From: Chavez, Carl, EMNRD
To: Holder, Mike; Roberts, Jason
Cc: Tupou, Kawika; Goetze, Phillip, EMNRD; Wrinkle, Justin, EMNRD
Subject: RE: [EXTERNAL] HF Sinclair Navajo Refining - RDU Pilot Sampling Plan Summary Report
Date: Wednesday, May 24, 2023 11:22:00 AM
Attachments: HFNR Response to OCD Cmts RDU PSP Report CJC 5-23-2023.pdf

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Mike, et al.:

Good morning!

The New Mexico Oil Conservation Division (OCD) has completed its review of above subject report with final responses in HFNR's E-mail correspondence of May 4, 2023 (See attachment).

OCD is pleased with the report, subsequent communications, findings and process associated with the report thus far but there are three (3) remaining post- RDU quarterly Post- RDU sampling events associated with the new Renewable Diesel Unit (RDU).

OCD will compile correspondence related to the above subject report and process it in Action ID# 193317 (Original report submittal) soon. The three (3) remaining Quarterly Reports and/or Sampling Events shall provide documentation of the Post-RDU environmental analytical laboratory data results and exceedances of the regulatory limits (RLs). The Quarterly Report shall be submitted via E-Permitting for OCD review and processing.

If exceedances are detected significantly above the RLs, the protocol under WQCC is to immediately resample to confirm the exceedance(s).

Please contact me if you have any questions or wish to communicate as needed. Good job!

Thank you.

Carl J. Chavez ● UIC Group
Engineering Bureau
EMNRD - Oil Conservation Division
Horizon Building
8801 Horizon Blvd., Suite 260 | Albuquerque, NM 87113
505.660.7923 | CarlJ.Chavez@emnrd.nm.gov
www.emnrd.nm.gov



From: Holder, Mike
To: Chavez, Carl, EMNRD; Roberts, Jason
Cc: Tupou, Kawika; Goetze, Phillip, EMNRD; Wrinkle, Justin, EMNRD; Holder, Mike
Subject: RE: [EXTERNAL] HF Sinclair Navajo Refining - RDU Pilot Sampling Plan Summary Report
Date: Thursday, May 4, 2023 5:50:16 PM

Carl:

Thanks for your input! HF Sinclair Navajo Refining (HFSNR) has reviewed your April 18, 2023 letter regarding OCD comments on the March 7, 2023 Renewable Diesel Unit Pilot Sampling Plan (PSP) Summary Report, and offers the following initial responses to your three questions. Please let us know if you have any questions or would like to discuss the items below.

1) **Why weren't NDs treated as the lab Method Detection Limits (MDLs) to conform to the EPA Guidelines for statistical evaluations where ND lab results are reported as the lab MDL value for statistical evaluation?**

Response: As a reference, the original March 11, 2022 PSP stated *"The list of parameters for both the WWTP effluent and the CTB discharge will include those given in 40 CFR 261.24(b) as well as those required under Discharge Permit UICI-8, Section 2.A (quarterly monitoring); a summary of these parameters along with corresponding analytical methods and laboratory reporting levels (RLs) is given in Attachment 4. These parameters and methods have been identified in conjunction with the New Mexico Oil Conservation Division (OCD) as the most appropriate for the UIC well program at Navajo over the life of the program and serve to characterize the Refinery effluent."* The RLs given in Attachment 4 are equal to the 40 CFR 261.24(b) TCLP Regulatory Levels for TCLP parameters (D004 through D048). The RL's for non-TCLP parameters (shown at the bottom of Attachment 4) are Hall Laboratory Practical Quantitation Limits (PQLs) since no regulatory levels exist for these parameters. While the specific methodology for non-detect (ND) substitutions for statistical evaluation was not stated in the PSP (use of Method Detection Limit (MDL) vs RL), HFSNR utilized the RLs for statistics as a conservative approach for comparison (i.e., RLs were greater than the MDLs). In other words, use of the greater RL would represent a maximum estimation for a non-detect sample results, thereby, a calculated parameter concentration average would conservatively skew higher.

HFSNR does not feel that that the use of the RL instead of the MDL *"appears to deviate from the Environmental Protection Agency (EPA) ProUCL Guidelines on the statistical treatment of ND values as the Method Detection Limit (MDL) for statistical analysis"* and that *"The Permittee did not appear to follow EPA ProUCL Statistical Data Handling Guidelines when it opted to default lab data results to the RL for NDs/MDLs that were less than the RL."* The HFSNR statistical analysis followed the guidelines set forth in the ProUCL Version 5.1 Technical Guide, Section 1.11.2, which states that *"It is the user's responsibility to enter a value which can be used to represent a ND value. For NDs, the user enters the associated DLs or RLs."* Based on these guidelines, use of the RL is an allowable practice and, as stated above, conservatively estimates concentrations for the purposes of statistical analysis.. Therefore, to follow what HFSNR believes to be the most uniform and conservative approach, the statistical analyses presented by HFSNR in the PSP report used the RL to appropriately represent ND values for both TCLP and non-TCLP parameters.

Finally, in response to the statement that *"OCD cannot determine from data in the report what changes occurred, if any, because all lab results were reported at the TCL/RL concentration,"* HFSNR notes that ProUCL was applied to 16 non-TCLP parameters where all (or a significant portion) of results were above the RL. The statistical results from these parameters indicated that the RDU wastewater stream was not identified to significantly affect/change the concentration characteristics of the Refinery WWTP discharge to the UIC well network in a negative manner.
A review of EPA Statistical Guidance for small population data sets w NDs allows for default to RL. Okay. CJC

2) **Continue to provide RDU Update Summary in the Quarterly Sampling Reports (3 more quarters) for the remainder of the year from No. 1 above to include "Conclusions" and "Recommendations" sections in the reports.**

Response: HFSNR will continue to sample in accordance with the UICI-8 permit Section 2.A (i.e., without CTB, samples, without filtered samples, and without pesticides except for the required chlordane). In the upcoming quarterly reports, HFSNR will compare results to TCLP levels. Given the information in Question #1 above, HFSNR does not see any merit to do additional ProUCL statistical comparisons between pre- and post-RDU conditions which were comprehensively assessed during the one-time PSP study. HFSNR requests OCD concurrence with future quarterly monitoring activities which will follow all the requirements given in the current UICI-8 Discharge Permit.
OCD concurs with remaining QRs providing RDU Summary Updates with exceedances of RLs, etc. as above.

3) **OCD cannot consider the changes requested by the Permittee in the Report until 3 more required quarters of RDU related sampling must be completed and compared against the TCLs/RLs.**

Continue to include "Chlordane" in the remaining 3 QR Sampling Events. Upon conclusion, OCD may remove.

Response: HFSNR is not requesting any changes to the current permit sampling program, except removing chlordane from the list of required parameters (as noted in our comments to the draft UICI-8 permits submitted April 17, 2023).

HFSNR appreciates OCD's consideration of the above responses and is happy to schedule a discussion to provide further clarity or address other concerns with the UIC well discharges (as related to RDU operations) If you believe a discussion regarding major study findings (i.e., treated wastewater and CTB discharges are not TCLP hazardous and no differences between pre- and post-RDU operations) would be helpful, please advise of your availability in the coming days.
OCD concurs for the sampling report but continues to observe QR sampling results for the remaining 3 events.

Thanks again and take care,
Mike

From: Chavez, Carl, EMNRD <Carlj.Chavez@emnrd.nm.gov>
Sent: Tuesday, April 18, 2023 4:50 PM
To: Roberts, Jason <Jason.Roberts@HFSinclair.com>
Cc: Holder, Mike <Michael.Holder@HFSinclair.com>; Tupou, Kawika <Kawika.Tupou@HFSinclair.com>; Goetze, Phillip, EMNRD <phillip.goetze@emnrd.nm.gov>; Wrinkle, Justin, EMNRD <Justin.Wrinkle@emnrd.nm.gov>
Subject: [EXTERNAL] HF Sinclair Navajo Refining - RDU Pilot Sampling Plan Summary Report

CAUTION: This email originated from outside of the HF Sinclair organization. Do

not click on links or open attachments unless you recognize the sender and know the content is safe.

Jason, et al.,

Good afternoon!

The New Mexico Oil Conservation Division (OCD) has completed its review of the attached HF Sinclair "PSP Summary Report."

Please find attached the OCD's corresponding "OCD RDU Report Review Cmts-Qstns CJC 4-18-2023" Letter (Letter).

Please respond to the OCD Letter and especially the last section "Questions/Conclusions/Requirements" for OCD's Administrative Records.

I communicated with Mike Holder this morning via E-mail on how OCD will handle the Action ID# 193317. This is a timely review considering there are a remaining 3 quarterly RDU/Effluent Sampling and monitoring events to complete the RDU evaluation of effluent quality.

Please contact me if you have questions.

Thank you.

Carl J. Chavez ● UIC Group
Engineering Bureau
EMNRD - Oil Conservation Division
Horizon Building
8801 Horizon Blvd., Suite 260 | Albuquerque, NM 87113
505.660.7923 | CarlJ.Chavez@emnrd.nm.gov
www.emnrd.nm.gov

From: Roberts, Jason <Jason.Roberts@HFSinclair.com>
Sent: Tuesday, March 7, 2023 11:39 AM
To: Chavez, Carl, EMNRD <Carlj.Chavez@emnrd.nm.gov>
Cc: Holder, Mike <Michael.Holder@HFSinclair.com>; Tupou, Kawika <Kawika.Tupou@HFSinclair.com>
Subject: [EXTERNAL] HF Sinclair Navajo Refining - RDU Pilot Sampling Plan Summary Report

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning Carl –

Attached is a copy of the RDU Pilot Sampling Plan (PSP) summary report. This plan has also been

uploaded to the OCD Permitting site under Action ID# 193317.

If you have any questions or need additional information, please feel free to contact me.

Thank you.

Jason O. Roberts
Environmental Supervisor | Environmental

M 575-703-6164

Jason.Roberts@hollyfrontier.com
www.HFSinclair.com
501 E. Main Street Street, Artesia, NM 88210



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From: Chavez, Carl, EMNRD
To: Roberts, Jason
Cc: Holder, Mike; Tupou, Kawika; Goetze, Phillip, EMNRD; Wrinkle, Justin, EMNRD
Subject: RE: [EXTERNAL] HF Sinclair Navajo Refining - RDU Pilot Sampling Plan Summary Report
Date: Tuesday, April 18, 2023 3:48:00 PM
Attachments: PSP Summary Report 030723 With Signature.pdf
OCD RDU Report Review Cmts-Qstns CJC 4-18-2023.pdf

Jason, et al.,

Good afternoon!

The New Mexico Oil Conservation Division (OCD) has completed its review of the attached HF Sinclair "PSP Summary Report."

Please find attached the OCD's corresponding "OCD RDU Report Review Cmts-Qstns CJC 4-18-2023" Letter (Letter).

Please respond to the OCD Letter and especially the last section "Questions/Conclusions/Requirements" for OCD's Administrative Records.

I communicated with Mike Holder this morning via E-mail on how OCD will handle the Action ID# 193317. This is a timely review considering there are a remaining 3 quarterly RDU/Effluent Sampling and monitoring events to complete the RDU evaluation of effluent quality.

Please contact me if you have questions.

Thank you.

Carl J. Chavez ● UIC Group
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505.660.7923 | CarlJ.Chavez@emnrd.nm.gov
www.emnrd.nm.gov

From: Roberts, Jason <Jason.Roberts@HFSinclair.com>
Sent: Tuesday, March 7, 2023 11:39 AM
To: Chavez, Carl, EMNRD <Carlj.Chavez@emnrd.nm.gov>
Cc: Holder, Mike <Michael.Holder@HFSinclair.com>; Tupou, Kawika <Kawika.Tupou@HFSinclair.com>
Subject: [EXTERNAL] HF Sinclair Navajo Refining - RDU Pilot Sampling Plan Summary Report

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on

links or opening attachments.

Good morning Carl –

Attached is a copy of the RDU Pilot Sampling Plan (PSP) summary report. This plan has also been uploaded to the OCD Permitting site under Action ID# 193317.

If you have any questions or need additional information, please feel free to contact me.

Thank you.

Jason O. Roberts
Environmental Supervisor | Environmental

M 575-703-6164

Jason.Roberts@hollyfrontier.com
www.HFSinclair.com
501 E. Main Street Street, Artesia, NM 88210



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State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Dylan Fuge, Acting Director
Oil Conservation Division

Sent via E-mail only

APRIL 18, 2023

Mr. Kawika Tupou
HF Sinclair Navajo Refining, LLC
501 East Main
Artesia, New Mexico 88210

Mr. Tupou:

Re: UICI-8: Renewable Diesel Unit (RDU) Pilot Sampling Plan Summary Report (March 2023)
Eddy County, New Mexico

The New Mexico Oil Conservation Division (OCD) is in receipt of the above subject report (Report) on March 7, 2023 from HF Sinclair Navajo Refining, LLC (Permittee).

The Permittee completed the "Pre vs Post" Renewable Diesel Unit (RDU) startup sampling to complete the "Renewable Diesel Unit Pilot Sampling Plan Summary Report" (Report). The objective of the Report was to report on the new RDU effects on effluent quality and for exceedances of the Federal Hazardous Characteristics (i.e., Ignitability, Reactivity and Corrosivity) and "Maximum Concentration of Contaminants for Toxicity Characteristics" or Toxicity Characteristics Limits (TCLs) referred to as "RLs" in the Report. OCD provides its review of Report in the text below.

Review Summary:

It is qualitatively apparent from the Report that the environmental analytical laboratory data results from "Pre vs Post" RDU effluent field sampling were within the TCLs/RLs and Characteristically Hazardous Toxicity Testing so far confirmed effluent is not hazardous under RCRA Subtitle "C." There were also qualitative statements indicating the Post RDU sampling effluent quality had actually improved over the Pre RDU sampling effluent quality in some instances.

Hall Environmental Analytical Laboratory (HEAL) utilized a subcontractor, "Pace Analytical Laboratory" (Pace) for TCL/RL Lab Testing. Pace appears to have QA/QC laboratory instrument recovery difficulties similar to other labs with some of the TCL parameters of concern (i.e., Heptachlor (~68%), Cresol (~43%), Pyridine (~18.3%) and Pentachlorophenol (~24.1%)). Pace reported "Ignitability" Flashpoints (FP) as "DNF at 170°F" (Does not flash at 170°F) for all laboratory testing in the Report when the regulatory limit is actually 140°F. On March 31, 2023, the OCD received a phone call and E-mail from Andy Freeman with HEAL clarifying that the FP regulatory limit of 140°F is actually addressed by the laboratory test method and that HEAL would report environmental analytical data results as "Less than 140°F" when a test is "positive", but will continue to report "negative" results as "DNF @ 170°F". OCD retained a copy of HEAL's correspondence for its records.

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It is qualitatively apparent from the Report that the environmental analytical laboratory data results were within the TCLs/RLs. OCD notices the Permittee and its Consultant SLR International Corporation (SLR) did not statistically treat all lab data value Non-Detects (NDs) as the numeric Laboratory Method Detection Limits (MDLs) value, but defaulted to the TCLs/RLs instead. This appears to deviate from the Environmental Protection Agency (EPA) ProUCL Guidelines on the statistical treatment of ND values as the Method Detection Limit (MDL) for statistical analysis. Defaulting to the TCL/RL does not allow for statistical evaluation of "Pre vs Post" sampling data results but the Report qualitatively shows that data results are within the TCLs/RLs.

Observations:

1) Pg. 4: For the Cooling Tower Blowdown (CTB) effluent, statistical analyses were only performed on the three sample events where all cooling towers were operational (i.e., 3 sampling events on June 23, June 30, and July 7, 2022) and the four sampling events post-RDU with CTB Y-26 Post PSP Sampling occurring during the December 2022 weekly sampling events to assess effluent when it was included. During the post- RDU Sapling, A discharge of ~ 9,000 bpd was only achieved for the 12/5/2022 sampling event and was around 6,100, 6,300 and 8,826 bpd on other events.
2) EPA ProUCL (version 5.1) was used to calculate the 95 percent UCL and the one-way Analysis of Variance (ANOVA; a statistical technique used to compare the means/medians of two or more groups). UCL statistics for Uncensored Full Data Sets were used to determine the general statistics, best fit data distribution, and the 95 percent UCL (via the suggested UCL output from ProUCL). Values less than the TCL were statistically treated to be the TCL. In addition, classical one-way ANOVA (as opposed to non-parametric) was used to assess if the concentrations after start-up of the RDU were statistically different than the pre-RDU data at a 0.05 level of significance.
3) The Permittee recommends together with OCD making a determination based on this PSP study that no revisions to the current Discharge Permit UICI-8 are necessary in regard to injection fluids sampling (Section 2.A). Current permit parameters and sampling frequency remain valid for permit renewal occurring in 2023. The Permittee further recommends that any CTB sampling remain absent from the permit and that OCD consider the removal of Chlordane from injection fluids quarterly monitoring since 1) no additional pesticide parameters are included in the permit, and 2) PSP results were less than the RLs for all pesticides and herbicides. The Permittee does acknowledge OCD's desire to assess future quarterly monitoring (i.e., 3 more quarters) for any changes over PSP baseline levels described in this report.

Comments:

1) Pg. 4 Sample Data Results and Statistics: OCD believes that values less than the TCL should have defaulted to the lab Method Detection Limit (MDL) and not the TCL for statistical analysis. The report stated, "Values less than the RL were conservatively included at the value of the RL (i.e., a result of <4 mg/L was included as a value of 4 mg/L)."
2) Pg. 4 Sample Data Results and Statistics: Number 1 above has resulted in the following statistical approach by the Permittee: As described in the footnotes to Tables 4 and 5, there were times where a 95 percent UCL could not be calculated due to small data size, data distribution (i.e., all results being the same value), and/or skewness. The 95 percent UCL and ANOVA could not be calculated for the TCLP parameters since all results were less than the reporting limit (regulatory level). An example of the ProUCL output is given for chloride in Appendix B; additional parameter outputs have been archived and are available upon request.
3) Statistical charts statistically comparing the "Pre vs Post" RDU effluent sampling sets along with their data sets would quickly demonstrate any variability or affects noticed in the parameters from the RDU Report.

4) EPA Quality Assurance/Quality Control (QA/QC) for duplicates, blanks, Chain of Custody, Lab DQO datasheets, etc. appears to be adequate for the sampling completed to date.

5) The Permittee did not appear to follow EPA ProUCL Statistical Data Handling Guidelines when it opted to default lab data results to the RL for NDs/MDLs that were less than the RL. This resulted in a lack of statistical graphical and data analytical analysis of the "Pre vs Post" RDU Sampling represented in the report. While OCD requested basic statistics for its analysis, OCD feels the Permittee failed to present statistically analyzed data conforming to EPA Statistical Guidelines in the report.

6) OCD cannot determine from data in the report what changes occurred, if any, because all lab results were reported at the TCL/RL concentration. Also, there were no statistical charts presented comparing the "Pre vs Post" RDU effluent sampling data sets or results to identify parameters affected by the RDU. What OCD can conclude is there does not appear to be any exceedances above the TCLs/RLs. See Pg. 4 PSP Findings: The primary purpose of this sampling program was to confirm if the addition of RDU operations resulted in the WWTP effluent to the UIC wells becoming characteristically hazardous under RCRA. All TCLP parameters (pre- and post-RDU, WWTP effluent and CTB, total and filtered) were less than the laboratory RL which was equal to the RLs contained in 40 CFR Section 261.24(b) for toxicity.

Questions/Conclusions/Requirements:

1) Why weren't NDs treated as the lab Method Detection Limits (MDLs) to conform to the EPA Guidelines for statistical evaluations where ND lab results are reported as the lab MDL value for statistical evaluation?

2) Continue to provide RDU Update Summary in the Quarterly Sampling Reports (3 more quarters) for the remainder of the year from No. 1 above to include "Conclusions" and "Recommendations" sections in the reports.

3) OCD cannot consider the changes requested by the Permittee in the Report until 3 more required quarters of RDU related sampling must be completed and compared against the TCLs/RLs.

Please contact me at (505) 660-7923 or at E-mail: carlj.chavez@emnrd.nm.gov to discuss the report or if you have questions.

Sincerely,

Carl J. Chavez
Engineering Bureau- UIC Group

xc: Phillip Goetze, Engineering Bureau- UIC Group
OCD Artesia Office

HF Sinclair Navajo Refining LLC
Artesia, NM

Renewable Diesel Unit Pilot Sampling Plan Summary Report

Submitted to:
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
5200 Oakland Avenue, NE
Albuquerque, New Mexico 87113

Prepared by:
SLR International Corporation
Denver, Colorado

March 2023

March 7, 2023

Phillip Goetze
Supervisor – UIC Permitting
New Mexico Oil Conservation Division (Albuquerque Office)
Energy Minerals and Natural Resources Department
5200 Oakland Avenue, NE
Albuquerque, New Mexico 87113

RE: HF Sinclair Navajo Refining LLC / Artesia Refinery / Renewable Diesel Unit Pilot Sampling Plan Summary Report: Verification of Non-Hazardous Injection Fluids from RDU Process

Dear Mr. Goetze:

Enclosed herein is the Summary Report for the March 11, 2022 "Verification of Non-hazardous Injection Fluids from RDU Process - Pilot Sampling Plan" (PSP). The PSP characterized the HF Sinclair Navajo Refining LLC (Navajo) effluent discharge from the on-site wastewater treatment plant (WWTP) as well as blowdown from cooling towers (that could potentially discharge to the WWTP) before and after operations from the new Renewable Diesel Unit (RDU) commenced. The WWTP effluent is discharged to both the City of Artesia POTW as well as four underground injection control (UIC) wells regulated collectively under the December 2017 Class I Non-Hazardous Waste Injection Well Discharge Permit UICI-8 as follows:

- Well WDW-1
  - API #30-015-27592 under Permit UICI-8-1 (Facility ID = fCJC2117350329)
- Well WDW-2
  - API #30-015-20894 under Permit UICI-8-2 (Facility ID = fCJC2117351808)
- Well WDW-3
  - API #30-015-26575 under Permit UICI-8-3 (Facility ID = fCJC2117354810)
- Well WDW-4
  - API #30-015-44677 under Permit UICI-8-4 (Facility ID = fCJC2117357871)

The New Mexico Oil Conservation Division, Engineering Bureau (OCD) requested the PSP and subsequent sampling program to confirm that RDU operations do not cause the WWTP effluent discharged to the UIC wells to be defined as characteristically hazardous under RCRA. The results of the sampling were compared to the characteristic levels contained in 40 Code of Federal Regulations (CFR) Section 261.21 through 261.24 for ignitability, corrosivity, reactivity, and toxicity. Specific parameters of concern were not only those in 40 CFR 261.24(b), but also include those listed in Section 2.A of the December 2017 UICI-8 Discharge Permit. The December 2017 UICI-8 Permit parameters have been historically monitored on a quarterly basis; this monitoring is anticipated to continue under the upcoming renewed permit. The PSP also determined if the new RDU operations affected (i.e., changed) the quality (concentration) of the discharge to the UIC wells by comparison to historical monitoring data (pre-RDU).

