



HEALTH, SAFETY, ENVIRONMENT, PRODUCT STEWARDSHIP AND SUSTAINABILITY

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November 7, 2025

Honorable Robert G. Torricelli
Office of the Special Master
RGTspecialmaster@aol.com

Subject: Revised 2024 Integrated Groundwater Monitoring Report
Study Areas 5, 6 & 7

Dear Senator Torricelli:

Attached is a Revised 2024 Integrated Groundwater Monitoring Report for Study Areas 5, 6 & 7 (2024 IGWMR) prepared by our hydrogeology consultant, Cornerstone. The original 2024 IGWMR was dated May 12, 2025. The 2024 IGWMR has been revised based upon the comments that were submitted by Plaintiffs in a letter dated August 27, 2025. Plaintiffs noted discrepancies in reported head differences between the 2024 IGWMR and some of the monthly data submittals. Tables 4-3 and 4-4 in the original 2024 IGWMR did report erroneous groundwater level data and have been revised to reflect corrected data. Plaintiffs also requested certain additional modifications to the text of the 2024 IGWMR. A memo prepared by WSP is also attached which explains the noted discrepancies in the reported groundwater level data and summarizes the other changes to the text requested. Revised 2024 Table 4s from the SA-6/SA-7 monthly/quarterly reports and revised 3rd and 4th quarter reports for NJCU are attached to the WSP memo.

Plaintiffs also requested several modifications to the Integrated Groundwater Sampling and Analysis Plan (SAP). The SAP was last updated in April 2024. A revised version of the SAP was submitted to the Parties on October 30, 2025, under separate cover.

Please contact me at 973-455-2877 should you have any questions or comments on this submittal.

Sincerely,

Eric Christodoulatos
Senior Remediation Manager

Enclosures:

Revised 2024 Integrated Groundwater Monitoring Report Study Areas 5, 6 & 7
WSP Memo, Response to Plaintiffs' Comments on the 2024 Integrated Groundwater Monitoring Report

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ATTACHMENT 1

REVISED 2024 INTEGRATED GROUNDWATER MONITORING REPORT
STUDY AREAS 5, 6 & 7

**INTEGRATED ANNUAL GROUNDWATER
PERFORMANCE REPORT
FOR 2024**

**STUDY AREAS 5, 6, AND 7
JERSEY CITY, NEW JERSEY**

Prepared for

**HONEYWELL
Morris Plains, New Jersey**

May 2025

Revised November 2025

Prepared by



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Project 209-4253484

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1 INTRODUCTION

This 2024 Integrated Groundwater Monitoring Report has been revised from its originally issued version, submitted by Honeywell on May 12, 2025. The reason for and nature of the revisions is more fully described in Honeywell's November 3, 2025 response to Plaintiffs' comments regarding the 2024 Integrated Groundwater Monitoring Report submitted by Plaintiffs in a letter dated August 25, 2025. Certain revisions to the text have been made. Associated revised Appendices, Tables, and Figures are indicated in the table of contents.

1.1 General

The Long Term Monitoring Plan (LTMP) for the Study Area 7 (SA-7) Deep Overburden and Bedrock groundwater remedy was originally developed in 2008 to monitor groundwater conditions relative to the Groundwater Extraction and Treatment (GWET) system (GWET LTMP). Annual progress reports have been prepared in accordance with this plan since the startup of the GWET system in December 2008 and thus this document represents the sixteenth such annual performance report. In 2011, the GWET LTMP was expanded to integrate groundwater monitoring requirements for Study Areas 5, 6 and 7 (Project Area). Sampling and analysis within this integrated plan were performed consistent with the requirements set forth in the *Integrated Groundwater Sampling and Analysis Plan (SAP) for Study Areas 5, 6 and 7* revised April 2024. The SAP has been updated to reflect recently approved Remedial Action (RA) Groundwater Permit modifications discussed below.

Groundwater monitoring in the Project Area is also governed by RA Permits issued by the NJDEP in 2018 for the Shallow, Deep Overburden, and Bedrock groundwater zones, and site-specific LTMPs applicable to SA-5 and SA-6 sites. RA Groundwater Permit modifications were submitted to NJDEP in 2021 including changes consistent with the revised SAP and are discussed further in Section 6. The modifications were approved by the NJDEP in February 2022 and May and June 2023, respectively.

Site-specific LTMPs include:

- LTMP for SA-5 New Jersey City University (NJCU) (Sites 090 and 184) November 2016, updated May 2019 and Shallow Groundwater Monitoring and Extraction System Operation Plan (Appendix L of the NJCU LTMP)
- Draft LTMP for SA-5 Shallow Groundwater, June 2018 (Shallow Groundwater LTMP);

- LTMP for SA-6 North and SA-6 South; February 2018, revised December 2020 (SA-6 LTMP).

1.2 Purpose and Objectives

The purpose of this document is to provide an integrated annual reporting format that characterizes regional groundwater conditions and documents compliance with area-specific remedial objectives. The specific objectives of this approach are to:

- Improve consistency and efficiency in field procedures including sample collection and scheduling.
- Provide a central database for monitoring well specifications and status.
- Compile groundwater data in one annual report.
- Provide regional groundwater flow interpretations that consider the impact of features such as subsurface barrier walls, drains, caps, and drawdown from pumping.
- Provide localized groundwater flow maps consistent with the regional contour maps.

1.3 Status of Integrated Monitoring Requirements for 2024

The two primary elements of groundwater monitoring within the Project Area are water level measurements and water quality sampling and analysis. Groundwater level monitoring is conducted in available monitoring wells and piezometers to fulfill various reporting requirements as shown on **Table 1-1**. Groundwater quality sampling is conducted in a subset of designated wells in accordance with the requirements of the various monitoring plans. The status of groundwater sample collection for laboratory analysis is shown on **Table 1-2**.

1.4 Document Organization

In accordance with the SAP, this report is organized in terms of its three primary elements: groundwater extraction (Section 3), groundwater elevations and flow direction (Section 4), and groundwater quality (Section 5). These sections are prefaced by a discussion of overall site conditions and events during the reporting period (Section 2). Conclusions and recommendations for modifications to the GWET LTMP and related monitoring and reporting operations in the project area are provided in Section 6.

2 GENERAL CONDITIONS

The GWET system was operated at its design rate throughout the year. Long term monitoring of the SA-6 Chromium Remedy continued at SA-6 South and SA-6 North in 2024. Groundwater pumping of the contingent groundwater extraction systems (CGWES) was conducted on an as-needed basis consistent with the requirements of the SA-6 LTMP in the SA-6 North and South Open Space Areas. At NJCU, the contingent groundwater pumping system was operated throughout 2024 with the exception of a few days for maintenance.

2.1 Annual Precipitation

Monthly precipitation data recorded at Newark Airport, approximately 2.5 miles southwest of SA-7, are provided in **Table 2-1** and shown on **Figure 2-1**. Precipitation was 0.72 inches above the 30-year average for the first half of 2024 and 4.84 inches below the 30-year average for the second half of 2024. The months of September and October were especially dry with monthly rainfall totals of 0.89 inches and 0.0 inches, respectively. Total precipitation in 2024 was 42.13 inches or 4.12 inches below the annual average of 46.25 inches.

2.2 Tidal Monitoring

Tidal fluctuations in the Hackensack River were monitored relative to the National Geodetic Vertical Datum of 1929 (NGVD-29) vertical datum. This datum is used for all reported groundwater elevation data in this report. The datalogger is programmed to record river stage at 6-minute intervals. These data are used to correct groundwater levels for tidal impacts based on tidal lag and efficiency values previously determined for monitoring wells screened in the Intermediate, Deep, and Bedrock Zones. With the exception of wells installed directly adjacent to the Hackensack River, there are no tidal influences in the Shallow Zone monitoring wells. Wells containing dataloggers do not have the data tidally corrected. The mean tidal elevation is approximately +1.6 feet above mean sea level (msl) in the NGVD-29 vertical datum as provided by the United States Geological Survey's website.

2.3 Monitoring Well Inventory

A list of the groundwater monitoring wells in service within the Project Area during 2024 is provided in **Table 2-2**. The wells are organized by hydrogeologic zone and provide information regarding their location, total depth, screen interval, and reference point elevation. Monitoring well 087-MW-136D at SA-6 North was damaged in late 2024 due to utility contractor onsite activities unrelated to Honeywell or site development activities.

This well was abandoned by a licensed driller in accordance with NJDEP guidance and replaced in April 2025 to a more favorable location.

3 GROUNDWATER EXTRACTION

3.1 GWET System Operation

The Deep Overburden GWET system was in operation throughout 2024. The GWET system consists of three extraction wells pumping at a combined rate of 54.5 gallons per minute (gpm) with discharge via independent force mains to the groundwater treatment plant located on SA-6 North. Wells 087-PW-1 and 087-PW-3 are located on the car dealership property¹ to the north of SA-6 North and are screened in the Deep and Intermediate Zones, respectively. Well 115-MW-215BR is located on the northwest side of Site 115 (SA-7) and pumps from the upper Bedrock zone.

3.1.1 Pumping Rates

Flow rate monitoring was conducted on each of the three force mains using flow meters located within the treatment plant. The flow rates are controlled using manually-operated valves as necessary to maintain design rates of 40 gpm for PW-1, 7.5 gpm for PW-3 and 7 gpm for the bedrock extraction well 115-MW-215BR. The total system rate of 54.5 gpm was maintained throughout the period with the exception of occasional downtime for O&M activities or power outages. **Table 3-1** identifies the events that resulted in a shutdown lasting more than 8 hours. The shutdown is illustrated on **Figure 3-1**.

3.1.2 Force Main Acid Flushing

Acid flushing of the force main line from PW-1 and PW-3 to the treatment plant was conducted on October 7, 2024. Total downtime of the GWET pumping system was 24 hours as documented in **Table 3-1**.

3.1.3 Well Redevelopment

GWET extraction well redevelopment activities were not conducted in 2024.

3.2 SA-6 North Contingent Groundwater Pumping System

The SA-6 North contingent groundwater pumping system design consists of a horizontal perforated drain located close to the centerline of the soil containment area. The drain consists of two sections extending from near Route 440 to the western barrier wall. In 2024, the eastern portion (pump PS-2N) was operated throughout the majority of the year with the exception of down time for routine maintenance; once from May 25 to June 10, 2024 and a second time from September 5 to September 23. Operation of the western

¹ This property has been referred to as the “Difeo property” in previous Integrated Annual Groundwater Performance Reports.

portion of the drain (pump PS-1N) occurred throughout the first three quarters of the year with the exception of June 6 to June 14, and then remained off from September 12 through the end of the year. The average daily pumping rate of PS-2N generally ranged from 1 to 2 gpm whereas the pumping rate of PS-1N generally ranged from 2.5 to 3 gpm. **Figure 3-2** compares these average daily rates with interior groundwater levels at SA-6 North. Pumping rates at PS-1N were increased in April and then gradually reduced as groundwater elevations lowered through the second and third quarters. PS-1N was eventually turned off in September in response to drought conditions which persisted throughout the remaining portion of the year. Pumping rates at PS-2N remained consistent throughout the year. Planned maintenance was performed on the PS-2N sump and far eastern leg of the CGWES drain line in December 2024.

3.3 SA-6 South Contingent Groundwater Pumping System

The SA-6 South contingent groundwater pumping system consists of a single horizontal perforated drain located close to the centerline of the soil containment area, which extends from near Route 440 to the western barrier wall in a continuous length. Three pumping cycles were conducted during 2024 to lower heads within the containment area. The first pumping cycle was a continuation from November 27, 2023 which ran until March 8, 2024. The second pumping cycle was from May 8 to September 11 and the third pumping cycle was from November 29 to December 16. Average pumping rates for these cycles were 3.21, 2.62, and 2.25 gpm, respectively. **Figure 3-3** shows the response in head at the five piezometers inside of the soil containment cell to the three pumping cycles. The greatest impact was during the second cycle which was approximately 4 months long and is shown to have lowered heads approximately three feet during this cycle.

3.4 SA-5 NJCU Contingent Groundwater Pumping System

The contingent groundwater pumping system at the NJCU site was operated throughout 2024 with no interruptions. All pumping was conducted using extraction Sump B only; Sump A was not operated in 2024. The Sump B pump cycles on and off based on a water level probe set to an elevation of approximately 4.5 feet mean sea level (msl) just below the drain line. When pumping, the discharge rate of the pump is 2.5-3.0 gpm; however, the average steady-state, long-term net yield of the drain was 0.29 gpm in 2024.

4 HYDRAULIC MONITORING

In accordance with the SAP and the associated RA Permits, regional hydraulic monitoring is conducted on an annual basis. In 2024, the annual monitoring was attempted during the fourth quarter; however, due to difficulties with locating and accessing certain monitoring wells, which led to incomplete data sets (data not collected on the same day), an additional (synoptic) monitoring event was completed on February 4, 2025. Snow coverage in January 2025 further complicated location of certain flush-mounted wells in unpaved areas. The synoptic round completed in February 2025 provides a complete data set and has been used in this report. Future annual regional hydraulic monitoring events will be completed between September 1 and October 31 of each year.

The measured depth to groundwater was subtracted from each well's reference point elevation to determine the elevation of the groundwater surface. For those wells that are tidally influenced, the measured values were adjusted using a time-series method developed by the U.S. Geological Survey (Halford, 2006). The results for the February 2025 round are provided in **Table 4-1**. Groundwater elevations are plotted for the Shallow, Intermediate, Deep, and Bedrock Zones on **Figures 4-1B through 4-4** respectively, and on **Figure 4-5** in cross section. Groundwater elevation data are reported in units of feet of water relative to mean sea level in the NGVD-29 vertical datum.

4.1 Regional Groundwater Flow

4.1.1 Shallow Zone

Due to the close spacing of monitoring wells and piezometers screened in the Shallow Zone, well location IDs are shown separately on **Figure 4-1A** to improve the readability of the groundwater elevations and contours provided on **Figure 4-1B**. Groundwater elevations in the Shallow Zone range from approximately 11 ft msl on Site 154 to less than 3 feet msl near the Hackensack River. As shown on **Figure 4-1B**, shallow groundwater flow is generally from east to west across the region but is locally impacted by subsurface features such as the barrier walls installed at SA-5, SA-6, and SA-7, and deep sewer lines that run beneath JCMUA and Route 440. These barriers cause the groundwater flow direction to be more southerly south of Site 117.

Dataloggers are installed in the piezometers along the barrier walls of SA-6 North, SA-6 South, and the four monitoring wells within SA-7. The loggers record the water level within each well at 6-hour intervals to aid in the determination of head gradients across the barrier walls as further discussed in Sections 4.5 and 4.6. On January 14, 2025, Honeywell submitted a response to comments memorandum (RTC memo) from Plaintiffs provided in a letter dated September 5, 2024, regarding groundwater gradients across the barrier walls in the Study Areas 6 North and South Open Space Areas. Honeywell prepared and

provided with the RTC memo Cycle Analysis Charts which provide a multi-year, comprehensive view of gradient fluctuations given precipitation and on-off pumping cycles.

At the NJCU site in Study Area 5, groundwater flow is generally from east to west; however, the north-south oriented barrier walls, including the barrier wall extension installed in 2017, have caused groundwater to be diverted to the north, generally parallel to the barrier wall.

4.1.2 Intermediate Zone

Groundwater elevations in the Intermediate Zone are shown on **Figure 4-2** and range from above 5 feet msl at SA-5 to less than mean sea level near the GWET pumping wells. Groundwater is diverted around the SA-7 barrier wall but is not impacted by near-surface features on SA-6 North to the same degree as in the Shallow Zone. Vertically, heads within the Intermediate Zone are generally 1 to 3 feet lower than in the Shallow Zone, which indicates a downward vertical gradient across Stratum D. At the 088-MW-15R location in SA-6 North for example, the vertical head difference in February 2025 was approximately 2 feet based on a comparison of **Figures 4-1B and 4-2**. Locally, however, vertical gradients can be lessened or even reversed to upwards in areas of pumping, such as within the soil containment cells of SA-6 North and South. **Figures 4-2 and 4-5** also illustrate that the combined groundwater depression in the vicinity of the GWET pumping wells fully encompasses the Deep Overburden plume and provides effective capture in the upper lacustrine soils.

4.1.3 Deep Zone

Groundwater elevations in the Deep Zone (**Figure 4-3**) are similar to those in the overlying Intermediate Zone, although the influence of the SA-7 barrier wall is not as prominent. As noted in prior reports, groundwater flow in the Deep Zone is, to a degree, able to move beneath the SA-7 barrier wall through gravel lenses in the underlying glacial till/ice contact deposits. At SA-5, the barrier wall does not extend down to the Deep Zone and thus does not influence flow. The area of influence of the GWET pumping wells on groundwater flow in the Deep Zone is also illustrated on **Figures 4-3 and 4-5**.

4.1.4 Bedrock Zone

Groundwater elevation contours in the Upper Bedrock Zone are shown on **Figure 4-4**. The impact of the GWET pumping well 115-MW-215BR on groundwater flow is evident from the closely-spaced closed contours along the western border of SA-7. This area is characterized by the southwest-northeast trending high-permeability fracture zone which aids in the propagation of the capture zone parallel to the bulkhead as shown on **Figure 4-4**.

4.2 GWET System Capture Zone

Figure 4-5 illustrates that pumping from PW-1 and PW-3 created a combined zone of influence causing groundwater to flow both laterally and vertically into the capture zone of the wells. The drawdown associated with both wells during the startup of PW-3 was documented in Cornerstone’s technical memorandum dated February 23, 2016. Based on these results and data provided in both plan view on **Figures 4-2 and 4-3** and in cross section on **Figure 4-5**, the combined groundwater depression in the vicinity of the GWET pumping wells fully encompasses the Deep Overburden plume and provides effective capture that meets its design objectives.

4.3 New Jersey City University

Quarterly groundwater elevation data for the NJCU property are compiled in **Table 4-2** and mapped on **Figures 4-6 through 4-9**. A barrier wall extension, connecting the open-ended wing-wall west of Building 5 and the Building 6 sheet pile wall, was constructed during May-June 2017. This wall completed the perimeter wall in the Shallow Zone around the capped portion of the Commercial AOC. This was followed by the installation of four monitoring wells (MW-105 through MW-108) that, along with the four existing wells MW-101 through MW-104, provide four well pairs along the barrier wall extension. As noted in previous reports, the screened interval in MW-106 was at a lower position than in the adjacent well MW-102 and thus MW-106 was replaced with MW-106R in August 2021. The replacement well was constructed with a screened interval comparable to that of MW-102.

Dataloggers placed in the four well pairs, as well as in Sumps A and B and wells 090-PZ-05 and 184-MW-05, were used to monitor groundwater elevation trends on a 6-hour interval. Hydrographs developed from these data were provided in the quarterly reports and indicate that groundwater elevations generally varied throughout the year in response to precipitation. For each piezometer equipped with an automatic datalogger, the arithmetic mean of the recorded values was calculated over a nominal one-month period and is plotted for 2024 in **Appendix B (Revised)**. These averages were then used to determine if the head gradient across the barrier wall meets the performance criterion of an inward gradient of 0.1-foot or greater as defined in Appendix L of the NJCU LTMP. These comparisons are provided in **Table 4-3 (Revised)** and graphed for the year on **Figure 4-10 (Revised)**.

For the two southernmost well pairs (MW-103/107 and MW-104/108), heads were relatively neutral throughout most of 2024 with inward gradients observed during periods of higher precipitation. While well pair MW-103/107 was inward throughout 2024, this pair did not meet the 0.1 ft criteria as defined in Appendix L of the SA-5 NJCU/Site 153 North LTMP in 6 months. While well pair MW-104/108 was inward for 10 of 12 months during 2024, this pair did not meet the 0.1 ft criteria in October and November. At the northernmost well pair (MW-101/105), **Figure 4-10 (Revised)** shows much greater variability in gradient throughout the year. This pair was split with an inward gradient

during 6 months and an outward gradient for 6 months. These variations correlate with changes in monthly precipitation, especially in the outboard well MW-101. Periods of higher rainfall allowed heads in MW-101 to remain elevated which resulted in inward gradients. However, during the drier periods from April through November, heads declined in MW-101 and an outward gradient was recorded.

At well pair MW-106R/102, heads inside of the barrier wall were consistently higher than those outside of the wall and an outward gradient was exhibited in this pair throughout 2024. These conditions at the two northern well pairs are likely due to presence of the Meadow Mat (Stratum D) on the inside of the barrier wall and the lack of Meadow Mat on the outside of the wall. This difference in the Meadow Mat allows groundwater to preferentially build up on top of the Meadow Mat inside of the barrier wall and allows a localized downward gradient in the Shallow Groundwater Zone outside of the barrier wall due to the lower heads of the underlying Intermediate Zone. This difference in Meadow Mat location also explains why the replacement of well MW-106 with MW-106R was not able to allow heads to build up to match those in well MW-102, despite its shallower screen.

Additional surface improvements and land use changes are expected in the future as part of NJCU's Phase 2 roadway and infrastructure project that may impact recharge and therefore groundwater levels. Thus, these levels should be evaluated during and after such surface modifications are conducted. For further details regarding groundwater levels, including monthly average head differences from logger data, refer to the quarterly reports. Finally, it is noted that each of the well pairs are separated by a steel sheet-pile wall constructed with sealed joints and that groundwater quality data indicates that hexavalent chromium has only been detected in one of the monitoring wells (MW-107) along the inside of the barrier wall during one sampling event (March 2021), and the hexavalent chromium concentration was below 70 parts per billion (ppb).

Groundwater elevation maps are provided on **Figures 4-6 through 4-9** and indicate that groundwater flow is generally to the northwest as it moves onto Sites 90 and 184 from the east, but then turns north, parallel to the barrier walls that block flow to the south and west. In addition, downward vertical gradients continue to be present as documented by the reported head in the Deep Zone well 090-MW-09/090-MW-09R, located between 184-MW-05 and Sump B in the Commercial AOC. These data suggest that groundwater bypasses the capped portion of the Commercial AOC and moves vertically downward into the underlying zones; a conclusion that is supported by groundwater quality data from the sentinel wells as further discussed in Section 5.5.

4.4 Eastern SA-7 Perimeter Pools

The SA-6 LTMP program includes monitoring of the hydraulic gradients across the soil-cement bentonite (SCB) barrier at the eastern perimeter of SA-7. This is accomplished through monitoring of the head in the eastern perimeter pools E-1 and E-2 and comparing these data to groundwater elevations in adjacent shallow piezometers E3-SO and E2-SO, respectively, located just outside of the SA-7 SCB. The location of the eastern pools, the

design pool elevations, and water level trends are provided in **Appendix C**. Overall, the data indicate that water levels within the SA-7 eastern pools are greater than those outside of the SCB and thus outward gradients are occurring relative to the SA-7 SCB.

4.5 SA-6 North Containment Cell

Shallow groundwater elevations within the SA-6 North containment cell, as measured in February 2025, are illustrated on **Figure 4-1B** and include data from the ten piezometers installed around the perimeter of the soil containment cell and the six wells on the border of SA-7 and SA-6 North which includes wells 115-PZ-502 and 115-PZ-503 installed in the backfill of the SA-7 interior pool. At the time of the measurements, groundwater elevations within the cell ranged from approximately 2 to 3 feet above msl but varied during the year with pumping from the contingent drain system. Data from automatic loggers placed in each of the wells were used to construct the hydrographs provided in monthly data submittals and quarterly reports to assess the impact of precipitation events on heads in the short term. The logger data were also used to calculate monthly average heads for the longer-term assessment of hydraulic gradients across the barrier walls. The monthly average heads are provided on **Table 4-4** (Revised) and plotted in **Appendix A** (Revised) for the year. Head differences across the barrier walls for these well pairs are also provided in **Table 4-4** (Revised) and plotted on **Figure 4-11** (Revised). Gradient determinations include the five piezometer pairs around the east, north, and west soil containment cell walls, and four well pairs that have been identified along the SA-7 SCB using wells 115-PZ-502 and 115-PZ-503. Revised tabulated monthly average calculations from the monthly data submissions (Table 4) and quarterly reports (Table 4 in Attachment 5) from January through December 2024 have been corrected and resubmitted as part of Honeywell's November 3, 2025 response to Plaintiffs' comments regarding the 2024 Integrated Groundwater Monitoring Report submitted by Plaintiffs in a letter dated August 25, 2025. The values on Revised Table 4-4 attached to this IGWMR correspond to the values on the revised Table 4s.

A review of the revised data indicates that (with the minor exceptions indicated below) the performance standard requiring at least 0.1 foot of inward gradient, as defined by the SA-6 LTMP, was met in three of the five piezometer pairs throughout the entirety of 2024. One of these exceptions was outward gradients at the PZ-1/PZ-2 pair for 5 months which generally correspond to drier periods. As discussed in the January 14, 2025 *Response to Plaintiffs' Comments Study Areas 6 North and South Groundwater Gradients in the Containment Cells*, three main factors contribute to the gradient reversal at PZ-1/PZ-2. First, the relatively high elevation (approximately +1.0' amsl) of the Meadow Mat in this area, as shown on Figure 4.3-1 in the Final Groundwater Investigation Report, dated February 2, 2007, results in a thin saturated zone which limited the depth to which the contingent collection pipe could be placed. The as-built pipe invert at its eastern end is +1.5 foot amsl and thus, with typical groundwater elevations beneath the cap in the range of 3 to 4 feet amsl, there are only 2 to 3 feet of available drawdown. Second, the storm sewer that runs along the western edge of Route 440 in close proximity to PZ-1 surcharges quickly during high rainfall events, which causes heads outside of the Open Space Area to

exhibit high volatility with spikes in the 3-to-4-foot range. In dry periods, heads outside of the Open Space Area tend to decline relatively quickly due to drainage into lower layers and/or due to leakage back into the storm sewer. This relationship results in inward gradients during wet periods and outward gradients during dry periods. However, during dry periods with a thinner saturated thickness, it is more difficult to propagate drawdown from the contingent drainpipe to well PZ-2. Finally, a buildup of a calcium-containing material has been observed within the sump containing the eastern contingent pump, PS-2N, and in a portion of the eastern leg of the contingent drain. These conditions reduce the effectiveness of pumping on drawdown in the vicinity of PZ-2. Honeywell has cleaned out this build-up several times to date and did so again on December 10 and 11, 2024. During this most recent cleanout, three blockages within the pipe were encountered and cleared using a jet hose. Shortly following the removal of the blockages, the water levels equilibrated in the PS-2N manhole and in Access Manhole No 2 located at the east end of the pipe. Thus, as stated in Section 3.2, Honeywell continues to perform maintenance at the PS-2N sump and far eastern leg of the CGWES drain line to clear the build-up of obstructing material.

An outward gradient was also present throughout the first 5 months and last 2 months of 2024 along the western SA-6 North soil containment cell wall at the PZ-9/PZ-10 well pair due to the influence of the Hackensack River. In addition, this pair did not meet the 0.1 ft criteria as defined by the SA-6 LTMP during June. The inward gradients in the PZ-9/PZ-10 well pair from July through October appear to be in response to higher pumping rates in PS-1N during April through August. As discussed in the 2019 annual performance report, groundwater elevations in PZ-10 remain relatively high following periods of heavy precipitation which is likely the result of water buildup on the cap that increases the head beneath the cap. In accordance with the SA-6 LTMP, the quality of groundwater along the inside of the barrier wall at this western end was determined through laboratory analysis of samples from PZ-10 as further discussed in Section 5.3

With respect to the SA-7 SCB wall along SA-6 North, gradients were inward during the entire year at the 115-MW-503/W1-SO, 115-MW-502/E4-SO, and 115-MW-502/E5-SO pairs. The 115-PZ-503/W6-SO pair had inward gradients in 2024 with the exception of January and February. In addition, this pair did not meet the 0.1 ft criteria as defined by the SA-6 LTMP during March.

4.6 SA-6 South Containment Cell

Shallow groundwater elevations within the SA-6 South containment area, as measured in February 2025, are illustrated on **Figure 4-1B** and include data from the ten piezometers installed around the perimeter of the soil containment cell and the five wells on the border of SA-7 and SA-6 South which include wells 115-PZ-500 and 115-PZ-501 installed in the backfill of SA-7. At the time of measurement, groundwater elevations were approximately 3 to 4 feet above msl within the cell but varied throughout the year in response to pumping of the contingent drain system as discussed in Section 3.3.

Data from automatic loggers placed in each of the wells were used to construct the hydrographs provided in monthly data submittals and quarterly reports and to assess the impact of precipitation events on heads in the short term. The logger data were also used to calculate monthly average heads for the longer-term assessment of hydraulic gradients across the barrier walls. The monthly average heads are provided on **Table 4-4** (Revised) and plotted in **Appendix A** (Revised) for the year. Head differences across the barrier walls for these well pairs are also provided in **Table 4-4** (Revised) and plotted on **Figure 4-12** (Revised). Gradient determinations include the 5 piezometer pairs around the east, south, and west soil containment cell wall, and three well pairs that have been identified along the SA-7 SCB using wells 115-PZ-500 and 115-PZ-501. Revised tabulated monthly average calculations from the monthly data submissions (Table 4) and quarterly reports (Table 4 in Attachment 5) from January through December 2024 have been corrected and resubmitted as part of Honeywell's November 3, 2025 response to Plaintiffs' comments regarding the 2024 Integrated Groundwater Monitoring Report submitted by Plaintiffs in a letter dated August 25, 2025. The values on Revised Table 4-4 attached to this IGWMR correspond to the values on the revised Table 4s.

A review of the revised data indicates that (with the exceptions indicated below) the performance standard requiring at least 0.1 foot of inward gradient, as defined by the SA-6 LTMP, was met in three of the five piezometer pairs throughout the entirety of 2024. One of these exceptions was PZ-17/18 during May which exhibited an outward gradient in May. The associated CGWES pump, PS-1S, was activated in May 2024 and reversed the gradient in PZ-17/PZ-18. Outward gradients were reported in 3 of the 12 months in the PZ-19R/PZ-20R well pair. In addition, this pair did not meet the 0.1 ft criteria as defined by the SA-6 LTMP during January and March.

With respect to the SA-7 SCB wall, the 115-PZ-500/115-W3-SO was inward for 11 of 12 months of 2024, but this pair did not meet the 0.1 ft criteria as defined by the SA-6 LTMP during April. The 115-PZ-501/115-W5-SO pair had inward gradients for 10 of the 12 months of the year. The 115-PZ-501/115-E1A-SO pair had inward gradients for all 12 months of 2024, but this pair did not meet the 0.1 ft criteria as defined by the SA-6 LTMP during May.

In accordance with the SA-6 LTMP, the quality of groundwater along the inside of the barrier wall at selected locations was determined through laboratory analysis as further discussed in Section 5.4

4.7 SA-5 Sites 117 and 153

Groundwater movement beneath Sites 117 and 153 is generally from northeast to southwest as illustrated on **Figures 4-1B through 4-3**. In the Shallow Zone, the 48-inch diameter Interceptor Sewer beneath Route 440 serves as a groundwater sink and together with the prevalent reducing conditions associated with the Meadow Mat, limits the further movement of impacted groundwater to the south and west. Additional detail regarding Honeywell's position on the impact of this sewer has been provided in Memoranda dated

December 7, 2018, January 23, 2019, March 2, 2020, August 10, 2020, December 14, 2020, March 2, 2021, and September 6, 2023.

Groundwater sampling was not required in 2024 for Site 117 and 153.

4.8 Miscellaneous Events

There were no miscellaneous events to be reported for 2024.

5 GROUNDWATER QUALITY MONITORING

Groundwater quality monitoring within the project area was conducted in 2024 in accordance with the GWET LTMP and the other applicable area-specific monitoring plans as discussed in Section 1.3 and listed on **Table 1-2**.

5.1 Deep Overburden Regional Plume Monitoring

The NJDEP Groundwater RA permits require regional monitoring to be on a 2-year frequency which would have required sampling in 2021, as the previous sampling was conducted in July 2019. Honeywell submitted a permit modification application on June 14, 2021 to have the frequency changed to 5 years to match the SAP and had expected NJDEP approval of that change in 2021. When the proposed change in frequency was not received in 2021, the regional sampling event was conducted in 2022. Per request of Plaintiffs, it was agreed to sample the Deep Overburden and bedrock wells to coincide with the shallow wells listed on each respective RA Groundwater Permit during a November 2023 sampling event. NJDEP issued the revised RA Permits for the Deep Overburden and Bedrock groundwater zones in May and June 2023, respectively, agreeing to the sampling frequency increase to every 5 years. Thus, the next scheduled Deep Overburden regional plume sampling event is planned for 2028. Since groundwater sampling was not required in 2024, the most recent groundwater quality data tables are presented in the 2023 IGWMR.

5.2 GWET Extraction Wells

In accordance with recommendations in Section 6.5 of the 2020 Integrated Annual Groundwater Performance Report and Plaintiffs' written concurrence in their letter of September 9, 2021, sampling of the GWET extraction wells is now conducted annually and does not include analysis of VOCs (unless one of the extraction wells is replaced). The 2024 annual round of groundwater discharge samples was collected from the three GWET pumping wells on July 12 as shown on **Table 5-1**.

The samples were collected from the discharge sampling ports for extraction wells PW-1, PW-3 and bedrock well 115-MW-215BR without filtering. The results for hexavalent chromium are plotted on **Figure 5-1** and indicate that concentrations in the Deep Zone (PW-1) have declined in an asymptotic fashion since 2009 to approximately 12 parts per million (ppm). Concentrations in the Intermediate Zone extraction well discharge initially increased significantly from 10 ppm to 90 ppm when PW-3 came online in January 2016 but since then have also declined in an asymptotic fashion to approximately 11 ppm. Hexavalent chromium concentrations in the bedrock have been generally stable in the range of approximately 10 to 11 ppm since December 2021.

5.3 SA-6 North

As noted in Section 4.5 and shown on **Table 5-2**, shallow groundwater samples were collected from perimeter piezometer PZ-10 located inside of the SA-6 North soil containment area. The samples were collected on May 22, 2024. Hexavalent chromium and total chromium were not detected in either the filtered or unfiltered samples.

5.4 SA-6 South

As noted in Section 4.6 and shown on **Table 5-2**, shallow groundwater samples were collected from perimeter piezometer PZ-20R located inside of the SA-6 South soil containment area on May 22, 2024. Hexavalent chromium was not detected in either the filtered or unfiltered samples and total chromium was not reported in either the filtered or unfiltered sample above the NJDEP GWQS of 0.07 ppm.

5.5 New Jersey City University

In accordance with the Shallow Groundwater Monitoring and Extraction System Operation Plan and modified NJDEP RA Groundwater Permit for the NJCU Commercial AOC, the four monitoring wells along the interior of the barrier wall extension were sampled quarterly in 2024. These wells are 184-MW-102, 184-MW-105, 184-MW-107, and 184-MW-108. The results are provided on **Table 5-3** and plotted on **Figure 5-2**. The results indicate that hexavalent chromium was not detected above the reporting limit of 0.0055 ppm in any of the samples in 2024. Total chromium was only reported above the NJCU GWQS of 0.07 ppm in two samples: 0.604 ppm and 0.382 ppm in the unfiltered sample in well 184-MW-107 during the June and November sampling rounds, respectively. However, the corresponding filtered samples reported total chromium at non-detect with a reporting limit of 0.010 ppm. **Table 1** in **Appendix D** provides historical groundwater quality data for the wells at NJCU. A review of these data indicates that although total chromium concentrations from unfiltered samples in well 184-MW-107 have historically been quite variable, ranging from over 1 ppm to non-detect, none of the filtered sample results have exceeded 0.07 ppm.

5.6 Plume Diversion Area Monitoring

Hexavalent chromium was detected in plume fringe wells 119-MW-01T and 119-MW-02T beginning in 2019. Hexavalent chromium was again detected in both wells in 2022 and only in 119-MW-02T. A declining trend has been observed in both wells since 2019. A brief summary of the history and discussion of results is provided below. Additional detail regarding Honeywell's position on this matter has been provided in the memorandum dated October 29, 2024 in which Honeywell proposed, and the Parties agreed, biennial sampling of wells 119-MW-01T and 119-MW-02T beginning in 2025 to allow further evaluation of the PDA. Additionally, in an email dated December 13, 2024, Honeywell agreed to Plaintiffs' request to analyze these samples for major ions; however, Honeywell advised the Parties that the use of major ions to determine sources of dilute hexavalent chromium

contamination is not always conclusive because dilution and dispersion tends to cloud the major ion characteristics of the original source. The 2025 biennial sampling event is scheduled for late May 2025 and Honeywell will share the data with the Parties once it is validated.

5.7 SA-5 Site 117

In accordance with the SAP and NJDEP RA Groundwater Permit, sampling of shallow monitoring wells at Site 117 is required every two years with the previous event conducted in 2023. Thus, the six listed monitoring wells were most recently sampled on November 28, 2023 with the next sampling event planned for 2025.

5.8 SA-5 Sites 079/153

Groundwater quality sampling of the shallow monitoring wells is not required at Site 079. In accordance with the SAP, groundwater quality monitoring of the bedrock monitoring well 079-MW-13BR is part of the regional groundwater monitoring plan and was sampled in November 2023 as discussed in Section 5.1.1.

In accordance with the SAP and NJDEP RA Groundwater Permit, sampling of the two shallow monitoring wells at Site 153 is required every two years. The last sampling event was on November 29, 2023, and thus the wells will be sampled next in 2025.

5.9 In-Situ Sampling Beneath Riverbed Sediments

In accordance with Section 3.3 of the GWET LTMP, in-situ groundwater from within the lacustrine deposits directly beneath the soft riverbed sediments in the Hackensack River is to be sampled every five years until chromium concentrations are below the GWQS. The prior sampling round was conducted in 2019 and thus a follow-up sampling event took place on May 14, 2024 during which location PW-09-450 was sampled. Results of this investigation were provided in a Technical Memorandum dated June 27, 2024. The results of the laboratory analysis showed that hexavalent chromium was non-detect in both the filtered and unfiltered samples as shown on **Figure 5-3**. This represents a significant decrease relative to the 2019 sample result of 15.8 ppm. Total chromium was detected at 1.87 ppm in the unfiltered sample (**Figure 5-4**) but was less than the GWQS of 0.07 ppm in the filtered sample at 0.03 ppm. Based on these results and in accordance with the GWET LTMP, plume pull-back is considered complete and no further sampling of groundwater beneath the riverbed sediments will be conducted.

5.10 Miscellaneous Groundwater Quality

The mass of hexavalent chromium removed from the Deep Overburden Plume through pumping has been calculated for reference. As shown on **Figure 5-5**, historic pumping includes operation of the two depressurization wells, 115-DP-1 and 115-DP-2, during the SA-7 soil excavation remedy, and the GWET system pumping that has been ongoing since December 2008. The mass removed was calculated by multiplying the pumping rate of

each well by the hexavalent chromium concentration of the discharge. The results indicate that over 100 tons of hexavalent chromium have been removed through groundwater extraction alone through the end of 2024 and does not include the 50 tons of chromium treated during the mass removal injection program conducted from 2011 to 2016.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Compliance with Monitoring Requirements

Hydraulic and groundwater quality monitoring conducted in 2024 have fulfilled the various monitoring plan requirements in accordance with **Tables 1-1** and **1-2**.

6.2 Status of Groundwater Remedial Action Permits

Groundwater Classification Exception Areas (CEAs) were approved by NJDEP on February 16, 2012 for the three principal water bearing zones in the Project Area (Shallow Zone, Deep Overburden, and Bedrock). In 2014, NJDEP notified Honeywell that CEA biennial certifications are not due until the applicable Groundwater Remediation Permits were issued. Honeywell submitted RA Groundwater Permit Applications to NJDEP in December 2017 that were issued by the NJDEP in 2018. The RA Groundwater Permits included one permit for the regional Deep Overburden Zone, one permit for the regional Bedrock Zone, and five permits for the shallow zone as follows: SA-5 NJCU, Site 117, Site 153, and the SA-6 North and SA-6 South Open Space Cap areas, respectively. Biennial certification reports were submitted during July and August of 2020, 2022 and 2024. Applications for various permit modifications are discussed in Section 6.3.

6.3 Recommendations for Monitoring Well Network

An RA Groundwater Permit modification application was submitted to NJDEP in June 2021 for Site 117 Shallow Groundwater that included a request to discontinue groundwater quality sampling at well 117-MW-I4S and to change groundwater level measurements from annually to quarterly to be consistent with the SAP. On May 23, 2023 NJDEP-approved the modified RA Permit for Site 117 Shallow Groundwater, NJDEP did not approve abandonment of Well 117-MW-I4S, but agreed to a five-year sampling frequency. This well was originally installed in the source area of the Deep Overburden plume to provide samples for treatability sampling and not for long term monitoring. This well is located along a roadway between Site 117 and adjacent Sites 090/184 (NJCU property).

An RA Groundwater Permit modification application was submitted to NJDEP in June 2021 for Site 117 Deep Overburden and Bedrock zones to be consistent with the SAP as follows:

Deep Overburden Zone (RAP 170002)

- Addition of well (087-MW-136D, now 087-MW-136DR) for groundwater quality sampling.

- Addition of two wells (088-MW-15R; 124-MW-G02D) for depth-to-water measurements.
- Change in frequency of groundwater quality sampling from biennial to every 5 years and depth-to-water measurements from quarterly to annually.

Bedrock Zone (RAP 170003)

- Change in frequency of groundwater quality sampling from biennial to every 5 years and depth-to-water measurements from quarterly to annually.

The NJDEP approved the permit modifications for the Deep Overburden and Bedrock Zone on May 23, 2023 and June 9, 2023, respectively.

An RA Groundwater Permit modification application was submitted to NJDEP in December 2021 for Study Area 5 NJCU to discontinue groundwater sampling of four wells on the outside of the barrier wall including 184-MW-101, 184-MW-103, 184-MW-104, and 184-MW-106R to be consistent with the SAP. The NJDEP issued a RA Groundwater Permit modification for NJCU reflecting this modification on February 11, 2022.

Based on review of the most recent 2023 analytical data and sampling events, no recommendations for modifications are proposed.

6.4 Recommendations for Water Level Monitoring Frequency

The frequency of regional groundwater level monitoring has been completed annually beginning January 2024 in accordance with the SAP. Groundwater level monitoring frequency at specific sites will continue to be conducted in accordance with frequencies specified in the various site-specific LTMPs as indicated in **Table 1-1**. As noted in Section 6.3, an RA Groundwater Permit modification application was submitted to NJDEP in June 2021 for Site 117 Shallow Groundwater that included a request to change groundwater level measurements from annually to quarterly to be consistent with the SAP.

Based on review of the most recent water level data, no recommendations for changes to the monitoring frequency are proposed.

6.5 Recommendations for Groundwater Quality Monitoring Frequency

As noted in Section 6.3, an RA Groundwater Permit modification application was submitted to NJDEP in June 2021 to change the frequency of groundwater quality sampling of the Deep Overburden and Bedrock Zones from biennial to every 5 years to be consistent with the SAP and approved on May 23, 2023 and June 9, 2023, respectively.

The frequency of groundwater quality monitoring, well selection, and parameters for analysis are established in the site-specific LTMPs and the NJDEP RA Groundwater Permits for the various sub-areas. Any additional future proposed changes to the monitoring program that differ from the requirements of RA Groundwater Permits will

require approval from the NJDEP via permit modification prior to implementation. Following review and approval of any future recommendations by the Parties, Honeywell will submit required permit modifications to the NJDEP for approval prior to proceeding with implementation.

6.6 Other Recommendations

There are no further recommendations.

LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

TABLES

**TABLE 1-1
GROUNDWATER LEVEL MONITORING REQUIREMENTS
for Integrated Groundwater Monitoring Plan**

<u>Location</u>	<u>Monitoring Plan</u>	<u>Consent Decree</u>	<u>Depth</u>	<u>Frequency</u>	<u># Wells</u>
Regional ¹	GWET Long Term Monitoring Plan June 10, 2008	Deep Overburden and Bedrock Groundwater Remedies Consent Order	All Zones	Annually	115
Study Area 7	SA-7 Perimeter Pools	Final Judgement, ICO v Honeywell	Shallow	Monthly	2
Study Area 7 - Site 115	SA-6 Long Term Monitoring Plan (February 2018, revised December 2020)	Final Judgement	Shallow	Monthly manual readings; logger readings every 6 hours-averaged monthly	6
SA-6 South ⁴	SA-6 Long Term Monitoring Plan (February 2018, revised December 2020)	First Amended Consent Decree Regarding Remediation and Redevelopment of SA-6 South	Shallow	Annual manual readings; logger readings every 6 hours-averaged monthly	15
SA-6 North ⁴	SA-6 Long Term Monitoring Plan (February 2018, revised December 2020)	First Amended Consent Decree Regarding Remediation and Redevelopment of Study Area 6 North	Shallow	Annual manual readings; logger readings every 6 hours-averaged monthly	14
SA-5 (NJCU) Sites 90 & 184 ⁴	Long Term Monitoring Plan ^{2A} (November 2016)	Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area	Shallow	Quarterly manual readings; logger readings every 6 hours-averaged monthly	13 wells and 2 sumps
SA-5: Site 079	Long Term Monitoring Plan for Sites 079 and 153 South (December 2019) ^{2B}	Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties	Shallow	Quarterly	3
SA-5: Site 153 ⁴	Long Term Monitoring Plan for SA-5 Shallow GW ³	Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties	Shallow	Quarterly	2
SA-5 Site 117 ⁴	Long Term Monitoring Plan for SA-5 Shallow GW ³	Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties	Shallow	Quarterly	6

¹Includes available wells on SA-5, SA-6, SA-7, and surrounding areas historically considered part of the Deep Overburden Plume investigation.

^{2A}SA-5 NJCU LTMP (November 2016; updated May 2019); Shallow Groundwater Monitoring and Extraction System Operation Plan (Appendix L of the LTMP).

^{2B}SA-5 SITE 079 AND 153 SOUTH LTMP (April 2014; draft updated December 2019 [sent to Plaintiffs 12/12/19]).

³Draft LTMP for SA-5 Shallow Groundwater includes Sites 117 and 153 in progress; pending ongoing technical discussions and correspondence with Plaintiffs.

⁴Remedial Action Groundwater Permits were issued in 2018 for the Deep Overburden; Bedrock; and Shallow groundwater zones at SA-5 Sites 90/184, 117, 153, SA-6 North and South Open Space Cap Areas; Various permit modification applications submitted 2021 were approved by the NJDEP in May and June 2023. SA-5 Sites 90/184 permit modified February 2022.

**TABLE 1-2
GROUNDWATER QUALITY MONITORING REQUIREMENTS
for Integrated Groundwater Monitoring Plan**

<u>Location</u>	<u>Monitoring Plan</u>	<u>Consent Decree</u>	<u>Depth</u>	<u>Frequency</u>	<u># Wells</u>	<u>Estimated Start Date</u>
Regional	Integrated Sampling and Analysis Plan; April 2014, revised October 2019	Deep Overburden and Bedrock Groundwater Remedies Consent Order	Intermediate	Every 5 years ³	6	On-going future events TBD
			Deep	Every 5 years ³	10	
			Bedrock	Every 5 years ³	9	
			Beneath River	Every 5 years	1	
SA-5 (NJCU) Sites 90 & 184	Long Term Monitoring Plan / Shallow Groundwater Monitoring Document ¹	Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area	Shallow	Quarterly; Future TBD per Appendix L of LTMP ⁴	4	On-going
SA-5 Site 117	Long Term Monitoring Plan for SA-5 Shallow GW ²	Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties	Shallow	Biennial ²	6	On-going
SA-5: Site153	Long Term Monitoring Plan for SA-5 Shallow GW ²	Consent Decree Regarding Remediation of the Study Area 5 Shallow Groundwater and the Site 79 Residential Properties	Shallow	Biennial ²	2	On-going
SA-6 South	SA-6 Long Term Monitoring Plan (February 2018, revised December 2020)	First Amended Consent Decree Regarding Remediation and Redevelopment of SA-6 South	Shallow	As required by gradients across wall	5	On-going
SA-6 North	SA-6 Long Term Monitoring Plan (February 2018, revised December 2020)	First Amended Consent Decree Regarding Remediation and Redevelopment of SA-6 North	Shallow	As required by gradients across wall	5	On-going

Biennial = every two years

¹SA-5 NJCU LTMP (November 2016, updated May 2019); Shallow Groundwater Monitoring and Extraction System Operation Plan (Appendix L of the LTMP).

²Draft LTMP for SA-5 Shallow Groundwater includes Sites 117 and 153 in progress; pending ongoing technical discussions and correspondence with Plaintiffs. 117-MW-I4S is on a 5-year sampling frequency per May 2023 Remedial Action Permit modification.

³Remedial Action Groundwater Permits were issued in 2018 for the Deep Overburden; Bedrock; and Shallow groundwater zones at SA-5 Sites 90/184, 117, 153, SA-6 North and South Open Space Cap Areas; Various permit modification applications submitted 2021 were approved by the NJDEP in May and June 2023. SA-5 Sites 90/184 permit modified 2/11/2022.

⁴Per NJDEP Groundwater Remedial Action Permit Modification dated February 11, 2022, only the four inboard wells along the barrier wall are now required to be sampled on a quarterly basis.

