SRNS-J2000-2019-00769

Shelia Mcfalls

From: Joseph Burch
Sent: Tuesday, October 08, 2019 2:21 PM
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Subject: Draft SRS Responses to the Regulatory Comments on the Performance Evaluation Report of 2018 for the M-Area Inactive Process Sewer Lines (081-M) Operable Unit (U), (SRNS-RP-2019-00066, Revision 0, March 2019) SEMS Number: 19
Attachments: MIPSL_RTC_OCT_7_2019_Final_Draft.pdf

Attached are the Draft SRS Responses to the Regulatory Comments on the Performance Evaluation Report of 2018 for the M-Area Inactive Process Sewer Lines (081-M) Operable Unit (U), (SRNS-RP-2019-00066, Revision 0, March 2019) SEMS Number: 19. SCDHEC approved and EPA provided comments on the MIPSL PER (SRNS-RP-2019-00066, Revision 0, March 2019) on 7/16/2019 and 9/12/2019, respectively.

Please review the draft responses and reply through e-mail by COB, October 21, 2019 whether the responses are acceptable or if a comment resolution conference call will be required. Once we receive your input on the draft responses, we will submit the final version of the responses along with the revised document by official DOE letter.

Please call me if you have any questions.

Thanks

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Comments Received: September 12, 2019

EPA GENERAL COMMENT:

EPA renews the request to address the issue noted below in italics from 2 previous EPA comments made during the last two MIPSL reporting efforts in order to ensure that this concern is addressed during this reporting interval. Please see EPA General Comment #1, below.

EPA's comment on the 2016 and 2017 Performance Evaluation Report for MIPSL comment is copied (in italics) and pasted below:

> *Based on the information presented in the 2016 MIPSL it appears the contaminant mass that exists below the Upland Unit is more significant than has been previously reported. For example, the text in Section 2.1 (System Overview) states the contamination is predominately within the fine-grained sediments (Upland Unit) in the zone below the sewer line to 35-feet below ground surface (bgs). However, the text in Section 1.2 (Nature and Extent of Contamination), Page 2 of 56 states the Upland Unit has limited contaminant mobility to a significant degree although volatile organic compounds (VOCs) have migrated downward, into the more permeable sediments below the Upland Unit. Furthermore, the text in Section 3.0 (Conclusions/Recommendations) on Page 10 of 56, states the vast majority of VOC production at MIPSL has been from MH-01, and approximately 94% of MH-01 production has been from the deeper extraction well screened in the Tobacco Road formation. As seen in Figure 3 Surface Well Configuration (Typical Cutaway View), Page 17 of 56 the SVE well is screened from 60 to 100 feet bgs and only a fraction of the total well screen length is located within the silty sand unit below the Upland Unit and above the clay unit. As such, it appears a majority of the mass removal is from below the Upland Unit and it is uncertain how this may impact the mass removal estimates and the overall remedial cleanup timeframes. Please revise the **next submittal** of the Performance Evaluation Report for the M-Area Inactive Process Sewer Lines (MIPSL) (081-M) Operable Unit (OU) (U), CERCLIS Number 19, (2017 MIPSL) to address this issue.*

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DOE SRS Response: Agree. The majority of the mass removal at MH-01 has occurred in the sediment below the Upland Unit. Based on a review of the soil vapor data collected from the CPT bore nearest MH-01 (i.e., MIPS-CP007) there was elevated PCE from 30 to 60 ft bgs and a significant indication of PCE at 88 ft bgs. The PCE observed from 30 to 60 ft bgs is below the upland unit in a sandy unit. The PCE hit at 88 ft corresponds to a low permeability unit. In reviewing the hydro-conceptual model (HCM) for the site, it appears that a revision is warranted to more accurately project the Upland Unit and the screened intervals of the well at MH-01. As a result, Section 2.1 will be revised in the 2017 PER to

more accurately explain mass removal relative to the geology of the unit as well as future expectations for the remediation. No change to the 2016 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

