



Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

FEB 14 2022

Ms. Susan B. Fulmer, P. G., Manager
Federal Remediation Section
Division of Site Assessment, Remediation and Revitalization
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Mr. Jon Richards
Savannah River Site Remedial Project Manager
Superfund Division
U. S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

Dear Ms. Fulmer and Mr. Richards:

SUBJECT: Savannah River Site's Responses to the Regulatory Comments on the Effectiveness Monitoring Report for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit (OU) (U) April 2020 through March 2021 (SRNS-RP-2021-03832, Revision 0, June 2021) SEMS Number: 24

In accordance with the terms of the Federal Facility Agreement, the U.S. Department of Energy (DOE) is submitting the subject comment responses for your review. The South Carolina Department of Health and Environmental Control (SCDHEC) and the U.S. Environmental Protection Agency (EPA) provided comments on the report on October 14, 2021 and November 15, 2021, respectively. The report will not be revised; however, all comment responses will be included and/or addressed in the next report, as applicable. Please review these responses and provide your approval thirty (30) days from receipt. The time and effort that the SCDHEC and the EPA have given on the subject operable unit are greatly appreciated.

Questions from you or your staff may be directed to me at (803) 952-8365, or the DOE Federal Project Director, Karen Adams, at (803) 952-7871.

Sincerely,

Brian T. Hennessey

Digitally signed by Brian T.

Hennessey

Date: 2022.02.10 13:44:58 -05'00'

Brian T. Hennessey

SRS Remedial Project Manager

Infrastructure and Area Completion Division

IACD-22-127

FEB 14 2022

Ms. Susan Fulmer
Mr. Jon Richards

2

Enclosures:

1. SRS Responses to SCDHEC Comments on the Effectiveness Monitoring Report for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit (OU) (U) April 2020 through March 2021 (SRNS-RP-2021-03832, Revision 0, June 2021) SEMS Number: 24
2. SRS Responses to EPA Comments on the Effectiveness Monitoring Report for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit (OU) (U) April 2020 through March 2021 (SRNS-RP-2021-03832, Revision 0, June 2021) SEMS Number: 24

cc w/o encl:

J. Blalock, SCDHEC-Columbia
S. French, SCDHEC-Columbia
M. Reece, SCDHEC-Columbia
G. K. Taylor, SCDHEC-Columbia
T. R. Fuss, SCDHEC-Aiken Environmental Affairs Office
G. O'Quinn, SCDHEC-Aiken Environmental Affairs Office
B. A. Cameron, SCDHEC-Aiken Environmental Affairs Office
K. L. Beatty, SCDHEC-Aiken Environmental Affairs Office
H. L. Herlong, SCDHEC-Aiken Environmental Affairs Office
R. H. Pope, EPA-Atlanta

cc w/ encl:

D. Lloyd, EPA-Atlanta
M. McRae, TechLaw, Inc.

**SRS Responses to SCDHEC Comments on the Effectiveness Monitoring Report (EMR) for the
Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits
Operable Unit; April 2020 through March 2021
SEMS NUMBER: 24, (SRNS-RP-2021-03832 Revision 0, Dated June 2021)**

**Page 1 of 1
Comments Received 10/14/2021**

Specific Comment

1. Table 1, CMP Pits OU MNA Monitoring Network, pages 96 and 97, and Table 3, CMP Pits OU Annual MNA Results, April 2020 through March 2021. There are a few discrepancies between these two tables regarding the sampling frequencies for some of the wells and analytes.

For VOCs, monitoring wells CMP 31B and 33D show 2Q and 4Q as the sampling frequency on Table 1, yet Table 3 only shows sampling data for 2Q. Also, VOC data is shown for wells CMP 32B and 34D on Table 3, yet Table 1 does not include any sampling frequency for VOCs at these wells.

Additionally, for 1,4-dioxane, Table 1 indicates 4Q sampling at wells CMP 31B and 33D, yet Table 3 shows that no sampling was performed at these wells. Table 3 indicates well CMP 34D was sampled and analyzed for 1,4-dioxane yet, Table 1 does not include a sampling frequency.

Finally, for lindane, Table 3 shows data for wells CMP 010A, 11D, 13D and 52, and Table 1 does not include a sampling frequency for lindane at these wells.

Please revise these tables so that they are consistent and accurate. Also, discuss why 4Q sampling was not performed at wells CMP 31B and 33D for VOCs and 1,4-dioxane in the report.

Response: Clarification

Wells CMP 31B and CMP 33D were scheduled to be sampled for VOCs and 1,4-dioxane during 4Q2020. However, due to an administrative error, the wells were categorized as being dry and were not sampled. Notes in the “Field Comment” column of Table 3 include either “Dry” or “SE” which means the “well was not sampled due to a sampling error. Since both water level measurements during 4Q2020 at wells CMP 31B and CMP 33D were incorrectly interpreted as being dry, well CMP 33D should have been more accurately listed in Table 3 with a field condition of “SE”.

Occasionally, additional samples are collected, and the extra data is usually included as shown in Table 3. This includes the lindane analyses at CMP010A, CMP 11D, CMP 13D, and CMP 52C as well as 1,4-dioxane analysis at CMP 34D. Although not required as part of the CMP Pits MNA required monitoring, the data is included in Table 3 and in the plume maps/cross sections for completeness.

Future reports will identify any extra analyses in their appropriate sections (i.e., VOCs, Lindane, 1,4-dioxane, etc.). No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

SRS Responses to EPA Comments on the Effectiveness Monitoring Report (EMR) for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit; April 2020 through March 2021
SEMS NUMBER: 24, (SRNS-RP-2021-03832 Revision 0, Dated June 2021)

Page 1 of 7

Comments Received 11/15/2021

EPA GENERAL COMMENTS:

1. Based on the locations of wells CMP062D/C/B and CMP063D/C/B, it is uncertain whether it is appropriate to include the water level elevations and/or chemical analyses from these wells in determining relative flow directions, flow velocity, and/or aquifer quality in the transmissive zone (TZ), middle aquifer zone (MAZ), and lower aquifer zone (LAZ). For example, well clusters CMP062D/C/B and CMP063D/C/B are sited across a natural drainage swale located south of the Chemicals, Metals, and Pesticides (CMP) Pits and defined by the topographic contours presented on Figure 2 (CMP Pits OU Subunits), page 31 of 104. Water levels in well CMP062D/C/B are consistently higher than well CMP063D/C/B and higher than all of the other CMP Pits monitoring wells. Higher water levels in CMP062D/C/B are most likely due to the recharge occurring at topographic high and hill located immediately to the east of CMP062D/C/B, as shown on Figure 2. Currently, it is uncertain how the drainage swale impacts groundwater flow, i.e., limiting or preventing flow across this boundary and indicating separate watershed flow. Please revise the Effectiveness Monitoring Report for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit (OU) (U) April 2020 through March 2021, SEMS Number: 24, SRNS-RP-2021-03832, Revision 0, dated June 2021 (the EMR) to address this concern as this may impact the siting of the soil borings/monitoring wells proposed during the sampling effort planned to further characterize the current volatile organic compound (VOC) soil and groundwater concentrations within the vadose zone and aquifers.

