COMMITMENT & INTEGRITY
DRIVE RESULTS

33 Broad Street | One Weybosset Hill
Floor 7
Providence, Rhode Island 02903
www.woodardcurran.com

T 800.985.7897
T 401.273.1007
F 401.273.5087

Via Electronic Mail

February 25, 2016

Ms. Anna Krasko
US Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code OSRR07-1
Boston, MA 02109-3912

Re: Draft RI/FS Work Plan – Comment Response
Administrative Settlement Agreement and Order on Consent (OU 2)
L&RR Superfund Site, North Smithfield, RI

Dear Ms. Krasko:

Woodard & Curran has reviewed comments from the U.S. Environmental Protection Agency (EPA) and the Rhode Island Department of Environmental Management (RIDEM) dated January 11, 2016 regarding the November 2, 2015 Remedial Investigation/Feasibility (RI/FS) Work Plan draft submittal for Operable Unit (OU 2) of the Landfill & Resource Recovery Superfund Site (the "Site") in North Smithfield, Rhode Island. In accordance with Appendix D to the Administrative Settlement Agreement and Order on Consent (AOC; effective date August 17, 2015), the November 2, 2015 Work Plan submittal also included a Site Management Plan (SMP), Health and Safety Plan (HSP), Community Relations Support Plan (CRSP), and Sampling and Analysis Plan (SAP), itself comprised of the Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP). This response to comment letter, submitted at the request of the Respondents, addresses each response to those comments from EPA and RIDEM. Each of the comments is re-printed below in italicized format followed by our response.

EPA REVIEW COMMENTS ON RI/FS WORK PLAN

Comment 1:

Section 1.1, RI/FS Objectives, p. 1-2*. The third bullet states the objective to "Provide sufficient information for USEPA to evaluate remedial alternatives, select an OU 2 remedy, and support issuance of a Record of Decision (ROD)." The RI/FS Work Plan (WP) should consider collection of additional data and analyses in the RI phase that could demonstrate implementability and effectiveness of alternatives and support remedy selection. Otherwise, extensive pre-design investigations may be required to support Remedial Design, and/or future environmental sampling may contradict assumptions in the FS that were used in the remedy selection process for the ROD. Please consider updating the RI/FS WP with additional analyses that would support evaluation of in-situ treatment technology alternatives and/or demonstrate natural attenuation processes (beyond only dilution).*

Response:

Additional analyses were mistakenly omitted from the initial Work Plan. Section 4.4.4.3 has been updated to include the following analyses: biological oxygen demand, chemical oxygen demand, ammonia, chloride, methane/ethane/ethene, nitrate, sulfate, dissolved hydrogen, total organic carbon, and alkalinity to evaluate the potential for *in situ* treatment technologies (chemical or biological) and demonstrate the strength of on-going natural attenuation processes.

The list of constituents provided above will provide sufficient understanding of oxidation/reduction potential to evaluate remedial options appropriately. We do not believe that additional data is required to answer relevant remedial questions. However, until additional data is obtained as part of the RI, it is difficult to predict whether additional analyses would be required beyond this list and if so what those analyses would be. Therefore, we propose to review analytical results for volatile organic compounds (VOCs), 1,4-dioxane, metals and other analytes obtained from the hydrogeological investigation program of the RI after they are available to determine if additional analyses (in addition to those listed above) are required. Within 21-days following installation of the last monitoring well, we will provide EPA and RIDEM with a memorandum describing whether additional sampling and analytical are recommended, and if so, the proposed scope of work for the additional activities. We would also update/addend the RI/FS scoping documents if needed at that time. This timeframe will precede collection of the initial round of samples from recently installed wells and can easily accommodate additional samples, if necessary. Please note that due to the presence of 1,4-dioxane in groundwater we acknowledge that a focused evaluation of *in situ* biodegradation processes, primarily via aerobic cometabolic pathways, will be considered using available molecular biological tools. This may include the use of quantitative polymerase chain reaction (qPCR) and other genomic sequence assays to evaluate the affinity for the native microbial community towards cometabolism of 1,4-dioxane to support the FS. However, the need for and scope of qPCR analyses will be outlined in the supplemental memorandum. We also recognize that pre-design activities may be required.

Comment 2:

Section 3.2, Migration Pathway, Para. 2, p. 3-2*. The text states that diffusive mechanisms are the primary driver for vertical migration into bedrock as a result of the contrast between higher permeability sand and gravel and the underlying bedrock. While diffusion may play a role in downward migration of contamination into the bedrock, advective migration along vertical fractures in response to the natural downward gradients probably plays an equal or larger role. Advective transport should be included in the conceptual site model unless a reason to discount it is revealed during the RI; we note that the greater density of low-angle fractures observed in BH-14-1, which is cited as support for presuming generally horizontal flow in the bedrock, is not adequate evidence to suggest that vertical groundwater flow into and within the bedrock does not occur.*

Response:

The conceptual site model text in Section 3.2 has been updated to incorporate advection as a potential process contributing to contaminant transport.

Comment 3:

Section 4.2, Floodplain and Wetland Identification, Para. 1, p. 4-1*. The text states that the wetlands will be delineated from the northern boundary of Lot 23 to the southern boundary of Lot 68. In order to encompass and characterize the wetland/upland habitat boundary, it is recommended that the wetland delineation be expanded to include all Ecological Assessment sampling stations shown on Figure 4-2, plus any other samples that are added to the plan in response to these comments. In particular, it is important to distinguish not only the limits of the wetland but to designate aquatic (sediment) versus wetland (soil) habitats.*

Response:

Delineation of wetlands will be expanded to encompass areas where ecological samples will be collected. Ecological sampling locations will be pre-marked (following wetland delineation activities) prior to sampling to characterize habitats. This information will also be documented on field forms during sampling; Appendix C of the SAP has been updated to include this form.

Comment 4:

Section 4.2, Floodplain and Wetland Identification, Para. 1, p. 4-1*. At the time of field sampling the type of wetland habitat and hydrology of the sample should be noted in order to properly designate the sample as sediment or soil. In addition, it is recommended that notes on the surface water depth, flow, and dominant vegetation, as well as a photo of the sample location, be taken along with other field parameters specified. The depth of the surface water is important in classifying exposures for both ecological and human health risk evaluations. The only data sheet provided in Appendix C is one for drilling, so it could not be verified that these field parameters will be included during sample collection.*

Response:

Wetland habitat, hydrology and other physical and biological characteristics will be documented at each sampling location, and the location photographed. Section 4.6 of the Work Plan has been revised to indicate this information will be collected. Additionally, a field data sheet for ecological sampling locations has been added to Appendix C of the SAP.

Comment 5:

Section 4.4, Subsurface and Hydrogeological Investigation, Para. 1, p. 4-1*. The text states that the investigations will define contaminant plume boundaries in the overburden and bedrock aquifers. As discussed at the meeting on 11/19/15 the proposed array of new monitoring wells may not be adequate to define the plume boundaries, and it is recommended that the WP be revised to indicate that even with the iterative approach that has been proposed additional wells and phases of work may be necessary to achieve the objectives.*

Response:

The investigation methodologies and the network of proposed hydrogeologic sample locations have been selected with the goal of identifying horizontal and vertical impacts in the overburden and bedrock aquifers. This network of groundwater profile locations, bedrock boreholes, and overburden monitoring wells proposed in the November 2, 2015 scope of work was designed based on interpretations of dissolved-phase impacts at the network of existing monitoring wells and off-property investigations on Lot 23 as part of prior Environmental Land Use Restriction (ELUR) efforts.

Based on discussions that occurred in the November 19, 2015 meeting, we have modified several of the proposed well/borehole locations along each of the three transects and updated the Work Plan accordingly. Please refer to Section 4.4, Table 4-1, and Figure 4-1 for further details regarding these modifications. However, we recognize the investigation results may ultimately necessitate an evaluation of subsurface impacts beyond the horizontal and vertical boundaries specified in the Work Plans. Should potential data gaps arise during the course of the RI/FS scope, the Respondents will discuss these cases with the Agencies before advancing additional explorations but acknowledge that additional wells and phases of work could be

necessary to achieve the objectives. Additional text highlighting this approach has been added to Section 4.4.

Comment 6:

Section 4.4 Subsurface and Hydrogeological Investigation, Para. 2, p. 4-2*. The text states that the investigations will include construction of monitoring wells and piezometers for evaluation of piezometric conditions. As discussed at the meeting on 11/19/15, it is recommended that the use of transducers to monitor fluctuations in the bedrock monitoring wells caused by pumping from the private supply wells be considered, since it is a relatively inexpensive way to investigate hydraulic connections.*

Response:

This recommendation has been incorporated into Section 4.4 the Work Plan. It is anticipated that up to four transducers will be temporarily installed in bedrock wells/boreholes to evaluate potential hydraulic variability as a result of pumping from nearby private wells.

Comment 7:

Section 4.4.3.1, Drilling, Geophysical Logging, and Packer Sampling, pp. 4-3 to 4-5, and Table 4-2, Bedrock Drilling Criteria and Steps*. As discussed during the meeting on 11/19/15, the criteria for terminating drilling at a bedrock borehole need clarification. Re-location of wells was also discussed at the meeting. Based on those discussions, it is assumed that the entire approach to the bedrock investigation will be modified for the final WP. As the plan is modified, please consider these observations:*

- *It is not unusual for water-bearing fractures to be more than 25 feet apart, once the drilling has progressed below the upper 10 to 20 feet of rock (which is often fractured and weathered). The bedrock competency criterion (as clarified at the meeting) seems to suggest that once a hole has been drilled below 50 feet into rock, or below the terminal elevation of the corresponding borehole on the upgradient transect, drilling will terminate if 25 feet of rock has been penetrated, and if the evidence from drilling/visual or geophysical logging confirms that the rock is not water-bearing within that interval. In our opinion, 25 feet of "unfractured" rock is not a valid reason to stop drilling unless another criterion (e.g., a minimum of 100 feet of rock has been penetrated) is also applied to prevent holes from being too shallow.*
- *The lineaments do not seem to have been considered in the placement of the proposed bedrock boreholes (although BH-14-1, which was proposed to be deepened in the WP, seems to be along the N-S lineament shown on Figure 2-3). As the borehole locations are being reconsidered, please briefly describe if any of the holes is/are intended to explore either of the lineaments.*
- *Note that even though deeper fractures may be less prolific, groundwater from either of the two lowermost sampled fracture zones (68 to 78 feet, and 81 to 91 feet) at BH-14-1 could create a detectable concentration in a water supply well that intersected those fractures.*
- *The different drilling methods that may be used (coring, sonic, air hammer) produce different types of rock samples and different types of drilling information. If possible. the drilling method (or at least the "preferred" or "intended" method) should be identified, so that appropriate criteria can be established.*

Response:

See Comment 5 regarding well and boring locations. Responses to the remaining four bullets are provided:

Unfractured Rock: Clarifications regarding bedrock drilling steps and criteria have been added to Section 4.4 and Table 4-2 of the RI/FS Work Plan. We have revised the approach to state that 25 feet of "unfractured" rock is a valid reason to stop drilling as long as a minimum of 100 feet of rock has been penetrated. We have also added the criteria to this section that all proposed bedrock wells shall extend a minimum of 100 feet into bedrock.