As detailed in this report, the PSP has confirmed that:

- Current Refinery WWTP capacity is sufficient to treat the additional RDU wastewater stream, and any corresponding RDU contribution to the influent constituent concentrations is reduced via treatment such that Navajo maintains compliance with limitations set forth in Discharge Permit UICI-8. Since these limitations are equivalent to the 40 CFR 261.24 limits for toxicity, the WWTP effluent discharged to the UIC wells is deemed non-hazardous under RCRA (i.e., all pre-RDU and post-RDU concentrations were below the analytical reporting limits equivalent to the corresponding 40 CFR 261.24 regulatory levels). Hazardous characteristics for ignitability (261.21), corrosivity (261.22) and reactivity (261.23) were also not present.

- The RDU wastewater stream was not identified to significantly affect/change the concentration characteristics of the Refinery WWTP discharge to the UIC well network in a negative manner. Generally, pre-RDU effluent concentrations were statistically similar to post-RDU effluent concentrations for non-TCLP parameters reported as greater than the reporting limit. For those few parameters where a statistically significant change was noted, this change was either a decrease in concentration (i.e., post-RDU results were less than pre-RDU results) or was for a parameter already monitored quarterly in the UICI-8 Permit with no corresponding regulatory level/standard.

Overall, the addition of RDU activities does not alter the operation, maintenance, or monitoring nor contribute to significant increases in pollutant concentrations of the four underground injection wells. Based on results from the PSP program, Navajo contends additional sampling (beyond the routine quarterly monitoring for parameters in the current permit) is not warranted.

This report is signed and certified in accordance with NMAC Section 20.6.2.5101.G. If there are any questions or comments, please contact Jason Roberts at 575-748-6733.

Sincerely,

Kawika Tupou
HF Sinclair Environmental Manager

Cc: Becca Crumpler, HF Sinclair Renewables
Mike Holder, HF Sinclair Corporation

Renewable Diesel Unit Pilot Sampling Plan Summary Report
HF Sinclair Navajo Refining LLC

Introduction

In 2022, HF Sinclair commenced operation of the new Renewable Diesel Unit (RDU) at the HF Sinclair Navajo Refinery (Navajo), in Artesia, New Mexico. The New Mexico Oil Conservation Division, Engineering Bureau (OCD) requested the Pilot Sampling Plan (PSP) and subsequent sampling program to confirm that RDU operations do not cause the WWTP effluent discharged to the UIC wells to be defined as characteristically hazardous under RCRA. The PSP, submitted to OCD March 11, 2022, was designed to characterize the Navajo effluent discharge from the on-site wastewater treatment plant (WWTP) at Navajo's Artesia Refinery before and after start-up operations of the new RDU. Start-up of the RDU began in June of 2022, however, full-rate production levels (around 9,000 barrels per day (bpd)) were not achieved until September 2022.

The WWTP effluent is discharged to both the City of Artesia Publicly Owned Treatment Works (POTW) as well as four underground injection control (UIC) wells regulated collectively under Class I Non-Hazardous Waste Injection Well Discharge Permit UICI-8 (effective December 2017) as follows:

1. Well WDW-1 (API #30-015-27592) under Permit UICI-8-1
2. Well WDW-2 (API #30-015-20894) under Permit UICI-8-2
3. Well WDW-3 (API #30-015-26575) under Permit UICI-8-3
4. Well WDW-4 (API #30-015-44677 under Permit UICI-8-4

In addition to the WWTP effluent, the PSP also included sampling of combined cooling tower blowdown (CTB) from Units Y-1, Y-2, Y-11, and Y-12 as well as Y-26 (which is a new cooling tower specific to RDU operations). The CTB sampling was conducted due to the small potential of discharge of these sources to the UIC wells as shown in Figure 1. During normal conditions, all combined CTB discharges directly to the City POTW and not the UIC wells. However, the combined CTB can be rerouted to the Refinery's onsite WWTP during emergency conditions for ultimate discharge to the City POTW and/or to the Refinery's UIC well network.

Sample Locations for WWTP Effluent and Cooling Tower Blowdown

Under Discharge Permit UICI-8, Section 2.A, Navajo collects quarterly samples of injected waste fluids (i.e., WWTP effluent) at the injection well pumps. This same sampling location was utilized for the PSP to allow comparison of the historical quarterly data with data collected herein representative of post-RDU operations. The injection well pumps sampling site is representative of the WWTP effluent and is shown schematically in Figure 2.

The PSP sample location for the CTB was the current sample location for the combined CTB (from Y-1, Y-2, Y-11, and Y-12) and WWTP effluent that discharges to the POTW (shown in Figure 3). However, prior to the PSP sampling events, all WWTP effluent was physically blocked from the City POTW (i.e., using the control valve as well as a manual block valve) and diverted to the injection wells so that the resulting discharge to the POTW only consisted of CTB and was sampled without

the contribution of WWTP effluent. A separate sampling point for CTB does not currently exist; hence the procedure above was necessary.

Sample Type and Parameters

Samples at both locations (WWTP effluent to injection wells and CTB to City POTW) were collected as grab samples, representative of normal discharge flow conditions and normal facility operations. Sampling procedures were provided in the March 11, 2022 PSP (see Attachments 2 and 3). The list of parameters for both the WWTP effluent and the CTB discharge included those given in 40 Code of Federal Regulations (CFR) 261.24(b) as well as those required under Discharge Permit UICI-8, Section 2.A (quarterly monitoring); a summary of these parameters along with corresponding analytical methods and laboratory reporting limits (RLs) is given in Table 1. These parameters and methods were identified in conjunction with the OCD as the most appropriate for the UIC well program at Navajo and historically served to characterize the WWTP effluent. Hall Environmental Laboratory (NELAP Certified) performed all analyses, along with Level I standard QA/QC procedures.

Sample Event Dates

Prior to RDU start-up, sampling of CTB to the City POTW occurred once per week for three weeks since no historical data for CTB exist for all the parameters of concern given in Table 1. Originally, the pre-RDU CTB sample dates were:

- March 28, 2022 – concurrent with Federal Fiscal Year (FFY) 2022 Second Quarter (Q2) permit sampling for UIC WWTP effluent
- April 26, 2022 – concurrent with FFY 2023 Q3 permit sampling for UIC WWTP effluent
- May 3, 2022
- May 10, 2022 – extra sample to ensure three consecutive weeks

However, after the May 10, 2022 CTB sample, it was discovered that Cooling Tower Y-12 was not discharging blowdown during the April – May 2022 time period. Therefore, the pre-RDU sampling was redone to capture all cooling towers during the following dates:

- June 23, 2022
- June 30, 2022
- July 7, 2022

Although these dates (6/23, 6/30, and 7/7) are after the start-up of RDU operations, HF Sinclair did not discharge blowdown from the RDU Cooling Tower (Y-26), therefore they are representative of pre-RDU CTB conditions. All seven pre-RDU CTB sample event results are presented in this report, but subsequent statistical calculations utilized only the last three events (6/23, 6/30, and 7/7) since these samples are more representative of all cooling towers (Y-1, Y-2, Y-11, and Y-12) discharging blowdown.

For the pre-RDU WWTP effluent samples, no weekly sampling was conducted or necessary due to the existence of the historical quarterly data required under the December 2017 UICI-8 Permit. As

mentioned above, routine quarterly monitoring for the WWTP effluent occurred on March 28, 2022 (FFY 2022 Q2) and April 26, 2022 (FFY 2022 Q3); these were the last two samples collected prior to RDU start-up.

Again, the RDU start-up period occurred during the June 2022 to September 2022 time frame. Per the PSP, the goal was to sample both the WWTP effluent and CTB during normal and representative operations, at a frequency of once per week for four weeks (i.e., a total of four sampling events post-RDU start-up). As typical for start-up and troubleshooting of a new process unit, issues arose during late summer and fall of 2022 (e.g., hydrogen supply, repairs at the Refinery, etc.) that led to additional delay in representative sample collection. Further, discussions with OCD resulted in the PSP modification to obtain post-RDU samples during times of full-rate production (or as close as possible). The RDU design production is 9,000 bpd, but this could not effectively be held (or quickly changed) for four consecutive weeks. Per the PSP, individual post-RDU sample events were collected on the same day of the week and at the same time of the day. Therefore, the available windows resulted in the following WWTP effluent post-RDU sample dates:

- September 28, 2022 (also satisfied the FFY 2023 Q3 permit sampling event) - RDU production = 6,320 bpd
- November 28, 2022 – RDU production = 8,826 bpd (approximately full-rate)
- December 5, 2022 – RDU production = 9,000 bpd (at full-rate)
- December 12, 2022 – RDU production = 6,300 bpd
- December 19, 2022 – RDU production = 6,100 bpd (extra sample to ensure four consecutive weeks)

Four weekly post-RDU CTB samples were collected concurrently on November 28, December 5, December 12, and December 19, 2022.

In summary, the databases for pre- and post-RDU statistical comparisons met the objectives of the March 11, 2022 PSP and consisted of:

- WWTP effluent = 14 sample events pre-RDU and 5 sample events post-RDU
- CTB = 3 sample events pre-RDU and 4 sample events post-RDU

Sample Data Results and Statistics

Hall Lab reports for the twelve days of pre- and post-RDU PSP sampling are presented in Appendix A, and results (including calculated cation/anion ratios) are compiled in Table 2 (WWTP effluent) and Table 3 (CTB). For both the WWTP and CTB, all parameters found in 40 CFR 261.24(b) (i.e., bottom of the tables – Arsenic through Vinyl Chloride) were less than ("<") the laboratory reporting limit (RL) that was set equal to the TCLP regulatory level. For the post-RDU TCLP parameters, both the total and filtered fractions were analyzed; neither exceeded TCLP regulatory levels.

Summary statistics were calculated for the pre- and post-RDU samples including minimum, average, maximum, and 95 percent Upper Confidence Level (UCL). WWTP effluent statistics are shown in Table 4 and CTB statistics are shown in Table 5. Statistical analyses were performed with all the available pre- and post-RDU start-up data for the WWTP effluent (i.e., fourteen sample events pre-

RDU and five sample events post-RDU). For the CTB effluent, statistical analyses were only performed on the three sample events where all cooling towers were operational (i.e., the three sampling events on June 23, June 30, and July 7, 2022) and the four sampling events post-RDU.

Minimum, average, and maximum values were calculated within the Excel spreadsheet. EPA ProUCL (version 5.1) was used to calculate the 95 percent UCL and the oneway Analysis of Variance (ANOVA; a statistical technique used to compare the means/medians of two or more groups). UCL statistics for Uncensored Full Data Sets were used to determine the general statistics, best fit data distribution, and the 95 percent UCL (via the suggested UCL output from ProUCL). Values less than the RL were conservatively included at the value of the RL (i.e., a result of <4 mg/L was included as a value of 4 mg/L). In addition, classical oneway ANOVA (as opposed to non-parametric) was used to assess if the concentrations after start-up of the RDU were statistically different than the pre-RDU data at a 0.05 level of significance.

As described in the footnotes to Tables 4 and 5, there were times where a 95 percent UCL could not be calculated due to small data size, data distribution (i.e., all results being the same value), and/or skewness. The 95 percent UCL and ANOVA could not be calculated for the TCLP parameters since all results were less than the reporting limit (regulatory level). An example of the ProUCL output is given for chloride in Appendix B; additional parameter outputs have been archived and are available upon request.

PSP Findings

The primary purpose of this sampling program was to confirm if the addition of RDU operations resulted in the WWTP effluent to the UIC wells becoming characteristically hazardous under RCRA. All TCLP parameters (pre- and post-RDU, WWTP effluent and CTB, total and filtered) were less than the laboratory RL which was equal to the regulatory levels contained in 40 CFR Section 261.24(b) for toxicity. Further, flashpoint values were all less than 170 °F which meets the regulatory level for ignitability given in 40 CFR 261.21(a)(1) and all pH values met the regulatory level for corrosivity given in 40 CFR 261.22(a)(1). Reactivity, as determined in 40 CFR 261.23(a)(5), can be deemed as non-hazardous due to low levels of cyanide and sulfide, as well as no statistical difference between pre- and post-RDU concentrations of these two constituents. Therefore, the addition of RDU operations to the WWTP effluent discharged to WDW-1, WDW-2, WDW-3, and WDW4 was not identified as characteristically hazardous.

Another purpose of the PSP was to determine if the new RDU operations had any additional affect/change on the quality (concentration) of the discharge to the UIC wells. This was assessed by conducting a statistical (ANOVA) comparison of pre-RDU vs. post-RDU samples for the non-TCLP WWTP effluent and CTB parameters (since all TCLP parameters were less than the RL). There were four instances where a statistical difference was calculated and detailed in the table footnotes. These instances are summarized follows:

1. WWTP Effluent – Chloride: the statistical difference was a decrease in concentration from pre- to post-RDU, thereby no negative effect was contributed by the RDU.
2. WWTP Effluent – Oxidation Reduction Potential (ORP): while the statistical difference did show an increase in the oxidizing potential of the effluent from pre- to post-RDU, this

parameter is already monitored quarterly in the UICI-8 Permit with no corresponding regulatory level/standard. Since ORP is technically not a toxic pollutant, the increase in ORP is not anticipated to cause negative impacts to groundwater. It is anticipated that ORP will continue to be monitored quarterly in future renewed permits.

3. CTB – Chloride: the statistical difference was a decrease in concentration from pre- to post-RDU, thereby no negative effect was contributed by the RDU.
4. CTB – Sodium: the statistical difference was a decrease in concentration from pre- to post-RDU, thereby no negative effect was caused by the RDU.

The 40 CFR 261 hazardous characteristics of ignitability (261.21), corrosivity (261.22), and reactivity (261.23) were determined by samples for flashpoint, pH, and cyanide/sulfide, respectively. As shown in Tables 4 and 5, none of these parameters (where detections were observed) exhibited statistically significant post-RDU changes/increases to warrant concern.

Given the above, the PSP study has shown no significant (negative) affects/changes to the historical discharge of WWTP effluent to the UIC wells, nor any anticipated affect from a potential emergency discharge of CTB to the UIC wells.

PSP Conclusions and Recommendations

Current Refinery WWTP capacity is sufficient to treat the additional RDU wastewater stream. Any corresponding RDU contribution to the influent constituent concentrations is reduced via treatment such that Navajo maintains compliance with limitations set forth in Discharge Permit UICI-8. Since these limitations are equivalent to the 40 CFR 261.24 limits for toxicity, the WWTP effluent discharged to the UIC wells is deemed non-hazardous under RCRA (i.e., all pre-RDU and post-RDU concentrations were below the analytical RLs equivalent to the corresponding 40 CFR 261.24 regulatory levels). Hazardous characteristics for ignitability (261.21), corrosivity (261.22) and reactivity (261.23) were also not present.

Based on available data, the RDU wastewater stream was not identified to significantly affect/change the concentration characteristics of the Refinery WWTP discharge to the UIC well network in a negative manner. Generally, pre-RDU effluent concentrations were statistically similar to post-RDU effluent concentrations for non-TCLP parameters reported as greater than the reporting limit. For those few parameters where a statistically significant change was noted, this change was either a decrease in concentration (i.e., post-RDU results were less than pre-RDU results) or was for a parameter already monitored quarterly in the UICI-8 Permit with no corresponding regulatory level/standard.

Overall, the addition of RDU activities does not alter the operation, maintenance, or monitoring nor contribute to significant increases in pollutant concentrations of the four underground injection wells. Based on results from the PSP program, Navajo contends additional sampling (beyond the routine quarterly monitoring for parameters in the current permit) is not warranted.

HF Sinclair recommends that OCD and Navajo together make a determination based on this PSP study that no revisions to the current Discharge Permit UICI-8 are necessary in regard to injection fluids sampling (Section 2.A). Current permit parameters and sampling frequency remain valid for

permit renewal occurring in 2023. HF Sinclair further recommends that any CTB sampling remain absent from the permit and that OCD consider the removal of chlordane from injection fluids quarterly monitoring since 1) no additional pesticide parameters are included in the permit, and 2) PSP results were less than the RLs for all pesticides and herbicides. HF Sinclair does acknowledge OCD's desire to assess future quarterly monitoring for one year for any changes over PSP baseline levels described in this report.

TABLES

TABLE 1. LIST OF PSP PARAMETERS
SOURCE: DISCHARGE PERMIT UICI-8 SECTION 2.A AND 40 CFR 261.24(b)

EPA Haz Waste #	Parameter	Laboratory Method (a)	Laboratory Reporting Level (mg/L) (b)
D004	Arsenic	6010B	5
D005	Barium	6010B	100
D018	Benzene	8260B	0.5
D006	Cadmium	6010B	1
D019	Carbon tetrachloride	8260B	0.5
D020	Chlordane	8081A	0.03
D021	Chlorobenzene	8260B	100
D022	Chloroform	8260B	6
D007	Chromium	6010B	5
D023	o-Cresol	8270C	200
D024	m-Cresol	8270C	200
D025	p-Cresol	8270C	200
D026	Cresol	8270C	200
D016	2,4-D	8151	10
D027	1,4-Dichlorobenzene	8260B	7.5
D028	1,2-Dichloroethane	8260B	0.5
D029	1,1-Dichloroethylene	8260B	0.7
D030	2,4-Dinitrotoluene	8270C	0.13
D012	Endrin	8081A	0.02
D031	Heptachlor (and its epoxide)	8081A	0.008
D032	Hexachlorobenzene	8270C	0.13
D033	Hexachlorobutadiene	8270C	0.5
D034	Hexachloroethane	8270C	3
D008	Lead	6010B	5
D013	Lindane	8081A	0.4
D009	Mercury	7470B	0.2
D014	Methoxychlor	8081A	10
D035	Methyl ethyl ketone	8260B	200
D036	Nitrobenzene	8270C	2
D037	Pentachlorophenol	8270C	100
D038	Pyridine	8270C	5
D010	Selenium	6010B	1
D011	Silver	6010B	5
D039	Tetrachloroethylene	8260B	0.7
D015	Toxaphene	8081A	0.5
D040	Trichloroethylene	8260B	0.5
D041	2,4,5-Trichlorophenol	8270C	400
D042	2,4,6-Trichlorophenol	8270C	2
D017	2,4,5-TP (Silvex)	8151	1
D043	Vinyl chloride	8260B	0.2
--	pH	9040C	--
--	Eh (ORP)	2580	--
--	Specific Conductance	2510B	10 umho/cm
--	Specific Gravity	not given	1
--	Temperature	provided with pH	--
--	Fluoride	300.0	0.1
--	Calcium	200.7	1
--	Potassium	200.7	1
--	Magnesium	200.7	1
--	Sodium	200.7	1
--	Bicarbonate	2320B	20
--	Carbonate	2320B	2
--	Chloride	300.0	0.5
--	Sulfate	300.0	0.5
--	Bromide	300.0	0.1
--	Total Dissolved Solids	2540C	40
--	Total Suspended Solids	2540D	4
--	Cation/anion balance	Calculation	--
D001	Ignitability	Flashpoint (D93/1010A)	--
D002	Corrosivity	Corrosivity by pH (9040C)	--
D003	Reactivity	Reactive Cyanide, Sulfide (4500 CN/S2)	--

For metals and organics with an EPA Hazardous Waste Number:
(a) = Laboratory method performed on both total and filtered fraction in accordance with July 1992 EPA SW-846 Test Method 1311 (TCLP)
(b) = Laboratory Reporting Limit equivalent to TCLP Regulatory Level given in 40 CFR 261.24(b)

TABLE 2. HF SINCLAIR WWTP EFFLUENT CONCENTRATIONS INJECTED INTO WELLS WDW-1, WDW-2, WDW-3, AND WDW-4
"<" = value less than the laboratory reporting limit (RL)

