MINNESOTA POLLUTION CONTROL AGENCY

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September 20, 2018

Dave Goodwin
Reviva Corporation
5130 Main Street NE
Fridley, MN 55421

RE: 2017 Field Investigation and Annual Monitoring Report Comprehensive Response
Dealers Manufacturing Site (Reviva Corporation)
5130 Main Street NE, Fridley
MPCA Site ID: SR0000027

Dear Dave Goodwin:

The Minnesota Pollution Control Agency (MPCA) staff in the Superfund Unit received your 2017 Field Investigation and Annual Monitoring Report (Report), dated January 9, 2018, prepared by Carlson McCain, Inc. This letter provides review comments on the 2017 Field Investigation and Annual Monitoring Report. The reports' stated purpose is to present the results of the 2017 field investigation and the 2017 annual monitoring event.

On March 15, 2018, MPCA provided comments specific to the vapor intrusion portions of the Report (which also references email communication dated August 1, 2017). Carlson McCain provided a response on April 19, 2018. Please refer to all three enclosed documents, in addition to the Report and Addendum No. 1 of the Report. MPCA has included a response to the Carlson McCain April 19, 2018 response in Section 3 below.

Upon review of the Report and Addendum No. 1 of the Report, the MPCA provides the following comments:

Section 2 Summary of Field Investigation Activities

2.2 Site Geologic and Hydrogeologic Conditions

The discussion in Section 2 of subsurface deposits and geology encountered is appropriate. However, the number of new boreholes, combined with the existing list of boreholes, makes the discussion a challenge to follow. Cross sections displaying the locations of existing and new boreholes, including any changes or updates to the site conceptual model resulting from these new boreholes, will be necessary in this investigation report.

2.9 Groundwater Sampling

The discussion on groundwater sampling includes information for 1,4-dioxane analysis completed for interior wells. Please explain why exterior wells (those more likely to have measurable concentrations) were excluded in this analysis. The text indicates VOC samples were analyzed using GCMS, yet the tables say the test method was 8021. Please specify which method was used and how the samples were analyzed for 1,4-dioxane (e.g. method 8260, 8270, etc.).

Section 3 Sub-Slab Soil Vapor Results and Mitigation

Carlson McCain prepared the Report dated January 9, 2018. MPCA provided an initial response (dated March 15, 2018) to the Report (copy enclosed). MPCA's interim response focused on the post-mitigation verification testing for the vapor mitigation system and was issued prior to full review and comment to allow for completion of additional post-mitigation verification testing in the MPCA defined heating season which ends on March 31. Carlson McCain completed additional post-mitigation verification testing in March 2018 and submitted the results as Addendum No. 1 dated April 19, 2018. The post-mitigation verification analytical and diagnostic testing conducted in March of 2018 indicates that the mitigation system is operating effectively to prevent vapor intrusion into the building from the subsurface.

MPCA's specific responses to the additional post-mitigation verification testing presented in the Report Addendum No. 1 (dated April 19, 2018) are as follows:

1. Collect paired sub-slab and indoor air samples along with an outdoor ambient air sample in the MPCA defined heating season (Nov. 1 - March 31) in accordance with the MPCA mitigation BMP.
    - MPCA response – Six paired sub-slab and indoor air samples and one outdoor ambient air sample were collected for post-mitigation verification testing on March 27, 2018, within the MPCA defined heating season.

2. Compare indoor air results to the commercial/industrial ISVs to verify system effectiveness.
    - MPCA response – indoor air results were summarized and compared to commercial/industrial ISVs on Table 3 of the Report. No volatile organic compounds (VOCs) were detected above industrial ISVs in the post-mitigation indoor air samples collected on March 27, 2018.

3. Repeat pressure differential diagnostic monitoring during the heating season analytical sampling event.
    - MPCA response – Post mitigation pressure differential diagnostic measurements were collected from eighteen monitoring locations within the building on March 27, 2018. All of the diagnostic measurements met or exceeded the minimum MPCA defined heating season pressure differential of -3 Pascal.

4. Provide complete copies of MPCA BMP Attachments A, B, C and D for documenting pre-mitigation diagnostic testing, active system installation, post-mitigation diagnostic testing and post-mitigation verification testing with final documentation for the mitigation system.
    - MPCA response – The Report Addendum No. 1 included MPCA BMP Attachments A, B, C and D for documenting the mitigation system installation and verification. One note on Section 10 of Attachment A (pre-mitigation PFE diagnostic measurements), the date of pre-mitigation readings is listed as August 8, 2018. It is assumed that this date should be August 8, 2017 as the pre-mitigation readings were received prior to August 8, 2018.