Lineaments: Interpreted cross-sections from the geophysical resistivity survey will be used to evaluate subsurface expression of lineaments. The geophysical survey results were obtained on February 10, 2016. A report summarizing the methods and results of the survey is included as Appendix D to the RI/FS Work Plan.

Based on the results of the survey we have made the following modifications to the borehole locations proposed in the original Work Plan:

- Transect 1-B (overburden well cluster and bedrock borehole) will be moved approximately 175 feet toward the east.

  Based on interpreted low resistivity at approximately 500 feet along Line 5. This area may correspond with the interpreted bedrock valley shown on cross-section D-D'. An additional groundwater profile location is not proposed at this modified location due to the proximity of WL-2 conducted as part of the 2013 groundwater profiling event. The 2013 profile results, along with drilling observations and field screening, will be used to select overburden monitoring well screen intervals at Transect 1-B.

- Transect 1-E (proposed groundwater profile location only; however, further investigation may be warranted based on analytical results) will be moved approximately 100 feet toward the northwest.

  Based on interpreted low resistivity from approximately 400 to 600 feet along Line 1. The adjustment is proposed toward the northwest as opposed to the east-southeast near the power lines based on the steep slope adjacent to the power lines.

- Transect 2-B (overburden well cluster and bedrock borehole) will be moved approximately 150 feet toward the southeast.

  Based on interpreted low resistivity at the intersection of Lines 4 and 6 indicating a possible bedrock feature. The adjustment is proposed toward the southeast as opposed to the southwest into the wetlands likely submerged soil conditions.

- Transect 3-B (bedrock borehole) will become a contingency location.

  Because of proximity to modified location of Transect 2-B, this location will be advanced only if necessary based on borehole geophysical and analytical results from Transect 2-B and comparison with the bedrock drilling criteria presented in Table 4-2 of the RI/FS Work Plan.

In addition, regarding the intent of intersecting lineaments, it should be noted that modelled results from Line 5 (west to east profile from MW-102 well cluster to Pound Hill Road) confirm alignment of existing borehole BH14-1 with the north-south trending photo lineament. No further adjustments to the investigation are proposed to intersect this lineament feature, and subsurface interpretations from BH14-1 and the resistivity survey will be applied across the borehole network during the evaluation of data obtained during the RI.

BH14-1: The potential for detectable concentrations of VOCs in groundwater downgradient of BH14-1 is acknowledged, however, results from private well sampling have not identified site-related VOCs above minimum laboratory reporting limits. Drinking water quality will continue to be monitored on a semi-annual basis because of this potential.

Drilling: Air rotary drilling will be used to advance bedrock boreholes prior to geophysical logging and packer sampling. Selection of this drilling method was based on effectiveness during the advancement of BH14-1. Drilling rates and cutting returns will be closely monitored to identify potential zones where fractures may persist. The suite of geophysical logging methods will subsequently be used to confirm water-bearing zones prior to packer sampling. Section 4.4.3.1 of the RI/FS Work Plan has been updated with this clarification.

Comment 8:

Section 4.4.3.2, Bedrock Monitoring Wells and Multi-Level System Installation, Para. 1, p. 4-5*. The text does not specify which analyses will be performed on the groundwater samples collected from the new bedrock monitoring wells. Since the text says that one purpose is to compare the results to the straddle-packer sample results, we assume that the well samples will be analyzed for VOCs, 1,4-dioxane, and dissolved and total Priority Pollutant 13 (PP13) metals. Please revise the WP to clarify the analyses to be done.*

Response:

Groundwater samples from new bedrock monitoring wells will be submitted for laboratory analysis of VOCs, 1,4-dioxane, and total and dissolved Priority Pollutant 13 (PP13) metals. This clarification has been incorporated into Section 4.4.3.2 of the Work Plan.

Comment 9:

Section 4.4.3.2, Bedrock Monitoring Wells and Multi-Level System Installation, Para. 1, p. 4-5*. It is recommended that individual wells or a multi-level sampling system be installed in open bedrock boreholes as soon as possible after testing is complete. If holes must be left open for extended periods of time then the use of temporary packers should be considered, to limit vertical flow in the borehole between fractures (particularly where contamination is present).*

Response:

We agree that individual wells or multi-level sampling systems should be installed in open bedrock boreholes as soon as possible after testing is completed. The screen or sample intervals will be determined based on the borehole geophysical logs and packer sampling analytical results. Temporary packers may be used to isolate specific fracture zones exhibiting elevated levels of contaminants prior to well construction or multi-level sampling system installation if determined necessary based on vertical flow with each borehole. Review of heat pulse flow meter (HPFM) results from existing bedrock borehole BH14-1 indicate no vertical flow

within the borehole under ambient conditions. If similar flow data is obtained during geophysical logging at new bedrock boreholes, this will support the determination that use of temporary packers is not necessary. Section 4.4.3.1 of the Work Plan has been revised to clarify this approach.

Comment 10:

Section 4.4.4, Overburden Investigation, Para. 1, pp. 4-5 to 4-6*. The overburden flow on the eastern side of Trout Brook is not well defined. There are two proposed overburden monitoring wells on the east side of Trout Brook, but both are adjacent to the wetland bordering Trout Brook, and no overburden monitoring wells or groundwater profiling holes are proposed east of Transect 2 in the direction of the residences. Please consider adding a Waterloo profile hole in overburden east of Trout Brook, as well as one or two additional overburden monitoring wells to the east of Transect 2, to better define flow direction in this area and to determine water quality downgradient of the homes in the area.*

Response:

Groundwater quality in the overburden aquifer east of the Trout Brook Pond wetlands will be assessed using two proposed overburden monitoring wells along Transect 2 described in Section 4.4 of the Work Plan. These two wells include a new overburden couplet adjacent to borehole BH14-1 (location "A") and a new couplet further to the south (location "B"). We believe the network of overburden wells is adequate to meet the goals of the RI. In the event that data from the Transect 2 "A" and "B" overburden wells indicate dissolved-phase impacts may extend towards Pound Hill Road, then additional locations will be discussed with EPA and RIDEM.

Comment 11:

Section 4.4.4.2, Monitoring Well Installation & Development, Para. 2, p. 4-6*. The text states that overburden wells (screen depths) will be based on soil logging during drilling, including changes in soil stratigraphy and PID screening results. At the proposed locations, if 1,4-dioxane is the contaminant with highest concentration, and VOCs that elicit a response from PID screening (benzene, PCE, TCE, DCE) are absent or present at low concentrations, then PID screening may not indicate any differences vertically. Please modify the WP to include additional description of the decision-making if only stratigraphic information is available to select screen depths for the proposed monitoring wells. Also, if appropriate, change the PID results units from "mV" to "ppmv, measured as isobutylene."*

In addition, the first sentence notes that overburden monitoring wells will be installed at "up to four locations." The number should be adjusted as appropriate to account for the installation of additional wells in response to these comments. But more importantly, please add a brief description of the decision-making process that might result in deletion of one or more of the proposed monitoring wells.

Response:

The photoionization detector (PID) will be used as one of several qualitative field screening tools during boring advancement to guide the selection of monitoring well screen zones. At three of the locations along Transect 1, overburden groundwater quality and hydraulic properties will be evaluated using vertical profiling (Waterloo^{APS}) to target well screen intervals. For the remaining locations where groundwater profiling is not proposed, a PID will be used to field screen soils during the initial advancement of the bedrock borehole and supported by soil classification to

identify where high and low permeability zones are in close vertical proximity to one another. To overcome the challenge presented by the incompatibility of using a PID for 1,4-dioxane, the results from borehole geophysical logging and packer sampling will be used to assess and identify fracture zones below the upper bedrock surface to select overburden screen intervals. If dissolved-phase impacts are identified in the upper bedrock zone, then a deep monitoring well screened above the bedrock interface will be considered. Also, note that each overburden well couplet will include a shallow water table well for monitoring and evaluation of groundwater flow.

Section 4.4.4.2 of the Work Plan has been updated to reference PID units as "ppmV, measured as isobutylene" and to include additional wells if necessary based on potential data gaps and expansion of RI/FS activities to locations beyond the proposed network.

The text in Section 4.4.4.2 has also been updated to state that overburden monitoring wells will be installed at up to five locations. Considerations used to evaluate installation of fewer monitoring wells will be based on results from groundwater profiling (if completed at the respective location), overburden thickness, and field observations/screening results during the logging of overburden soils. Should these results confirm that overburden conditions remain free from subsurface impacts than a discussion with EPA and RIDEM will occur to determine if the proposed overburden monitoring well is not required to be installed.

Comment 12:

Section 4.4.4.2, Monitoring Well Installation & Development, Para. 2, p. 4-6*. The text states that soil samples will be submitted for laboratory analysis based on PID readings. The document does not discuss the analyses to be performed on these samples, nor how the data will be used (e.g., to justify additional monitoring locations or to use in the risk assessments). Please clarify this information in the document.*

Response:

As discussed above, the PID will be used as a screening tool during overburden drilling. As indicated in Section 4.4.4.2, soil samples may be submitted for laboratory analysis of VOCs and 1,4-dioxane from intervals where PID readings are above 10 parts per million by volume (ppmV). PID screening and soil analytical data will support selection of overburden well screen zones and the data. Soil data will be compared with groundwater analytical results, where applicable, to evaluate leaching properties to soil constituents. The soil data will also be evaluated and incorporated into subsequent risk assessment. This clarification has been incorporated into Section 4.4.4.2 of the Work Plan.

