating some vertical separation between a very shallow bedrock well screen and the bedrock surface. This would be necessary in order to establish a seal above the well screen that will preclude possible overlying impacted overburden groundwater from entering the very shallow well via the borehole annulus. No additional bedrock coring or packer-testing is anticipated for this very shallow location.

Schedule

Based upon driller availability, it is currently anticipated that these supplemental RI activities will begin the week of July 8, 2013. The actual start date for these activities will be partly dependent upon receipt of Agency approval to proceed. It is currently anticipated that approximately 10 field days will be required to complete this program. However, based upon information developed in the field, this duration could be reduced or expanded. If additional time is required beyond the initial 10 days, it is likely that any such work will be scheduled later in the summer.

The supplemental RI activities proposed in this Work Plan addendum will be completed in a similar manner as previously conducted as part of the ongoing RI activities being completed at the Site, and will be 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 me at (908) 625-3192 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

CC: Jim Goff

MWBR-09 A
MW-15
MWBR-12 A
MWBR-14A
Building 14
Building 5
Building 6
MWBR-08 A
Humboldt Street
MWBR-13 A
Building 8
MWBR-10 A
BR-6X
Building 7
Building 1
Building 2
Building 3
Building 4
MWBR-01 A
Building 9
BR-6VI
BR-6IX
Building 10A
Building 10
BR-6VII
MW-09D
Carlson Road
MWBR-02 A
Blossom Rd.
BR-6VIII
BR-6IV
BR-6II
BR-6I
BR-6III
BR-6V
MWBR-05
OB, A & B
MWBR-04 A
MWBR-03
OB & A
MWBR-07 A
IP-10
MW-11 OB
MWBR-06 A
Hampden Road
MWBR-11 A

Legend

- Proposed Shallow Bedrock Evaluation Area

Locations

- Bedrock Monitoring Well - A
- Bedrock Monitoring Well - B
- Monitoring Well - OB
- Temp. Shallow Bedrock DNAPL Eval. Location

Features

- Roads
- Railroad
- Sidewalks
- Buildings
- Property Boundary

0 55 110 220 330 440 Feet

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CARLSON PARK FACILITY
CARLSON ROAD
ROCHESTER, NEW YORK

TITLE
PROPOSED SHALLOW BEDROCK
EVALUATION AREAS
SUMMER 2013

FIGURE 1

SCALE 1:1,800

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