			PRE-RDU SAMPLING														POST-RDU SAMPLING				
Parameter	Units	UICI-8 Condition 2.A Regulatory Level (a)	3/26/2019 (c)	6/26/2019 (c)	9/30/2019	12/30/2019	3/29/2020	6/30/2020 (c)	9/24/2020 (c)	1/22/2021	3/21/2021	5/24/2021 (c)	9/29/2021	12/21/2021 (c)	3/28/2022	4/26/2022	9/28/2022	11/28/2022 (b)	12/5/2022 (b)	12/12/2022 (b)	12/19/2022 (b)
Alkalinity, bicarbonate	mg/L	--	488.6	537.6	408.2	460.7	1100.0	600.2	474.4	421.3	333.1	498.3	404.3	826.6	477.1	626.9	582.9	563.6	538.1	511.1	370.5
Alkalinity, carbonate	mg/L	--	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Alkalinity, total	mg/L	--	488.6	537.6	408.2	460.7	1100.0	600.2	474.4	421.3	333.1	498.3	404.3	826.6	477.1	626.9	582.9	563.6	538.1	511.1	370.5
Conductivity	uS/cm	--	4100	6100	5100	6400	6800	8000	7700	6500	6400	5700	7100	7400	6300	6500	6900	6100	5800	5800	5800
Cyanide (Reactivity)	mg/L	--	0.0141	0.0269	0.0927	0.00549	0.0110	0.0585	0.0379	0.0358	0.0384	0.0319	0.0293	<0.05	0.0103	0.0133	0.0207	0.0120	0.0113	0.0151	0.0140
Flashpoint (Ignitability)	deg F	--	<170	<170	<170	<170	<170	<170	<170	<170	<170	<170		<170	<170	<170	<170	<170	<170	<170	<170
Oxidation Reduction Potential	mV	--	192	50	190	80	102	53	171	155	83.3	122	158	-10.4	34.9	157	129	165	283	95.8	338
pH (Corrosivity)	su	--	7.56	7.47	7.69	7.39	7.84	7.77	7.53	7.27	7.40	7.53		7.39	7.47	7.25	7.83	7.66	7.81	7.77	7.26
Specific Gravity	su	--	1.0010	1.0020	1.0000	1.0100	1.0010	1.0060	1.0000	1.0030	1.0000	1.0020	1.0050	1.0020	0.9968	0.9981	0.9989	1.0070	0.9956	1.0010	0.9954
Sulfide (Reactivity)	mg/L	--	0.123	<0.05	<0.05	0.050	0.096	0.084	<0.05	<0.05	0.065	<0.05	0.121	0.334	<0.05	0.108	<0.05	<0.05	<0.05	<0.05	0.075
Total Dissolved Solids	mg/L	--	3130	4570	3520	4480	5120	5830	5850	4940	5070	4600	4910	5340	4660	4640	5120	4420	4210	4170	4350
Total Suspended Solids	mg/L	--													14	21	28	30	25	30	38
Bromide	mg/L	--	0.94	0.59	<0.5	0.88	2.50	<0.5	1.30	1.30	0.65	0.59	0.81	0.80	0.61	0.62	<0.5	<0.5	0.84	0.90	0.72
Chloride	mg/L	--	420	570	430	620	730	440	860	520	520	390	510	800	720	600	490	340	340	340	520
Fluoride	mg/L	--	9.6	23	31	10	9.8	44	28	23	57	22	67	57	35	24	65	47	19	34	24
Nitrate	mg/L	--							0.79		0.72		0.90	<0.5	0.75	0.88	2.50		1.00	0.91	0.78
Nitrate/Nitrite	mg/L	--	<1	1.2	1.2	<1	<1	<1		<1		<1						<1			
Nitrite	mg/L	--							<0.5		<0.5		<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
Phosphorus, total	mg/L	--	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<10	<50	<2.5	<2.5
Sulfate	mg/L	--	1500	2300	1700	2200	2100	3400	2400	2400	2300	2300	2300	1800	2300	2400	2300	2300	2000	2100	2000
Calcium	mg/L	--	330	470	340	420	310	430	390	440	400	380	340	340	460	490	400	380	380	400	400
Magnesium	mg/L	--	100	140	110	130	120	140	130	150	140	120	110	110	140	160	130	130	130	120	120
Potassium	mg/L	--	64	69	100	52	88	290	360	160	270	110	320	140	130	100	230	160	100	140	130
Sodium	mg/L	--	360	640	570	650	1200	1300	1000	810	780	800	780	850	640	580	880	690	750	710	710
Cation/Anion Ratio	__:1	--	--	--	--	--	--	--	--	--	--	--	--	--	0.82	0.81	0.97	0.89	1.03	0.98	0.98
Arsenic	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Barium	mg/L	TCLP=100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Cadmium	mg/L	TCLP=1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Lead	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Mercury	mg/L	TCLP=0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Selenium	mg/L	TCLP=1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silver	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlordane	mg/L	TCLP=0.03	<0.03			<0.03			<0.03	<0.03	<0.03	<0.03		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	mg/L	TCLP=0.02													<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Lindane	mg/L	TCLP=0.4													<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Heptachlor	mg/L	TCLP=0.008													<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Heptachlor Epoxide	mg/L	TCLP=0.008													<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Methoxychlor	mg/L	TCLP=10													<10	<10	<10	<10	<10	<10	<10
Toxaphene	mg/L	TCLP=0.50													<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,4,5-TP (Silvex)	mg/L	TCLP = 1													<1	<1	<1	<1	<1	<1	<1
2,4-D	mg/L	TCLP = 10													<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
1,2-Dichloroethane	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	mg/L	TCLP=7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
2,4,5-Trichlorophenol	mg/L	TCLP=400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400		<400	<400	<400	<400	<400	<400	<400	<400
2,4,6-Trichlorophenol	mg/L	TCLP=2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	<2	<2	<2	<2	<2	<2	<2
2,4-Dinitrotoluene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13		<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13
2-Butanone	mg/L	TCLP=200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
2-Methylphenol	mg/L	TCLP=200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		<200	<200	<200	<200	<200	<200	<200	<200
3+4-Methylphenol	mg/L	TCLP=200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		<200	<200	<200	<200	<200	<200	<200	<200
Benzene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	mg/L	TCLP=100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Chloroform	mg/L	TCLP=6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Cresols	mg/L	TCLP=200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		<200	<200	<200	<200	<200	<200	<200	<200
Hexachlorobenzene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13		<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13
Hexachlorobutadiene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloroethane	mg/L	TCLP=3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	<3	<3	<3	<3	<3	<3	<3
Nitrobenzene	mg/L	TCLP=2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	<2	<2	<2	<2	<2	<2	<2
Pentachlorophenol	mg/L	TCLP=100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	<100	<100	<100	<100	<100	<100	<100
Pyridine	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
Trichloroethene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	mg/L	TCLP=0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

(a) TCLP = Toxicity Characteristic Leaching Procedure with regulatory level given in 40 CFR 261.24(b)
(b) TCLP parameters run as both total and filtered fractions; all results less than corresponding regulatory level
(c) Lab reports include TCLP metals analyzed with reporting limit (RL) less than TCLP regulatory level

TABLE 3. HF SINCLAIR COOLING TOWER BLOWDOWN CONCENTRATIONS
"<" = value less than the laboratory reporting limit (RL)

			PRE-RDU SAMPLING							POST-RDU SAMPLING			
Parameter	Units	UICI-8 Condition 2.A Regulatory Level (a)	3/28/2022 (c)	4/26/2022 (c)	5/3/2022 (c)	5/10/2022 (c)	6/23/2022	6/30/2022	7/7/2022	11/28/2022 (b)	12/5/2022 (b)	12/12/2022 (b)	12/19/2022 (b)
Alkalinity, bicarbonate	mg/L	--	35.00	49.16	63.12	59.36	34.24	65.76	110.80	155.40	61.80	25.72	62.56
Alkalinity, carbonate	mg/L	--	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Alkalinity, total	mg/L	--	35.00	49.16	63.12	59.36	34.24	65.76	110.80	155.40	61.80	25.72	62.56
Conductivity	uS/cm	--	1700	1700	2100	2100	1800	1700	2300	1500	1600	1300	2100
Cyanide (Reactivity)	mg/L	--	<0.005	<0.005	<0.005	<0.005	0.00939	<0.005	<0.005	0.00544	<0.005	0.00590	<0.005
Flashpoint (Ignitability)	deg F	--	<170	<170	<170	<170	<170	<170	<170	<170	<170	<170	<170
Oxidation Reduction Potential	mV	--	65.8	149	192	203	198	292	204	194	307	263	362
pH (Corrosivity)	su	--	7.20	7.54	7.57	7.88	6.96	8.10	8.06	8.33	7.80	7.34	7.70
Specific Gravity	su	--	0.9900	0.9986	0.9999	0.9977	0.9962	0.9976	0.9967	0.9995	0.9980	0.9969	0.9980
Sulfide (Reactivity)	mg/L	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Dissolved Solids	mg/L	--	1380	1500	1880	1970	1470	1380	2090	1160	1410	1080	1940
Total Suspended Solids	mg/L	--	9.0	9.0	6.0	12.0	6.0	7.0	<4	<4	<4	<4	<4
Bromide	mg/L	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.1	<0.1
Chloride	mg/L	--	100	58	58	51	78	100	81	59	33	35	54
Fluoride	mg/L	--	1.1	1.3	1.8	2.1	2.2	1.3	2.1	1.2	1.4	1.1	1.7
Nitrate	mg/L	--	4.9	1.5	1.8	1.4	3.4	3.4	1.7		0.94	1.6	1.5
Nitrate/Nitrite	mg/L	--								<1			
Nitrite	mg/L	--	<0.1	<0.1	<0.1	<0.1	6.50	<0.1	<0.1		<0.5	<0.1	<0.1
Phosphorus, total	mg/L	--	2.0	1.8	12	<10	2.4	<10	<10	<2.5	<5	<10	<10
Sulfate	mg/L	--	740	960	1100	1200	940	810	1200	600	820	690	2200
Calcium	mg/L	--	220	250	310	340	230	200	330	180	220		320
Magnesium	mg/L	--	64	75	99	100	72	60	100	61	75		95
Potassium	mg/L	--	1.9	2.1	2.7	2.8	1.9	1.8	2.6	1.5	2.0		2.5
Sodium	mg/L	--	81	60	65	57	71	83	77	50	39		58
Cation/Anion Ratio	__:1	--	1.01	0.93	1.02	1.00	0.88	0.87	0.95	0.93	0.98	0.94	0.54
Arsenic	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Barium	mg/L	TCLP=100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Cadmium	mg/L	TCLP=1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Lead	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Mercury	mg/L	TCLP=0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Selenium	mg/L	TCLP=1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silver	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlordane	mg/L	TCLP=0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	mg/L	TCLP=0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Lindane	mg/L	TCLP=0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Heptachlor	mg/L	TCLP=0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Heptachlor Epoxide	mg/L	TCLP=0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Methoxychlor	mg/L	TCLP=10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Toxaphene	mg/L	TCLP=0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,4,5-TP (Silvex)	mg/L	TCLP = 1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2,4-D	mg/L	TCLP = 10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
1,2-Dichloroethane	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	mg/L	TCLP=7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
2,4,5-Trichlorophenol	mg/L	TCLP=400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400	<400
2,4,6-Trichlorophenol	mg/L	TCLP=2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2,4-Dinitrotoluene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13
2-Butanone	mg/L	TCLP=200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
2-Methylphenol	mg/L	TCLP=200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
3+4-Methylphenol	mg/L	TCLP=200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Benzene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	mg/L	TCLP=100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Chloroform	mg/L	TCLP=6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Cresols	mg/L	TCLP=200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Hexachlorobenzene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13
Hexachlorobutadiene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachloroethane	mg/L	TCLP=3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Nitrobenzene	mg/L	TCLP=2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Pentachlorophenol	mg/L	TCLP=100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Pyridine	mg/L	TCLP=5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
Trichloroethene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	mg/L	TCLP=0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

(a) TCLP = Toxicity Characteristic Leaching Procedure with regulatory level given in 40 CFR 261.24(b)
(b) TCLP parameters run as both total and filtered fractions; all results less than corresponding regulatory level
(c) These samples dates did not include all cooling towers (i.e., Y-12 was not in operation), therefore Table 4 statistics calculations do not include these values

TABLE 4. HF SINCLAIR WWTP EFFLUENT CONCENTRATION STATISTICS

"<" = value less than the laboratory reporting limit (RL); for statistics calculations, "<" results conservatively substituted with RL

			PRE-RDU SAMPLING				POST-RDU SAMPLING				ONE-WAY ANOVA	
Parameter	Units	UICI-8 Condition 2.A Regulatory Level (a)	Min	Average	Max	95% UCL (b)	Min	Average	Max	95% UCL (b)	p-value (c)	Significant? (Yes/No)
Alkalinity, bicarbonate	mg/L	--	333.1	547.0	1100.0	--	370.5	513.2	582.9	--	--	--
Alkalinity, carbonate	mg/L	--	<2	<2	<2	--	<2	<2	<2	--	--	--
Alkalinity, total	mg/L	--	333.1	547.0	1100.0	656.2	370.5	513.2	582.9	593.6	0.723	No
Conductivity	uS/cm	--	4100	6436	8000	6918	5800	6080	6900	6534	0.468	No
Cyanide (Reactivity)	mg/L	--	0.0055	0.0325	0.0927	0.0436	0.0113	0.0146	0.0207	0.0182	0.112	No
Flashpoint (Ignitability)	deg F	--	<170	<170	<170	--	<170	<170	<170	--	--	--
Oxidation Reduction Potentia	mV	--	-10.4	109.8	192.0	139.8	95.8	202.2	338.0	301.0	0.030	**Yes[g]**
pH (Corrosivity)	su	--	7.25	7.50	7.84	7.59	7.26	7.67	7.83	7.89	0.134	No
Specific Gravity	su	--	0.9968	1.0019	1.0100	1.0040	0.9954	0.9996	1.0070	1.0040	0.245	No
Sulfide (Reactivity)	mg/L	--	<0.05	0.092	0.334	0.179	<0.05	0.055	0.075	0.066	0.304	No
Total Dissolved Solids	mg/L	--	3130	4761	5850	5116	4170	4454	5120	4822	0.399	No
Total Suspended Solids	mg/L	--	14	18	21	(d)	25	30	38	35	--	--
Bromide	mg/L	--	<0.5	0.90	2.50	1.19	<0.5	0.69	0.90	0.87	0.410	No
Chloride	mg/L	--	390	581	860	651	340	406	520	493	0.026	**Yes[f]**
Fluoride	mg/L	--	9.6	31.5	67.0	40.2	19.0	37.8	65.0	55.5	0.520	No
Nitrate	mg/L	--	<0.5	0.76	0.90	0.88	0.78	1.30	2.50	(e)	--	--
Nitrate/Nitrite	mg/L	--	<1.0	1.1	1.2	--	<1	<1	<1	--	--	--
Nitrite	mg/L	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Phosphorus, total	mg/L	--	<2.5	<2.5	<2.5	--	<2.5	<13.5	<50	--	--	--
Sulfate	mg/L	--	1500	2243	3400	2450	2000	2140	2300	2285	0.619	No
Calcium	mg/L	--	310	396	490	423	380	392	400	402	0.890	No
Magnesium	mg/L	--	100	129	160	137	120	126	130	131	0.754	No
Potassium	mg/L	--	52	161	360	210	100	152	230	198	0.857	No
Sodium	mg/L	--	360	783	1300	902	690	748	880	821	0.767	No
Cation/Anion Ratio	__:1	--	0.81	0.82	0.82	--	0.89	0.97	1.03	--	--	--
Arsenic	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Barium	mg/L	TCLP=100	<100	<100	<100	--	<100	<100	<100	--	--	--
Cadmium	mg/L	TCLP=1	<1	<1	<1	--	<1	<1	<1	--	--	--
Chromium	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Lead	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Mercury	mg/L	TCLP=0.2	<0.02	<0.02	<0.02	--	<0.02	<0.02	<0.02	--	--	--
Selenium	mg/L	TCLP=1	<1	<1	<1	--	<1	<1	<1	--	--	--
Silver	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Chlordane	mg/L	TCLP=0.03	<0.03	<0.03	<0.03	--	<0.03	<0.03	<0.03	--	--	--
Endrin	mg/L	TCLP=0.02	<0.02	<0.02	<0.02	--	<0.02	<0.02	<0.02	--	--	--
Lindane	mg/L	TCLP=0.4	<0.4	<0.4	<0.4	--	<0.4	<0.4	<0.4	--	--	--
Heptachlor	mg/L	TCLP=0.008	<0.008	<0.008	<0.008	--	<0.008	<0.008	<0.008	--	--	--
Heptachlor Epoxide	mg/L	TCLP=0.008	<0.008	<0.008	<0.008	--	<0.008	<0.008	<0.008	--	--	--
Methoxychlor	mg/L	TCLP=10	<10	<10	<10	--	<10	<10	<10	--	--	--
Toxaphene	mg/L	TCLP=0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	--	--	--
2,4,5-TP (Silvex)	mg/L	TCLP = 1	<1	<1	<1	--	<1	<1	<1	--	--	--
2,4-D	mg/L	TCLP = 10	<10	<10	<10	--	<10	<10	<10	--	--	--
1,1-Dichloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	--	<0.7	<0.7	<0.7	--	--	--
1,2-Dichloroethane	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
1,4-Dichlorobenzene	mg/L	TCLP=7.5	<7.5	<7.5	<7.5	--	<7.5	<7.5	<7.5	--	--	--
2,4,5-Trichlorophenol	mg/L	TCLP=400	<400	<400	<400	--	<400	<400	<400	--	--	--
2,4,6-Trichlorophenol	mg/L	TCLP=2	<2	<2	<2	--	<2	<2	<2	--	--	--
2,4-Dinitrotoluene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	--	--	--
2-Butanone	mg/L	TCLP=200	<200	<200	<200	--	<200	<200	<200	--	--	--
2-Methylphenol	mg/L	TCLP=200	<200	<200	<200	--	<200	<200	<200	--	--	--
3+4-Methylphenol	mg/L	TCLP=200	<200	<200	<200	--	<200	<200	<200	--	--	--
Benzene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Carbon tetrachloride	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Chlorobenzene	mg/L	TCLP=100	<100	<100	<100	--	<100	<100	<100	--	--	--
Chloroform	mg/L	TCLP=6	<6	<6	<6	--	<6	<6	<6	--	--	--
Cresols	mg/L	TCLP=200	<200	<200	<200	--	<200	<200	<200	--	--	--
Hexachlorobenzene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	--	--	--
Hexachlorobutadiene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Hexachloroethane	mg/L	TCLP=3	<3	<3	<3	--	<3	<3	<3	--	--	--
Nitrobenzene	mg/L	TCLP=2	<2	<2	<2	--	<2	<2	<2	--	--	--
Pentachlorophenol	mg/L	TCLP=100	<100	<100	<100	--	<100	<100	<100	--	--	--
Pyridine	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Tetrachloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	--	<0.7	<0.7	<0.7	--	--	--
Trichloroethene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Vinyl chloride	mg/L	TCLP=0.2	<0.2	<0.2	<0.2	--	<0.2	<0.2	<0.2	--	--	--

(a) TCLP = Toxicity Characteristic Leaching Procedure with regulatory level given in 40 CFR 261.24(b)
(b) UCL = Upper Confidence Limit
(c) p-value <= 0.05 suggests that there are significant differences in mean/median characteristics of the pre- and post-RDU data sets at 0.05 level of significance
(d) ProUCL was unable to complete 95% UCL statistics due to the data set being too small to compute reliable and meaningful statistics and estimates
(e) ProUCL cannot provide a suggested 95% UCL, due to data size, data distribution, and skewness
(f) The significant difference in mean/median characteristics of the pre- and post-RDU data sets indicates a significant decrease in concentrations which is not of concern
(g) ORP is already monitored quarterly in the UICI-8 Permit with no corresponding regulatory level/standard

TABLE 5. HF SINCLAIR COOLING TOWER BLOWDOWN CONCENTRATION STATISTICS

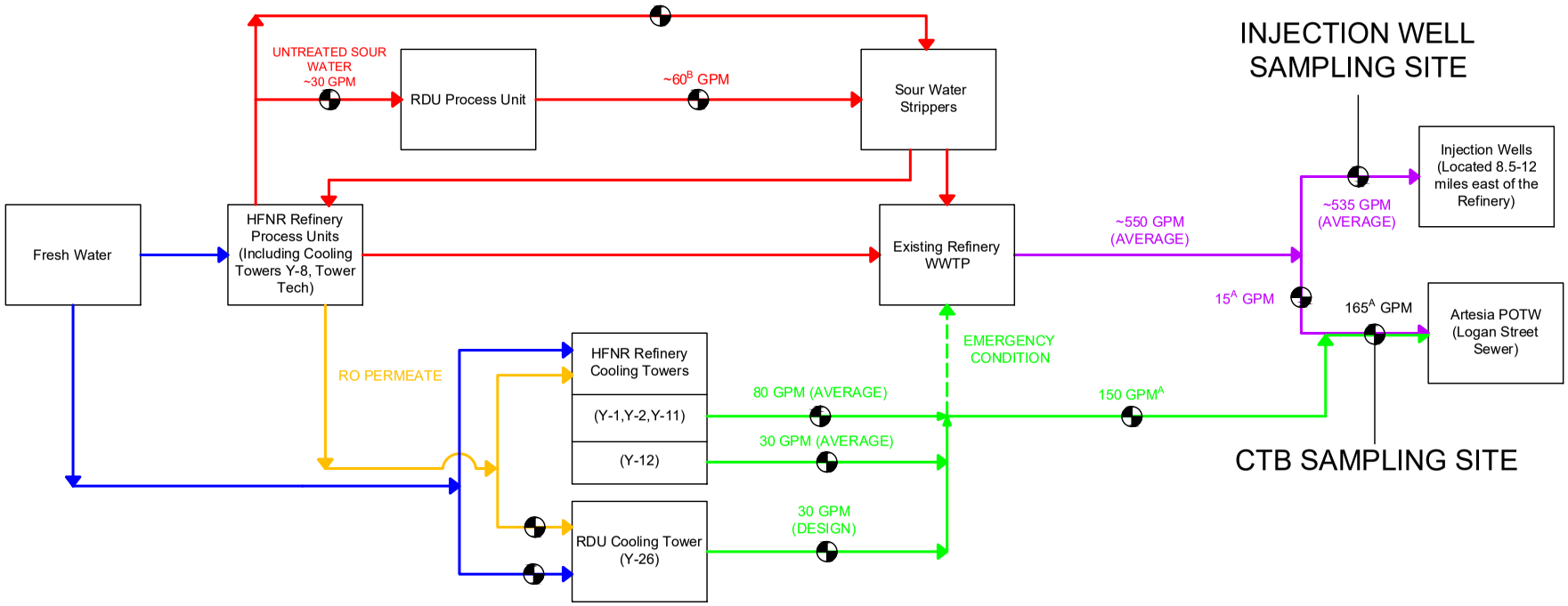
"<" = value less than the laboratory reporting limit (RL); for statistics calculations, "<" results conservatively substituted with RL