Text from DOE-SRS PER of 2017 for the MIPSL, page 6 of 58, dated March 2018
The majority of the mass removed by the AS VEU has been from MH-01 and more specifically from SVE-01 which is screened from 70- to 110-ft bgs. The higher concentrations observed at this SVE well are likely a product of mass diffusing from the base of the Upland Unit and other low permeability sediments located between the Upland Unit and the water table. Evidence of this VOC mass was observed at an adjacent soil boring (i.e., MIPS-CP007) drilled and sampled for soil vapor in 2003. At MIPS-CP007, PCE concentrations were elevated from 30- to 60-ft bgs and at 88-ft bgs. The highest PCE concentration was observed at 35-ft bgs and generally decreased with depth, indicating the Upland Unit as the source. The lithology at MIPS-CP007 reveals relatively sandy sediment from 35- to 85-ft bgs, so the ZOI at SVE-01 could extend into the shallow vadose zone.

1. **Page 5 of 58, DOE-SRS PER of 2018 for MIPSL, dated March 2019 – This report:** DOE-SRS asserts that observed changes in VOC vapor concentrations are directly related to mass of VOCs remaining in the Upland Unit and that the mass of VOCs in the Upland Unit will decrease to a point where the efficacy of the mobile SVEU will be minimal resulting in a transition and ultimate recommendation to passive SVEU.
    a. EPA renews it's request for a 3rd time for DOE-SRS to address the uncertainty associated with mass removal estimates and overall remedial cleanup timeframes since it appears that only a fraction of the total well screen length is located within the silty sand unit below the Upland Unit and above the clay unit. As such, it appears a majority of the mass removal is from below the Upland Unit leading to uncertainties as outlined above.

    Response: Clarification. Total mass estimates for VOC contamination below MH-01 and timeframes for removal of that mass were not part of the contaminant migration model analysis. As such, and as addressed in previous responses, SRS believes that the VOC concentrations observed below MH-01 are likely VOCs leaching from the upland unit (30 to 60 ft bgs) and the low permeability unit at 88 ft bgs from the solid to the vapor phase. VOC concentrations at shallow wells indicate that VOCs are still present in the Upland Unit and leaching out of the Upland Unit into the underlying sandy unit would be a reasonable result of that banked contamination.

    As maintained in previous responses, VOC removal observed at well SVE-01, screened from 21.3- to 33.5-m bgs (70- to 110-ft bgs), are likely being pulled into the well screen from both the contamination within the Upland Unit as well as what has

leached further down below the Upland Unit. The screened interval for this well was positioned below the Upland Unit and near a clay unit based upon soil vapor data obtained in 2004 during the initial CPT pushes.

During a February 28, 2017 Core Team discussion, it was agreed to proceed with obtaining soil samples at the MIPSL Manholes. As such the data obtained during a Fall 2019 sampling event will be used to further identify any contamination below the Upland Unit and will validate the lithology of the 2004 CPT pushes. The information gained during the Fall 2019 sampling event will be incorporated into the 2019 PER.

b. Please construct a specific cutaway figure for the SVE Well Configuration associated with Manhole 01 to facilitate review of this issue.

Response: Agree. The HCM depicted in Figure 3 of the PER of 2018 for the MIPSL has been revised to reflect the specific lithology observed at MH-01. The revised HCM (Figure A) is based on previously installed CPT boring MIPS-CP007 which was logged and used for a soil gas profile in 2004. As stated above, Figure 3 may be updated once additional information is obtained from the sampling event to be conducted in Fall 2019.

c. Provision of the above information is requested for this PER reporting interval and prior to the soil sampling effort for MIPSL since the data will be useful in present site conceptualization and future decisions, especially in conjunction with an updated contaminant migration analysis and future decisions as they pertain to the efficacy of the SVE remediation (transition to passive vs active) and in reaching the RGs for TCE and PCE for the MIPSL OU.