Comment 13:

Section 4.4.4.3, Sampling and Analysis, Para. 1, p. 4-7*. The document states that newly installed and existing monitoring wells will be sampled, but it does not specify which existing wells will be included. This information should be included in the document for completeness.*

Response:

The following clarifications are proposed for the network of monitoring wells proposed for sampling following installation of new overburden and bedrock monitoring wells during the RI. This subset of wells includes new locations, existing wells that have not been routinely sampled during Post-Site Closure Monitoring activities, and incorporation of annual monitoring locations

designated by the Operation & Maintenance (O&M) Plan that will be sampled separately but within two weeks of this RI-specific event.

- New overburden well couplets and bedrock monitoring locations (completed as either wells or multi-level systems): Transect 1A, 1B, 1C, Transect 2A, 2B, and Transect 3A, 3B.
- Additional locations proposed for sampling include: BH14-1, CW-6A, CW-6B (new), CW-7A, and MW-104B.
- Annual monitoring locations designated by the O&M Plan include: MW-201, MW-202, MW-102A, MW-103A, MW-104A, CW-5B, and CW-7B.

Prior to sampling, individual wells that have not been sampled in several years will be evaluated by checking in-well pump condition and confirming well depth measurements with existing records. Wells will also be re-developed using surge and purge techniques. Groundwater samples will be submitted for laboratory analysis of VOCs, 1,4-dioxane, and total and dissolved PP13 metals. Section 4.4.4.3 of the Work Plan has been updated accordingly. Also, note that at locations where the results from groundwater profile sampling indicate that additional wells may need to be installed than these wells will be incorporated into this sampling event. This event is also proposed to occur no later than 30-days following installation of monitoring wells or multi-level systems.

Comment 14:

Section 4.4.4.3, Sampling and Analysis, Para. 1, p. 4-7*. Analytical parameters for samples from overburden wells are stated to be VOCs, 1,4-dioxane, and dissolved and total arsenic, while the bedrock straddle-packer samples (and presumably the bedrock well samples) are to be analyzed for VOCs, 1,4-dioxane, and total and dissolved Priority Pollutant 13 (PP13) metals. Table 4-1 shows all groundwater samples (both overburden and bedrock) being analyzed for VOCs, 1,4-dioxane, and for total and dissolved PP13 metals. Please include reasons for any difference in analytical parameters between overburden and bedrock groundwater samples and make them consistent throughout the document.*

Response:

Section 4.4.4.3 of the Work Plan has been revised to clarify analytical parameters for groundwater samples. Samples from both overburden and bedrock monitoring wells will be analyzed for VOCs, 1,4-dioxane, and total and dissolved PP13 metals as shown on Table 4-1.

Comment 15:

Section 4.6, Surface Water, Pore Water, and Sediments, General, pp. 4-7 to 4-8*. Based on Section 3.3 (Potential Receptors and Pathways), Trout Brook Pond and its tributaries and appurtenant wetlands may be used for recreational purposes, such as fishing or wading. That section goes on to say that additional sample collection proposed as part of RI/FS activities will be conducted to better evaluate potential recreational exposures. The sampling proposed in Section 4.6 appears to be focused on ecological evaluation, but may be appropriate for use during the HHRA. Please review the proposed sampling to determine if any changes need to be made to address human exposures (e.g., sampling locations, water depth, and sediment sample depths) and edit the document to clarify that this sampling will be used for both ecological and human exposure evaluations. It is recommended that the revisions describe the depths at which surface water samples will be collected and provide the rationale.*

Response:

Surface water and sediment samples will be collected to support both ecological and human health risk assessments. Samples across all locations will be collected from accessible water bodies where water depth is approximately two feet or shallower. This depth was determined the most likely depth for wading scenarios. In general, the wetlands and waterways around the landfill are not easily accessible or highly desirable recreational areas for swimming and fishing, and it is unlikely a recreational user of these areas would be exposed to areas with greater than two feet of water. Section 4.6 of the Work Plan has been revised to reflect this information. And the 'ecological evaluation' nomenclature previously used to describe the proposed wetland sampling was also changed to 'wetland sampling program' to make this less confusing in the document.

The streams nearest the landfill are generally very shallow and narrow; in such places, samples will be collected from the midpoint of the channel. In more ponded areas where water depth is greater than two feet, samples will be collected from the shoreline. A new table (Table 4-4, Trout Brook and Wetland Samples) has been added to Section 4 of the Work Plan to summarize the 30 sample locations proposed as part of this RI/FS for OU 2. As later discussed in the response to Comment 31, the locations of Reference area samples have also been changed. Figure 4-2 of the Work Plan depicts the locations of revised sample locations.

Comment 16:

Section 4.6, Surface Water, Pore Water, and Sediments, Para. 3, pp. 4-7 to 4-8. *In the first partial sentence at the top of page 4-8, please specify the method(s) to be used for pore water sampling, or describe the process that will be used to determine which method will be employed. Although two methods are described in SOP S-5 (Pore Water Sampling) in Appendix B, it is not clear which method will be used. All locations should be sampled with the same method to ensure comparability of the results among locations. Selection of the method should consider important factors such as accessibility, substrate composition, sample depth, and the octanol-water partition coefficients of the target COCs. Push point samplers work better in sediments with more coarse (sandy) materials; in sediments with more fines (clay/silt) it can be difficult to extract adequate volumes of pore water. Since passive samplers need to be set out and retrieved after a period of days or weeks (the duration is not specified in the SOP), the security of the location to prevent sampler loss is important. Please review the site-specific conditions and present the rationale for selecting a preferred method.*

Response:

Based on information collected to date and past field experiences, we believe that we will be able to collect pore water samples using push-point samplers; however, we have included other pore water sampling methods in the Work Plan as potential alternatives to accommodate a variety of sediment types, if needed. We have revised Section 4.6 of the Work Plan to provide more details regarding the most likely approach and a discussion of when alternative approaches are necessary.

Comment 17:

Section 4.6, Surface Water, Pore Water, and Sediments, Para. 3, p. 4-8. *The text states that samples will be collected at 0" - 4" and 4" - 12". Typically the sampling depth for aquatic exposures is 0-6". Please clarify why these depths were selected, and if 2 depths are selected, revise the text to clearly state that the data will be evaluated separately for the two depth intervals for ecological exposures.*

Response:

Data suggest that the majority of the benthic fauna is located within the upper 4-inches of sediment, and historical sediment samples collected at the site in 1986-1987 were collected within the upper 4-inches. However, we agree that a depth of 0-6 inches is also ecologically relevant (as well as relevant to human exposures), and thus will modify the shallow sampling depth interval to 0-6 inches and the deeper interval to 6-12 inches; this deeper interval will be used to evaluate vertical extent of impact, rather than to characterize human or ecological risk. Section 4.6 of the Work Plan text was revised to reflect this change, and to state that the 0-6 inch interval will be used to support the ecological (and human health) risk assessment.

Comment 18:

Section 4.6, Surface Water, Pore Water, and Sediments, last paragraph, p. 4-8. *The text discusses timing of sampling and that a single round of sampling is proposed. Two rounds of sampling is typically preferred as a minimum number to account for any potential seasonal or short-term effects. Text in Section 2.3 suggests that recent evaluations of groundwater-surface water interactions have shown seasonal differences depending on the stage of Trout Brook. As low-flow conditions typically occur in the fall and often result in higher detected contaminant concentrations, please use results from the historical data to justify a single monitoring round in the spring as being appropriate for conservative evaluation of this site.*

Response:

While we agree that multiple rounds of data will better characterize temporal variability in contaminant concentrations, one round of sampling was proposed to accommodate an accelerated project schedule based on our review of historical data. Based on what we believe will be the start date for the RI, the mandated 28-week completion time does not allow for sampling to be conducted in Fall 2016.

With respect to historical stream/wetland data, surface water and sediment samples were collected from waterways upgradient of, adjacent to and downgradient from the landfill in October 1986 (low flow) and May 1987 (presumably high flow), as indicated in the 1988 OU 1 RI/FS. In both surface water and sediment, neither semi-volatile organic compounds (SVOCs) nor polychlorinated biphenyls (PCBs) were detected in either medium during both rounds of samples. Limited detections of VOCs were identified at low concentrations in surface water and sediment. Inorganics, primarily iron and manganese, were consistently detected in sediment at variable concentrations at multiple locations. The data do not show a prevailing relationship between constituents during high-flow and low-flow conditions. The October 1986 sampling results showed elevated concentrations of select contaminants at a few locations compared with the May 1987 sampling round. This trend was limited to select parameters at a limited number of locations. See Tables 6-1 through 6-4 of the OU 1 RI/FS report for historical surface water and sediment analytical results.

Based on the comments and discussion during the November 19, 2015 meeting and February 4, 2016 conference call we have updated the Work Plan to include two rounds of ecological sampling. Assuming the schedule may be modified, we have revised Section 4.6 of the Work Plan to state that an additional round of samples will be collected in the Fall 2016. Following the review of the Spring round of results, the risk assessment may determine that additional samples may be worth pursuing at select locations. This information, and recommendations for the Fall 2016 sampling program, will be discussed during interim deliverables and communications with EPA and RIDEM. The full Screening Level Ecological Risk Assessment (SLERA) and Human Health Risk Assessment (HHRA) will be conducted based on the first (Spring) and second round (Fall) of results. The Spring results will be used to determine the scope of additional wetland/stream sampling for the Fall of 2016 (for example, sampling for the Baseline Ecological Risk Assessment [BERA]).

Comment 19:

Section 4.7, Ecological Assessment, Para. 1, p. 4-8. *Clarify if any historic data (surface water) will be used in the risk assessment.*

Response:

As discussed in the response to Comment 18, historical surface water and sediment data are available for the OU 1 RI. These data were generated from samples collected at the landfill in 1986 and 1987. While these historical data are useful in evaluating analyte lists and sample locations for the current scope of work, they are not considered representative of current site conditions and will not be used in the risk assessment. However, Section 4.7 of the Work Plan has been updated to reflect that the recent (past five years) surface water data collected annually as part of the monitoring program for OU 1 may be considered in support the SLERA.