			PRE-RDU SAMPLING				POST-RDU SAMPLING				ONE-WAY ANOVA	
Parameter	Units	UICI-8 Condition 2.A Regulatory Level (a)	Min	Average	Max	95% UCL (b)	Min	Average	Max	95% UCL (b)	p-value (c)	Significant? (Yes/No)
Alkalinity, bicarbonate	mg/L	--	34.24	70.27	110.80	--	25.72	76.37	155.40	--	--	--
Alkalinity, carbonate	mg/L	--	<2	<2	<2	--	<2	<2	<2	--	--	--
Alkalinity, total	mg/L	--	34.24	70.27	110.80	135.10	25.72	76.37	155.40	141.6	0.878	No
Conductivity	uS/cm	--	1700	1933	2300	2475	1300	1625	2100	2025	0.279	No
Cyanide (Reactivity)	mg/L	--	<0.005	0.0065	0.0094	0.0107	<0.005	0.0053	0.0059	0.0058	0.408	No
Flashpoint (Ignitability)	deg F	--	<170	<170	<170	--	<170	<170	<170	--	--	--
Oxidation Reduction Potential	mV	--	198	231	292	320	194	282	362	365	0.354	No
pH (Corrosivity)	su	--	6.96	7.71	8.10	8.80	7.34	7.79	8.33	8.27	0.837	No
Specific Gravity	su	--	0.9962	0.9968	0.9976	0.9980	0.9969	0.9981	0.9995	0.9990	0.138	No
Sulfide (Reactivity)	mg/L	--	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	--	--	--
Total Dissolved Solids	mg/L	--	1380	1647	2090	2298	1080	1398	1940	1854	0.438	No
Total Suspended Solids	mg/L	--	<4	5.7	7.0	8.2	<4	<4	<4	(d)	0.074	No
Bromide	mg/L	--	<0.1	<0.1	<0.1	--	<0.1	<0.3	<0.5	--	--	--
Chloride	mg/L	--	78	86	100	106	33	45	59	61	0.008	**Yes(f)**
Fluoride	mg/L	--	1.30	1.87	2.20	2.70	1.10	1.35	1.70	1.66	0.130	No
Nitrate	mg/L	--	1.70	2.83	3.40	4.49	0.94	1.35	1.60	1.95	0.069	No
Nitrate/Nitrite	mg/L	--	--	--	--	--	<1	<1	<1	--	--	--
Nitrite	mg/L	--	<0.1	2.23	6.50	--	<0.1	<0.2	<0.5	--	--	--
Phosphorus, total	mg/L	--	2.4	7.5	<10	--	<2.5	<6.9	<10	--	--	--
Sulfate	mg/L	--	810	983	1200	1318	600	1078	2200	(e)	0.845	No
Calcium	mg/L	--	200	253	330	368	180	240	320	362	0.827	No
Magnesium	mg/L	--	60	77	100	112	61	77	95	106	0.984	No
Potassium	mg/L	--	1.8	2.1	2.6	2.8	1.5	2.0	2.5	2.8	0.807	No
Sodium	mg/L	--	71	77	83	87	39	49	58	65	0.013	**Yes(f)**
Cation/Anion Ratio	__:1	--	0.87	0.90	0.95		0.54	0.85	0.98			
Arsenic	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Barium	mg/L	TCLP=100	<100	<100	<100	--	<100	<100	<100	--	--	--
Cadmium	mg/L	TCLP=1	<1	<1	<1	--	<1	<1	<1	--	--	--
Chromium	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Lead	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Mercury	mg/L	TCLP=0.2	<0.02	<0.02	<0.02	--	<0.02	<0.02	<0.02	--	--	--
Selenium	mg/L	TCLP=1	<1	<1	<1	--	<1	<1	<1	--	--	--
Silver	mg/L	TCLP=5	<5	<5	<5	--	<5	<5	<5	--	--	--
Chlordane	mg/L	TCLP=0.03	<0.03	<0.03	<0.03	--	<0.03	<0.03	<0.03	--	--	--
Endrin	mg/L	TCLP=0.02	<0.02	<0.02	<0.02	--	<0.02	<0.02	<0.02	--	--	--
Lindane	mg/L	TCLP=0.4	<0.4	<0.4	<0.4	--	<0.4	<0.4	<0.4	--	--	--
Heptachlor	mg/L	TCLP=0.008	<0.008	<0.008	<0.008	--	<0.008	<0.008	<0.008	--	--	--
Heptachlor Epoxide	mg/L	TCLP=0.008	<0.008	<0.008	<0.008	--	<0.008	<0.008	<0.008	--	--	--
Methoxychlor	mg/L	TCLP=10	<10	<10	<10	--	<10	<10	<10	--	--	--
Toxaphene	mg/L	TCLP=0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	--	--	--
2,4,5-TP (Silvex)	mg/L	TCLP = 1	<1	<1	<1	--	<1	<1	<1	--	--	--
2,4-D	mg/L	TCLP = 10	<10	<10	<10	--	<10	<10	<10	--	--	--
1,1-Dichloroethene	mg/L	TCLP=0.7	<0.7	<0.7	<0.7	--	<0.7	<0.7	<0.7	--	--	--
1,2-Dichloroethane	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
1,4-Dichlorobenzene	mg/L	TCLP=7.5	<7.5	<7.5	<7.5	--	<7.5	<7.5	<7.5	--	--	--
2,4,5-Trichlorophenol	mg/L	TCLP=400	<400	<400	<400	--	<400	<400	<400	--	--	--
2,4,6-Trichlorophenol	mg/L	TCLP=2	<2	<2	<2	--	<2	<2	<2	--	--	--
2,4-Dinitrotoluene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	--	--	--
2-Butanone	mg/L	TCLP=200	<200	<200	<200	--	<200	<200	<200	--	--	--
2-Methylphenol	mg/L	TCLP=200	<200	<200	<200	--	<200	<200	<200	--	--	--
3+4-Methylphenol	mg/L	TCLP=200	<200	<200	<200	--	<200	<200	<200	--	--	--
Benzene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Carbon tetrachloride	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Chlorobenzene	mg/L	TCLP=100	<100	<100	<100	--	<100	<100	<100	--	--	--
Chloroform	mg/L	TCLP=6	<6	<6	<6	--	<6	<6	<6	--	--	--
Cresols	mg/L	TCLP=200	<200	<200	<200	--	<200	<200	<200	--	--	--
Hexachlorobenzene	mg/L	TCLP=0.13	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	--	--	--
Hexachlorobutadiene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Hexachloroethane	mg/L	TCLP=3	<0.5	<0.5	<0.5	--	<3	<3	<3	--	--	--
Nitrobenzene	mg/L	TCLP=2	<0.5	<0.5	<0.5	--	<2	<2	<2	--	--	--
Pentachlorophenol	mg/L	TCLP=100	<0.5	<0.5	<0.5	--	<100	<100	<100	--	--	--
Pyridine	mg/L	TCLP=5	<0.5	<0.5	<0.5	--	<5	<5	<5	--	--	--
Tetrachloroethene	mg/L	TCLP=0.7	<0.5	<0.5	<0.5	--	<0.7	<0.7	<0.7	--	--	--
Trichloroethene	mg/L	TCLP=0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	--	--
Vinyl chloride	mg/L	TCLP=0.2	<0.5	<0.5	<0.5	--	<0.2	<0.2	<0.2	--	--	--

(a) TCLP = Toxicity Characteristic Leaching Procedure with regulatory level given in 40 CFR 261.24(b)
(b) UCL = Upper Confidence Limit
(c) p-value <= 0.05 suggests that there are significant differences in mean/median characteristics of the pre- and post-RDU data sets at 0.05 level of significance
(d) A 95% UCL cannot be calculated due to all samples having the equivalent value (i.e., <4 mg/L)
(e) ProUCL cannot provide a suggested 95% UCL, due to data size, data distribution, and skewness
(f) The significant difference in mean/median characteristics of the pre- and post-RDU data sets indicates a significant decrease in concentrations which is not of concern

FIGURES

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NOTES
A DENOTES CURRENT LIMIT
B INCLUDES 30 GPM CREATED FROM RDU PROCESS

LEGEND
- FRESH WATER SUPPLY
- RO PERMEATE
- COOLING TOWER BLOWDOWN
- PROCESS UNIT DISCHARGE
- WWTP EFFLUENT

FLOW MONITORING LOCATION

HF Sinclair Navajo Refining

Drawing
Refinery/RDU Water Flow Diagram

Date	February 27, 2023	Scale	AS SHOWN
File Name	HF Artesia RDU WW UIC PSP	Project No.	

FIGURE 1

SLR

Received by OCD: 3/6/2023 7:46:22 AM
Released to Imaging: 5/24/2023 4:44:56 PM
Drawing path: N:\Portland\Figures\23.0\.dgn - Navajo Refining Artesia\RDU-FIG Wastewater\HF Artesia RDU WW UIC PSP.dwg



HF Sinclair Navajo Refining

Drawing

WWTP EFFLUENT SAMPLE LOCATION

Date	February 27, 2023	Scale	AS SHOWN
File Name	HF Artesia RDU WW UIC PSP	Project No.	

FIGURE 2

SLR

Drawing path: N:\Portland\Figures\123.01368 - HollyFrontier Navajo Refining Artesia\RDU.PTU Wastewater\HF Artesia RDU WW UIC PSP.dwg

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HF Sinclair Navajo Refining

Drawing

CTB SAMPLE LOCATION

Date	February 27, 2023	Scale	AS SHOWN
File Name	HF Artesia RDU WW UIC PSP	Project No.	

FIGURE 3

SLR

Received by OCD: 3/6/2023 7:46:22 AM

Navajo Refining Artesia\RDU PTU Wastewater\HF Artesia RDU WW UIC PSP.dwg

Released to Imaging: 5/24/2023 4:44:56 PM

APPENDIX A

Hall Environmental Laboratory Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

May 13, 2022

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2203E91

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/29/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2203E91**
Date: **5/13/2022**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2203E91**
Date Reported: **5/13/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2203E91-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 3/28/2022 9:35:00 AM
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	4/8/2022 11:41:10 AM	66537
Endrin	ND	0.000049	0.020		mg/L	1	4/8/2022 11:41:10 AM	66537
gamma-BHC (Lindane)	ND	0.000041	0.40		mg/L	1	4/8/2022 11:41:10 AM	66537
Heptachlor	ND	0.000041	0.0080		mg/L	1	4/8/2022 11:41:10 AM	66537
Heptachlor epoxide	ND	0.000047	0.0080		mg/L	1	4/8/2022 11:41:10 AM	66537
Methoxychlor	ND	0.000046	10		mg/L	1	4/8/2022 11:41:10 AM	66537
Toxaphene	ND	0.00050	0.50		mg/L	1	4/8/2022 11:41:10 AM	66537
Surr: Decachlorobiphenyl	87.1	0	73-119		%Rec	1	4/8/2022 11:41:10 AM	66537
Surr: Tetrachloro-m-xylene	117	0	36.6-84.1	S	%Rec	1	4/8/2022 11:41:10 AM	66537
EPA METHOD 300.0: ANIONS							Analyst: **CAS**	
Fluoride	35	2.0	5.0	*	mg/L	50	4/8/2022 10:49:57 AM	R87132
Chloride	720	12	25	*	mg/L	50	4/8/2022 10:49:57 AM	R87132
Nitrogen, Nitrite (As N)	ND	0.027	0.50		mg/L	5	3/29/2022 4:27:18 PM	R86833
Bromide	0.61	0.25	0.50		mg/L	5	3/29/2022 4:27:18 PM	R86833
Nitrogen, Nitrate (As N)	0.75	0.050	0.50		mg/L	5	3/29/2022 4:27:18 PM	R86833
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	3/29/2022 4:27:18 PM	R86833
Sulfate	2300	12	25	*	mg/L	50	4/8/2022 10:49:57 AM	R87132
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	0.0078	0.0050	5.0	J	mg/L	10	3/30/2022 2:59:41 PM	66484
Lead	ND	0.0050	5.0		mg/L	10	3/30/2022 2:59:41 PM	66484
Selenium	0.067	0.0050	1.0	J	mg/L	10	3/30/2022 2:59:41 PM	66484
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	0.00034	0.000091	0.020	J	mg/L	1	3/30/2022 2:32:07 PM	66490
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JLF**	
Calcium	460	0.58	10		mg/L	10	4/5/2022 6:20:12 PM	A87057
Magnesium	140	0.34	10		mg/L	10	4/5/2022 6:20:12 PM	A87057
Potassium	130	2.1	10		mg/L	10	4/5/2022 6:20:12 PM	A87057
Sodium	640	4.2	10		mg/L	10	4/8/2022 12:49:55 PM	A87128
EPA 6010B: TCLP METALS							Analyst: **JLF**	
Barium	0.041	0.0053	100	J	mg/L	5	4/5/2022 3:54:17 PM	66484
Cadmium	ND	0.0058	1.0		mg/L	5	4/5/2022 3:54:17 PM	66484
Chromium	ND	0.0084	5.0		mg/L	5	4/5/2022 3:54:17 PM	66484
Silver	0.0068	0.0063	5.0	J	mg/L	5	4/5/2022 3:54:17 PM	66484
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	4/13/2022 11:15:48 PM	66542
3+4-Methylphenol	ND	0.00045	200		mg/L	1	4/13/2022 11:15:48 PM	66542

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2203E91**
Date Reported: **5/13/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2203E91-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 3/28/2022 9:35:00 AM
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	4/13/2022 11:15:48 PM	66542
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	4/13/2022 11:15:48 PM	66542
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	4/13/2022 11:15:48 PM	66542
Hexachloroethane	ND	0.00045	3.0		mg/L	1	4/13/2022 11:15:48 PM	66542
Nitrobenzene	ND	0.00051	2.0		mg/L	1	4/13/2022 11:15:48 PM	66542
Pentachlorophenol	ND	0.00059	100		mg/L	1	4/13/2022 11:15:48 PM	66542
Pyridine	ND	0.00093	5.0		mg/L	1	4/13/2022 11:15:48 PM	66542
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	4/13/2022 11:15:48 PM	66542
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	4/13/2022 11:15:48 PM	66542
Cresols, Total	ND	0.00051	200		mg/L	1	4/13/2022 11:15:48 PM	66542
Surr: 2-Fluorophenol	46.8	0	15-118		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: Phenol-d5	36.0	0	15-92.9		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: 2,4,6-Tribromophenol	60.4	0	15-150		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: Nitrobenzene-d5	63.3	0	15-136		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: 2-Fluorobiphenyl	51.4	0	15-134		%Rec	1	4/13/2022 11:15:48 PM	66542
Surr: 4-Terphenyl-d14	74.5	0	15-168		%Rec	1	4/13/2022 11:15:48 PM	66542
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	4/6/2022 9:14:00 PM	T87039
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	4/6/2022 9:14:00 PM	T87039
2-Butanone	ND	0.0020	200		mg/L	200	4/6/2022 9:14:00 PM	T87039
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	4/6/2022 9:14:00 PM	T87039
Chloroform	ND	0.00013	6.0		mg/L	200	4/6/2022 9:14:00 PM	T87039
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	4/6/2022 9:14:00 PM	T87039
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	4/6/2022 9:14:00 PM	T87039
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	4/6/2022 9:14:00 PM	T87039
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	4/6/2022 9:14:00 PM	T87039
Vinyl chloride	ND	0.00032	0.20		mg/L	200	4/6/2022 9:14:00 PM	T87039
Chlorobenzene	ND	0.00016	100		mg/L	200	4/6/2022 9:14:00 PM	T87039
Surr: 1,2-Dichloroethane-d4	104	0	70-130		%Rec	200	4/6/2022 9:14:00 PM	T87039
Surr: 4-Bromofluorobenzene	99.3	0	70-130		%Rec	200	4/6/2022 9:14:00 PM	T87039
Surr: Dibromofluoromethane	105	0	70-130		%Rec	200	4/6/2022 9:14:00 PM	T87039
Surr: Toluene-d8	95.6	0	70-130		%Rec	200	4/6/2022 9:14:00 PM	T87039
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **LRN**	
Conductivity	6300	10	10		µmhos/c	1	4/5/2022 1:59:25 PM	R87028
SM4500-H+B / 9040C: PH							Analyst: **LRN**	
pH	7.72			H	pH units	1	4/5/2022 1:59:25 PM	R87028
SM2320B: ALKALINITY							Analyst: **LRN**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2203E91**
Date Reported: **5/13/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 3/28/2022 9:35:00 AM
Lab ID: 2203E91-001
Matrix: AQUEOUS
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	477.1	20.00	20.00		mg/L Ca	1	4/5/2022 1:59:25 PM	R87028
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	4/5/2022 1:59:25 PM	R87028
Total Alkalinity (as CaCO3)	477.1	20.00	20.00		mg/L Ca	1	4/5/2022 1:59:25 PM	R87028
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9968	0	0			1	4/11/2022 4:41:00 PM	R87156
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	4660	100	100	*D	mg/L	1	4/7/2022 11:00:00 AM	66599
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	14	4.0	4.0		mg/L	1	4/5/2022 10:33:00 AM	66600

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2203E91**
Date Reported: **5/13/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City of POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 3/28/2022 10:05:00 AM
Lab ID: 2203E91-002
Matrix: AQUEOUS
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	4/8/2022 12:07:30 PM	66537
Endrin	ND	0.000049	0.020		mg/L	1	4/8/2022 12:07:30 PM	66537
gamma-BHC (Lindane)	ND	0.000041	0.40		mg/L	1	4/8/2022 12:07:30 PM	66537
Heptachlor	ND	0.000041	0.0080		mg/L	1	4/8/2022 12:07:30 PM	66537
Heptachlor epoxide	ND	0.000047	0.0080		mg/L	1	4/8/2022 12:07:30 PM	66537
Methoxychlor	ND	0.000046	10		mg/L	1	4/8/2022 12:07:30 PM	66537
Toxaphene	ND	0.00050	0.50		mg/L	1	4/8/2022 12:07:30 PM	66537
Surr: Decachlorobiphenyl	97.6	0	73-119		%Rec	1	4/8/2022 12:07:30 PM	66537
Surr: Tetrachloro-m-xylene	73.1	0	36.6-84.1		%Rec	1	4/8/2022 12:07:30 PM	66537
EPA METHOD 300.0: ANIONS							Analyst: **CAS**	
Fluoride	1.1	0.040	0.10		mg/L	1	4/8/2022 11:02:18 AM	R87132
Chloride	100	5.0	10		mg/L	20	3/29/2022 5:29:21 PM	R86833
Nitrogen, Nitrite (As N)	0.049	0.0053	0.10	J	mg/L	1	3/29/2022 4:52:07 PM	R86833
Bromide	ND	0.050	0.10		mg/L	1	3/29/2022 4:52:07 PM	R86833
Nitrogen, Nitrate (As N)	4.9	0.010	0.10		mg/L	1	3/29/2022 4:52:07 PM	R86833
Phosphorus, Orthophosphate (As P)	2.0	0.25	0.50		mg/L	1	3/29/2022 4:52:07 PM	R86833
Sulfate	740	5.0	10	*	mg/L	20	3/29/2022 5:29:21 PM	R86833
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	ND	0.0050	5.0		mg/L	10	3/30/2022 3:04:15 PM	66484
Lead	ND	0.0050	5.0		mg/L	10	3/30/2022 3:04:15 PM	66484
Selenium	ND	0.0050	1.0		mg/L	10	3/30/2022 3:04:15 PM	66484
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	3/30/2022 2:34:11 PM	66490
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JLF**	
Calcium	220	0.58	10		mg/L	10	4/5/2022 6:23:18 PM	A87057
Magnesium	64	0.034	1.0		mg/L	1	4/5/2022 6:46:41 PM	A87057
Potassium	1.9	0.21	1.0		mg/L	1	4/5/2022 6:46:41 PM	A87057
Sodium	81	2.1	5.0		mg/L	5	4/8/2022 12:52:47 PM	A87128
EPA 6010B: TCLP METALS							Analyst: **JLF**	
Barium	0.022	0.0011	100	J	mg/L	1	4/5/2022 7:11:20 PM	66484
Cadmium	ND	0.0012	1.0		mg/L	1	4/5/2022 7:11:20 PM	66484
Chromium	0.0024	0.0017	5.0	J	mg/L	1	4/5/2022 7:11:20 PM	66484
Silver	0.0032	0.0013	5.0	J	mg/L	1	4/5/2022 7:11:20 PM	66484
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	4/13/2022 11:56:36 PM	66542
3+4-Methylphenol	ND	0.00045	200		mg/L	1	4/13/2022 11:56:36 PM	66542