Response: Clarification. As stated above in the response to Comment 1a, additional contamination information is being sought by SRS to address the concerns listed in this comment. The vadose zone sampling event is scheduled to be conducted during Fall 2019 in the vicinity of MH-01, MH-11, MH-12, and MH-13. Three soil bores will be advanced to ~100 ft bgs adjacent to MH-01 and will provide further characterization to verify the lithology and contaminant distribution near MH-01. If results are greater than the baseline RG values, a contaminant migration (CM) model will be created from the sampling results to further evaluate the effectiveness of the SVE remediation. The additional data and new model will be incorporated in the 2019 PER.

d. Provision of this information is requested prior to any transition to passive SVE

Response: Agree. As noted in response to comments for the Sampling Analysis Plan for the MIPSL (SRNS-RP-2018-01053, July 2019), the analytical results will be compared to the RG values after the soil sampling is complete. If analytical results are above the approved RG values, a CM model will be completed to evaluate the new analytical results as compared to the approved RG values. A report for the new modeling effort will be provided to the Core Team for review and further discussion. Any recommendations to revise the RG values based on CM model results or to transition to passive SVE will be discussed with and agreed to by the Core Team.

No change to the 2018 PER is proposed.

Responsible Party: James Kupar, 803-952-6525, james.kupar@srs.gov

EPA SPECIFIC COMMENTS

1) **Page 3 of 58, Nature and Extent of Contamination, paragraph three:**
   a. Please provide a timeframe for the computer modeling and a reference for the document that contains the referenced computer modeling.

Response: Agree. The time period for the modeling and the reference to the report will be added to the text in the Nature and Extent of Contamination section in the 2019 PER similar to the following: "Contaminant migration modeling conducted in 2004 was used to establish TCE and PCE soil concentrations that would not adversely impact the underlying groundwater (WSRC 2005).

Responsible Party: James Kupar, 803-952-6525, james.kupar@srs.gov

2) **Page 3 of 58, Section 1.2, Nature and Extent of Contamination**:
   a. Please include a brief discussion of seasonal water surface fluctuations (potentiometric surface) and indicate over what range these fluctuations occur to facilitate an understanding of when or if the water surface may come near or intersect the longer screened interval of the deeper SVE wells.
   b. A figure that depicts this would be helpful and could be included in Figure 3 or another figure, whichever is preferred.

Response: Agree. Text discussion similar to the following will be added to Section 1.2, Nature and Extent of Contamination in the 2019 PER:

"Water elevations show variations related to rainfall, proximity to streams and other physical features. Since 2009, the two nearest monitoring wells to MIPSL sampling locations have experienced minor water elevation fluctuations. Monitoring well MSB 23R, located north of MH-01, has water level measurements ranging from 154.2 ft bgs to 149.29 ft bgs.

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Monitoring well MSB 15D, located south of MH-01, has water level measurements ranging from 147.7 ft bgs to 143.77 ft bgs. The top of the water table is not expected to come near or intersect the screened intervals of the deeper SVE wells."

Figure A, included with these comment responses, depicts the water table near MH-01 to be 35 ft below the bottom of the screen at SVE-01. Figure A will be added to the 2019 PER and referenced in the text as appropriate. No change to the 2018 PER is proposed.

Responsible Party: James Kupar, 803-952-6525, james.kupar@srs.gov

3) **Page 7 of 58, Section 2.2, Soil Vapor Extraction Operations:** Please provide clarification (table or text) about the timing of lockout/system repairs. From the dates given, it appears that the system was down for ~ 50 days.
   a. The number of consecutive days the soil vapor extraction unit (SVEU) was inoperable on two occasions in calendar year 2018 (CY2018) is not clearly presented in this section. For example, the second paragraph on Page 7 of 58 states the M-Area Inactive Process Sewer Line (MIPSL) SVEU was inoperable for seven consecutive days on two occasions. However, the text states the MIPSL was down from March 6 to March 23, 2018 and from June 14, 2018 to July 3, 2018, which is more than 14 consecutive days on two occasions. Revise the PER 2018 to address this discrepancy.