Response: Agree

A detailed evaluation of the CMP062 and CMP063 cluster has been done. See Attachment A of these comment responses for details. Cation/anion analyses at both of these well clusters is scheduled to be done in 2Q22. Additionally, updated regional groundwater elevations will also be collected in 2Q22. (Also see response to EPA Specific Comment #6). The proposed sampling and well installation has already taken place during summer of 2021. Any additional investigations can be discussed after review of the new 2021 data. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

2. It is uncertain whether a low permeability cap was installed at the CMP Pits that may retard infiltration as indicated in the EMR. For example, according to the Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Groundwater Remedies (U) SEMS Number: 00 SRNS-RP-2019-00511, Revision 1, Aiken, South Carolina, July 2020, only a vegetative cover is installed at the CMP Pits. To support development of the conceptual site model (CSM), please revise the EMR to address this uncertainty in whether a low permeability engineered cap was installed over the CMP Pits.

Response: Clarification

After the 1984 removal activities when the uncontained/contained containers of contaminants, debris, and contaminated soil were removed from the CMP Pits, the area was backfilled, compacted, and a low permeability synthetic HDPE cap was installed over

SRS Responses to EPA Comments on the Effectiveness Monitoring Report (EMR) for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit; April 2020 through March 2021
SEMS NUMBER: 24, (SRNS-RP-2021-03832 Revision 0, Dated June 2021)

Page 2 of 7

Comments Received 11/15/2021

the entire CMP Pits trenches, including the space between the north and south trenches. This low permeability synthetic cap was chosen over a compacted clay cap for cost saving reasons at the time. A vegetative soil cover was then installed over the synthetic cap. The compacted backfill, synthetic cap, and vegetative cover were designed to shed water off the cap.

The low permeability synthetic cap was not included as part of the final remedial action design in the ROD for CMP Pits or for any of the CMP Pits Subunits. During subsequent soil and groundwater investigations (i.e., soil investigations, ERH/SVE locations, monitoring wells), the low permeability cap has been drilled through at multiple locations. The borings and wells have been grouted which provides some seal from infiltration of rainwater as well. It is expected that the infiltration of rainwater at the CMP Pits is minimal if not non-existent. The low permeability synthetic cap will be described in the June 2022 EMR. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

3. The EMR currently speculates the Gordon Aquifer (GA) contamination at CMP010A is temporary and resulted from drilling activities at the well and is not representative of GA groundwater conditions. Considering the Gordon Aquifer Confining Zone (GACZ) overlies the GA, please revise the EMR to include a discussion of what mitigation efforts (e.g., double cased well) were implemented during soil boring/well installation to isolate the aquifer and prevent cross-contamination from the overlying LAZ, MAZ, TZ plumes and/or contaminated vadose zone soil.

Response: Clarification

During installation of the CMP010A Gordon Aquifer well, temporary or permanent surface casing was not used. The well was rotosonically installed using only the 4" core barrel and outer 6" casing. It was thought that this would be sufficient as no contamination was expected at depth due to the low VOC levels that are seen in the LAZ at this well cluster. Future discussion in the June 2022 EMR will include this information. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

4. According to the EMR it is unclear if soil samples will be collected for VOCs below the water table and within the aquifers. For example, the text in Section 3.0 (Additional Sampling Efforts), page 23 of 104, states, "...SRS will be conducting an additional sampling effort to further characterize the current VOC soil concentrations within the vadose zone and aquifers." Please revise the EMR to state, "SRS will be conduct additional sampling efforts to further characterize the current VOC concentrations of soil and groundwater within the vadose zone and aquifers, respectively."

Response: Clarification

During the 2021 soil investigations, VOC headspace soil samples were collected in the vadose zone and within the UTRA and Gordon Aquifer. Groundwater samples were

**SRS Responses to EPA Comments on the Effectiveness Monitoring Report (EMR) for the
Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits
Operable Unit; April 2020 through March 2021
SEMS NUMBER: 24, (SRNS-RP-2021-03832 Revision 0, Dated June 2021)
Page 3 of 7
Comments Received 11/15/2021**

collected from monitoring wells that were installed after the soil investigation drilling was completed. Specifics on the soil investigation, depths of samples, sample types and groundwater sampling activities at the new monitoring wells will be described in the June 2022 EMR. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

5. It is uncertain whether the proposed soil borings and well installations siting locations will be adequate to further characterize the current VOC concentrations within the vadose zone and aquifers. For example, the text in Section 3.0 (Additional Sampling Efforts), page 23 of 104, states, “Due to increasing contaminant trends in source area wells (i.e., CMP 35D and CMP 34D) and the recent discovery of potential GA contamination at CMP010A, SRS will be conducting an additional sampling effort to further characterize the current VOC soil concentrations within the vadose zone and aquifers.” The proposed soil boring and well installation locations are presented on Figure 34 (Additional Sampling Locations for 2021), page 95 of 105. However, as seen on Figure 5 (CMP Pits OU Monitoring Network, and Cross Section Lines), page 37 of 104, the lack of monitoring wells south of the CMP Pits between CMP 11D/B and CMP 10D/C/B/A results in a data gap in the downgradient extent of contamination in the TZ, MAZ, LAZ, and potentially the GA. Please revise the EMR to address this issue to ensure the downgradient extent of contamination in the TZ, MAZ, LAZ, and potentially the GA south of the CMP Pits is adequately defined.