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2203E91**
Date Reported: **5/13/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City of POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 3/28/2022 10:05:00 AM
Lab ID: 2203E91-002 **Matrix:** AQUEOUS **Received Date:** 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	4/13/2022 11:56:36 PM	66542
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	4/13/2022 11:56:36 PM	66542
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	4/13/2022 11:56:36 PM	66542
Hexachloroethane	ND	0.00045	3.0		mg/L	1	4/13/2022 11:56:36 PM	66542
Nitrobenzene	ND	0.00051	2.0		mg/L	1	4/13/2022 11:56:36 PM	66542
Pentachlorophenol	ND	0.00059	100		mg/L	1	4/13/2022 11:56:36 PM	66542
Pyridine	ND	0.00093	5.0		mg/L	1	4/13/2022 11:56:36 PM	66542
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	4/13/2022 11:56:36 PM	66542
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	4/13/2022 11:56:36 PM	66542
Cresols, Total	ND	0.00051	200		mg/L	1	4/13/2022 11:56:36 PM	66542
Surr: 2-Fluorophenol	56.8	0	15-118		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: Phenol-d5	43.1	0	15-92.9		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: 2,4,6-Tribromophenol	61.6	0	15-150		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: Nitrobenzene-d5	70.6	0	15-136		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: 2-Fluorobiphenyl	59.1	0	15-134		%Rec	1	4/13/2022 11:56:36 PM	66542
Surr: 4-Terphenyl-d14	86.0	0	15-168		%Rec	1	4/13/2022 11:56:36 PM	66542
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	4/6/2022 9:37:00 PM	T87039
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	4/6/2022 9:37:00 PM	T87039
2-Butanone	ND	0.0020	200		mg/L	200	4/6/2022 9:37:00 PM	T87039
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	4/6/2022 9:37:00 PM	T87039
Chloroform	ND	0.00013	6.0		mg/L	200	4/6/2022 9:37:00 PM	T87039
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	4/6/2022 9:37:00 PM	T87039
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	4/6/2022 9:37:00 PM	T87039
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	4/6/2022 9:37:00 PM	T87039
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	4/6/2022 9:37:00 PM	T87039
Vinyl chloride	ND	0.00032	0.20		mg/L	200	4/6/2022 9:37:00 PM	T87039
Chlorobenzene	ND	0.00016	100		mg/L	200	4/6/2022 9:37:00 PM	T87039
Surr: 1,2-Dichloroethane-d4	106	0	70-130		%Rec	200	4/6/2022 9:37:00 PM	T87039
Surr: 4-Bromofluorobenzene	97.5	0	70-130		%Rec	200	4/6/2022 9:37:00 PM	T87039
Surr: Dibromofluoromethane	107	0	70-130		%Rec	200	4/6/2022 9:37:00 PM	T87039
Surr: Toluene-d8	96.7	0	70-130		%Rec	200	4/6/2022 9:37:00 PM	T87039
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **LRN**	
Conductivity	1700	10	10		µmhos/c	1	4/5/2022 2:19:18 PM	R87028
SM4500-H+B / 9040C: PH							Analyst: **LRN**	
pH	7.29			H	pH units	1	4/5/2022 2:19:18 PM	R87028
SM2320B: ALKALINITY							Analyst: **LRN**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2203E91**
Date Reported: **5/13/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2203E91-002 **Matrix:** AQUEOUS

Client Sample ID: CTB to City of POTW
Collection Date: 3/28/2022 10:05:00 AM
Received Date: 3/29/2022 8:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	35.00	20.00	20.00		mg/L Ca	1	4/5/2022 2:19:18 PM	R87028
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	4/5/2022 2:19:18 PM	R87028
Total Alkalinity (as CaCO3)	35.00	20.00	20.00		mg/L Ca	1	4/5/2022 2:19:18 PM	R87028
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9900	0	0			1	4/11/2022 4:41:00 PM	R87156
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	1380	40.0	40.0	*D	mg/L	1	4/7/2022 11:00:00 AM	66599
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	9.0	4.0	4.0		mg/L	1	4/5/2022 10:33:00 AM	66600

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	WDW-1,2,3 & 4 Effluent 2203E91-001		CTB to City of POTW 2203E91-002									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	640	27.84	81	3.52								
Potassium	130	3.32	1.9	0.05								
Calcium	460	22.95	220	10.98								
Magnesium	140	11.52	64	5.27								
Total Cations		65.64		19.82								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2300	47.89	740	15.41								
Chloride	720	20.31	100	2.82								
Bicarbonate (CaCO3)	477.1	9.53	35.00	0.70								
Carbonate (CaCO3)												
Phosphate (P)			2.0	0.19								
Nitrite (N)												
Nitrate (N)	0.75	0.05	4.9	0.35	-							
Fluoride	35	1.84	1.1	0.06								
Bromide	0.61	0.01										
Total Anions		79.63		19.53								
Elect. Cond. (μMhos/cm)	6300		1700									
CATION/ANION RATIO		0.82		1.01								
% Difference		10		1								
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	4660		1380									
TDS (calculated)	4715		1257									
Ratio meas TDS:calc TDS		1.0		1.1								
Ratio Meas. TDS:EC		0.74		0.81								
Ratio Calc. TDS:EC		0.75		0.74								
Ratio of anion sum:EC		1.3		1.1								
Ratio of cation sum:EC		1.0		1.2								

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

April 07, 2022

Hall Environmental Analysis Laboratory

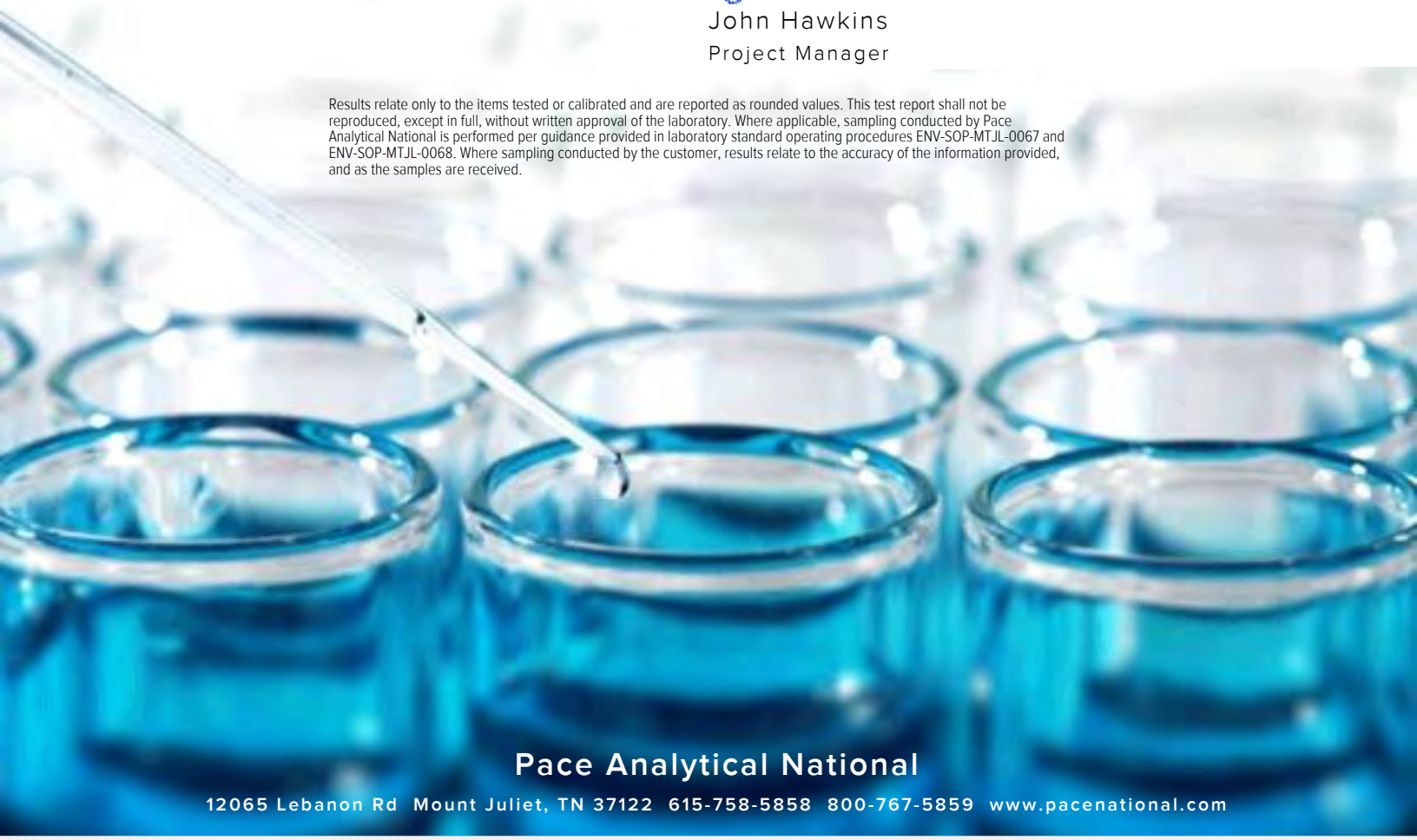
Sample Delivery Group:	L1476728
Samples Received:	03/30/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2203E91-001F WDW-1,2,3 & 4 EFFLUENT L1476728-01 Waste

Collected by | Collected date/time 03/28/22 09:35 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1841054	1	03/31/22 12:11	03/31/22 12:11	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1842932	1	04/05/22 04:17	04/06/22 13:13	HLA	Mt. Juliet, TN

2203E91-001G WDW-1,2,3 & 4 EFFLUENT L1476728-02 GW

Collected by | Collected date/time 03/28/22 09:35 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1840372	1	03/31/22 01:58	03/31/22 01:58	ARD	Mt. Juliet, TN

2203E91-001H WDW-1,2,3 & 4 EFFLUENT L1476728-03 GW

Collected by | Collected date/time 03/28/22 09:35 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1841262	1	03/31/22 17:11	04/01/22 10:12	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1840723	1	03/30/22 20:33	03/30/22 20:33	TWF	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1842212	1	04/05/22 12:00	04/05/22 12:00	GI	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1840943	1	03/31/22 01:00	03/31/22 01:00	WOS	Mt. Juliet, TN

2203E91-002F CTB TO CITY OF POTW L1476728-04 Waste

Collected by | Collected date/time 03/28/22 10:05 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1841054	1	03/31/22 12:11	03/31/22 12:11	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1842932	1	04/05/22 04:17	04/06/22 14:11	AO	Mt. Juliet, TN

2203E91-002G CTB TO CITY OF POTW L1476728-05 GW

Collected by | Collected date/time 03/28/22 10:05 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1840372	1	03/31/22 01:58	03/31/22 01:58	ARD	Mt. Juliet, TN

2203E91-002H CTB TO CITY OF POTW L1476728-06 GW

Collected by | Collected date/time 03/28/22 10:05 | Received date/time 03/30/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1841262	1	03/31/22 17:11	04/01/22 10:13	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1840723	1	03/30/22 20:34	03/30/22 20:34	TWF	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1843431	1	04/06/22 11:38	04/06/22 11:38	SCM	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1840943	1	03/31/22 01:00	03/31/22 01:00	WOS	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		3/31/2022 12:11:40 PM	WG1841054
Fluid	1		3/31/2022 12:11:40 PM	WG1841054
Initial pH	N/A		3/31/2022 12:11:40 PM	WG1841054
Final pH	N/A		3/31/2022 12:11:40 PM	WG1841054

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	04/06/2022 13:13	WG1842932
2,4-D	ND		0.00200	10	1	04/06/2022 13:13	WG1842932
(S) 2,4-Dichlorophenyl Acetic Acid	*41.0*		*14.0-158*			*04/06/2022 13:13*	WG1842932

Collected date/time: 03/28/22 09:35

L1476728

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	34.9	T8	1	03/31/2022 01:58	WG1840372

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	0.0103		0.00500	1	04/01/2022 10:12	WG1841262

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		0.0500	1	03/30/2022 20:33	WG1840723

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.47	T8	1	04/05/2022 12:00	WG1842212

Sample Narrative:

L1476728-03 WG1842212: 7.47 at 18.5C

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	03/31/2022 01:00	WG1840943

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		3/31/2022 12:11:40 PM	WG1841054
Fluid	1		3/31/2022 12:11:40 PM	WG1841054
Initial pH	N/A		3/31/2022 12:11:40 PM	WG1841054
Final pH	N/A		3/31/2022 12:11:40 PM	WG1841054

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
2,4,5-TP (Silvex)	ND		0.00200	1	1	04/06/2022 14:11	WG1842932
2,4-D	ND		0.00200	10	1	04/06/2022 14:11	WG1842932
(S) 2,4-Dichlorophenyl Acetic Acid	*40.6*		*14.0-158*			*04/06/2022 14:11*	WG1842932

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	65.8	T8	1	03/31/2022 01:58	WG1840372

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND		0.00500	1	04/01/2022 10:13	WG1841262

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	03/30/2022 20:34	WG1840723

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.20	T8	1	04/06/2022 11:38	WG1843431

Sample Narrative:

L1476728-06 WG1843431: 7.20 @ 20.55C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	03/31/2022 01:00	WG1840943

L1476010-17 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-17 03/31/22 01:58 • (DUP) R3775877-3 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	190	192	1	2.00		20

L1476010-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-18 03/31/22 01:58 • (DUP) R3775877-4 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	240	240	1	0.600		20

L1476010-19 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-19 03/31/22 01:58 • (DUP) R3775877-5 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	295	294	1	0.900		20

L1476010-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-20 03/31/22 01:58 • (DUP) R3775877-6 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	286	279	1	6.50		20

L1476010-21 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-21 03/31/22 01:58 • (DUP) R3775877-7 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	292	289	1	3.10		20

L1476010-22 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-22 03/31/22 01:58 • (DUP) R3775877-8 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	291	281	1	9.60		20

L1476010-23 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-23 03/31/22 01:58 • (DUP) R3775877-9 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	296	291	1	4.20		20

L1476010-24 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-24 03/31/22 01:58 • (DUP) R3775877-10 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	-36.3	-40.8	1	0.000		20

L1476728-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1476728-02 03/31/22 01:58 • (DUP) R3775877-11 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	34.9	42.7	1	7.80		20

L1476728-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1476728-05 03/31/22 01:58 • (DUP) R3775877-12 03/31/22 01:58

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	65.8	68.0	1	2.20		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3775877-1 03/31/22 01:58 • (LCSD) R3775877-2 03/31/22 01:58

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	110	110	102	102	86.0-105			0.300	20

Method Blank (MB)

(MB) R3776480-1 04/01/22 09:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1476719-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1476719-01 04/01/22 10:04 • (DUP) R3776480-3 04/01/22 10:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1476734-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1476734-01 04/01/22 10:14 • (DUP) R3776480-6 04/01/22 10:15

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3776480-2 04/01/22 09:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0952	95.2	87.1-120	

L1476720-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1476720-02 04/01/22 10:06 • (MS) R3776480-4 04/01/22 10:09 • (MSD) R3776480-5 04/01/22 10:10

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	0.0394	0.136	0.136	96.6	96.6	1	90.0-110			0.000	20

L1476734-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1476734-02 04/01/22 10:16 • (MS) R3776480-7 04/01/22 10:17 • (MSD) R3776480-8 04/01/22 10:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0897	0.0833	89.7	83.3	1	90.0-110	J6	J6	7.40	20

QUALITY CONTROL SUMMARY

L1476728-03,06

Wet Chemistry by Method 4500 S2 D-2011

Method Blank (MB)

(MB) R3775845-1 03/30/22 20:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3775845-2 03/30/22 20:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.503	101	85.0-115	

L1476728-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1476728-06 03/30/22 20:34 • (MS) R3775845-4 03/30/22 20:38 • (MSD) R3775845-5 03/30/22 20:38

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	1.00	ND	0.472	0.484	47.2	48.4	1	80.0-120			2.51	20

Received by OCD: 3/6/2023 7:46:22 AM

Wet Chemistry by Method 9040C

L1476728-03

Laboratory Control Sample (LCS)

(LCS) R3777702-1 04/05/22 12:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 19.4C

Released to Imaging: 5/24/2023 4:44:56 PM

L1476010-17 Original Sample (OS) • Duplicate (DUP)

(OS) L1476010-17 04/06/22 10:26 • (DUP) R3778150-2 04/06/22 10:33

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
Corrosivity by pH	7.47	7.49	1	0.267		1

Sample Narrative:

OS: 7.47 @ 19.87C

DUP: 7.49 @ 19.85C

L1476677-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1476677-01 04/06/22 11:25 • (DUP) R3778150-3 04/06/22 11:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
Corrosivity by pH	7.43	7.51	1	1.07	J3	1

Sample Narrative:

OS: 7.43 @ 20.46C

DUP: 7.51 @ 20.50C

Laboratory Control Sample (LCS)

(LCS) R3778150-1 04/06/22 10:21

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.91	99.1	99.0-101	

Sample Narrative:

LCS: 9.91 @ 19.91C

L1476517-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1476517-02 03/31/22 01:00 • (DUP) R3776327-3 03/31/22 01:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3776327-1 03/31/22 01:00 • (LCSD) R3776327-2 03/31/22 01:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	125	129	98.8	102	96.0-104			3.16	10

Method Blank (MB)

(MB) R3778206-1 04/06/22 10:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*50.8*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3778206-2 04/06/22 10:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0287	57.4	50.0-125	
2,4-D	0.0500	0.0257	51.4	50.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*47.0*	*14.0-158*	

L1473617-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1473617-01 04/06/22 10:31 • (MS) R3778206-3 04/06/22 10:46 • (MSD) R3778206-4 04/06/22 11:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0240	0.0227	48.0	45.4	1	50.0-125	J6	J6	5.57	20
2,4-D	0.0500	ND	0.0230	0.0216	46.0	43.2	1	50.0-120	J6	J6	6.28	20
(S) 2,4-Dichlorophenyl Acetic Acid					*42.0*	*39.8*		*14.0-158*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

H009

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: clients.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

LY76728

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2203E91-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	3/28/2022 9:35:00 AM	1	8151TCLP *RUSH 7 DAY TAT* 01
2	2203E91-001G	WDW-1,2,3 & 4 Effluent	125HDP	Aqueous	3/28/2022 9:35:00 AM	1	ORP *RUSH 7 DAY TAT* 02
3	2203E91-001H	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	3/28/2022 9:35:00 AM	3	RCI *RUSH 7 DAY TAT* 03
4	2203E91-002F	CTB to City of POTW	1LAMGU	Aqueous	3/28/2022 10:05:00 AM	1	8151TCLP *RUSH 7 DAY TAT* 04
5	2203E91-002G	CTB to City of POTW	125HDP	Aqueous	3/28/2022 10:05:00 AM	1	ORP *RUSH 7 DAY TAT* 05
6	2203E91-002H	CTB to City of POTW	500HDPE	Aqueous	3/28/2022 10:05:00 AM	3	RCI *RUSH 7 DAY TAT* 06

Sample Receipt Checklist

COC Seal Present/Intact:	Y	N	If Applicable		
COC Signed/Accurate:	Y	N	VOA Zero Headspace:	Y	N
Bottles arrive intact:	Y	N	Pres.Correct/Check:	Y	N
Correct bottles used:	Y	N			
Sufficient volume sent:	Y	N			
RAD Screen <0.5 mR/hr:	Y	N			

1.6+0=1.6 DR A7

B528 5947 9547

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 3/29/2022	Time: 9:42 AM	Received By:	Date: 3/30/22	Time: 0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

Released to Imaging: 5/24/2023 4:44:56 PM

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **Mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R86833**	RunNo: **86833**
Prep Date:	Analysis Date: **3/29/2022**	SeqNo: **3066895** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R86833**	RunNo: **86833**
Prep Date:	Analysis Date: **3/29/2022**	SeqNo: **3066896** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.2	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	96.7	90	110			
Bromide	2.4	0.10	2.500	0	97.5	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.9	90	110			
Sulfate	9.4	0.50	10.00	0	93.6	90	110			

Sample ID: **2203E91-002CMS**	SampType: **MS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **CTB to City of POT**	Batch ID: **R86833**	RunNo: **86833**
Prep Date:	Analysis Date: **3/29/2022**	SeqNo: **3066925** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0.04900	92.5	83.4	105			
Bromide	2.4	0.10	2.500	0	97.1	91.2	106			
Phosphorus, Orthophosphate (As P	6.1	0.50	5.000	2.040	80.5	80.1	109			

Sample ID: **2203E91-002CMSD**	SampType: **MSD**	TestCode: **EPA Method 300.0: Anions**
Client ID: **CTB to City of POT**	Batch ID: **R86833**	RunNo: **86833**
Prep Date:	Analysis Date: **3/29/2022**	SeqNo: **3066926** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0.04900	93.1	83.4	105	0.655	20	
Bromide	2.4	0.10	2.500	0	97.9	91.2	106	0.911	20	
Phosphorus, Orthophosphate (As P	6.2	0.50	5.000	2.040	82.3	80.1	109	1.52	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R87132**	RunNo: **87132**
Prep Date:	Analysis Date: ***4/8/2022***	SeqNo: **3080691** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R87132**	RunNo: **87132**
Prep Date:	Analysis Date: ***4/8/2022***	SeqNo: **3080692** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Chloride	4.8	0.50	5.000	0	95.5	90	110			
Sulfate	9.6	0.50	10.00	0	95.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-66484**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **66484**	RunNo: **86849**
Prep Date: **3/29/2022**	Analysis Date: **3/30/2022**	SeqNo: **3067909** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-66484**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **66484**	RunNo: **86849**
Prep Date: **3/29/2022**	Analysis Date: **3/30/2022**	SeqNo: **3067910** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00087	0.0010	0.001000	0	87.0	70	130			J
Lead	0.0011	0.0010	0.001000	0	107	70	130			
Selenium	0.00091	0.0010	0.001000	0	90.9	70	130			J

Sample ID: **MSLCS-66484**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **66484**	RunNo: **86849**
Prep Date: **3/29/2022**	Analysis Date: **3/30/2022**	SeqNo: **3067911** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0010	0.05000	0	98.6	80	120			
Lead	0.051	0.0010	0.05000	0	102	80	120			
Selenium	0.048	0.0010	0.05000	0	96.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-66537**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **66537**	RunNo: **87097**
Prep Date: **3/31/2022**	Analysis Date: **4/8/2022**	SeqNo: **3080552** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0028		0.002500		113	73	119			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		75.6	36.6	84.1			