5. Update the Operation and Maintenance plan to include a specific schedule for when the inspection and maintenance, and frequency is to occur.

- MPCA response – The Operation and Maintenance plan was updated (Appendix B of the Report Addendum No. 1) to include a quarterly schedule for inspection and maintenance frequency.

6. Provide site figures in the format of the MPCA Vapor Intrusion GIS map templates illustrating the vapor intrusion area of concern (VI AOC) and mitigation decisions for buildings based on the investigation data collected to date.
    - MPCA response – Figure 1 of the Report Addendum No. 1 consists of a GIS map in the general MPCA template format. The vapor intrusion area of concern (VI AOC) boundary line, groundwater contamination boundary and 100 foot buffer do not appear to be drawn based on all of the available site data and should be re-drawn using all the available vapor and groundwater data available from the site investigation activities. Surrounding adjacent buildings to the north and south may fall within the VI AOC based on all the available Site data.

Section 4 2017 Groundwater Monitoring Results

4.2 Groundwater Sample Collection Procedures

Please explain why wells were purged and stabilized at a high rate (1,000 mL/minute) and then sampled at another rate (300 mL/min). This is not consistent with low-flow sampling. Please determine how this will be remedied in future sampling events.

4.3 Groundwater Sampling Equipment Decontamination

Lab analytical results from the equipment blank samples indicate that the decontamination procedures used in the field were insufficient. Please determine why this occurred and provide an explanation how this will be prevented in the future. If this requires modifications to the QAPP, please submit those separately.

4.4 Groundwater Monitoring Results

There is a typo regarding 1,4-dioxane. The report refers to "1,2-dioxane" when it should be 1,4-dioxane.

4.4.2 Gradient and Flow Direction

The report indicates that the wells located within the eastern 1/3, "…of the [Reviva property] can be considered up-gradient wells and essentially provide background concentrations for water quality entering the Site." While it appears that these wells are typically up-gradient of the source area, they cannot be considered background wells. Wells located within the source area plume are not considered appropriate as background wells. Background wells need to be located outside the potential plume areas.

4.5.1 Trichloroethene

The second paragraph indicates that Reviva feels there is an off-property source for the contamination observed. However, there is no data included in the report to support this statement. Simple inferences based on recent changes in concentrations is not sufficient to define a separate source area. If Reviva suspects another source area, please identify that source and provide data in support of your conclusion.

Additionally, the discussion indicates that, "…natural attenuation processes continue to decrease concentrations through natural biodegradation." However, nothing has been presented to support such a conclusion. Simply stating that these processes are happening without any discussion and data is inappropriate and misleading.

4.5.2 1,4-dioxane

Detected concentrations of 1,4-dioxane all exceed the HRL. 1,4-Dioxane is generally highly mobile and concentrations within the source area will likely be depleted much sooner than TCE. 1,4-Dioxane will generally lead the main groundwater contamination plume as it moves down-gradient from the source area. Only wells located close to the source area were sampled for 1,4-dioxane. Please explain why none of the other wells were sampled for 1,4-dioxane. Wells located further out are more likely to have measurable levels.

4.5.3 Groundwater Quality at Existing Wells

The 2013 results are referred to as anomalously high in several locations in the text. Please explain why Reviva considers these results an anomaly.

MW-101A

The presence of significant levels of TCE would indicate that the well is not strictly side-gradient, but is at least periodically down-gradient.

MW-110

The text says that MW-110 is a water table well located up-gradient of the source. Yet, elsewhere, the well is included with the intermediate-depth wells. Please resolve this issue.

Further, it is stated that contamination found at MW-110 and MW-109B are not related to the Dealers' site. MPCA disagrees with Reviva's conclusion that the contamination in wells MW-109A/B and MW-110 are not related to the Dealers' site. The data provided indicates otherwise. The location of monitoring wells along the southern property line may be up-gradient, side gradient, or down-gradient, depending on aquifer conditions at any given time. It is incumbent upon Reviva to provide data to support their conclusion.

4.5.4 Groundwater Quality at New Monitoring Wells

Wells BNSF-1S, BNSF-1D, BNSF-2S, BNSF-2D, REEP-1 and REEP-2 were installed in 2013-2014 to monitor the Dealers' site, not in 2017. There is no evidence to indicate these wells lie up-gradient of the Dealers' plume. Wells BNSF-1S, BNSF-1D, and REEP-1 were installed at locations within the Dealers' groundwater plume. Well REEP-2 was installed to monitor the down-gradient margin of the plume to the south of the Dealers' property; and wells BNSF-2S and BNSF-2D were installed down-gradient of the western margin of the Dealers' groundwater plume.