Table 2-1
2024 Monthly Precipitation Data

Month	2024 Precipitation	Average Precipitation
January	5.52	3.98
February	1.75	2.96
March	7.99	4.21
April	3.85	3.92
May	2.79	4.46
June	1.75	3.4
July	3.59	4.68
August	6.69	4.02
September	0.89	4.01
October	0.00	3.16
November	2.92	3.88
December	4.39	3.57
Annual Total	42.13	46.25

Data Source: [Search | Climate Data Online \(CDO\) | National Climatic Data Center \(NCDC\) \(noaa.gov\)](#)
 Station name: Newark International Airport
 Station ID: GHCND:USW00014734

**Table 2-2
Groundwater Monitoring Well Inventory**

<u>Well ID</u>	<u>Screen Zone</u>	<u>Ref. Pt. Elev.</u>	<u>Well Depth</u>	<u>Screen Length</u>	<u>Comments</u>
		(ft msl)	(ft)	(ft)	
087-MW-08	Deep	12.98	99.0	10	
087-MW-34	Deep	12.73	70.0	5	
087-MW-A26T	Deep	9.92	56.0	15	
087-MW-W25T	Deep	19.06	91.0	15	
087-OBS-1L	Deep	15.27	67.1	5	
087-OBS-1T	Deep	15.23	105.0	10	
087-OBS-3L	Deep	12.68	65.0	5	
087-OBS-4T	Deep	11.60	75.5	5	
087-OBS-5T	Deep	12.62	81.9	10	
087-PW-1	Deep	10.27	69.0	10	
088-MW-G19T	Deep	13.25	93.0	15	
090-MW-09	Deep	10.59	75.0	5	Abandoned October 2023
090-MW-09R	Deep	11.24	75.0	10	Installed October 2023
117-MW-D1	Deep	11.08	41.0	10	
117-MW-D2	Deep	17.62	48.0	10	
117-MW-D3	Deep	18.85	80.0	10	
117-MW-I4	Deep	15.49	75.0	10	
119-MW-01T	Deep	10.78	62.0	10	
119-MW-02T	Deep	8.80	70.0	10	
124-MW-106T	Deep	17.70	86.5	10	Abandoned October 2023
124-MW-106TR	Deep	13.55	82.0	10	Installed October 2023
153-MW-A13T	Deep	9.34	58.0	15	
SA6-MW-AA1T	Deep	15.31	70.0	10	
087-MW-136D	Intermediate	13.18	36.0	10	Installed July 2018, replaced 087-MW-O19D, abandoned April 2025
087-MW-136DR	Intermediate	NA	38.5	10	Installed April 2025
087-MW-13	Intermediate	12.93	40.0	10	
087-MW-A26D	Intermediate	10.35	28.0	10	
087-MW-O29D	Intermediate	10.32	56.0	NA	
087-MW-W25D	Intermediate	16.98	66.0	10	
087-OBS-07	Intermediate	12.59	30.0	5	
087-OBS-1D	Intermediate	15.13	42.8	10	
087-OBS-2D	Intermediate	12.68	54.0	10	
087-OBS-5D	Intermediate	12.72	39.8	10	
087-PW-2	Intermediate	13.02	48.0	20	
087-PW-3	Intermediate	12.40	50.0	20	
088-MW-15R	Intermediate	12.83	35.0	10	
090-MW-07	Intermediate	17.20	40.0	10	
117-MW-I1	Intermediate	11.08	22.0	10	
117-MW-I2	Intermediate	17.59	28.0	10	
117-MW-I3	Intermediate	15.59	28.0	10	
117-MW-I5	Intermediate	18.76	37.0	15	
124-MW-G02D	Intermediate	16.80	34.5	10	
SA6-MW-AA1D	Intermediate	19.36	32.0	10	
DP-1	Intermediate	12.92	38.5	10	Temporary depressurization well in SA-6 South Deferred Area, abandoned November 18, 2020
DP-2	Intermediate	13.80	38.5	10	Temporary depressurization well in SA-6 South Deferred Area, abandoned November 18, 2020
DP-3	Intermediate	13.20	38.5	10	Temporary depressurization well in SA-6 South Deferred Area, abandoned November 18, 2020
DP-4	Intermediate	12.20	38.5	10	Temporary depressurization well in SA-6 South Deferred Area, abandoned November 18, 2020
OW-1	Intermediate	11.10	32.5	10	Temporary observation well in SA-6 South Deferred Area, abandoned November 18, 2020
OW-2	Intermediate	11.10	32.5	10	Temporary observation well in SA-6 South Deferred Area, abandoned November 18, 2020
OW-3	Intermediate	11.20	32.5	10	Temporary observation well in SA-6 South Deferred Area, abandoned November 18, 2020
OW-4	Intermediate	15.00	19.0	10	Temporary observation well in SA-6 South Deferred Area, abandoned November 19, 2020

**Table 2-2
Groundwater Monitoring Well Inventory**

<u>Well ID</u>	<u>Screen Zone</u>	<u>Ref. Pt. Elev.</u> (ft msl)	<u>Well Depth</u> (ft)	<u>Screen Length</u> (ft)	<u>Comments</u>
073-MW-1BR	Rock	20.39	144.0	15	
079-MW-13BR-1	Rock	13.08	121.0	10	
079-MW-13BR-2	Rock	13.08	214.0	15	
079-MW-13BR-3	Rock	13.08	284.0	15	
090-MW-7BR-1	Rock	16.99	134.0	15	
090-MW-7BR-2	Rock	16.99	177.0	15	
090-MW-7BR-3	Rock	16.99	233.0	15	
115-MW-203BR	Rock	6.61	162.0	20	
115-MW-215BR	Rock	8.82	143.0	20	
117-MW-3BR-1	Rock	12.34	155.0	15	
117-MW-3BR-2	Rock	12.34	263.0	15	
117-MW-8BR	Rock	12.94	125.0	10	
119-MW-2BR-1	Rock	8.43	163.0	15	
119-MW-2BR-2	Rock	8.43	245.0	15	
119-MW-2BR-3	Rock	8.43	315.0	15	
119-MW-16BR-1	Rock	8.61	151.0	15	
119-MW-16BR-2	Rock	8.61	187.0	15	
119-MW-16BR-3	Rock	8.61	247.0	15	
124-MW-8BR	Rock	17.24	140.5	15	
SA6-MW-5BR-1	Rock	17.06	106.0	15	
SA6-MW-5BR-2	Rock	17.06	154.0	15	
SA6-MW-5BR-3	Rock	17.06	204.0	15	
SA6-MW-5BR-4	Rock	17.06	236.0	15	
SA6-MW-5BR-5	Rock	17.06	281.0	15	
SA6-MW-14BR	Rock	9.99	85.0	10	
SA6-MW-15BR	Rock	8.08	103.0	20	
079-MW-01	Shallow	8.80	8.9	5	
079-MW-A2	Shallow	8.10	11.5	10	
079-MW-C6	Shallow	11.00	13.0	10	
087-PZ-1	Shallow	10.04	11.0	5	Installed June 2016
087-PZ-2	Shallow	10.35	8.0	5	Installed June 2016
087-PZ-3	Shallow	13.28	13.0	5	Installed June 2016
087-PZ-4	Shallow	13.65	12.0	5	Installed June 2016
087-PZ-5	Shallow	19.49	13.0	5	Installed June 2016
087-PZ-6	Shallow	21.01	13.0	5	Installed June 2016
087-PZ-7	Shallow	16.24	26.0	5	Installed June 2016
087-PZ-8	Shallow	16.54	14.0	5	Installed June 2016
087-PZ-9	Shallow	17.19	12.0	5	Installed June 2016
087-PZ-10	Shallow	17.06	12.0	5	Installed June 2016
090-PZ-05	Shallow	18.08	16.4	NA	
090-PZ-06	Shallow	18.20	18.0	NA	
115-E1A-SO	Shallow	16.48	7.0	NA	Replaced 115-E1A-SO in 2015
115-E2-SO	Shallow	10.33	10.0	5	
115-E3-SO	Shallow	12.57	20.7	5	

**Table 2-2
Groundwater Monitoring Well Inventory**

<u>Well ID</u>	<u>Screen Zone</u>	<u>Ref. Pt. Elev.</u> (ft msl)	<u>Well Depth</u> (ft)	<u>Screen Length</u> (ft)	<u>Comments</u>
115-E4-SO	Shallow	14.04	13.5	10	
115-E5-SO	Shallow	17.39	21.4	8	
115-PZ-500	Shallow	6.68	11.0	9	
115-PZ-501	Shallow	14.47	16.5	8.5	
115-PZ-502	Shallow	14.51	16.0	8	
115-PZ-503	Shallow	7.32	10.0	8	
115-W1-SO	Shallow	18.84	24.7	10	
115-W3-SO	Shallow	14.96	14.0	10	
115-W5-SO	Shallow	21.68	16.0	NA	
115-W6-SO	Shallow	14.76	18.2	NA	
117-MW-A05	Shallow	18.48	16.0	10	
117-MW-A14	Shallow	17.33	17.0	10	
117-MW-I4S	Shallow	16.70	11.2	10	
117-MW-A85	Shallow	17.40	15.0	10	
117-MW-A89	Shallow	13.17	16.0	10	
117-MW-A99	Shallow	15.95	14.0	10	
124-MW-10	Shallow	10.06	11.0	8	
124-MW-11	Shallow	9.05	8.0	6	
124-PZ-11	Shallow	9.69	9.5	5	Installed 2015
124-PZ-12	Shallow	10.63	9.5	5	Installed 2015
124-PZ-13	Shallow	19.34	18.4	5	Installed 2015
124-PZ-14	Shallow	15.15	14.1	5	Installed 2015
124-PZ-15	Shallow	24.41	21.2	5	Installed 2015
124-PZ-16	Shallow	17.70	19.6	5	Installed 2015
124-PZ-17	Shallow	15.15	12.0	5	Installed 2015
124-PZ-18	Shallow	18.28	16.2	5	Installed 2015
124-PZ-19	Shallow	17.91	10.4	5	Installed 2015, abandoned Q2 2020
124-PZ-20	Shallow	18.38	17.3	5	Installed 2015, abandoned Q3 2020
124-PZ-19R	Shallow	14.47	24.6	5	Installed Q4 2020
124-PZ-20R	Shallow	19.63	27.6	5	Installed Q4 2020
153-MW-A13	Shallow	9.62	10.0	6	
153-MW-A15	Shallow	11.19	12.2	10	
154-MW-A06	Shallow	19.87	15.1	NA	
154-MW-A5A	Shallow	19.16	14.0	NA	
184-MW-04	Shallow	8.87	6.8	NA	
184-MW-05	Shallow	14.71	13.0	NA	
184-MW-06	Shallow	18.75	15.0	NA	
184-MW-101	Shallow	14.85	13.0	5	
184-MW-102	Shallow	13.16	12.0	5	
184-MW-103	Shallow	14.71	14.0	5	
184-MW-104	Shallow	15.47	13.0	5	
184-MW-105	Shallow	15.10	12.0	5	
184-MW-106	Shallow	12.72	14.0	5	Abandoned August 12, 2021
184-MW-106R	Shallow	12.68	9.5	5	Installed August 12, 2021
184-MW-107	Shallow	13.41	11.0	5	
184-MW-108	Shallow	15.32	15.0	5	
Sump A	Shallow	15.98	21.0	NA	
Sump B	Shallow	13.08	15.0	NA	

NA - information not available

Table 3-1

GWET Pumping Outages in 2024

Well ID	Start Date	End Date	Duration Days and Hours		Comment
087-PW-1, 087-PW-3, 087-MW-215BR	7-Oct-24	8-Oct-24	1	0.00	Acid soaking of all lines

Only outages over 8 hours are noted.

TABLE 4-1
GROUNDWATER ELEVATION DATA FROM ANNUAL ROUND IN 2025

Well ID	Screen Zone	Ref. Pt. Elev.	Well Depth	Screen Length	Groundwater
					Elevation (NGVD-29)
		(ft msl)	(ft)	(ft)	2/4/25 (ft msl)
087-MW-08	Deep	12.98	99	10	0.40
087-MW-34	Deep	12.73	70	5	-1.09
087-MW-A26T	Deep	9.92	56	15	2.27
087-MW-W25T	Deep	19.06	91	15	0.88
087-OBS-1L	Deep	15.27	67.05	5	1.48
087-OBS-1T	Deep	15.23	105	10	1.08
087-OBS-3L	Deep	12.68	65	5	0.18
087-OBS-4T	Deep	11.60	75.5	5	0.20
087-OBS-5T	Deep	12.62	81.9	10	-0.70
087-PW-1	Deep	10.27	69	10	-48.71
088-MW-G19T	Deep	13.25	93	15	2.16
090-MW-09R	Deep	11.24	75	10	4.32
117-MW-D1	Deep	11.08	41	10	1.99
117-MW-D2	Deep	17.62	48	10	3.59
117-MW-D3	Deep	18.85	80	10	4.94
117-MW-I4	Deep	15.49	75	10	4.57
119-MW-01T	Deep	10.78	62	10	1.89
119-MW-02T	Deep	8.80	70	10	1.89
124-MW-106TR	Deep	13.55	82	10	1.87
153-MW-A13T	Deep	9.34	58	15	2.12
SA6-MW-AA1T	Deep	15.31	70	10	0.47
087-MW-136D	Intermediate	13.18	36	10	N/A
087-MW-13	Intermediate	12.93	40	10	2.83
087-MW-A26D	Intermediate	10.35	28	10	2.30
087-MW-O29D	Intermediate	10.32	56	NA	0.84
087-MW-W25D	Intermediate	16.98	66	10	1.28
087-OBS-07	Intermediate	12.59	30	5	-1.27
087-OBS-1D	Intermediate	15.13	42.8	10	1.27
087-OBS-2D	Intermediate	12.68	54	10	-2.27
087-OBS-5D	Intermediate	12.72	39.83	10	0.05
087-PW-2	Intermediate	13.02	48	20	0.09
087-PW-3	Intermediate	12.40	50	20	-8.32
088-MW-15R	Intermediate	12.83	35	10	1.73
090-MW-07	Intermediate	17.20	40	10	4.28
117-MW-I1	Intermediate	11.08	22	10	3.14
117-MW-I2	Intermediate	17.59	28	10	3.70
117-MW-I3	Intermediate	15.59	28	10	4.23
117-MW-I5	Intermediate	18.76	37	15	5.28
124-MW-G02D	Intermediate	16.80	34.5	10	1.98
SA6-MW-AA1D	Intermediate	19.36	32	10	0.55
073-MW-1BR	Rock	20.39	144	15	-2.80
079-MW-13BR-1	Rock	13.08	121	10	7.05
079-MW-13BR-2	Rock	13.08	214	15	7.03
079-MW-13BR-3	Rock	13.08	284	15	6.72
090-MW-7BR-1	Rock	16.99	134	15	4.24
090-MW-7BR-2	Rock	16.99	177	15	4.55
090-MW-7BR-3	Rock	16.99	233	15	4.60
115-MW-203BR	Rock	6.61	162	20	-2.82
115-MW-215BR	Rock	8.82	143	20	-4.71
117-MW-3BR-1	Rock	12.34	155	15	4.98
117-MW-3BR-2	Rock	12.34	263	15	7.01
117-MW-8BR	Rock	12.94	125	10	4.83
119-MW-2BR-1	Rock	8.43	163	15	-1.40
119-MW-2BR-2	Rock	8.43	245	15	-0.08
119-MW-2BR-3	Rock	8.43	315	15	-0.41
119-MW-16BR-1	Rock	8.61	151	15	N/A
119-MW-16BR-2	Rock	8.61	187	15	N/A
119-MW-16BR-3	Rock	8.61	247	15	N/A
124-MW-8BR	Rock	17.24	140.5	15	3.19
SA6-MW-5BR-1	Rock	17.06	106	15	1.46
SA6-MW-5BR-2	Rock	17.06	154	15	2.19
SA6-MW-5BR-3	Rock	17.06	204	15	3.18
SA6-MW-5BR-4	Rock	17.06	236	15	2.69
SA6-MW-5BR-5	Rock	17.06	281	15	2.79
SA6-MW-14BR	Rock	9.99	85	10	2.89
SA6-MW-15BR	Rock	8.08	103	20	1.02

TABLE 4-1
GROUNDWATER ELEVATION DATA FROM ANNUAL ROUND IN 2025

Well ID	Screen Zone	Ref. Pt. Elev.	Well Depth	Screen Length	Groundwater Elevation (NGVD-29)
					2/4/25
079-MW-01	Shallow	8.80	8.88	5	2.67
079-MW-A2	Shallow	8.10	11.48	10	2.58
079-MW-C6	Shallow	11.00	13	10	4.18
087-PZ-1	Shallow	10.04	11.03	5	2.65
087-PZ-2	Shallow	10.35	8	5	2.55
087-PZ-3	Shallow	13.28	13	5	3.83
087-PZ-4	Shallow	13.65	12	5	2.53
087-PZ-5	Shallow	19.49	13	5	5.04
087-PZ-6	Shallow	21.01	13	5	2.58
087-PZ-7	Shallow	16.24	26	5	7.64
087-PZ-8	Shallow	16.54	14	5	2.85
087-PZ-9	Shallow	17.19	12	5	2.33
087-PZ-10	Shallow	17.06	12	5	6.06
090-PZ-05	Shallow	18.08	16.41	NA	5.93
090-PZ-06	Shallow	18.20	18	NA	7.85
115-E1A-SO	Shallow	16.48	7	NA	2.83
115-E2-SO	Shallow	10.33	10	5	5.30
115-E3-SO	Shallow	12.57	20.73	5	5.42
115-E4-SO	Shallow	14.04	13.45	10	2.48
115-E5-SO	Shallow	17.39	21.39	8	2.33
115-PZ-500	Shallow	6.68	11	9	4.14
115-PZ-501	Shallow	14.47	16.5	8.5	4.53
115-PZ-502	Shallow	14.51	16	8	4.32
115-PZ-503	Shallow	7.32	10	8	4.30
115-W1-SO	Shallow	18.84	24.66	10	2.52
115-W3-SO	Shallow	14.96	14	10	2.70
115-W5-SO	Shallow	21.68	16	NA	2.85
115-W6-SO	Shallow	14.76	18.15	NA	2.98
117-MW-A05	Shallow	18.48	16	10	6.47
117-MW-A14	Shallow	17.33	17	10	5.15
117-MW-A85	Shallow	17.40	15	10	4.09
117-MW-A89	Shallow	13.17	16	10	3.07
117-MW-A99	Shallow	15.95	14	10	4.62
117-MW-I45	Shallow	16.70	11.17	10	4.77
124-MW-10	Shallow	10.06	11	8	5.88
124-MW-11	Shallow	9.05	8	6	3.67
124-PZ-11	Shallow	9.69	9.5	5	5.77
124-PZ-12	Shallow	10.63	9.5	5	3.09
124-PZ-13	Shallow	19.34	18.35	5	6.10
124-PZ-14	Shallow	15.15	14.1	5	3.12
124-PZ-15	Shallow	24.41	21.21	5	3.98
124-PZ-16	Shallow	17.70	19.6	5	3.15
124-PZ-17	Shallow	15.15	12	5	3.72
124-PZ-18	Shallow	18.28	16.2	5	3.24
124-PZ-19R	Shallow	14.47	24.55	5	2.99
124-PZ-20R	Shallow	19.63	27.55	5	3.01
153-MW-A13	Shallow	9.62	10	6	2.40
153-MW-A15	Shallow	11.00	12.15	10	1.66
154-MW-A06	Shallow	19.87	15.12	NA	11.09
154-MW-ASA	Shallow	19.16	14	NA	10.96
184-MW-04	Shallow	8.70	6.8	NA	3.44
184-MW-05	Shallow	14.71	13	NA	4.79
184-MW-06	Shallow	18.75	15	NA	7.18
184-MW-101	Shallow	14.85	13	5	4.99
184-MW-102	Shallow	13.12	12	5	5.54
184-MW-103	Shallow	14.71	14	5	5.67
184-MW-104	Shallow	15.47	13	5	6.15
184-MW-105	Shallow	15.10	12	5	5.20
184-MW-106R	Shallow	12.68	9.5	5	5.10
184-MW-107	Shallow	13.41	11	5	5.51
184-MW-108	Shallow	15.32	15	5	5.99
SUMP A	Shallow	15.98	21	NA	5.27
SUMP B	Shallow	13.08	15	NA	5.05

NA- information not available

N/A-no access or issue with well

Due to incomplete water level measurement rounds in 2024, an additional annual water level round was completed on February 4, 2025.

Table 4-2
Summary of Groundwater Elevations Near NJCU
2024

Location	3/27/2024		6/26/2024		9/27/2024		12/30/2024		
	10/31/2023								
	Ref. pt. Elev. (ft. msl)	Depth to GW (ft.)	GW Elev. (ft., msl)						
079-MW-A02	8.10	4.28	3.82	5.11	2.99	5.22	2.88	5.29	2.81
Sump A (North)	15.98	9.33	6.65	10.03	5.95	10.36	5.62	10.69	5.29
Sump B (South)	13.08	8.01	5.07	8.11	4.97	8.11	4.97	8.19	4.89
090-PZ-5	18.08	9.75	8.33	11.54	6.54	11.76	6.32	11.55	6.53
090-PZ-6	18.20	8.48	9.72	9.24	8.96	9.28	8.92	9.78	8.42
184-MW-4	8.87	5.05	3.82	5.33	3.54	5.39	3.48	5.23	3.64
184-MW-5	14.71	8.15	6.56	9.43	5.28	9.22	5.49	9.23	5.48
184-MW-6	18.751	10.08	8.67	11.15	7.60	11.19	7.56	11.14	7.61
090-MW-09R	11.24	5.38	5.86	6.45	4.79	6.55	4.69	6.54	4.70
090-MW-07	17.20	10.9	6.30	11.58	5.62	11.79	5.41	12.27	4.93
117-MW-I4S	16.70	10.28	6.42	11.01	5.69	11.38	5.32	11.85	4.85
117-MW-I5	18.76	11.95	6.81	12.54	6.22	12.79	5.97	12.98	5.78
184-MW-101 (outside)	14.85	7.98	6.87	9.68	5.17	9.91	4.94	8.77	6.08
184-MW-105 (inside)	15.1	8.52	6.58	9.22	5.88	9.55	5.55	9.89	5.21
184-MW-106R (outside)	12.68	5.77	6.91	7.10	5.58	7.33	5.35	7.17	5.51
184-MW-102 (inside)	13.16	6.15	7.01	7.09	6.07	7.29	5.87	7.34	5.82
184-MW-103 (outside)	14.71	7.32	7.39	8.52	6.19	8.71	6.00	8.46	6.25
184-MW-107 (inside)	13.41	6.12	7.29	7.27	6.14	7.48	5.93	7.36	6.05
184-MW-104 (outside)	15.47	7.73	7.74	8.31	7.16	8.96	6.51	8.79	6.68
184-MW-108 (inside)	15.32	7.58	7.74	8.74	6.58	9.08	6.24	8.8	6.52

Table 4-3
REVISED Monthly Average Heads and Gradients Across Barrier Walls - NJCU

	184-MW-101/184-MW-105			184-MW-106R/184-MW-102		
	Exterior Piezometer/Monitoring Well Average Head (ft. msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft. msl) ¹	Average Head Difference (ft) ²	Exterior Piezometer/Monitoring Well Average Head (ft. msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft. msl) ¹	Average Head Difference (ft) ²
2024 - Month	184-MW-101	184-MW-105		184-MW-106R	184-MW-102	
January	6.60	5.97	0.63	6.59	6.74	-0.15
February	6.37	6.01	0.36	6.31	6.51	-0.20
March	6.82	6.48	0.34	6.70	6.84	-0.14
April	6.70	6.56	0.14	6.85	6.97	-0.12
May	5.80	6.01	-0.21	5.95	6.43	-0.48
June	5.64	6.00	-0.36	5.88	6.27 ⁴	-0.39
July	5.51	5.85	-0.34	N/A	N/A ³	N/A
August	6.00	5.75	0.25	N/A	N/A ³	N/A
September	5.19	5.73	-0.54	5.52	5.92 ⁴	-0.40
October	4.68	5.40	-0.72	N/A	N/A ³	N/A
November	4.55	5.17	-0.62	4.84	5.46 ⁴	-0.62
December	5.40	5.11	0.29	5.16	5.61	-0.45

Notes:

The November Head difference for MW-101 / MW-105 was incorrectly reported on the Q4 NJCU Submittal. The revised value is included in the above table.

1. Average monthly head from data logger
2. Average monthly gradient across barrier wall. Bold values do not meet the LTMP criterion of inward gradient (>0.1 ft)
3. Full-month Logger Malfunction

Table 4-3
REVISED Monthly Average Heads and Gradients Across Barrier Walls - NJCU

	184-MW-103/184-MW-107			184-MW-104/184-MW-108		
	Exterior Piezometer/Monitoring Well Average Head (ft. msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft. msl) ¹	Average Head Difference (ft) ²	Exterior Piezometer/Monitoring Well Average Head (ft. msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft. msl) ¹	Average Head Difference (ft) ²
	2024 - Month	184-MW-103	184-MW-107	184-MW-104	184-MW-108	
January	7.28	7.11	0.17	7.52	7.50	0.02
February	6.99	6.78	0.21	7.26	7.20	0.06
March	7.37	7.28	0.09	7.75	7.60	0.15
April	7.34	7.31	0.03	7.62	7.65	-0.03
May	6.52	6.46	0.06	6.90	6.75	0.15
June	6.40	6.33	0.07	6.67	6.61	0.06
July	6.34	6.22	0.12	6.61	6.68	-0.07
August	6.66	6.54	0.12	7.11 ⁴	6.95	0.16
September	6.22	6.14	0.08	6.53	6.49	0.04
October	5.76	5.67	0.09	N/A ³	N/A	N/A
November	5.56	5.35	0.21	N/A ³	N/A	N/A
December	5.85	5.62	0.23	6.34 ⁴	6.09	0.25

Notes:

The September head difference for MW-104/MW-108 was incorrectly reported as N/A on the Q3 NJCU submittal. The revised value is included in the above table.

1. Average monthly head from data logger
2. Average monthly gradient across barrier wall. Bold values do not meet the LTMP criterion of inward gradient (>0.1 ft)
3. Full-month Logger Malfunction

Table 4-4
REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	087-PZ-1/087-PZ-2			087-PZ-3/087-PZ-4		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}
	PZ-1	PZ-2		PZ-3	PZ-4	
2024 - Month						
January	6.06	3.76	2.30	6.03	3.78	2.25
February	5.06	3.62	1.44	5.42	4.01	1.41
March	6.18	3.93	2.25	5.94	4.42	1.52
April	5.58	4.28	1.30	6.05	4.21	1.84
May	4.12	3.83	0.29	5.06	3.32	1.74
June	N/A ⁴	N/A	N/A	4.59	3.32	1.27
July	N/A	N/A ⁴	N/A	4.24	3.07	1.17
August	4.98	3.64 ⁵	1.34	4.75	2.99	1.76
September	3.64	3.71	-0.07	4.51	2.58	1.93
October	3.01	3.53	-0.52	3.72	2.64	1.08
November	2.68	3.18	-0.50	3.51	2.36	1.15
December	3.50	2.94	0.56	3.77	2.46	1.31

1. Average monthly head from datalogger
2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
3. Positive value indicates inward gradient towards SA-6 North soil containment cell.
4. Full-month Logger Malfunction.
5. Partial-month Logger Malfunction

Table 4-4
REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	087-PZ-5/087-PZ-6			087-PZ-7/087-PZ-8		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}
	2024 - Month	PZ-5	PZ-6	PZ-7	PZ-8	
January	6.65	3.55	3.10	8.61	4.24	4.37
February	6.11	3.77	2.34	8.56	4.64	3.92
March	6.74	3.83	2.91	8.56	4.30	4.26
April	6.38	3.65	2.73	8.23	3.63	4.60
May	5.63	3.60	2.03	7.82	2.72	5.10
June	5.55	3.43	2.12	7.87	2.00	5.87
July	5.22	3.16	2.06	7.65	1.59	6.06
August	5.78	2.85	2.93	7.65	1.30	6.35
September	5.09	2.73	2.36	7.22	2.08	5.14
October	4.79	2.60	2.19	7.03	2.29	4.74
November	4.64	2.52	2.12	6.99	2.35	4.64
December	5.09	2.48	2.61	7.57	2.46	5.11

1. Average monthly head from datalogger
2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
3. Positive value indicates inward gradient towards SA-6 North soil containment cell.

Table 4-4
REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	087-PZ-9/087-PZ-10			124-PZ-11/124-PZ-12		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,4}
	2024 - Month	PZ-9	PZ-10	PZ-11	PZ-12	
January	3.26	5.10	-1.84	6.96	5.07	1.89
February	3.21	4.99	-1.78	6.78	4.83	1.95
March	3.21	4.87	-1.66	7.15	4.94	2.21
April	3.26	4.58	-1.32	6.67	5.33	1.34
May	2.81	3.66	-0.85	5.98	5.23	0.75
June	2.46	2.41	0.05	5.85	5.06	0.79
July	2.01	1.74	0.27	5.61	4.52	1.09
August	2.60	2.04	0.56	6.28	4.18	2.10
September	2.96	2.27	0.69	5.68	3.80	1.88
October	2.67	2.28	0.39	4.99	3.25	1.74
November	2.19	2.31	-0.12	4.75	2.94	1.81
December	2.45	2.67	-0.22	5.53	2.89	2.64

1. Average monthly head from datalogger
2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
3. Positive value indicates inward gradient towards SA-6 North soil containment cell.
4. Positive value indicates inward gradient towards SA-6 South soil containment cell.

Table 4-4
REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	124-PZ-13/124-PZ-14			124-PZ-15/124-PZ-16		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}
	2024- Month	PZ-13	PZ-14	PZ-15	PZ-16	
January	8.25	3.95	4.30	7.33	5.10	2.23
February	7.86	3.60 ⁵	4.26	6.96	4.07	2.89
March	8.34	4.24	4.10	7.51	5.09	2.42
April	7.58	5.45	2.13	6.93	5.71	1.22
May	6.27	5.12	1.15	5.65	5.28	0.37
June	5.83	4.13 ⁵	1.70	4.97	4.45	0.52
July ⁴	N/A	N/A ⁴	N/A	4.67	3.52	1.15
August	6.26	2.66 ⁵	3.60	5.22	2.79	2.43
September	5.62	2.50	3.12	5.04	2.50	2.54
October	4.98	2.57	2.41	4.30	2.75	1.55
November	4.73	2.50	2.23	4.00	2.50 ⁵	1.50
December	4.93 ⁵	2.44	2.49	4.66	2.28 ⁵	2.38

1. Average monthly head from datalogger
2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
3. Positive value indicates inward gradient towards SA-6 South soil containment cell.
4. Full-month Logger Malfunction.
5. Partial-month Logger Malfunction.

Table 4-4
REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	124-PZ-17/124-PZ-18			124-PZ-19R/124-PZ-20R		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}
	2024 - Month	PZ-17	PZ-18	PZ-19R	PZ-20R	
January	5.68	3.93	1.75	3.59	3.52	0.07
February	5.51	3.52	1.99	3.60	3.12	0.48
March	5.94	4.05	1.89	3.57	3.55	0.02
April	5.57	5.02	0.55	3.56	5.14	-1.58
May	4.54	4.80	-0.26	3.33	5.00	-1.67
June	4.19	4.03	0.16	3.19	4.11	-0.92
July	3.89	3.10	0.79	3.24	3.13	0.11
August	4.16	2.42	1.74	3.21	2.35	0.86
September	3.99	2.19	1.80	3.52	2.23	1.29
October	3.66	2.60	1.06	3.41	2.64	0.77
November	3.31	2.44	0.87	2.88	2.65	0.23
December	3.69	2.35	1.34	3.09	2.36	0.73

1. Average monthly head from datalogger
2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
3. Positive value indicates inward gradient towards SA-6 South soil containment cell.

Table 4-4
REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	115-PZ-500/115-W3-SO			115-PZ-501/115-E1A-SO		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}
	2024 - Month	PZ-500	W3-SO	PZ-501	E1A-SO	
January	4.73	3.86	0.87	5.12	3.98	1.14
February	4.70	3.49	1.21	5.33	3.49	1.84
March	4.83	3.60	1.23	5.46	4.18	1.28
April	4.75	4.66	0.09	5.27	5.07	0.20
May	4.26	4.81	-0.55	4.80	4.77	0.03
June	4.31	4.14	0.17	4.76	3.72	1.04
July	4.27	3.38	0.89	4.65	2.92	1.73
August	4.23	2.88	1.35	4.84	2.67	2.17
September	4.25	2.21	2.04	4.61	2.19	2.42
October	4.15	2.40	1.75	4.20	2.19	2.01
November	3.99	2.20	1.79	4.07	2.32	1.75
December	4.25	2.12	2.13	4.46	2.20	2.26

1. Average monthly head from datalogger
 2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
 3. Positive value indicates inward gradient towards SA-6 South soil containment cell.
- NA - data logger malfunctioned.

Table 4-4
REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	115-PZ-501/115-W5-SO			115-PZ-502/115-E4-SO		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,4}
	2024 - Month	PZ-501	W5-SO	PZ-502	E4-SO	
January	5.12	4.56	0.56	4.99	3.30	1.69
February	5.33	3.78	1.55	5.02	3.45	1.57
March	5.46	4.56	0.90	5.24	3.43	1.81
April	5.27	5.48	-0.21	5.14	3.78	1.36
May	4.80	4.97	-0.17	4.53	4.41	0.12
June	4.76	4.02	0.74	4.56	3.80	0.76
July	4.65	2.94	1.71	4.50	3.42	1.08
August	4.84	2.93	1.91	4.74	3.70	1.04
September	4.61	2.13	2.48	4.47	3.35	1.12
October	4.20	2.21	1.99	4.02	2.98	1.04
November	4.07	2.43	1.64	3.99	2.82	1.17
December	4.46	2.46	2.00	4.35	2.47	1.88

1. Average monthly head from datalogger
2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
3. Positive value indicates inward gradient towards SA-6 South soil containment cell.
4. Positive value indicates inward gradient towards SA-6 North soil containment cell.

Table 4-4
REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	115-PZ-502/115-E5-SO			115-PZ-503/115-W6-SO		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}
	2024 - Month	PZ-502	E5-SO	PZ-503	W6-SO	
January	4.99	4.66	0.33	4.67	4.79	-0.12
February	5.02	4.38	0.64	4.67	5.02	-0.35
March	5.24	4.94	0.30	4.79	4.74	0.05
April	5.14	4.85	0.29	4.72	3.54	1.18
May	4.53	3.47	1.06	4.42	2.67	1.75
June	4.56	3.08	1.48	4.47	1.99	2.48
July	4.50	2.66	1.84	4.42	1.76	2.66
August	4.74	2.73	2.01	4.54	1.61	2.93
September	4.47	2.56	1.91	4.56	1.83	2.73
October	4.02	2.44	1.58	4.18 ⁵	2.21	1.97
November	3.99	2.40	1.59	4.13	2.17	1.96
December	4.35	2.41	1.94	4.58	2.38	2.20

1. Average monthly head from datalogger
2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
3. Positive value indicates inward gradient towards SA-6 North soil containment cell.
4. Full-month Logger Malfunction.
5. Partial-month Logger Malfunction.

Table 4-4
 REVISED Monthly Average Heads and Gradients Across Barrier Walls - SA-6

	115-PZ-503/115-W1-SO		
	Exterior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Interior Piezometer/Monitoring Well Average Head (ft, msl) ¹	Average Head Difference (ft) ^{2,3}
	2024 - Month	PZ-503	W1-SO
January	4.67	4.18	0.49
February	4.67	4.37	0.30
March	4.79	4.04	0.75
April	4.72	3.30	1.42
May	4.42	2.43	1.99
June	4.47	1.96	2.51
July	4.42	1.62	2.80
August	4.54	1.45	3.09
September	4.56	1.78	2.78
October	4.18 ⁵	1.99	2.19
November	4.13	2.04	2.09
December	4.58	2.16	2.42

1. Average monthly head from datalogger
2. Average monthly gradient across barrier wall. **Bold** values do not meet the LTMP criterion of inward gradient (>0.1ft)
3. Positive value indicates inward gradient towards SA-6 North soil containment cell.

Table 5-1
Groundwater Quality Data from GWET Extraction Wells

Parameter	28-Dec-21			24-Jun-22			28-Jun-23			12-Jul-24		
	PW-1 (ug/L)	PW-3 (ug/L)	115-MW. 215BR (ug/L)									
Hexavalent Chromium	15,900	18,600	10,700	14,800	16,100	11,700	13,500	13,100	9,700	11,800	10,500	10,000
Total Chromium	15,400	17,200	10,600	14,600	15,500	10,700	14,200	11,900	9,660	12,600	13,600	10,700

ND = Not detected above reporting limit.

Volatile Organic Compounds no longer analyzed as of fourth quarter 2021.

Hexavalent Chromium and Total Chromium sampled annually as of 2022.

Table 5-2
Summary of Groundwater Quality Monitoring Results - SA-6 and SA-7

Sample Location	Sample Date	Total Chromium µg/l	Total Chromium µg/l (Filtered)	Hexavalent Chromium µg/l	Hexavalent Chromium µg/l (Filtered)
087-PZ-10	5/22/2024	<4.0	<4.0	<5.5	<5.5
124-PZ-20R	5/22/2024	8.5	8.6	<5.5	<5.5

Notes:

Bold Exceeds GWQS 70 µg/l

GWQS - Highest of NJDEP Ground Water Quality Standards, N.J.A.C 7:9C; last amended 6/20/2020

U - Not detected above reporting limit

J - Estimated value

µg/l - micrograms/liter

Table 5-3
Summary of Groundwater Quality Monitoring Results - NJCU

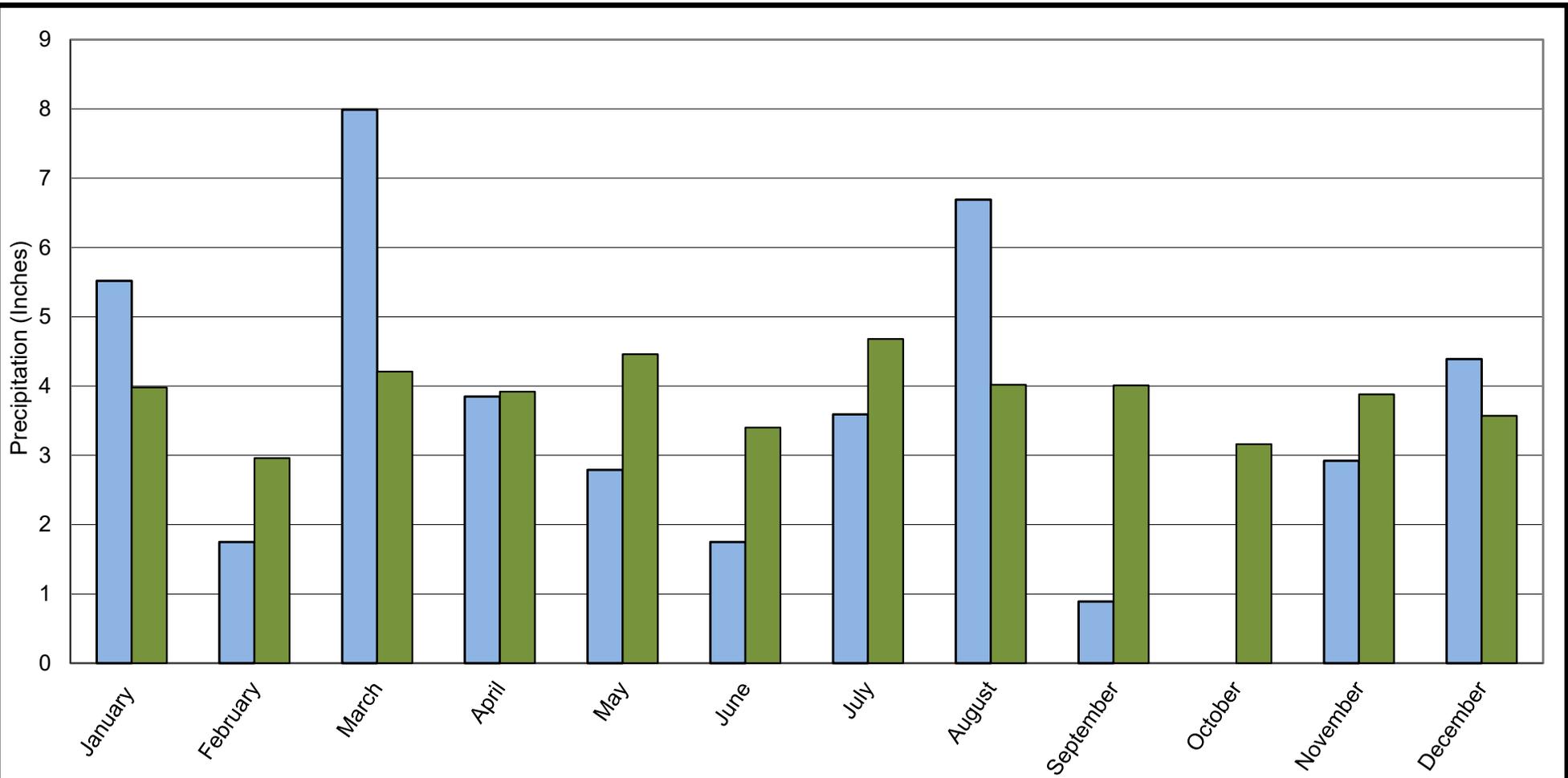
Sample Location	Sample Date	Total Chromium ug/l	Total Chromium ug/l (Filtered)	Hexavalent Chromium ug/l	Hexavalent Chromium ug/l (Filtered)
184-MW-102	3/12/2024	10 U	10 U	5.5 U	5.5 U
	6/19/2024	10 U	10 U	5.5 U	5.5 U
	9/4/2024	10 U	10 U	5.5 U	5.5 U
	11/14/2024	10 U	10 U	5.5 U	5.5 U
184-MW-105	3/12/2024	10 U	10 U	5.5 U	5.5 U
	3/12/2024 DUP	10 U	10 U	5.5 U	5.5 U
	6/19/2024	10 U	10 U	5.5 U	5.5 U
	6/19/2024 DUP	10 U	10 U	5.5 U	5.5 U
	9/4/2024	10 U	10 U	5.5 U	5.5 U
	9/4/2024 DUP	10 U	10 U	5.5 U	5.5 U
	11/14/2024	10 U	10 U	5.5 U	5.5 U
	11/4/2024 DUP	10 U	10 U	5.5 U	5.5 U
184-MW-107	3/12/2024	43.8	39.5	5.5 U	5.5 U
	6/19/2024	604	10 U	5.5 U	5.5 U
	9/4/2024	10 U	10 U	5.5 U	5.5 U
	11/14/2024	382	10 U	5.5 U	5.5 U
184-MW-108	3/12/2024	10 U	10 U	5.5 UJ	5.5 UJ
	6/19/2024	10 U	10 U	5.5 U	5.5 U
	9/4/2024	10 UJ	10 UJ	5.5 U	5.5 U
	11/14/2024	10 U	10 UJ	5.5 U	5.5 U

BOLD - sample exceeds the GWQS of 70 ug/l for Total Chromium

U - Value not detected above reporting limit

J- Estimated value

FIGURES



Month

■ 2024 Precipitation
 ■ Average Precipitation

FIGURE 2-1

2024 Monthly Precipitation

Integrated Annual Groundwater Performance Report
2024



Figure 3-1
GWET Pumping Rates and Downtimes in 2024

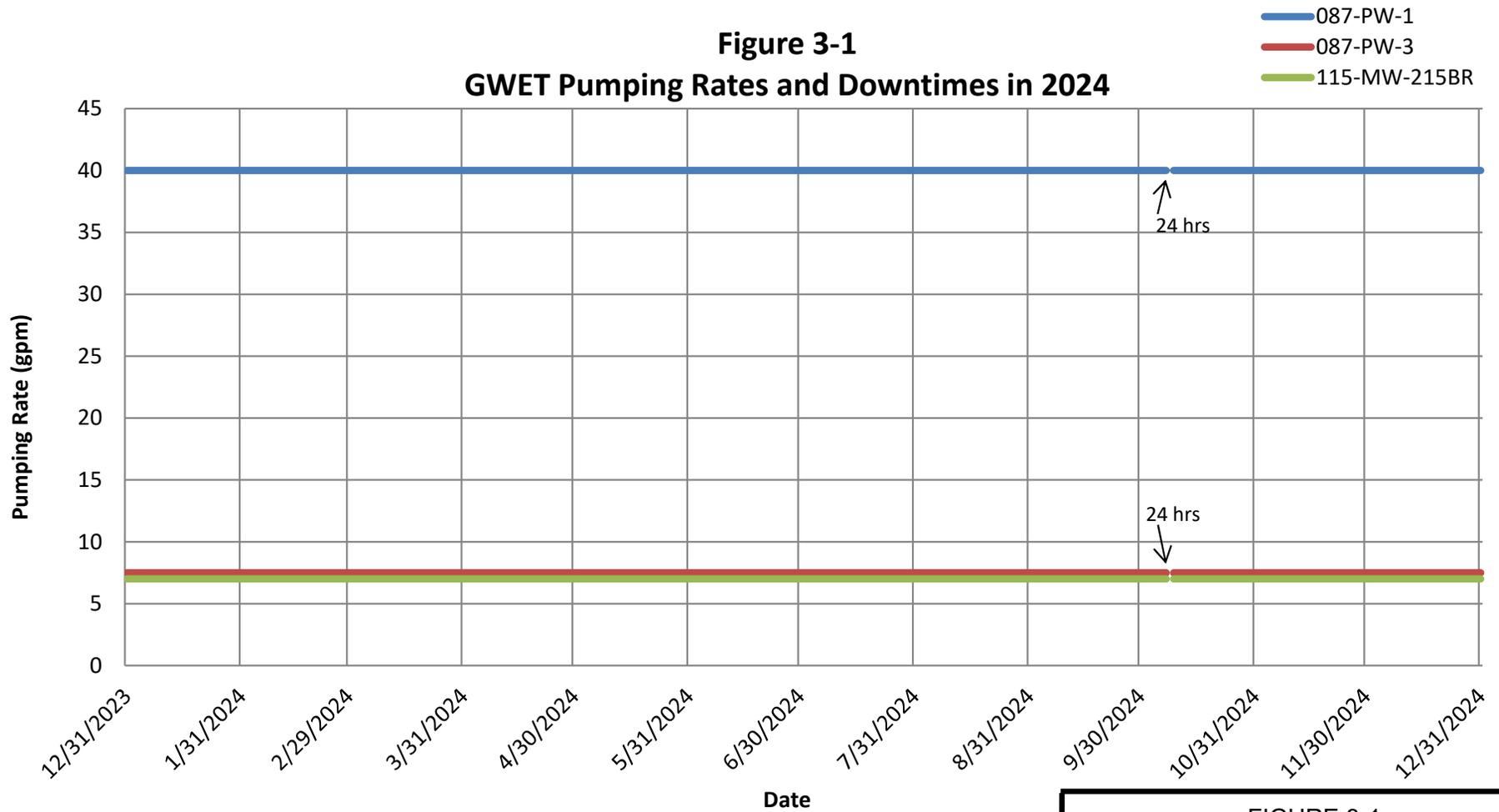
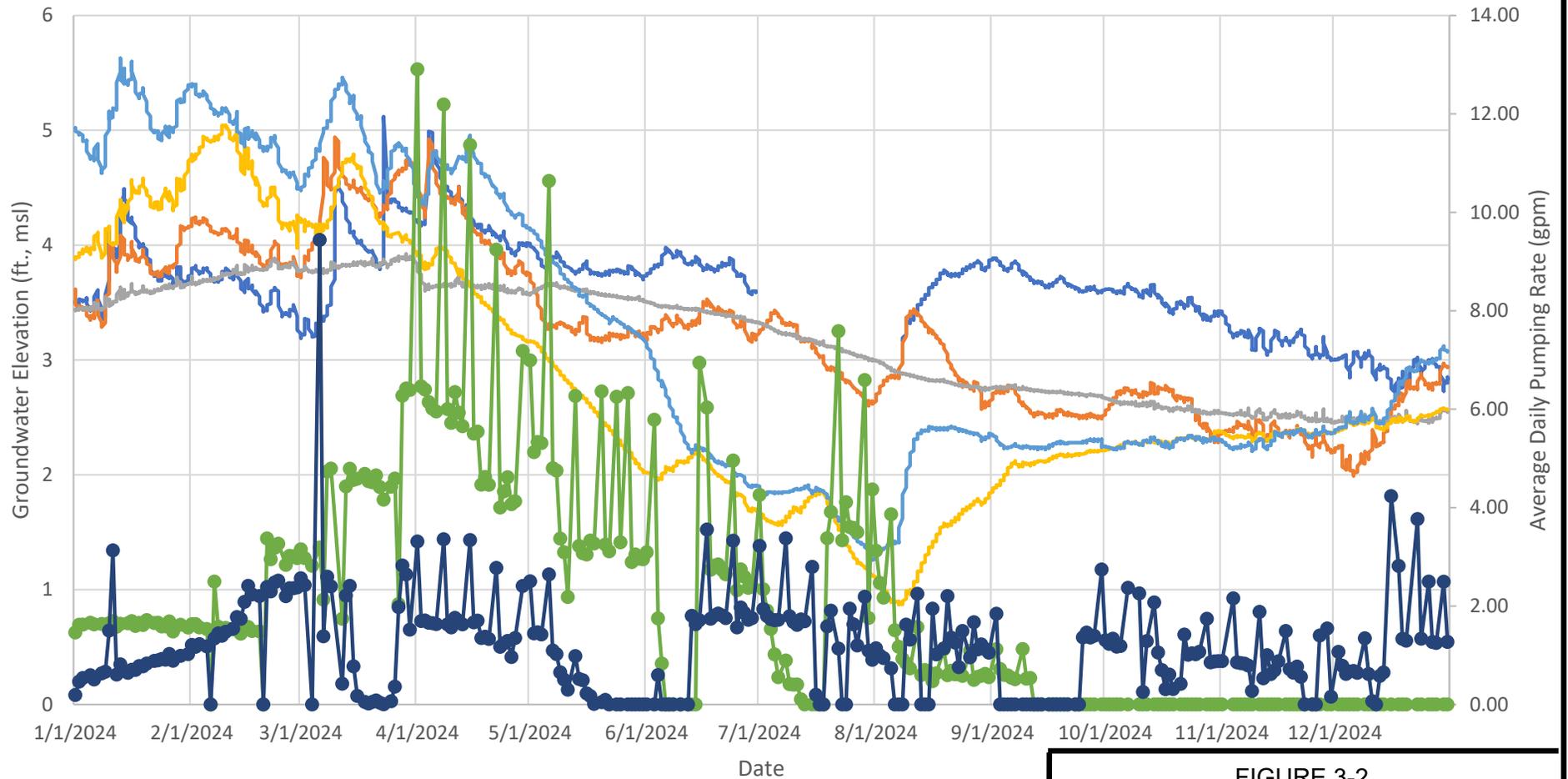


FIGURE 3-1
GWET Pumping Rates and Downtimes
In 2024

Integrated Annual Groundwater Performance Report
2024

Contingent Pumping vs. Interior Heads - SA-6 North



—● PZ-2 (Inside) —● PZ-4 (Inside) —● PZ-6 (Inside) —● PZ-8 (Inside)
—● PZ-10 (Inside) —● PS-1N —● PS--2N

Gap in data = data logger malfunction

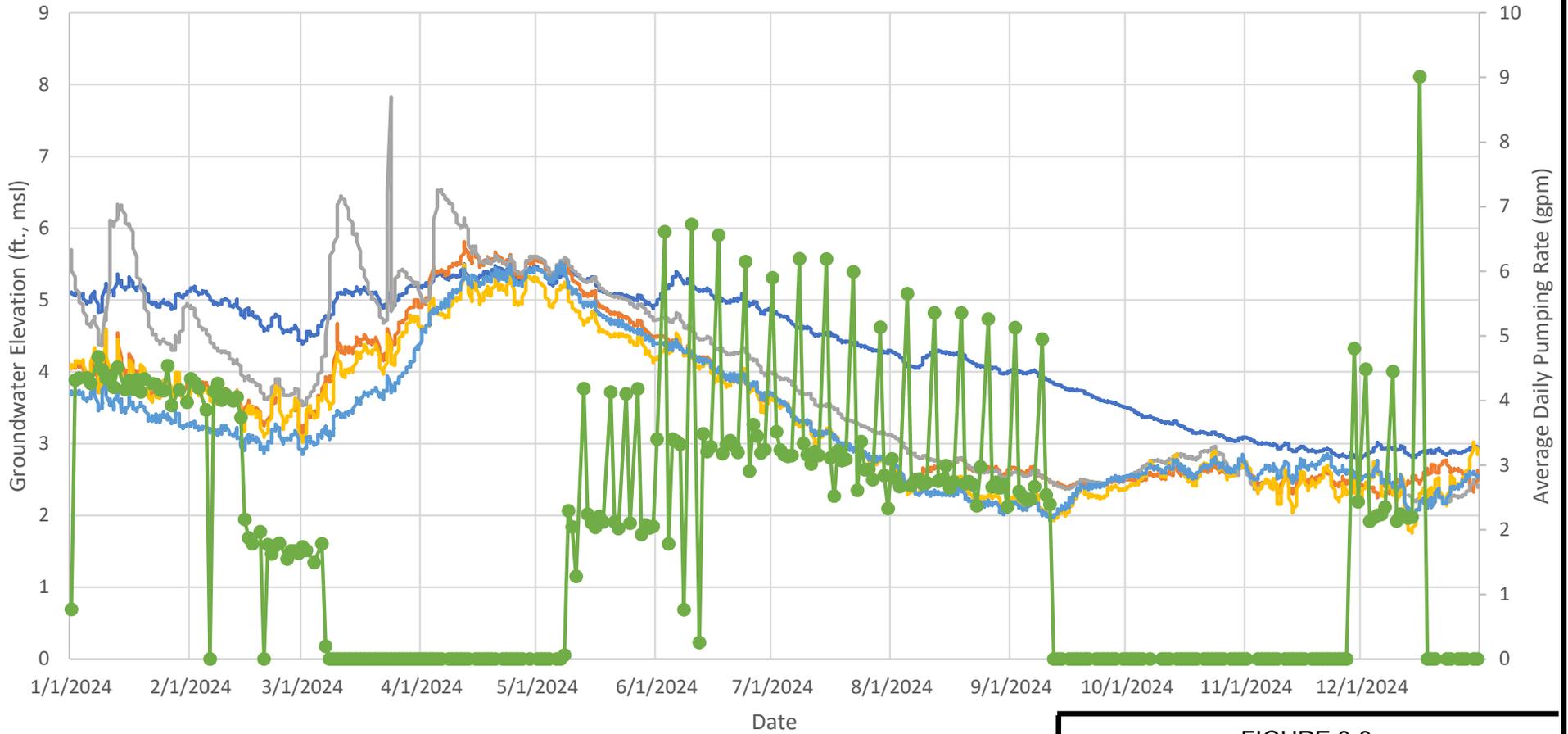
FIGURE 3-2

**Contingent Pumping vs.
Interior Heads – SA6 North**

Integrated Annual Groundwater Performance Report
2024



Contingent Pumping vs. Interior Heads - SA-6 South



- PZ-12 (Inside)
- PZ-14 (Inside)
- PZ-16 (Inside)
- PZ-18 (Inside)
- PZ-20R (Inside)
- PS-1S