Comment 20:

Section 4.7, Ecological Assessment, Para. 2, p. 4-8. *The text does not provide any details on how the data collected for the SLERA will be used. At a minimum, please state that the data from each exposure area (upgradient, near site and tributaries, and downgradient) will be evaluated separately for each medium (surface water, sediment, and pore water); and that the screening will be done by comparing the maximum observed concentration for each COPC in each medium against screening-level benchmarks. Benchmarks for VOCs and selection of benchmarks for pore water will be particularly important at this site. It is preferable to state the assessment and measurement end-point planned to be used in the WP as well as potential source of benchmarks. If this is not done in the WP, then the submission of an earlier deliverable is recommended (see comment on Section 5.1).*

Response:

Section 4.7 of the Work Plan has been revised to include a general discussion of how data will be used in the assessment, however, the planning/problem formulation stages of the ecological risk assessment, including proposed ecological benchmarks for all media, will be submitted under separate cover as its own deliverable concurrent with the Interim Deliverable #1 referenced in Comment 23 below. Section 5.2 of the Work Plan has been revised to clarify technical components of SLERA interim deliverables and the final report in accordance with the schedule provided in Appendix C of the Work Plan.

The expected outcome of the SLERA is to determine whether a BERA is necessary. If a BERA is warranted, then sampling recommendations will be incorporated into the proposed Fall 2016 sampling event.

Comment 21:

Section 5.1, Remedial Investigation Report, Para. 2, p. 5-1. *The text indicates that the preliminary conclusions for the SLERA will be presented during a technical meeting with the Agencies, and this will be followed by the first interim deliverable. Since the WP does not provide significant detail on the structure of the SLERA (e.g., end-points, exposure calculations, benchmarks to be used), it is recommended that the first interim deliverable come before the meeting. If the agencies are given the opportunity to review the deliverable and provide input prior to the proposed technical meeting, it is less likely that the SLERA will be prepared in a manner that is not acceptable to EPA and/or RIDEM, and the proposed meeting would be more likely to result in a consensus on the SLERA results.*

Response:

Section 5.2 of the Work Plan has been updated to reflect the first interim deliverable will be submitted before the proposed meeting. Also, refer to the response to Comment 20 for a discussion of the schedule for all SLERA deliverables.

Comment 22:

Section 5.3, Baseline Human Health Risk Assessment (HHRA), Para. 1, p. 5-1. *It is unclear what media will be included in the HHRA, which makes it difficult to assess if appropriate data collection has been included in the WP. Based on Section 3.3 (Potential Receptors and Pathways), humans may use Trout Brook Pond and its tributaries and appurtenant wetlands for recreational purposes, such as fishing or wading. That section goes on to say that additional sample collection proposed as part of RI/FS activities will be conducted to better evaluate potential recreational exposures. The sampling proposed in Section 4.6 appears to be focused on ecological evaluation, but may be appropriate for use during the HHRA. Please review the proposed sampling to determine if any changes need to be made to address human exposures and edit the document accordingly.*

Response:

Groundwater, surface water and sediment sample results will be used to evaluate human health risk. The wetland and stream sampling proposed as part of the RI/FS activities is intended to accommodate both human health and ecological risk assessments. Please see the response to Comment 15. Section 5.3 of the Work Plan has been revised to discuss the data that will be used to support the HHRA.

Comment 23:

Section 5.3, Baseline Human Health Risk Assessment (HHRA), General, pp. 5-1 to 5-2. *As recommended in the RI/FS SOW (Section D.III.C) interim deliverables should be submitted for review prior to submission of the full HHRA. Please revise the WP to include the following interim deliverables:*

Interim Deliverable #1 – Selection of Exposure Pathways – A completed Standardized Table 1 (See RAGS Part D).

Interim Deliverable #2

a. *Selection of Contaminants of Concern – A completed Standardized Table 2 for each unique combination of: scenario timeframe, medium, exposure medium and exposure point (See RAGS Part D).*
b. *Exposure Point Concentration and Exposure Parameters – Completed Standardized Risk Tables 3 and 4 (see RAGS Part D). The 95% UCL on the arithmetic mean shall be computed for all COPCs and reported in Table 3.*
c. *Toxicity Data/Dose-Response Evaluation – Completed Standardized Risk Tables 5 and 6 (see RAGS Part D) for the COPCs.*

Interim Deliverable #3 – *Interim Deliverable Risk Characterization – A complete set of Standardized Risk Tables (RAGS Part 0), completed Tables 7, 8, 9, and 10, and revised Tables 1, 2, 3, 4, 5, and 6.*

Response:

Section 5.3 of the Work Plan has been revised to indicate the above interim deliverables for both the human health and ecological risk assessment. The HHRA Report produced according to the above schedule will be based on the Fall 2016 round of sampling events. Any sampling recommendations generated from a review of the Spring 2016 sample event will be incorporated into the proposed Fall 2016 sampling event.

Comment 24:

Section 9, Preliminary Identification of Potential Remedial Alternatives and Technologies, pp. 9-1. *This section provides a preliminary list of remedial technologies/alternatives that may be included in the Feasibility Study (FS) report. It is acknowledged that potential technologies to screen/evaluate in the FS could change based on data collected and analysis performed during the Remedial Investigation. Including a preliminary list of technologies/alternatives can aid the RI planning process to collect sufficient data to fully develop as FS report and support remedy selection in the ROD. It is not apparent that the analyses proposed in the RI/FS WP are adequate to support alternatives evaluation and selection. As stated in the earlier comment on Section 1.1, it is recommended that the RI/FS WP be revised to include additional sampling and analyses that would support evaluation of the list of technologies, including in-situ treatment technologies, and selection of a remedy in the ROD.*

Response:

Refer to the response to Comment 1.

Comment 25:

Table 4-1, Hydrogeological Investigation Sampling Summary. *The table appears to suggest that there are 2 overburden monitoring wells along Transect 3. However, Figure 4-1 does not appear to include these monitoring wells. Please review and revise as appropriate.*

Response:

Table 4-1 incorrectly suggested that overburden monitoring wells have been proposed along Transect 3. The table has been revised to reflect the correct approach along this transect.

Comment 26:

Table 4-2, Bedrock Drilling Criteria and Steps. *The criteria for terminating the borehole based on analytical results states that drilling will be terminated when non-detect results are obtained "to confirm absence of dissolved compounds." It is recommended that "dissolved compounds" be replaced with "contaminants", since filtered and unfiltered samples are proposed for metals analyses.*

Response:

Table 4-2 has been updated to reflect this recommendation.

Comment 27:

Table 4-3, Ecological Assessment Sampling Summary. *For sediment, the analytical parameters list both total and dissolved metals. As this is a solid matrix, please edit to remove dissolved metals. In addition, based on the two sediment sample depths proposed in Section 4.6, the number of sediment samples to be collected should be doubled. Please review and revise as appropriate.*

Response:

Table 4-3 has been revised to indicate only total metals will be analyzed for sediment, and the number of sediment samples has been adjusted to reflect the total number of sediment samples collected from both depths (0-6 inches and 6-12 inches). Additionally, the number of matrix spike samples for sediment was increased to account for different sediment types, and the number of equipment blanks was increased to account for multiple sampling days.

Comment 28:

Table 8-1, Preliminary Identification of and Potentially Applicable ARARs and TBCs - Chemical-Specific. *The table includes some benchmarks for surface water and sediments that are "To be Considered." To be more comprehensive, it is recommended that the table be revised to include other sources such as: USEPA Region III Screening Benchmarks and USEPA Region 5 Ecological Screening Levels.*

Response:

The following updates have been incorporated into Table 8-1:

- EPA Regional Screening Levels (RSLs) have been added as “To Be Considered”.
- EPA Vapor Intrusion Screening Levels (VISLs) have been added as “Relevant and Appropriate”.

- EPA Region 3 Biological Technical Assistance Group (BTAG) Screening Benchmarks.
- EPA Region 5 Ecological Screening Levels (ESLs).

Other ecological benchmarks used in the SLERA will be identified in the SLERA Interim Deliverable.

Comment 29:

Figure 2-3, Interpolated Bedrock Topographic Map. *The cross-section (Figure 2-2) and the original RI/FS report (excerpts of which are included in Appendix A of this WP) indicate that MW-102A was not drilled to bedrock. It is recommended that on future versions of this map, bedrock elevations at holes that did not reach bedrock be preceded by a "≤" or "<" symbol. The symbol could either replace or supplement a note in the legend (included on this figure) that describes which data points were not used for contouring.*

Response:

Figures 2-2, 2-3, and 3-1 have been revised to incorporate this nomenclature for previous explorations that did not reach bedrock.

Comment 30:

Figure 3-1, TVOC Distribution Along Cross-Section. *While the western edge of the TVOC isoconcentration contours (10 µg/L) is shown with a dashed line (meaning it is inferred), the figure suggests that there are essentially no TVOCs under the landfill. In future versions of this cross-section and other sections that include the landfill, it is recommended that the upgradient edge of the plume (the 10 µg/L contour) be shown open ended to reflect the presence of the source of the contamination in the landfill.*

Response:

Figure 3-1 has been revised to extend the total VOC (TVOC) isoconcentration contours further in the direction of the landfill. For presentation purposes, the 10 micrograms per liter (µg/L) isocontour has been dashed to indicate that the configuration is inferred based on available data and may extend further upgradient.

Comment 31:

Figure 4-2, Proposed Ecological Assessment Sampling Locations. *Assuming these data points will also be used for assessment of human health exposures, the title of the figure should be changed for clarity. Additionally, there does not appear to be any rationale or justification presented in document for the layout of the sampling locations, either from an ecological or human health risk standpoint (e.g., these are known depositional areas or discharge points). Some rationale for the selection of the proposed sampling locations should be provided. For example, it is unclear why the sample distribution has locations clustered around PZ-1 and near SWP-01 D, but then leaves a large gap (> 600 feet) between the last sample in Trout Brook and the first sample in Trout Brook Pond. Unless there is rationale to explain the advantage of this, it is recommended that samples be added, or that the proposed locations be spread out north toward SWP-02S.*

Furthermore, consider water depth related to both ecological and human exposures when locating samples, since a sample in less than 2 feet of water can be evaluated both for ecological receptors and human waders. For example, if the southernmost of the two samples in Trout Brook Pond were moved south near the southern end of the pond, it could be located to ensure it is in less than 2 feet of water for human health exposures, and also represent an area of deposition at the inlet end of the pond. The second sample should possibly be located in the deeper water of the pond, to also represent the more conservative depositional environment; however, if the water is deeper than 2 feet at the center of the pond, additional samples may be needed to address human health exposures. As much as possible, the selected upgradient sample locations should be consistent with the locations selected along Trout Brook adjacent to the landfill in terms of substrate type, water depth, and flow. Please review and revise the proposed sample locations as appropriate, include the rationale or justification for the placement (even if they will be adjusted later in the field), and update the document.