MPCA provided results of sampling in 2013 and/or 2014 from each of these wells in its 2014 report. Please include all water quality data collected dating back to 2013. Groundwater monitoring should be conducted on an annual basis with the inclusion of 1,4-dioxane in the list of compounds which are analyzed.

BNSF-3D

c-DCE was detected in this well at 11.2 µg/L, in excess of the MDH HBV of 6 µg/L.

MW-108PC
Vinyl chloride was detected at a concentration of 0.146 µg/L, which does not exceed the HRL. This well monitors the upper Prairie du Chien, which is a primary drinking water aquifer in this part of Minnesota. The PDC aquifer provides drinking water for several municipalities in the area. The concentrations of many COCs did not exceed HRLs, but TCE did exceed the HRL by three orders of magnitude. An additional bedrock well may be necessary in the future to define the extent of contamination within the bedrock.

REEP-1
c-DCE concentration was 14.1 µg/L, which does exceed the MDH HBV (6 µg/L).

REEP-2
The REEP 2 well nest (REEP-2, REEP-2S, REEP-2PC) is currently side-gradient to down-gradient of the source area depending upon aquifer conditions. This well nest is not, and has not been located up-gradient since well REEP-2 was installed in 2014. If there are data that support an up-gradient source interpretation, please provide that data.

REEP-2PC
This well monitors the upper Prairie du Chien aquifer, one of the primary production aquifers in the region. Sample results show that TCE concentrations in this well exceeded the HRL. 1,4-Dioxane should be included in the list of parameters which are analyzed.

4.5.5-4.5.6 QA/QC / Field Blanks and Field Duplicate Samples
Several COC were detected in the field blank samples. These include acetone, chloroform, 1,4-dioxane, and TCE. The presence of these contaminants (1,4-dioxane, TCE, acetone, & chloroform) indicates that the decontamination procedures actually employed in the field during sampling were ineffective. Acetone is a common contaminant in isopropyl alcohol, which is often used as part of a decontamination protocol. As such, it is inappropriate to assume that acetone and chloroform are lab contaminants, as the results suggest otherwise.

Clearly, the sampling order, sampling & decontamination protocols employed for this sampling event did not work as well as one would hope. Please review the procedures actually employed in the field, compared with those in the QAPP to determine where the weakness lies, provide a detailed explanation of the cause, and propose how this will be resolved in future monitoring events. This may or may not require revising the relevant SOPs in the QAPP. If this requires modifications to the QAPP, please submit those separately.

Duplicate sample RPD should be much less than 50%. To demonstrate compliance, the RPD should be on the order of 10-20%. The list below highlights some specific issues found.

Test America Job 310-108069-1

- 1,4-Dioxane results in samples MW-102B and MW-108A should be considered as estimate due to the QC failure of 1,4-dioxane in the matrix spike duplicate.

- 1,2,3-Trichloropropane and 1,4-dioxane results in samples 310-108069-17 and 310-108069-19 should be considered as estimate because they did not meet the relative percent difference quality control criteria.
- The trichloroethene result for MW-103B should be considered an estimate due to insufficient sample volume resulting in dilution and analysis from a vial that had already been analyzed.
- Sample results for 1,4-dioxane in 310-108069-3 and 310-108069-10 should be considered as estimates due to similar concentration in environmental samples, and thus results may be due to sampling, transport, or storage activities.
- Positive results for 1,2-dichloroethane and tricholorethene in REEP-2PC and for trichloroethene in Equipment Blank 2 and Equipment Blank 3 should be considered as estimates due to quality control failures demonstrating a positive bias.

Test America Job 310-113869-1

- The volatile organic analysis (VOA) results for Drum Sample 2 and the Trip Blank should be considered as estimates because they were received outside the required temperature range. In addition, the pH of the VOA vials from Drum Sample 2 did not meet the method required chemical preservation.

Test America Job 200-40305-1

- There is a positive result for Naphthalene in VP-2. The original result from October 3, 2017, may contain a slight positive bias and should be considered an estimate.

4.5.7 Holding Times/Sample Preservation
Several sample vials were received broken by the laboratory. Please determine how this will be prevented in the future. If the sample packing and shipping did not follow the SOP as presented in the QAPP, please provide an explanation of why and how this will be prevented in the future.