Response: Clarification

The soil data and monitoring well installations (and subsequent data collected from them) conducted in 2021 will be provided to and discussed with the USDOE, SCDHEC, and USEPA (Core Team). At that time, the need for additional soil and/or groundwater investigations or data will be discussed. No changes to the 2021 EMR are proposed. SRS will propose a meeting date during 2022 to discuss the new soil and groundwater investigation data.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

6. It is noted toward the end of the CMP Pits OU Core Team Meeting on August 10, 2021, EPA contractor, Mac McRae made an observation about the groundwater flow direction and water level with respect to well cluster CMP062. As indicated in the email correspondence received from Brian Hennessey on August 18, 2021, in order to formally document the path forward to address Mac’s concern, the CMP team has planned the following activities to further investigate well cluster CMP062:
- Review lithologic data to discern any unusual occurrence(s) relative to well placement
 - Review well construction logs relative to surrounding wells within similar horizon
 - Review water level data
 - Evaluate, if available, sampler notes
 - Provide a cross section for well CMP062
 - Cation/anion analysis of well cluster CMP062

SRS Responses to EPA Comments on the Effectiveness Monitoring Report (EMR) for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit; April 2020 through March 2021

SEMS NUMBER: 24, (SRNS-RP-2021-03832 Revision 0, Dated June 2021)

Page 4 of 7

Comments Received 11/15/2021

EPA notes that well cluster CMP063 is located within the same watershed boundary as the CMP062 well cluster. As such, it is recommended a cross section is provided and cation/anion analysis of well cluster CMP063 also is performed as an activity to further investigate well cluster CMP062.

Response: Agree

A detailed evaluation of the CMP062 and CMP063 cluster has been done. See response to EPA General Comment #1 and Attachment A for details. Cation/anion analyses at both of these well clusters is scheduled to be done in 2Q22. Additionally, updated regional groundwater elevations will also be collected in 2Q22. (Also see response to EPA Specific Comment #6).

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

EPA SPECIFIC COMMENTS:

1. **Section 1.2, Nature and Extent of Contamination, Page 2 of 104:** The second paragraph indicates the electrical resistance heating (ERH) treatment area included the extent of tetrachloroethylene (PCE) contamination above the dense non-aqueous phase liquid (DNAPL) threshold concentrations; however, the text does not state the PCE concentration that would indicate the DNAPL threshold. In consideration of the planned additional sampling effort to further characterize the current VOC concentrations within the vadose zone and aquifers, please revise the text to state the PCE threshold concentration indicating the presence of DNAPL.

Response: Agree

Future reports will include the PCE DNAPL (60 mg/kg) threshold concentration limit. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

2. **Section 1.3, Observed Hydrostratigraphy at the CMP Pits OU, Page 5 of 104, and Figure 3, CMP Pits Groundwater OU Conceptual Site Model (CSM), Page 33 of 104:** The text states, "...the stratigraphy, aquifers and plumes are all, in general, gently sloping towards Pen Branch. However, the confining units appear to slope towards the south in some areas at the main CMP Pits area..." Additionally, the text states, "Although the TCCZ [tan clay confining zone] and the TCLC [tan clay lower confining] are depicted as continuous units in the cross-sections, the aquifer behavior in this area shows various elevation heads and contaminant pathways that indicate the confining horizons are discontinuous and/or intermixed with sandy clays in areas." It is noted the CSM figure does not depict this description of the confining units sloping towards the south, and the TCCZ and TCLC are not shown to be discontinuous and/or intermixed with sandy clay in areas. Please revise the EMR as appropriate to address this discrepancy.

Response: Agree/Clarification

A conceptual site model is a highly generalized figure depicting the basic processes and conditions across the entire CMP Pits OU. Every detail of the OU cannot be represented in the CSM figures. However, the CSM will be updated in the June 2022 EMR to depict

SRS Responses to EPA Comments on the Effectiveness Monitoring Report (EMR) for the Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits Operable Unit; April 2020 through March 2021
SEMS NUMBER: 24, (SRNS-RP-2021-03832 Revision 0, Dated June 2021)

Page 5 of 7

Comments Received 11/15/2021

the confining units consistent with the cross-section figures and to also include a note about them possibly being discontinuous and/or intermixed with sandy clay in areas. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

3. **Section 2.2.1, Groundwater Aquifers, Page 10 of 104:** Total dissolved mass estimates were not presented for each constituent of concern (COC) over time (e.g., 2008 through present) for each aquifer zone. As such, an evaluation could not be performed on whether the total estimated dissolved masses over time are declining for each COC (i.e., horizontally and vertically) or if the total mass is being reduced for each aquifer zone as a supporting line of evidence for natural attenuation, consistent with the EPA MNA Guidance. Please revise the EMR to include total dissolved mass estimates prepared for each COC over time (e.g., 2008 through present) for each aquifer zone so an evaluation of reduction in total contaminant mass over time in each aquifer zone can be assessed.

Response: Clarification

Monitoring and reporting at the CMP Pits has followed the approved Effectiveness Monitoring Plan (EMP). The EMP did not identify attempting to calculate the dissolved mass estimates within the aquifers but instead used differences in concentrations at wells and surface water stations and plume changes as an indicator of changes over time. An estimate of the total dissolved mass has not been calculated for each COC. As monitoring wells represent a tiny fraction of aquifer volume, quantification of total dissolved mass has very high uncertainties. The mass of contaminants present in lower permeability zones is very difficult to reasonably estimate. Qualitative evidence of a reduction of mass is presented with the general monitoring well concentration trends discussed and presented in the reports, as well as, estimates in the modeling that has been performed to better understand the distribution and dissolution of the plume. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

4. **Section 3.0, Additional Sampling Efforts, Page 23 of 104:** The text states, “The vertical contaminant trends at the well cluster are not supportive of vertical migration and also concentration trends at the CMP010A are decreasing.” However, the text does not include graphics, discussion, or additional lines of evidence to support this statement. Please revise the text to address this issue.

Response: Clarification

The A-A cross sections (Figures 12, 21, and 26) display the vertical distribution of the plumes and the concentrations in the wells at the CMP 10 cluster. Future discussions on vertical trends will reference the appropriate cross sections and/or include a reference to specific data. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

**SRS Responses to EPA Comments on the Effectiveness Monitoring Report (EMR) for the
Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits
Operable Unit; April 2020 through March 2021
SEMS NUMBER: 24, (SRNS-RP-2021-03832 Revision 0, Dated June 2021)**

Page 6 of 7

Comments Received 11/15/2021

5. **Figure 3, CMP Pits Groundwater OU Conceptual Site Model (CSM), Page 33 of 104:** The CSM figure does not extend the ground surface elevation line further to the south to illustrate the slope of the hill or knoll where the CMP Pits are located. Based on the text in Section 1.4 (Observed Hydrology at the CMP Pits OU), page 5 of 104, the locally high topography at the CMP Pits impacts groundwater flow in a radial direction. Evidence of this can be seen in the elevated water table and low water table lines shown on the figure which illustrate a northerly flow towards Pen Branch and a southerly flow away from the CMP Pits. As such, it is recommended the CSM figure extend the ground surface elevation line further to the south to illustrate the slope of the hill or knoll where the CMP Pits are located.