Response:

Figure 4-2 has been retitled as "Proposed Wetland Sampling Program". Notable modifications include relocation of several upgradient locations to the stretch of Trout Brook that extends further east beneath a culvert along Pound Hill Road based on the flow direction of the brook further to the south to the Old Oxford Road crossing, better spacing among locations, and relocation of samples in the Trout Brook Pond area. Revisions to sample locations have been added to the updated version of Figure 4-2. A description of sample locations in Trout Brook and adjacent wetland areas is also now summarized on a new Table 4-4, which includes details regarding placement of sample locations and sample depth, as previously described in responses to Comments 15, 16 and 17.

In total, there are 30 proposed wetland area sampling locations which we believe provide a robust dataset to characterize spatial extent of impacts, to evaluate typical exposure scenarios and to support both the SLERA and HHRA. A site visit was conducted in the Fall of 2015 to evaluate potential sample locations. Each of these locations identified on Figure 4-2 is generally accessible by foot or small boat and represents a shallow, depositional area. Additional text has been added to the Work Plan to discuss the selection of sample locations. Subsequent to review of analytical results and characterization of risk based on the Spring 2016 sampling round, any data gaps will be noted and may be addressed in future sampling activities, if warranted.

Comment 32:

***Appendix B, Select VOC Concentrations Over Time (1996 — 2015)**. These plots would be greatly improved if the values that represent one-half of the reporting limit for "non-detect" results were shown with a different (e.g., open) symbol from the detected results. This simple revision, which would allow the reader to differentiate between detected and non-detect results, would prevent the drawing of false conclusions regarding trends and contaminant detections. For example, the June 2013 result for 1,4-dioxane in MW-102A appears to be 20 µg/L but is actually, according to Figure A2-1, a non-detect result with a reporting limit of 40 µg/L.*

Response:

The trend graphs included as Appendix B of the RI/FS Work Plan have been revised to show results detected below laboratory reporting limits with a different symbol from the detected results.

EPA REVIEW COMMENTS ON SAP, INCLUDING QAPP AND FSP (DECEMBER 18, 2015)

Comment 1:

General: *According to the graded approach described by the EPA Quality System, the level of detail and specificity required for a sampling and analysis plan depends on the complexity of the investigation. This RI/FS involves risk assessment and multiple sampling approaches, matrices, and analyses, some of which have relatively new techniques or options (e.g., low-level 1,4-dioxane analysis, pore water sampling, multi-level well installation). Therefore, a more specific and detailed plan is needed to demonstrate that the project and data quality objectives will be met, and the following comments describe some of the elements that need revision or are missing.*

Response:

This comment is acknowledged and comments clarifying select elements discussed below have been incorporated into the revised version of the SAP, including the QAPP and FSP.

Comment 2:

Section 6.1.3, Identification of Contaminants of Concern and Other Analytes, p. 25*. For completeness and clarity, a more detailed explanation of the rationale for the selection of the site contaminants of concern (COCs) identified in this section should be presented, either here or in Section 7 of the QAPP. The list does not include analytes that were identified as COCs in the 1988 ROD for OU1 (2-butanone, toluene. trans-1,2-dichloroethene, 1,1-dichloroethane, chloroform, 1,2-dichloroethane, carbon tetrachloride, benzene, 1,1-dichloroethene, methylene chloride, 1,1,2,2-tetrachloroethane, ethylbenzene, lead, zinc). Section C(I)(B) of the RI/FS SOW (p. 29) states that "All samples will be analyzed for VOCs (including 1,4-dioxane with sufficiently low detection limits), total and dissolved metals and any additional compounds approved as part of the work plan." Section 3.2 of the RI/FS Work Plan (WP) indicates that lead was detected in overburden groundwater east of the landfill and east of Trout Brook at concentrations above MCLs. For this OU2, the standard suite of analyses should be performed on all media (VOCs, SVOCs, metals, PCBs and pesticides) in order to identify COCs.*

Response:

The list of contaminants of concern (COCs) has been updated to include compounds specified by the 1988 Record of Decision (ROD) for OU 1. For OU 2, the list of COCs will be expanded based on the results from analysis of VOCs, SVOCs, metals, PCBs, and pesticides. Based on the results from recent annual monitoring activities and the subset of compounds detected in groundwater as part of Lot 23 investigations, VOCs, 1,4-dioxane, and metals are anticipated to form the basis of COCs for OU 2. However, based on feedback provided during the meeting and conference call we are proposing to expand the suite of analyses as follows:

- *Ecological Sampling:* a subset of 13 wetland/stream sample locations will be analyzed for PCBs, SVOCs and pesticides, to evaluate whether these constituents are present in wetland media. The locations where this expanded list of analytes will be conducted are shown on Figure 4-2 and generally represent areas around the base of the landfill to the west, south and east, as well as locations within Trout Brook downgradient of the landfill; additionally, several upgradient sample locations will be evaluated for this expanded analyte list to document upgradient/reference conditions, given that PCBs, SVOCs and pesticides are commonly-occurring contaminants and may originate from

off-site sources. Should these be detected at concentrations exceeding upgradient/reference concentrations or at concentrations posing a potential risk, then additional sampling and evaluation of these compounds will be conducted, as needed, during the Fall 2016 wetland sampling event.

- *Groundwater Sampling:* a subset of groundwater monitoring locations will be analyzed for PCBs, SVOCs and pesticides to evaluate whether these constituents are present in groundwater. Section 4.4.4.3 of the RI/FS Work Plan has been updated to include these locations, which include the OU 1 Post-Site Closure Monitoring locations as well as select bedrock and overburden monitoring locations proposed to be installed along Transect 1 during the hydrogeological investigation. The results will be compared with historic groundwater data to understand the extent of impacts of these contaminants and evaluate the necessity of inclusion of these analyses in future groundwater monitoring.

Section 6.1.3 has been updated to reflect this approach.

Comment 3:

Section 6.1.4, Project Action Limits and Project Quantitation Limits, Para. 2, p. 25, and Table 6-1 through 6-5. *In accordance with EPA QAPP requirements (IDQTF, 2005) and by definition, Project Quantitation Limits are quantitation limits (not Method Detection Limits). Quantitation limits should minimally be three times and ideally ten times greater than the achievable laboratory MDL. If the quantitation limit is not sufficiently low to achieve sensitivity objectives (3-10 times lower than the project action limit [PAL]), a more sensitive analysis is needed to meet the PAL. If a more sensitive analysis will not be used, then an explanation as to how this limitation in the data will be addressed should be presented. Please correct the Project Quantitation Limits on the Section 6 tables so they are equal to the laboratory Reporting Limit presented (which is the laboratory quantitation limit). Nondetected results should be reported at the laboratory quantitation limit, not the MDL as stated in the last sentence.*

Response:

Project Action Limits (PALs) have been set equal to the laboratory Reporting Limits (RLs) and Section 6.1.4 of the SAP has been updated to reflect this modification. More-sensitive analyses have been evaluated for use in instances where the laboratory RL is not sufficiently low to meet the PAL. In certain cases, laboratory or method limitations do not allow the Project Quantitation Limit (PQL) to be less than 1/3 of the PAL, and/or reporting to the method detection limit (MDL) is required to meet PALs. Please refer to the newly developed Table 6-40 for a summary of constituents that do not meet ideal sensitivity quality objectives and the associated rationale for method selection.

The data usability section of the RI/FS report will present instances in which the RLs for non-detect data are elevated above the PALs on a case-by-case basis, and address the potential impacts of elevated RLs on data usability and project decision-making. Similarly, the uncertainty associated with any data reported below the RL (detected between the MDL and the RL, or reported as non-detect at the MDL) will be addressed on a case-by-case basis in the data usability section of the RI/FS report. The impacts of the uncertainty associated with these data on data usability and project decision making will be discussed.

Comment 4:

Section 6.1.6, Analysis Tasks, p. 25, and Tables 6-31, 6-32, 7-29. *The text indicates what parameters may be analyzed in various matrices and refers to the RI/FS WP or other plans for the details, however, the details are not clear from the RI/FS WP, and there are conflicts in multiple places. Further, multiple methods, analyte lists, and reporting limits (e.g., three different methods/analyte lists for VOCs) are included in the SAP for some parameters, and it is not clear which will be used when and for what locations. The rationale for the specifics of the analysis selected (method, analyte list, reporting limits) is also not clear. The text indicates that Table 6-32 is "an example QA/QC summary table included in each task-specific work plan," but an actual table of the samples and QA/QC samples is not referenced. Please clarify the analyses that will be conducted for each matrix, sampling location and task for this investigation. If analytical methods, analyte list, reporting limits, basis method, SOP, etc., will differ depending on matrix, location, or investigation task, clearly present the associated requirements. Please include a version of Table 6-32 specific to this investigation.*

Response:

The RI/FS Work Plan has been updated to clarify which analytical methods will be used during the RI. Section 6.1.5 of the SAP has been updated to reflect that Table 6-39 (formerly Table 6-32) is the actual quality assurance/quality control (QA/QC) summary for the RI, not an example.

Comment 5:

Table 6-1 through 6-5. *The footnotes for "#" and "@" indicate that reporting positive results below the reporting limit and down to the MDL "may be required to meet PALs," Unless the quantitation limit is below the PAL, the sensitivity requirements and the PALs are not met. If a more sensitive method is not available for these instances, please revise the footnote to indicate that method sensitivity is not sufficient to meet PALs. Please discuss how data quality objectives will be met if the sensitivity is not sufficiently low to meet PALs (e.g., 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, and acrylonitrile in Table 6-2).*

Response:

Table footnotes have been revised. For a limited set of analytes, PQLs are more than 1/3 of the PAL. Please refer to Table 6-40 for a summary of constituents that do not meet ideal sensitivity objectives presented alongside method selection rationale. We acknowledge the comment to consider more sensitive analyses for groundwater analysis (e.g., VOCs by drinking water EPA Method 524.2 instead of 8260C); however, we believe that the selected methods strike an appropriate balance of sensitivity while accounting for differences in media.