Gap in data = data logger malfunction

FIGURE 3-3

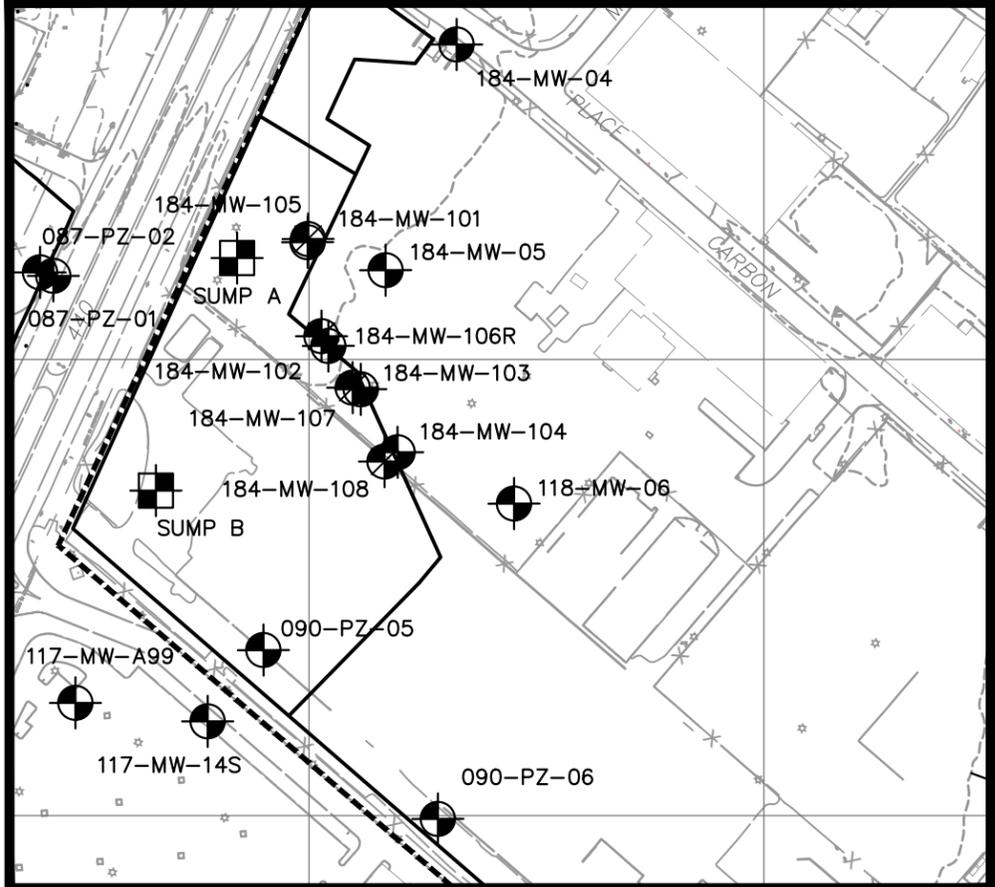
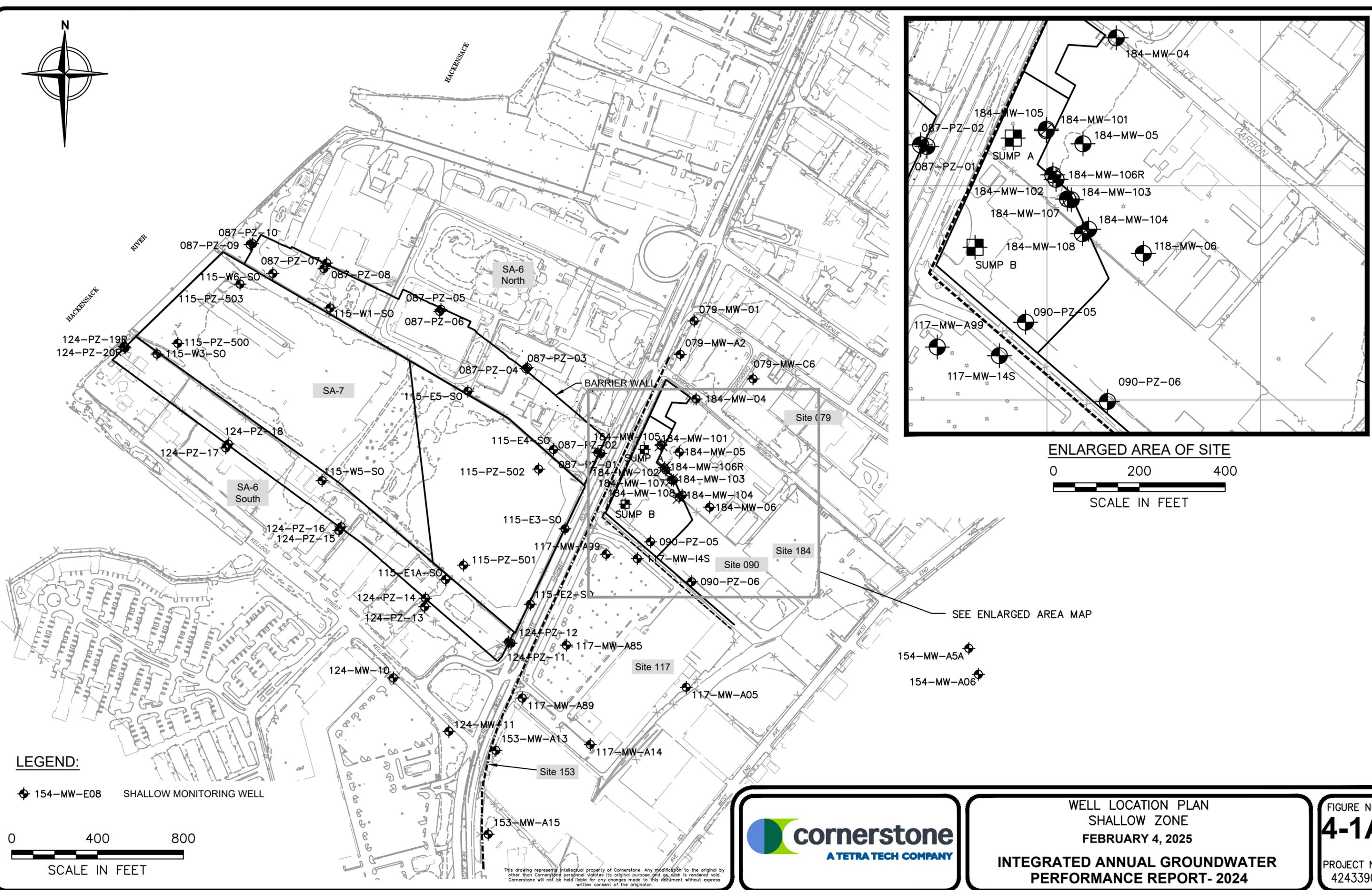
Contingent Pumping vs. Interior Heads - SA6 South

Integrated Annual Groundwater Performance Report 2024





File: X:\PROJECTS\HONEYWELL\130109 - SA7\PROJECT DRAWINGS\2024-Annual Figures\H15WSF-S-SITE-4-1A.dwg Layout: FIGURE 4-1A User: johnguliano Oct 31, 2024 - 11:45am



ENLARGED AREA OF SITE
0 200 400
SCALE IN FEET

LEGEND:
◆ 154-MW-E08 SHALLOW MONITORING WELL

0 400 800
SCALE IN FEET

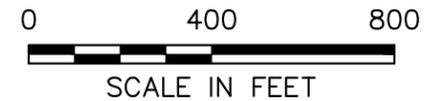
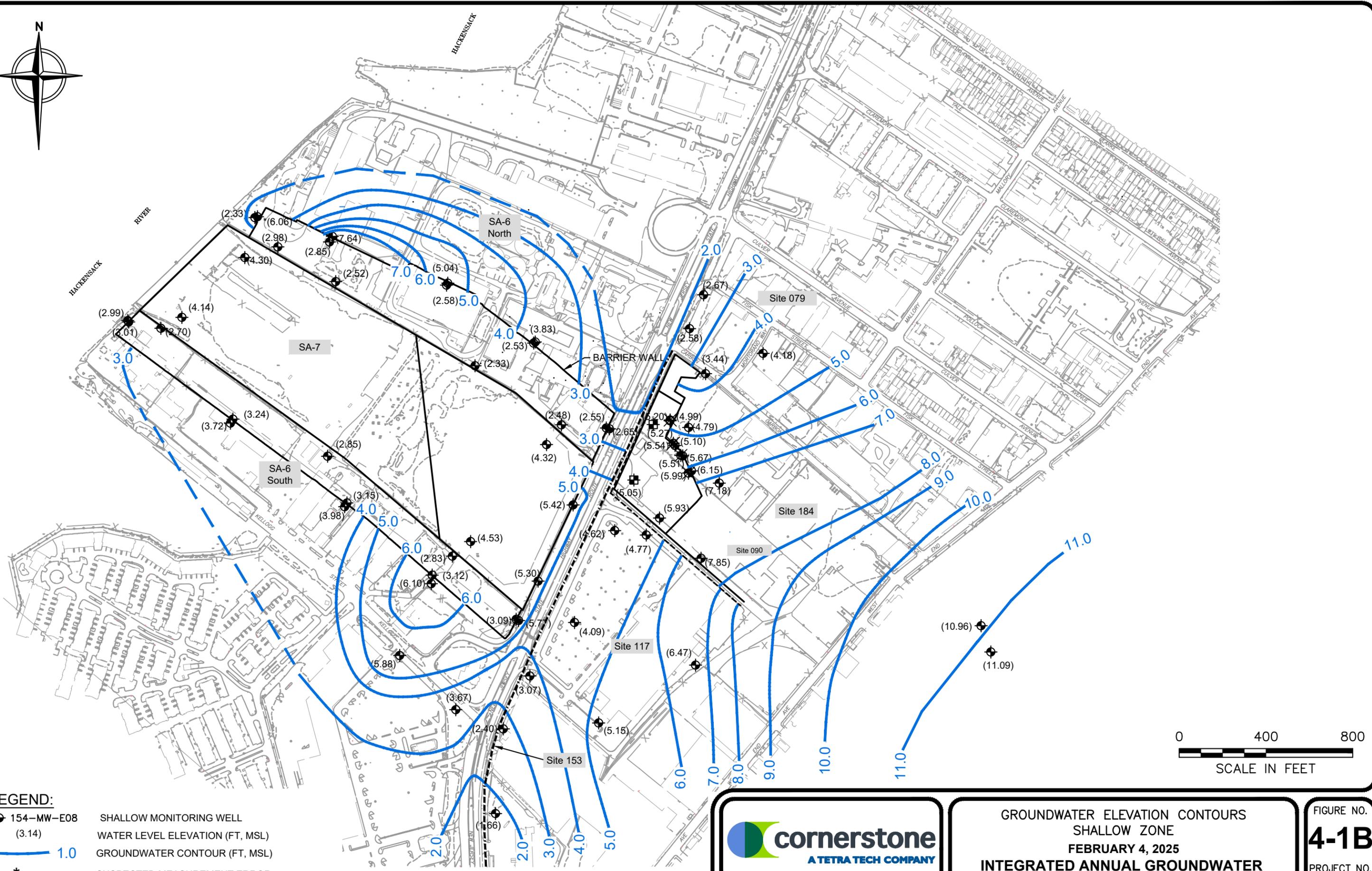
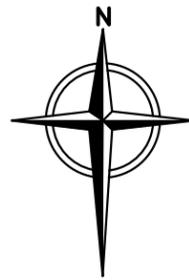
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WELL LOCATION PLAN
SHALLOW ZONE
FEBRUARY 4, 2025
INTEGRATED ANNUAL GROUNDWATER
PERFORMANCE REPORT-2024

FIGURE NO.
4-1A
PROJECT NO.
4243390

File: X:\PROJECTS\HONEYWELL\130109 - SA7\PROJECT DRAWINGS\2024-Annual Figures\H15WSF-S-SITE-4-1B.dwg Layout: FIGURE 4-1B User: john.guliano Apr 14, 2025 - 7:58am



LEGEND:

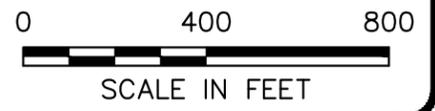
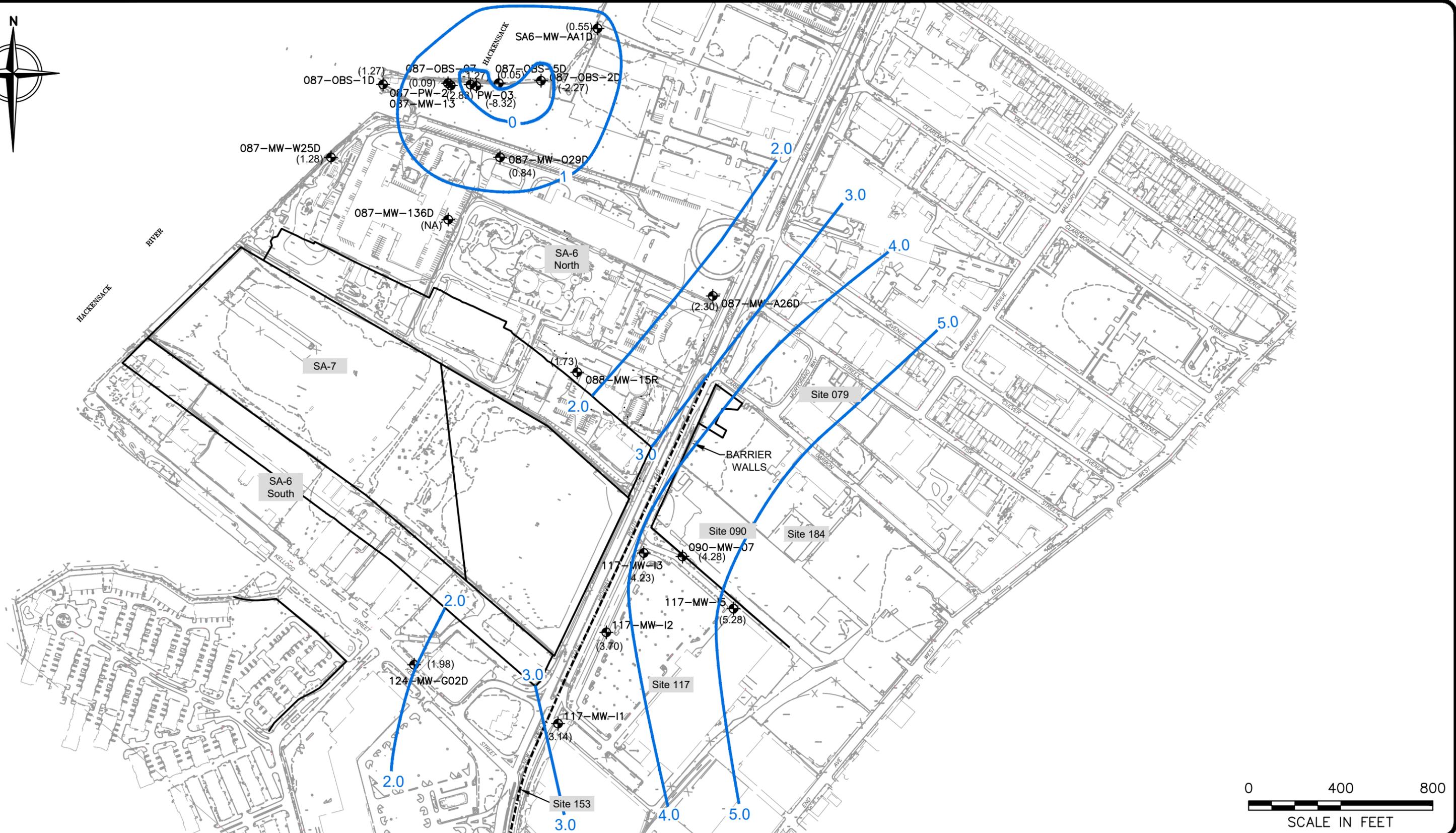
- 154-MW-E08 (3.14) SHALLOW MONITORING WELL
- WATER LEVEL ELEVATION (FT, MSL)
- 1.0 GROUNDWATER CONTOUR (FT, MSL)
- * SUSPECTED MEASUREMENT ERROR. VALUE NOT USED IN CONTOURING.

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GROUNDWATER ELEVATION CONTOURS
SHALLOW ZONE
FEBRUARY 4, 2025
INTEGRATED ANNUAL GROUNDWATER
PERFORMANCE REPORT- 2024

FIGURE NO.
4-1B
PROJECT NO.
4243390



LEGEND:

- 087-MW-029D
 (3.45)
- 1.0

INTERMEDIATE ZONE MONITORING WELL
 WATER LEVEL ELEVATION (FT, MSL)
 GROUNDWATER CONTOUR (FT, MSL)

VALUE FOR 087-MW-13 NOT USED IN CONTOURING.
 SUSPECTED MEASUREMENT ERROR.

FIGURE REVISED JANUARY 2020
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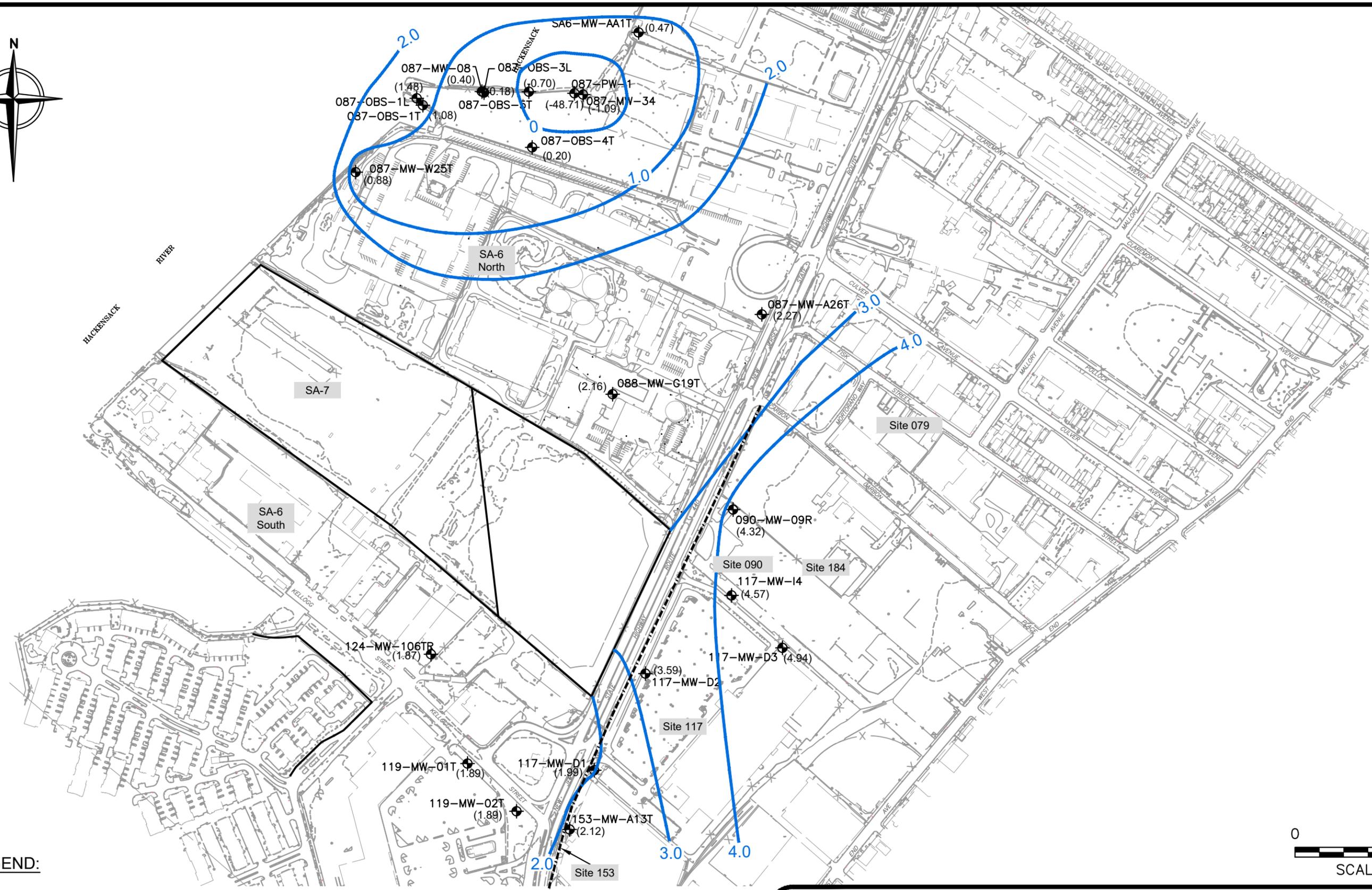


GROUNDWATER ELEVATION CONTOURS
 INTERMEDIATE ZONE
 FEBRUARY 4, 2025
**INTEGRATED ANNUAL GROUNDWATER
 PERFORMANCE REPORT- 2024**

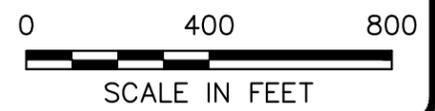
FIGURE NO.
4-2
 PROJECT NO.
 4243390

File: X:\PROJECTS\HONEYWELL\130109 - SA7_PROJECT DRAWINGS\2024-Annual Figures\H15WSF-S-SITE-4-2.dwg Layout: FIGURE 4-2 User: johngiuliano Apr 14, 2025 - 10:12am

File: X:\PROJECTS\HONEYWELL\130109 - SKY\PROJECT DRAWINGS\2024-Annual Figures\HWSF-S-SITE-4_3.dwg Layout: FIGURE 4-3 User: john.guliano Apr 14, 2025 - 7:52am



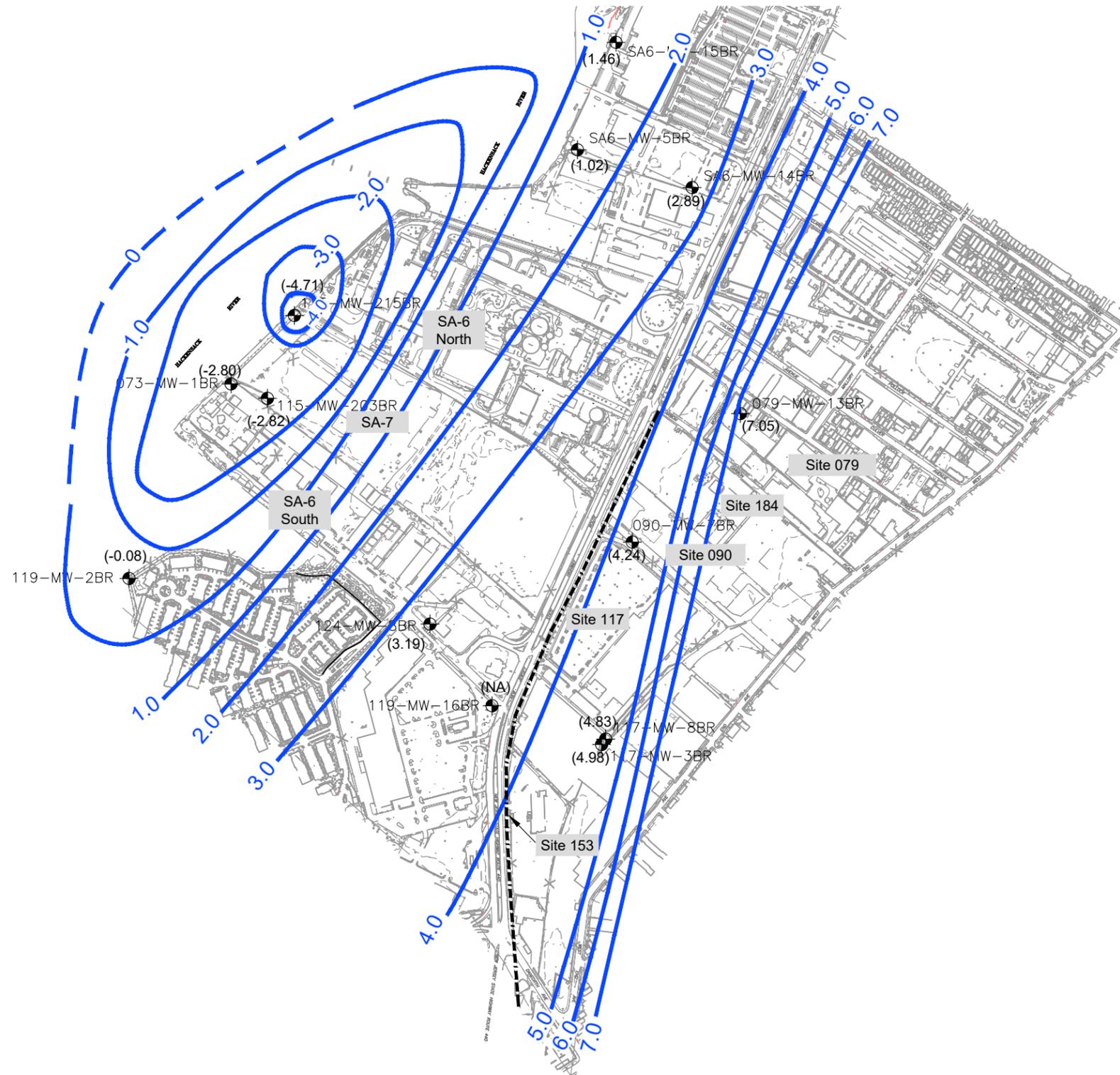
- LEGEND:**
-  087-MW-029D DEEP ZONE MONITORING WELL
 - (2.25) WATER LEVEL ELEVATION (FT, MSL)
 -  1.0 GROUNDWATER CONTOUR (FT, MSL)



GROUNDWATER ELEVATION CONTOURS
 DEEP ZONE
 FEBRUARY 4, 2025
 INTEGRATED ANNUAL GROUNDWATER
 PERFORMANCE REPORT- 2024

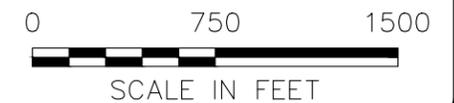
FIGURE NO.
4-3
 PROJECT NO.
 4243390

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LEGEND:

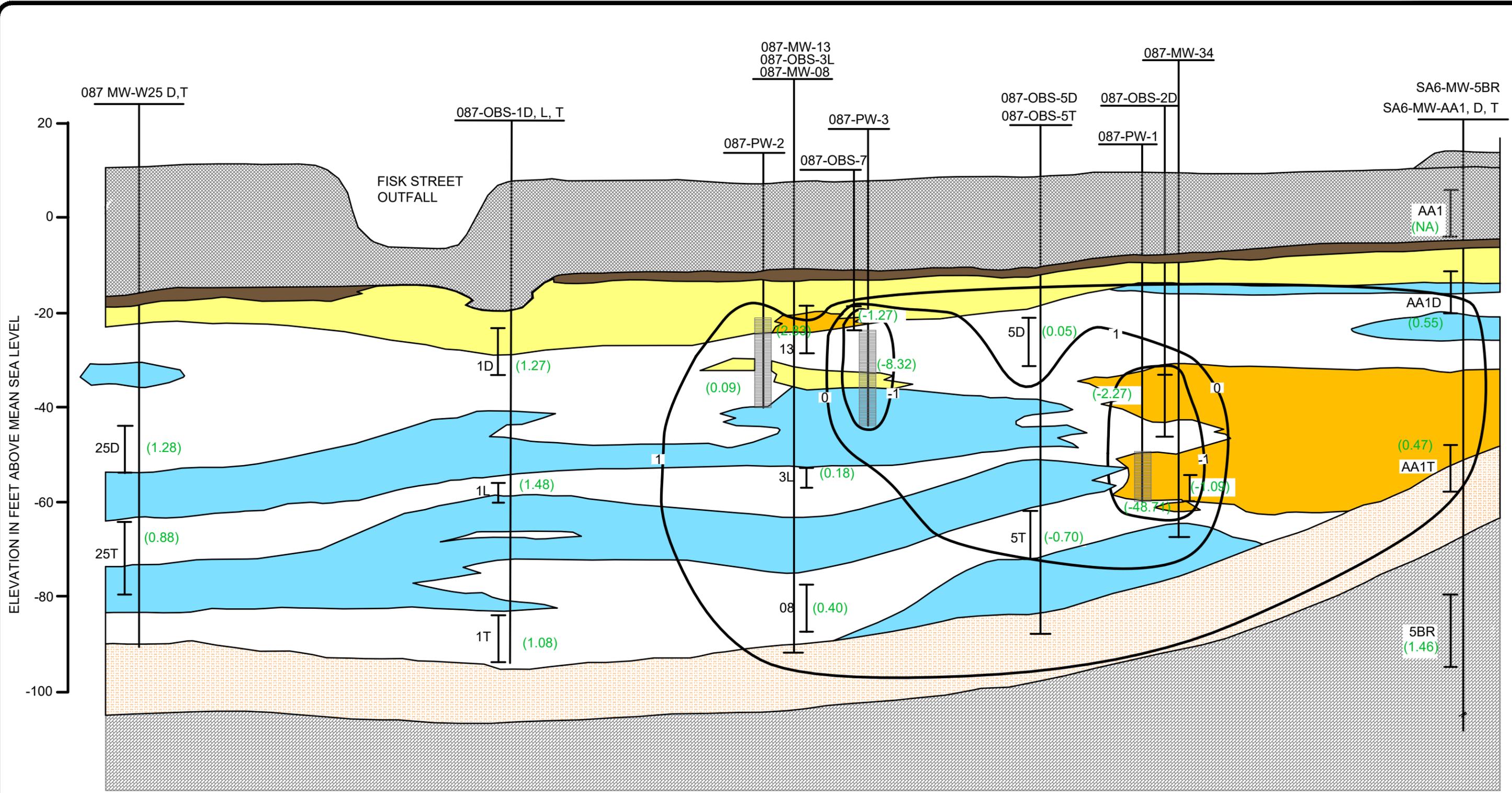
- 119-MW-11BR  BEDROCK ZONE MONITORING WELL
- (5.04) WATER LEVEL ELEVATION (FT, MSL)
-  1.0 GROUNDWATER CONTOUR (FT, MSL)



GROUNDWATER ELEVATION CONTOURS
BEDROCK ZONE
FEBRUARY 4, 2025
**INTEGRATED ANNUAL GROUNDWATER
PERFORMANCE REPORT- 2024**

FIGURE NO.
4-4
PROJECT NO.
4243390

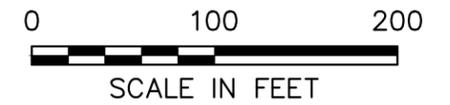
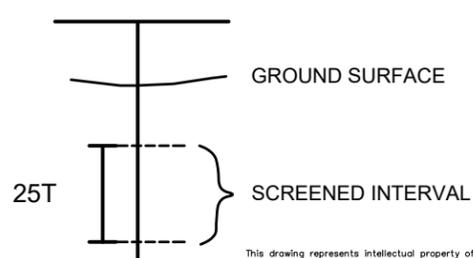
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LEGEND:

- | | |
|-----------------------------|--------------------------|
| FILL | INTERBED SILTS AND CLAYS |
| MEADOW MAT | GLACIAL TILL |
| FINE TO MEDIUM SAND | PASSAIC FORMATION |
| FINE, MEDIUM TO COARSE SAND | FINE TO VERY FINE SAND |

087-MW-W25T WELL DESIGNATION



087-MW-13 NOT USED IN CONTOURING,
SUSPECTED MEASUREMENT ERROR.

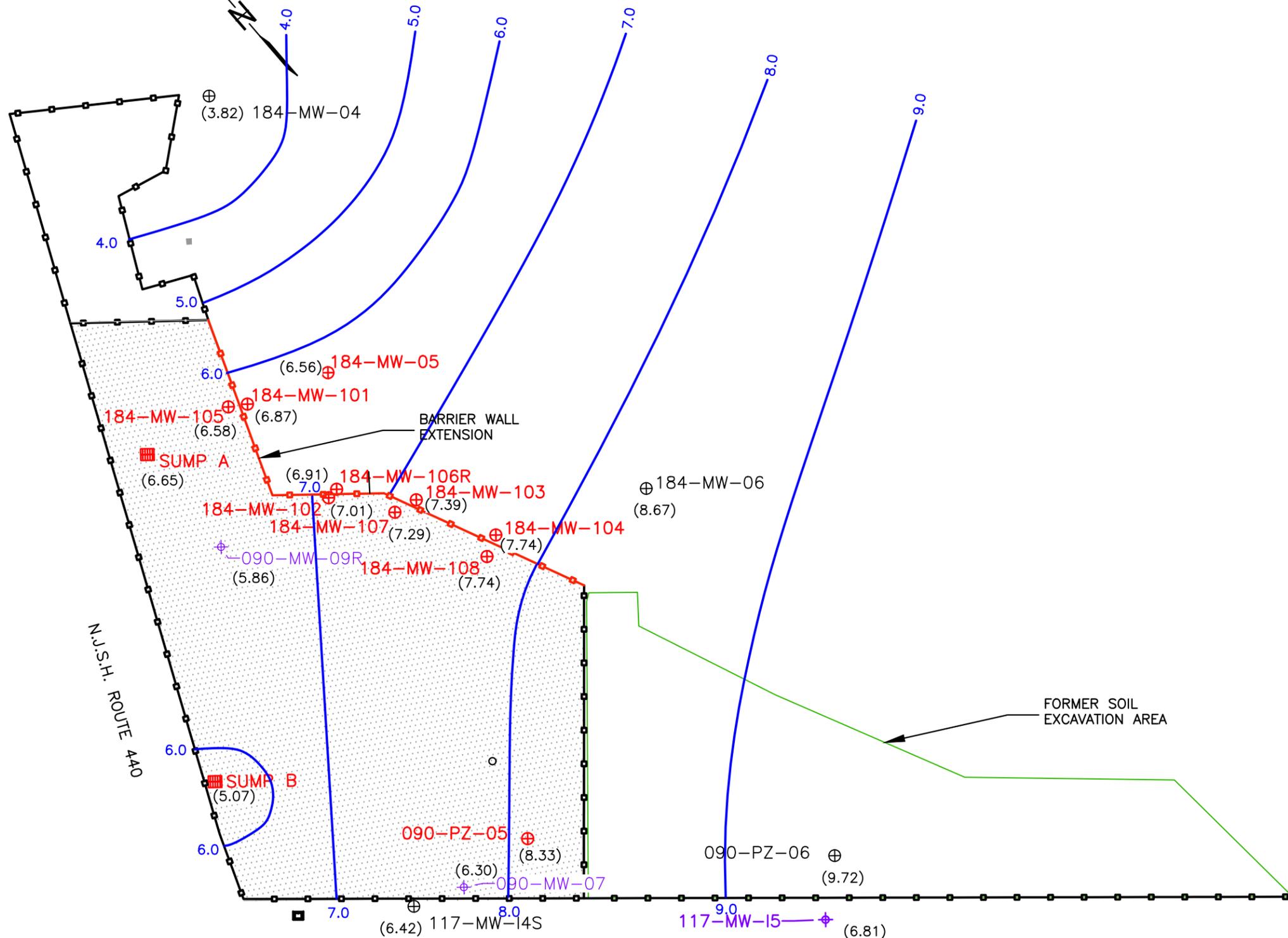
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GROUNDWATER ELEVATIONS (FT, MSL)
IN CROSS-SECTION
FEBRUARY 4, 2025
INTEGRATED ANNUAL GROUNDWATER
PERFORMANCE REPORT- 2024

FIGURE NO.
4-5
PROJECT NO.
4243390

⊕ 079-MW-A02
(3.82)



LEGEND

- ⊕ MONITORING WELL
 - ⊕ MONITORING WELL WITH DATA LOGGER
 - ⊕ PIEZOMETER
 - ⊕ INDICATES INTERMEDIATE OR DEEP ZONE MONITORING WELL
 - SUMP
 - SHEET PILE WALL
 - GROUNDWATER ELEVATION CONTOUR
 - CAP AREA
- TCE WELLS AS OF MAY 2019 ARE NO LONGER MEASURED

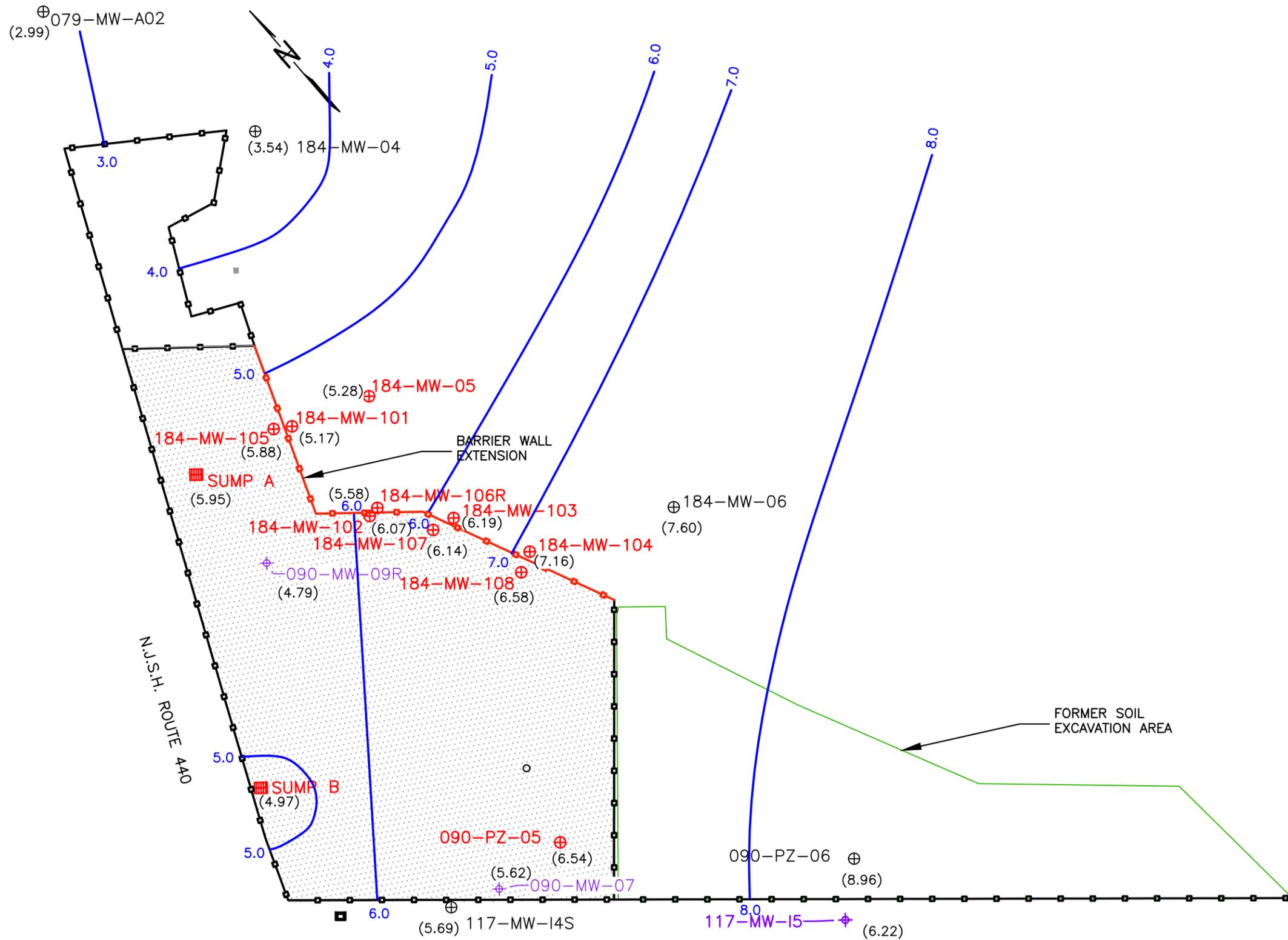


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GROUNDWATER ELEVATION CONTOURS (ft.,msl)
MARCH 27, 2024
STUDY AREA 5 - NJCU
INTEGRATED ANNUAL GROUNDWATER
PERFORMANCE REPORT- 2024

FIGURE NO.
4-6
PROJECT NO.
4243390



LEGEND

- ⊕ MONITORING WELL
 - ⊕ SHALLOW MONITORING LOCATION WITH DATA LOGGER INSTALLED
 - ⊕ MONITORING WELL
 - ⊕ INDICATES INTERMEDIATE OR DEEP ZONE MONITORING WELL
 - SUMP
 - SHEET PILE WALL
 - GROUNDWATER ELEVATION CONTOUR
 - SUMP A (5.95)
 - SUMP B (4.97)
 - CAP AREA
- TCE WELLS AS OF MAY 2019 ARE NO LONGER MEASURED

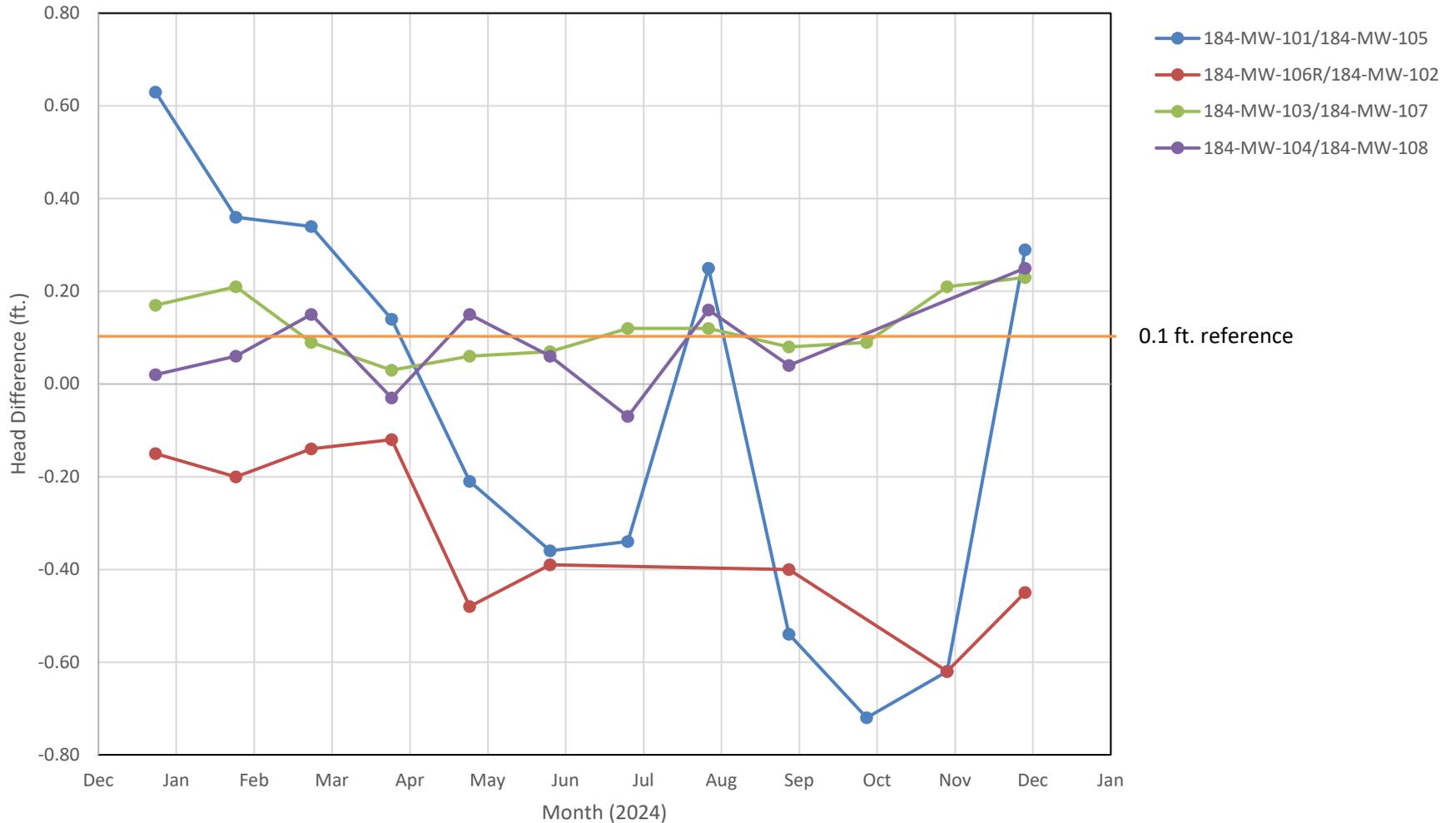


GROUNDWATER ELEVATION CONTOURS (ft.,msl)
JUNE 26, 2024
STUDY AREA 5 - NJCU
INTEGRATED ANNUAL GROUNDWATER
PERFORMANCE REPORT- 2024

FIGURE NO.
4-7
PROJECT NO.
4243390

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Head Differences NJCU Piezometers



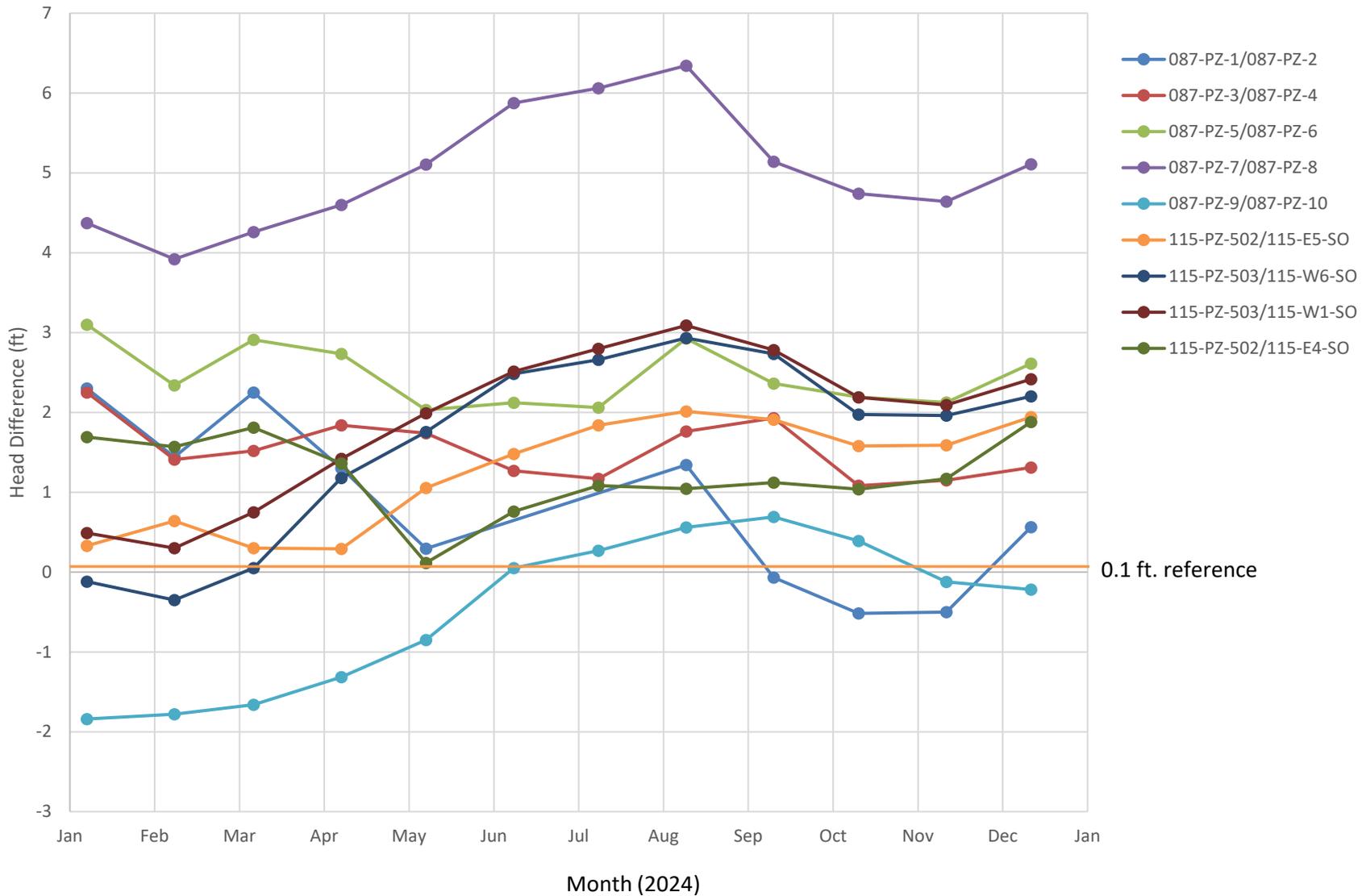
Note:
Positive head difference = inward gradient
Negative head difference = outward gradient
Gap in data = data logger malfunction



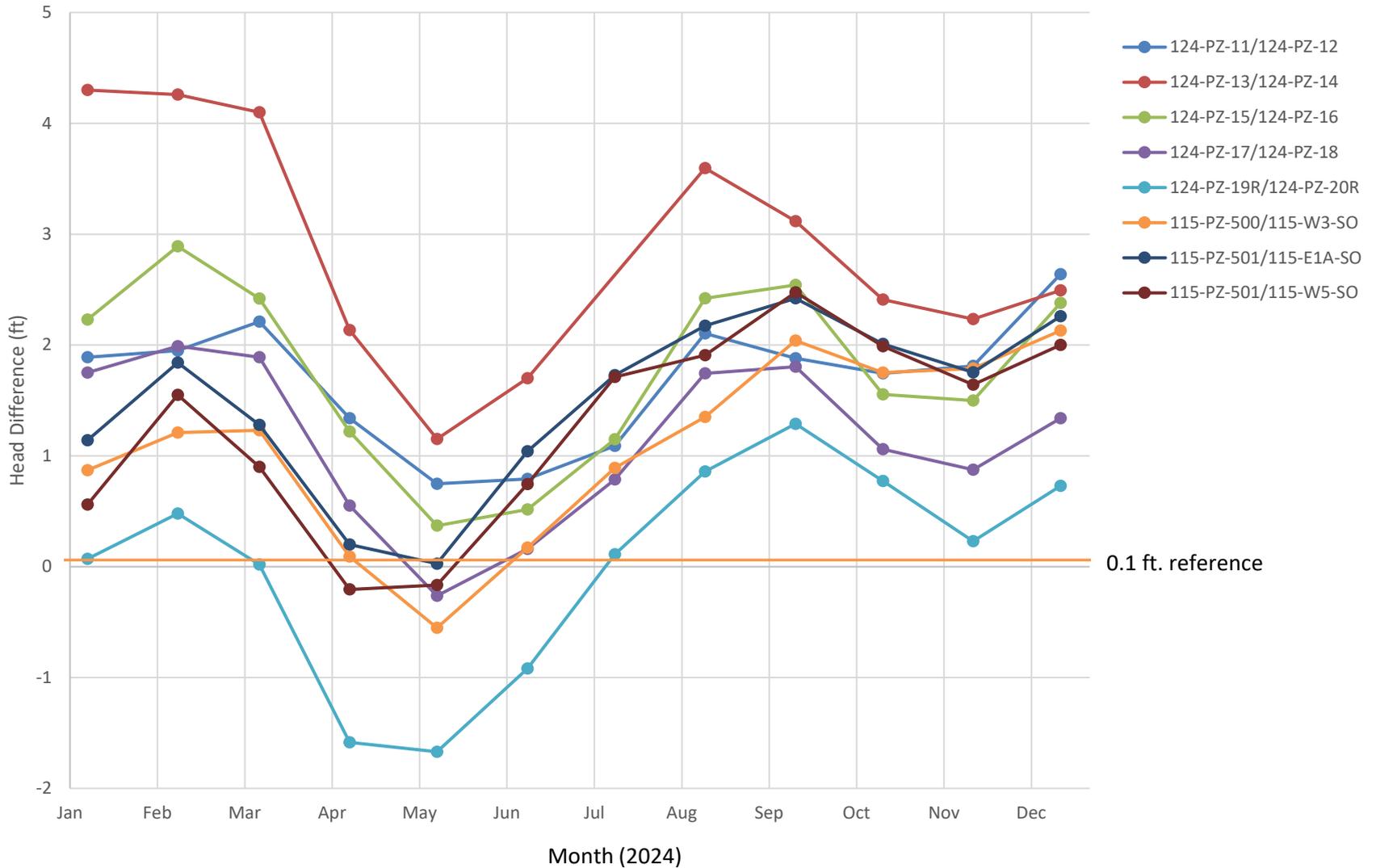
Integrated Annual Groundwater
Performance Report 2024

Monthly Average Head Differences Across
NJCU Barrier Wall
(Revised)

Figure
4-10



Note:
Positive head difference = inward gradient
Negative head difference = outward gradient



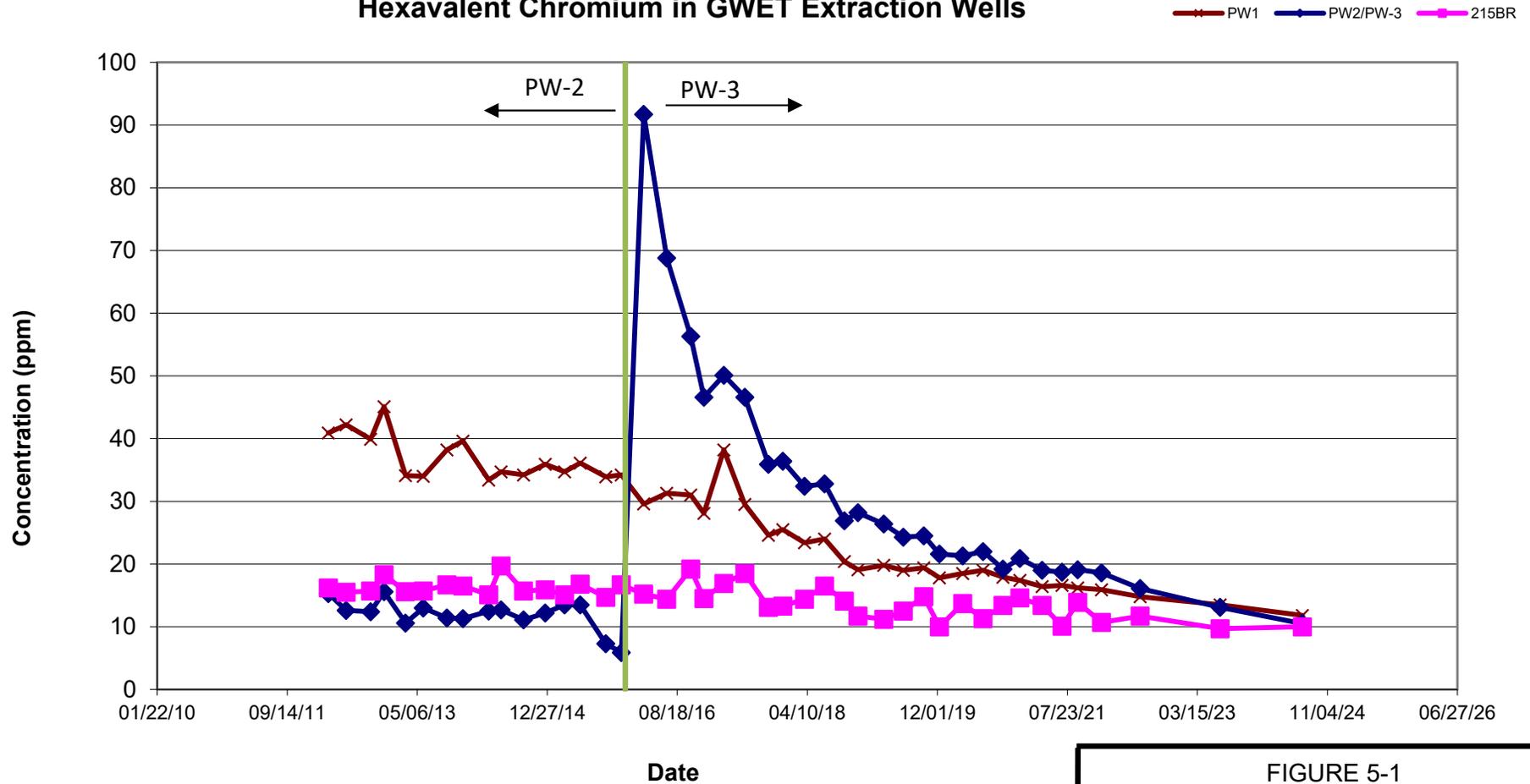
Note:
 Positive head difference = inward gradient
 Negative head difference = outward gradient


 A TETRA TECH COMPANY
 Integrated Annual Groundwater
 Performance Report 2024

Monthly Average Head Differences Across
 SA-6 South Barrier Wall
 (Revised)

Figure
 4-12

Hexavalent Chromium in GWET Extraction Wells



Notes:

Well 115-MW-203BR was replaced with 115-MW-215BR on 3/3/14.
Well 087-PW-2 was replaced with well 087-PW-3 on 12/22/15.