Sample ID: **MB-66537**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **66537**	RunNo: **87097**
Prep Date: **3/31/2022**	Analysis Date: **4/8/2022**	SeqNo: **3080553** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0029		0.002500		118	73	119			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		76.7	36.6	84.1			

Sample ID: **LCS-66537**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **66537**	RunNo: **87097**
Prep Date: **3/31/2022**	Analysis Date: **4/8/2022**	SeqNo: **3080554** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	96.9	56.3	126			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.3	45.8	103			
Heptachlor	0.00037	0.00010	0.0005000	0	74.3	33.7	104			
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	93.6	50.1	116			
Methoxychlor	0.00051	0.00010	0.0005000	0	101	15	203			
Surr: Decachlorobiphenyl	0.0029		0.002500		115	73	119			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		60.8	36.6	84.1			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**
13-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-66537** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **66537** RunNo: **87097**
Prep Date: **3/31/2022** Analysis Date: **4/8/2022** SeqNo: **3080555** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00050	0.00010	0.0005000	0	101	56.3	126			
gamma-BHC (Lindane)	0.00041	0.00010	0.0005000	0	82.5	45.8	103			
Heptachlor	0.00038	0.00010	0.0005000	0	76.4	33.7	104			
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	93.7	50.1	116			
Methoxychlor	0.00052	0.00010	0.0005000	0	104	15	203			
Surr: Decachlorobiphenyl	0.0030		0.002500		119	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		63.5	36.6	84.1			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng 624 lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**

Client ID: **LCSW** Batch ID: **T87039** RunNo: **87039**

Prep Date: Analysis Date: **4/6/2022** SeqNo: **3077978** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.021	0.50	0.02000	0	105	70	130			J
1,1-Dichloroethene	0.020	0.70	0.02000	0	101	70	130			J
Trichloroethene (TCE)	0.020	0.50	0.02000	0	101	70	130			J
Chlorobenzene	0.021	100	0.02000	0	105	70	130			J
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		101	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		104	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		101	70	130			
Surr: Toluene-d8	0.0099		0.01000		98.9	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**
13-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-66542**	SampType: **MBLK**	TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW**	Batch ID: **66542**	RunNo: **87231**
Prep Date: **4/1/2022**	Analysis Date: **4/13/2022**	SeqNo: **3084458** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.11		0.2000		55.0	15	118			
Surr: Phenol-d5	0.082		0.2000		41.0	15	92.9			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		62.7	15	150			
Surr: Nitrobenzene-d5	0.065		0.1000		65.3	15	136			
Surr: 2-Fluorobiphenyl	0.052		0.1000		51.8	15	134			
Surr: 4-Terphenyl-d14	0.075		0.1000		74.5	15	168			

Sample ID: **lcs-66542**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **66542**	RunNo: **87231**
Prep Date: **4/1/2022**	Analysis Date: **4/13/2022**	SeqNo: **3084459** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.056	0.00010	0.1000	0	55.8	19	106			
3+4-Methylphenol	0.11	0.00010	0.2000	0	53.3	16.3	112			
2,4-Dinitrotoluene	0.034	0.00010	0.1000	0	34.3	15	99.6			
Hexachlorobenzene	0.052	0.00010	0.1000	0	52.4	41.8	111			
Hexachlorobutadiene	0.042	0.00010	0.1000	0	41.6	15	91.5			
Hexachloroethane	0.046	0.00010	0.1000	0	46.3	15	87.5			
Nitrobenzene	0.059	0.00010	0.1000	0	59.3	19.3	114			
Pentachlorophenol	0.057	0.00010	0.1000	0	56.7	29	103			
Pyridine	0.039	0.00010	0.1000	0	39.3	15	92.6			
2,4,5-Trichlorophenol	0.052	0.00010	0.1000	0	51.7	25.2	114			
2,4,6-Trichlorophenol	0.053	0.00010	0.1000	0	52.9	25.7	112			
Cresols, Total	0.16	0.00010	0.3000	0	54.1	15	145			
Surr: 2-Fluorophenol	0.092		0.2000		45.9	15	118			
Surr: Phenol-d5	0.071		0.2000		35.3	15	92.9			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		61.6	15	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-66542**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**	
Client ID: **LCSW**	Batch ID: **66542**	RunNo: **87231**	
Prep Date: **4/1/2022**	Analysis Date: **4/13/2022**	SeqNo: **3084459**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.058		0.1000		58.5	15	136			
Surr: 2-Fluorobiphenyl	0.051		0.1000		50.8	15	134			
Surr: 4-Terphenyl-d14	0.077		0.1000		77.0	15	168			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 100.2uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R87028**	RunNo: **87028**
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3075403** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	100.2	0	100	85	115			

Sample ID: **lcs-2 100.2uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R87028**	RunNo: **87028**
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3075427** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	100.2	0	104	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-66490**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW**	Batch ID: **66490**	RunNo: **86867**
Prep Date: **3/30/2022**	Analysis Date: **3/30/2022**	SeqNo: **3068731** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-66490**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC**	Batch ID: **66490**	RunNo: **86867**
Prep Date: **3/30/2022**	Analysis Date: **3/30/2022**	SeqNo: **3068732** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00019	0.00020	0.0001500	0	129	50	150			J

Sample ID: **LCS-66490**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW**	Batch ID: **66490**	RunNo: **86867**
Prep Date: **3/30/2022**	Analysis Date: **3/30/2022**	SeqNo: **3068733** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	92.4	85	115			

Sample ID: **LCSD-66490**	SampType: **LCSD**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSS02**	Batch ID: **66490**	RunNo: **86867**
Prep Date: **3/30/2022**	Analysis Date: **3/30/2022**	SeqNo: **3068734** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	91.1	85	115	1.45	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A87057**	RunNo: **87057**
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3077196** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A87057**	RunNo: **87057**
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3077198** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	55	1.0	50.00	0	111	80	120			
Magnesium	53	1.0	50.00	0	107	80	120			
Potassium	53	1.0	50.00	0	106	80	120			

Sample ID: **LCSD-A**	SampType: **LCSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSS02**	Batch ID: **A87057**	RunNo: **87057**
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3077199** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	56	1.0	50.00	0	112	80	120	0.933	20	
Magnesium	54	1.0	50.00	0	108	80	120	0.834	20	
Potassium	53	1.0	50.00	0	107	80	120	0.832	20	

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A87128**	RunNo: **87128**
Prep Date:	Analysis Date: **4/8/2022**	SeqNo: **3080438** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A87128**	RunNo: **87128**
Prep Date:	Analysis Date: **4/8/2022**	SeqNo: **3080440** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	48	1.0	50.00	0	95.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-66484**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **66484**	RunNo: **86886**
Prep Date: **3/29/2022**	Analysis Date: **3/31/2022**	SeqNo: **3069689** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-66484**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **66484**	RunNo: **86886**
Prep Date: **3/29/2022**	Analysis Date: **3/31/2022**	SeqNo: **3069691** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0	99.8	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.50	0.0060	0.5000	0	101	80	120			
Silver	0.10	0.0050	0.1000	0	103	80	120			

Sample ID: **2203E91-001EMS**	SampType: **MS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **66484**	RunNo: **87057**
Prep Date: **3/29/2022**	Analysis Date: **4/5/2022**	SeqNo: **3077186** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.010	0.5000	0.04065	89.8	75	125			
Cadmium	0.45	0.010	0.5000	0	90.8	75	125			
Chromium	0.44	0.030	0.5000	0	88.0	75	125			
Silver	0.096	0.025	0.1000	0.006833	89.5	75	125			

Sample ID: **2203E91-001EMSD**	SampType: **MSD**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **66484**	RunNo: **87057**
Prep Date: **3/29/2022**	Analysis Date: **4/5/2022**	SeqNo: **3077187** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.010	0.5000	0.04065	91.3	75	125	1.47	20	
Cadmium	0.47	0.010	0.5000	0	93.0	75	125	2.43	20	
Chromium	0.45	0.030	0.5000	0	89.5	75	125	1.69	20	
Silver	0.094	0.025	0.1000	0.006833	86.9	75	125	2.72	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87028**	RunNo: **87028**							
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3075482**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87028**	RunNo: **87028**							
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3075483**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	73.64	20.00	80.00	0	92.0	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87028**	RunNo: **87028**							
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3075505**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87028**	RunNo: **87028**							
Prep Date:	Analysis Date: **4/5/2022**	SeqNo: **3075506**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	73.84	20.00	80.00	0	92.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-66599**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **66599**	RunNo: **87062**
Prep Date: **4/4/2022**	Analysis Date: **4/7/2022**	SeqNo: **3077421** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-66599**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **66599**	RunNo: **87062**
Prep Date: **4/4/2022**	Analysis Date: **4/7/2022**	SeqNo: **3077422** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2203E91**

13-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-66600**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **66600**	RunNo: **87001**							
Prep Date: **4/4/2022**	Analysis Date: **4/5/2022**	SeqNo: **3074139**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-66600**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **66600**	RunNo: **87001**							
Prep Date: **4/4/2022**	Analysis Date: **4/5/2022**	SeqNo: **3074140**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	92	4.0	92.40	0	99.6	83.44	119.05			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2203E91 | RcptNo: 1

Received By: Sean Livingston 3/29/2022 8:15:00 AM

Completed By: Sean Livingston 3/29/2022 9:09:25 AM

Reviewed By: JN 3/29/22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 6 4 (<2 or >12 unless noted)

Adjusted? NO

Checked by: KPG 3/29/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks: Poured off from unpreserved 002C 2 of 2 for ORP 125mL 002G - KPG 3/29/22

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.5	Good				

Poured off from unpres 001C 1 of 2 for ORP 125mL 001G - KPG 3/29/22

Released to Imaging: 5/24/2023 4:44:56 PM
Received by OCD: 3/6/2023 7:46:22 AM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
Standard X Rush X

Project Name:
PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard
On Ice: ☒ Yes ☐ No
Sample Temperature: 0.6 -0.1 = 0.5°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2203E91	Analysis Request: Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	X						
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			X					
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				X				
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					X			
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						X		
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							X	
3/28/22	9:35	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								X
3/28/22	10:05	Liquid	CTB to City POTW	**	**	002	X						
3/28/22	10:05	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
3/28/22	10:05	Liquid	CTB to City POTW	1-1L Amber	none				X				
3/28/22	10:05	Liquid	CTB to City POTW	***	***					X			
3/28/22	10:05	Liquid	CTB to City POTW	1-250ml P	HNO4						X		
3/28/22	10:05	Liquid	CTB to City POTW	1-1L Amber	none							X	
3/28/22	10:05	Liquid	CTB to City POTW	1-1L Amber	none								X

Date	Time	Relinquished by	Received by	Date	Time
3-28-22	10:30	Brady Hubbard			
3/28/22	1900			3/29/22	8:15

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.
Will suffice for Quarterly WDW-1, 2, 3 & 4 Inj Well

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

May 25, 2022

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2204B57

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/27/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2204B57**
Date: **5/25/2022**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001A

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	4/27/2022 10:15:00 PM	T87552
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	4/27/2022 10:15:00 PM	T87552
2-Butanone	ND	0.0020	200		mg/L	200	4/27/2022 10:15:00 PM	T87552
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	4/27/2022 10:15:00 PM	T87552
Chloroform	ND	0.00013	6.0		mg/L	200	4/27/2022 10:15:00 PM	T87552
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	4/27/2022 10:15:00 PM	T87552
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	4/27/2022 10:15:00 PM	T87552
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	4/27/2022 10:15:00 PM	T87552
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	4/27/2022 10:15:00 PM	T87552
Vinyl chloride	ND	0.00032	0.20		mg/L	200	4/27/2022 10:15:00 PM	T87552
Chlorobenzene	ND	0.00016	100		mg/L	200	4/27/2022 10:15:00 PM	T87552
Surr: 1,2-Dichloroethane-d4	99.6	0	70-130		%Rec	200	4/27/2022 10:15:00 PM	T87552
Surr: 4-Bromofluorobenzene	97.7	0	70-130		%Rec	200	4/27/2022 10:15:00 PM	T87552
Surr: Dibromofluoromethane	102	0	70-130		%Rec	200	4/27/2022 10:15:00 PM	T87552
Surr: Toluene-d8	90.8	0	70-130		%Rec	200	4/27/2022 10:15:00 PM	T87552

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001B

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.0050	0.030	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Endrin	ND	0.00049	0.020	D	mg/L	10	5/18/2022 10:41:44 AM	67182
gamma-BHC (Lindane)	ND	0.00041	0.40	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Heptachlor	ND	0.00041	0.0080	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Heptachlor epoxide	ND	0.00047	0.0080	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Methoxychlor	ND	0.00046	10	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Toxaphene	ND	0.0050	0.50	D	mg/L	10	5/18/2022 10:41:44 AM	67182
Surr: Decachlorobiphenyl	0	0	73-119	SD	%Rec	10	5/18/2022 10:41:44 AM	67182
Surr: Tetrachloro-m-xylene	0	0	36.6-84.1	SD	%Rec	10	5/18/2022 10:41:44 AM	67182
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	5/3/2022 5:44:26 PM	67188
3+4-Methylphenol	ND	0.00045	200		mg/L	1	5/3/2022 5:44:26 PM	67188
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	5/3/2022 5:44:26 PM	67188
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	5/3/2022 5:44:26 PM	67188
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	5/3/2022 5:44:26 PM	67188
Hexachloroethane	ND	0.00045	3.0		mg/L	1	5/3/2022 5:44:26 PM	67188
Nitrobenzene	ND	0.00051	2.0		mg/L	1	5/3/2022 5:44:26 PM	67188
Pentachlorophenol	ND	0.00059	100		mg/L	1	5/3/2022 5:44:26 PM	67188
Pyridine	0.0059	0.00093	5.0	J	mg/L	1	5/3/2022 5:44:26 PM	67188
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	5/3/2022 5:44:26 PM	67188
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	5/3/2022 5:44:26 PM	67188
Cresols, Total	ND	0.00051	200		mg/L	1	5/3/2022 5:44:26 PM	67188
Surr: 2-Fluorophenol	42.8	0	15-118		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: Phenol-d5	34.5	0	15-92.9		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: 2,4,6-Tribromophenol	46.4	0	15-150		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: Nitrobenzene-d5	68.1	0	15-136		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: 2-Fluorobiphenyl	60.5	0	15-134		%Rec	1	5/3/2022 5:44:26 PM	67188
Surr: 4-Terphenyl-d14	83.9	0	15-168		%Rec	1	5/3/2022 5:44:26 PM	67188

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 4/26/2022 9:25:00 AM
Lab ID: 2204B57-001C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	24	0.80	2.0	*	mg/L	20	4/27/2022 9:16:29 PM	R87581
Chloride	600	25	50	*	mg/L	100	5/5/2022 7:33:05 PM	R87788
Nitrogen, Nitrite (As N)	0.17	0.027	0.50	J	mg/L	5	4/27/2022 9:03:38 PM	R87581
Bromide	0.62	0.25	0.50		mg/L	5	4/27/2022 9:03:38 PM	R87581
Nitrogen, Nitrate (As N)	0.88	0.050	0.50		mg/L	5	4/27/2022 9:03:38 PM	R87581
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	4/27/2022 9:03:38 PM	R87581
Sulfate	2400	25	50	*	mg/L	100	5/5/2022 7:33:05 PM	R87788
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **LRN**	
Conductivity	6500	10	10		µmhos/c	1	4/28/2022 4:12:20 PM	R87620
SM4500-H+B / 9040C: PH							Analyst: **LRN**	
pH	7.33			H	pH units	1	4/28/2022 4:12:20 PM	R87620
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	626.9	20.00	20.00		mg/L Ca	1	4/28/2022 4:12:20 PM	R87620
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	4/28/2022 4:12:20 PM	R87620
Total Alkalinity (as CaCO3)	626.9	20.00	20.00		mg/L Ca	1	4/28/2022 4:12:20 PM	R87620
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9981	0	0			1	5/10/2022 4:15:00 PM	R87962
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	4640	100	100	*D	mg/L	1	5/5/2022 1:25:00 PM	67191
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	21	4.0	4.0		mg/L	1	5/4/2022 12:57:00 PM	67224

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001D

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	490	2.9	50		mg/L	50	5/16/2022 8:36:22 AM	A88011
Magnesium	160	1.7	50		mg/L	50	5/16/2022 8:36:22 AM	A88011
Potassium	100	10	50		mg/L	50	5/16/2022 8:36:22 AM	A88011
Sodium	580	21	50		mg/L	50	5/16/2022 8:36:22 AM	A88011

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-001E

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 4/26/2022 9:25:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	0.012	0.0025	5.0	J	mg/L	5	5/4/2022 12:10:37 PM	67111
Lead	ND	0.0025	5.0		mg/L	5	5/2/2022 4:17:19 PM	67111
Selenium	0.29	0.0025	1.0	J	mg/L	5	5/2/2022 4:17:19 PM	67111
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	5/2/2022 1:09:17 PM	67181
EPA 6010B: TCLP METALS							Analyst: **JLF**	
Barium	0.051	0.0011	100	J	mg/L	1	4/28/2022 3:31:14 PM	67111
Cadmium	ND	0.0012	1.0		mg/L	1	4/28/2022 3:31:14 PM	67111
Chromium	ND	0.0017	5.0		mg/L	1	4/28/2022 3:31:14 PM	67111
Silver	0.0066	0.0013	5.0	J	mg/L	1	4/28/2022 3:31:14 PM	67111

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City of POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 4/26/2022 9:50:00 AM
Lab ID: 2204B57-002A
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	4/27/2022 10:38:00 PM	T87552
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	4/27/2022 10:38:00 PM	T87552
2-Butanone	ND	0.0020	200		mg/L	200	4/27/2022 10:38:00 PM	T87552
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	4/27/2022 10:38:00 PM	T87552
Chloroform	ND	0.00013	6.0		mg/L	200	4/27/2022 10:38:00 PM	T87552
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	4/27/2022 10:38:00 PM	T87552
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	4/27/2022 10:38:00 PM	T87552
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	4/27/2022 10:38:00 PM	T87552
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	4/27/2022 10:38:00 PM	T87552
Vinyl chloride	ND	0.00032	0.20		mg/L	200	4/27/2022 10:38:00 PM	T87552
Chlorobenzene	ND	0.00016	100		mg/L	200	4/27/2022 10:38:00 PM	T87552
Surr: 1,2-Dichloroethane-d4	96.2	0	70-130		%Rec	200	4/27/2022 10:38:00 PM	T87552
Surr: 4-Bromofluorobenzene	96.1	0	70-130		%Rec	200	4/27/2022 10:38:00 PM	T87552
Surr: Dibromofluoromethane	103	0	70-130		%Rec	200	4/27/2022 10:38:00 PM	T87552
Surr: Toluene-d8	91.1	0	70-130		%Rec	200	4/27/2022 10:38:00 PM	T87552

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-002B

Client Sample ID: CTB to City of POTW
Collection Date: 4/26/2022 9:50:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	5/18/2022 11:08:06 AM	67182
Endrin	ND	0.000049	0.020		mg/L	1	5/18/2022 11:08:06 AM	67182
gamma-BHC (Lindane)	ND	0.000041	0.40		mg/L	1	5/18/2022 11:08:06 AM	67182
Heptachlor	ND	0.000041	0.0080		mg/L	1	5/18/2022 11:08:06 AM	67182
Heptachlor epoxide	ND	0.000047	0.0080		mg/L	1	5/18/2022 11:08:06 AM	67182
Methoxychlor	ND	0.000046	10		mg/L	1	5/18/2022 11:08:06 AM	67182
Toxaphene	ND	0.00050	0.50		mg/L	1	5/18/2022 11:08:06 AM	67182
Surr: Decachlorobiphenyl	80.7	0	73-119		%Rec	1	5/18/2022 11:08:06 AM	67182
Surr: Tetrachloro-m-xylene	59.8	0	36.6-84.1		%Rec	1	5/18/2022 11:08:06 AM	67182
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	5/3/2022 7:54:16 PM	67188
3+4-Methylphenol	ND	0.00045	200		mg/L	1	5/3/2022 7:54:16 PM	67188
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	5/3/2022 7:54:16 PM	67188
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	5/3/2022 7:54:16 PM	67188
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	5/3/2022 7:54:16 PM	67188
Hexachloroethane	ND	0.00045	3.0		mg/L	1	5/3/2022 7:54:16 PM	67188
Nitrobenzene	ND	0.00051	2.0		mg/L	1	5/3/2022 7:54:16 PM	67188
Pentachlorophenol	ND	0.00059	100		mg/L	1	5/3/2022 7:54:16 PM	67188
Pyridine	ND	0.00093	5.0		mg/L	1	5/3/2022 7:54:16 PM	67188
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	5/3/2022 7:54:16 PM	67188
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	5/3/2022 7:54:16 PM	67188
Cresols, Total	ND	0.00051	200		mg/L	1	5/3/2022 7:54:16 PM	67188
Surr: 2-Fluorophenol	65.0	0	15-118		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: Phenol-d5	45.0	0	15-92.9		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: 2,4,6-Tribromophenol	79.1	0	15-150		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: Nitrobenzene-d5	75.4	0	15-136		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: 2-Fluorobiphenyl	71.3	0	15-134		%Rec	1	5/3/2022 7:54:16 PM	67188
Surr: 4-Terphenyl-d14	82.1	0	15-168		%Rec	1	5/3/2022 7:54:16 PM	67188