Response: Agree

The figure will be updated in the June 2022 EMR to depict the knoll more accurately. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

6. **Figure 6, Regional Water Table Potentiometric Surface, Page 39 of 104:** It is unclear if the potentiometric surface depicted on the figure is representative of current water table elevations and flow directions. For example, according to the figure legend, the potentiometric surface depicted on the figure is based on water table elevation data collected during the second quarter 2017. Considering above average rainfall and monitoring wells showing a slight increase in water elevations during 2020, it is recommended the figure be updated with the most recent water table elevation data. Please revise the figure to address this issue.

Response: Agree/Clarification

Groundwater elevations from the regional wells depicted in Figure 6 will be collected during 2Q2022 and the figure updated in the June 2022 EMR. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

7. **Figure 7, 2020 Potentiometric Surface for the TZ and MAZ, Page 41 of 104:** The potentiometric surface depicted for the TZ and the MAZ does not include southerly flow direction arrows. According to the water levels shown for the individual wells, a southerly flow direction from the CMP Pits is indicated. Please revise the figure to include groundwater flow direction to the south away from the CMP Pits.

Response: Agree/Clarification

The southerly flow path is believed to be a localized effect from the knoll where CMP Pits is located and is not a regional feature as is shown in the regional potentiometric surface map (Figure 6). Future reports will include additional flow path line(s) with a southerly flow direction as appropriate. Additionally, as noted in the response to Comment #6,

**SRS Responses to EPA Comments on the Effectiveness Monitoring Report (EMR) for the
Monitored Natural Attenuation (MNA) at the Chemicals, Metals, and Pesticides (CMP) Pits
Operable Unit; April 2020 through March 2021
SEMS NUMBER: 24, (SRNS-RP-2021-03832 Revision 0, Dated June 2021)**

Page 7 of 7

Comments Received 11/15/2021

regional potentiometric surface data will be collected in 2nd Quarter 2022 and reported in the next EMR. No changes to the 2021 EMR are proposed.

Contact: Ashley Shull (ashley.shull@srs.gov) (803-952-7090)

Attachment A

CMP Pits OU Well Cluster Analysis for CMP062 and CMP063

SRNS – Feb 2022

Purpose

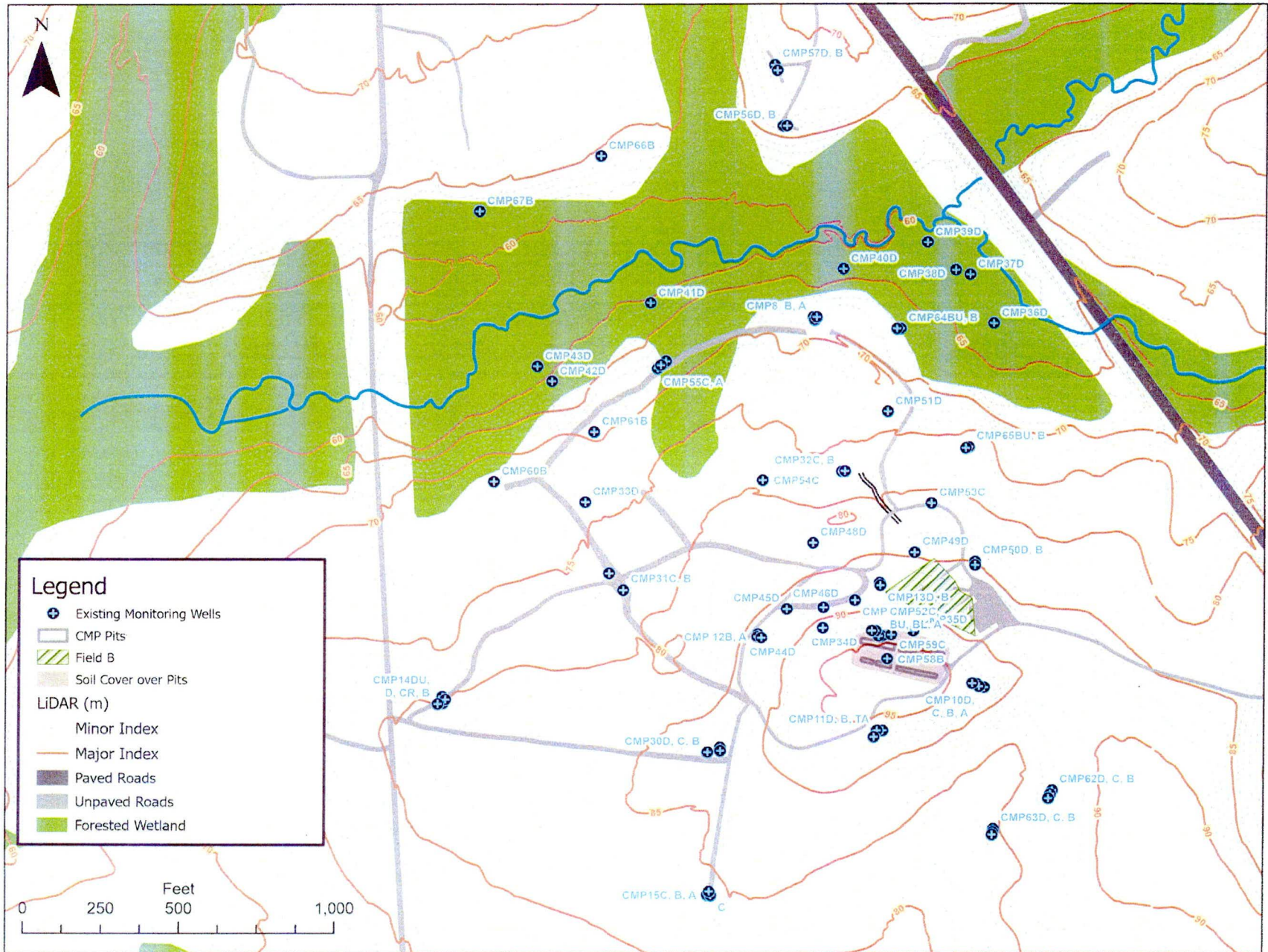
- Response to an observation raised during the August 2021 Core Team meeting concerning the reported water levels at the CMP062 and CMP063 well clusters and the associated groundwater flow direction in that area

Data Review

In an effort to evaluate the reported water level and groundwater flow direction at well cluster CMP062, a review of the following was performed:

- Review lithologic data to discern any unusual occurrence(s) relative to well placement
- Review well construction logs relative to surrounding wells within similar horizon
- Review water level data
- Evaluate, if available, sampler notes
- Provide a cross section for well CMP062
- Cation/anion analysis of well cluster CMP062