FIGURE 5-1

Hexavalent Chromium Trends in
GWET Extraction Wells

Integrated Annual Groundwater Performance Report
2024



079-MW-A02

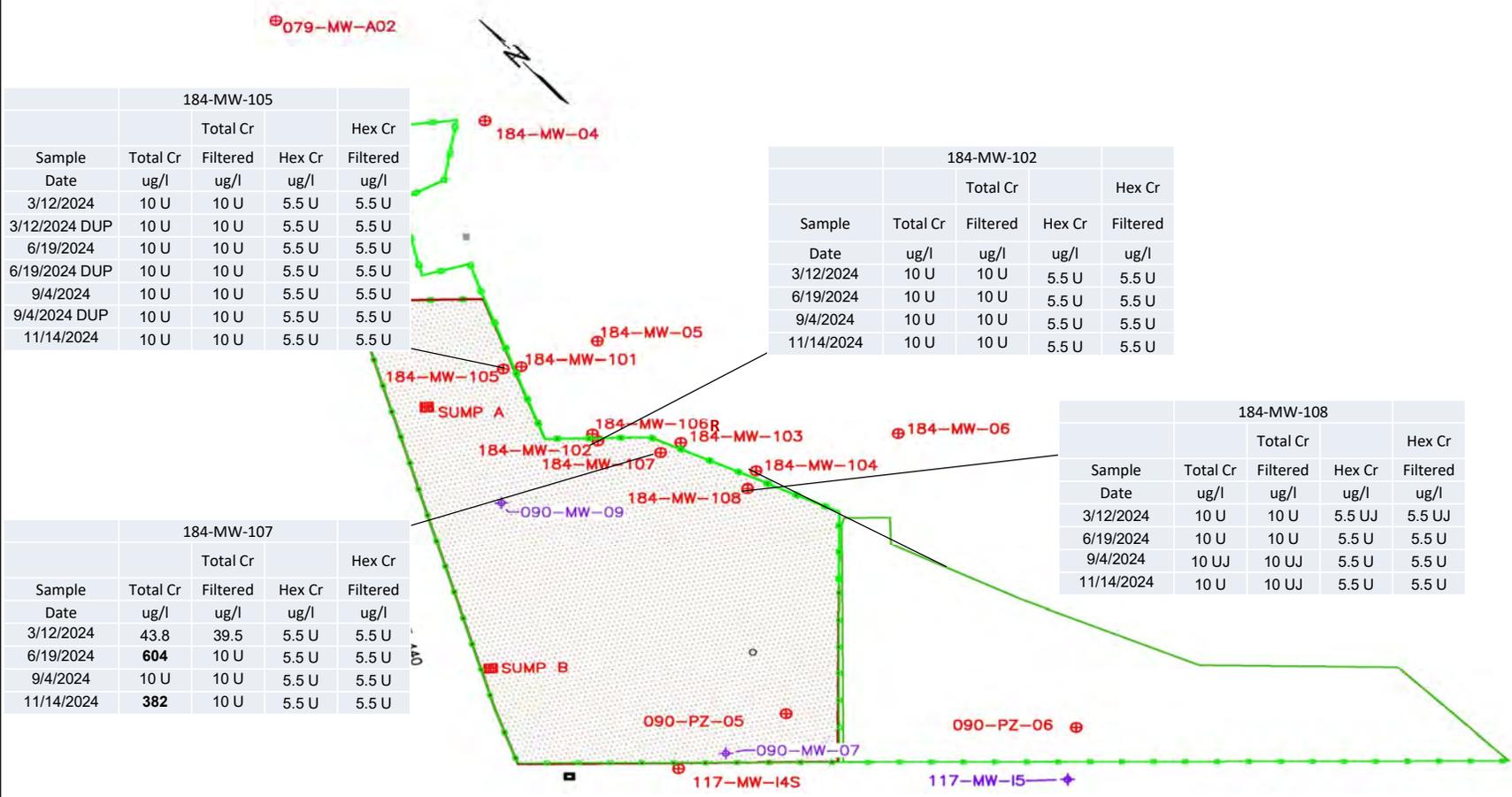


184-MW-105				
Sample Date	Total Cr		Hex Cr	
	ug/l	ug/l	ug/l	ug/l
3/12/2024	10 U	10 U	5.5 U	5.5 U
3/12/2024 DUP	10 U	10 U	5.5 U	5.5 U
6/19/2024	10 U	10 U	5.5 U	5.5 U
6/19/2024 DUP	10 U	10 U	5.5 U	5.5 U
9/4/2024	10 U	10 U	5.5 U	5.5 U
9/4/2024 DUP	10 U	10 U	5.5 U	5.5 U
11/14/2024	10 U	10 U	5.5 U	5.5 U

184-MW-102				
Sample Date	Total Cr		Hex Cr	
	ug/l	ug/l	ug/l	ug/l
3/12/2024	10 U	10 U	5.5 U	5.5 U
6/19/2024	10 U	10 U	5.5 U	5.5 U
9/4/2024	10 U	10 U	5.5 U	5.5 U
11/14/2024	10 U	10 U	5.5 U	5.5 U

184-MW-108				
Sample Date	Total Cr		Hex Cr	
	ug/l	ug/l	ug/l	ug/l
3/12/2024	10 U	10 U	5.5 UJ	5.5 UJ
6/19/2024	10 U	10 U	5.5 U	5.5 U
9/4/2024	10 UJ	10 UJ	5.5 U	5.5 U
11/14/2024	10 U	10 UJ	5.5 U	5.5 U

184-MW-107				
Sample Date	Total Cr		Hex Cr	
	ug/l	ug/l	ug/l	ug/l
3/12/2024	43.8	39.5	5.5 U	5.5 U
6/19/2024	604	10 U	5.5 U	5.5 U
9/4/2024	10 U	10 U	5.5 U	5.5 U
11/14/2024	382	10 U	5.5 U	5.5 U



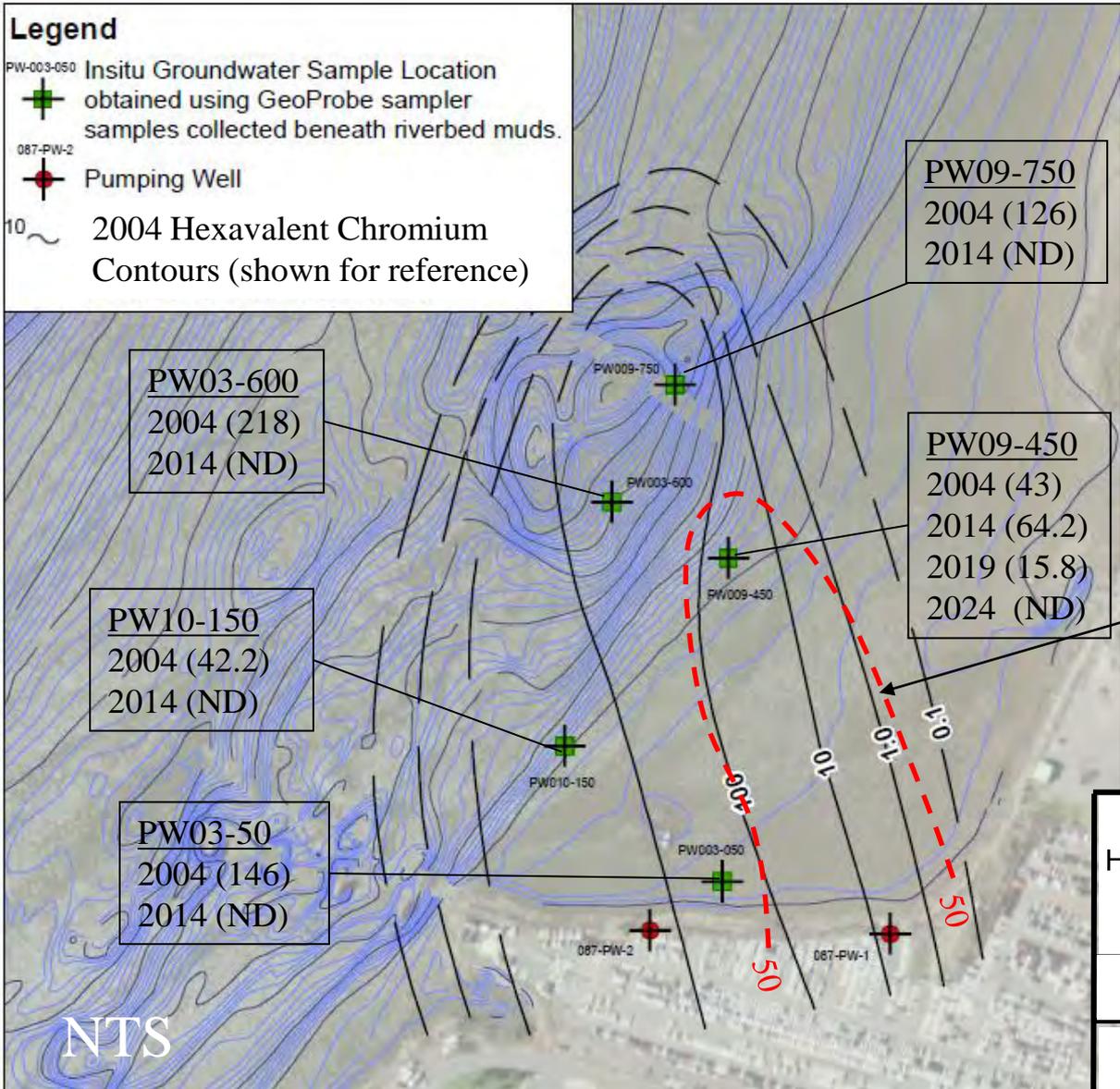
- LEGEND**
- ⊕ MONITORING WELL
 - ⊕ PIEZOMETER
 - SUMP
 - SHEET PILE WALL
 - ▨ CAP AREA

FIGURE 5-2
Groundwater Quality Monitoring Well
Results 2024 - NJCU

Integrated Annual Groundwater Performance Report
 2024

Legend

- PW-003-050  Insitu Groundwater Sample Location obtained using GeoProbe sampler samples collected beneath riverbed muds.
- 087-PW-2  Pumping Well
- 10  2004 Hexavalent Chromium Contours (shown for reference)



PW03-600
2004 (218)
2014 (ND)

PW10-150
2004 (42.2)
2014 (ND)

PW03-50
2004 (146)
2014 (ND)

PW09-750
2004 (126)
2014 (ND)

PW09-450
2004 (43)
2014 (64.2)
2019 (15.8)
2024 (ND)

2014 Hexavalent Chromium Contour shown for reference

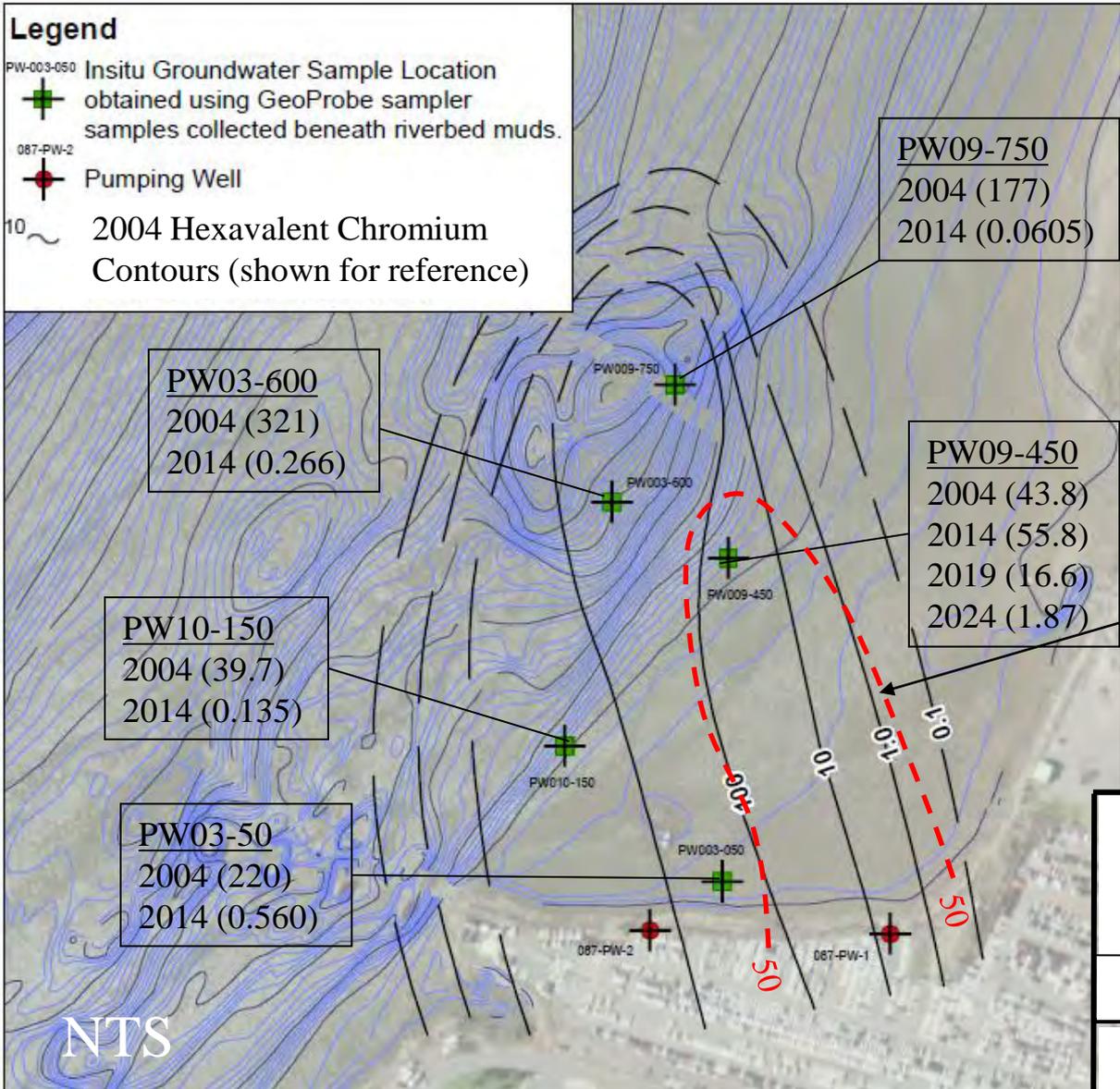
Data from unfiltered sample

Figure 5-3
Hexavalent Chromium Concentrations
In Groundwater Beneath
Riverbed Sediments (ppm)
Integrated Annual Groundwater Performance Report
2024

NTS

Legend

- PW-003-050  Insitu Groundwater Sample Location obtained using GeoProbe sampler samples collected beneath riverbed muds.
- 087-PW-2  Pumping Well
- 10  2004 Hexavalent Chromium Contours (shown for reference)



2014 Total Chromium Contour

Data from unfiltered sample

Figure 5-4
Total Chromium Concentrations
In Groundwater Beneath
Riverbed Sediments (ppm)

Integrated Annual Groundwater Performance Report
2024

NTS

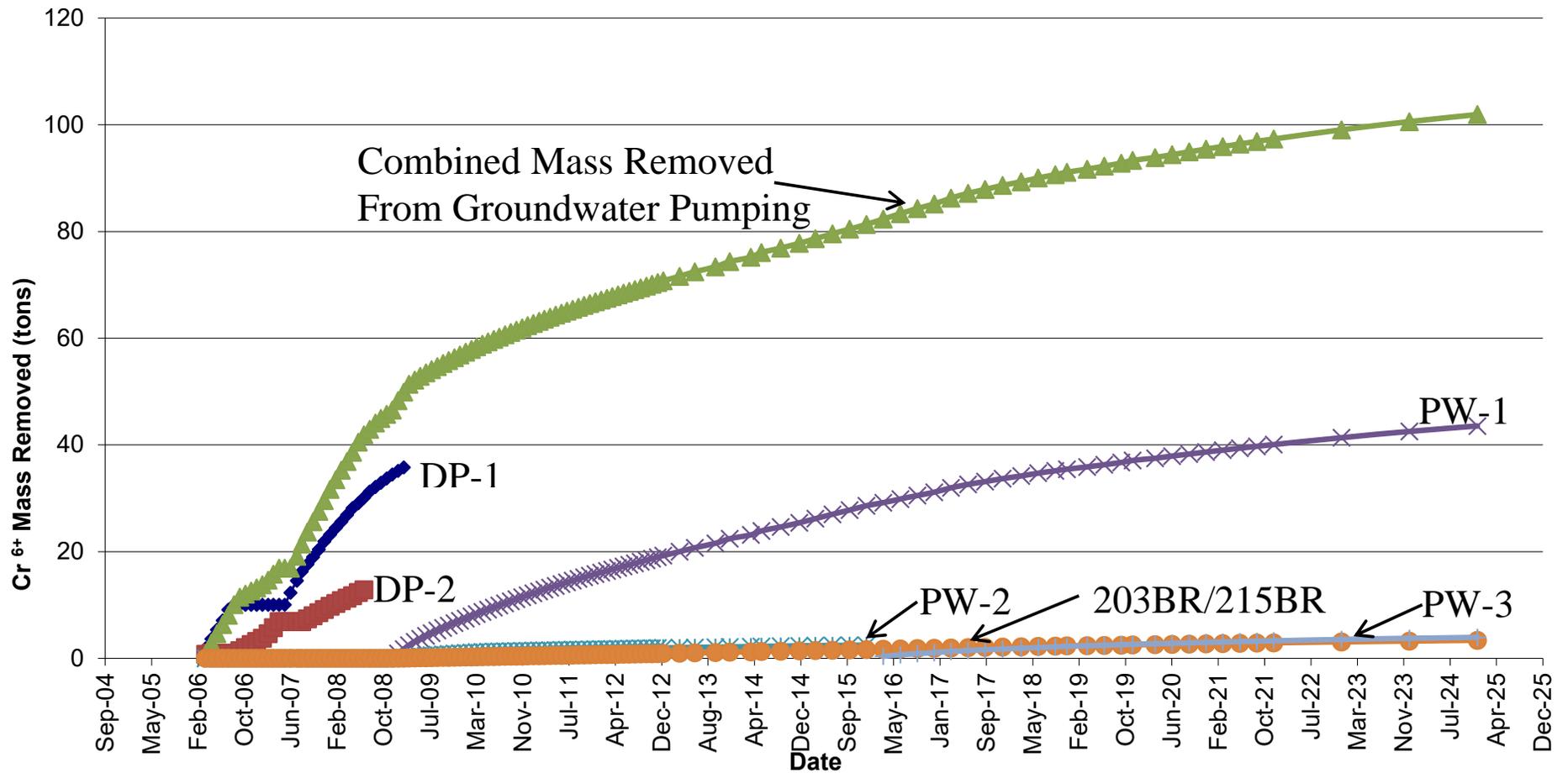
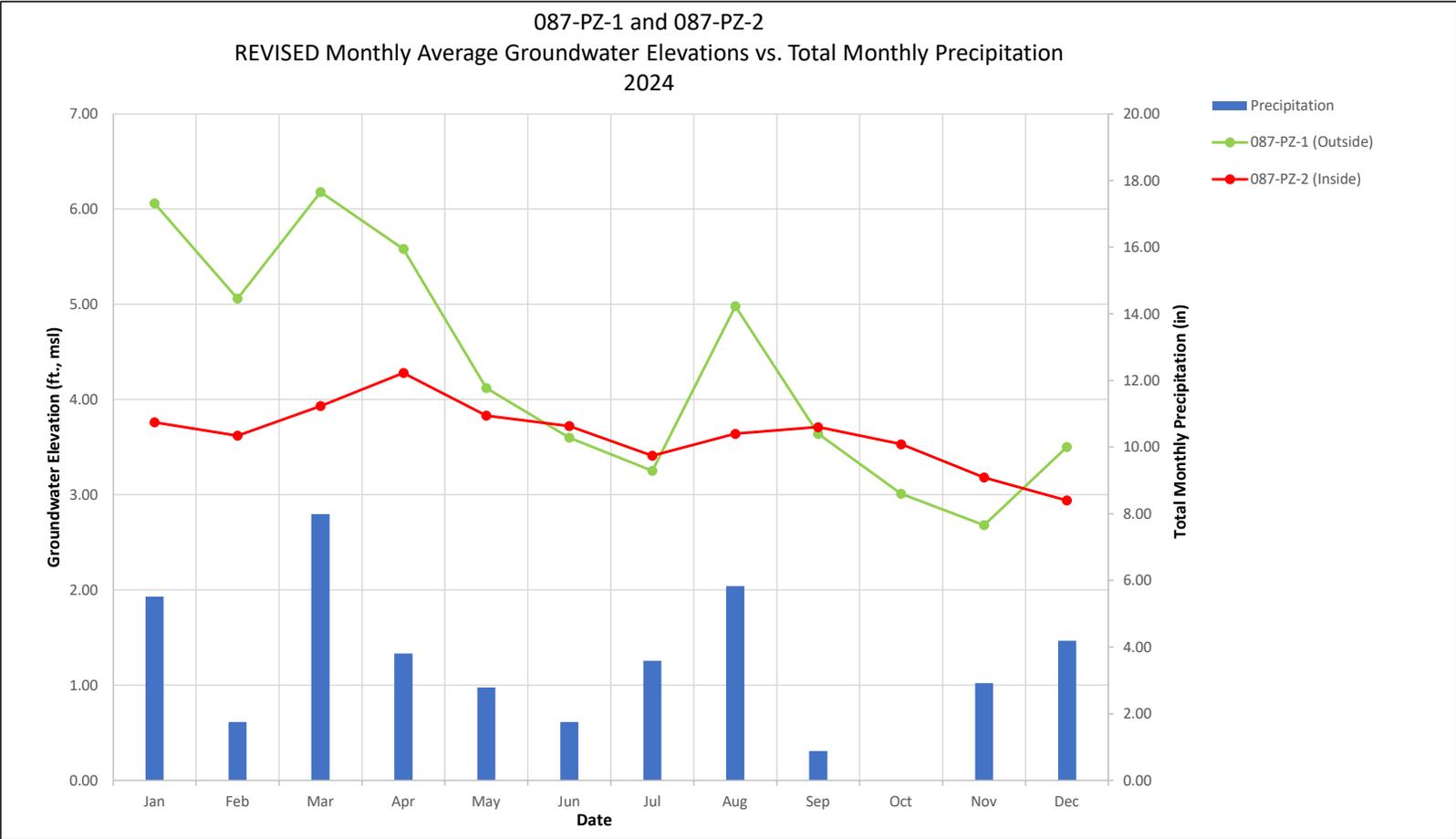


FIGURE 5-5
 Cumulative Mass of Chromium Removed From
 Groundwater by Pumping
 Integrated Annual Groundwater Performance Report
 2024



APPENDIX A

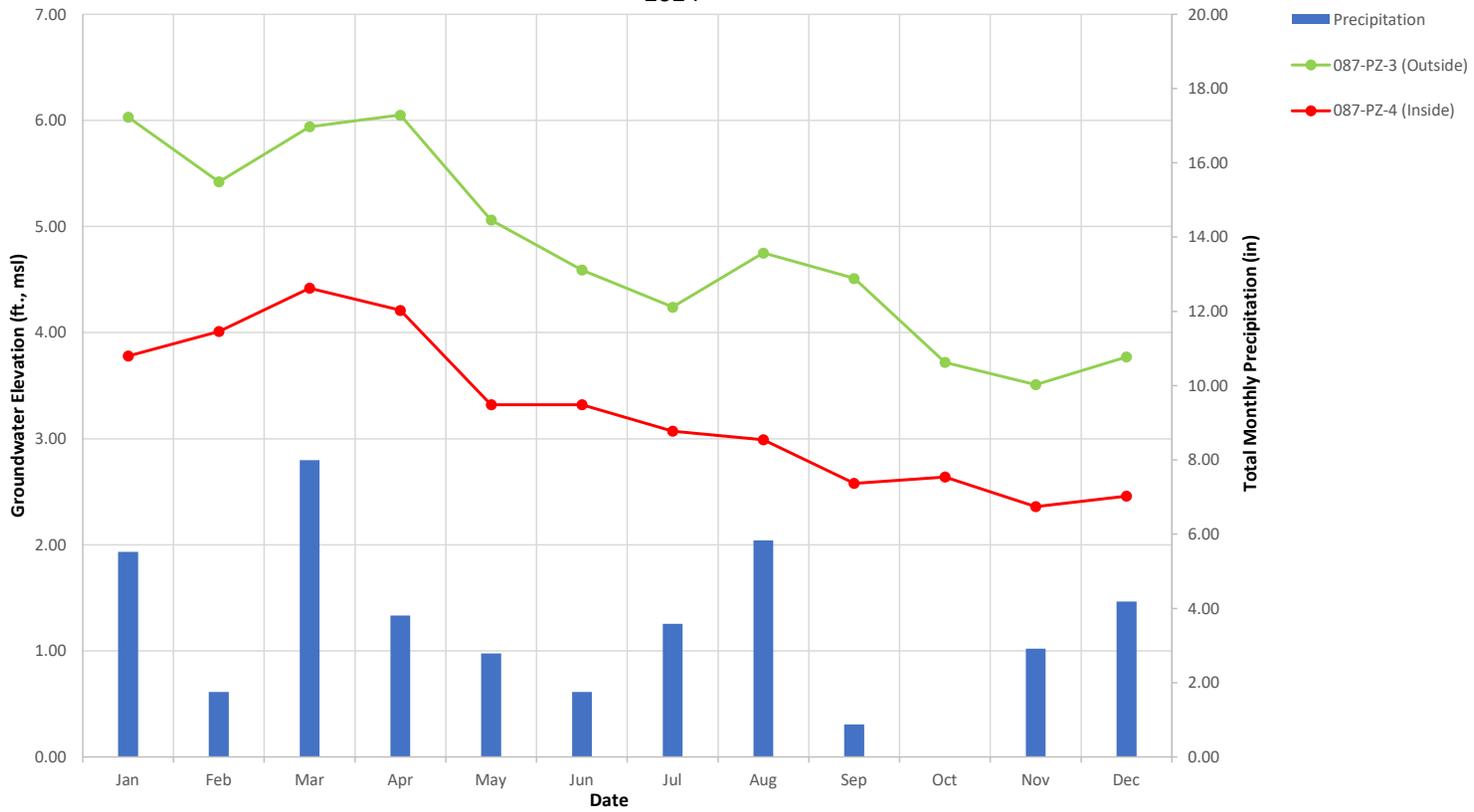
HYDROGRAPHS OF AVERAGE MONTHLY HEADS FROM SA-6 AND SA-7



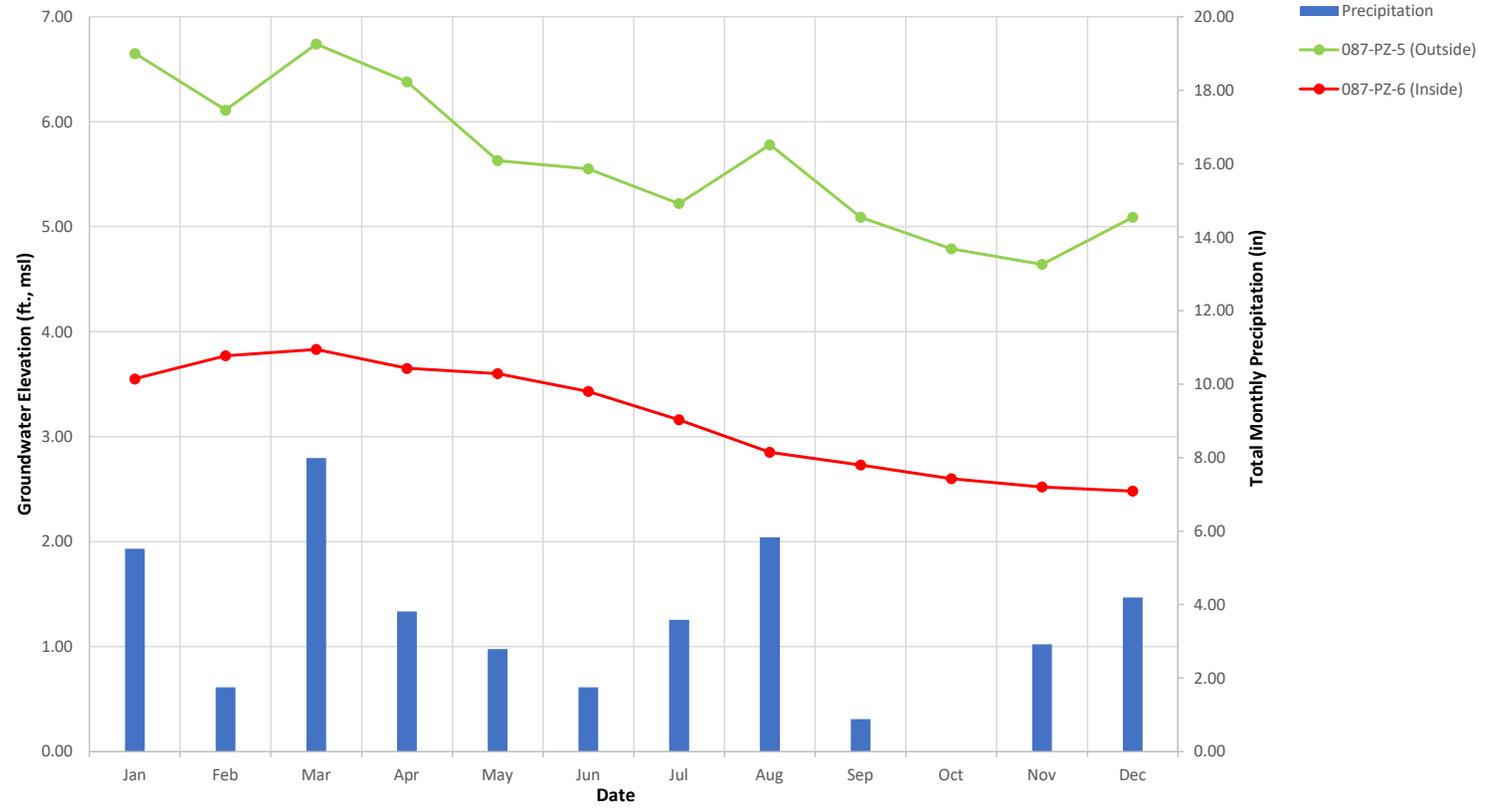
PZ-1 June: no data for entire month, averaged manual readings

PZ-2 July: no data for entire month, averaged manual readings

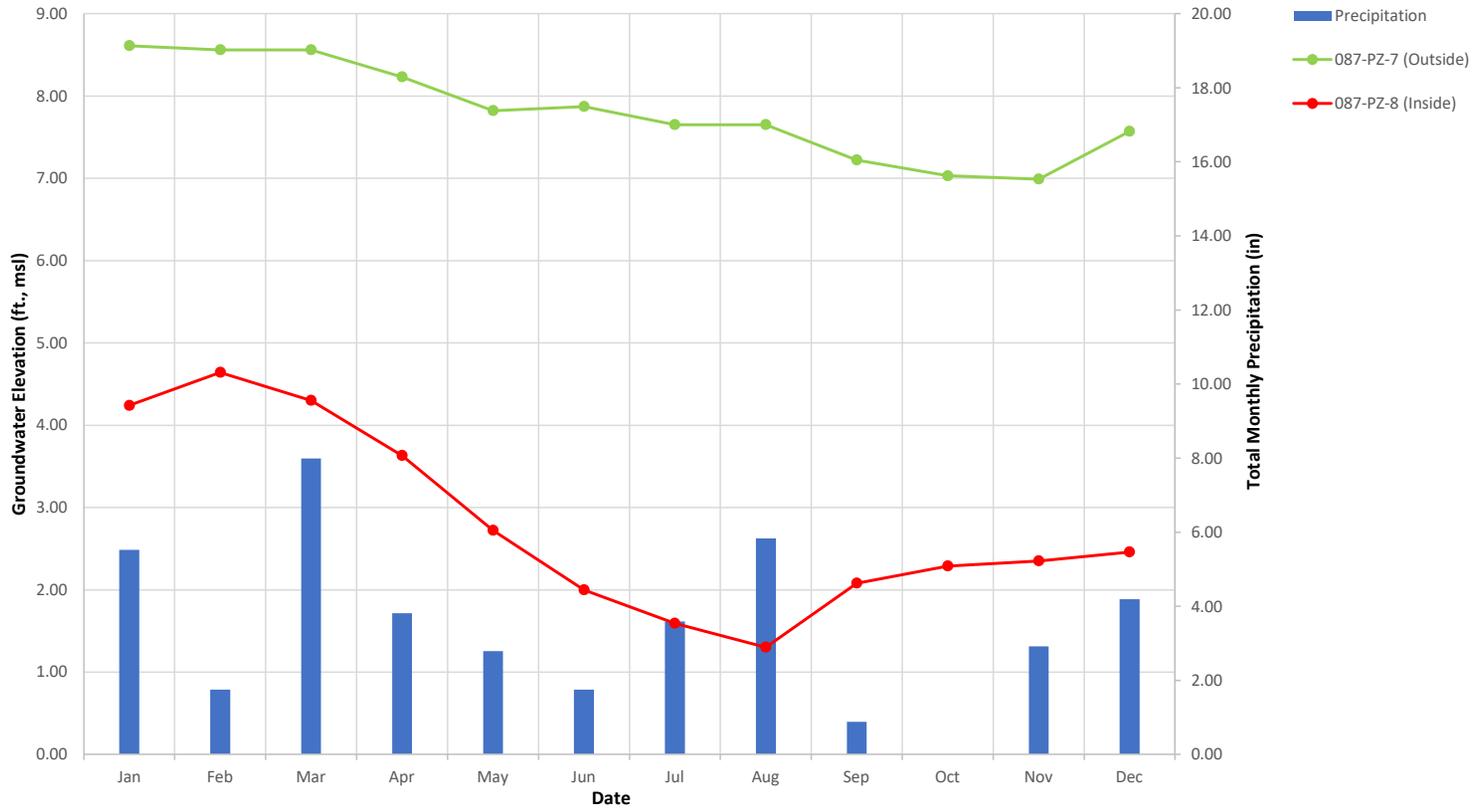
087-PZ-3 and 087-PZ-4
REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
2024



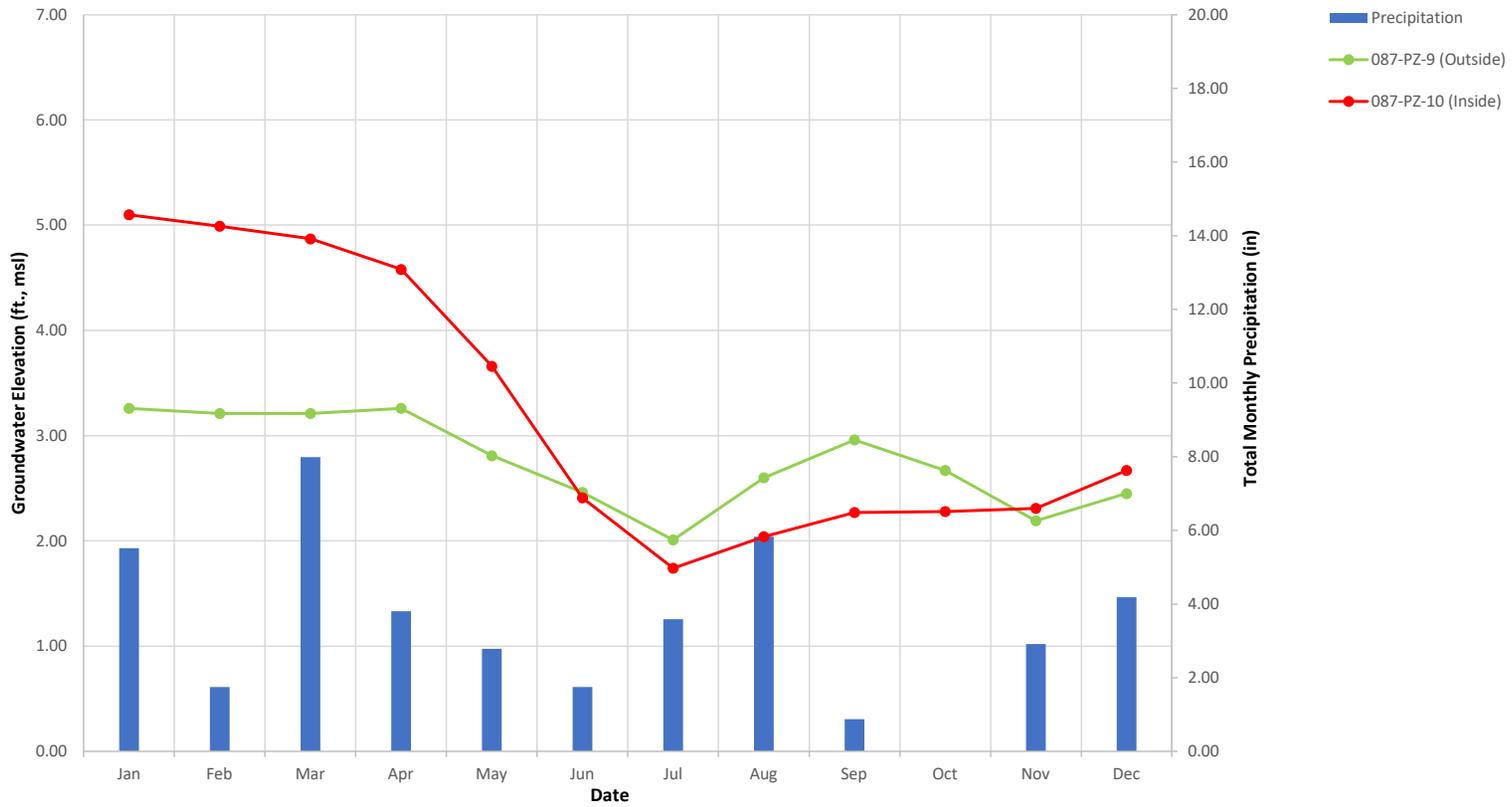
087-PZ-5 and 087-PZ-6
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



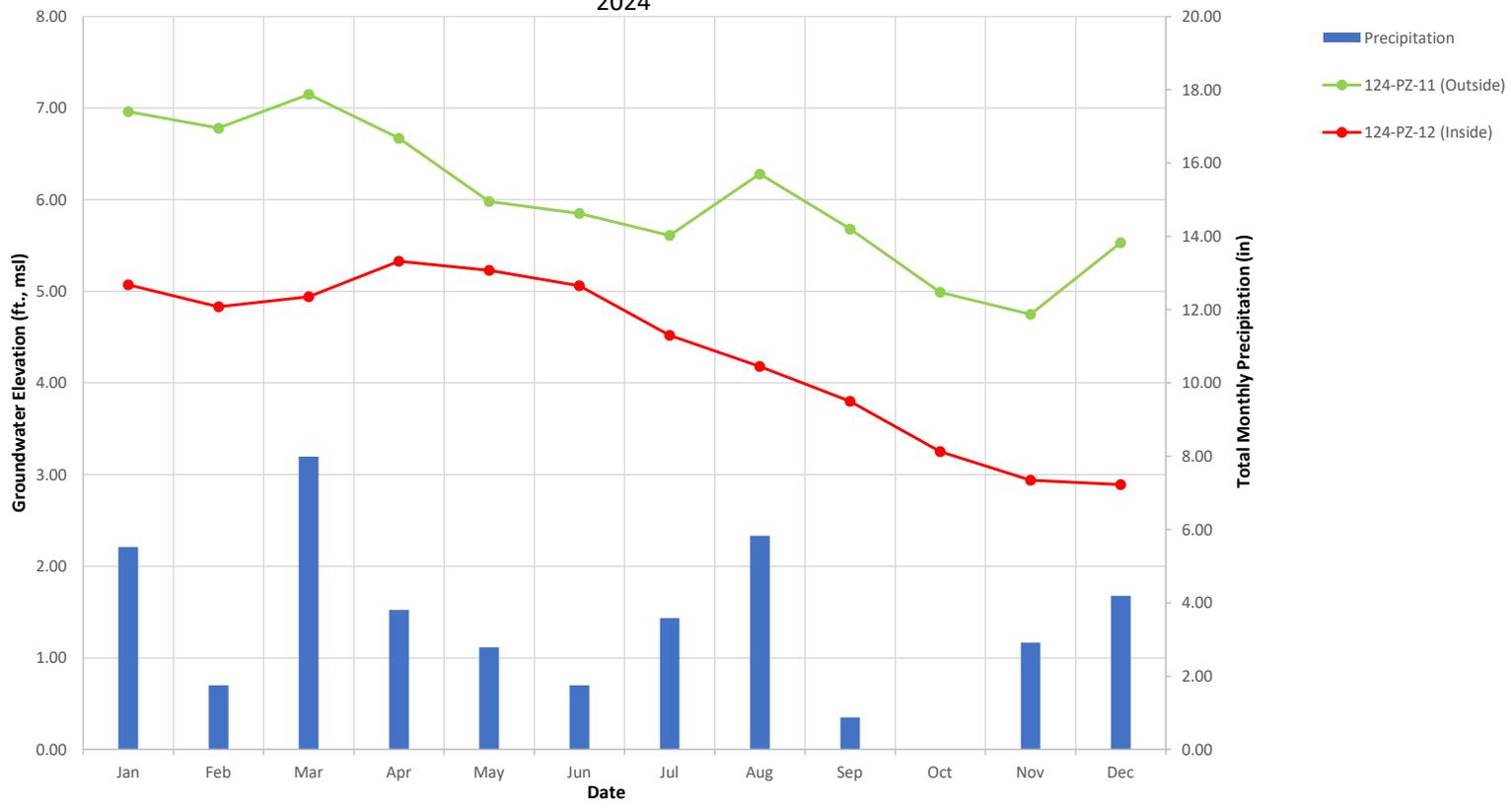
087-PZ-7 and 087-PZ-8
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024

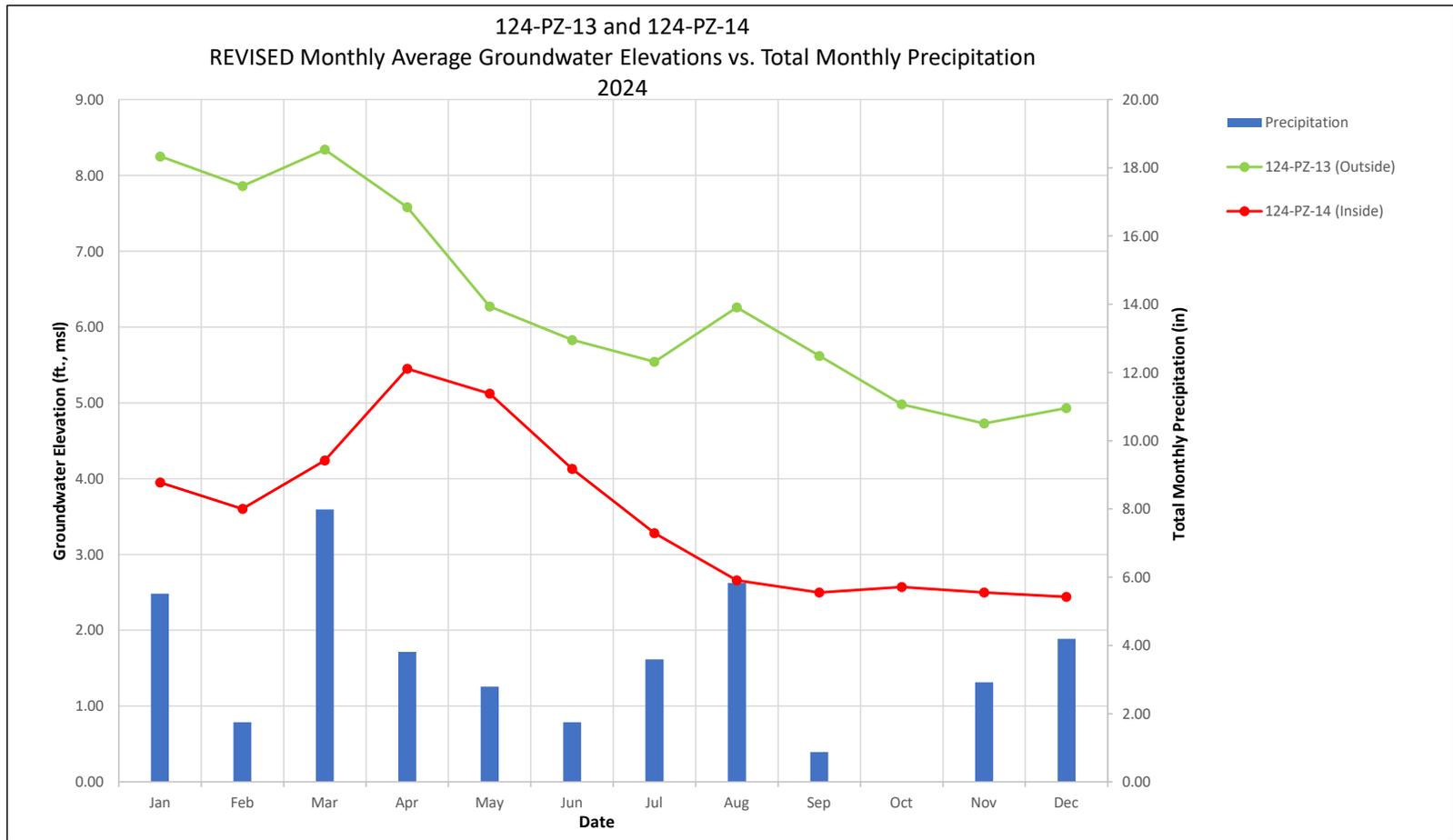


087-PZ-9 and 087-PZ-10
 REVISED Monthly Average Groundwater Elevations vs Total Monthly Precipitation
 2024