Section 5.0 CONCLUSIONS AND RECOMMENDATIONS

First bullet item: Water quality continues to significantly improve
Concentrations remaining stable while water levels change does not necessarily indicate another source area. If another source area is suspected, please provide data that can support that.

The entire discussion regarding "average concentration" of TCE across the site is not applicable or needed; please remove.

Second bullet item: Site specific groundwater flow direction has shifted to the west-northwest
MPCA agrees that groundwater flow directions appear to have changed over time. Shifting of groundwater flow direction over time is expected. Changes to climate conditions, water levels in the Mississippi River, pumping of various aquifers, and so on all contribute to shifting groundwater flow directions and the amount of water contained in a given aquifer. The northwesterly flow component may explain the presence of the contaminants detected at well nest BNSF-3.

Third bullet item: Off-Site Sources of TCE

MPCA disagrees with Reviva that the data demonstrate an off-property source. Detection of low levels of contamination in property perimeter wells does not constitute an "off-site source." Similarly, sudden changes in contaminant concentrations does not constitute an anomalous increase. In many cases, these kinds of changes can often be explained by changes in aquifer conditions, long-term changes in climatic conditions, changes in laboratories, changes in field procedures, and so on. All the data presented is consistent with the source area being located on the Reviva property. There are no documented nearby TCE sources located east of the Reviva facility. In addition, there are no documented TCE sources located on the properties lying immediately to the north and south of the Reviva property. If Reviva is aware of data sufficient to demonstrate an off-property source, please present that data.

Fourth, fifth, and sixth bullet items:

The extent and magnitude of shallow groundwater contamination has not been determined toward the north and toward the east of the source area. There are no data from the water table aquifer east or north of MW-101A to provide any indication of extent and magnitude in this area of the Site.

The extent and magnitude of groundwater contamination in the intermediate drift aquifer appear to have been determined to the extent practicable to the south and west of the Reviva property. Toward the northwest, samples from BNSF-3D indicate low levels of TCE and other contamination. Whether this is indicative of contamination resulting from the Dealers release or from another release is not known at this time. The extent and magnitude toward the north, east and southeast of the source area has not been well defined. However, inferences from the data from MW-104B and MW-111B indicate that the horizontal extent of contamination is likely close to these locations. There is no data to the southeast (near the eastern building on the REEP property) to indicate the extent of contamination.

Groundwater TCE contamination in the upper PdC bedrock aquifer has been detected at MW-108PC and REEP-2PC. Neither the horizontal, nor the vertical extent and magnitude of groundwater contamination in the PdC bedrock aquifer have been determined. Low levels of TCE were detected in the sample collected from REEP-2PC. This may indicate that the southern extent of contamination in the upper PdC may lie in this area. However, the results from the sample at MW-108PC indicate that contamination may exist even deeper in the PdC aquifer in the source area, as well as in the area of MW-108PC.

The presence of 1,4-dioxane has been documented in two wells. However, this does not constitute delineation of the extent and magnitude of 1,4-dioxane contamination in the groundwater. The extent and magnitude of 1,4-dioxane contamination has not been determined in any aquifer at this site.

Seventh bullet item: BNSF-2 and BNSF-3

This states that "Based on the direction of groundwater flow it is presumed that this contamination is not related to the known contamination at Reviva." However, in the second bullet item (above) and elsewhere in the report, it is discussed that there is a northwesterly component to groundwater flow in various portions of the site. A northwesterly component to groundwater flow in the northern part of the Site does not seem unusual, and could potentially explain the contamination detected in BNSF-3D as a result of the Dealers release.

Eighth bullet item: Vapor Mitigation System
The presence of Naphthalene at the stated concentrations is curious. However, because the facility remanufactures diesel engines, it does not seem like that should be unexpected. MPCA suggests that Reviva follow up with their industrial hygienist to determine if this is a regulatory or worker exposure concern.

Tables

Please provide all data electronically in the appropriate Lab MN EDD format. This includes well data, water levels, field geochemistry, and VOC data. OC data needs to be complete for all analytes.

Table 4
The laboratory analytical method for the VOC analysis being used is not clear. Method 8021 has been decertified for at least a decade. Please determine which lab method is currently being used and correct the tables. If results from some prior years were from method 8021, state that in a footnote to the table.

Note that strongly reducing conditions and elevated dissolved oxygen concentrations in a single sample are mutually exclusive. Readings like this (see results for MW-104B) sometimes crop up in this and other data sets. Please check to see if field techniques may be introducing oxygen to the groundwater. It may also be worth checking your dissolved oxygen electrode and checking the redox electrode and making sure they are operating as designed.