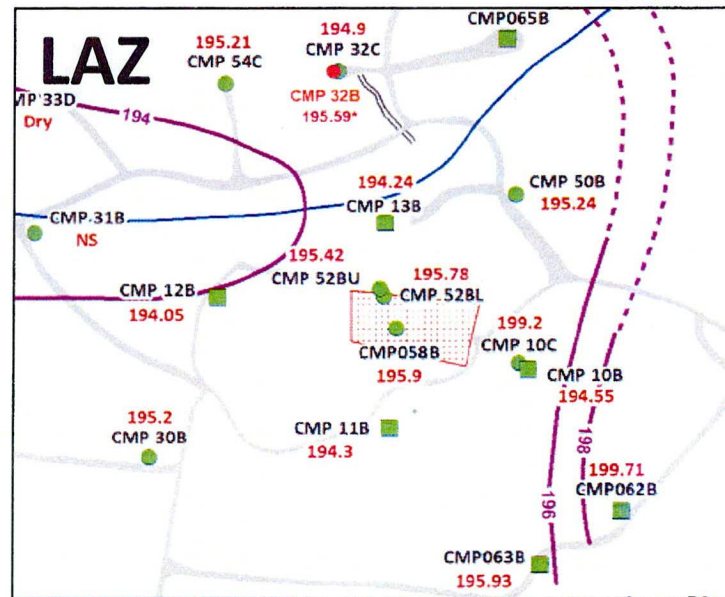
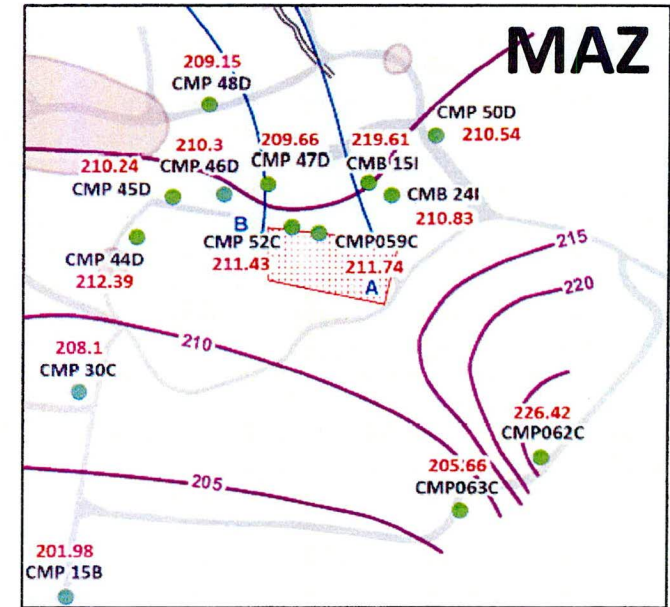
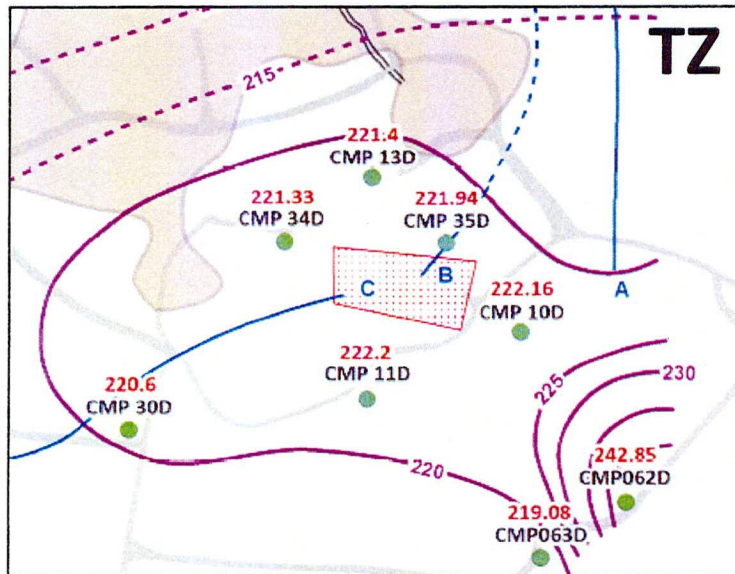
CMP Pits Well Cluster Locations



CMP062 vs CMP063 Well Clusters

- Well clusters are located approx. 500 ft southeast of the CMP Pits
- Significant differences in water elevations have been documented for years between the two well clusters.
 - The water table elevations can differ ~ 17- 20 ft within the Transmissive Zone (D screened wells).
 - Water elevation differences are less extreme in the deeper aquifer screen zones
 - MAZ(C screens) ~ 12- 14 ft difference
 - LAZ (B screens) ~ 4 ft difference