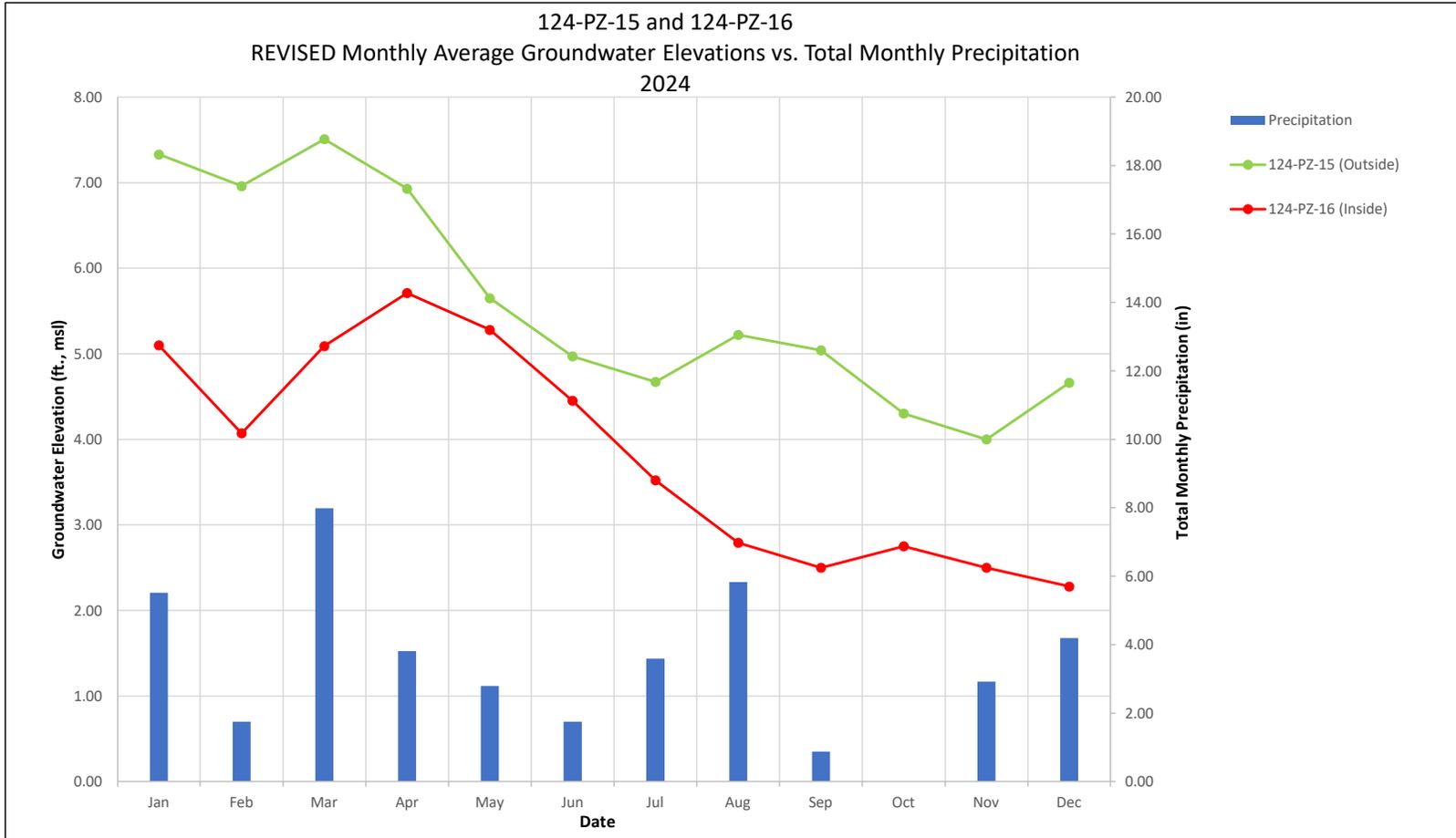
124-PZ-11 and 124-PZ-12
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024





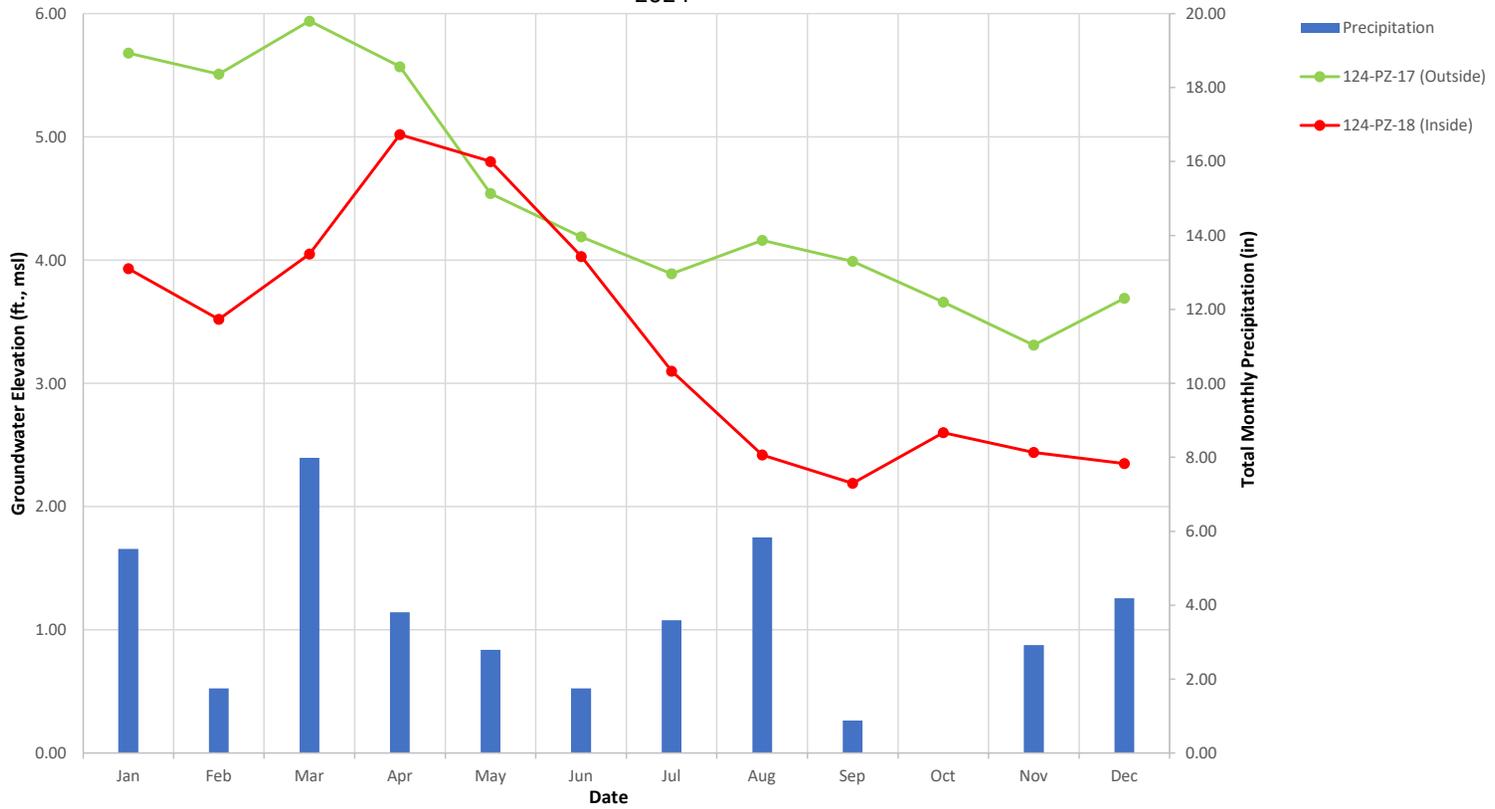
PZ-13 December: no data for entire month, averaged manual readings

PZ-14 July: no data for entire month, averaged manual readings

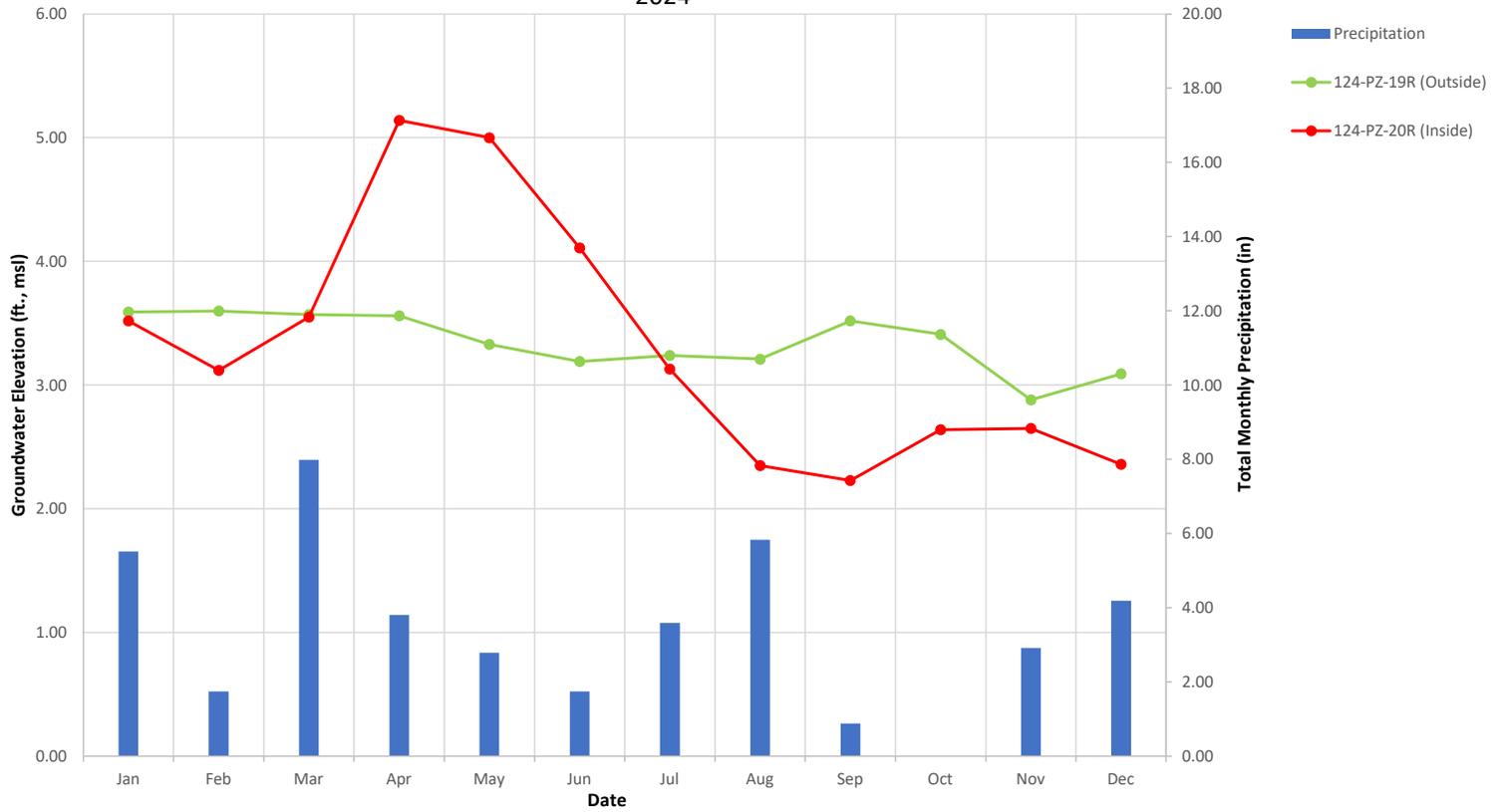


PZ-16 November: no data for entire month, averaged manual readings

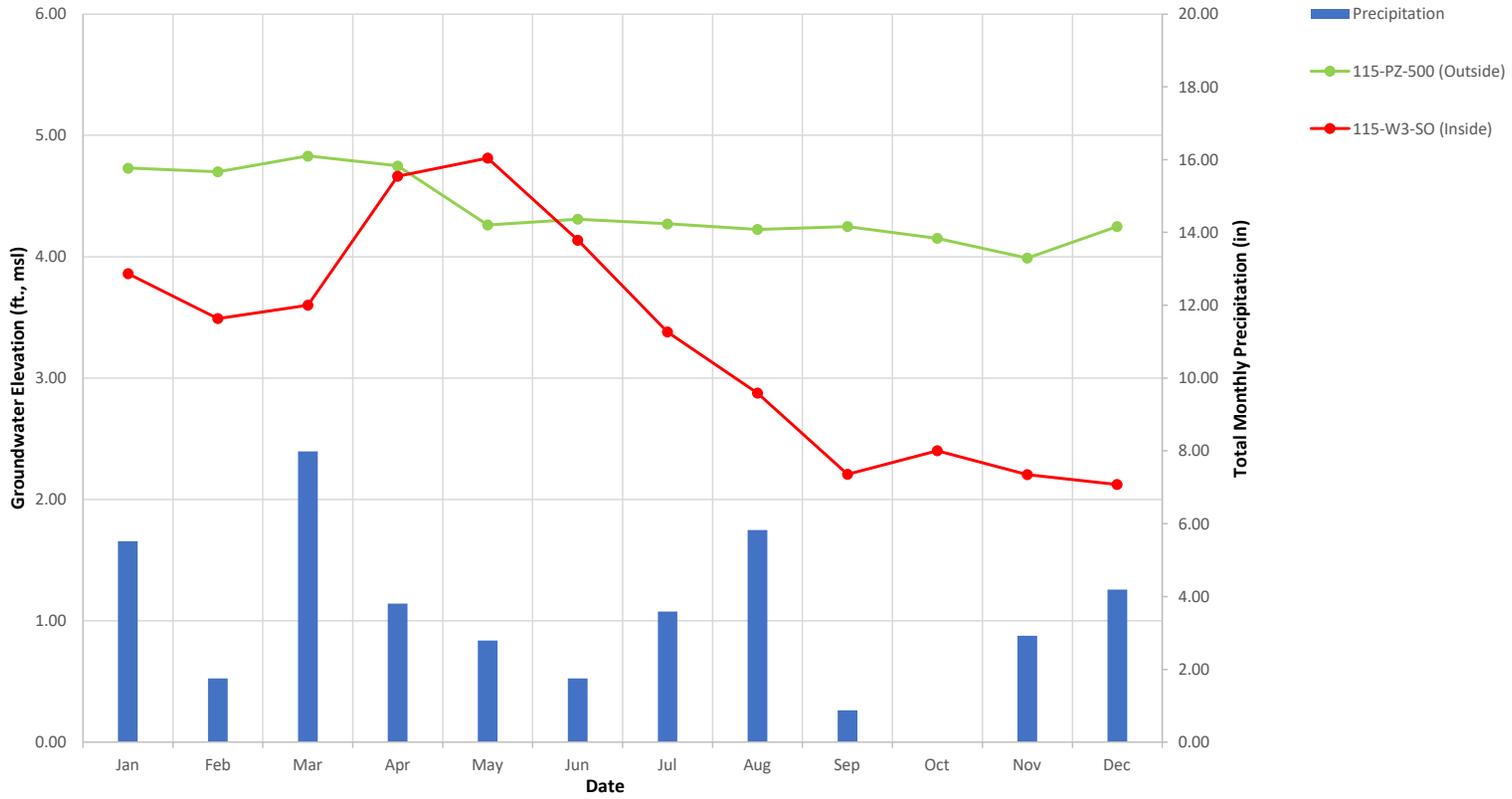
124-PZ-17 and 124-PZ-18
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



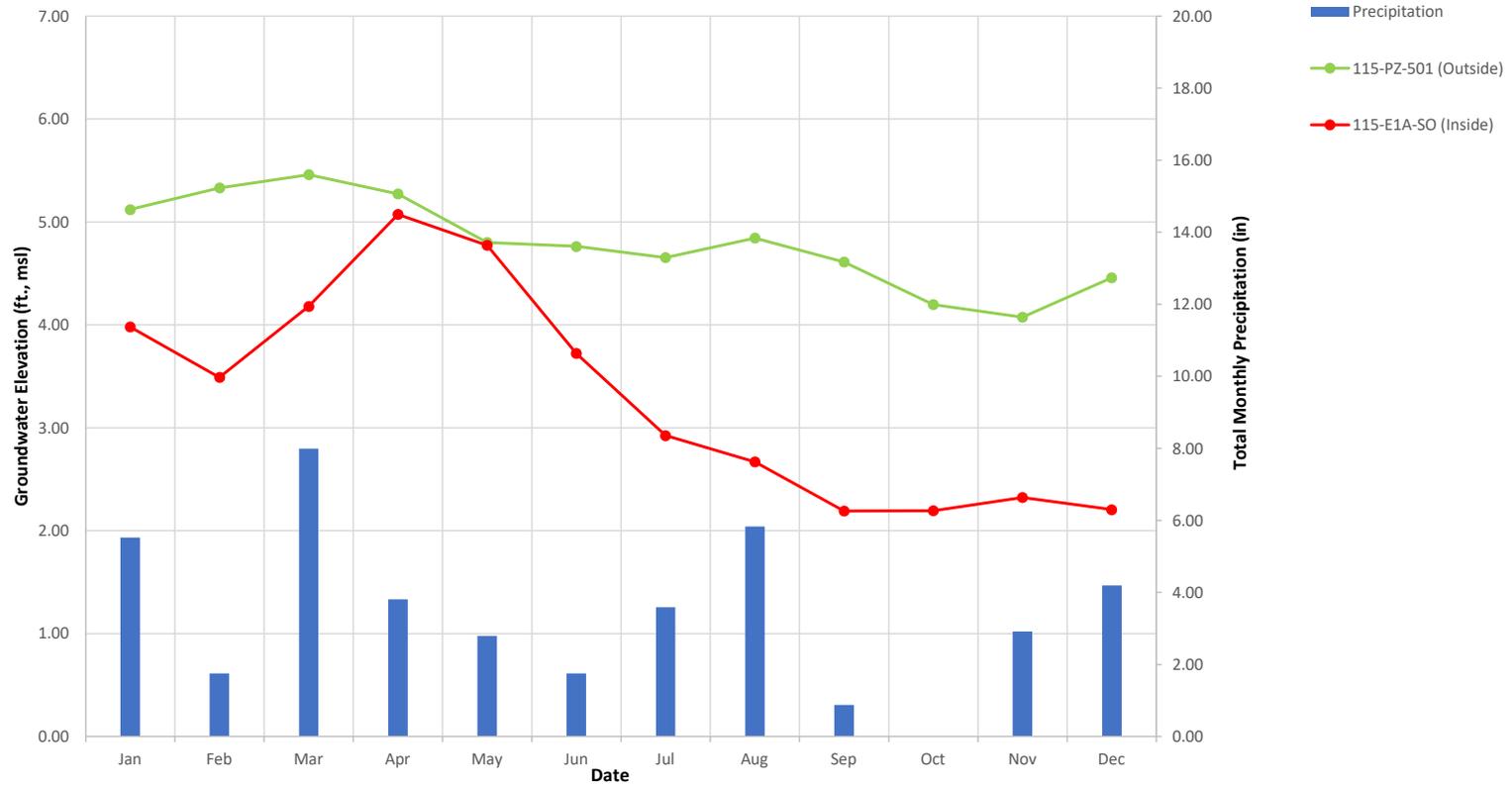
124-PZ-19R and 124-PZ-20R
REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
2024



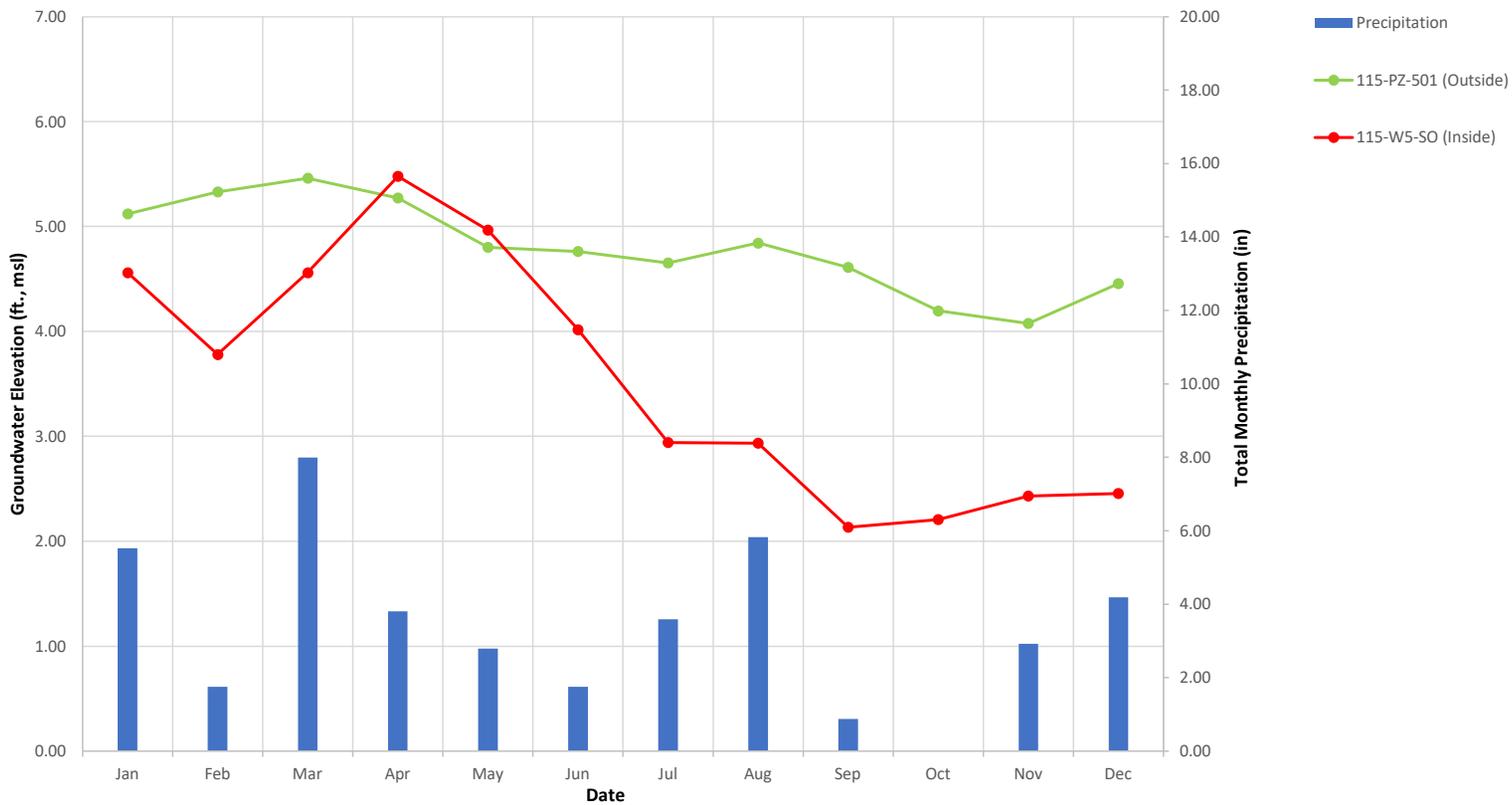
115-PZ-500 and 115-W3-SO
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



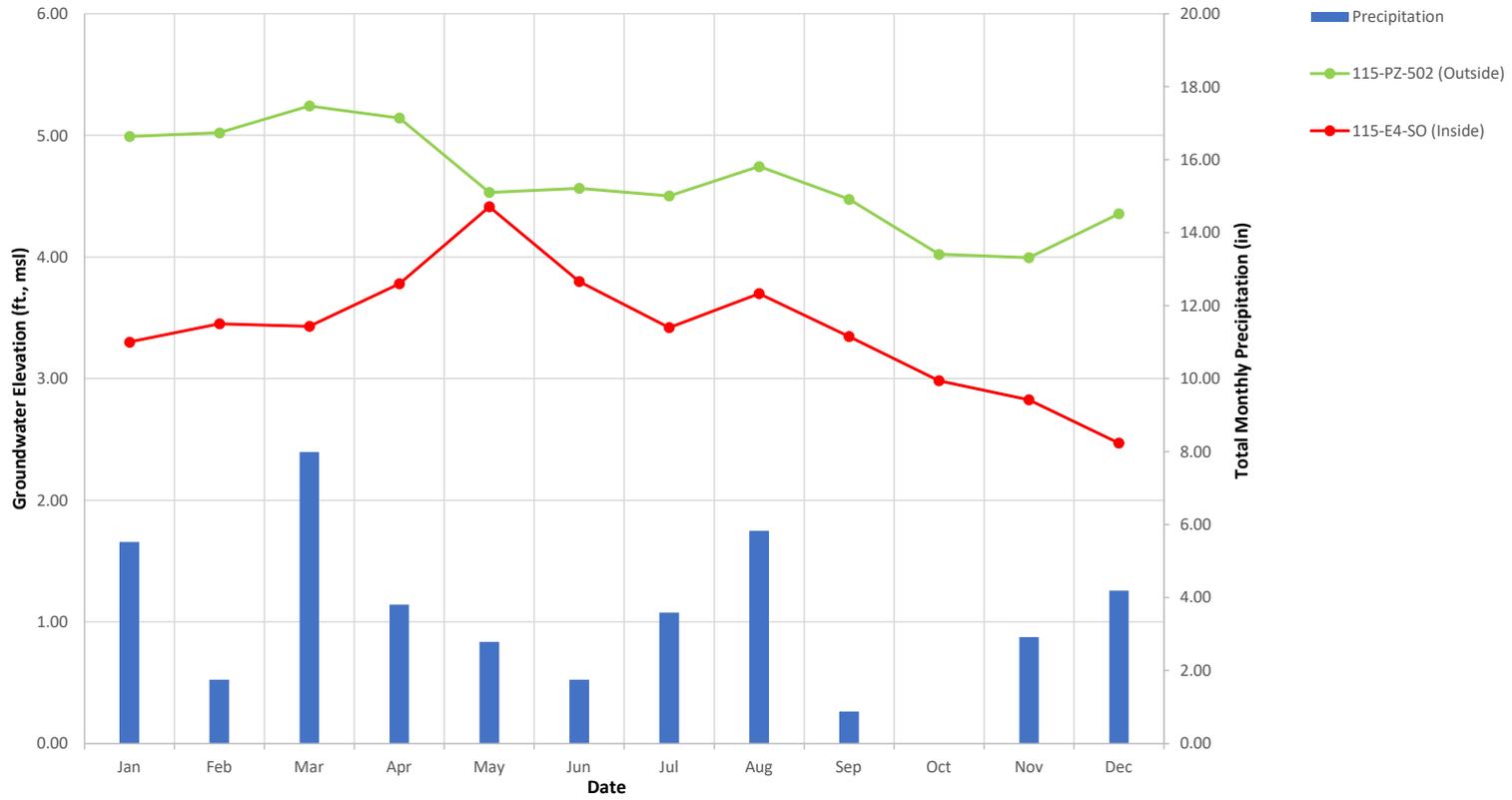
115-PZ-501 and 115-E1A-SO
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



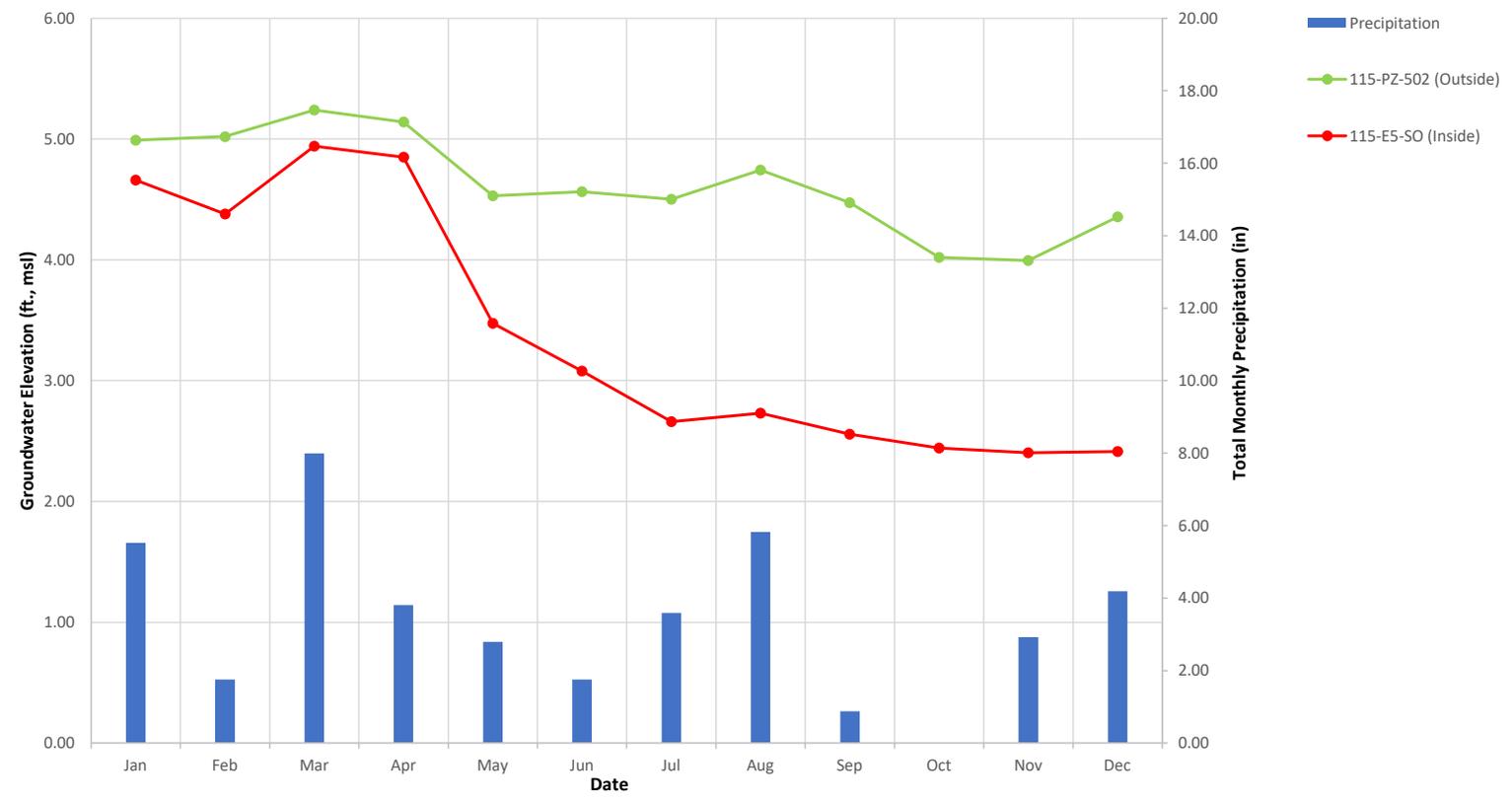
115-PZ-501 and 115-W5-SO
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



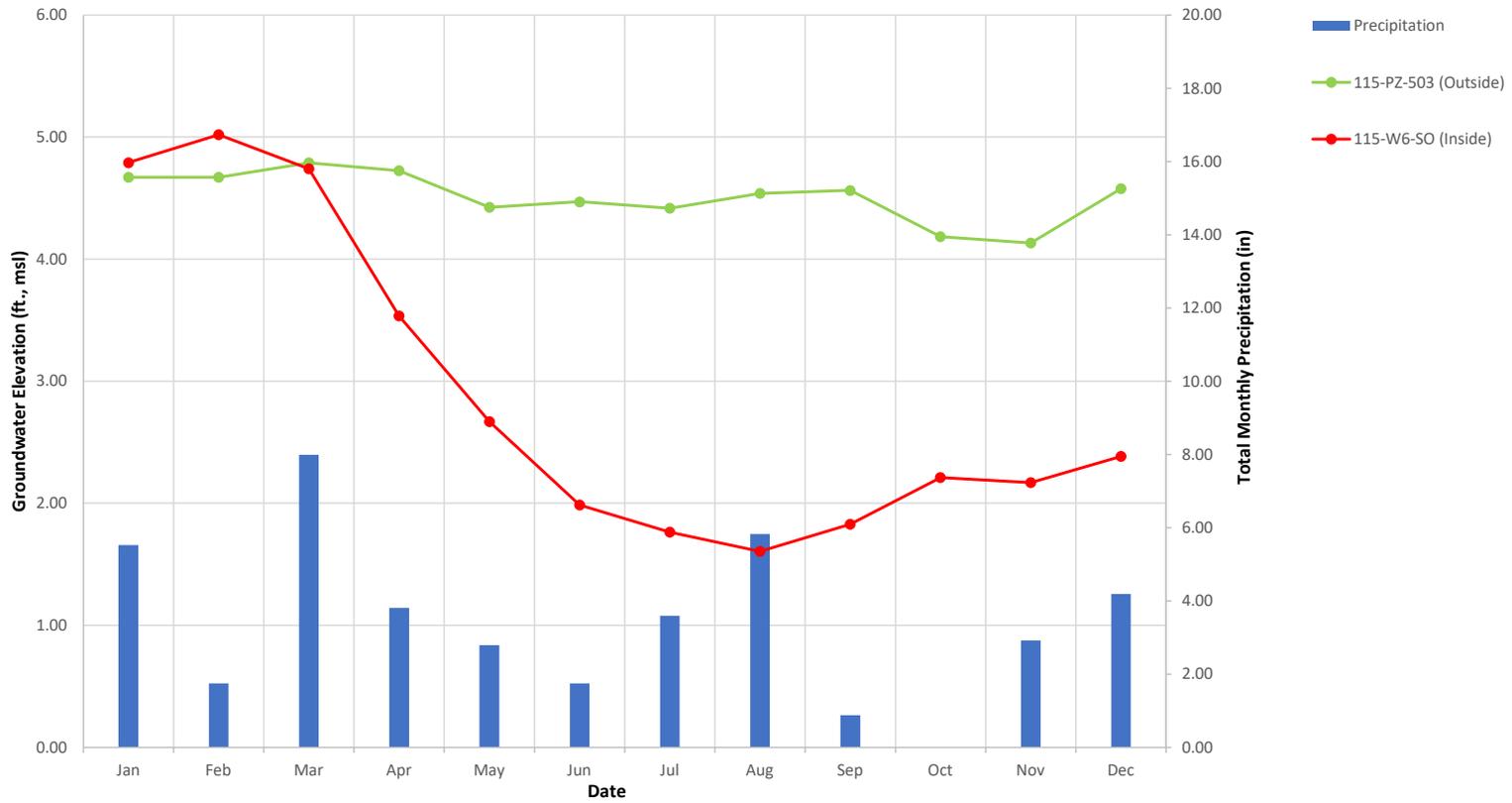
115-PZ-502 and 115-E4-SO
REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
2024



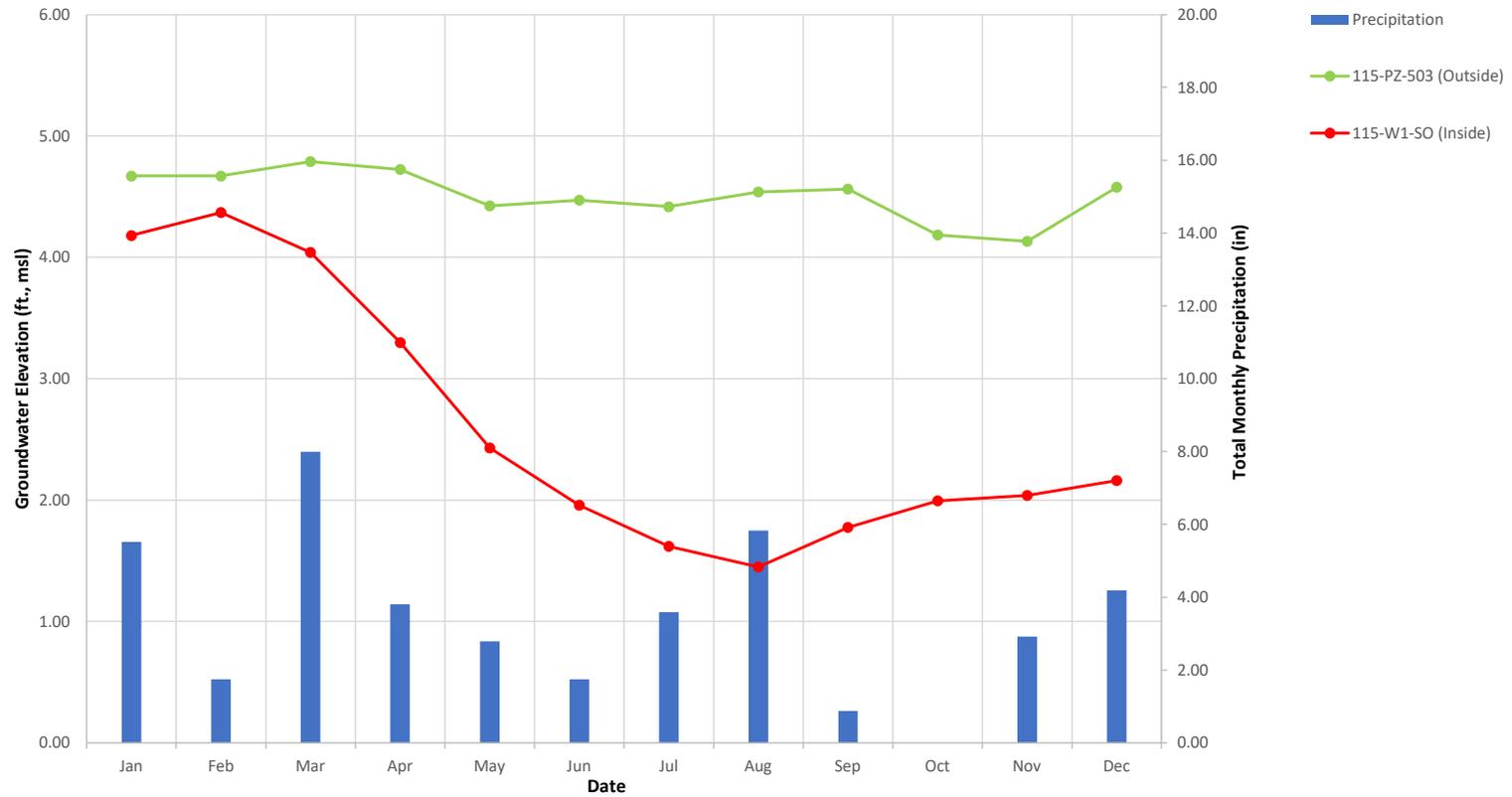
115-PZ-502 and 115-E5-SO
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



115-PZ-503 and 115-W6-SO
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



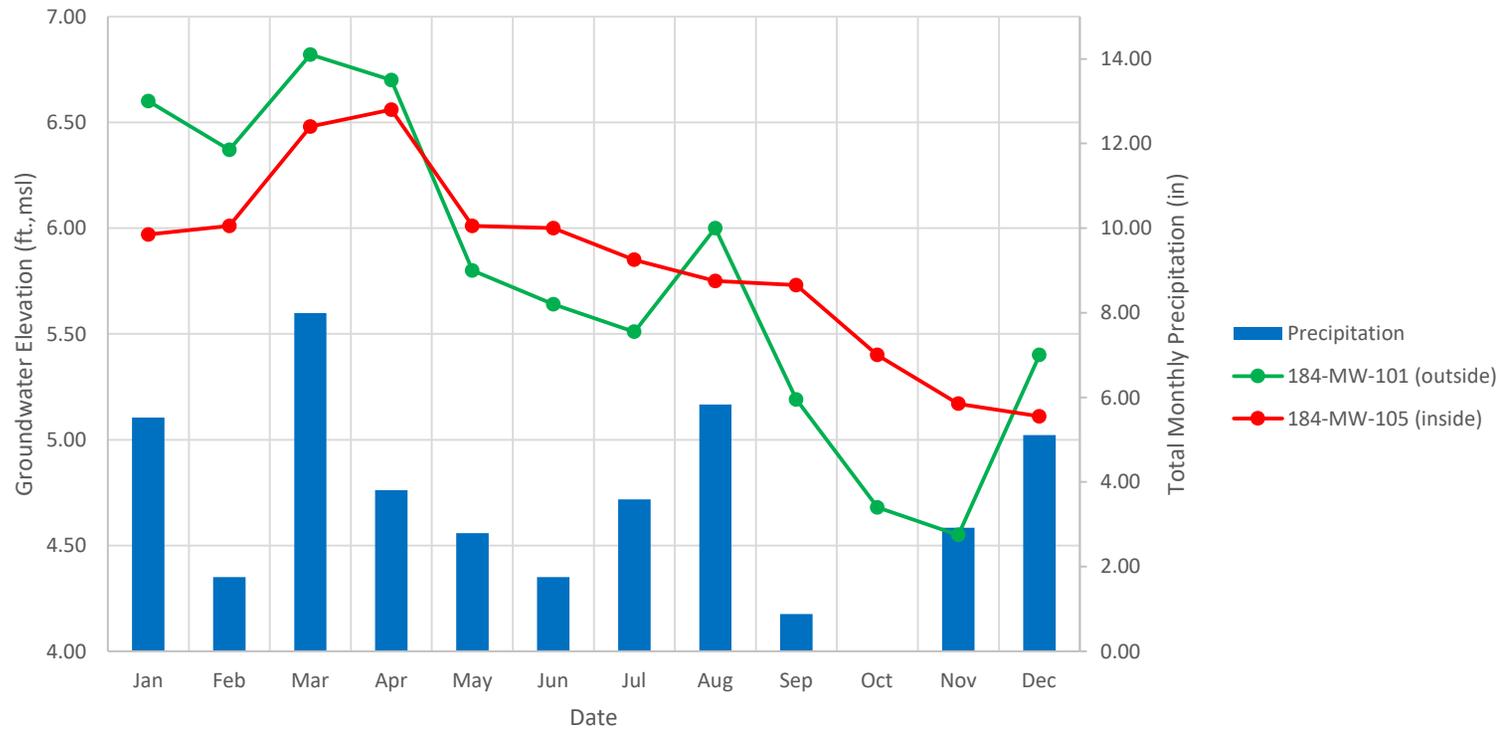
115-PZ-503 and 115-W1-SO
REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
2024



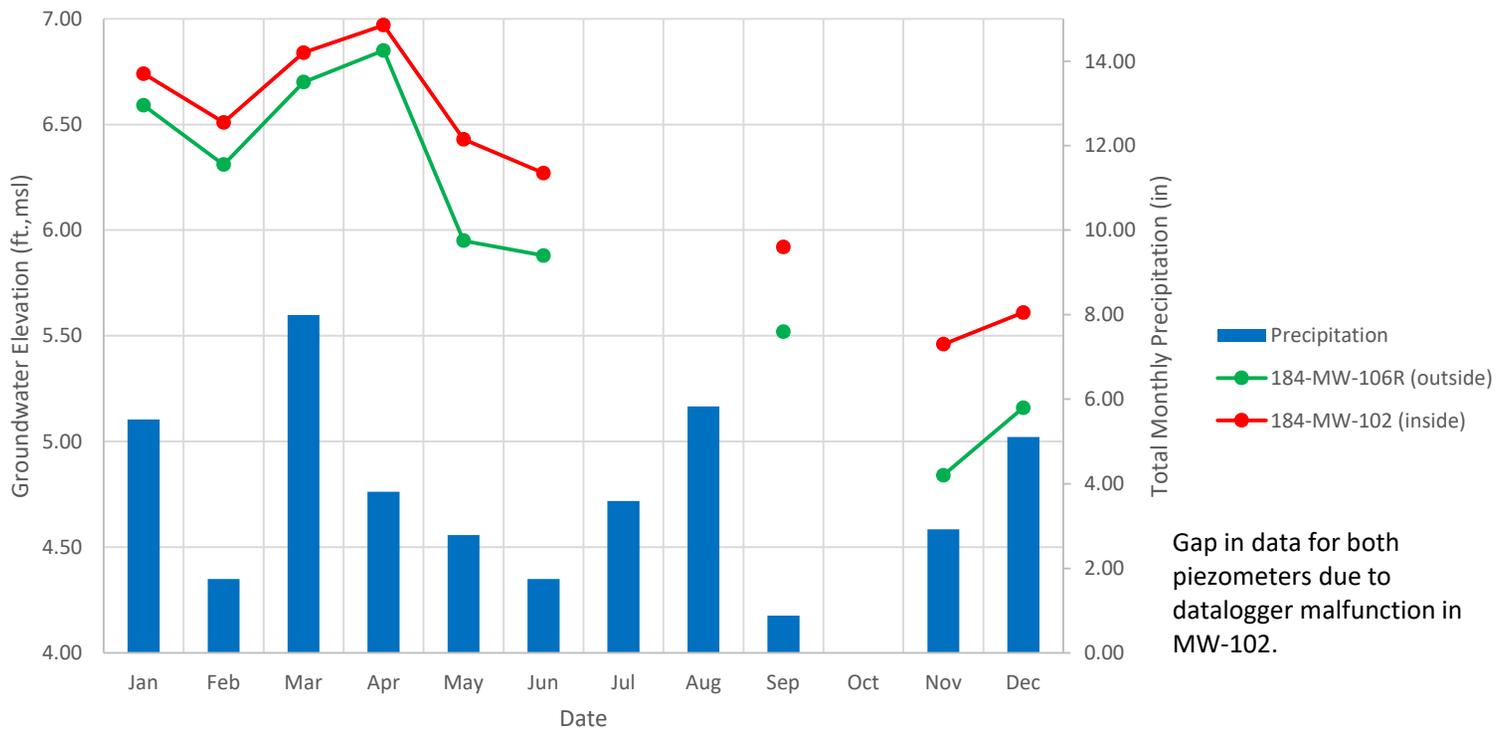
APPENDIX B

HYDROGRAPHS OF AVERAGE MONTHLY HEADS FROM SA-5 NJCU

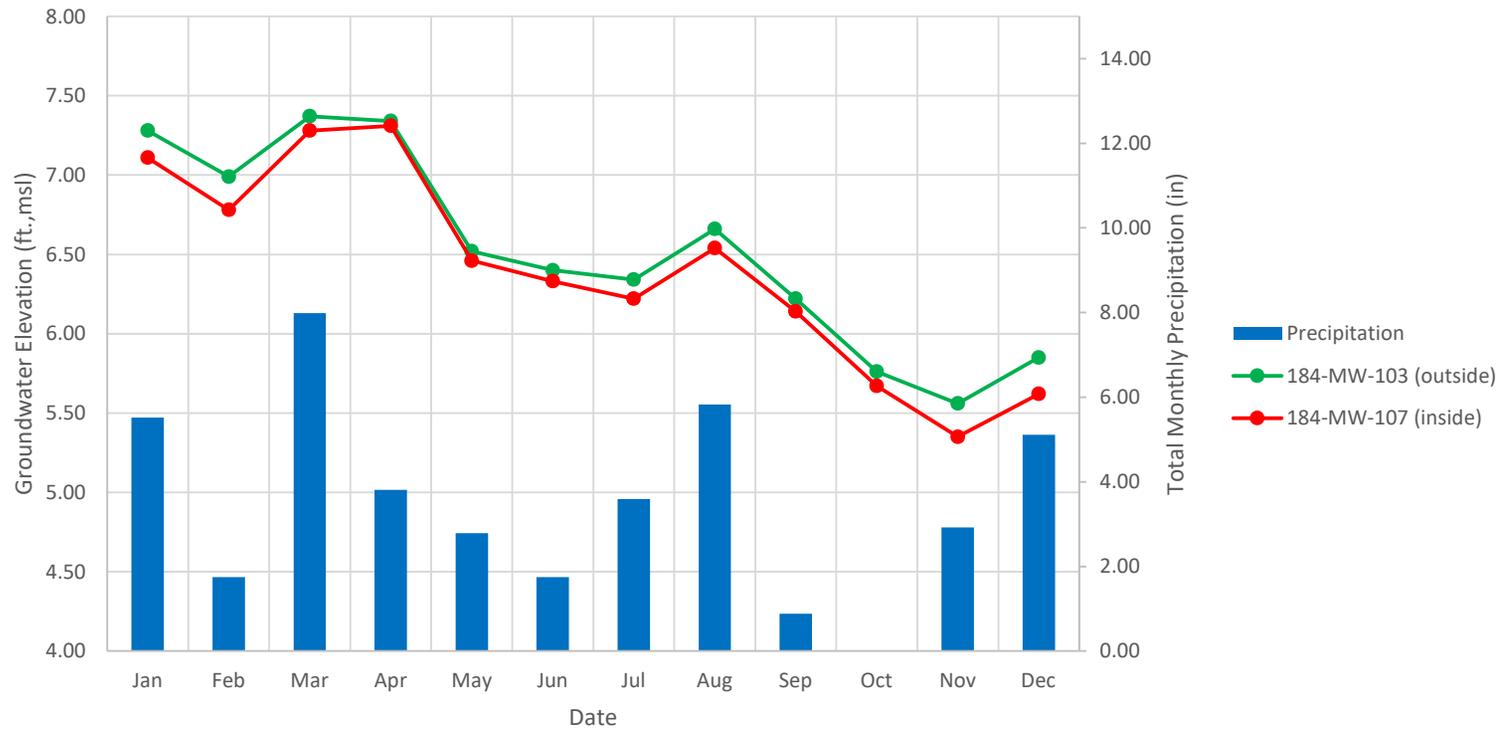
184-MW-101 and 184-MW-105
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



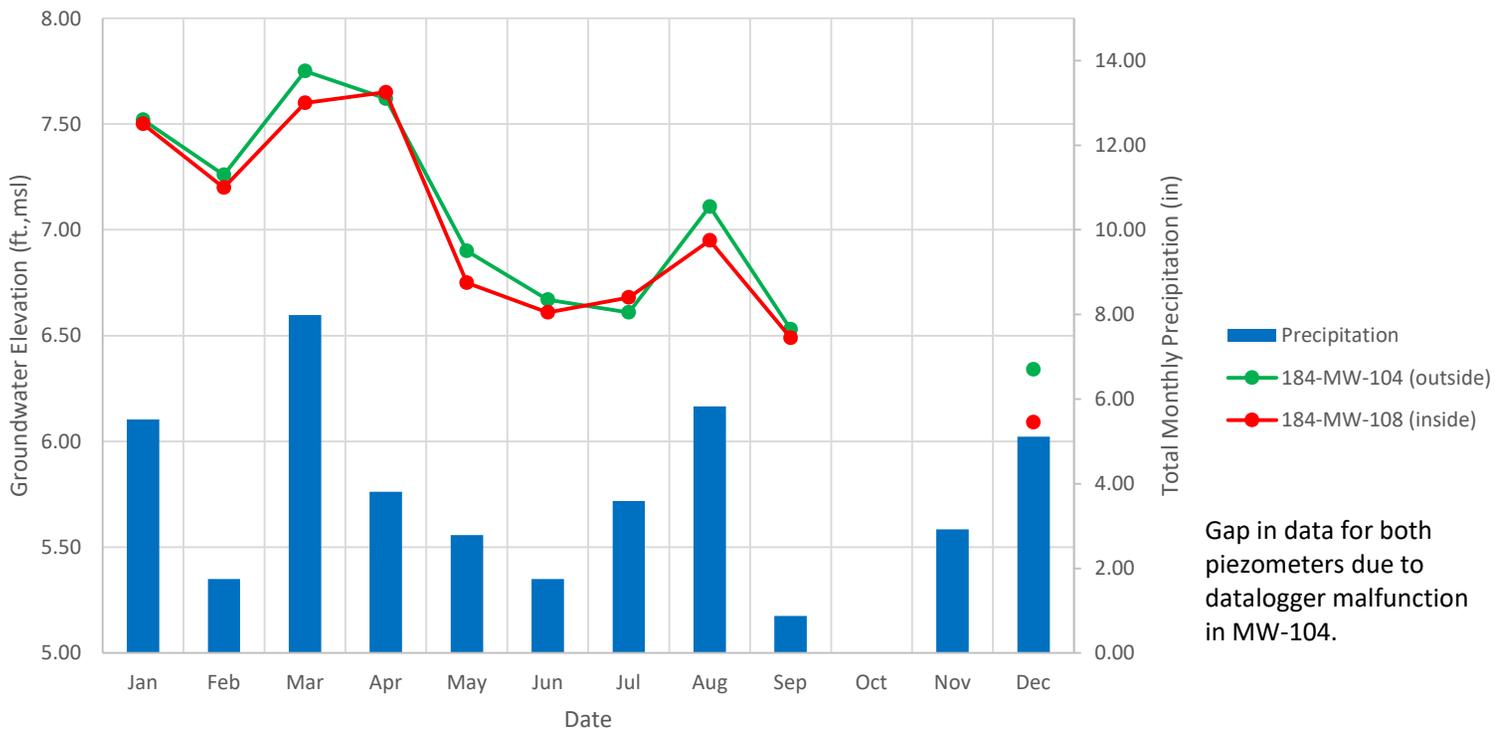
184-MW-106R and 184-MW-102
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



184-MW-103 and 184-MW-107
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024



184-MW-104 and 184-MW-108
 REVISED Monthly Average Groundwater Elevations vs. Total Monthly Precipitation
 2024

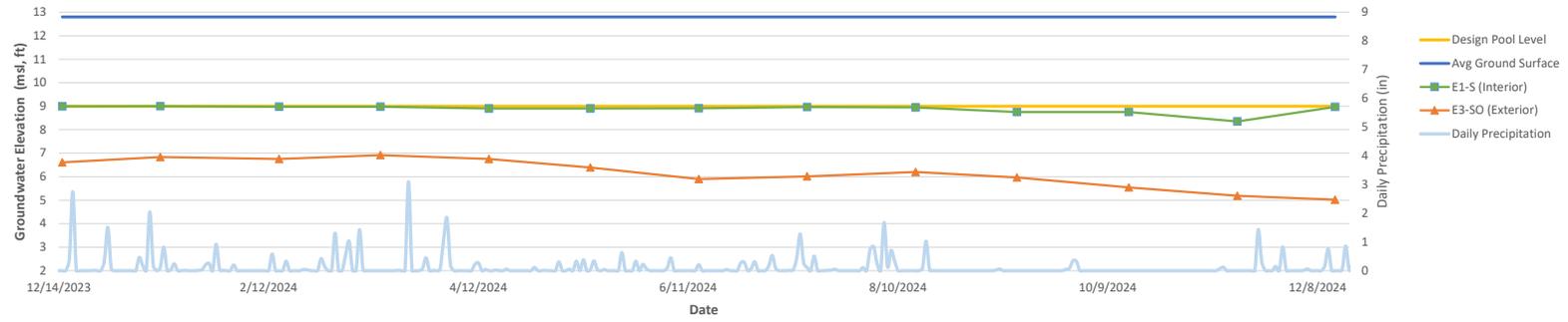


Gap in data for both piezometers due to datalogger malfunction in MW-104.