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City of POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 4/26/2022 9:50:00 AM
Lab ID: 2204B57-002C
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							Analyst: **MRA**	
Fluoride	1.3	0.040	0.10		mg/L	1	4/27/2022 9:29:20 PM	R87581
Chloride	58	5.0	10		mg/L	20	4/27/2022 9:42:12 PM	R87581
Nitrogen, Nitrite (As N)	ND	0.0053	0.10		mg/L	1	4/27/2022 9:29:20 PM	R87581
Bromide	ND	0.050	0.10		mg/L	1	4/27/2022 9:29:20 PM	R87581
Nitrogen, Nitrate (As N)	1.5	0.010	0.10		mg/L	1	4/27/2022 9:29:20 PM	R87581
Phosphorus, Orthophosphate (As P)	1.8	0.25	0.50		mg/L	1	4/27/2022 9:29:20 PM	R87581
Sulfate	960	5.0	10	*	mg/L	20	4/27/2022 9:42:12 PM	R87581
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **LRN**	
Conductivity	1700	10	10		µmhos/c	1	4/28/2022 4:36:53 PM	R87620
SM4500-H+B / 9040C: PH							Analyst: **LRN**	
pH	7.36			H	pH units	1	4/28/2022 4:36:53 PM	R87620
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	49.16	20.00	20.00		mg/L Ca	1	4/28/2022 4:36:53 PM	R87620
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	4/28/2022 4:36:53 PM	R87620
Total Alkalinity (as CaCO3)	49.16	20.00	20.00		mg/L Ca	1	4/28/2022 4:36:53 PM	R87620
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9986	0	0			1	5/10/2022 4:15:00 PM	R87962
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	1500	20.0	20.0	*	mg/L	1	5/5/2022 1:25:00 PM	67191
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	9.0	4.0	4.0		mg/L	1	5/4/2022 12:57:00 PM	67224

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2204B57-002D

Client Sample ID: CTB to City of POTW
Collection Date: 4/26/2022 9:50:00 AM
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	250	0.29	5.0		mg/L	5	5/16/2022 8:40:17 AM	A88011
Magnesium	75	0.034	1.0		mg/L	1	5/16/2022 8:38:16 AM	A88011
Potassium	2.1	0.21	1.0		mg/L	1	5/16/2022 8:38:16 AM	A88011
Sodium	60	0.42	1.0		mg/L	1	5/16/2022 8:38:16 AM	A88011

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order: **2204B57**
Date Reported: **5/25/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City of POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 4/26/2022 9:50:00 AM
Lab ID: 2204B57-002E
Matrix: Aqueous

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	0.0011	0.00050	5.0	J	mg/L	1	5/4/2022 12:12:01 PM	67111
Lead	0.00091	0.00050	5.0	J	mg/L	1	5/2/2022 4:12:09 PM	67111
Selenium	0.0034	0.00050	1.0	J	mg/L	1	5/2/2022 4:12:09 PM	67111
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	5/2/2022 1:11:25 PM	67181
EPA 6010B: TCLP METALS							Analyst: **JLF**	
Barium	0.027	0.0011	100	J	mg/L	1	4/28/2022 3:37:46 PM	67111
Cadmium	ND	0.0012	1.0		mg/L	1	4/28/2022 3:37:46 PM	67111
Chromium	0.0050	0.0017	5.0	J	mg/L	1	4/28/2022 3:37:46 PM	67111
Silver	0.0035	0.0013	5.0	J	mg/L	1	4/28/2022 3:37:46 PM	67111

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	WDW-1,2,3 & 4 Effluent 2204B57-001		CTB to City of POTW 2204B57-002									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	580	25.23	60	2.61								
Potassium	100	2.56	2.1	0.05								
Calcium	490	24.45	250	12.48								
Magnesium	160	13.17	75	6.17								
Total Cations		65.41		21.31								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2400	49.97	960	19.99								
Chloride	600	16.93	58	1.64								
Bicarbonate (CaCO3)	626.9	12.53	49.16	0.98								
Carbonate (CaCO3)												
Phosphate (P)			1.8	0.17								
Nitrite (N)	0.17	0.01										
Nitrate (N)	0.9	0.06	1.5	0.11	-							
Fluoride	24	1.26	1.3	0.07								
Bromide	0.62	0.01										
Total Anions		80.77		22.96								
Elect. Cond. (µMhos/cm)	6500		1700									
CATION/ANION RATIO		0.81		0.93								
% Difference		11		4								
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	4640		1500									
TDS (calculated)	4735		1448									
Ratio meas TDS:calc TDS		1.0		1.0								
Ratio Meas. TDS:EC		0.71		0.88								
Ratio Calc. TDS:EC		0.73		0.85								
Ratio of anion sum:EC		1.2		1.4								
Ratio of cation sum:EC		1.0		1.3								

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

May 16, 2022

Hall Environmental Analysis Laboratory

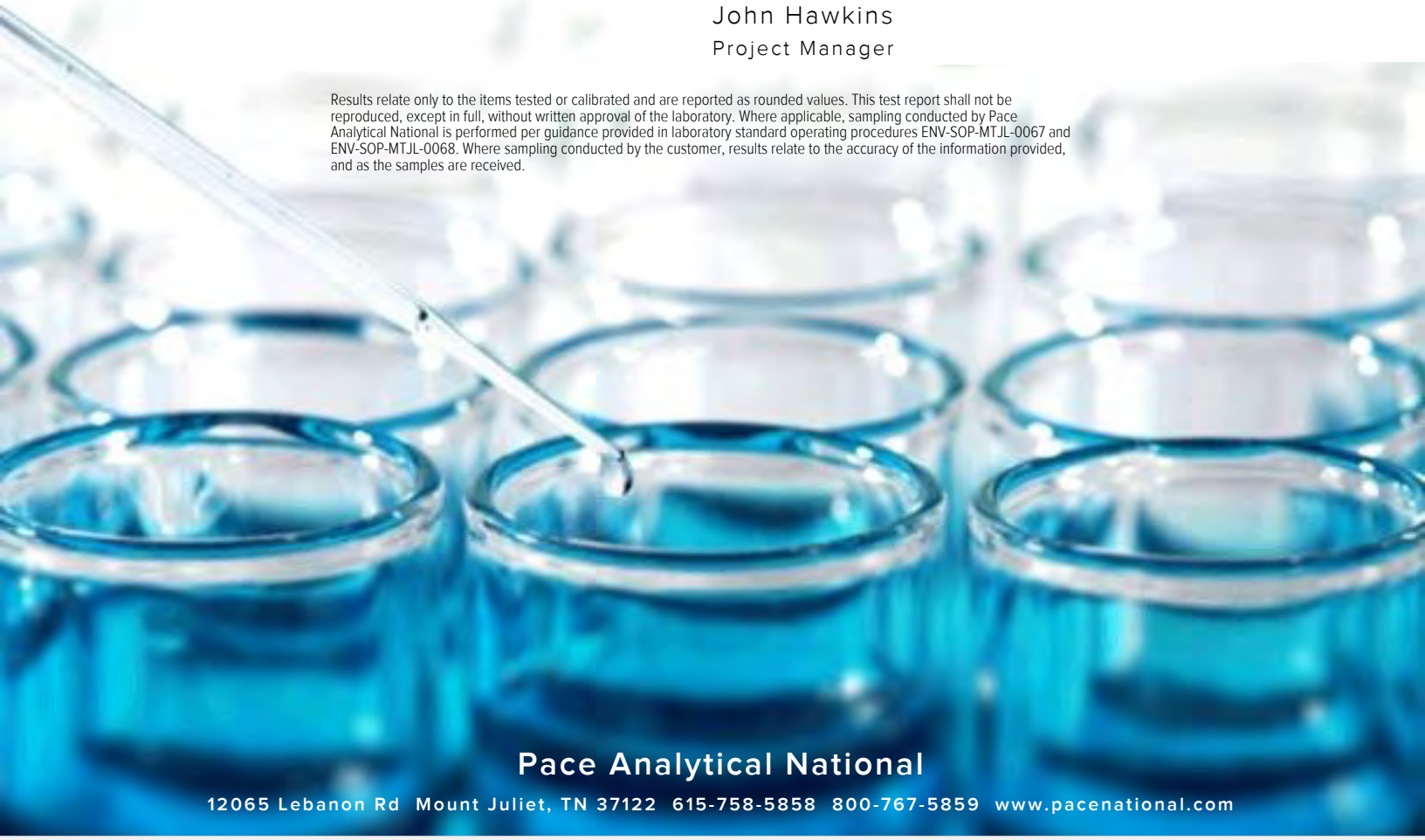
Sample Delivery Group:	L1487566
Samples Received:	04/28/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2204B57-001F WDW-1,2,3 & 4 EFFLUENT L1487566-01 Waste

Collected by | Collected date/time 04/26/22 09:25 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1859202	1	05/05/22 14:00	05/05/22 14:00	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1860542	1	05/09/22 02:53	05/10/22 02:08	HMH	Mt. Juliet, TN

2204B57-001G WDW-1,2,3 & 4 EFFLUENT L1487566-02 GW

Collected by | Collected date/time 04/26/22 09:25 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1859241	1	05/06/22 11:27	05/06/22 11:27	ARD	Mt. Juliet, TN

2204B57-001H WDW-1,2,3 & 4 EFFLUENT L1487566-03 GW

Collected by | Collected date/time 04/26/22 09:25 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1859852	1	05/07/22 18:20	05/09/22 17:49	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1862545	1	05/13/22 17:59	05/13/22 17:59	SMW	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1859881	1	05/09/22 13:45	05/09/22 13:45	EPW	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1858842	1	05/05/22 19:00	05/05/22 19:00	WOS	Mt. Juliet, TN

2204B57-002F CTB TO CITY OF POTW L1487566-04 Waste

Collected by | Collected date/time 04/26/22 09:50 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1859202	1	05/05/22 14:00	05/05/22 14:00	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1860542	1	05/09/22 02:53	05/10/22 02:23	HMH	Mt. Juliet, TN

2204B57-002G CTB TO CITY OF POTW L1487566-05 GW

Collected by | Collected date/time 04/26/22 09:50 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1859241	1	05/06/22 11:27	05/06/22 11:27	ARD	Mt. Juliet, TN

2204B57-002H CTB TO CITY OF POTW L1487566-06 GW

Collected by | Collected date/time 04/26/22 09:50 | Received date/time 04/28/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1859852	1	05/07/22 18:20	05/09/22 17:53	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1862546	1	05/12/22 18:30	05/12/22 18:30	AW	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1859881	1	05/09/22 13:45	05/09/22 13:45	EPW	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1858842	1	05/05/22 19:00	05/05/22 19:00	WOS	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1487566-06	2204B57-002H CTB TO CITY OF POTW	4500 S2 D-2011

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		5/5/2022 2:00:42 PM	WG1859202
Fluid	1		5/5/2022 2:00:42 PM	WG1859202
Initial pH	N/A		5/5/2022 2:00:42 PM	WG1859202
Final pH	N/A		5/5/2022 2:00:42 PM	WG1859202

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND	J4	0.00200	1	1	05/10/2022 02:08	WG1860542
2,4-D	ND	J4	0.00200	10	1	05/10/2022 02:08	WG1860542
(S) 2,4-Dichlorophenyl Acetic Acid	*89.6*		*14.0-158*			*05/10/2022 02:08*	WG1860542

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	157	T8	1	05/06/2022 11:27	WG1859241

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	0.0133		0.00500	1	05/09/2022 17:49	WG1859852

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	0.108	Q	0.0500	1	05/13/2022 17:59	WG1862545

Sample Narrative:

L1487566-03 WG1862545: Ran out of hold due to supply chain issues.

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.25	T8	1	05/09/2022 13:45	WG1859881

Sample Narrative:

L1487566-03 WG1859881: 7.25 at 20.5C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	05/05/2022 19:00	WG1858842

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		5/5/2022 2:00:42 PM	WG1859202
Fluid	1		5/5/2022 2:00:42 PM	WG1859202
Initial pH	N/A		5/5/2022 2:00:42 PM	WG1859202
Final pH	N/A		5/5/2022 2:00:42 PM	WG1859202

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND	J4	0.00200	1	1	05/10/2022 02:23	WG1860542
2,4-D	ND	J4	0.00200	10	1	05/10/2022 02:23	WG1860542
(S) 2,4-Dichlorophenyl Acetic Acid	*81.2*		*14.0-158*			*05/10/2022 02:23*	WG1860542

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	149	T8	1	05/06/2022 11:27	WG1859241

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND		0.00500	1	05/09/2022 17:53	WG1859852

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND	Q	0.0500	1	05/12/2022 18:30	WG1862546

Sample Narrative:

L1487566-06 WG1862546: Ran out of hold due to supply chain issues.

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.54	T8	1	05/09/2022 13:45	WG1859881

Sample Narrative:

L1487566-06 WG1859881: 7.54 at 19.9C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	05/05/2022 19:00	WG1858842

L1487566-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1487566-02 05/06/22 11:27 • (DUP) R3788898-3 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	157	149	1	7.80		20

L1487566-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1487566-05 05/06/22 11:27 • (DUP) R3788898-4 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	149	156	1	7.20		20

L1487958-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-01 05/06/22 11:27 • (DUP) R3788898-5 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	359	359	1	0.200		20

L1487958-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-02 05/06/22 11:27 • (DUP) R3788898-6 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	87.0	87.1	1	0.100		20

L1487958-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-03 05/06/22 11:27 • (DUP) R3788898-7 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	314	313	1	0.600		20

L1487958-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-04 05/06/22 11:27 • (DUP) R3788898-8 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	302	301	1	0.400		20

L1487958-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-05 05/06/22 11:27 • (DUP) R3788898-9 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	316	316	1	0.100		20

L1487958-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-06 05/06/22 11:27 • (DUP) R3788898-10 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	73.9	76.5	1	2.60		20

L1487958-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-07 05/06/22 11:27 • (DUP) R3788898-11 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	197	197	1	0.800		20

L1487958-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1487958-08 05/06/22 11:27 • (DUP) R3788898-12 05/06/22 11:27

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	251	255	1	3.70		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3788898-1 05/06/22 11:27 • (LCSD) R3788898-2 05/06/22 11:27

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	108	115	99.5	106	90.0-110			7.40	20

Method Blank (MB)

(MB) R3789863-1 05/09/22 17:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1487559-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1487559-02 05/09/22 17:37 • (DUP) R3789863-3 05/09/22 17:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1487566-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1487566-03 05/09/22 17:49 • (DUP) R3789863-8 05/09/22 17:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.0133	0.0142	1	6.55		20

Laboratory Control Sample (LCS)

(LCS) R3789863-2 05/09/22 17:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.108	108	87.1-120	

L1487559-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487559-03 05/09/22 17:41 • (MS) R3789863-4 05/09/22 17:42 • (MSD) R3789863-5 05/09/22 17:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0996	0.105	99.6	105	1	90.0-110			5.28	20

L1487562-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487562-01 05/09/22 17:44 • (MS) R3789863-6 05/09/22 17:45 • (MSD) R3789863-7 05/09/22 17:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0869	0.0920	86.9	92.0	1	90.0-110	J6		5.70	20

Received by OCD: 5/6/2023 7:46:22 AM

Method Blank (MB)

(MB) R3791750-1 05/13/22 17:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3791750-2 05/13/22 17:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.555	111	85.0-115	

Released to Imaging: 5/24/2023 4:44:56 PM

Method Blank (MB)

(MB) R3791378-1 05/12/22 18:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3791378-2 05/12/22 18:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.528	106	85.0-115	

L1487566-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487566-06 05/12/22 18:30 • (MS) R3791378-3 05/12/22 18:30 • (MSD) R3791378-4 05/12/22 18:30

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	0.500	ND	0.536	0.529	107	106	1	80.0-120			1.31	20

Sample Narrative:

OS: Ran out of hold due to supply chain issues.

Received by OCD: 3/6/2023 7:46:22 AM

Laboratory Control Sample (LCS)

(LCS) R3789960-1 05/09/22 13:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 21.1C

Released to Imaging: 5/24/2023 4:44:56 PM

L1487566-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1487566-06 05/05/22 19:00 • (DUP) R3788643-3 05/05/22 19:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3788643-1 05/05/22 19:00 • (LCSD) R3788643-2 05/05/22 19:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	130	130	103	103	96.0-104			0.000	10

Method Blank (MB)

(MB) R3790044-1 05/09/22 21:28

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*76.4*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3790044-2 05/09/22 21:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0641	128	50.0-125	E J4
2,4-D	0.0500	0.0873	175	50.0-120	E J4
(S) 2,4-Dichlorophenyl Acetic Acid			*144*	*14.0-158*	

L1487556-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487556-01 05/10/22 01:24 • (MS) R3790044-3 05/10/22 01:38 • (MSD) R3790044-4 05/10/22 01:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0355	0.0374	71.0	74.8	1	50.0-125			5.21	20
2,4-D	0.0500	ND	0.0546	0.0497	109	99.4	1	50.0-120	E		9.40	20
(S) 2,4-Dichlorophenyl Acetic Acid					*75.8*	*68.4*		*14.0-158*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

A199

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

L148758d6

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	2204B57-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	4/26/2022 9:25:00 AM	1	8151TCLP *RUSH 7 DAY TAT*	-01
2	2204B57-001G	WDW-1,2,3 & 4 Effluent	125HDP	Aqueous	4/26/2022 9:25:00 AM	1	ORP *RUSH 7 DAY TAT*	-02
3	2204B57-001H	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	4/26/2022 9:25:00 AM	3	RCI *RUSH 7 DAY TAT*	-03
4	2204B57-002F	CTB to City of POTW	1LAMGU	Aqueous	4/26/2022 9:50:00 AM	1	8151TCLP *RUSH 7 DAY TAT*	-04
5	2204B57-002G	CTB to City of POTW	125HDP	Aqueous	4/26/2022 9:50:00 AM	1	ORP *RUSH 7 DAY TAT*	-05
6	2204B57-002H	CTB to City of POTW	500HDPE	Aqueous	4/26/2022 9:50:00 AM	3	RCI *RUSH 7 DAY TAT*	-06

7767 0976 9790

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N	DRA7	
Sufficient volume sent:	Y N	3.8 to = 3.8	
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 4/27/2022	Time: 10:38 AM	Received By:	Date: 4/28/22	Time: 0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R87581**	RunNo: **87581**
Prep Date:	Analysis Date: **4/27/2022**	SeqNo: **3099704** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R87581**	RunNo: **87581**
Prep Date:	Analysis Date: **4/27/2022**	SeqNo: **3099705** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.50	0.10	0.5000	0	99.5	90	110			
Chloride	4.6	0.50	5.000	0	92.5	90	110			
Nitrogen, Nitrite (As N)	0.98	0.10	1.000	0	98.0	90	110			
Bromide	2.4	0.10	2.500	0	97.5	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	100	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	92.6	90	110			
Sulfate	10	0.50	10.00	0	100	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R87788**	RunNo: **87788**
Prep Date:	Analysis Date: **5/5/2022**	SeqNo: **3109682** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R87788**	RunNo: **87788**
Prep Date:	Analysis Date: **5/5/2022**	SeqNo: **3109683** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.8	90	110			
Sulfate	10	0.50	10.00	0	101	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67111** SampType: **MBLK** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW** Batch ID: **67111** RunNo: **87655**
Prep Date: **4/27/2022** Analysis Date: **5/2/2022** SeqNo: **3103419** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-67111** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **67111** RunNo: **87655**
Prep Date: **4/27/2022** Analysis Date: **5/2/2022** SeqNo: **3103420** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0012	0.0010	0.001000	0	124	70	130			
Selenium	0.00099	0.0010	0.001000	0	98.7	70	130			J

Sample ID: **MSLCS-67111** SampType: **LCS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW** Batch ID: **67111** RunNo: **87655**
Prep Date: **4/27/2022** Analysis Date: **5/2/2022** SeqNo: **3103421** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.052	0.0010	0.05000	0	103	80	120			
Selenium	0.048	0.0010	0.05000	0	96.0	80	120			

Sample ID: **MB-67111** SampType: **MBLK** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW** Batch ID: **67111** RunNo: **87716**
Prep Date: **4/27/2022** Analysis Date: **5/4/2022** SeqNo: **3107038** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								

Sample ID: **MSLLLCS-67111** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **67111** RunNo: **87716**
Prep Date: **4/27/2022** Analysis Date: **5/4/2022** SeqNo: **3107039** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00096	0.0010	0.001000	0	96.1	70	130			J

Sample ID: **MSLCS-67111** SampType: **LCS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW** Batch ID: **67111** RunNo: **87716**
Prep Date: **4/27/2022** Analysis Date: **5/4/2022** SeqNo: **3107040** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0010	0.05000	0	99.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67182** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **67182** RunNo: **88093**
Prep Date: **5/2/2022** Analysis Date: **5/18/2022** SeqNo: **3123051** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		94.2	73	119			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.6	36.6	84.1			

Sample ID: **MB-67182** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **67182** RunNo: **88093**
Prep Date: **5/2/2022** Analysis Date: **5/18/2022** SeqNo: **3123052** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		92.2	73	119			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.8	36.6	84.1			

Sample ID: **LCS-67182** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **67182** RunNo: **88093**
Prep Date: **5/2/2022** Analysis Date: **5/18/2022** SeqNo: **3123054** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00047	0.00010	0.0005000	0	93.5	56.3	126			
gamma-BHC (Lindane)	0.00040	0.00010	0.0005000	0	81.0	45.8	103			
Heptachlor	0.00027	0.00010	0.0005000	0	53.2	33.7	104			
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	85.9	50.1	116			
Methoxychlor	0.00055	0.00010	0.0005000	0	111	15	203			
Surr: Decachlorobiphenyl	0.0022		0.002500		87.0	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		64.1	36.6	84.1			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-67182** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **67182** RunNo: **88093**
Prep Date: **5/2/2022** Analysis Date: **5/18/2022** SeqNo: **3123055** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00047	0.00010	0.0005000	0	94.4	56.3	126			
gamma-BHC (Lindane)	0.00041	0.00010	0.0005000	0	82.4	45.8	103			
Heptachlor	0.00027	0.00010	0.0005000	0	53.4	33.7	104			
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.3	50.1	116			
Methoxychlor	0.00052	0.00010	0.0005000	0	103	15	203			
Surr: Decachlorobiphenyl	0.0021		0.002500		85.3	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		64.2	36.6	84.1			