Water Elevations at CMP062 and CMP063 - 2020



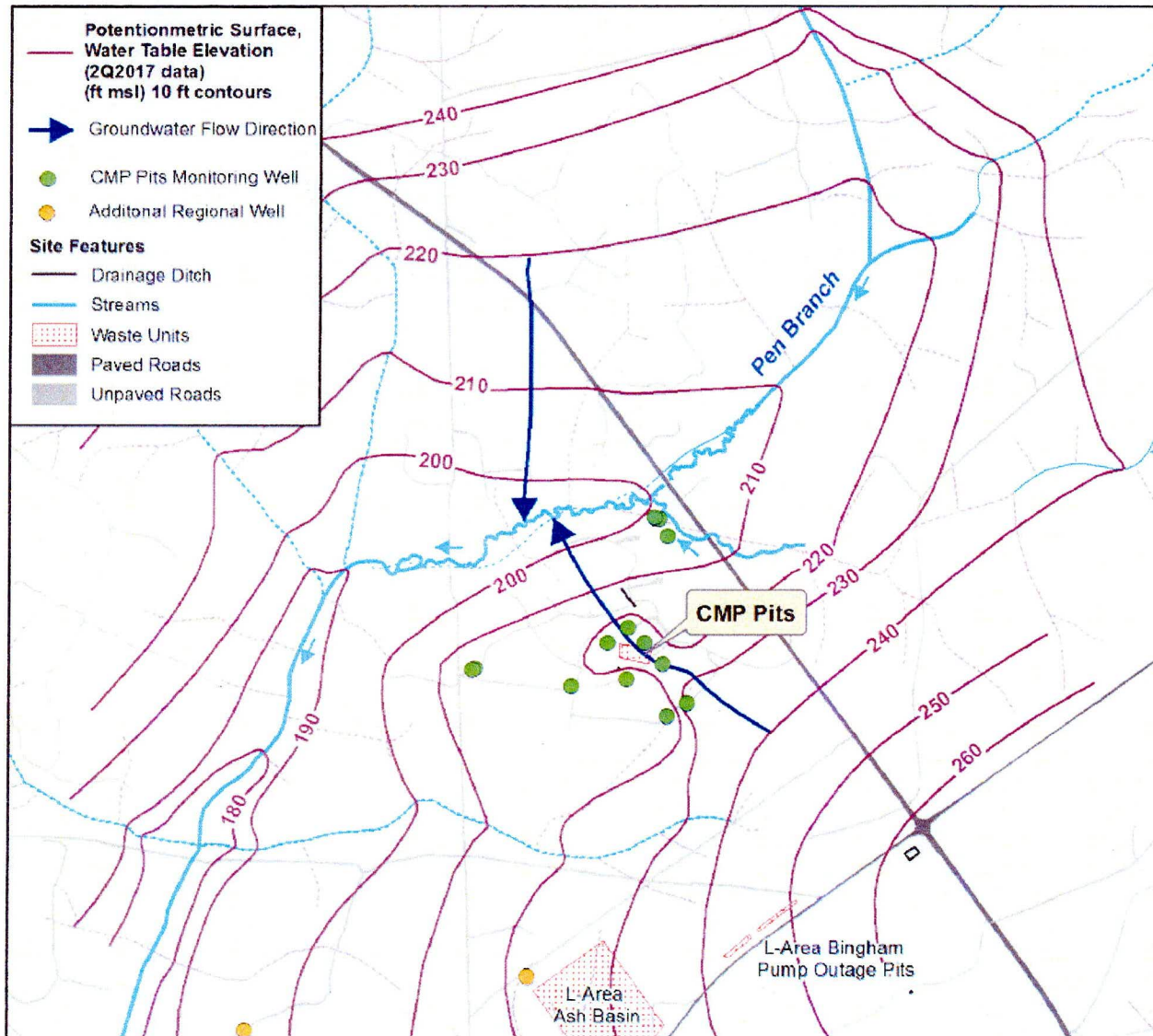
Well Records Review

- Verified the electronic well records in the database matched the original records.
- Verified field notes match official well records.
- Verified ground elevations were correctly recorded.
- Screens within the two well clusters are offset.
 - CMP062D is screened 8 ft higher than CMP063D.
 - CMP062C is screened 4.5 ft higher than CMP063C.
 - CMP062B is screened 3 ft higher than CMP063B.
- Depth to groundwater is 45+ ft and isn't expected to be greatly influenced by topography.
 - The nearest surface water feature has no influence locally.

Water Elevations

- Conductivity is normally low in both well clusters CMP062 and CMP063.
- An additional field investigation was conducted using multiple water level meters.
 - Verified that data is consistent with sampler collected data.
- No known issues from sampling notes.
- No major fluctuations in water elevations for all six wells.
- Overall regional groundwater flow supports the general water levels.
 - This water elevation difference appears distinctly localized.
 - Updated regional water elevation measurements will be collected during 2Q22.

Regional Water Table Flow

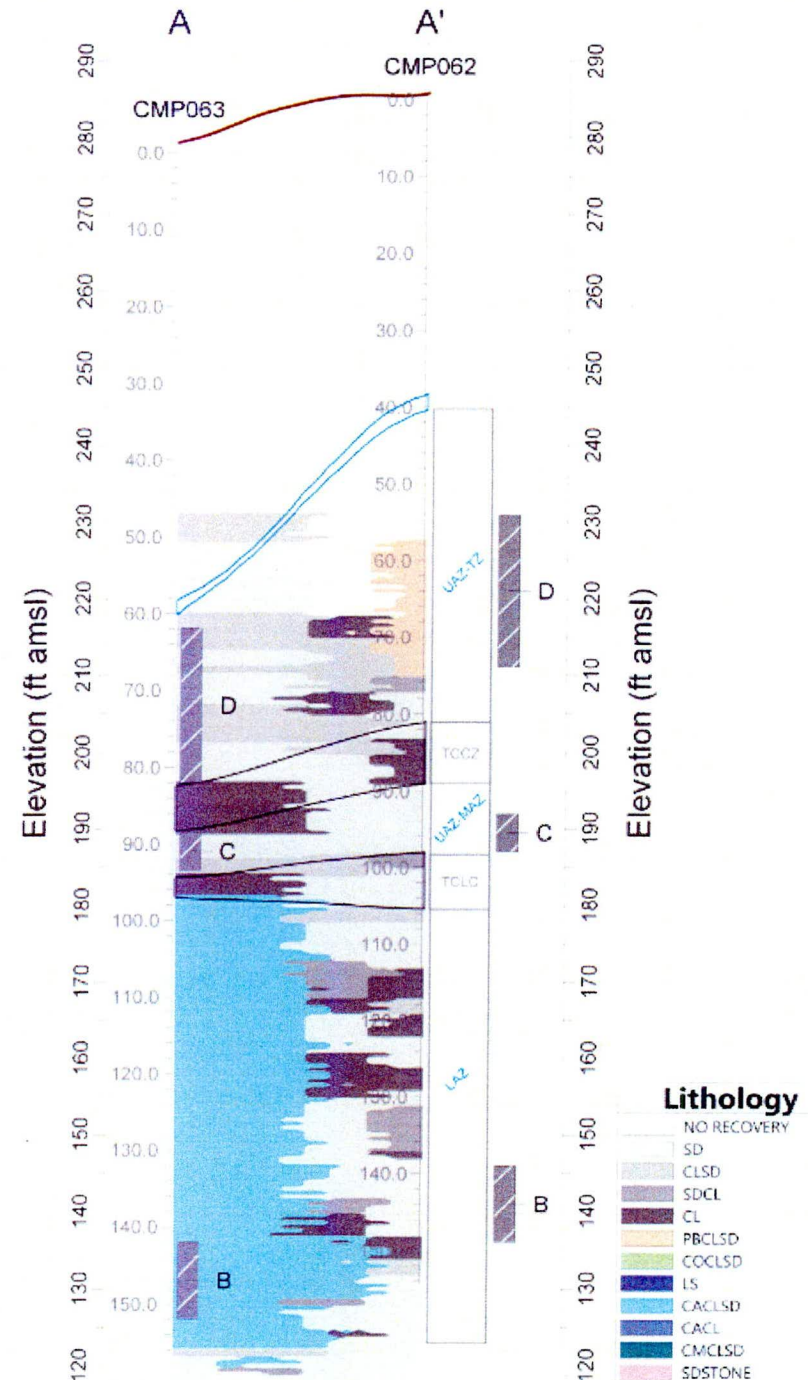


Water Elevations and Possible Geologic Influence

- The abundance of carbonate material at cluster CMP063 may allow for increased vertical migration of groundwater.
- Groundwater elevations are influenced by rainfall amounts as is seen in the data for both well clusters.