APPENDIX C

SA-7 EASTERN PERIMETER POOL HYDROGRAPHS

E1 Perimeter Pool



E2 Perimeter Pool

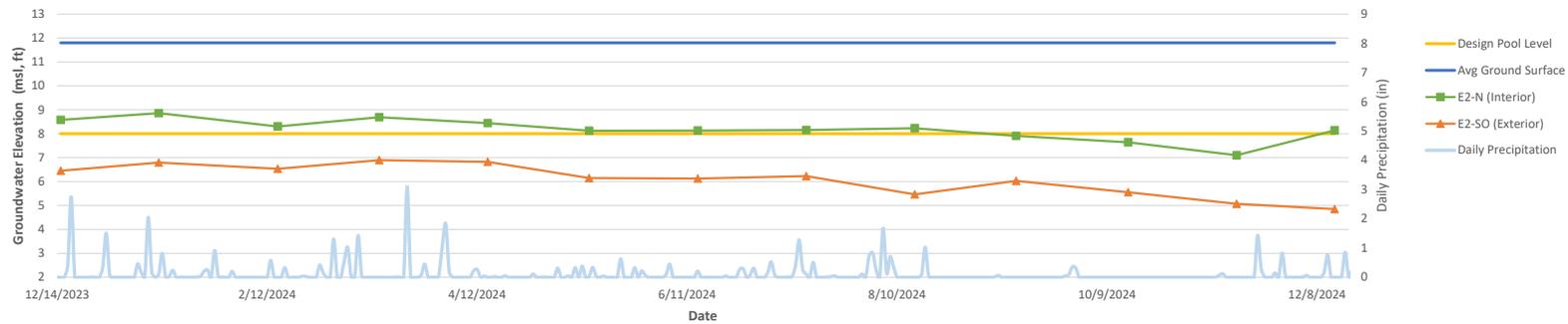


Table 1		
Exterior Shallow Groundwater Data		
Date	E2-SO	E3-SO
12/15/2023	6.45	6.61
1/12/2024	6.79	6.84
2/15/2024	6.53	6.76
3/15/2024	6.89	6.92
4/15/2024	6.82	6.76
5/14/2024	6.14	6.39
6/14/2024	6.12	5.90
7/15/2024	6.23	6.01
8/15/2024	5.46	6.20
9/13/2024	6.03	5.97
10/15/2024	5.55	5.54
11/15/2024	5.07	5.19
12/13/2024	4.85	5.02

APPENDIX D

HISTORICAL GROUNDWATER QUALITY MONITORING RESULTS

Table 1
Historical Groundwater Quality Monitoring Results - NJCU

Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-04	4/8/2014	N	6		4	U	5.5	U	5.5	U
	6/24/2014	N	16.4		4	U	5.5	U	5.5	U
	9/23/2014	N	12.4		5.8		5.5	U	5.5	U
	12/4/2014	N	27.2		5.7		5.5	U	5.5	U
	3/18/2015	N	23.6		4	U	6	U	6	U
	6/3/2015	N	10.6		4	U	5.5	UJ	5.5	UJ
	9/9/2015	N	22.3		4.3		5.5	U	5.5	U
	12/10/2015	N	<u>527</u>		5.6		5.5	U	5.5	U
	3/31/2016	N	17.6		4.2		5.5	U	5.5	U
	6/10/2016	N	16		4.3		5.5	U	5.5	U
	9/7/2016	N	18.2		7.8		5.5	U	5.5	U
	12/8/2016	N	14.6		4.5		5.5	UJ	5.5	UJ
	3/9/2017	N	12.1		4.6		5.5	U	5.5	UJ
	6/22/2017	N	9.8		4	U	5.5	U	5.5	UJ
	9/15/2017	N	<u>80.3</u>		7		5.5	UJ	5.5	UJ
	12/8/2017	N	24.6		4.7		5.5	UJ	5.5	UJ
	3/30/2018	N	4	U	4	U	5.5	U	5.5	U
	6/6/2018	N	6.5		4.1		6	U	6	U
9/7/2018	N	50.9		8		5.5	U	5.5	U	
12/4/2018	N	6.5		4	U	5.5	U	5.5	UJ	

Table 1
Historical Groundwater Quality Monitoring Results - NJCU

Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-05	4/8/2014	N	45.1		4.3		5.5	U	5.5	U
	4/8/2014	Y	43.7		4.3		5.5	U	5.5	U
	6/24/2014	N	26.6		5.7		5.5		5.5	U
	6/24/2014	Y	20.6		13.2		10		5.5	
	9/23/2014	N	15.4		4	U	5.5	U	5.5	U
	9/23/2014	Y	20	U	20	U	5.5	U	5.5	U
	12/4/2014	N	18.8		4	U	5.5	U	5.5	U
	12/4/2014	Y	32.5		4	U	5.5	U	5.5	U
	3/18/2015	N	<u>396</u>		4	U	6	U	6	U
	3/18/2015	Y	<u>399</u>		4	U	6	U	6	U
	6/3/2015	N	63		4		5.5	UJ	5.5	UJ
	6/3/2015	Y	21.8		4.5		5.5	UJ	5.5	UJ
	9/9/2015	N	36.3		5.6		5.5	U	5.5	U
	9/9/2015	Y	22.5		5.7		5.5	U	5.5	U
	12/10/2015	N	56.3		6.4		5.5	U	5.5	U
	12/10/2015	Y	<u>120</u>		6.8		5.5	U	5.5	U
	3/31/2016	N	<u>996</u>		4	U	5.5	U	5.5	U
	3/31/2016	Y	<u>707</u>		4	U	5.5	U	5.5	U
	6/10/2016	N	48.3		5.6		5.5	U	5.5	U
	6/10/2016	Y	41.3		5.7		5.5	U	5.5	U
	9/7/2016	N	33.9		7.1		5.5	U	5.5	U
	9/7/2016	Y	12.1		7.2		5.5	U	5.5	U
	12/7/2016	N	7.6		4	U	5.5	UJ	5.5	UJ
	12/7/2016	Y	7.5		4.3		5.5	UJ	5.5	UJ
	3/9/2017	N	4.9		4	U	5.5	U	5.5	UJ
	3/9/2017	Y	4		4	U	5.5	U	5.5	UJ
	6/22/2017	N	12.5		5.3		5.5	U	5.5	UJ
	6/22/2017	Y	25.5		5.5		5.5	U	5.5	UJ
	9/14/2017	N	10	J	4.7	J	6	U	6	U
	9/14/2017	Y	9.5	J	5.1	J	6	U	6	U
	12/7/2017	N	10.4		10.3		5.5	U	5.5	U
	12/7/2017	Y	10.4		10.6		5.5	U	5.5	U
	3/29/2018	N	<u>91.3</u>		8	U	5.5	UJ	5.5	UJ
3/29/2018	Y	<u>84.1</u>		8	U	5.5	UJ	5.5	UJ	
6/5/2018	N	17.3		7.7		5.5	UJ	5.5	U	
6/5/2018	Y	23.3		6.7		5.5	UJ	5.5	U	
9/6/2018	N	7.3		5.7		5.5	U	5.5	U	
9/6/2018	Y	7.7		6		5.5	U	5	U	
12/4/2018	N	16.1		6.8		5.5	U	5.5	UJ	
12/4/2018	Y	13.3		6.8		5.5	U	5.5	UJ	

Table 1
Historical Groundwater Quality Monitoring Results - NJCU

Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-06	4/8/2014	N	30.9		28.8		20		20	
	6/24/2014	N	<u>81.4</u>		5.1		5.5	U	10	
	9/23/2014	N	12.9		11.8		7.7		9.9	
	12/4/2014	N	9.9		9.8		8.8		8.8	
	3/18/2015	N	10.9		8		9.1		9.2	
	6/3/2015	N	21.6		20.3		20	J	20	J
	9/9/2015	N	36.2		30.7		30		30	
	12/10/2015	N	10.3		8.9		9.8		9.6	
	3/31/2016	N	15.6		13.1		10		10	
	6/10/2016	N	28.6		26.3		20		20	
	9/7/2016	N	28		8		9.3		9.1	
	12/7/2016	N	9.4		9.1		9	J	8.6	J
	3/9/2017	N	20.8		19.8		20		20	J
	6/22/2017	N	17.2		12.1		10		10	J
	9/14/2017	N	14.4	J	12.1	J	10		10	
	12/7/2017	N	6.2		5.3		7.3		8.3	
	3/30/2018	N	8.1		7.6		7.6		6.4	
6/6/2018	N	9.2		7.8		6	U	6.3		
9/7/2018	N	5.6		4.9		5.5	U	5.5	U	
12/5/2018	N	6.9		5.2		5.5	U	5.5	U	
184-MW-101*	7/20/2016	N	4	U	4	U	5.5	U	5.5	U
	9/7/2016	N	5.4		4.1		5.5	U	5.5	U
	12/7/2016	N	4.3		4	U	5.5	UJ	5.5	UJ
	3/9/2017	N	4	U	4	U	5.5	U	5.5	UJ
	6/22/2017	N	4	U	4	U	5.5	U	5.5	UJ
	9/14/2017	N	4	U	4	U	5.5	U	5.5	U
	12/7/2017	N	4	U	4	U	5.5	U	5.5	U
	3/29/2018	N	4	U	4	U	5.5	UJ	5.5	UJ
	6/5/2018	N	4	U	4	U	5.5	UJ	5.5	U
	9/6/2018	N	4	U	4	U	5.5	U	5.5	U
	12/4/2018	N	6.3		4	U	5.5	U	5.5	UJ
	3/4/2019	N	4.5		4	U	5.5	U	5.5	U
	6/14/2019	N	4	U	4	U	5.5	U	5.5	U
	9/5/2019	N	4	U	4	U	5.5	UJ	5.5	UJ
	12/5/2019	N	4.7		4	U	5.5	U	5.5	UJ
	3/12/2020	N	4	U	4	U	5.5	UJ	5.5	UJ
	6/3/2020	N	4	U	4	U	5.5	U	5.5	U
9/11/2020	N	4.4		4		5.5	U	5.5	U	
12/10/2020	N	4	U	4	U	5.5	U	5.5	U	
3/8/2021	N	4	U	4	U	5.5	U	5.5	U	
6/23/2021	N	4.3		4	U	5.5	U	5.5	U	
9/8/2021	N	4	U	4	U	5.5	U	5.5	U	
12/1/2021	N	4.5		4.3		5.5	U	5.5	U	

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Historical Groundwater Quality Monitoring Results - NJCU

Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-102*	7/20/2016	N	8.5		5		5.5	U	5.5	U
	9/7/2016	N	13.6		4.6		5.5	U	5.5	U
	12/7/2016	N	12.6		4.4		5.5	UJ	5.5	UJ
	3/9/2017	N	7.1		4.3		5.5	U	5.5	UJ
	9/14/2017	N	18.6		4.3		5.5	U	5.5	U
	12/7/2017	N	26.6		5.6		5.5	U	5.5	U
	3/29/2018	N	<u>205</u>		6.1		5.5	UJ	5.5	UJ
	6/5/2018	N	11.5		5.4		5.5	UJ	5.5	U
	9/6/2018	N	8.3		5.7		5.5	U	5.5	U
	12/4/2018	N	13.2		6.5		5.5	U	5.5	UJ
	3/4/2019	N	45.1		6.4		5.5	U	5.5	U
	6/13/2019	N	26.7		5.2		5.5	U	5.5	U
	9/4/2019	N	15.9		5.1		5.5	UJ	5.5	UJ
	12/5/2019	N	13.8		5.7		5.5	U	5.5	UJ
	3/12/2020	N	<u>129</u>		7.5		5.5	UJ	5.5	UJ
	6/3/2020	N	8.3		5.6		5.5	U	5.5	U
	9/9/2020	N	9.6		5.8		5.5	UJ	5.5	UJ
	9/9/2020	Y	9.5		5.6		5.5	UJ	5.5	UJ
	12/11/2020	N	8		5.1		5.5	UJ	5.5	UJ
	12/11/2020	Y	7.1		4.9		5.5	UJ	5.5	UJ
	3/9/2021	N	4		4	U	5.5	U	5.5	UJ
	3/9/2021	Y	4	U	4	U	5.5	U	5.5	UJ
	6/22/2021	N	8.7		5.6		5.5	U	5.5	U
	9/8/2021	N	5.7		5		5.5	U	5.5	U
	12/2/2021	N	5		4.3		5.5	U	5.5	U
	3/16/2022	N	4.9		4.5		5.5	U	5.5	UJ
	6/2/2022	N	5		4.8		5.5	U	5.5	UJ
	9/14/2022	N	6.1		6.1		5.5	U	5.5	UJ
	12/6/2022	N	5.6		4.5		5.5	UJ	5.5	UJ
	3/8/2023	N	5.4	J	4.3	J	5.5	U	5.5	U
6/22/2023	N	10	U	10	U	5.5	U	5.5	U	
9/14/2023	N	39.8		10	U	5.5	U	5.5	U	
12/19/2023	N	10	U	10	U	5.5	U	5.5	U	
3/12/2024	N	10	U	10	U	5.5	U	5.5	U	
6/19/2024	N	10	U	10	U	5.5	U	5.5	U	
9/4/2024	N	10	U	10	U	5.5	U	5.5	U	
11/14/2024	N	10	U	10	U	5.5	U	5.5	U	

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Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-103*	7/20/2016	N	4		4	U	5.5	U	5.5	U
	7/20/2016	Y	4.3		4	U	5.5	U	5.5	U
	9/7/2016	N	4	U	4	U	5.5	U	5.5	U
	12/7/2016	N	4	U	4	U	5.5	UJ	5.5	UJ
	3/9/2017	N	4	U	4	U	5.5	U	5.5	UJ
	6/22/2017	N	12.8		4	U	5.5	U	5.5	UJ
	9/15/2017	N	4	U	4	U	5.5	UJ	5.5	UJ
	12/7/2017	N	4	U	4	U	5.5	U	5.5	U
	3/29/2018	N	24.8		20		20	J	10	J
	6/6/2018	N	12.2		8.8		6.1		6.8	
	9/7/2018	N	5.4		4	U	5.5	U	5.5	U
	12/5/2018	N	21.2		16.4		5.5	U	5.5	U
	3/4/2019	N	34.2		28.9		30	J	30	J
	6/13/2019	N	34.7		28.1		29		27	
	9/4/2019	N	11.3		4	U	5.5	UJ	5.5	UJ
	12/4/2019	N	20.2		4	U	5.5	UJ	5.5	UJ
	3/11/2020	N	29.5		4	U	5.5	UJ	5.5	UJ
	6/2/2020	N	33.2		4	U	5.5	U	5.5	UJ
	9/9/2020	N	5.9		4	U	5.5	UJ	5.5	UJ
	12/10/2020	N	29.6		27.8		28		27	
3/8/2021	N	30.9		28.6		31		30		
6/22/2021	N	26.1		19		19		18		
9/8/2021	N	6.7		4	U	5.5	U	5.5	U	
12/1/2021	N	4	U	4	U	5.5	U	5.5	U	

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Historical Groundwater Quality Monitoring Results - NJCU

Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-104*	7/20/2016	N	4	U	4	U	5.5	U	5.5	U
	9/7/2016	N	4	U	4	U	5.5	U	5.5	U
	12/7/2016	N	4	U	4	U	5.5	UJ	5.5	UJ
	3/9/2017	N	4	U	4	U	5.5	U	5.5	UJ
	6/22/2017	N	4	U	4	U	5.5	U	5.5	UJ
	9/14/2017	N	4	U	4	U	5.5	U	5.5	U
	12/7/2017	N	4	U	4	U	5.5	U	5.5	U
	3/30/2018	N	4	U	4	U	5.5	U	5.5	U
	6/5/2018	N	4	U	4	U	5.5	UJ	5.5	U
	9/6/2018	N	4	U	4	U	5.5	U	5.5	U
	12/4/2018	N	4	U	4	U	5.5	U	5.5	UJ
	3/5/2019	N	4	U	4	U	5.5	U	5.5	U
	9/4/2019	N	4	U	4	U	5.5	UJ	5.5	UJ
	12/4/2019	N	4	U	4	U	5.5	UJ	5.5	UJ
	3/11/2010	N	4	U	4	U	5.5	UJ	5.5	UJ
	3/11/2020	Y	4	U	4	U	5.5	UJ	5.5	UJ
	6/2/2020	N	4	U	4	U	5.5	U	5.5	UJ
	9/9/2020	N	4	U	4	U	5.5	UJ	5.5	UJ
	12/10/2020	N	4	U	4	U	5.5	U	5.5	U
	3/8/2021	N	4.1		4.2		5.5	U	5.5	U
6/22/2021	N	4	U	4	U	5.5	U	5.5	U	
6/22/2021	Y	4	U	4	U	5.5	U	5.5	U	
9/8/2021	N	4	U	4	U	5.5	U	5.5	U	
9/8/2021	Y	4	U	4	U	5.5	U	5.5	U	
12/1/2021	N	4	U	4	U	5.5	U	5.5	U	
12/1/2021	Y	4	U	4	U	5.5	U	5.5	U	

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Historical Groundwater Quality Monitoring Results - NJCU

Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-105*	9/14/2017	N	4	U	4	U	5.5	U	5.5	U
	12/7/2017	N	4	U	4	U	5.5	U	5.5	U
	3/29/2018	N	4	U	4	U	5.5	UJ	5.5	UJ
	6/5/2018	N	4	U	4	U	5.5	UJ	5.5	U
	9/6/2018	N	4	U	4	U	5.5	U	5.5	U
	12/4/2018	N	4	U	4	U	5.5	U	5.5	UJ
	3/4/2019	N	4	U	4	U	5.5	U	5.5	U
	6/14/2019	N	4	U	4	U	5.5	U	5.5	U
	9/5/2019	N	4	U	4	U	5.5	UJ	5.5	UJ
	12/5/2019	N	4	U	4	U	5.5	U	5.5	UJ
	3/12/2020	N	4	U	4	U	5.5	UJ	5.5	UJ
	6/3/2020	N	4	U	4	U	5.5	U	5.5	U
	9/11/2020	N	4	U	4	U	5.5	U	5.5	U
	12/10/2020	N	4	U	4	U	5.5	U	5.5	U
	3/8/2021	N	4	U	4	U	5.5	U	5.5	U
	6/23/2021	N	4	U	4	U	5.5	U	5.5	U
	9/8/2021	N	4	U	4	U	5.5	U	5.5	U
	12/1/2021	N	4	U	4	U	5.5	U	5.5	U
	3/16/2022	N	4	U	4	U	5.5	U	5.5	UJ
	6/2/2022	N	4	U	4	U	5.5	U	5.5	U
	9/14/2022	N	4	U	4	U	5.5	U	5.5	U
	12/6/2022	N	4	U	4	U	5.5	UJ	5.5	UJ
	3/8/2023	N	4	UJ	4	UJ	5.5	U	5.5	U
	3/8/2023	Y	4	U	4	U	5.5	U	5.8	
	6/22/2023	N	10	U	10	U	5.5	U	5.5	U
	6/22/2023	Y	10	U	10	U	5.5	U	5.5	U
	9/14/2023	N	10	U	10	U	5.5	U	5.5	U
	9/14/2023	Y	10	U	10	U	5.5	U	5.5	U
12/19/2023	N	10	U	10	U	5.5	U	5.5	U	
12/19/2023	Y	10	U	10	U	5.5	U	5.5	U	
3/12/2024	N	10	U	10	U	5.5	U	5.5	U	
3/12/2024	Y	10	U	10	U	5.5	U	5.5	U	
6/19/2024	N	10	U	10	U	5.5	U	5.5	U	
6/19/2024	Y	10	U	10	U	5.5	U	5.5	U	
9/4/2024	N	10	U	10	U	5.5	U	5.5	U	
9/4/2024	Y	10	U	10	U	5.5	U	5.5	U	
11/14/2024	N	10	U	10	U	5.5	U	5.5	U	
11/14/2024	Y	10	U	10	U	5.5	U	5.5	U	
184-MW-106*	6/22/2017	N	5.8		4.7		5.5	U	5.5	UJ
	9/14/2017	N	6.2		4.8		5.5	U	5.5	U
	12/7/2017	N	6.7		5.8		5.5	U	5.5	U
	3/29/2018	N	13.4		5.9		6	UJ	6	UJ
	6/5/2018	N	6.3		5.6		5.5	UJ	5.5	U
	9/6/2018	N	8.1		7.3		5.5	U	5.5	U
	12/4/2018	N	7.9		7.9		5.5	U	5.5	UJ
	3/4/2019	N	7.2		5.1		5.5	U	5.5	U
	6/13/2019	N	5.7		5		5.5	U	5.5	U
	9/4/2019	N	6.5		6		5.5	UJ	5.5	UJ
	12/4/2019	N	6.8		6.5		5.5	UJ	5.5	UJ
	3/12/2020	N	6.8		6		5.5	UJ	5.5	UJ
	6/2/2020	N	6.3		6		5.5	U	5.5	UJ
	9/9/2020	N	6.9		6.3		5.5	UJ	5.5	UJ
	12/10/2020	N	5.8		5.6		5.5	U	5.5	U
3/8/2021	N	5		4.1		5.5	U	5.5	U	
6/23/2021	N	5.6		4.9		5.5	U	5.5	U	
184-MW-106R*	9/8/2021	N	4	U	4	U	5.5	U	5.5	U
	12/2/2021	N	4	U	4	U	5.5	U	5.5	U

Table 1
Historical Groundwater Quality Monitoring Results - NJCU

Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-107*	9/15/2017	N	5.7		4	U	5.5	UJ	5.5	UJ
	12/8/2017	N	<u>1210</u>		4	U	5.5	UJ	5.5	UJ
	3/29/2018	N	4	U	4	U	5.5	UJ	5.5	UJ
	6/6/2018	N	33.2		4	U	6	U	6	U
	9/7/2018	N	<u>108</u>		4.4		5.5	U	5.5	U
	12/5/2018	N	<u>139</u>		4	U	5.5	U	5.5	U
	3/5/2019	N	40.7		4	U	5.5	U	5.5	U
	3/5/2019	Y	36		4	U	5.5	U	5.5	U
	6/13/2019	N	<u>136</u>		4	U	5.5	U	5.5	U
	6/13/2019	Y	<u>715</u>		4	U	5.5	U	5.5	U
	9/4/2019	N	<u>95.7</u>		4	U	5.5	UJ	5.5	UJ
	9/4/2019	Y	<u>76.3</u>	J	8	UJ	5.5	UJ	5.5	UJ
	12/4/2019	N	49		4	U	5.5	UJ	5.5	UJ
	12/4/2019	Y	34.5		4	U	5.5	UJ	5.5	UJ
	3/11/2020	N	<u>689</u>		4	U	5.5	UJ	5.5	UJ
	6/2/2020	N	<u>2790</u>		4	U	5.5	U	5.5	UJ
	9/9/2020	N	61		4	U	5.5	UJ	5.5	UJ
	12/11/2020	N	<u>84.7</u>		4	U	5.5	UJ	5.5	UJ
	3/8/2021	N	<u>656</u>		21.1		15		22	
	6/23/2021	N	4	U	4	U	5.5	U	5.5	U
	9/7/2021	N	18.9		4	U	5.5	UJ	5.5	U
	12/1/2021	N	4	UJ	4	UJ	5.5	U	5.5	U
	3/16/2022	N	<u>74.9</u>		4	U	5.5	UJ	5.5	UJ
	6/2/2022	N	4	U	4	U	5.5	U	5.5	U
	9/14/2022	N	DRY		DRY		DRY		DRY	
	12/6/2022	N	13.6		4	U	5.5	UJ	5.5	UJ
	3/8/2023	N	4	U	4	U	5.5	U	5.5	U
	6/22/2023	N	10	U	10	U	5.5	U	5.5	U
9/14/2023	N	<u>185</u>		10	U	5.5	U	5.5	U	
12/19/2023	N	51.5		60.8		5.5	U	5.5	U	
3/12/2024	N	43.8		39.5		5.5	U	5.5	U	
6/19/2024	N	<u>604</u>		10	U	5.5	U	5.5	U	
9/4/2024	N	10	U	10	U	5.5	U	5.5	U	
11/14/2024	N	<u>382</u>		10	U	5.5	U	5.5	U	

Table 1
Historical Groundwater Quality Monitoring Results - NJCU

Monitoring Well ID	Sample Date	Sample Duplicate (Y/N)	Total Chromium (Unfiltered)		Total Chromium (Filtered)		Hexavalent Chromium (Unfiltered)		Hexavalent Chromium (Filtered)	
			Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
184-MW-108*	9/14/2017	N	4	UJ	4	UJ	5.5	U	5.5	U
	12/8/2017	N	4	U	4	U	5.5	UJ	5.5	UJ
	3/30/2018	N	4	U	4	U	5.5	U	5.5	U
	6/5/2018	N	4	U	4	U	5.5	UJ	5.5	U
	9/6/2018	N	4	U	4	U	5.5	U	5.5	U
	12/5/2018	N	4.3		4	U	5.5	U	5.5	U
	3/5/2019	N	4.5		4	U	5.5	U	5.5	U
	9/4/2019	N	8	UJ	8	UJ	5.5	UJ	5.5	UJ
	12/4/2019	N	5.3		4	U	5.5	UJ	5.5	UJ
	3/11/2020	N	20	U	4	U	5.5	UJ	5.5	UJ
	6/2/2020	N	4	U	4	U	5.5	U	5.5	UJ
	6/2/2020	Y	4	U	4	U	5.5	U	5.5	UJ
	9/9/2020	N	21.7		4	U	5.5	UJ	5.5	UJ
	12/10/2020	N	4	U	4	U	5.5	U	5.5	U
	3/8/2021	N	4	U	4	U	5.5	U	5.5	U
	6/23/2021	N	4	U	4	U	5.5	U	5.5	U
	9/7/2021	N	4	U	4	U	5.5	UJ	5.5	U
	12/1/2021	N	4	U	4	U	5.5	UJ	5.5	U
	3/16/2022	N	4	U	4	U	5.5	U	5.5	UJ
	3/16/2022	Y	4	U	4	U	5.5	U	5.5	UJ
	6/2/2022	N	4	U	4	U	5.5	U	5.5	U
	6/2/2022	Y	4	U	4	U	5.5	U	5.5	U
	9/14/2022	N	4	U	4	U	5.5	U	5.5	U
	9/14/2022	Y	4	U	9.1		5.5	U	5.5	U
	12/6/2022	N	15.3		4	U	5.5	UJ	5.5	UJ
	12/6/2022	Y	3		4	U	5.5	UJ	5.5	UJ
	3/8/2023	N	4	U	4	U	5.5	U	5.5	U
	6/22/2023	N	10	U	10	U	5.5	U	5.5	U
9/14/2023	N	10	U	10	U	5.5	U	5.5	U	
12/19/2023	N	10	U	10	U	5.5	U	5.5	U	
3/12/2024	N	10	U	10	U	5.5	UJ	5.5	UJ	
6/19/2024	N	10	U	10	U	5.5	U	5.5	U	
9/4/2024	N	10	UJ	10	UJ	5.5	U	5.5	U	
11/14/2024	N	10	U	10	UJ	5.5	U	5.5	U	

General Notes:

1. Analysis methods E200.8 used for Total Chromium and SW7199 for Hexavalent Chromium.
2. **2. Bold and underlined values** exceed the NJDEP Ground Water Quality Standards (Chromium - 70 µg/L), N.J.A.C 7:9C; last amended 6/1/2020.

3. Monitoring well 184-MW-106 abandoned and replaced by 184-MW-106R on August 12, 2021.

*Defined as Sentinel Well in Groundwater Remedial Action Permit

Abbreviations:

Conc.: Concentration measured in micrograms per liter

N: No

Q: Qualifiers

Y: Yes

Data Qualifies:

B: Analyte found in blank and sample

J: Estimated concentration

U: Analyte not detected above method detection limit

ATTACHMENT 2

WSP MEMO, RESPONSE TO PLAINTIFFS' COMMENTS
ON THE 2024 INTEGRATED GROUNDWATER MONITORING REPORT



MEMO

Date: November 7, 2025

From: Dennis Nagg - WSP

To: Eric Christodoulatos, Honeywell

cc: Jeremy Karpatkin – Arnold & Porter
CJ Minchoff – GES
George Pfeiffer – Honeywell
John Giuliano – Tetra Tech
Natalie Warner – WSP

Subject: Response to Plaintiffs’ Comments on the 2024 Integrated Groundwater Monitoring Report

WSP USA Inc. (WSP), on behalf of Honeywell, has prepared the following responses to the comments that were submitted by Plaintiffs regarding the 2024 Integrated Groundwater Monitoring Report in a letter dated August 25, 2025. Honeywell’s hydrogeology consultant, Cornerstone, has revised the 2024 Integrated Groundwater Monitoring Report, as further described herein. Below, WSP has summarized the changes to pertinent portions of the text or tables based upon the comments received from Plaintiffs.

RESPONSES TO COMMENTS FROM DR. BENJAMIN ROSS

DR. BENJAMIN ROSS COMMENT (BR-1):

Water levels differ from values reported in monthly and quarterly reports

The groundwater levels reported in Tables 4-3 and 4-4 differ from the values previously reported in monthly and quarterly reports. I did not check every report, but I did check both corrected reports submitted on January 28, 2025 for the months of April through October and reports for months as to which Honeywell did not submit corrections. There are discrepancies in both categories of reports.

The majority of the discrepancies are less than two inches. However, there are occasional discrepancies of 2 to 3 inches at a number of wells, and at 087-PZ-7 and 087-PZ-8 the discrepancies are on the order of 1 to 2 feet in all the months I checked.

The text of the 2024 IGWMR does not mention that the reported head values were altered subsequent to the issuance of the quarterly reports and original and corrected monthly data submissions, let alone explain why the numbers changed.

The report should state that the head values were altered and explain why and how the head values in the 2024 IGWMR were calculated. It should also call attention to the existence of revised monthly and quarterly reports, so

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that future users of the 2024 IGWMR who want more detailed data do not mistakenly turn to the original rather than revised monthly and quarterly reports.

Also, the head data for the 087-PZ-7/PZ-8 pair in the SA6/7 monthly data for April, May and June 2025, issued after the 2024 IGWMR, show steady water levels around 8 ft in 087-PZ-7. This resembles the data in the 2024 monthly reports (for reports corrected in January 2025, the corrected versions) much more than it resembles the data in the 2024 IGWMR. Honeywell should review the data in the monthly and quarterly reports issued so far in 2025 to ensure that they reflect whatever adjustments were found to be necessary when the 2024 IGWMR was prepared.

WSP RESPONSE:

Groundwater level data reported in any IGWMR is intended to match that reported in the SA-6 monthly data submittals and NJCU quarterly reports. Discrepancies in the groundwater level data in the 2024 IGWMR were inadvertent and occurred for the following reasons:

- The groundwater level data reported on Table 4-4 for PZ-7 and PZ-8 was erroneously the 2023 data, not the 2024 data.
- Discrepancies in head differences between the 2024 IGWMR and the 2024 SA-6/SA-7 monthly/quarterly reports and NJCU quarterly reports occurred because monthly averages were calculated using different date ranges between the monthly/quarterly reports and the 2024 IGWMR. Depending on the month, there are four causes for the date range discrepancies as summarized below. These causes, acting alone or in combination, contributed to variations in the average monthly head differences.
 - In the 2024 IGWMR, monthly averages were calculated using data on a strict calendar basis, from the first day of the month to the last day of the month. That was not necessarily the case for the monthly data submittals and quarterly reports. For some months, datalogger downloads could not occur on the last day of the month due to the last day falling on a weekend or holiday or on a day with inclement weather and requiring the download day to occur on a day prior to the last day of the month. When that occurred, the date range used for calculating the monthly averages in the monthly data submittals and quarterly reports could have been offset several days from the month's first day/last day date ranges used in the IGWMR.
 - In the NJCU quarterly reports, for certain months where a datalogger malfunctioned and did not record data for a series of days within the month, calculations of monthly average heads from the properly functioning logger of the associated piezometer pair omitted data for the corresponding series of days as that of the malfunctioning logger. Calculations of monthly average heads for the annual report, reported on Table 4-3, did not omit any data; instead all available data was used in the calculations, whether or not an associated piezometer pair's logger had a malfunction during the month.
 - For some of the SA-6/SA-7 monthly/quarterly reports, an embedded formula in the Excel file used to compile the data and calculate monthly average heads caused an error. The formula that omitted the date ranges associated with a malfunctioning logger in one month was carried over into the subsequent month(s) even where the logger was repaired or replaced and all data for the month was recorded. This error has been corrected.



- Additionally, for some of the SA-6/SA-7 monthly/quarterly reports, an error in an embedded formula in the Excel file caused inadvertent exclusion of data in the monthly average calculation. For some months, data was included up to the final day of the month for which data was downloaded (for example, March 28th), but excluded for the remainder of that month when calculating the following month's averages. This formula error has also been corrected.

The following summarizes the remedies for the above-noted discrepancies:

- The Revised 2024 IGWMR includes a revised Table 4-4 including the 2024 data for PZ-7 and PZ-8.
- The Revised 2024 IGWMR includes a revised Table 4-3 that reports head differences consistent with the NJCU quarterly reports.
- Minor revisions to the monthly average head differences in the 3rd quarter (for MW-104/MW-108 in September) and the 4th quarter (for MW-101/MW-105 in November) NJCU quarterly reports was also required. These revised quarterly reports are attached.
- Revised Table 4s from the SA-6/SA-7 monthly/quarterly reports for January through December 2024 are attached correcting the two date range errors.
- The Revised 2024 IGWMR includes a revised Table 4-4 that reports SA-6/SA-7 monthly averages and head differences consistent with the revised Table 4s.
- The Revised 2024 IGWMR includes a revised Figure 4-10 which graphs the head differences across the NJCU hydraulic barrier wall.
- The Revised 2024 IGWMR includes revised Figures 4-11 and 4-12 which graph the head differences across the SA-6 North and SA-6 South hydraulic barrier walls, respectively.
- The Revised 2024 IGWMR also includes revised hydrographs for SA-6/SA-7 in Appendix A and revised hydrographs for NJCU in Appendix B with the new monthly average values.

Furthermore, monthly average calculations will prospectively be conducted consistently for all data sets as follows:

- Monthly averages will be calculated from download date to download date, not from the first day of the month to the last day of the month. This will restore the method of calculating monthly averages Honeywell has used since the outset of the program.
- In the following month, the date range for the monthly average calculation will start where the previous month left off (i.e. on the date of the previous month's datalogger download date).
- If a datalogger malfunctions for a series of days within the month, the data corresponding to the same series of days as that of the malfunctioning logger from the properly functioning logger will be omitted from the monthly average calculation. In this way, the data sets used for calculation of the monthly averages for all piezometer pairs will be analogous. This has been standard practice for Honeywell when reporting data for the NJCU quarterly since the beginning of the program; however, this is not what was done for the SA-6/SA-7 data in the monthly gradient calculations to date.
- The IGWMR will report the monthly data consistent with the way the data is reported in the monthly/quarterly reports.



Beginning with the August 2025 monthly report which was submitted to All Parties on September 30, 2025, Honeywell is now making a change in the way we calculate monthly gradient averages at SA-6 and SA-7 when there is a datalogger malfunction at a piezometer pair. In reviewing the remaining previously submitted 2025 monthly reports, we noticed that all or some of these same errors occurred. Therefore, Honeywell will be submitting to All Parties Revised 2025 Table 4s for January through July 2025 under separate cover.

DR. BENJAMIN ROSS COMMENT (BR-2):

Mean Tidal Elevation

As we requested in our comments on the 2022 and 2023 IGWMRs, Honeywell reports the mean tidal elevation for 2024. It was 1.6 feet, an increase of 0.4 feet (about 5 inches) from the value of 1.2 ft. Please clarify whether this was calculated from data from Honeywell's tide gauge, or is based on the 0.4 ft rise in mean tidal elevation measured by USGS and discussed in Honeywell's August 15, 2024 response to comments.

WSP RESPONSE:

The Revised 2024 IGWMR clarifies how the increase of 0.4 feet in the mean tidal elevation was determined.

DR. BENJAMIN ROSS COMMENT (BR-3):

Gradient reversal

As discussed in Section 4.5, piezometer pair PZ-1/PZ-2 failed to meet the inward gradient criterion for five months in 2024. The influence of the storm sewer on water levels in PZ-1, and the resulting difficulty in maintaining an inward gradient there, were discussed in Honeywell's January 14, 2025 response to comments on SA6 gradients. This discussion should be summarized here.

As discussed in my May 6, 2025 memo on gradient reversals, Honeywell is unable to satisfy the gradient criterion at this piezometer pair. Water quality sampling at PZ-2 should be resumed. Because repeated sampling in 2018, 2019, and 2020 found hexavalent chromium and dissolved total chromium levels uniformly below or near detection limits, annual sampling as is done at PZ-10 and PZ-20 would be sufficient.

WSP RESPONSE:

The Revised 2024 IGWMR summarizes the discussion of the piezometer pair, PZ-1/PZ-2, from Honeywell's January 14, 2025 response to comments on the SA-6 gradients.

In Honeywell's response to comment memo sent to All Parties on September 2, 2025 in response to Plaintiffs' comments regarding gradients at SA-6 and SA-7 sent via email on May 8, 2025, Honeywell committed to sample PZ-2 in 2025 since the PZ-1/PZ-2 pair exhibited a 30-day average outward gradient in 2024 from early September to early December. Further, Honeywell committed to collecting a groundwater sample from an interior piezometer when pumping for 30 days fails to reverse an outward gradient based on the monthly head difference at those locations.

DR. BENJAMIN ROSS COMMENT (BR-4):

Page 4-1, ¶1 - *The report states that the annual round of water-level measurements will be conducted in the 3rd quarter of 2025. To reduce the delay between collection and analysis and reporting of these data, the measurements should be taken late in the year. Given the risks of planning on measurements in winter weather, we recommend that this measurement round should occur no earlier than September 1.*



WSP RESPONSE:

Honeywell proposes implementing the annual round of water-level measurements between September 1 and October 31 of each year. The Revised 2024 IGWMR has been modified to indicate these proposed dates.

DR. BENJAMIN ROSS COMMENT (BR-5):

Page 4-4, ¶2 - I agree that groundwater levels should be evaluated during and after future NJCU infrastructure projects that may impact recharge.

WSP RESPONSE:

Acknowledged.

DR. BENJAMIN ROSS COMMENT (BR-6):

Page 4-4, ¶3 - Figure 4-9, showing measurements on December 30, illustrates the successful operation of the infiltration trench outboard of the NJCU sheetpile wall, creating an inward gradient after the December 28-30 rainstorm and snowmelt in the preceding weeks.

WSP RESPONSE:

Acknowledged.

DR. BENJAMIN ROSS COMMENT (BR-7):

Page 4-5, ¶1 and Page 4-6, ¶2 - The existence of corrected monthly data submissions and quarterly reports should be mentioned in both paragraphs to ensure that future users of the 2024 IGWMR refer to the right version of the more detailed head data in those documents.

WSP RESPONSE:

The Revised 2024 IGWMR includes a statement to indicate that the tabulated monthly average calculations from the monthly data submissions (Table 4) and quarterly reports (Table 4 in Attachment 5) from January through December 2024 have been corrected as indicated in the response to Comment BR-1 above.

DR. BENJAMIN ROSS COMMENT (BR-8):

Page 4-5, ¶2 - High groundwater elevations in PZ-10 after rainfalls are not the result of water buildup on the cap. The elevation of the cap at PZ-10 is between 10 ft and 11 ft. The water levels at PZ-10, even after rainfalls, are not higher than about 6 ft. The weight of water above the cap is only transmitted to water below the cap when the zone below the cap is fully saturated.

WSP RESPONSE:

Honeywell and Plaintiffs continue to differ about the potential cause for the elevated water levels at PZ-10. Honeywell reminds all Parties that the SA-6 LTMP contains language that recognizes that maintaining gradients at this piezometer pair is challenging due to the tidal influence of the river on the exterior piezometer. Additionally, the SA-6 LTMP requires annual water quality sampling and data reveal that chromium concentrations in groundwater at PZ-10 have consistently been non-detect. Thus, the cause of the elevated water levels at PZ-10 and the resulting outward gradient is moot.



DR. BENJAMIN ROSS COMMENT (BR-9):

Page 4-5, ¶3 - The statement about the net direction of groundwater flow over the year should be deleted. The relevant measure is the monthly average flow direction, not the annual average.

WSP RESPONSE:

Honeywell is aware that the criteria for compliance is based upon monthly averages, and states as much in the Report. The statement in the Report about the net directional flow of groundwater is accurate, and is an appropriate factual observation to include in the Report.

DR. BENJAMIN ROSS COMMENT (BR-10):

Page 5-1, ¶4 - I would not interpret the chromium concentration plot for PW-1 as asymptotic. It looks to me like the concentrations are still declining. Let's hope this continues.

WSP RESPONSE:

Acknowledged. Honeywell will continue to evaluate the trends in these concentrations.

Revised SA-6/SA-7 2024 Table 4s

REVISED Table 4
January 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	6.06	3.76	2.30
PZ-3/PZ-4	6.03	3.78	2.25
PZ-5/PZ-6	6.65	3.55	3.10
PZ-7/PZ-8	8.61	4.24	4.37
PZ-9/PZ-10	3.26	5.10	-1.84
PZ-11/PZ-12	6.96	5.07	1.89
PZ-13/PZ-14	8.25	3.95	4.30
PZ-15/PZ-16	7.33	5.10	2.23
PZ-17/PZ-18	5.68	3.93	1.75
PZ-19R/PZ-20R	3.59	3.52	0.07
115-PZ-500/115-W3-SO	4.73	3.86	0.87
115-PZ-501/115-E1A-SO	5.12	3.98	1.14
115-PZ-502/115-E4-SO	4.99	3.30	1.69
115-PZ-503/115-W6-SO	4.67	4.79	-0.12
115-PZ-502/115-E5-SO	4.99	4.66	0.33
115-PZ-503/115-W1-SO	4.67	4.18	0.49
115-PZ-501/115-W5-SO	5.12	4.56	0.56

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

REVISED averages calculated between download dates (12/29/23 - 2/1/24)

REVISED Table 4
February 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	5.06	3.62	1.44
PZ-3/PZ-4	5.42	4.01	1.41
PZ-5/PZ-6	6.11	3.77	2.34
PZ-7/PZ-8	8.56	4.64	3.92
PZ-9/PZ-10	3.21	4.99	-1.78
PZ-11/PZ-12	6.78	4.83	1.95
PZ-13/PZ-14	7.86	3.60	4.26
PZ-15/PZ-16	6.96	4.07	2.89
PZ-17/PZ-18	5.51	3.52	1.99
PZ-19R/PZ-20R	3.60	3.12	0.48
115-PZ-500/115-W3-SO	4.70	3.49	1.21
115-PZ-501/115-E1A-SO	5.33	3.49	1.84
115-PZ-502/115-E4-SO	5.02	3.45	1.57
115-PZ-503/115-W6-SO	4.67	5.02	-0.35
115-PZ-502/115-E5-SO	5.02	4.38	0.64
115-PZ-503/115-W1-SO	4.67	4.37	0.30
115-PZ-501/115-W5-SO	5.33	3.78	1.55

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

PZ-14 datalogger malfunctioned and data was not recorded from 2/23 to 2/28. Data in this range was omitted in the monthly average calculation for PZ-13.

REVISED averages calculated between download dates (2/1/24 - 2/29/24)

REVISED Table 4
March 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	6.18	3.93	2.25
PZ-3/PZ-4	5.94	4.42	1.52
PZ-5/PZ-6	6.74	3.83	2.91
PZ-7/PZ-8	8.56	4.30	4.26
PZ-9/PZ-10	3.21	4.87	-1.66
PZ-11/PZ-12	7.15	4.94	2.21
PZ-13/PZ-14	8.34	4.24	4.10
PZ-15/PZ-16	7.51	5.09	2.42
PZ-17/PZ-18	5.94	4.05	1.89
PZ-19R/PZ-20R	3.57	3.55	0.02
115-PZ-500/115-W3-SO	4.83	3.60	1.23
115-PZ-501/115-E1A-SO	5.46	4.18	1.28
115-PZ-502/115-E4-SO	5.24	3.43	1.81
115-PZ-503/115-W6-SO	4.79	4.74	0.05
115-PZ-502/115-E5-SO	5.24	4.94	0.30
115-PZ-503/115-W1-SO	4.79	4.04	0.75
115-PZ-501/115-W5-SO	5.46	4.56	0.90

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

REVISED averages calculated between download dates (2/29/24 - 4/1/24)

REVISED Table 4
April 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	5.58	4.28	1.30
PZ-3/PZ-4	6.05	4.21	1.84
PZ-5/PZ-6	6.38	3.65	2.73
PZ-7/PZ-8	8.23	3.63	4.60
PZ-9/PZ-10	3.26	4.58	-1.32
PZ-11/PZ-12	6.67	5.33	1.34
PZ-13/PZ-14	7.58	5.45	2.13
PZ-15/PZ-16	6.93	5.71	1.22
PZ-17/PZ-18	5.57	5.02	0.55
PZ-19R/PZ-20R	3.56	5.14	-1.58
115-PZ-500/115-W3-SO	4.75	4.66	0.09
115-PZ-501/115-E1A-SO	5.27	5.07	0.20
115-PZ-502/115-E4-SO	5.14	3.78	1.36
115-PZ-503/115-W6-SO	4.72	3.54	1.18
115-PZ-502/115-E5-SO	5.14	4.85	0.29
115-PZ-503/115-W1-SO	4.72	3.30	1.42
115-PZ-501/115-W5-SO	5.27	5.48	-0.21

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

REVISED averages calculated between download dates (4/1/24 - 4/29/24)

REVISED Table 4
May 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	4.12	3.83	0.29
PZ-3/PZ-4	5.06	3.32	1.74
PZ-5/PZ-6	5.63	3.60	2.03
PZ-7/PZ-8	7.82	2.72	5.10
PZ-9/PZ-10	2.81	3.66	-0.85
PZ-11/PZ-12	5.98	5.23	0.75
PZ-13/PZ-14	6.27	5.12	1.15
PZ-15/PZ-16	5.65	5.28	0.37
PZ-17/PZ-18	4.54	4.80	-0.26
PZ-19R/PZ-20R	3.33	5.00	-1.67
115-PZ-500/115-W3-SO	4.26	4.81	-0.55
115-PZ-501/115-E1A-SO	4.80	4.77	0.03
115-PZ-502/115-E4-SO	4.53	4.41	0.12
115-PZ-503/115-W6-SO	4.42	2.67	1.75
115-PZ-502/115-E5-SO	4.53	3.47	1.06
115-PZ-503/115-W1-SO	4.42	2.43	1.99
115-PZ-501/115-W5-SO	4.80	4.97	-0.17

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

REVISED averages calculated between download dates (4/29/24 - 5/28/24)

REVISED Table 4
June 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	N/A	N/A	N/A
PZ-3/PZ-4	4.59	3.32	1.27
PZ-5/PZ-6	5.55	3.43	2.12
PZ-7/PZ-8	7.87	2.00	5.87
PZ-9/PZ-10	2.46	2.41	0.05
PZ-11/PZ-12	5.85	5.06	0.79
PZ-13/PZ-14	5.83	4.13	1.70
PZ-15/PZ-16	4.97	4.45	0.52
PZ-17/PZ-18	4.19	4.03	0.16
PZ-19R/PZ-20R	3.19	4.11	-0.92
115-PZ-500/115-W3-SO	4.31	4.14	0.17
115-PZ-501/115-E1A-SO	4.76	3.72	1.04
115-PZ-502/115-E4-SO	4.56	3.80	0.76
115-PZ-503/115-W6-SO	4.47	1.99	2.48
115-PZ-502/115-E5-SO	4.56	3.08	1.48
115-PZ-503/115-W1-SO	4.47	1.96	2.51
115-PZ-501/115-W5-SO	4.76	4.02	0.74

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

PZ-1 datalogger malfunctioned and data was not recorded from 5/28 to 7/1. Data in this range was omitted in the monthly average calculation for PZ-2.

PZ-14 datalogger malfunctioned and data was not recorded for the last few readings of 7/1, which are part of the June reporting period. Therefore, data for these final readings on 7/1 was also omitted in the monthly average calculation for PZ-13.