Response: Clarification. Per regulatory agreement, SRS is required to notify SCDHEC and USEPA when the SVEU has been inoperable for greater than seven consecutive days. The text should have clearly stated that the SVEU was inoperable for more than seven days on two occasions, March 6 to the 23rd and June 14 to July 3rd. The SVEU was inoperable for a total of 37 days in 2018. A more accurate description for the timing of lockout/system repairs will be provided in future PER documents. No change to the 2018 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

4) **Section 2.2, Soil Vapor Extraction Operations, Page 7 of 58:** The first sentence in the second paragraph indicates the electrical power for the MIPSL SVEU originates from the same circuit as the M-1 Air Stripper. The text also discusses the periods in CY2018 when the MIPSL SVEU system was inoperable due primarily to the M-1 Air Stripper being locked out either for repairs or recovery well installation. As such, it appears the performance of the M-1 Air Stripper directly impacts the performance of the MIPSL SVEU. To ensure future performance of the MIPSL SVEU is not impacted by M-1 Air Stripper lock out power interruptions, revise the PER 2018 to address this issue.

Response: Clarification. The M-1 Air Stripper and the MIPSL SVEU share a common power source. When electrical power needs to be interrupted, both units are put off-line for electrical operation. However, when the MIPSL SVEU is not operable by electrical power

for any length of time, microblowers are placed into service at the well head to continue remediation. No change to the 2018 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

5) **Page 8 of 58, Samples and Analyses:** Please provide a reference or information in an appendix which includes the modifications to the Modified Method 18.

Response: Agree. Modified Method 18 was discussed in the report, *Comparison of USEPA Method 18 Versus Savannah River Site Modified Method 18 Sampling of Vapor Extraction and Air Stripper Units*, ESH-ERP-2003-00038, Westinghouse Savannah River Company, Aiken, SC, February 7, 2003. This reference to Modified Method 18 will be added to future PERs. No change to the 2018 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

6) **Page 9 of 58, Section 2.2.2 Performance Results**: EPA's Conditional Approval Letter dated October 21, 2018 in reference to the MIPSL PER of 2017 provided conditional approval for the 2017 PER with the "understanding that additional discussion will be provided in the next reporting effort (this report – MIPSL 2018 PER) include additional discussion, clarification and comparison of the use of the average 2nd, 3rd and 4th highest flow rates versus the use of an average flow rate at each well." This level of discussion has NOT been provided in this report.
   a. EPA renews it's request as outlined above and further requests that this information be included in this reporting effort since it is the 2nd time it has been requested and is important when evaluating future site decisions to move to a passive instead of active SVE system
   b. ***This comment which was included in EPA Comment Letter for the MIPSL PER of 2017 and is provided here as background information for the above EPA comment 4***

      i. ***Section 3.0, Conclusions/Recommendations, Page 11 of 58:***

      Section 3.0 states, "SRS recommends that the monitoring of the ASVE unit and the sampling frequency remain unchanged, but that a different approach to flow rate evaluation be implemented for the MicroBlower™ systems. SRS determined that the eleven fractured MicroBlower™ wells with the smaller blower (Wells F11-1, F11-2, F11-3, F11-4, F12-1, F12-2, F12-4, F13-1, F13-2, F13-3, and F13-4) have an average flow rate of 2 cubic feet per minute (cfm). This average was obtained by taking the average of the second, third, and fourth highest flow rates of the five most recent flow measurements at each well..." However, it is unclear why the average flow rate was not calculated using all of the data obtained from the most recent flow measurement events at each well location. Revise the 2017 PER to provide a calculated average flow measurement using all of the recent flow rates for a comparison.