Table 5
MPCA policy is to report the entire Minnesota Soil Gas list on the laboratory analytical tables. This table is missing a significant number of analytes. Please correct this and submit complete tables.

Figures

Figure 4. SSD System As-Built Diagram
Excellent figure. This figure conveys the need for the locations selected for sample ports and suction trenches without further explanation. However, it would be helpful to highlight each of the monitoring ports and each of the suction trenches with color. They are somewhat difficult to locate on this figure.

Cross Sections
This report is in desperate need of cross sections that cover the entire site and possibly including some data points from the NIROP/FMC/BAE sites, Kurt site, and possibly Fridley well 13. The new wells add a great deal of new information that need to be evaluated not only with regard to the Reviva property, but also with regard to the larger groundwater system in the area.

Below is a compiled list of items MPCA is requesting in response to the above review.

1. Develop cross sections displaying the locations of existing and new boreholes, including any changes or updates to the site conceptual model resulting from these new boreholes.
2. Determine potential decontamination procedures leading to compromised analytical results. Provide explanation and update QAPP separately as appropriate to prevent in future.
3. Include results of 2013 and/or 2014 sampling from wells in future data reporting.

4. Provide site figures in the format of the MPCA Vapor Intrusion GIS map templates illustrating the vapor intrusion area of concern (VI AOC) and mitigation decisions for buildings based on the investigation data collected to date.
    - Figure 1 of the Report Addendum No. 1 consists of a GIS map in the general MPCA template format. The vapor intrusion area of concern (VI AOC) boundary line, groundwater contamination boundary and 100 foot buffer do not appear to be drawn based on all of the available site data and should be re-drawn using all the available vapor and groundwater data available from the site investigation activities. Surrounding adjacent buildings to the north and south may fall within the VI AOC based on all the available Site data.
5. Conduct annual groundwater monitoring at each well.
6. Continue to analyze for VOC and 1,4-dioxane in all groundwater monitoring wells.
7. Continue frequent water level monitoring in each well (at least monthly intervals, or using datalogging transducers) for at least one calendar year in an effort to understand the conditions within each of the hydrostratigraphic units monitored.
8. Consider installing an additional bedrock well in the future to define the extent of contamination within the bedrock. Alternatively, consider increasing monitoring of all parameters in the two bedrock wells, MW-108PC and REEP-2PC, to quarterly.
9. Provide all data electronically in the appropriate Lab MN EDD and Edge MN EDD format. This includes well data, water levels, field geochemistry, and laboratory analytical data. VOC data needs to be complete for all analytes.
10. Determine which lab method is currently being used and correct the tables. If results from some prior years were from method 8021, state that in a footnote to the table. Begin reporting the entire VOC list of analytes in your tables.
11. Report entire Minnesota Soil Gas list on the laboratory analytical tables per MPCA policy. Correct and submit complete tables.
12. Develop an environmental covenant for the Reviva property under separate cover. MPCA has example environmental covenant language that can be used as a starting point for developing an environmental covenant for the property.

The MPCA requests that Reviva address these comments, make any further necessary revisions to the report, and resubmit the report in its entirety by November 19, 2018. The report in its current form is considered incomplete.

Beginning in March 2018, project management responsibilities were transitioned from Jamie Wallerstedt to Liz Kaufenberg. Liz will be the primary MPCA contact for this site going into the future. Liz can be contacted at 651-757-2481 or elizabeth.kaufenberg@state.mn.us.

Liz Kaufenberg will be sending an email with a link to access the enclosures electronically.

If you have any questions regarding this letter, please contact Tom Higgins, Superfund Unit 1 Supervisor at 651-757-2436 or tom.higgins@state.mn.us or Liz Kaufenberg, Project Manager, as noted above.

Sincerely,

Kathryn J. Sather

This document has been electronically signed.
Kathryn J. Sather
Division Director
Remediation Division

KS/LK:bhj

Enclosures: August 1, 2017 Dealers Update email
2017 Field Investigation and Annual Monitoring Report dated January 9, 2018
March 15, 2018 MPCA 2017 Field Investigation and Annual Monitoring Report Response
April 19, 2018 Reponses to MPCA Comment Letter dated March 15, 2018
2017 Field Investigation and Annual Monitoring Report (Addendum No. 1) dated April 19, 2018

cc: Wade Carlson, Carlson McCain, Inc. (electronic)
Tom Higgins, MPCA (electronic)
Jamie Wallerstedt, MPCA (electronic)
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Greg Small, MPCA (electronic)
William Scruton, MPCA (electronic)
Liz Kaufenberg, MPCA (electronic)