REVISED averages calculated between download dates (5/28/24 - 7/1/24)

REVISED Table 4
July 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	N/A	N/A	N/A
PZ-3/PZ-4	4.24	3.07	1.17
PZ-5/PZ-6	5.22	3.16	2.06
PZ-7/PZ-8	7.65	1.59	6.06
PZ-9/PZ-10	2.01	1.74	0.27
PZ-11/PZ-12	5.61	4.52	1.09
PZ-13/PZ-14	N/A	N/A	N/A
PZ-15/PZ-16	4.67	3.52	1.15
PZ-17/PZ-18	3.89	3.10	0.79
PZ-19R/PZ-20R	3.24	3.13	0.11
115-PZ-500/115-W3-SO	4.27	3.38	0.89
115-PZ-501/115-E1A-SO	4.65	2.92	1.73
115-PZ-502/115-E4-SO	4.50	3.42	1.08
115-PZ-503/115-W6-SO	4.42	1.76	2.66
115-PZ-502/115-E5-SO	4.50	2.66	1.84
115-PZ-503/115-W1-SO	4.42	1.62	2.80
115-PZ-501/115-W5-SO	4.65	2.94	1.71

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

PZ-2 datalogger malfunctioned and data was not recorded from 7/1 to 7/30. Data in this range was omitted in the monthly average calculation for PZ-1.

PZ-14 datalogger malfunctioned and data was not recorded from 7/1 to 7/30. Data in this range was omitted in the monthly average calculation for PZ-13.

REVISED averages calculated between download dates (7/1/24 - 7/30/24)

REVISED Table 4
August 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	4.98	3.64	1.34
PZ-3/PZ-4	4.75	2.99	1.76
PZ-5/PZ-6	5.78	2.85	2.93
PZ-7/PZ-8	7.65	1.30	6.35
PZ-9/PZ-10	2.60	2.04	0.56
PZ-11/PZ-12	6.28	4.18	2.10
PZ-13/PZ-14	6.26	2.66	3.60
PZ-15/PZ-16	5.22	2.79	2.43
PZ-17/PZ-18	4.16	2.42	1.74
PZ-19R/PZ-20R	3.21	2.35	0.86
115-PZ-500/115-W3-SO	4.23	2.88	1.35
115-PZ-501/115-E1A-SO	4.84	2.67	2.17
115-PZ-502/115-E4-SO	4.74	3.70	1.04
115-PZ-503/115-W6-SO	4.54	1.61	2.93
115-PZ-502/115-E5-SO	4.74	2.73	2.01
115-PZ-503/115-W1-SO	4.54	1.45	3.09
115-PZ-501/115-W5-SO	4.84	2.93	1.91

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

PZ-2 datalogger malfunctioned and data was not recorded from 7/30 to 8/8. Data in this range was omitted in the monthly average calculation for PZ-1.

PZ-14 datalogger malfunctioned and data was not recorded from 7/30 to 8/8. Data in this range was omitted in the monthly average calculation for PZ-13.

REVISED averages calculated between download dates (7/30/24 - 8/29/24)

REVISED Table 4
September 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	3.64	3.71	-0.07
PZ-3/PZ-4	4.51	2.58	1.93
PZ-5/PZ-6	5.09	2.73	2.36
PZ-7/PZ-8	7.22	2.08	5.14
PZ-9/PZ-10	2.96	2.27	0.69
PZ-11/PZ-12	5.68	3.80	1.88
PZ-13/PZ-14	5.62	2.50	3.12
PZ-15/PZ-16	5.04	2.50	2.54
PZ-17/PZ-18	3.99	2.19	1.80
PZ-19R/PZ-20R	3.52	2.23	1.29
115-PZ-500/115-W3-SO	4.25	2.21	2.04
115-PZ-501/115-E1A-SO	4.61	2.19	2.42
115-PZ-502/115-E4-SO	4.47	3.35	1.12
115-PZ-503/115-W6-SO	4.56	1.83	2.73
115-PZ-502/115-E5-SO	4.47	2.56	1.91
115-PZ-503/115-W1-SO	4.56	1.78	2.78
115-PZ-501/115-W5-SO	4.61	2.13	2.48

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

REVISED averages calculated between download dates (8/29/24 - 9/30/24)

REVISED Table 4
October 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	3.01	3.53	-0.52
PZ-3/PZ-4	3.72	2.64	1.08
PZ-5/PZ-6	4.79	2.60	2.19
PZ-7/PZ-8	7.03	2.29	4.74
PZ-9/PZ-10	2.67	2.28	0.39
PZ-11/PZ-12	4.99	3.25	1.74
PZ-13/PZ-14	4.98	2.57	2.41
PZ-15/PZ-16	4.30	2.75	1.55
PZ-17/PZ-18	3.66	2.60	1.06
PZ-19R/PZ-20R	3.41	2.64	0.77
115-PZ-500/115-W3-SO	4.15	2.40	1.75
115-PZ-501/115-E1A-SO	4.20	2.19	2.01
115-PZ-502/115-E4-SO	4.02	2.98	1.04
115-PZ-503/115-W6-SO	4.18	2.21	1.97
115-PZ-502/115-E5-SO	4.02	2.44	1.58
115-PZ-503/115-W1-SO	4.18	1.99	2.19
115-PZ-501/115-W5-SO	4.20	2.21	1.99

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

PZ-503 datalogger malfunctioned and data was not recorded from 10/15 to 10/19. Data in this range was omitted in the monthly average calculation for W1-SO and W6-SO.

REVISED averages calculated between download dates (9/30/24 - 10/30/24)

REVISED Table 4
November 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	2.68	3.18	-0.50
PZ-3/PZ-4	3.51	2.36	1.15
PZ-5/PZ-6	4.64	2.52	2.12
PZ-7/PZ-8	6.99	2.35	4.64
PZ-9/PZ-10	2.19	2.31	-0.12
PZ-11/PZ-12	4.75	2.94	1.81
PZ-13/PZ-14	4.73	2.50	2.23
PZ-15/PZ-16	4.00	2.50	1.50
PZ-17/PZ-18	3.31	2.44	0.87
PZ-19R/PZ-20R	2.88	2.65	0.23
115-PZ-500/115-W3-SO	3.99	2.20	1.79
115-PZ-501/115-E1A-SO	4.07	2.32	1.75
115-PZ-502/115-E4-SO	3.99	2.82	1.17
115-PZ-503/115-W6-SO	4.13	2.17	1.96
115-PZ-502/115-E5-SO	3.99	2.40	1.59
115-PZ-503/115-W1-SO	4.13	2.04	2.09
115-PZ-501/115-W5-SO	4.07	2.43	1.64

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

PZ-16 datalogger malfunctioned and data was not recorded from 11/6 to 11/30. Data in this range was omitted in the monthly average calculation for PZ-15.

REVISED averages calculated between download dates (10/30/24 - 11/30/24)

REVISED Table 4
December 2024 Head Differences in
Paired Piezometers/Monitoring Wells
Study Area 6 and Study Area 7
Honeywell International Inc.
Jersey City, New Jersey

Exterior/Interior Piezometer/Monitoring Well Pair	Exterior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Interior Piezometer/Monitoring Well Monthly Average Groundwater Elevation (ft msl)	Head Difference (ft)
PZ-1/PZ-2	3.50	2.94	0.56
PZ-3/PZ-4	3.77	2.46	1.31
PZ-5/PZ-6	5.09	2.48	2.61
PZ-7/PZ-8	7.57	2.46	5.11
PZ-9/PZ-10	2.45	2.67	-0.22
PZ-11/PZ-12	5.53	2.89	2.64
PZ-13/PZ-14	4.93	2.44	2.49
PZ-15/PZ-16	4.66	2.28	2.38
PZ-17/PZ-18	3.69	2.35	1.34
PZ-19R/PZ-20R	3.09	2.36	0.73
115-PZ-500/115-W3-SO	4.25	2.12	2.13
115-PZ-501/115-E1A-SO	4.46	2.20	2.26
115-PZ-502/115-E4-SO	4.35	2.47	1.88
115-PZ-503/115-W6-SO	4.58	2.38	2.20
115-PZ-502/115-E5-SO	4.35	2.41	1.94
115-PZ-503/115-W1-SO	4.58	2.16	2.42
115-PZ-501/115-W5-SO	4.46	2.46	2.00

Notes:

ft msl = feet above mean sea level

Positive head difference = Inward gradient from outside to inside of cap

Negative (-) head difference = Outward gradient from inside to outside of cap

PZ-13 datalogger malfunctioned and data was not recorded from 12/1 to 12/30. However, two available readings on 11/30 were used for the monthly average calculation for PZ-13. This same data range was used in the monthly average calculation for PZ-14. PZ-16 datalogger malfunctioned and data was not recorded from 11/30 to 12/13. Data in this range was omitted in the monthly average calculation for PZ-15.

REVISED averages calculated between download dates (11/30/24- 12/30/24)

Revised NJCU Q3 and Q4 2024 Reports



MEMO

Date: December 5, 2024 Revised November 4, 2025

From: Natalie Warner – WSP USA

To: Eric Christodoulatos – Honeywell

cc: Benny Dehghi; George Pfeiffer – Honeywell
Jeremy Karpatkin – Arnold & Porter
Dennis Nagg – WSP USA
William Soukup – Tetra Tech
CJ Minchoff – GES

Subject: Revised Quarterly Monitoring for Q3 – 2024
Study Area 5 – Sites 090/184 and 153 North

WSP USA Environment & Infrastructure Inc. (WSP USA) is transmitting quarterly cap inspection reports, groundwater monitoring results, and Contingent Groundwater Extraction and Treatment (CGWET) System monitoring data for the 3rd quarter of 2024, in accordance with the Long-Term Monitoring Plan (LTMP) for New Jersey City University (Sites 090/184) and the associated portion of the Former Morris Canal (Site 153 North). The attached monitoring records are being submitted in conformance with Section 4.1 of the LTMP.

NJCU COMMERCIAL AOC CAP INSPECTION

The cap inspection reports for the New Jersey City University (NJCU) Commercial Area and Site 153 North are provided in **Attachment A**. The inspection results indicate that the cap remains in acceptable condition and continues to be protective.

The NJCU Phase 2 infrastructure/roadwork and site restoration work in the Commercial Area is substantially complete¹. WSP continues to monitor NJCU redevelopment and restoration work in this area. This work is being conducted under Dig Authorization 2017-13 for Phase II Infrastructure - Commercial Area work. When completed, the dig permit will be closed with submittal of as-built drawings and other documentation from NJCU.

No new dig permits were opened for the Commercial AOC during this reporting period. Closed dig permits for the Commercial Area will be provided after all signatures are obtained.

GROUNDWATER ELEVATION DATA

Data loggers were previously installed in the four well pairs along the barrier wall and in Sumps A and B, monitoring well 184-MW-05, and piezometer 090-PZ-05. Upon well abandonment, the data logger in 184-MW-106 was transferred

¹ Final roadwork including grading/paving along the portion of University Place within the Commercial Area is not yet complete.



to 184-MW-106R on August 12, 2021. Table 1, containing groundwater elevation data, the groundwater elevation contour map from September 27, 2024, and a hydrograph of each well pair is provided in **Attachment B**.

The attached hydrographs show that groundwater elevations varied during July and the first half of August due to varying volumes of precipitation. Groundwater elevations decreased during the latter half of August through September as a result of little to no precipitation during this time frame.

Manual groundwater elevation readings during the quarter are provided on Table 1 (**Attachment B**). However, the monthly average head differences from logger data and hydrographs discussed below provide a more complete assessment of water levels during the quarter. Monthly average head differences (in feet) were determined from the logger data for each well pair as provided below. The datalogger in monitoring well MW-102 malfunctioned in July and August. The datalogger in monitoring well MW-104 malfunctioned in mid-August through the end of the August reporting period.

Monitoring Well Pair	July 2024	August 2024	September 2024
MW-101/MW-105	-0.34	0.25	-0.54
MW-106R/MW-102	N/A	N/A	-0.40
MW-103/MW-107	0.12	0.12	0.08
MW-104/MW-108	-0.07	0.16	0.04

Note: Positive values indicate inward gradient; negative values indicate outward gradient relative to cap area.

The results show that monthly gradients were inward throughout the quarter at the MW-103/MW-107 well pair, although the 0.1 ft criteria was not met in September. MW-101/MW-105 had an inward monthly gradient during August and outward monthly gradient in July and September. MW-104/MW-108 had an inward monthly gradient during August and outward monthly gradient in July. The MW-104/MW-108 pair had an inward gradient in September, although the 0.1 ft criteria was not met.

Monthly average gradients for the MW-106R/MW-102 well pair were outward in September 2024. The outward gradient is likely caused by the presence of the Meadow Mat (Stratum D) on the inside of the barrier wall and the lack or thinning of Meadow Mat on the outside of the wall, as discussed in prior progress reports, along with the lack of precipitation during the latter half of the quarter. Meadow Mat inside the barrier wall holds water whereas the lack of meadow mat outside the barrier wall allows precipitation to drain down causing outward gradients. It is further noted that the well pairs are separated by a steel sheet-pile wall constructed with sealed joints. Groundwater quality data indicates that hexavalent chromium was not detected in any of the interior monitoring wells along the barrier wall, as discussed below.

Overall, the four well pairs demonstrated the same trend throughout the quarter. Heads on both sides of the wall responded to a series of large precipitation events in July to early-August and slowly declined throughout the remaining quarter when drier conditions prevailed.

The attached groundwater elevation contour map provided on Figure 1 (**Attachment B**) indicates that the predominant direction of groundwater flow is from southeast to northwest and generally parallel to the barrier wall extension.

Based on the groundwater elevation data discussed above and the results of the groundwater quality sampling discussed below, activation of the Sump A contingent pumping system is not warranted. Sump B continued to operate throughout the quarter as discussed below.

GROUNDWATER QUALITY RESULTS

The NJDEP issued a new Groundwater Remedial Action Permit (RAP) #RAP210001 on February 11, 2022 which includes quarterly groundwater sampling from the four inboard monitoring wells only. The new permit reflects Honeywell's recommendations from previous quarterly report memoranda to discontinue water quality sampling at the four



outboard monitoring wells (184-MW-101, -103, -104, -106/106R) and is based on more than two years of quarterly sampling results since the barrier wall extension was completed in June 2017 and consistent with Appendix L of the LTMP.

Groundwater quality sampling was performed on September 4, 2024 at the four inboard 100-series wells along the barrier wall extension: 184-MW-102, -105, -107, -108.² Groundwater sampling results are shown on the figure in **Attachment C**. Sampling data for September 2024 indicate that total chromium was not detected above the 10 micrograms per liter ($\mu\text{g}/\text{L}$) detection limit in any groundwater sample. Hexavalent chromium was not detected above the 5.5 $\mu\text{g}/\text{L}$ detection limit in any sample (unfiltered or filtered).

CONTINGENT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM MONITORING DATA

The Sump B pump was activated on April 20, 2016. Monitoring has been conducted in accordance with the startup procedures as provided in the April 21, 2016 Memorandum (startup memo) regarding Sump B activation.

System monitoring data (e.g., run time, average flow rates, volume) are provided in **Attachment D**. Sump B operated throughout this reporting period. During the operational time, Sump B pumped 35,610 gallons during the 3rd quarter of 2024. There were no operational shutdowns during this quarter.

² As indicated in previous quarterly memos, Honeywell discontinued sampling of the original sentinel wells (184-MW-04, -05, -06) beginning in 2019. The wells remain in use for groundwater level monitoring, to the extent feasible.

Attachment A

Cap Inspection Monitoring Reports – Q3 2024

NJCU Commercial AOC Inspection Report

I. Site Information	
Site Name:	SA5 NJCU- West Campus
NJDEP Site Number:	90, 184
Block/Lot Numbers:	Block 21902.03, Lot 1; Block 21902, Lots 2.01, 13.01, 14.01, 14.02, 14.03; Block 21902.01, Lot 1 (formerly Block 21902, Lots 14, 13, 2, and 3)
Date of Inspection:	Annual Inspection: Date:
	Quarterly Inspection: <input checked="" type="checkbox"/> Date: 9/4/2024
Inspected By:	Jonathan Stocum
II. General Information	
Site Redevelopment Status:	Active
Number of Persons Working at Site:	3 (security guards)
Building Owner and Address:	Comments/Status
NJCU – Main Campus (property owner) 2039 Kennedy Blvd Jersey City, NJ 07305	
NJCU – West Campus a. Commercial AOC – Block 6	No buildings; current parking lot
NJCU – West Campus b. Commercial AOC – Block 7	No buildings; current parking lot
Tenants Name(s) and Address:	Comments/Status
a. Block 6	No buildings; current parking lot
b. Block 7	No buildings; current parking lot
Current Site Use: (Plant, Warehouse, Vacant, etc.):	Parking Lot
Summary of Previous Inspections:	
The asphalt throughout the parking lot is in acceptable condition.	
The concrete pad and surrounding asphalt for Sump A are in acceptable condition.	
The concrete pad and surrounding grass for Sump B are in acceptable condition.	

NJCU Commercial AOC Inspection Report

III. On-Site Documents & Records				
Description	Readily available	Up to date	N/A	Remarks
O&M Documents:				
LTMP	X	X		
Worker Training Manual	X	X		
As-built drawings	X	X		
Maintenance logs	X	X		
OM Manual-Filter Station	X	X		
Site Health & Safety Plan:				
Contingency Plan/ Emergency response plan	X	X		
O&M and OSHA Training Records:				
O&M and OSHA Training Records	X	X		
Permits and Service Agreements:				
TWA Permit	X	X		
PVSC Discharge Permit	X	X		
NJDEP RA Permit – Soil	X	X		
IV. Institutional Controls				
Status of Deed Notice				
Description	Yes	No	N/A	Remarks
Site conditions imply Institutional Controls are properly implemented.	X			
Site conditions imply Institutional Controls not being fully enforced.		X		
Biennial Certification Reports up to date.	X			Next biennial certification due 8/17/26
Violations have been reported.			X	
Previous suggested correction made.			X	
Other problems or suggestions:				
None				

NJCU Commercial AOC Inspection Report

V. Site Conditions					
Description		Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Yes	No	N/A	
Pavement cap area					
a.	Chromium Remedy (Check for cracking, spalling, and potholes.)	X			No cracking, spalling, or potholes were observed.
b.	Differential Settlement (Check for settlement or subsidence.)	X			Differential settlement was not observed.
c.	Disturbance (Check for disturbance e.g., construction or utility repair, etc.)	X			No disturbance was observed.
Description		Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Yes	No	N/A	
Vegetative cap area					
a.	Disturbance (Check for disturbance e.g., construction or utility repair, etc.)	X			No disturbance was observed.
b.	Surface Grade (Check for sign of erosion, settlement or subsidence.)	X			No evidence of erosion, settlement or subsidence.
c.	Vegetative Cover (Check for missing vegetative cover or soil erosion, size of trees/shrubs, tree roots impacting nearby pavement.)	X			Vegetative cover is in acceptable condition.
d.	Burrowing (Check for animal borrowing.)	X			No evidence of animal burrows was observed.

NJCU Commercial AOC Inspection Report

Other						
a.	Utility line (Check for any disturbance due to development of area or utility repair.)	X				No disturbance was observed.
b.	Manholes/Signage (Check for any disturbance and/or damage.)	X				All manholes and signage remain in acceptable condition.
c.	Building Exterior (Once Building 7 constructed in Commercial AOC)			X		

NJCU Commercial AOC Inspection Report

VI. Groundwater Monitoring Well Records						
Monitoring Wells						
Description	Properly secured/Locked	Routinely sampled	Condition	Remarks		
Monitoring wells	X	X	Acceptable			
Groundwater Level Record						
Description	Readily available	Up to date	N/A	Remarks		
Groundwater Level measurement record		X				
Groundwater Level Measurement:						
Well ID Location	Date	Time	Depth from TIC to		Measured by:	Remarks: Calibration data found on Instrument Calibration Record
			Water (feet)	Bottom (feet)		
090-MW-09	9/27/2024	0945	6.55	NM	JS	None
184-MW-05	9/27/2024	0850	9.22	NM	JS	None
184-MW-06	9/27/2024	0927	11.19	NM	JS	None
184-MW-101	9/27/2024	0906	9.91	NM	JS	None
184-MW-102	9/27/2024	0937	7.29	NM	JS	None
184-MW-103	9/27/2024	0931	8.71	NM	JS	None
184-MW-104	9/27/2024	0956	8.96	NM	JS	None
184-MW-105	9/27/2024	0909	9.55	NM	JS	None
184-MW-106R	9/27/2024	0934	7.33	NM	JS	None
184-MW-107	9/27/2024	0928	7.48	NM	JS	None
184-MW-108	9/27/2024	0952	9.08	NM	JS	None
PZ-05	9/27/2024	1014	11.76	NM	JS	None
PZ-06	9/27/2024	1025	9.28	NM	JS	None
VII. Overall Observations on Remedy Implementation & Site Conditions						
<p>The asphalt throughout the parking lot is in acceptable condition.</p> <p>The concrete pad and surrounding asphalt for Sump A are in acceptable condition. The concrete pad and surrounding grass for Sump B are in acceptable condition.</p>						

NJCU Commercial AOC Inspection Report



Photo 1 – Present condition of the northern portion of the asphalt cap, facing east.



Photo 2 – Present condition of the asphalt along the western edge, facing south.



Photo 3 – Present condition of the eastern section of the asphalt cap, facing north.



Photo 4 – Present condition of the southern section of the asphalt cap, facing west.

NJCU Commercial AOC Inspection Report



Photo 5 – Parking lot bollard location, facing north.



Photo 6 – Vegetative cover and stone area between parking lots, facing north.



Photo 7 – Vegetative cover and stone area along western perimeter, facing south.



Photo 8 – Vegetative cover along the southern perimeter facing east.

Quarterly Site Inspection Report
SA-5, Site 153 North Segment
September 4, 2024

I. Site Information	
Site Name	SA-5 Site 153 North Segment
NJDEP Site Number:	153
Block/Lot Numbers:	Block 21902, Lot 1 (formerly Block 1289.5, Lot E)
Date of Inspection:	Annual Inspection: Date:
	Quarterly Inspection: <input checked="" type="checkbox"/> Date: 9/4/24
Inspected By:	Jonathan Stocum

II. General Information	
Site Status:	Utility Easement
Number of Persons Working at Site (if applicable):	None
Building Owner and Address:	Comments/Status
Honeywell (property owner) 115 Tabor Road Morris Plains, NJ 07950	No buildings onsite
Tenants Name(s) and Address (if applicable):	Not applicable
Current Site Use: (Plant, Warehouse, Vacant, etc.):	Vacant
Summary of Previous Inspections: Asphalt onsite is in acceptable condition. Cracks in pavement have been sealed by road department.	

**Quarterly Site Inspection Report
SA-5, Site 153 North Segment
September 4, 2024**

III. On-Site Documents & Records				
Description	Readily available	Up to date	N/A	Remarks
O&M Documents:				
LTMP	X			
Worker Training Manual	X			
As-built drawings	X			
Maintenance logs	X			
Site Health & Safety Plan:				
Contingency Plan/ Emergency response plan	X			
O&M and OSHA Training Records:				
O&M and OSHA Training Records	X			
Permits and Service Agreements:				
None			X	

IV. Institutional Controls				
Status of Deed Notice:				
Description	Yes	No	N/A	Remarks
Site conditions imply Institutional Controls are properly implemented	X			
Site conditions imply Institutional Controls not being fully enforced		X		
Biennial Certification Reports up to date	X			
Violation have been reported			X	
Previous suggested correction made			X	
Other problems or suggestions:				
None				

Quarterly Site Inspection Report
SA-5, Site 153 North Segment
September 4, 2024

V. Site Conditions					
Description		Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Yes	No	N/A	
Pavement cap area					
a.	Chromium Remedy (Check for cracking, spalling, and potholes)	X			Spalling and potholes were not observed.
b.	Differential Settlement (Check for settlement or subsidence)	X			Differential settlement was not observed.
c.	Disturbance (Check for disturbance e.g. construction or utility repair, etc.)	X			No disturbances were observed.
Description		Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Yes	No	N/A	
Vegetative cap area					
a.	Disturbance (Check for disturbance e.g. construction or utility repair, etc.)			X	N/A
b.	Surface Grade (Check for sign of erosion, settlement or subsidence.)			X	N/A
c.	Vegetative Cover (Check for missing vegetative cover or soil erosion, size of trees/shrubs, tree roots impacting nearby pavement.)			X	N/A

Quarterly Site Inspection Report
SA-5, Site 153 North Segment
September 4, 2024

	Description	Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Yes	No	N/A	
d.	Burrowing (Check for animal borrowing.)			X	N/A
Other					
a.	Utility line (Check for any disturbance due to development of area or utility repair.)	X			No disturbance was observed.
b.	Manholes/Signage (Check for any disturbance and/or damage.)	X			Signage remains in good condition.
c.	Building Exterior			X	N/A

VI. Groundwater Monitoring Well Records						
Monitoring Wells no monitoring wells on Site 153 North						
Description	Properly secured/Locked		Routinely sampled		Condition	Remarks
Monitoring wells	N/A					N/A
Groundwater Elevation Record						
Description	Readily available		Up to date		N/A	Remarks
Groundwater Elevation measurement record	N/A					N/A
Groundwater Elevation Measurement:						
Well ID Location	Date	Time	Depth from TIC to		Measure d by:	Remarks: Calibration data found on Instrument Calibration Record
			Water (feet)	Bottom (feet)		
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Quarterly Site Inspection Report SA-5, Site 153 North Segment September 4, 2024

VII. Overall Observations on Remedy Implementation & Site Conditions

Asphalt onsite is in acceptable condition. Cracks in pavement have been sealed by road department. Minimal vegetative growth visible through previous pavement crack seals.



Photo 1 – View of the southern portion of the Site 153 North asphalt area, facing north.



Photo 2 – View of the central section of the Site 153 North asphalt area, facing north.



Photo 3 – View of the northern portion of the Site 153 North asphalt area, facing north.



Photo 4 – View of the northern portion of the Site 153 North asphalt area, facing north.

Attachment B

Summary of Groundwater Elevation Data – Q3 2024
Groundwater Elevation Contour Map –
September 2024
Hydrographs – Q3 2024

TABLE 1
SUMMARY OF MANUAL GROUNDWATER LEVEL DATA AT NJCU
THIRD QUARTER 2024

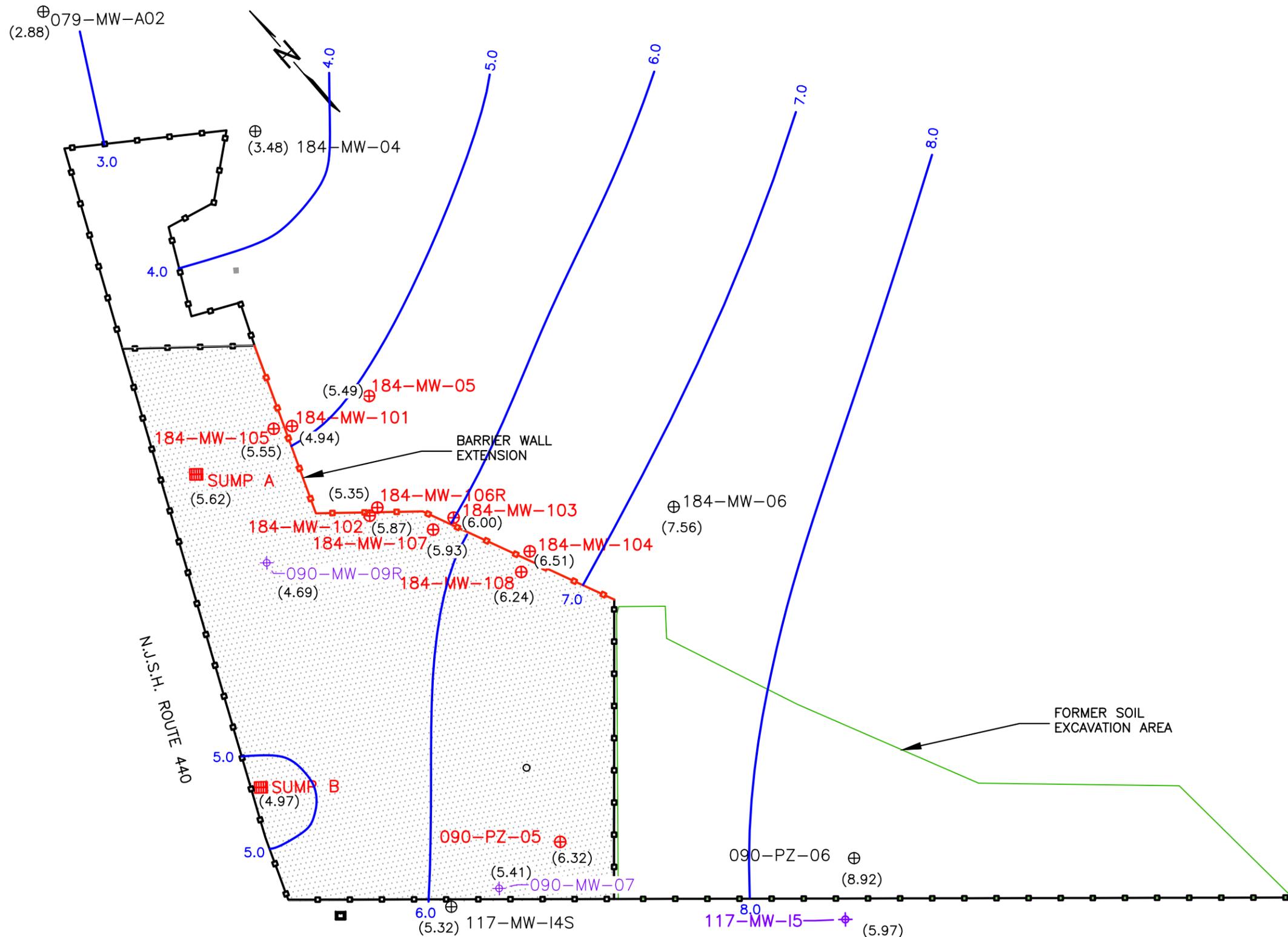
Location	7/31/2024			8/29/2024		9/27/2024	
	10/15/2023	Depth to GW (ft.)	GW Elev. (ft., msl)	Depth to GW (ft.)	GW Elev. (ft., msl)	Depth to GW (ft.)	GW Elev. (ft., msl)
	Ref. pt. Elev. (ft., msl)						
079-MW-A02	8.10	5.18	2.92	5.13	2.97	5.22	2.88
Sump A (North)	15.98	10.03	5.95	10.00	5.98	10.36	5.62
Sump B (South)	13.08	8.07	5.01	8.05	5.03	8.11	4.97
090-PZ-5	18.08	11.49	6.59	11.17	6.91	11.76	6.32
090-PZ-6	18.20	8.74	9.46	8.53	9.67	9.28	8.92
184-MW-4	8.87	5.35	3.52	5.29	3.58	5.39	3.48
184-MW-5	14.71	9.40	5.31	9.03	5.68	9.22	5.49
184-MW-6	18.751	11.00	7.75	10.78	7.97	11.19	7.56
090-MW-09R	11.24	6.48	4.76	6.23	5.01	6.55	4.69
090-MW-07	17.20	NG	NG	11.59	5.61	11.79	5.41
117-MW-I4S	16.70	11.21	5.49	11.08	5.62	11.38	5.32
117-MW-I5	18.76	12.24	6.52	12.02	6.74	12.79	5.97
184-MW-101 (outside)	14.85	9.58	5.27	9.13	5.72	9.91	4.94
184-MW-105 (inside)	15.1	9.25	5.85	9.22	5.88	9.55	5.55
184-MW-106R (outside)	12.68	7.07	5.61	6.74	5.94	7.33	5.35
184-MW-102 (inside)	13.16	7.09	6.07	6.87	6.29	7.29	5.87
184-MW-103 (outside)	14.71	8.47	6.24	8.18	6.53	8.71	6.00
184-MW-107 (inside)	13.41	7.25	6.16	7.01	6.40	7.48	5.93
184-MW-104 (outside)	15.47	8.75	6.72	8.53	6.94	8.96	6.51
184-MW-108 (inside)	15.32	8.79	6.53	8.53	6.79	9.08	6.24

184-MW-106R installed on August 12, 2021

090-MW-09 Abandoned October 4, 2023.

090-MW-09R installed October 4-5, 2023.

NG - Not Gauged



LEGEND

- ⊕ MONITORING WELL
- ⊕ (with red square) SHALLOW MONITORING LOCATION WITH DATA LOGGER INSTALLED
- ⊕ (with purple square) INDICATES INTERMEDIATE OR DEEP ZONE MONITORING WELL
- ⊕ (with black square) PIEZOMETER
- SUMP
- (with square) SHEET PILE WALL
- ⊕ (with red square) TCE WELLS AS OF MAY 2019 ARE NO LONGER MEASURED
- (blue line) GROUNDWATER ELEVATION CONTOUR
- ▨ CAP AREA



SCALE IN FEET

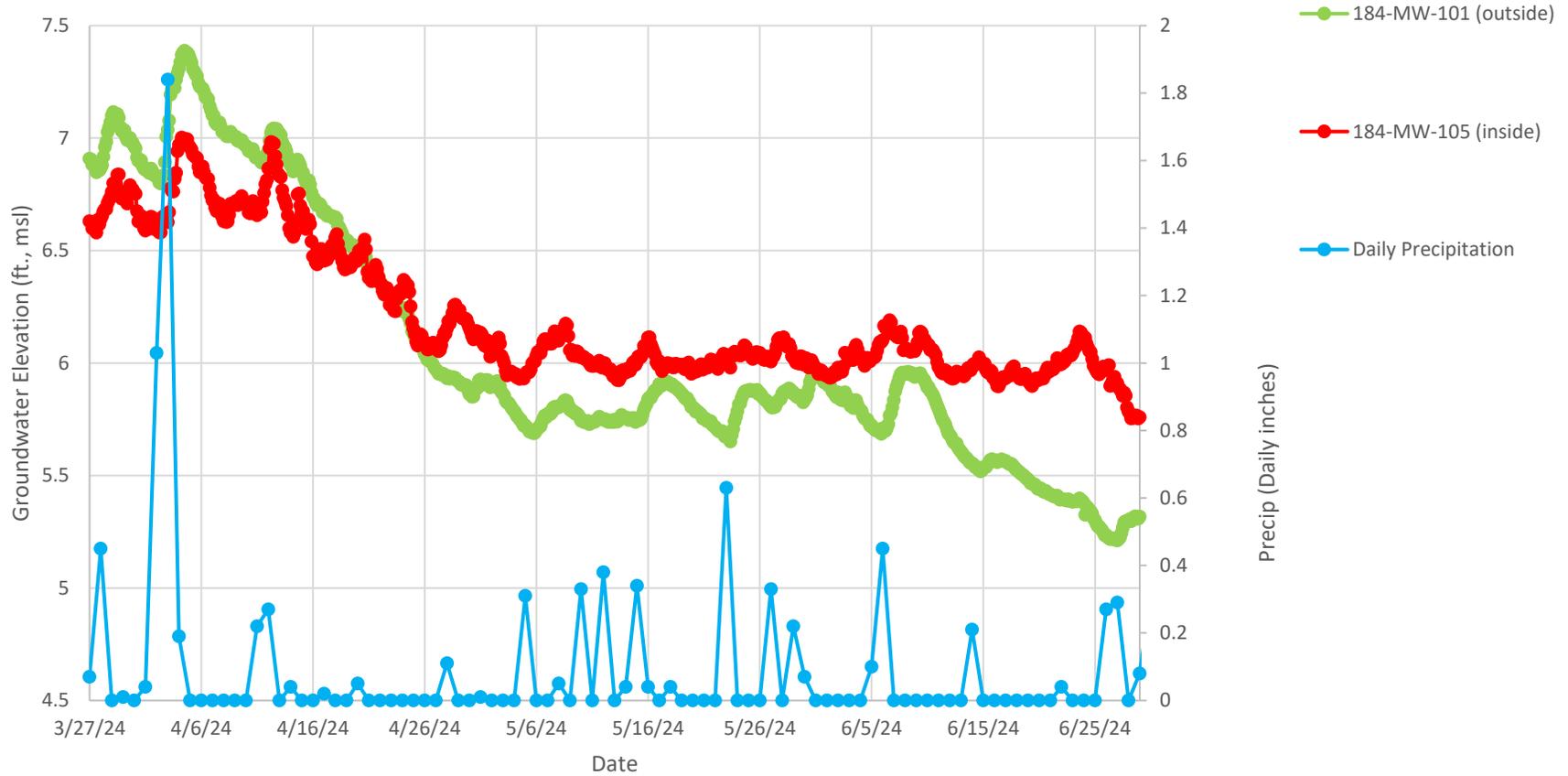


STUDY AREA 5 – NJCU
SEPTEMBER 27, 2024

FIGURE NO.
1
PROJECT NO.
4203516

This drawing represents intellectual property of Cornerstone. Any modification to the original by other than Cornerstone personnel violates its original purpose and as such is rendered void. Cornerstone will not be held liable for any changes made to this document without express written consent of the originator.

184-MW-101 and 184-MW-105



Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

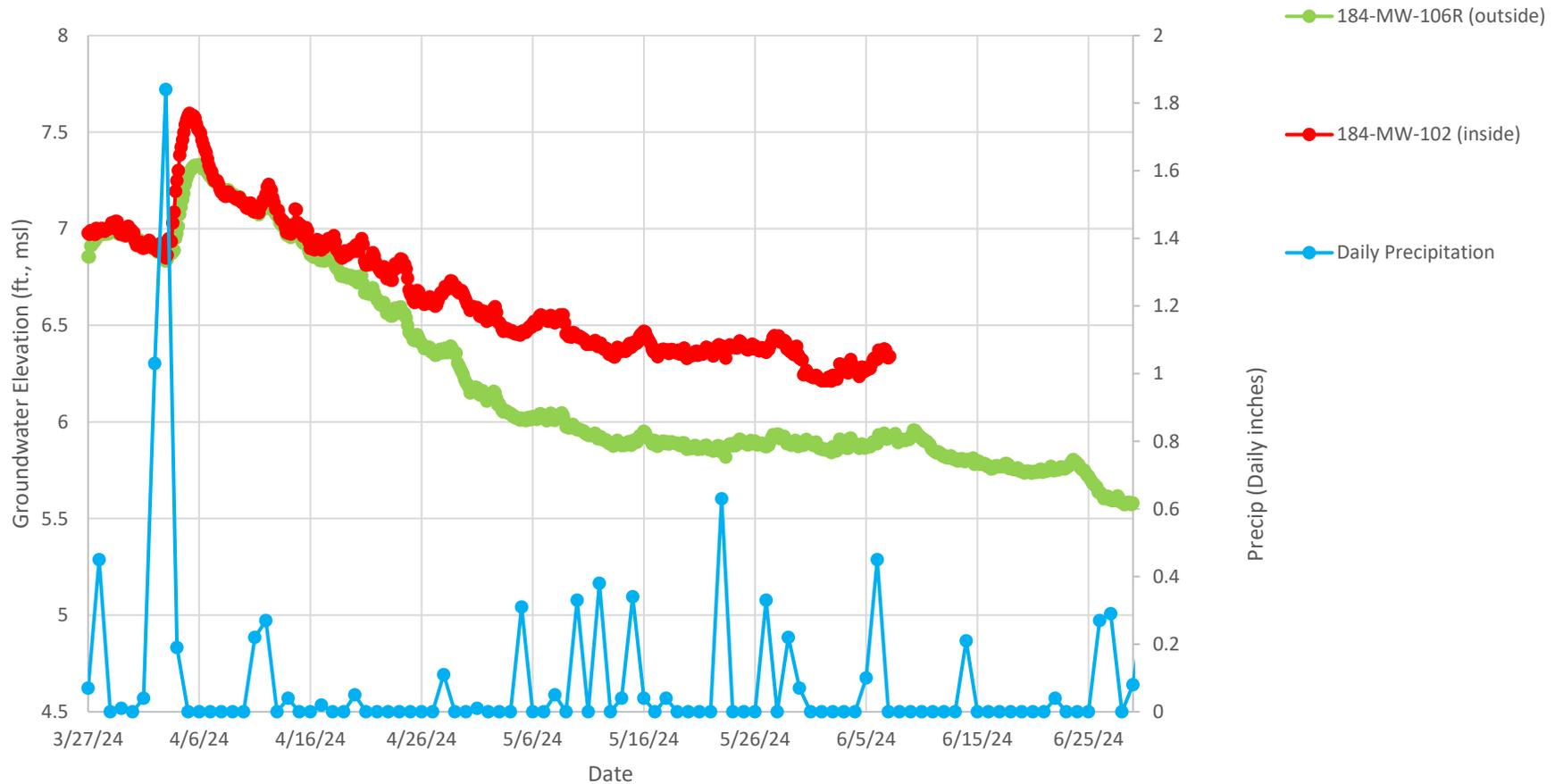
FIGURE 1

**Hydrograph of Piezometer Pair
MW-101 and MW-105
Second Quarter 2024**

NJCU, Jersey City, NJ



184-MW-106R and 184-MW-102



Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ
4. MW-102 datalogger malfunction

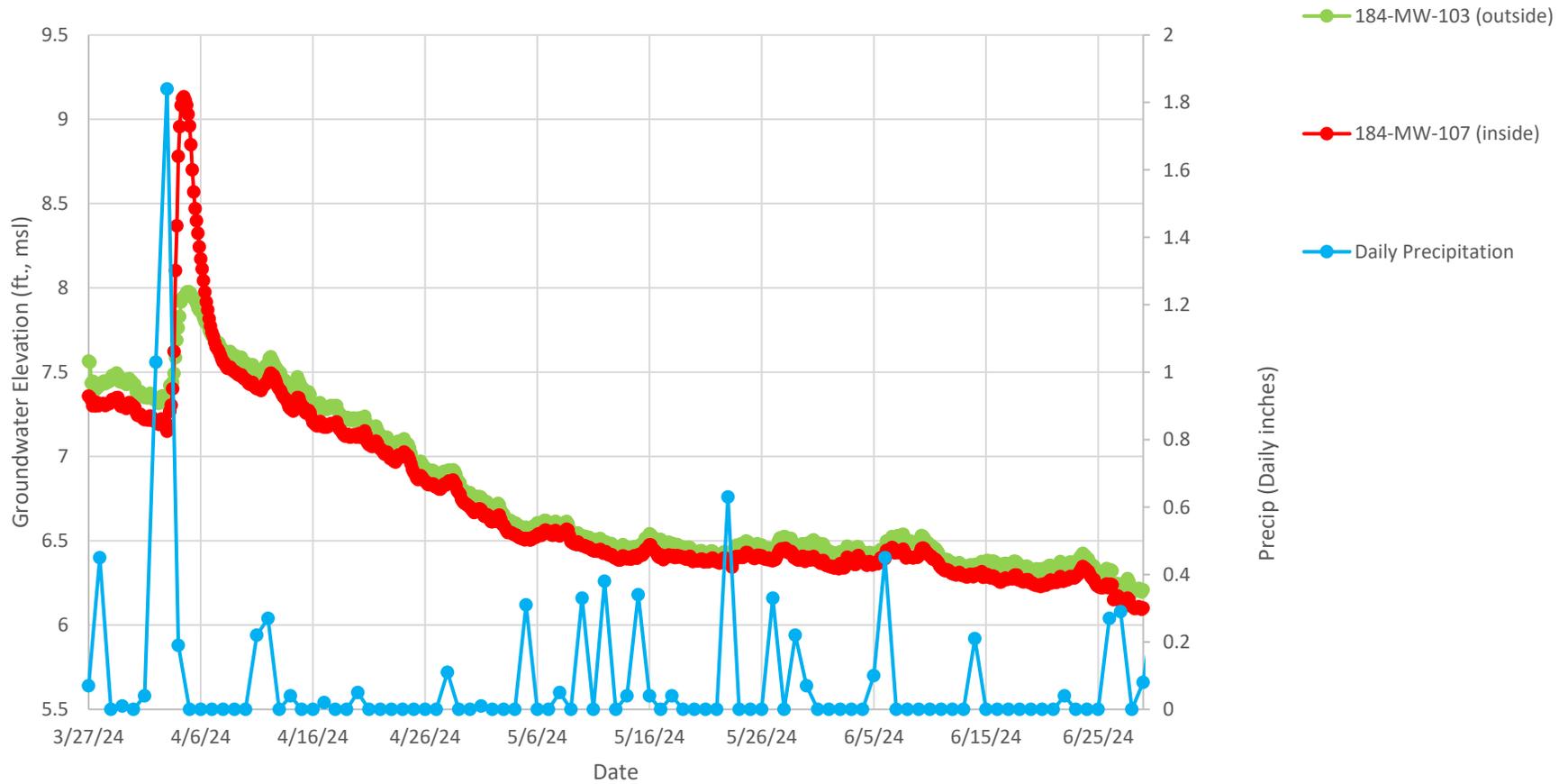
FIGURE 2

**Hydrograph of Piezometer Pair
MW-106R and MW-102
Second Quarter 2024**

NJCU, Jersey City, NJ



184-MW-103 and 184-MW-107



Notes:

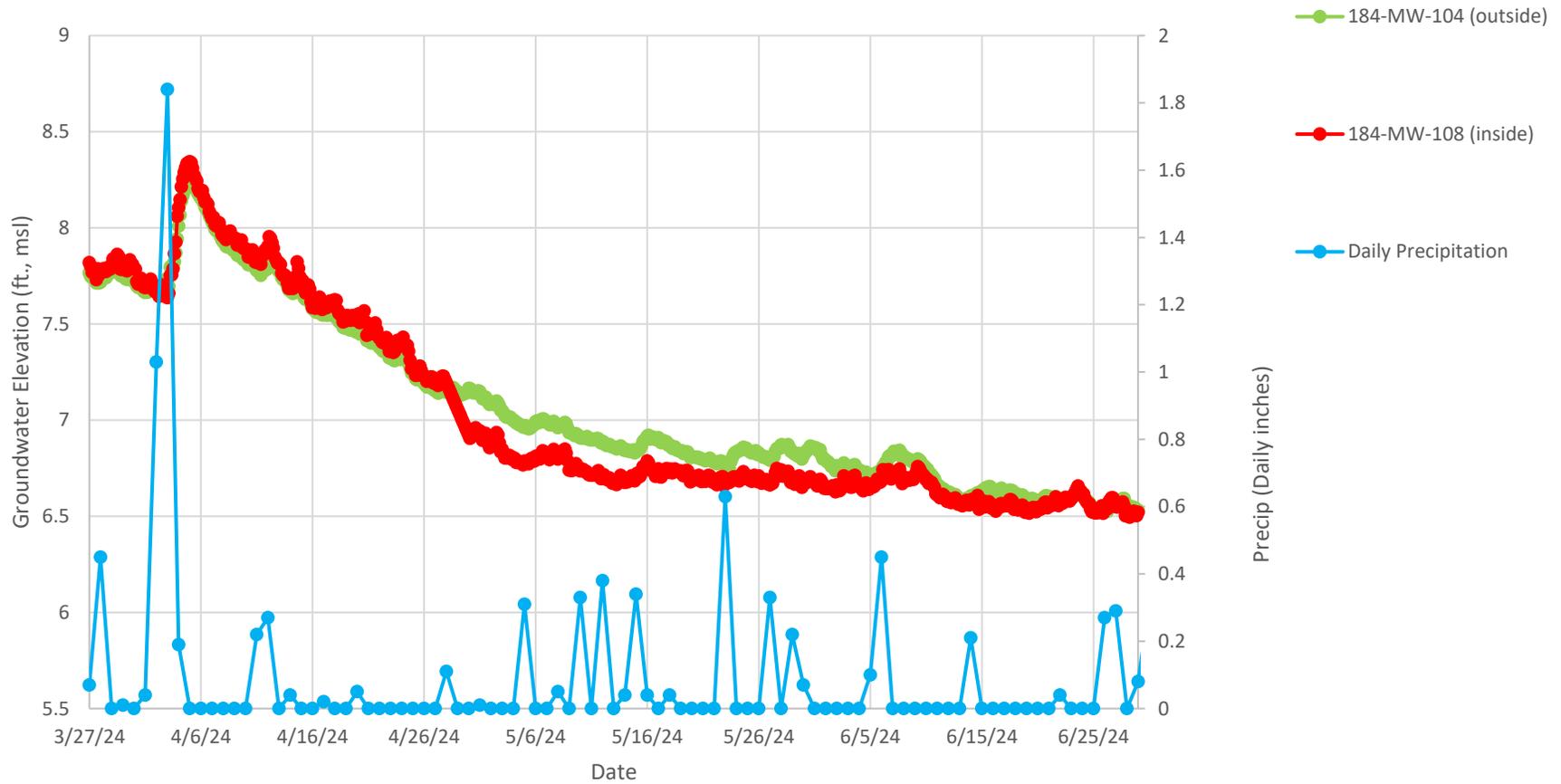
- 1. Logger data recorded at six-hour intervals
- 2. Corrected for barometric fluctuation
- 3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

FIGURE 3
Hydrograph of Piezometer Pair
MW-103 and MW-107
Second Quarter 2024

NJCU, Jersey City, NJ



184-MW-104 and 184-MW-108



Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

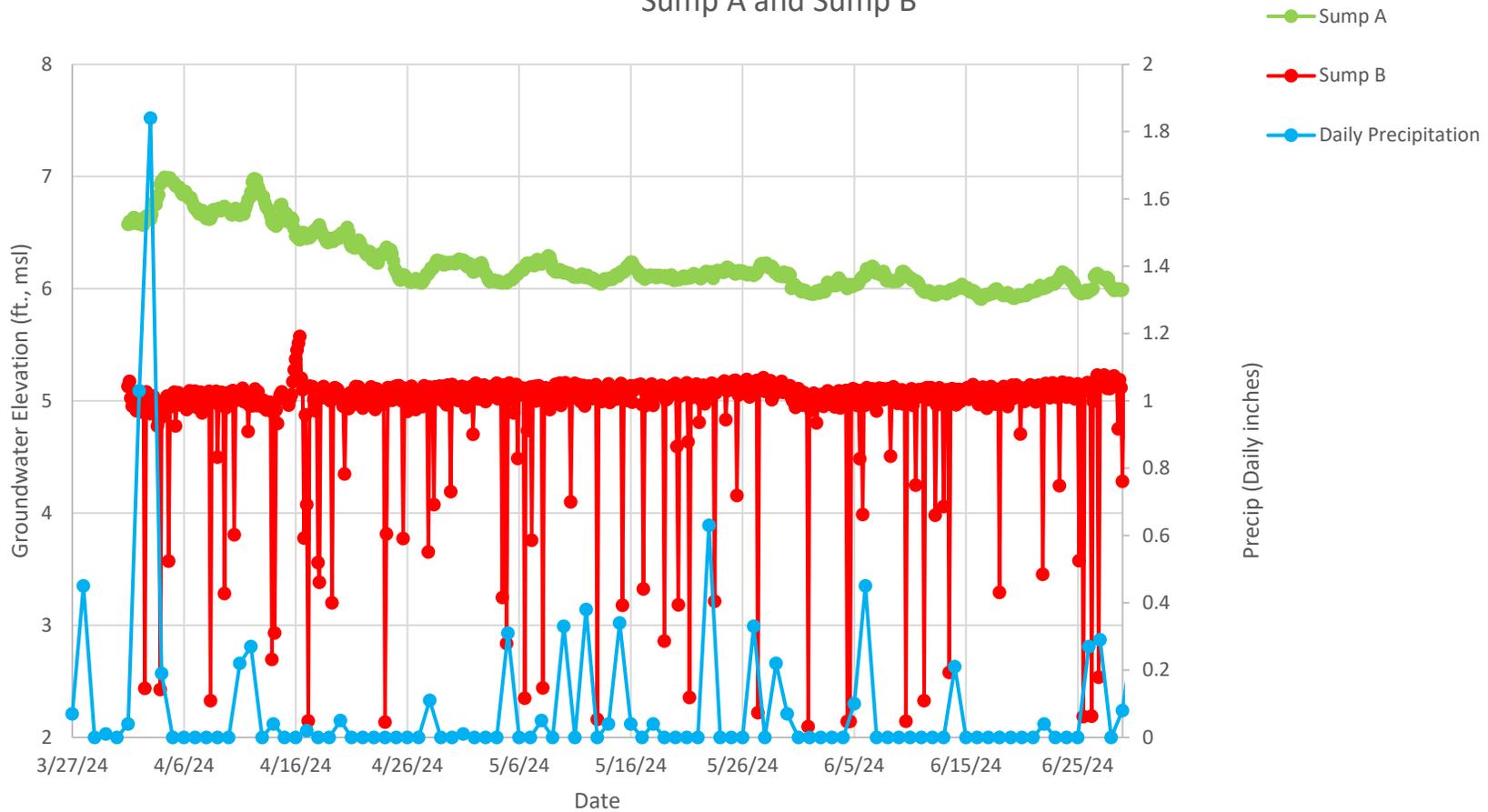
FIGURE 4

**Hydrograph of Piezometer Pair
MW-104 and MW-108
Second Quarter 2024**

NJCU, Jersey City, NJ



Sump A and Sump B



Notes:

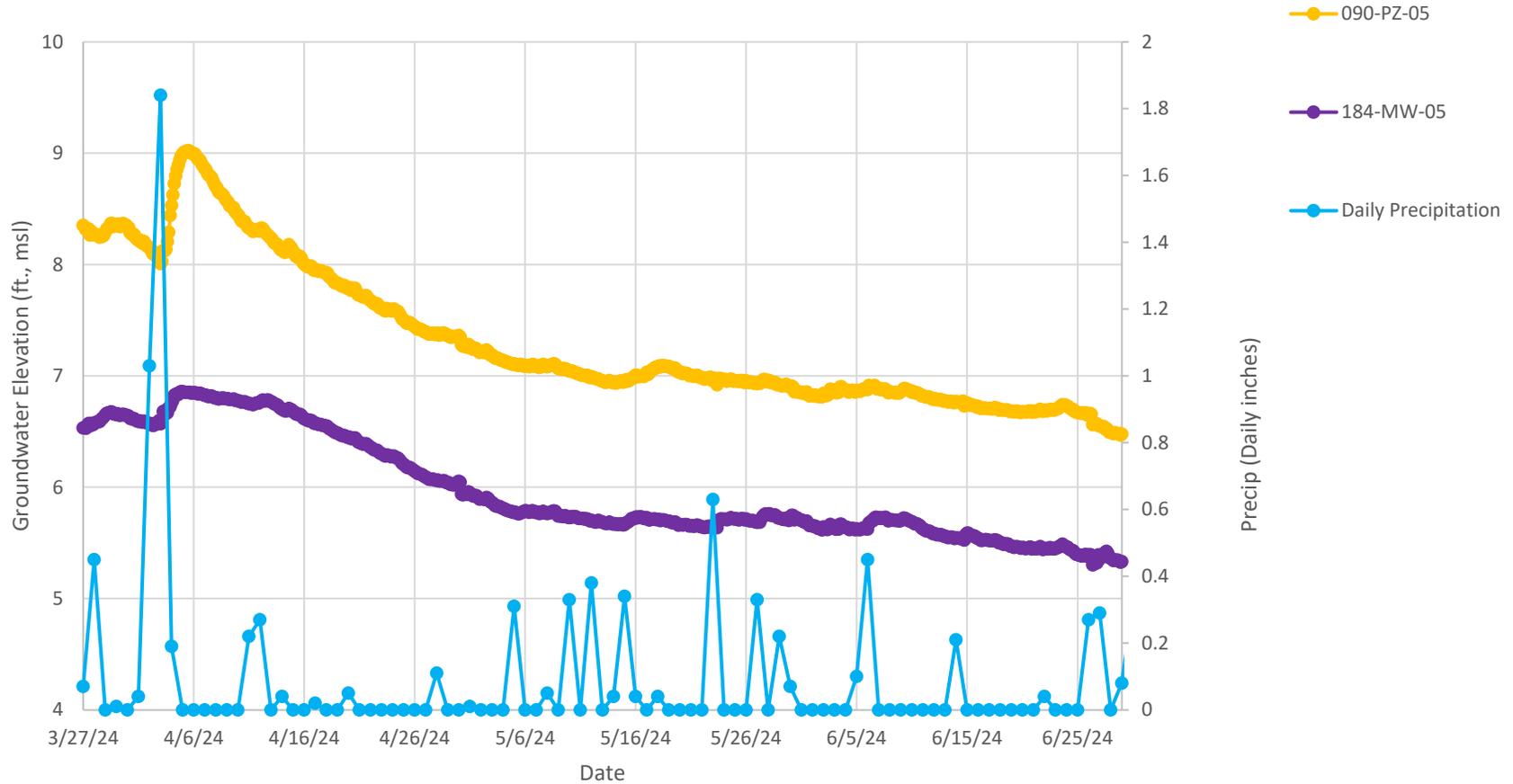
- 1. Logger data recorded at six-hour intervals
- 2. Corrected for barometric fluctuation
- 3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

FIGURE 5
Hydrograph of Piezometer Pair
Sump A and Sump B
Second Quarter 2024

NJCU, Jersey City, NJ



090-PZ-05 and 184-MW-05



Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

FIGURE 6

**Hydrograph of Piezometer Pair
PZ-05 and MW-05
Second Quarter 2024**

NJCU, Jersey City, NJ



Attachment C

Groundwater Results Figure

Attachment D

Contingent GW Extraction and Treatment System Monitoring Data

Attachment D
3rd Quarter 2024 CGWET System Summary
Study Area 5 NJCU
Honeywell International Inc.
Jersey City, New Jersey

GWTS Pump	Location	Pump Operating During Quarter	Pump Shutdowns During Quarter	Run Hours	Avg Flow Rate (GPM)	Total Gallons Pumped	Comments
Sump A	Study Area 5, southwestern corner of Lot 6	No	N/A	0.0	0.00	0	Sump Not in Operation
Sump B	Study Area 5, in the grass west of Lot 7	Yes	None	207.8	2.86	35,610	Pump run cycles are dictated by level sensors in the sump. Contingent system continuously in operation during quarter.