Comment 6:

Tables 6-1 and 6-3. *In some cases in these tables, analytical methods have been selected that do not achieve PALs, even though analytical methods with lower sensitivity are available and are being used for different types of samples in the project (e.g., 1,4-dioxane on Table 6-1 and 1.2-dibromo-3-chloropropane and 1,2-dibromomethane on Table 6-3). Please explain the rationale for the selection of analytical methods that do not meet project sensitivity objectives when more sensitive analyses are available.*

Response:

The PAL for 1,4-dioxane has been conservatively set to the EPA Drinking Water Health Advisory corresponding to a 1E-6 cancer risk. We acknowledge that the PQL for 1,4-dioxane by 8270D selected ion monitoring (SIM) does not meet the ideal sensitivity quality objectives, but also note that the PAL relates to human health and the ingestion of drinking water. Per RI/FS Work Plan, EPA Method 522.1 will be used to quantify 1,4-dioxane in drinking water media to meet sensitivity objectives for the Drinking Water Health Advisory PAL.

1,2-dibromo-3-chloropropane and 1,2-dibromomethane have not been detected during post-closure groundwater monitoring using the sensitive drinking water EPA Method 504.1. This method will be used during the RI for groundwater analysis. These constituents will be quantified using the drinking water analytical EPA Method 524.2 in drinking water unless conditions encountered during the groundwater investigation indicate that these constituents are present in the drinking water aquifer.

Comment 7:

Table 6-1. *The RLs for 1,2-dibromo-3-chloropropane and 1,2-dibromomethane suggest a much greater degree of accuracy (more significant figures) that can normally be achieved in a commercial laboratory analysis. Please confirm that these are not typographical errors or correct them.*

Response:

The proposed laboratory subcontractor, Alpha Analytical, reports to three significant figures for 1,2-dibromo-3-chloropropane and 1,2-dibromomethane. Table 6-1 has been updated to reflect this degree of accuracy.

Comment 8:

Table 6-1 and 6-3. *Section 3.3 of the RI/FS WP indicates that VOC results in evaluation of off-property groundwater quality will assist in determining whether the vapor intrusion (VI) pathway is complete. However, the PALs presented are based on only MCLs and RIDEM standards for GAA and GA. Please clarify if the PALs are appropriate for VI evaluations.*

Response:

Based upon an evaluation of available information and the current site conceptual model, it is unlikely that the conditions encountered during the proposed Work Plan will warrant an investigation of vapor intrusion pathways. Based upon the distance of the source area from the Pound Hill Road neighborhood and nature of the dilute plume (predominantly made up of constituents denser than water) it is unlikely that overburden conditions within the Pound Hill Road neighborhood will present a vapor intrusion pathway. Notwithstanding, Tables 6-1 and 6-3 have been updated to include Office of Solid Waste and Emergency Response (OSWER) VISL for Target Groundwater Concentrations (TCR = 1E-06 and THQ = 1). Should shallow aquifer conditions in the Pound Hill Road neighborhood deviate from the conceptual site model, VISLs will be considered as PALs where conditions warrant investigation of vapor intrusion pathways. In these limited instances, Woodard & Curran will consider analyzing groundwater with a more sensitive drinking water analytical method to improve data quality and usability outcomes. Woodard & Curran notes that even the most sensitive VOC methods (e.g., EPA 524.2) will not meet data quality objectives for some VISL Target Ground Water Concentrations.

Comment 9:

Table 6-1. *According to Table 4-2 of the RI/FS WP, the decision to terminate a boring will be based on groundwater concentrations above or below 1/2 the MCL. The project action limits for this part of the investigation should therefore be set at 1/2 the MCL, not at the MCL. This requires that the reporting limit for vinyl chloride be lowered (currently MCL of 2 µg/L and RL of 1 µg/L). This reporting limit can be achieved using SIM.*

Response:

Table 6-1b has been created to account for the modified PALs that will be used as termination criteria during bedrock drilling. Woodard & Curran acknowledges that the importance of meeting sensitivity objectives for the OU 1 groundwater COC vinyl chloride. The analytical laboratory will use a modified SW 846 8260C full-scan with a 0.2 µg/L RL for vinyl chloride (provided the sample does not need to be diluted prior to analysis). This method will be used for VOC analysis of all groundwater, pore water, and surface water during the OU 2 RI. Tables 6-1 through 6-3 have been updated to reflect updated PQLs.

Comment 10:

Section 9 and Appendix B, Sampling Procedures and Requirements. *The sampling procedures that will be used for each matrix in each task of the investigation are not clear from the text, in either the SAP or the RI/FS WP. For example, drinking water is included in the SAP as a matrix to be sampled, but a drinking water sampling procedure is not included in this section. Field-filtration of groundwater and surface water samples for dissolved metals is required, but this is not mentioned, and procedures are not presented. Groundwater sampling using low-flow and submersible bladder pumps is indicated in Section 9.1, but this may not be possible for many locations (packer sampling, multi-level monitoring systems, narrow piezometers). Not all of the pore water sampling techniques cited are suitable for the analyses planned. Please consider the above and provide more detail concerning the technique and equipment to be used in each instance, and the rationale for that selection.*

Response:

Section 9 of the SAP has been updated to include drinking water sampling procedures and information regarding the field-filtration of groundwater and surface water samples for dissolved metals. Clarification has also been provided in the SAP and the RI/FS Work Plan regarding the use of temporary push points for pore water sample collection. Additional details regarding sampling technique and equipment can be found in the Standard Operating Procedures for each task.

Comment 11:

Section 9.5.1, Low Solids Sediment Samples, p. 35. *The process for removing moisture from sediment samples by allowing them to settle and pouring off the standing water risks the loss of fines which may preferentially retain contaminants. The water that accumulates as the sediment sample sits is likely pore water. Since 1,4-dioxane is water soluble and a contaminant of interest, removal of the pore water may impact the 1,4-dioxane results obtained. It is recommend that standing water be removed by suction (with pipette or similar method) to reduce the chance that fines will be lost by pouring. It is recommended that the decision to allow sediment samples to stand and release pore water for removal be considered by the ecological risk assessors in light of the project objectives for sediment and contaminants of interest.*

Response:

Where necessary, sediment samples will be allowed to stand, and standing water will be siphoned off to the extent practicable. Section 9.5.1 of the SAP has been revised to reflect this.

Comment 12:

***Table 19-1**. The last footnote is not visible. Please revise for clarity.*

Response:

Table 19-1 footnote has been revised for clarity.

Comment 13:

***Section 19.2, External Verification, Para.1, p. 70.** The most recent version of the National Functional Guidelines should be used for validation. Please revise the text to update the reference for the organic methods. If older validation guidelines must be applied to the GC/MS methods because surrogates are being used in place of deuterated monitoring compounds, then cite the older guidelines for those criteria only.*

Response:

The SAP has been updated to indicate that data validation organic methods will be conducted in accordance with the National Functional Guidelines for Superfund Organic Methods Data Review dated August 2014.

Comment 14:

***Table 19-1.** It is recommended that 10 to 20% of the analytical data undergo a greater level of validation (Tier 2/Stage 4), since risk assessment is one of the data quality objectives, and a greater degree of confidence in the data is warranted. Selection of the data that undergoes greater scrutiny may be biased towards more critical matrices and analyses, more complicated analyses, more difficult matrices, or data from earlier as opposed to later rounds of sampling. For example, analysis of 1,4-dioxane in groundwater and surface water samples might be a logical choice, as the analysis can be problematic, and the analyte is central to the investigation. Note that the level of data deliverable required would have to be increased. Please address.*

Response:

The recommendation to subject 10-20% to the Tier 2 level of validation has been incorporated into SAP. Data evaluated during the Tier 2 process will correspond with collection of groundwater from monitoring wells and surface water samples as proposed.

Comment 15:

***Section 7 Tables, Measurement Performance Criteria for GC/MS Analyses.** The method performance criteria presented for the GC/MS methods, 8260C and 8270D, are outdated. The differences between the current versions and the previous versions are not minor. Please update these criteria to reflect the method versions cited.*

Response:

Laboratory Measurement Performance Criteria for 8260C and 8270D have been updated in the SAP to reference current accuracy criteria.

Comment 16:

Table 10-1. *The holding time for nitrate is typically 48 hours or "analyze immediately", but this table lists 28 days. The holding time for 1,4-dioxane Method 522, listed simply as 28 days in this table, is 28 days to extraction, and 28 days from extraction to analysis. Please correct the table or present justification for the times presented.*

Response:

These holding times have been corrected in Table 10-1.

Comment 17:

Appendix B, Woodard & Curran Standard Operating Procedures, SOP S-5, SOP for Pore Water Sampling. *Please indicate which of the two methods will be utilized, or when this decision will be made.*

Response:

Refer to the response to Comment 16 associated with EPA's review of the RI/FS Work Plan.

Comment 18:

Appendix C: Example Woodard & Curran Field Sampling Sheets. *The only sheet that is provided is a boring log. It is recommended that sheets for other field sampling activities be included also; e.g., as requested in a comment on Section 4.2 of the RI/FS WP, field data sheets for collection of surface water, sediment, and pore water samples should be included, with the information specifically requested in that comment.*

Response:

Additional field sampling sheets were included with Addendum 1 of the RI/FS Work Plan documents. These will also be included with the revised SAP.

RIDEM REVIEW COMMENTS

Comment 1:

Section 4.4.2, Geophysical Resistivity Survey, p, 4-2. *Please be advised that a geophysical resistivity survey and a seismic survey was previously performed at the site. It is evident in the survey that contaminant distribution found at the site in some cases does not conform to that which would have been predicted by the groundwater contours due to the fact that there is a limited groundwater sampling network and history and as such the contours may not be accurate. Please consider this when devising the geophysical survey layout.*

The geophysical survey results, (maps depicting conductivity zones, bedrock fracture information, etc., both the current and previous survey, and the seismic survey as well) shall be submitted to the regulatory agencies on a figure along with the proposed locations of the monitoring wells for review and approval. Please modify the Work Plan to reflect all of the above concerns.