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Response: Clarification. As previously discussed in the 2017 PER, the average flow rate of 2 cfm was calculated by excluding the first and fifth highest flow rates at each well to account for variability in flow rates due to the effect of weather conditions on the photovoltaic powered units. By comparison, an average flow rate of 2.4 cfm was calculated using all flow rates from all MicroBlower™ wells over the last five years. When calculating mass removal, the difference between 2 cfm and 2.4 cfm is not significant. Therefore, the average flow rate of 2 cfm reported in the 2017 and 2018 PERs was used to account for system variability and to provide a consistent approach for evaluating the performance of the MicroBlower™ systems from year to year.

Discussion similar to the following text will be added to future PER reports to explain how the average flow rate of 2 cfm was determined.

"An average flow rate of 2.0 cfm was determined based on the second, third, and fourth highest flow rates from all MicroBlower™ wells. The first and fifth highest flow rates were excluded from the average to account for variances in flow rates due to the effect of weather conditions on the photovoltaic powered units. By comparison, an average flow rate considering all flow rates (highest to lowest) from all MicroBlower™ wells over the last five years resulted in an average value of 2.4 cfm. When calculating mass removal, the difference between 2 cfm and 2.4 cfm is not significant. Therefore, the average flow rate of 2.0 cfm is used to account for the variability in flow rates and to provide a consistent approach for evaluating the performance of the MicroBlower™ systems from year to year."

No change to the 2018 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

7) **Page 10 of 58, Section 2.3 Soil Gas Performance Data, 3rd paragraph**: DOE-SRS refers to "spurious" 2018 data from Well 11-3 and Well 11-4 based on historical values. However, no further information is provided except to offer that that it will be considered in 2019.
   a. EPA requests additional clarification to support and explain DOE-SRS's assertion as to spurious data.

Response: Clarification. The 2018 concentrations at Well 11-3 and Well 11-4 were the first values above 1 ppmv measured in ten years. These values were unexpected and not thought to be representative of soil gas performance. For this reason, additional inquiry into these two wells are being conducted during 2019. No change to the 2018 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

8) **Page 10 of 58, Section 2.3 Soil Gas Performance Data:** The text in the first paragraph indicates the maximum tetrachloroethylene (PCE) concentration in CY2018 was 17.0 parts per million by volume (ppmv). However, the maximum CY2018 PCE concentration summarized

in the table on Page 10 of 58 is 15.5 ppmv (sic). Revise the PER 2018 as appropriate to address this discrepancy.

Response: Clarification. The 17.0 ppmv PCE value was measured from the discharge of the SVEU. The 15.3 ppmv PCE value was measured at Well SVE-01 as indicated by the table column header. In future reports, the text will be revised to identify measurements from the SVEU system as appropriate. No change to the 2018 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

9) **Page 16 of 58, Figure 2:** Please depict the Manhole locations within the MIPSL OU Boundary Map to facilitate overview of manhole locations with respect to the MIPSL boundary.

Response: Clarification. The location of the manholes is shown on Figure 2 by both symbol and number identification. No change to the 2018 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

10) **Pages 25-45, Tables 3, 4 and 5:** In future reporting efforts, please include Manhole designation associated with the Well ID and station ID.

Response: Clarification. The Manhole designation is indicated by the first two numbers of the Well ID and the Station ID, e.g., the manhole designation for Well F11-1 is Manhole 11.

A footnote will be added to Tables 3 and 4 in the 2019 PER as follows:
"* The manhole designation is indicated by the first two numbers of the Well ID."

A footnote will be added to Table 5 in the 2019 PER as follows:
"* The manhole designation is indicated by the first two numbers of the Station ID."

No change to the 2018 PER is proposed.

Responsible Party: John Bradley, 803-952-2301, john02.bradley@srs.gov

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Figure A: Surface Well Configuration at MH-01 with CPT Log and Soil Gas Profile