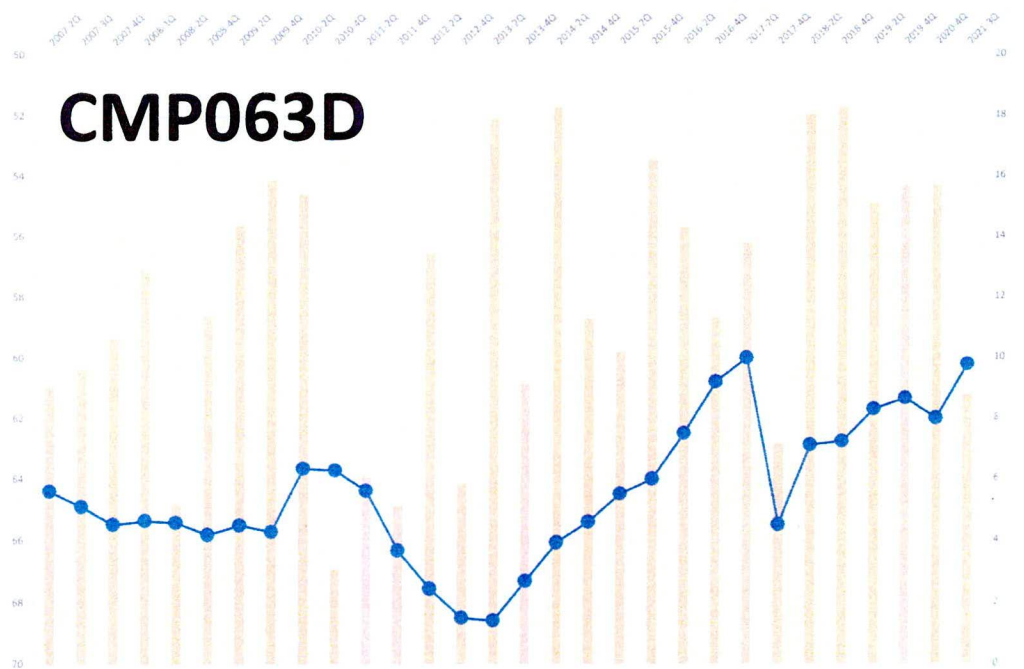
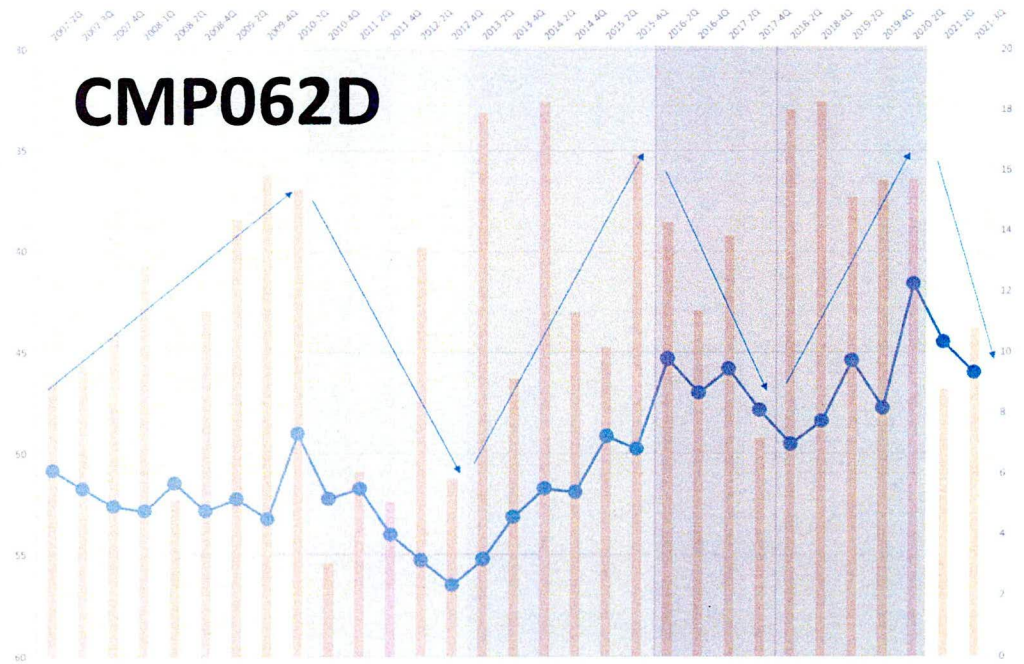
Cross Section of CMP062 and CMP063

- The CMP063 location has much more carbonate material compared to the CMP062 location.
- This may attribute to more vertical flow of water due to increased porosity.



Depth to Water vs Rainfall

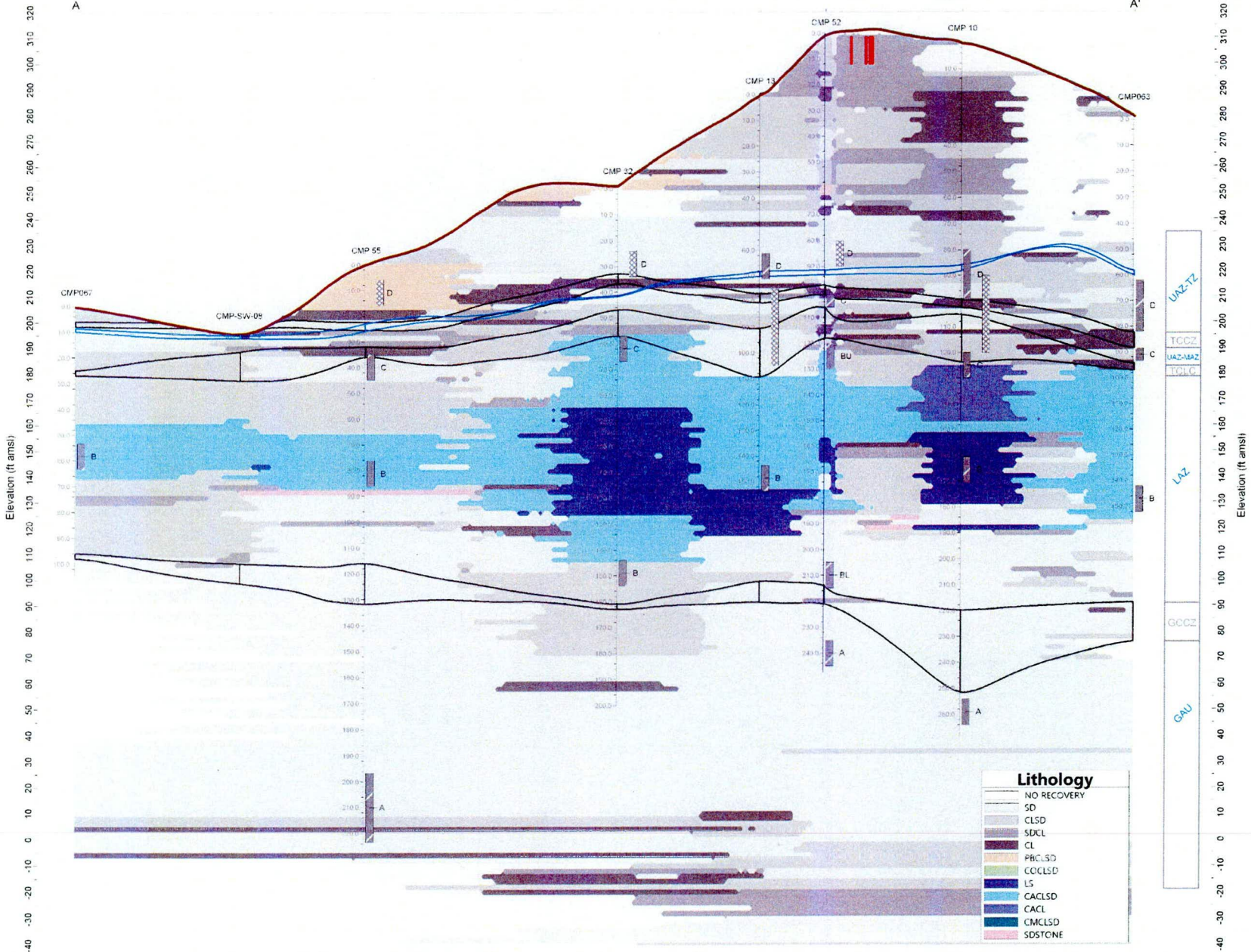
- Water table elevations fluctuate with rainfall amounts