Notes:

GPM = Gallons per Minute

Pump run hours calculated from operational period between 7/3/24 and 10/3/24

Avg Flow Rate calculated from total gallons removed from sump during quarter

Total Gallons Pumped calculated from operational period between 7/3/24 and 10/3/24

Sump B operation began 4/4/2016. Sump A does not require pumping.



MEMO

Date: January 31, 2025 Revised November 5, 2025

From: Natalie Warner – WSP USA

To: Eric Christodoulatos – Honeywell

cc: Benny Dehghi; George Pfeiffer – Honeywell
Jeremy Karpatkin – Arnold & Porter
Dennis Nagg – WSP USA
William Soukup – Tetra Tech
CJ Minchoff – GES

Subject: Revised Quarterly Monitoring for Q4 – 2024
Study Area 5 – Sites 090/184 and 153 North

WSP USA Inc. (WSP) is transmitting quarterly cap inspection reports, groundwater monitoring results, and Contingent Groundwater Extraction and Treatment (CGWET) System monitoring data for the 4th quarter of 2024, in accordance with the Long-Term Monitoring Plan (LTMP) for New Jersey City University (Sites 090/184) and the associated portion of the Former Morris Canal (Site 153 North). The attached monitoring records are being submitted in conformance with Section 4.1 of the LTMP.

NJCU COMMERCIAL AOC CAP INSPECTION

The cap inspection reports for the New Jersey City University (NJCU) Commercial Area and Site 153 North are provided in **Attachment A**. The inspection results indicate that the cap remains in acceptable condition and continues to be protective.

The NJCU Phase 2 infrastructure/roadwork and site restoration work in the Commercial Area is substantially complete. This work was being conducted under Dig Authorization 2017-13 for Phase II Infrastructure - Commercial Area work. Several years have passed since Dig Authorization 2017-13 was opened. Therefore, the dig permit will be closed in the 1st Quarter 2025 with as-built drawings and other documentation from NJCU. When final roadwork including grading/paving along the portion of University Place within the Commercial Area is proposed, then a new dig permit will be opened. WSP continues to monitor NJCU redevelopment and restoration work in this area.

No new dig permits were opened for the Commercial AOC during this reporting period. Closed dig permits for the Commercial Area will be provided after all signatures are obtained.

GROUNDWATER ELEVATION DATA

Data loggers were previously installed in the four well pairs along the barrier wall and in Sumps A and B, monitoring well 184-MW-05, and piezometer 090-PZ-05. Upon well abandonment, the data logger in 184-MW-106 was transferred to 184-MW-106R on August 12, 2021. Table 1, containing groundwater elevation data, the groundwater elevation contour map from December 30, 2024, and a hydrograph of each well pair is provided in **Attachment B**.

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2000 Lenox Drive, 3rd Floor
Lawrenceville, NJ 08648
USA

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F+ 1 609 512-3600

wsp.com



The attached hydrographs show that groundwater elevations decrease from October to mid-November as a result of little to no precipitation during this time frame. From mid-November through the end of the year, elevations generally increased due to multiple precipitation events.

Manual groundwater elevation readings during the quarter are provided on Table 1 (**Attachment B**). However, the monthly average head differences from logger data and hydrographs discussed below provide a more complete assessment of water levels during the quarter. Monthly average head differences (in feet) were determined from the logger data for each well pair as provided below. The datalogger in monitoring well MW-102 malfunctioned in the October reporting period and into the start of the November reporting period. The datalogger in monitoring well MW-104 malfunctioned in the October reporting period through November and into the start of the December reporting period.

Monitoring Well Pair	October 2024	November 2024	December 2024
MW-101/MW-105	-0.72	-0.62	0.29
MW-106R/MW-102	N/A	-0.62	-0.45
MW-103/MW-107	0.09	0.21	0.23
MW-104/MW-108	N/A	N/A	0.25

Note: Positive values indicate inward gradient; negative values indicate outward gradient relative to cap area.

The results show that monthly gradients were inward throughout the quarter at the MW-103/MW-107 well pair, although the 0.1 ft criteria was not met in October. MW-101/MW-105 had an inward monthly gradient during December and outward monthly gradients in October and November. MW-104/MW-108 had an inward monthly gradient during December.

Monthly average gradients for the MW-106R/MW-102 well pair were outward in November and December 2024. The outward gradient is likely caused by the presence of the Meadow Mat (Stratum D) on the inside of the barrier wall and the lack or thinning of Meadow Mat on the outside of the wall, as discussed in prior progress reports. Meadow Mat inside the barrier wall holds water whereas the lack of meadow mat outside the barrier wall allows precipitation to drain down causing outward gradients. It is further noted that the well pairs are separated by a steel sheet-pile wall constructed with sealed joints. Groundwater quality data indicates that hexavalent chromium was not detected in any of the interior monitoring wells along the barrier wall, as discussed below.

Overall, the four well pairs demonstrated the same trend throughout the quarter. Heads on both sides of the wall continued to decline throughout October while drier conditions prevailed and responded to a series of large precipitation events in mid-November and December.

The attached groundwater elevation contour map provided on Figure 1 (**Attachment B**) indicates that the predominant direction of groundwater flow is from southeast to northwest and generally parallel to the barrier wall extension.

Based on the groundwater elevation data discussed above and the results of the groundwater quality sampling discussed below, activation of the Sump A contingent pumping system is not warranted. Sump B continued to operate throughout the quarter as discussed below.

GROUNDWATER QUALITY RESULTS

The NJDEP issued a new Groundwater Remedial Action Permit (RAP) #RAP210001 on February 11, 2022 which includes quarterly groundwater sampling from the four inboard monitoring wells only. The new permit reflects Honeywell's recommendations from previous quarterly report memoranda to discontinue water quality sampling at the four outboard monitoring wells (184-MW-101, -103, -104, -106/106R) and is based on more than two years of quarterly sampling results since the barrier wall extension was completed in June 2017 and consistent with Appendix L of the LTMP.



Groundwater quality sampling was performed on November 14, 2024 at the four inboard 100-series wells along the barrier wall extension: 184-MW-102, -105, -107, -108.¹ Groundwater sampling results are shown on the figure in **Attachment C**. Sampling data for November 2024 indicate that total chromium was not detected above the 10 micrograms per liter ($\mu\text{g}/\text{L}$) detection limit in any groundwater sample except for MW-107 with a value of 382 $\mu\text{g}/\text{L}$ in the unfiltered sample. Total chromium was not detected above the 10 $\mu\text{g}/\text{L}$ detection limit in the filtered sample for MW-107. Hexavalent chromium was not detected above the 5.5 $\mu\text{g}/\text{L}$ detection limit in any sample (unfiltered or filtered).

CONTINGENT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM MONITORING DATA

The Sump B pump was activated on April 20, 2016. Monitoring has been conducted in accordance with the startup procedures as provided in the April 21, 2016 Memorandum (startup memo) regarding Sump B activation.

System monitoring data (e.g., run time, average flow rates, volume) are provided in **Attachment D**. Sump B operated throughout this reporting period. During the operational time, Sump B pumped 19,510 gallons during the 4th quarter of 2024. There were no operational shutdowns during this quarter.

¹ As indicated in previous quarterly memos, Honeywell discontinued sampling of the original sentinel wells (184-MW-04, -05, -06) beginning in 2019. The wells remain in use for groundwater level monitoring, to the extent feasible.

Attachment A

Cap Inspection Monitoring Reports – Q4 2024

NJCU Commercial AOC Inspection Report

I. Site Information	
Site Name:	SA5 NJCU- West Campus
NJDEP Site Number:	90, 184
Block/Lot Numbers:	Block 21902.03, Lot 1; Block 21902, Lots 2.01, 13.01, 14.01, 14.02, 14.03; Block 21902.01, Lot 1 (formerly Block 21902, Lots 14, 13, 2, and 3)
Date of Inspection:	Annual Inspection: Date:
	Quarterly Inspection: <input checked="" type="checkbox"/> Date: 12/30/2024
Inspected By:	Jonathan Stocum
II. General Information	
Site Redevelopment Status:	Active
Number of Persons Working at Site:	3 (security guards)
Building Owner and Address:	Comments/Status
NJCU – Main Campus (property owner) 2039 Kennedy Blvd Jersey City, NJ 07305	
NJCU – West Campus a. Commercial AOC – Block 6	No buildings; current parking lot
NJCU – West Campus b. Commercial AOC – Block 7	No buildings; current parking lot
Tenants Name(s) and Address:	Comments/Status
a. Block 6	No buildings; current parking lot
b. Block 7	No buildings; current parking lot
Current Site Use: (Plant, Warehouse, Vacant, etc.):	Parking Lot
Summary of Previous Inspections:	
The asphalt throughout the parking lot is in acceptable condition.	
The concrete pad and surrounding asphalt for Sump A are in acceptable condition.	
The concrete pad and surrounding grass for Sump B are in acceptable condition.	

NJCU Commercial AOC Inspection Report

III. On-Site Documents & Records				
Description	Readily available	Up to date	N/A	Remarks
O&M Documents:				
LTMP	X	X		
Worker Training Manual	X	X		
As-built drawings	X	X		
Maintenance logs	X	X		
OM Manual-Filter Station	X	X		
Site Health & Safety Plan:				
Contingency Plan/ Emergency response plan	X	X		
O&M and OSHA Training Records:				
O&M and OSHA Training Records	X	X		
Permits and Service Agreements:				
TWA Permit	X	X		
PVSC Discharge Permit	X	X		
NJDEP RA Permit – Soil	X	X		
IV. Institutional Controls				
Status of Deed Notice				
Description	Yes	No	N/A	Remarks
Site conditions imply Institutional Controls are properly implemented.	X			
Site conditions imply Institutional Controls not being fully enforced.		X		
Biennial Certification Reports up to date.	X			Next biennial certification due 5/20/26
Violations have been reported.			X	
Previous suggested correction made.			X	
Other problems or suggestions:				
None				

NJCU Commercial AOC Inspection Report

V. Site Conditions					
Description		Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Yes	No	N/A	
Pavement cap area					
a.	Chromium Remedy (Check for cracking, spalling, and potholes.)	X			No cracking, spalling, or potholes were observed.
b.	Differential Settlement (Check for settlement or subsidence.)	X			Differential settlement was not observed.
c.	Disturbance (Check for disturbance e.g., construction or utility repair, etc.)	X			No disturbance was observed.
Description		Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Yes	No	N/A	
Vegetative cap area					
a.	Disturbance (Check for disturbance e.g., construction or utility repair, etc.)	X			No disturbance was observed.
b.	Surface Grade (Check for sign of erosion, settlement or subsidence.)	X			No evidence of erosion, settlement or subsidence.
c.	Vegetative Cover (Check for missing vegetative cover or soil erosion, size of trees/shrubs, tree roots impacting nearby pavement.)	X			Vegetative cover is in acceptable condition.
d.	Burrowing (Check for animal borrowing.)	X			No evidence of animal burrows was observed.

NJCU Commercial AOC Inspection Report

Other						
a.	Utility line (Check for any disturbance due to development of area or utility repair.)	X				No disturbance was observed.
b.	Manholes/Signage (Check for any disturbance and/or damage.)	X				All manholes and signage remain in acceptable condition.
c.	Building Exterior (Once Building 7 constructed in Commercial AOC)			X		

NJCU Commercial AOC Inspection Report

VI. Groundwater Monitoring Well Records						
Monitoring Wells						
Description	Properly secured/Locked	Routinely sampled	Condition	Remarks		
Monitoring wells	X	X	Acceptable			
Groundwater Level Record						
Description	Readily available	Up to date	N/A	Remarks		
Groundwater Level measurement record		X				
Groundwater Level Measurement:						
Well ID Location	Date	Time	Depth from TIC to		Measured by:	Remarks: Calibration data found on Instrument Calibration Record
			Water (feet)	Bottom (feet)		
090-MW-09	12/30/2024	0929	6.54	72.29	JS	None
184-MW-05	12/30/2024	0812	9.23	12.20	JS	None
184-MW-06	12/30/2024	0843	11.14	15.50	JS	None
184-MW-101	12/30/2024	0819	8.77	12.75	JS	None
184-MW-102	12/30/2024	0924	7.34	9.22	JS	None
184-MW-103	12/30/2024	0913	8.46	12.69	JS	None
184-MW-104	12/30/2024	0945	8.79	12.20	JS	None
184-MW-105	12/30/2024	0825	9.89	12.36	JS	None
184-MW-106R	12/30/2024	0920	7.17	9.28	JS	None
184-MW-107	12/30/2024	0848	7.36	8.88	JS	None
184-MW-108	12/30/2024	0940	8.80	13.64	JS	None
PZ-05	12/30/2024	0958	11.55	16.41	JS	None
PZ-06	12/30/2024	1013	9.78	17.84	JS	None
VII. Overall Observations on Remedy Implementation & Site Conditions						
<p>The asphalt throughout the parking lot is in acceptable condition.</p> <p>The concrete pad and surrounding asphalt for Sump A are in acceptable condition.</p> <p>The concrete pad and surrounding grass for Sump B are in acceptable condition.</p>						

NJCU Commercial AOC Inspection Report



Photo 1 – Present condition of the northern portion of the asphalt cap, facing west.



Photo 2 – Present condition of the asphalt along the western edge, facing south.



Photo 3 – Present condition of the eastern section of the asphalt cap, facing north.



Photo 4 – Present condition of the southern section of the asphalt cap, facing east.

NJCU Commercial AOC Inspection Report



Photo 5 – Parking lot bollard location, facing north.



Photo 6 – Vegetative cover and stone area between parking lots, facing north.



Photo 7 – Vegetative cover and stone area along western perimeter, facing south.



Photo 8 – Vegetative cover along the southern perimeter facing east.

**Quarterly Site Inspection Report
SA-5, Site 153 North Segment
December 3, 2024**

I. Site Information	
Site Name	SA-5 Site 153 North Segment
NJDEP Site Number:	153
Block/Lot Numbers:	Block 21902, Lot 1 (formerly Block 1289.5, Lot E)
Date of Inspection:	Annual Inspection: Date:
	Quarterly Inspection: <input checked="" type="checkbox"/> Date: 12/3/24
Inspected By:	Jonathan Stocum

II. General Information	
Site Status:	Utility Easement
Number of Persons Working at Site (if applicable):	None
Building Owner and Address:	Comments/Status
Honeywell (property owner) 115 Tabor Road Morris Plains, NJ 07950	No buildings onsite
Tenants Name(s) and Address (if applicable):	Not applicable
Current Site Use: (Plant, Warehouse, Vacant, etc.):	Vacant
Summary of Previous Inspections: Asphalt onsite is in acceptable condition. Cracks in pavement have been sealed by road department.	

**Quarterly Site Inspection Report
SA-5, Site 153 North Segment
December 3, 2024**

III. On-Site Documents & Records				
Description	Readily available	Up to date	N/A	Remarks
O&M Documents:				
LTMP	X			
Worker Training Manual	X			
As-built drawings	X			
Maintenance logs	X			
Site Health & Safety Plan:				
Contingency Plan/ Emergency response plan	X			
O&M and OSHA Training Records:				
O&M and OSHA Training Records	X			
Permits and Service Agreements:				
None			X	

IV. Institutional Controls				
Status of Deed Notice:				
Description	Yes	No	N/A	Remarks
Site conditions imply Institutional Controls are properly implemented	X			
Site conditions imply Institutional Controls not being fully enforced		X		
Biennial Certification Reports up to date	X			
Violation have been reported			X	
Previous suggested correction made			X	
Other problems or suggestions:				
None				

Quarterly Site Inspection Report
SA-5, Site 153 North Segment
December 3, 2024

V. Site Conditions					
Description		Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Ye s	No	N/A	
Pavement cap area					
a.	Chromium Remedy (Check for cracking, spalling, and potholes)	X			Spalling and potholes were not observed.
b.	Differential Settlement (Check for settlement or subsidence)	X			Differential settlement was not observed.
c.	Disturbance (Check for disturbance e.g. construction or utility repair, etc.)	X			No disturbances were observed.
Description		Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Ye s	No	N/A	
Vegetative cap area					
a.	Disturbance (Check for disturbance e.g. construction or utility repair, etc.)			X	N/A
b.	Surface Grade (Check for sign of erosion, settlement or subsidence.)			X	N/A
c.	Vegetative Cover (Check for missing vegetative cover or soil erosion, size of trees/shrubs, tree roots impacting nearby pavement.)			X	N/A

Quarterly Site Inspection Report
SA-5, Site 153 North Segment
December 3, 2024

	Description	Inspected			Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #
		Yes	No	N/A	
d.	Burrowing (Check for animal borrowing.)			X	N/A
Other					
a.	Utility line (Check for any disturbance due to development of area or utility repair.)	X			No disturbance was observed.
b.	Manholes/Signage (Check for any disturbance and/or damage.)	X			Signage remains in good condition.
c.	Building Exterior			X	N/A

VI. Groundwater Monitoring Well Records						
Monitoring Wells no monitoring wells on Site 153 North						
Description	Properly secured/Locked	Routinely sampled	Condition	Remarks		
Monitoring wells	N/A			N/A		
Groundwater Elevation Record						
Description	Readily available	Up to date	N/A	Remarks		
Groundwater Elevation measurement record	N/A			N/A		
Groundwater Elevation Measurement:						
Well ID Location	Date	Time	Depth from TIC to		Measured by:	Remarks: Calibration data found on Instrument Calibration Record
			Water (feet)	Bottom (feet)		
N/A	N/A	N/A	N/A	N/A	N/A	N/A

VII. Overall Observations on Remedy Implementation & Site Conditions
Asphalt onsite is in acceptable condition. Cracks in pavement have been sealed by road department. Minimal vegetative growth visible through previous pavement crack seals.

**Quarterly Site Inspection Report
SA-5, Site 153 North Segment
December 3, 2024**



Photo 1 – View of the southern portion of the Site 153 North asphalt area, facing north.



Photo 2 – View of the central section of the Site 153 North asphalt area, facing north.



Photo 3 – View of the northern portion of the Site 153 North asphalt area, facing north.



Photo 4 – View of the northern portion of the Site 153 North asphalt area, facing north.

**Quarterly Site Inspection Report
SA-5, Site 153 North Segment
December 3, 2024**



Photo 5 – View of damage to previously destroyed sign base at mid-section of site.



Photo 6 – View of damage to previously destroyed sign base at mid-section of site.

Attachment B

Summary of Groundwater Elevation Data – Q4 2024
Groundwater Elevation Contour Map – December 2024
Hydrographs – Q4 2024

TABLE 1
SUMMARY OF MANUAL GROUNDWATER LEVEL DATA AT NJCU
FOURTH QUARTER 2024

<u>Location</u>	10/31/2024			11/27/2024		12/30/2024	
	10/15/2023	Depth to <u>GW (ft.)</u>	GW Elev. <u>(ft., msl)</u>	Depth to <u>GW (ft.)</u>	GW Elev. <u>(ft., msl)</u>	Depth to <u>GW (ft.)</u>	GW Elev. <u>(ft., msl)</u>
	Ref. pt. <u>Elev. (ft., msl)</u>						
079-MW-A02	8.10	5.56	2.54	5.70	2.40	5.29	2.81
Sump A (North)	15.98	10.60	5.38	10.73	5.25	10.69	5.29
Sump B (South)	13.08	8.10	4.98	10.11	2.97	8.19	4.89
090-PZ-5	18.08	12.19	5.89	12.08	6.00	11.55	6.53
090-PZ-6	18.20	9.43	8.77	10.12	8.08	9.78	8.42
184-MW-4	8.87	5.44	3.43	5.39	3.48	5.23	3.64
184-MW-5	14.71	9.98	4.73	9.89	4.82	9.23	5.48
184-MW-6	18.751	11.49	7.26	11.56	7.19	11.14	7.61
090-MW-09R	11.24	6.91	4.33	6.94	4.30	6.54	4.70
090-MW-07	17.20	12.16	5.04	12.32	4.88	12.27	4.93
117-MW-I4S	16.70	11.68	5.02	11.90	4.80	11.85	4.85
117-MW-I5	18.76	13.14	5.62	13.32	5.44	12.98	5.78
184-MW-101 (outside)	14.85	10.28	4.57	9.73	5.12	8.77	6.08
184-MW-105 (inside)	15.1	9.79	5.31	9.92	5.18	9.89	5.21
184-MW-106R (outside)	12.68	7.71	4.97	7.69	4.99	7.17	5.51
184-MW-102 (inside)	13.16	7.60	5.56	7.69	5.47	7.34	5.82
184-MW-103 (outside)	14.71	9.01	5.70	9.01	5.70	8.46	6.25
184-MW-107 (inside)	13.41	7.93	5.48	7.91	5.50	7.36	6.05
184-MW-104 (outside)	15.47	9.25	6.22	9.28	6.19	8.79	6.68
184-MW-108 (inside)	15.32	9.40	5.92	9.31	6.01	8.80	6.52

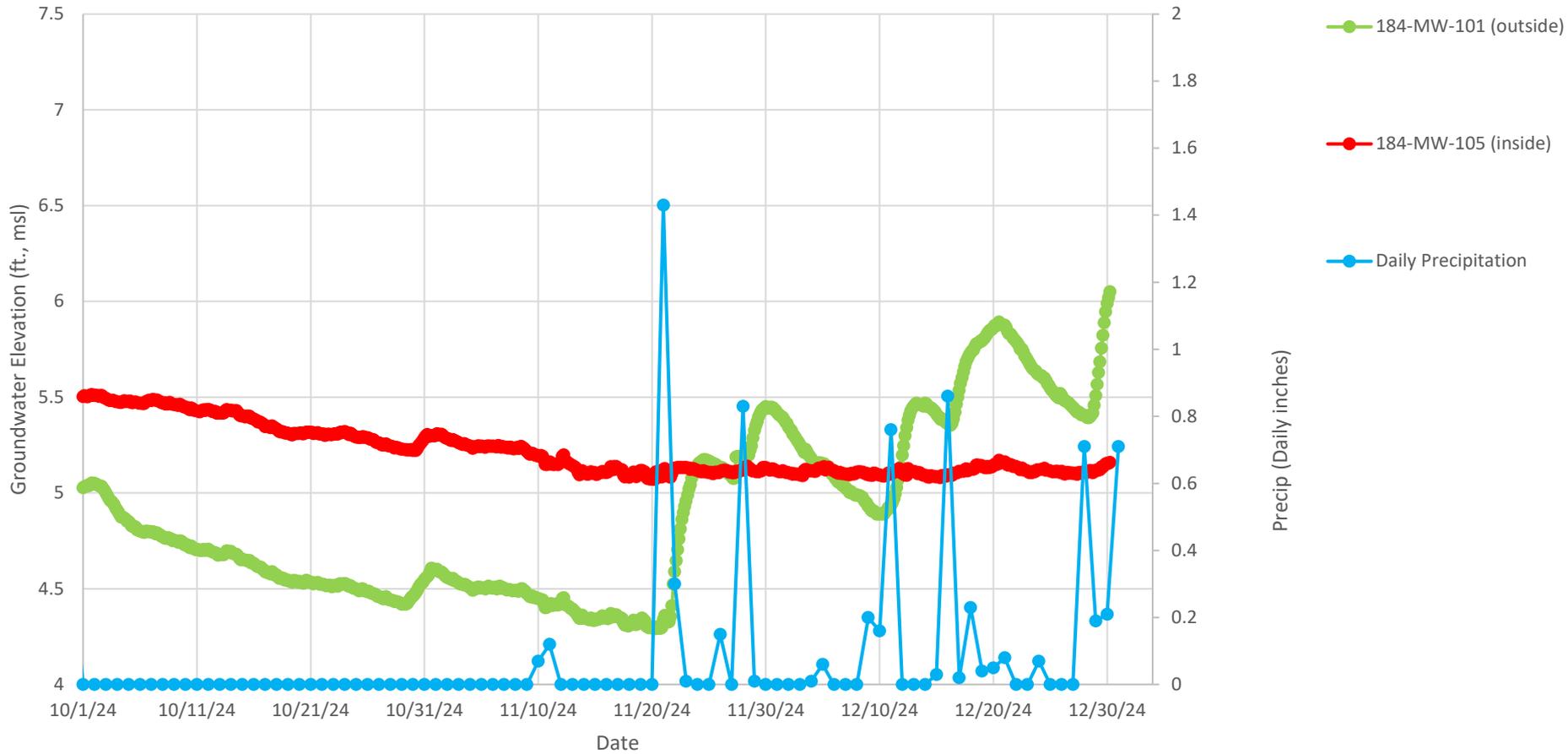
184-MW-106R installed on August 12, 2021

090-MW-09 Abandoned October 4, 2023.

090-MW-09R installed October 4-5, 2023.

NG - Not Gauged

184-MW-101 and 184-MW-105



Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

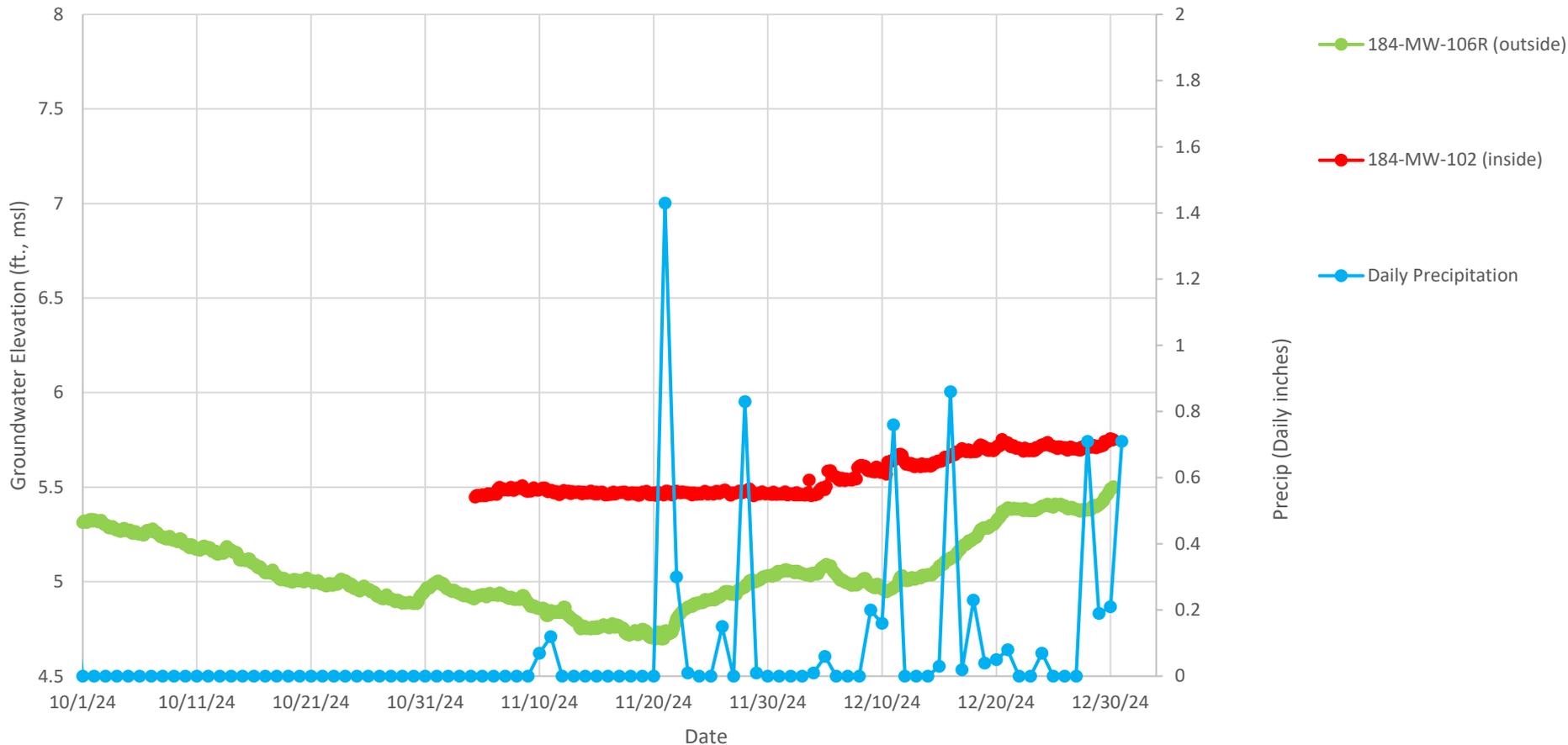
FIGURE 1

**Hydrograph of 184-MW-101 and 184-MW-105
Data Logger Heads v. Precipitation
Fourth Quarter 2024**

Study Area 6 North, Jersey City, NJ



184-MW-106R and 184-MW-102



*MW-102 datalogger malfunction 10/24; no data points stored

Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

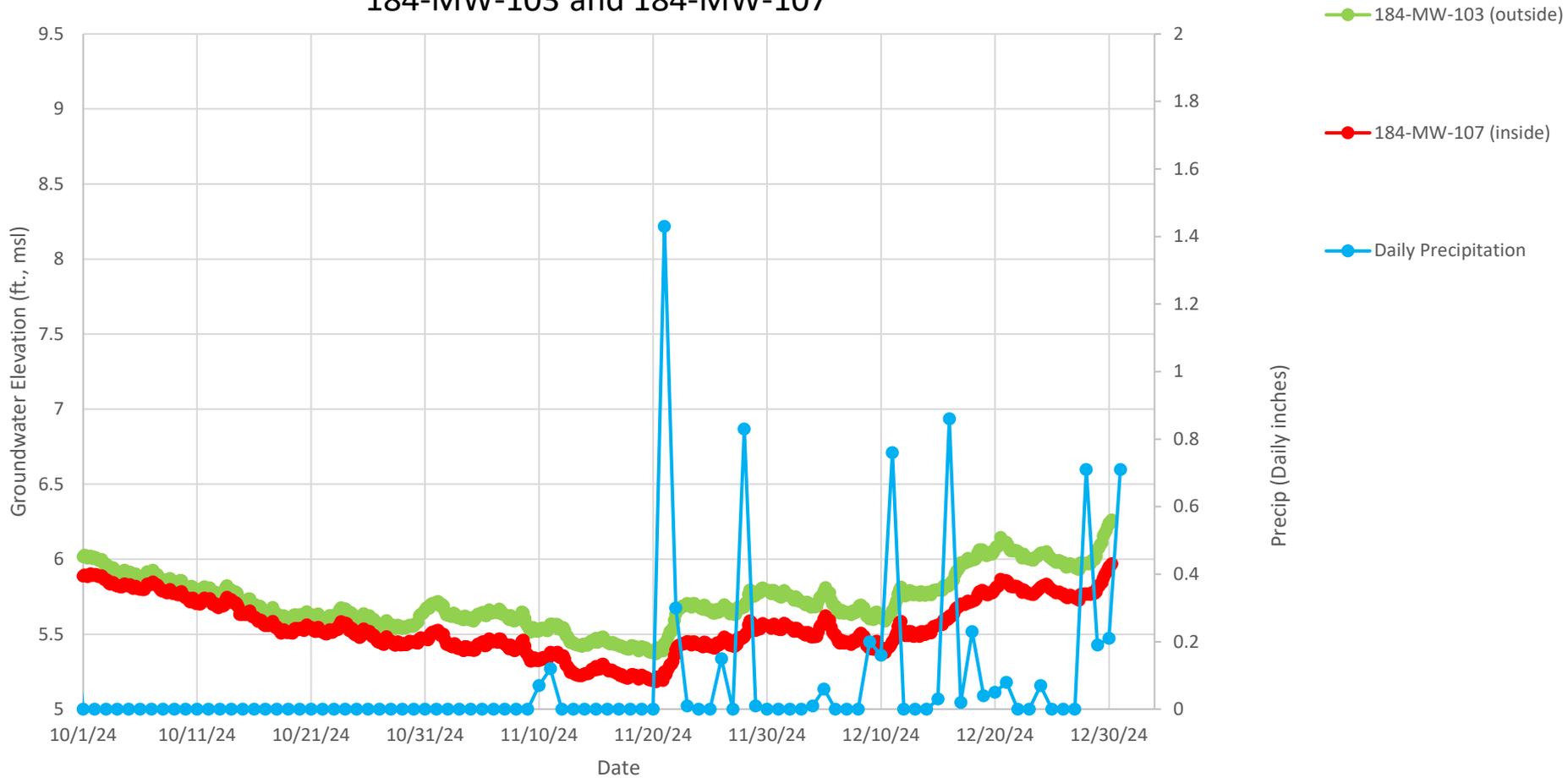
FIGURE 2

Hydrograph of 184-MW-106R and 184-MW-102
Data Logger Heads v. Precipitation
Fourth Quarter 2024

Study Area 6 North, Jersey City, NJ



184-MW-103 and 184-MW-107



Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

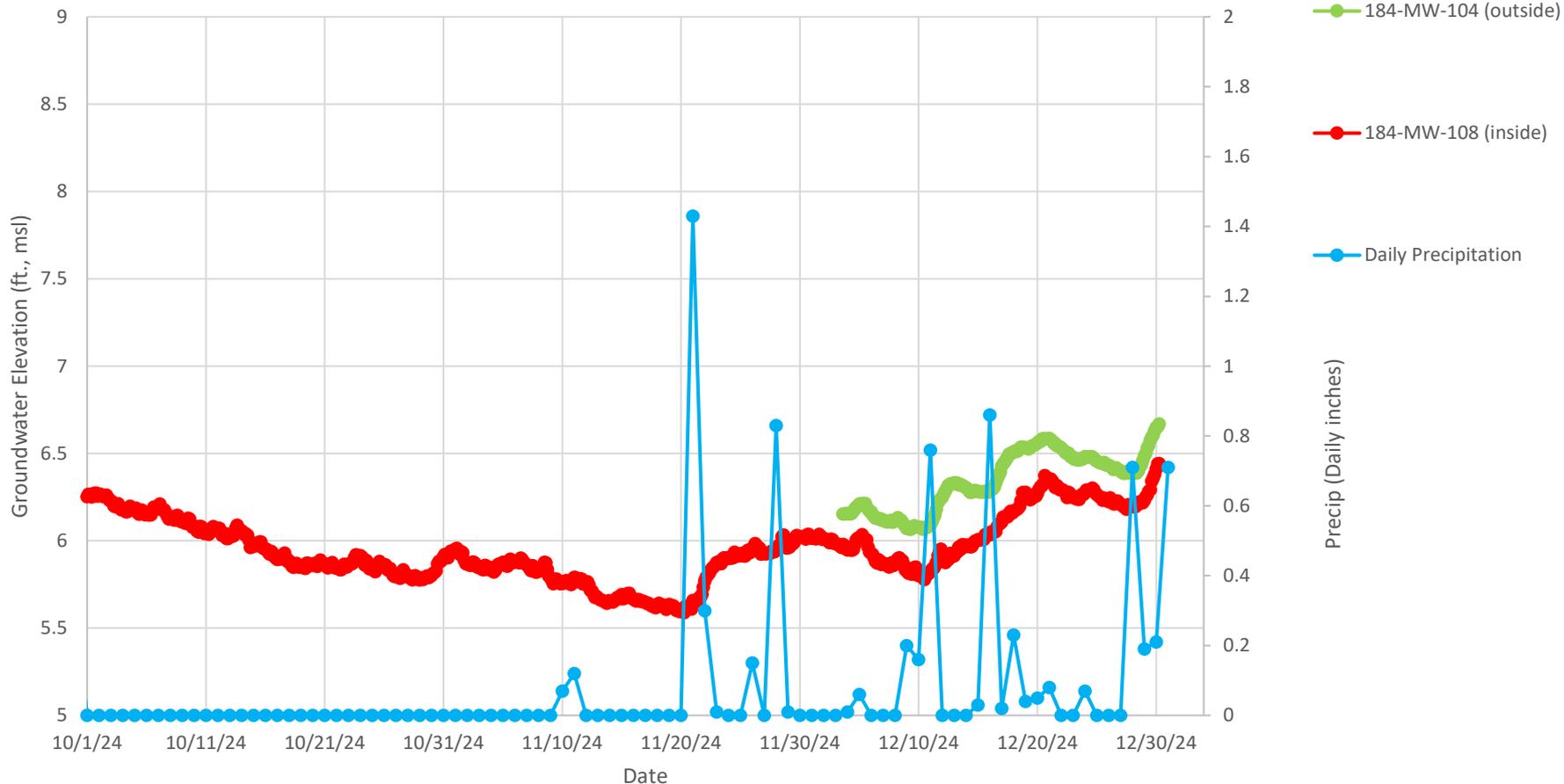
FIGURE 3

**Hydrograph of 184-MW-103 and 184-MW-107
Data Logger Heads v. Precipitation
Fourth Quarter 2024**

Study Area 6 North, Jersey City, NJ



184-MW-104 and 184-MW-108



*MW-104 datalogger malfunction; no logger data from 9/27 through 12/3/24.

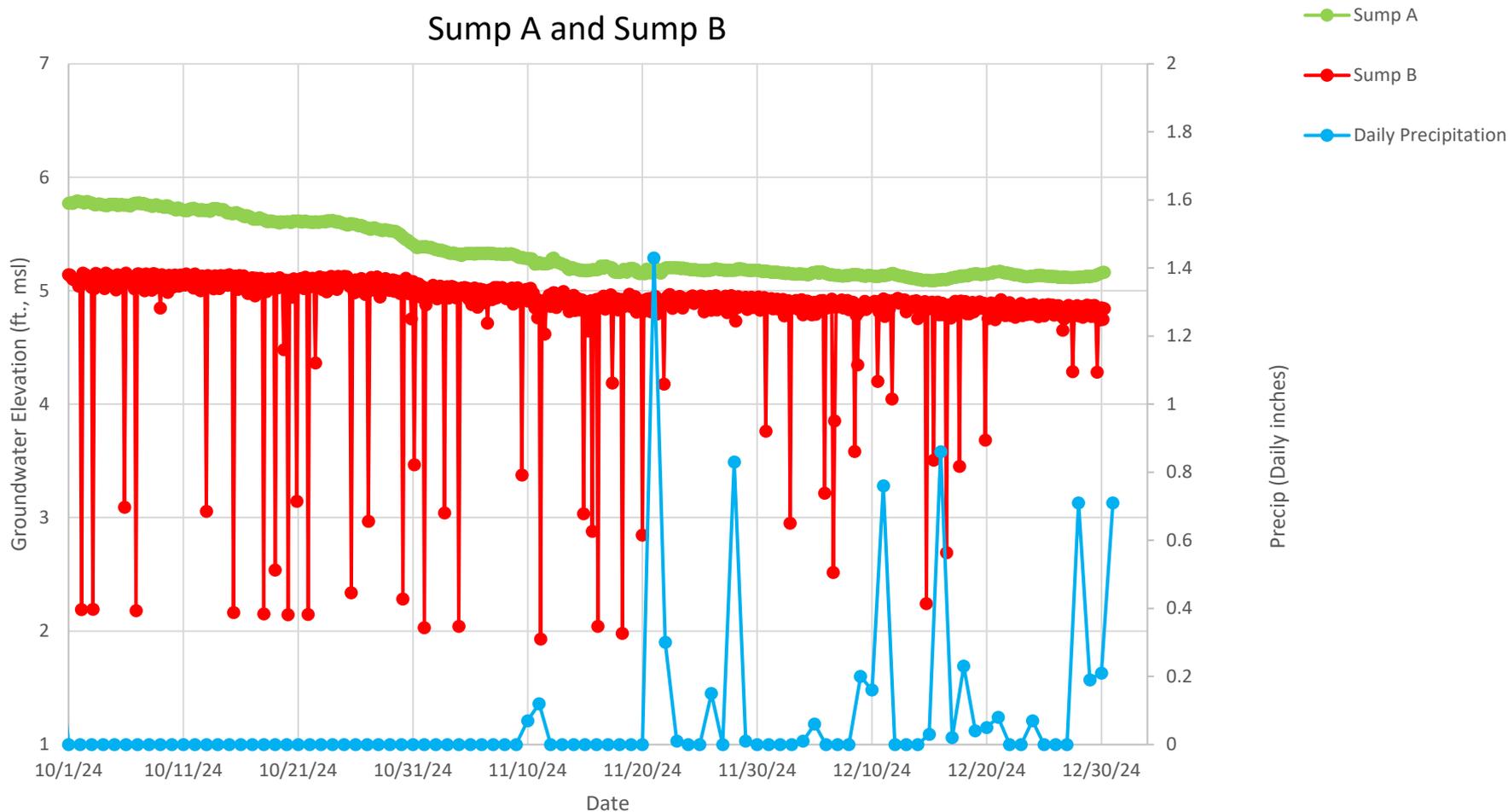
Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

FIGURE 4
Hydrograph of 184-MW-104 and 184-MW-108
Data Logger Heads v. Precipitation
Fourth Quarter 2024

Study Area 6 North, Jersey City, NJ

Sump A and Sump B



Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

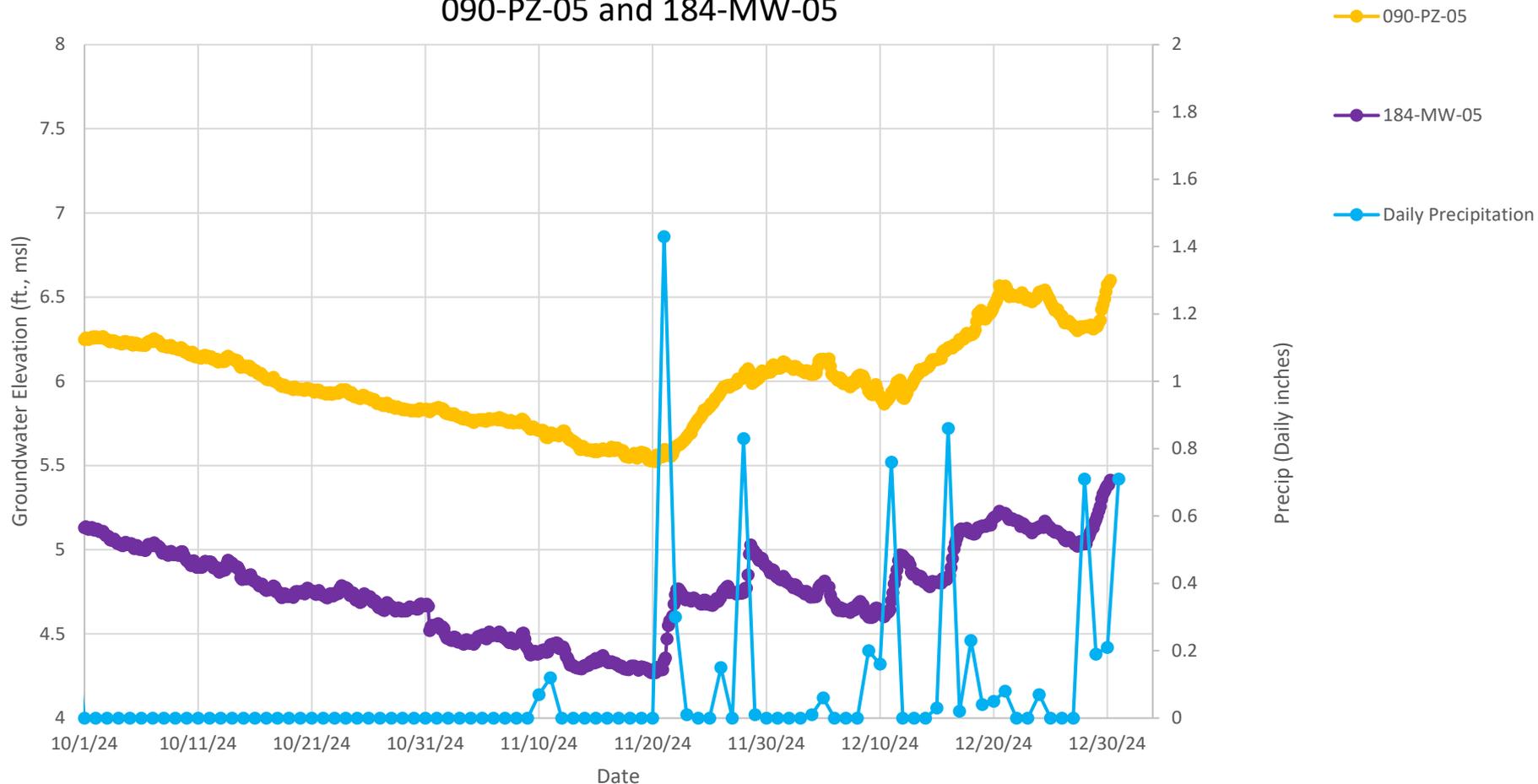
FIGURE 5

**Hydrograph of Sump A and Sump B
Data Logger Heads v. Precipitation
Fourth Quarter 2024**

Study Area 6 North, Jersey City, NJ



090-PZ-05 and 184-MW-05



Notes:

1. Logger data recorded at six-hour intervals
2. Corrected for barometric fluctuation
3. Precipitation data from NOAA's National Centers for Environmental Information (NCEI) database, Newark, NJ

FIGURE 6

**Hydrograph of 090-PZ-05 and 184-MW-05
Data Logger Heads v. Precipitation
Fourth Quarter 2024**

Study Area 6 North, Jersey City, NJ



Attachment C

Groundwater Results Figure

Attachment D

Contingent GW Extraction and Treatment System Monitoring Data

Attachment D
4th Quarter 2024 CGWET System Summary
Study Area 5 NJCU
Honeywell International Inc.
Jersey City, New Jersey

GWTS Pump	Location	Pump Operating During Quarter	Pump Shutdowns During Quarter	Run Hours	Avg Flow Rate (GPM)	Total Gallons Pumped	Comments
Sump A	Study Area 5, southwestern corner of Lot 6	No	N/A	0.0	0.00	0	Sump Not in Operation
Sump B	Study Area 5, in the grass west of Lot 7	Yes	None	116.3	2.80	19,510	Pump run cycles are dictated by level sensors in the sump. Contingent system continuously in operation during quarter.

Notes:

GPM = Gallons per Minute

Pump run hours calculated from operational period between 10/3/24 and 1/2/25

Avg Flow Rate calculated from total gallons removed from sump during quarter

Total Gallons Pumped calculated from operational period between 10/3/24 and 1/2/25

Sump B operation began 4/4/2016. Sump A does not require pumping.