Response:

A Resistivity Survey Scope of Work was provided to EPA and RIDEM on January 7, 2016. Comments were received from RIDEM thereafter and were addressed via email on January 15, 2016 and during a teleconference on January 21, 2016. The resistivity survey occurred between January 25 – 29, 2016 and included expansion of the initial scope in the northeast area to address RIDEM's concerns. Notice of survey completion was provided to EPA and RIDEM on January 29, 2016.

Comment 2:

Section 4.4.3.1, Drilling, Geophysical Logging and Packer Sampling Geophysical Resistivity Survey, Figure 4-1, p. 4-4. *There are two sets of bedrock lineament that traverses the site. As these highly fractured zones represent potentially preferential contaminant migration pathways, please ensure that the proposed wells lie in these lineaments.*

Response:

The subsurface expression of these lineaments is a key objective of the resistivity survey. The locations of proposed boreholes and overburden monitoring wells will be adjusted based on the results of this survey.

Comment 3:

Section 4.4.3.1, Drilling, Geophysical Logging and Packer Sampling Geophysical Resistivity Survey, Table 4-2, p. 4-4. *It appears that bedrock drilling will be terminated when analytical results indicate nd and/or one half of the MCLs or other similar criteria in two consecutive 10-foot packer intervals. Although a mobile lab, if used, may serve as a guide for determining relative concentrations in a boring, it is not acceptable for real time analytical results be used as a criteria to terminate drilling.*

If laboratory analysis is to be performed as part of this assessment, then typical development and equilibrium sampling times will have to be employed in order to obtain a representative sample. As such it will be days before drilling can resume at a particular location. Perhaps it would be simpler to drill to a preset depth of X feet, continue drilling, based upon the bedrock

competency criteria, if necessary, and then perform the series of analytical tests to see if drilling will be continued.

Response:

Real time analyses are not proposed as a criteria for drilling termination; samples will be sent to Alpha Analytical with a 24-hour turnaround requirement. To the extent practical, groundwater samples collected via straddle packer methods will occur under quasi-steady state equilibrium conditions using low flow sampling techniques. If groundwater yield from a packer zone is too low to support low flow sampling than this condition may be used as a supplementary line of evidence that fracture flow is minimal and a representative groundwater sample cannot be collected from that particular zone. Refer to the response to EPA Comment 7 for updates regarding drilling steps and criteria.

Comment 4:

Section 4.4.3.1, Drilling, Geophysical Logging and Packer Sampling Geophysical Resistivity Survey, Table 4-2, p. 4-4. *It is proposed that bedrock drilling be terminated if two intervals are below one half MCLs or the bedrock competency criteria are met. This may result in premature termination of drilling, especially in highly fracture systems and/or systems in which the contaminants are found in the low yielding sections of the aquifer. It is therefore recommended that the criteria be modified as follows:*

*Have **both** of the two termination criteria been achieved?*

Response:

Refer to the response to EPA Comment 7 for updates regarding drilling steps and criteria.

Comment 5:

Section 4.4.3.1, Drilling, Geophysical Logging and Packer Sampling Geophysical Resistivity Survey, Table 4-2, p. 4-4. *In transect one it is proposed to terminate boring at a depth of 50 feet. This depth is somewhat shallow and is atypical. Please provide justification for this value or proceed to a depth of 100 feet be employed.*

Response:

We will advance all bedrock drilling a minimum of 100 feet into bedrock. Refer to the response to EPA Comment 7 for updates regarding drilling steps and criteria.

Comment 6:

Section 4.4.3.1, Drilling, Geophysical Logging and Packer Sampling Geophysical Resistivity Survey, p 4-5. *In order to provide potentially useful information concerning contaminant distribution please modify the Work Plan as follows:*

Water quality measurements (dissolved oxygen [DO], specific conductance [SC], oxidation-reduction potential [ORP], Volatile Organic Compounds (VOCs), temperature; and pH) will also be obtained using a hand-held meter equipped with an in-line flow-through cell at an interval of three to five gallons purged.

Hydraulically lower yielding fractures maybe found to be significantly contaminated based upon field specific conductivity measurements and/or VOC PID readings. Therefore it is recommended the Work Plan be modified as follows:

Samples may not be collected from zones exhibiting low recharge representative of minimal fracture flow, based on a comparison of static water conditions and pumped water levels unless there is field evidence of contamination.

Response:

These recommendations have been added to Section 4.4.3.1 of the revised Work Plan. As noted in the response to RIDEM Comment 3, water quality measurements will be obtained during packer sampling to establish quasi-steady state conditions using low flow purging methods. Headspace readings with a PID using purged groundwater will be collected to characterize the presence of TVOCs, if present.

Comment 7:

Section 4.4.4.2, Monitoring Well Installation and Development, p 4-6. *Please note whether CW 4-70 is the same well as CW -4, and depict the well(s) on the map.*

CW 4-70 appears to be located in the northwest corner of the site. Chlorinated solvents were detected in this well. VOCs were also detected in the surface water sample collected in the vicinity of this well. There is no information concerning shallow groundwater contours in this area, bedrock groundwater contours depicts groundwater flowing towards the east (not towards MW 101). Given the above it would seem prudent to further investigate this area with monitoring wells and/or other appropriate methods.

Response:

It is our understanding that CW 4-70 as referenced in the data summary tables for the 1985 Site Investigation Report is the same well referenced as CW-4 throughout the OU 1 RI/FS, the source of historic well locations shown on Figure 2-1 of the RI/FS Work Plan. Based on historic concentrations of VOCs at this location, groundwater quality will be evaluated as part of the RI by collecting discrete groundwater samples using direct push technology. The uppermost vertical sampling zone will correlate with the 70-foot depth designation from the OU 1 RI and samples will be collected at two additional five-foot intervals at 75 and 80-feet. Samples will be submitted for VOCs, 1,4-dioxane, and total and dissolved PP-13 metals. The results from sampling will be used to determine if a monitoring well needs to be constructed to meet long-term monitoring objectives. This approach has been incorporated into the Work Plan.

Comment 8:

Section 4.4.4.2, Monitoring Well Installation and Development, p 4-6. *Please note whether CW 2-37 is the same well as CW -2, and depict the wells on the map.*

CW 2-37 appears to be located in the north northeast corner of the site chlorinated solvents were detected in this well. Based upon the groundwater flow it appears that a portion of the groundwater from the area around this well may flow towards WL-1. VOCs were also detected in WL-1. There are no wells beyond WL-1. Please consider further investigation in this area or justify why they are not needed.

Response:

It is our understanding that CW-2 as shown on historic site plans represents the well cluster that includes CW-2-37, CW-2-58, and CW-2-78. Based on concentrations of VOCs detected at the CW-2 well cluster and more recently at WL-1, a bedrock borehole and monitoring well cluster have been proposed hydraulically downgradient of these locations. This change is consistent with the revisions discussed during the November 19, 2015 meeting. Refer to updates on Figure 4-1.

Comment 9:

Section 4.4.4.2, Monitoring Well Installation and Development, p 4-6. *VOCs were detected in surface water and sediment sample SW-6 SED-6 located at the south eastern portion of the site indicting contaminant migration in this area. There are no wells in this area and there is little to no information concerning groundwater flow. It is therefore recommended that this area be investigated further.*

Response:

We have updated Figure 4-2 to add a wetland sampling location with expanded analytes at the location of SW-6/SED6.

Comment 10:

Section 4.4.4.2, Monitoring Well Installation and Development, p. 4-6. *Monitoring Well location CW 5A, B, C was found to contain VOCs and 1,4-Dioxane. There are wells to the southeast of this location which were also found to be contaminated, however there are no wells north east of this location, in the probable direction of water flow, north of this location. It is recommended that this area be further investigated and a well be installed north east of the set (and potentially north, depending upon the results of the survey).*

Response:

Groundwater quality along the northeast corner of the landfill has been historically monitored using CW-5B (screened 92 to 102 feet below the ground surface). Concentrations of tetrachloroethylene (PCE), trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), and vinyl chloride were detected at levels above maximum contaminant levels (MCLs) until 2010. Systematic decreases in these constituents were noted several years prior as a result of expected biological reductive pathways that have led to significant groundwater quality improvements in this area. Recent samples collected from all three wells in 2014 did not indicate levels of 1,4-dioxane while the sample from CW-5B collected in 2015 showed low levels of 1,4-dioxane at 1.15 µg/L. Samples from Waterloo^{APS} location WL-1 downgradient of the CW-5 wells indicated low levels of two of these constituents (PCE and cis-1,2-DCE, and no 1,4-dioxane) below MCLs and highlight the effectiveness of *in situ* biodegradation processes in this area. Based on low levels of data collected up to this point additional investigation locations are not proposed in this area. Groundwater quality will continue to be evaluated at the CW-5 cluster of wells along with a new borehole and wells along the northern boundary of Lot 23 with Lot 15. In the event that groundwater impacts are identified following sampling at these locations, than further characterization of groundwater may be considered.

Comment 11:

Section 4.4.4.2, Monitoring Well Installation and Development, p. 4-6. *CW-7B and surface water sample 7 A was found to contain 1,4-dioxane. There is no information south of this location. Please consider further investigation in this area.*

Response:

A Waterloo^{APS} location is proposed hydraulically downgradient of the CW-7 wells to evaluate overburden groundwater quality. Additional wells/boreholes may be considered based on the Waterloo^{APS} results. Refer to locations "D" and "E" depicted on Figure 4-2.

Comment 12:

Section 4.4.4.2, Monitoring Well Installation and Development, p. 4-6. *CW-1 was found to contain a variety of VOCs. The surface water samples taken downgradient of this monitoring well also contained VOCs.*

CW -1 appears to be located on the eastern side of the landfill in-between CW-6 and CW-7. Please depict its location on a map as this will assist in evaluating the proposed WL well location.

Response:

Based on review of the 1985 Site Investigation Report, the CW-1 couplet is located due west of the CW-6 well cluster. These wells have been abandoned. These locations have been added to Figure 4-2.

Comment 13:

Section 4.4.4.2, Monitoring Well Installation and Development, p. 4-6. *CW-3-3-30 and CW-3-45 contained a variety of VOCs. Please note the locations of these wells on figures as they will aid in the assessment of contaminant distribution and the proposed monitoring well locations.*

Response:

The location of the abandoned CW-3 well triplet has been added to Figure 4-2.