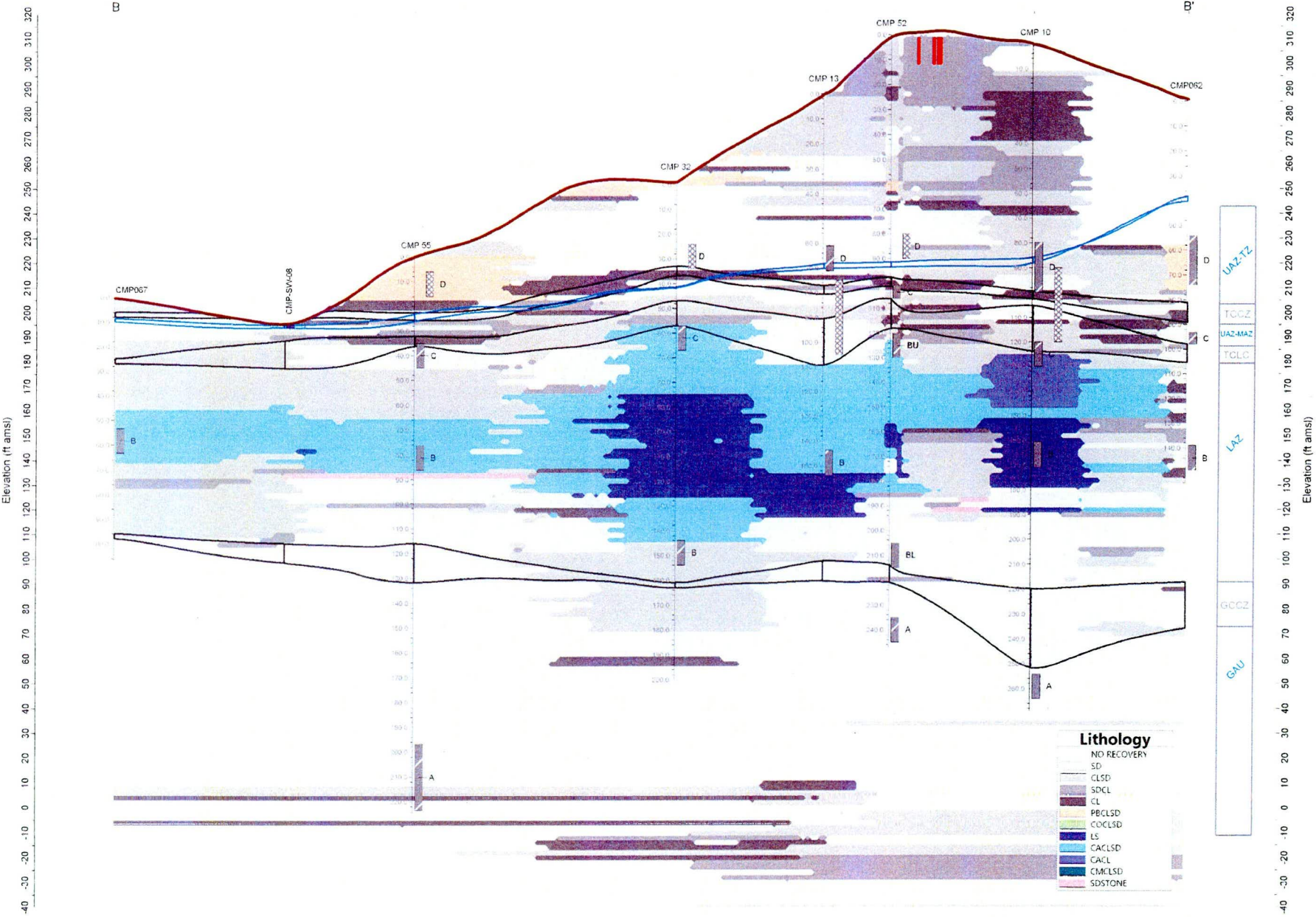
Upcoming Investigations

- Additional analysis of the CMP062 and CMP063 well clusters will be done this coming spring (2Q2022).
 - Cation/anion analysis will be done in addition to CMP Pits wetland wells to provide potential insight to aquifer conditions.
- Updated regional water elevation measurements will be collected during 2Q22.

CMP Pits Cross Section A-A' Using CMP063



CMP Pits Cross Section A-A' Using CMP062



Summary

- Review indicates reported water levels are real.
- No issues with reported well construction data.
- Topographic location of wells and water levels strongly influence potentiometric surface and flow.
- Lithology between wells is significant allowing for increased vertical head difference at CMP063 vs CMP062 which may account for lower water levels at CMP063.
- Overall, findings suggest the observed water levels to be real and representative of local hydraulic conditions at the site.
- Updated regional water elevation measurements will be collected during 2Q22.
- Additional analysis of anions/cations at the CMP062 and CMP063 well clusters will be done this coming spring (2Q2022).