Comment 14:

Section 4.4.4.2, Monitoring Well Installation and Development, p. 4-6. *MW LFRR1, LFRR B, LFRR C are multilayer barcad wells. OWR-6 and RFG-4 are standard monitoring wells. If the analytical results from these wells are available please include them in the report. A number of these wells are located in areas of interest, therefore it might be worthwhile to see if these wells are still present and if they can be sampled. In addition, it appears that there were a number of piezometers and observation wells installed at the site. If possible, obtaining groundwater elevations measurements to provide groundwater contour and contaminant migrating information would seem useful.*

Response:

An assessment to determine if these wells are still present has been completed and it was confirmed that these wells no longer exist.

Comment 15:

Section 4.4.4.2, Monitoring Well Installation and Development, p. 4-6. *The Work Plan notes that a number of the existing monitoring wells will be sampled as part of this effort. Please note if appropriate, these well should be redeveloped at the same time the newly installed wells are being developed.*

Response:

As previously stated, select monitoring wells and dedicated sampling equipment will be evaluated for functionality and re-developed using surge and purge techniques in accordance with the RIDEM Groundwater Regulations prior to sampling, as necessary.

Comment 16:

Section 4.4.4.2, Monitoring Well Installation and Development, p. 4-6. *Please ensure that the monitoring wells are installed and developed in accordance with the regulatory requirements listed in the RIDEM Groundwater Regulations.*

Response:

Section 4.4.4.2 has been updated to indicate that monitoring wells will be installed and developed in accordance with the RIDEM Groundwater Regulations.

Comment 17:

Section 4.4.4.3, Sampling and Analysis, p. 4-7. *This section of the report notes that samples will be collected via low flow analysis. Please ensure that the typical procedure of looking for LNAPL and DNAPLs with an oil water interphase probe will be performed, and if NAPL is found a separate sample of the NAPL will be collected (if LNAPL is found it should also be analyzed for PCBs and TPH). It is recommended that these standard procedures be noted in this section of the work plan as they apply to both the overburden and bedrock monitoring wells.*

Response:

The Work Plan and SAP have been updated to incorporate these regulatory requirements.

Comment 18:

Section 4.4.4.3, Sampling and Analysis, p. 4-7. *Metals, SVOCs, PCBs, oils and pesticides were reportedly disposed of at the site. Based upon limited sampling conducted at the site, a number of these contaminants were previously detected in various media at the site. Therefore it would seem appropriate to analyze groundwater samples from new and existing wells for the typical list of contaminants employed at Superfund sites that is VOCs, SVOCs, metals and pesticides/PCBs.*

Response:

Refer to the response to EPA SAP Comment 2.

Comment 19:

Section 4.6, Surface Water, Pore Water and Sediments, p. 4-7. *This section contains the protocols for collecting sediment and surface water samples. In regards to proposed sample locations, although not stated in the work plan, it is assumed that the standard procedure of inspecting the areas for evidence of impacts (i.e. leachate outbreaks, staining, etc.) will be employed to fine tune where the samples will be collected. Suggested language is noted below:*

> *To evaluate the nature and extent of impacts to the surface water bodies and wetlands associated with Trout Brook, Trout Brook Pond and its tributaries, a series of sediment, surface water, and pore water samples will be collected from several locations as shown on Figure 4-2. Prior to sample collection the wetlands and streams will be inspected for evidence of impacts (leachate outbreaks, stained soil, etc.). Samples in the vicinity of the proposed sample locations will be collected from impacted areas if present. If impacted areas are observed outside of the proposed sampling locations then additional samples will be collected in these areas.*

Response:

This suggested language has been incorporated into Section 4.6 of the Work Plan.

Comment 20:

Section 4.6, Surface Water, Pore Water and Sediments, p. 4-7. *Manifested waste sent to the site included PCB oil, malathion, sevin and other pesticides, phthalates, various oils, etc. It is interesting to note that dioxane was listed as one of the manifested waste in previous reports. Previous studies have found pesticides and SVOCs and VOCs in sediment and surface water samples. VOCs and SVOCs were also found in groundwater samples. Considering the fact that sediments may serve as sinks for contaminants, and VOCs, SVOCs, metals, PCBs and pesticides were disposed of at the site it would make sense to sample for these contaminants in the stream media. Finally, as a wide variety of oils were disposed of at the site, if there is field evidence of TPH contamination in the sediments, it would seem appreciate to collect a sample in those areas and analyze for TPH.*

Response:

Refer to response to EPA Comment 2 of the SAP. A subset of surface water, sediment and pore water samples will be analyzed for an expanded analyte list, including SVOCs, PCBs and pesticides. These locations are identified on the revised Figure 4-2. Visual observations of petroleum hydrocarbons will be made to determine if supplementary samples require analytical testing for hydrocarbon fractions.

Comment 21:

Section 4.6, Surface Water, Pore Water and Sediments, Proposed Ecological Assessment Sampling Points, Figure 4-2, p. 4-7. *This figure contains the proposed sediment and surface water sampling points. Please modify the figure to show the outline of both the stream and the wetlands, as this will aid in the evaluation of the sample location selection.*

Based upon information presented in the 1988 RI it appears that there is a tributary which immediately abuts the southern end of the landfill. Samples SED-6/SW-6 were collected in this area and found to have elevated levels of contaminants (DCE, MEK). Given the proximity of this tributary to the landfill and its observations made in the past please consider collecting sediment

and surface water samples in this area. The stream north of the landfill also exhibits similar characteristics (1988 RI sample SED/SW 13, elevated levels of DCE, toluene, inorganics). Again it would seem appropriate to sample this stream. VOCs (DCE, MEK) were also detected SED 4 and 5 which were located northeast of the site. This stream appears to discharge into Trout Brook? Given its location and detected contaminants it is recommended to this area be investigated with sediment samples.

Response:

The wetland sampling program now includes locations TRIB-9 (near SW-6). A recent evaluation of the area in the vicinity of historic sample location SW/SED-13 did not locate a wetland or surface water feature. The Work Plan has been revised to reflect this change. Two samples (TRIB-6 and TRIB-7) are proposed for the northeastern landfill edge, as shown on Figure 4-2. This figure has also been revised to depict the outline of streams and wetlands.

Comment 22:

Section 2.3, Hydrology and Groundwater Flow, Figure 2-3 Interpolated Bedrock Map. *Certain wells from the 1988 Remedial Investigation Report were either not included or had depths to bedrock which were different from that in the in Figure 2-3. Please include the wells cited below, rectify any depths as necessary and redraw the contours. In addition, the seismic survey conducted at the sites reports an irregular shaped bedrock surface which is not depicted on the provided contours. Please incorporate the results of this survey into the contours.*

Please include CW-4, Depth to Bedrock 253 (information from 1988 RI)

Please include CW-2 B, Depth to Bedrock > 201 (information from 1988 RI)

Please change CW5C from 170 to >173 (Information from 1988 RI)

Please change MW102B from 183 to >173 (Information from 1988 RI)

Please change MW103B from 236 to 227 (Information from 1988 RI)

Response:

Figure 2-3 has been updated to incorporate bedrock elevation data as follows based on information provided in Table 3-1 of the 1985 Site Investigation Report, Table 3-1 of the 1988 RI, and associated boring logs. Please note that based on monitoring well identification nomenclature as used by EC Jordan during the 1988 RI, an "A" indicates the deepest monitoring well in a cluster. Therefore, we have applied the bedrock elevation changes proposed for CW-5C, MW-102B and MW-103B to CW-5A, MW-102A and MW-103A, respectively.

- At CW-4, the bedrock elevation is 253 feet above mean sea level (AMSL), as suggested.
- At CW-2B, the bedrock elevation is >201 feet AMSL, as suggested.
- At CW-5A, the bedrock elevation is 170 feet AMSL.
- At MW-102A, the bedrock elevation is >173 feet AMSL, as suggested.
- At MW-103A, the bedrock elevation is 227 feet AMSL, as suggested.

Draft Sampling and Analysis Plan

Comment 1:

Table 6-1 Groundwater/Pore water Constituents of Concern. *Please confirm that analysis will be conducted for all of the constituents listed in this table.*

Response:

Results will be reported for all of the constituents listed in this table for each sample analyzed for VOCs using methods SW846 8260C, 8270D SIM, and EPA 504.1.

Comment 2:

Section 6.1.3, Identification of Contaminants of Concern and Other Analysis. *This section notes the contaminants of concern for the site. Please include the following note under the list of bullets.*

The results of the current RI may result in addition contaminants of concern, other than those listed for the given media.

Response:

This language has been incorporated into Section 6.1.3 of the revised Sampling and Analysis Plan.

REVISED WORK PLAN DOCUMENTS

Accompanying this letter are updated versions of the following documents that were revised to address the comments as described above:

- RI/FS Work Plan with:
    a. Preliminary Identification of Applicable or Relevant and Appropriate Requirements (ARARs),
    b. Data Requirements, including data requirements for Potential Remedial Alternatives and Technologies,
    c. Expanded Schedule for the RI/FS, and
    d. Cost Estimate for the RI/FS.
- Project Operation Plan (POP) with:
    a. Site Management Plan (SMP),
    b. Health and Safety Plan (HSP),
    c. Community Relations Support Plan (CRSP), and
    d. Sampling and Analysis Plan (SAP, itself comprised of the Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP)).

We have provided PDF files containing the entirety of each revised document as well as Word files showing the revisions that we have made in "track changes".

In addition, please note that the project schedule included as Appendix C to the Work Plan has been revised to include two rounds of ecological samples along with three interim risk deliverables. The incorporation of these additional components results in extending the schedule for completing the RI/FS beyond the schedule outlined in the SOW.

Please let us know if you have any questions or need additional information. We look forward to discussing these responses with you in the near future.

WOODARD & CURRAN INC.

Alan Benevides, P.E., L.S.P.
Senior Project Manager

224263.5G

Attachments: Revised Work Plan Documents

cc: Warren Diesel, AECOM
Karen Douglas, Corning Incorporated
Angela Knight, Corning Incorporated
Curt Connors, Giarrusso Norton Cooley & McGlone, PC
Roy Giarrusso, Giarrusso Norton Cooley & McGlone, PC
James Cashwell, Olin Corporation
Paul Kulpa, RIDEM
Judy Armour, Waste Management
David Moreira, Waste Management