Sample ID: **LCSD-67182** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **67182** RunNo: **88093**
Prep Date: **5/2/2022** Analysis Date: **5/18/2022** SeqNo: **3123056** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.9	56.3	126	2.57	20	
gamma-BHC (Lindane)	0.00042	0.00010	0.0005000	0	83.6	45.8	103	3.16	20	
Heptachlor	0.00034	0.00010	0.0005000	0	67.7	33.7	104	24.0	20	R
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.7	50.1	116	4.30	20	
Methoxychlor	0.00054	0.00010	0.0005000	0	108	15	203	2.80	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		88.7	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0015		0.002500		61.0	36.6	84.1	0	0	

Sample ID: **LCSD-67182** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **67182** RunNo: **88093**
Prep Date: **5/2/2022** Analysis Date: **5/18/2022** SeqNo: **3123057** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	96.0	56.3	126	1.73	20	
gamma-BHC (Lindane)	0.00043	0.00010	0.0005000	0	85.1	45.8	103	3.12	20	
Heptachlor	0.00034	0.00010	0.0005000	0	67.6	33.7	104	23.5	20	R
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.5	50.1	116	3.56	20	
Methoxychlor	0.00052	0.00010	0.0005000	0	103	15	203	0.199	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		87.5	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0017		0.002500		68.7	36.6	84.1	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T87552** RunNo: **87552**
Prep Date: Analysis Date: **4/27/2022** SeqNo: **3099812** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.022	0.50	0.02000	0	108	70	130			J
1,1-Dichloroethene	0.020	0.70	0.02000	0	102	70	130			J
Trichloroethene (TCE)	0.021	0.50	0.02000	0	104	70	130			J
Chlorobenzene	0.020	100	0.02000	0	99.4	70	130			J
Surr: 1,2-Dichloroethane-d4	0.0097		0.01000		96.6	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		99.8	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		101	70	130			
Surr: Toluene-d8	0.0091		0.01000		91.2	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T87552** RunNo: **87552**
Prep Date: Analysis Date: **4/27/2022** SeqNo: **3099813** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.0099		0.01000		99.0	70	130			
Surr: 4-Bromofluorobenzene	0.0099		0.01000		99.4	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		101	70	130			
Surr: Toluene-d8	0.0092		0.01000		92.5	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-67188** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **67188** RunNo: **87709**
Prep Date: **5/2/2022** Analysis Date: **5/3/2022** SeqNo: **3105691** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.14		0.2000		69.3	15	118			
Surr: Phenol-d5	0.094		0.2000		46.9	15	92.9			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		69.0	15	150			
Surr: Nitrobenzene-d5	0.082		0.1000		82.0	15	136			
Surr: 2-Fluorobiphenyl	0.072		0.1000		71.5	15	134			
Surr: 4-Terphenyl-d14	0.076		0.1000		75.8	15	168			

Sample ID: **lcs-67188** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **67188** RunNo: **87709**
Prep Date: **5/2/2022** Analysis Date: **5/3/2022** SeqNo: **3105692** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.077	0.00010	0.1000	0	77.0	19	106			
3+4-Methylphenol	0.16	0.00010	0.2000	0	82.4	16.3	112			
2,4-Dinitrotoluene	0.056	0.00010	0.1000	0	55.7	15	99.6			
Hexachlorobenzene	0.070	0.00010	0.1000	0	70.2	41.8	111			
Hexachlorobutadiene	0.057	0.00010	0.1000	0	56.6	15	91.5			
Hexachloroethane	0.064	0.00010	0.1000	0	64.5	15	87.5			
Nitrobenzene	0.072	0.00010	0.1000	0	71.6	19.3	114			
Pentachlorophenol	0.063	0.00010	0.1000	0	63.0	29	103			
Pyridine	0.018	0.00010	0.1000	0	18.3	15	92.6			
2,4,5-Trichlorophenol	0.078	0.00010	0.1000	0	77.7	25.2	114			
2,4,6-Trichlorophenol	0.076	0.00010	0.1000	0	75.7	25.7	112			
Cresols, Total	0.24	0.00010	0.3000	0	80.6	15	145			
Surr: 2-Fluorophenol	0.13		0.2000		62.8	15	118			
Surr: Phenol-d5	0.086		0.2000		43.0	15	92.9			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.6	15	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-67188** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **67188** RunNo: **87709**
Prep Date: **5/2/2022** Analysis Date: **5/3/2022** SeqNo: **3105692** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.078		0.1000		77.9	15	136			
Surr: 2-Fluorobiphenyl	0.069		0.1000		69.4	15	134			
Surr: 4-Terphenyl-d14	0.085		0.1000		84.9	15	168			

Sample ID: **2204b57-001bms** SampType: **MS** TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **67188** RunNo: **87709**
Prep Date: **5/2/2022** Analysis Date: **5/3/2022** SeqNo: **3105694** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.075	0.00010	0.1000	0	74.9	15.8	101			
3+4-Methylphenol	0.16	0.00010	0.2000	0	79.1	16.9	97.9			
2,4-Dinitrotoluene	0.058	0.00010	0.1000	0	57.5	20.1	90.5			
Hexachlorobenzene	0.072	0.00010	0.1000	0	71.6	34	108			
Hexachlorobutadiene	0.063	0.00010	0.1000	0	63.0	15	99.7			
Hexachloroethane	0.068	0.00010	0.1000	0	67.9	15	86.4			
Nitrobenzene	0.073	0.00010	0.1000	0	72.6	15	109			
Pentachlorophenol	0.024	0.00010	0.1000	0	24.1	15	130			
Pyridine	0.049	0.00010	0.1000	0.005858	42.9	15	82			
2,4,5-Trichlorophenol	0.073	0.00010	0.1000	0	73.0	28.1	105			
2,4,6-Trichlorophenol	0.064	0.00010	0.1000	0	64.3	21.5	110			
Cresols, Total	0.23	0.00010	0.3000	0	77.7	15	127			
Surr: 2-Fluorophenol	0.12		0.2000		60.6	15	118			
Surr: Phenol-d5	0.086		0.2000		43.2	15	92.9			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.1	15	150			
Surr: Nitrobenzene-d5	0.079		0.1000		78.9	15	136			
Surr: 2-Fluorobiphenyl	0.070		0.1000		70.4	15	134			
Surr: 4-Terphenyl-d14	0.082		0.1000		81.6	15	168			

Sample ID: **2204b57-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **67188** RunNo: **87709**
Prep Date: **5/2/2022** Analysis Date: **5/3/2022** SeqNo: **3105695** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.080	0.00010	0.1000	0	80.2	15.8	101	6.81	20	
3+4-Methylphenol	0.17	0.00010	0.2000	0	84.2	16.9	97.9	6.20	20	
2,4-Dinitrotoluene	0.059	0.00010	0.1000	0	59.2	20.1	90.5	2.89	20	
Hexachlorobenzene	0.077	0.00010	0.1000	0	76.6	34	108	6.76	20	
Hexachlorobutadiene	0.066	0.00010	0.1000	0	66.0	15	99.7	4.73	20	
Hexachloroethane	0.069	0.00010	0.1000	0	68.9	15	86.4	1.50	20	
Nitrobenzene	0.076	0.00010	0.1000	0	75.9	15	109	4.40	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2204b57-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **67188** RunNo: **87709**
Prep Date: **5/2/2022** Analysis Date: **5/3/2022** SeqNo: **3105695** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.040	0.00010	0.1000	0	39.5	15	130	48.7	20	R
Pyridine	0.056	0.00010	0.1000	0.005858	49.7	15	82	13.1	20	
2,4,5-Trichlorophenol	0.077	0.00010	0.1000	0	77.3	28.1	105	5.68	20	
2,4,6-Trichlorophenol	0.076	0.00010	0.1000	0	75.8	21.5	110	16.4	20	
Cresols, Total	0.25	0.00010	0.3000	0	82.9	15	127	6.40	20	
Surr: 2-Fluorophenol	0.13		0.2000		66.1	15	118	0	0	
Surr: Phenol-d5	0.096		0.2000		47.8	15	92.9	0	0	
Surr: 2,4,6-Tribromophenol	0.16		0.2000		81.0	15	150	0	0	
Surr: Nitrobenzene-d5	0.081		0.1000		81.2	15	136	0	0	
Surr: 2-Fluorobiphenyl	0.073		0.1000		73.3	15	134	0	0	
Surr: 4-Terphenyl-d14	0.078		0.1000		78.3	15	168	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 98.6uS eC**	SampType: **lcs**		TestCode: **SM2510B: Specific Conductance**		
Client ID: **LCSW**	Batch ID: **R87620**		RunNo: **87620**		
Prep Date:	Analysis Date: **4/28/2022**		SeqNo: **3101479**	Units: **µmhos/cm**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	98.60	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**

25-May-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67181**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW**	Batch ID: **67181**	RunNo: **87656**
Prep Date: **5/2/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103457** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-67181**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC**	Batch ID: **67181**	RunNo: **87656**
Prep Date: **5/2/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103458** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00014	0.00020	0.0001500	0	95.6	50	150			J

Sample ID: **LCS-67181**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW**	Batch ID: **67181**	RunNo: **87656**
Prep Date: **5/2/2022**	Analysis Date: **5/2/2022**	SeqNo: **3103459** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW** Batch ID: **A88011** RunNo: **88011**
Prep Date: Analysis Date: **5/16/2022** SeqNo: **3119568** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A88011** RunNo: **88011**
Prep Date: Analysis Date: **5/16/2022** SeqNo: **3119570** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	80	120			
Magnesium	51	1.0	50.00	0	103	80	120			
Potassium	51	1.0	50.00	0	102	80	120			
Sodium	50	1.0	50.00	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67111**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **67111**	RunNo: **87611**
Prep Date: ***4/27/2022***	Analysis Date: ***4/28/2022***	SeqNo: **3100575** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	0.0028	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-67111**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **67111**	RunNo: **87611**
Prep Date: ***4/27/2022***	Analysis Date: ***4/28/2022***	SeqNo: **3100577** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.0020	0.5000	0	93.9	80	120			
Cadmium	0.48	0.0020	0.5000	0	95.5	80	120			B
Chromium	0.47	0.0060	0.5000	0	93.9	80	120			
Silver	0.096	0.0050	0.1000	0	96.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101381**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101382**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.12	20.00	80.00	0	95.2	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101404**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101405**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.60	20.00	80.00	0	94.5	90	110			

Sample ID: **mb-3 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101427**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-3 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87620**	RunNo: **87620**							
Prep Date:	Analysis Date: **4/28/2022**	SeqNo: **3101428**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.32	20.00	80.00	0	95.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67191**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **PBW**	Batch ID: **67191**	RunNo: **87767**							
Prep Date: **5/3/2022**	Analysis Date: **5/5/2022**	SeqNo: **3108756**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-67191**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **LCSW**	Batch ID: **67191**	RunNo: **87767**							
Prep Date: **5/3/2022**	Analysis Date: **5/5/2022**	SeqNo: **3108757**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2204B57**
25-May-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67224**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **67224**	RunNo: **87726**							
Prep Date: **5/3/2022**	Analysis Date: **5/4/2022**	SeqNo: **3106971**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-67224**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **67224**	RunNo: **87726**							
Prep Date: **5/3/2022**	Analysis Date: **5/4/2022**	SeqNo: **3106972**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	90	4.0	92.40	0	97.4	83.44	119.05			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2204B57 | RcptNo: 1

Received By: Juan Rojas 4/27/2022 7:10:00 AM

Completed By: Sean Livingston 4/27/2022 10:32:16 AM

Reviewed By: KPG 4-27-22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 6 4 (<2 or >12 unless noted)

Adjusted? NO

Checked by: JN 4/27/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

16. Additional remarks: Poured off 125ml from samples 001B 2 of 2, 002B 2 of 2. for orp analysis. JN 4/27/22.

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.6	Good				

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
Standard X Rush X

Project Name:
PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard
On Ice: ☑ Yes ☐ No
Sample Temperature: 0.3+0.3=0.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2204857	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	X						
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			X					
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				X				
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					X			
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						X		
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							X	
4/26/22	9:25	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								X
4/26/22	9:50	Liquid	CTB to City POTW	**	**	002	X						
4/26/22	9:50	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
4/26/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none				X				
4/26/22	9:50	Liquid	CTB to City POTW	***	***					X			
4/26/22	9:50	Liquid	CTB to City POTW	1-250ml P	HNO4						X		
4/26/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none							X	
4/26/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none								X

Date: 4-26-22 Time: 11:15 Relinquished by: Brady Hubbard Brady Hubbard
Received by: [signature] Date: 4/26/22 Time: 1115

Date: 4/26/22 Time: 1900 Relinquished by: [signature]
Received by: [signature] Courier Date: 4/27/22 Time: 7:10

Analysis Request

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 01, 2022

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2205139

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/4/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
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TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2205139**
Date: **6/1/2022**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2205139**
Date Reported: **6/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 5/3/2022 9:50:00 AM
Lab ID: 2205139-001 **Matrix:** AQUEOUS **Received Date:** 5/4/2022 7:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	5/18/2022 11:34:25 AM	67352
Endrin	ND	0.000049	0.020		mg/L	1	5/18/2022 11:34:25 AM	67352
gamma-BHC (Lindane)	ND	0.000041	0.40		mg/L	1	5/18/2022 11:34:25 AM	67352
Heptachlor	ND	0.000041	0.0080		mg/L	1	5/18/2022 11:34:25 AM	67352
Heptachlor epoxide	ND	0.000047	0.0080		mg/L	1	5/18/2022 11:34:25 AM	67352
Methoxychlor	ND	0.000046	10		mg/L	1	5/18/2022 11:34:25 AM	67352
Toxaphene	ND	0.00050	0.50		mg/L	1	5/18/2022 11:34:25 AM	67352
Surr: Decachlorobiphenyl	90.0	0	73-119		%Rec	1	5/18/2022 11:34:25 AM	67352
Surr: Tetrachloro-m-xylene	77.8	0	36.6-84.1		%Rec	1	5/18/2022 11:34:25 AM	67352
EPA METHOD 300.0: ANIONS							Analyst: **CAS**	
Fluoride	1.8	0.040	0.10		mg/L	1	5/17/2022 6:30:11 PM	R88075
Chloride	58	5.0	10		mg/L	20	5/4/2022 12:15:27 PM	R87761
Nitrogen, Nitrite (As N)	ND	0.0053	0.10		mg/L	1	5/4/2022 11:38:14 AM	R87761
Bromide	ND	0.050	0.10		mg/L	1	5/4/2022 11:38:14 AM	R87761
Nitrogen, Nitrate (As N)	1.8	0.010	0.10		mg/L	1	5/4/2022 11:38:14 AM	R87761
Phosphorus, Orthophosphate (As P)	12	5.0	10		mg/L	20	5/4/2022 12:15:27 PM	R87761
Sulfate	1100	12	25	*	mg/L	50	5/12/2022 5:07:45 PM	R87965
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Calcium	310	0.57	5.0		mg/L	5	5/26/2022 12:13:14 PM	A88292
Magnesium	99	0.067	1.0		mg/L	1	5/26/2022 12:11:34 PM	A88292
Potassium	2.7	0.16	1.0		mg/L	1	5/26/2022 12:11:34 PM	A88292
Sodium	65	0.33	1.0		mg/L	1	5/26/2022 12:11:34 PM	A88292
EPA METHOD 6020A: TOTAL METALS							Analyst: **DBK**	
Arsenic	0.0012	0.00050	5.0	J	mg/L	1	5/9/2022 5:23:13 PM	67304
Lead	ND	0.00050	5.0		mg/L	1	5/9/2022 5:23:13 PM	67304
Selenium	0.0041	0.00050	1.0	J	mg/L	1	5/9/2022 5:23:13 PM	67304
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	5/10/2022 12:34:10 PM	67364
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **JRR**	
Barium	0.032	0.0011	100	J	mg/L	1	5/6/2022 10:45:58 AM	67304
Cadmium	ND	0.0012	1.0		mg/L	1	5/6/2022 10:45:58 AM	67304
Chromium	ND	0.0017	5.0		mg/L	1	5/6/2022 10:45:58 AM	67304
Silver	0.0075	0.0013	5.0	J	mg/L	1	5/10/2022 12:36:46 PM	67304
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	5/11/2022 3:27:27 PM	67375
3+4-Methylphenol	ND	0.00045	200		mg/L	1	5/11/2022 3:27:27 PM	67375

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2205139**
Date Reported: **6/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 5/3/2022 9:50:00 AM
Lab ID: 2205139-001 **Matrix:** AQUEOUS **Received Date:** 5/4/2022 7:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	5/11/2022 3:27:27 PM	67375
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	5/11/2022 3:27:27 PM	67375
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	5/11/2022 3:27:27 PM	67375
Hexachloroethane	ND	0.00045	3.0		mg/L	1	5/11/2022 3:27:27 PM	67375
Nitrobenzene	ND	0.00051	2.0		mg/L	1	5/11/2022 3:27:27 PM	67375
Pentachlorophenol	ND	0.00059	100		mg/L	1	5/11/2022 3:27:27 PM	67375
Pyridine	ND	0.00093	5.0		mg/L	1	5/11/2022 3:27:27 PM	67375
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	5/11/2022 3:27:27 PM	67375
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	5/11/2022 3:27:27 PM	67375
Cresols, Total	ND	0.00051	200		mg/L	1	5/11/2022 3:27:27 PM	67375
Surr: 2-Fluorophenol	64.4	0	15-118		%Rec	1	5/11/2022 3:27:27 PM	67375
Surr: Phenol-d5	42.7	0	15-92.9		%Rec	1	5/11/2022 3:27:27 PM	67375
Surr: 2,4,6-Tribromophenol	74.2	0	15-150		%Rec	1	5/11/2022 3:27:27 PM	67375
Surr: Nitrobenzene-d5	76.7	0	15-136		%Rec	1	5/11/2022 3:27:27 PM	67375
Surr: 2-Fluorobiphenyl	69.8	0	15-134		%Rec	1	5/11/2022 3:27:27 PM	67375
Surr: 4-Terphenyl-d14	94.8	0	15-168		%Rec	1	5/11/2022 3:27:27 PM	67375
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	5/5/2022 7:09:00 AM	TC8771
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	5/5/2022 7:09:00 AM	TC8771
2-Butanone	ND	0.0020	200		mg/L	200	5/5/2022 7:09:00 AM	TC8771
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	5/5/2022 7:09:00 AM	TC8771
Chloroform	ND	0.00013	6.0		mg/L	200	5/5/2022 7:09:00 AM	TC8771
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	5/5/2022 7:09:00 AM	TC8771
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	5/5/2022 7:09:00 AM	TC8771
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	5/5/2022 7:09:00 AM	TC8771
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	5/5/2022 7:09:00 AM	TC8771
Vinyl chloride	ND	0.00032	0.20		mg/L	200	5/5/2022 7:09:00 AM	TC8771
Chlorobenzene	ND	0.00016	100		mg/L	200	5/5/2022 7:09:00 AM	TC8771
Surr: 1,2-Dichloroethane-d4	102	0	70-130		%Rec	200	5/5/2022 7:09:00 AM	TC8771
Surr: 4-Bromofluorobenzene	99.4	0	70-130		%Rec	200	5/5/2022 7:09:00 AM	TC8771
Surr: Dibromofluoromethane	103	0	70-130		%Rec	200	5/5/2022 7:09:00 AM	TC8771
Surr: Toluene-d8	97.1	0	70-130		%Rec	200	5/5/2022 7:09:00 AM	TC8771
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **LRN**	
Conductivity	2100	10	10		µmhos/c	1	5/5/2022 2:42:02 PM	R87793
SM4500-H+B / 9040C: PH							Analyst: **LRN**	
pH	7.47			H	pH units	1	5/5/2022 2:42:02 PM	R87793
SM2320B: ALKALINITY							Analyst: **LRN**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

Analytical Report
Lab Order **2205139**
Date Reported: **6/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 5/3/2022 9:50:00 AM
Lab ID: 2205139-001 **Matrix:** AQUEOUS **Received Date:** 5/4/2022 7:05:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	63.12	20.00	20.00		mg/L Ca	1	5/5/2022 2:42:02 PM	R87793
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	5/5/2022 2:42:02 PM	R87793
Total Alkalinity (as CaCO3)	63.12	20.00	20.00		mg/L Ca	1	5/5/2022 2:42:02 PM	R87793
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9999	0	0			1	5/10/2022 4:15:00 PM	R87962
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	1880	20.0	20.0	*	mg/L	1	5/8/2022 9:56:00 AM	67311
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	6.0	4.0	4.0		mg/L	1	5/7/2022 7:49:00 PM	67312

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	CTB to City POTW 2205139-001											
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	65	2.83										
Potassium	2.7	0.07										
Calcium	310	15.47										
Magnesium	99	8.15										
Total Cations		26.51										
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	1100	22.90										
Chloride	58	1.64										
Bicarbonate (CaCO3)	63.12	1.26	-									
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)												
Nitrate (N)	1.8	0.13			-							
Fluoride	1.8	0.09										
Bromide												
Total Anions		26.02										
Elect. Cond. (µMhos/cm)	2100											
CATION/ANION RATIO		1.02										
% Difference		1										
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	1880											
TDS (calculated)	1682											
Ratio meas TDS:calc TDS		1.1										
Ratio Meas. TDS:EC		0.90										
Ratio Calc. TDS:EC		0.80										
Ratio of anion sum:EC		1.2										
Ratio of cation sum:EC		1.3										

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

May 30, 2022

Hall Environmental Analysis Laboratory

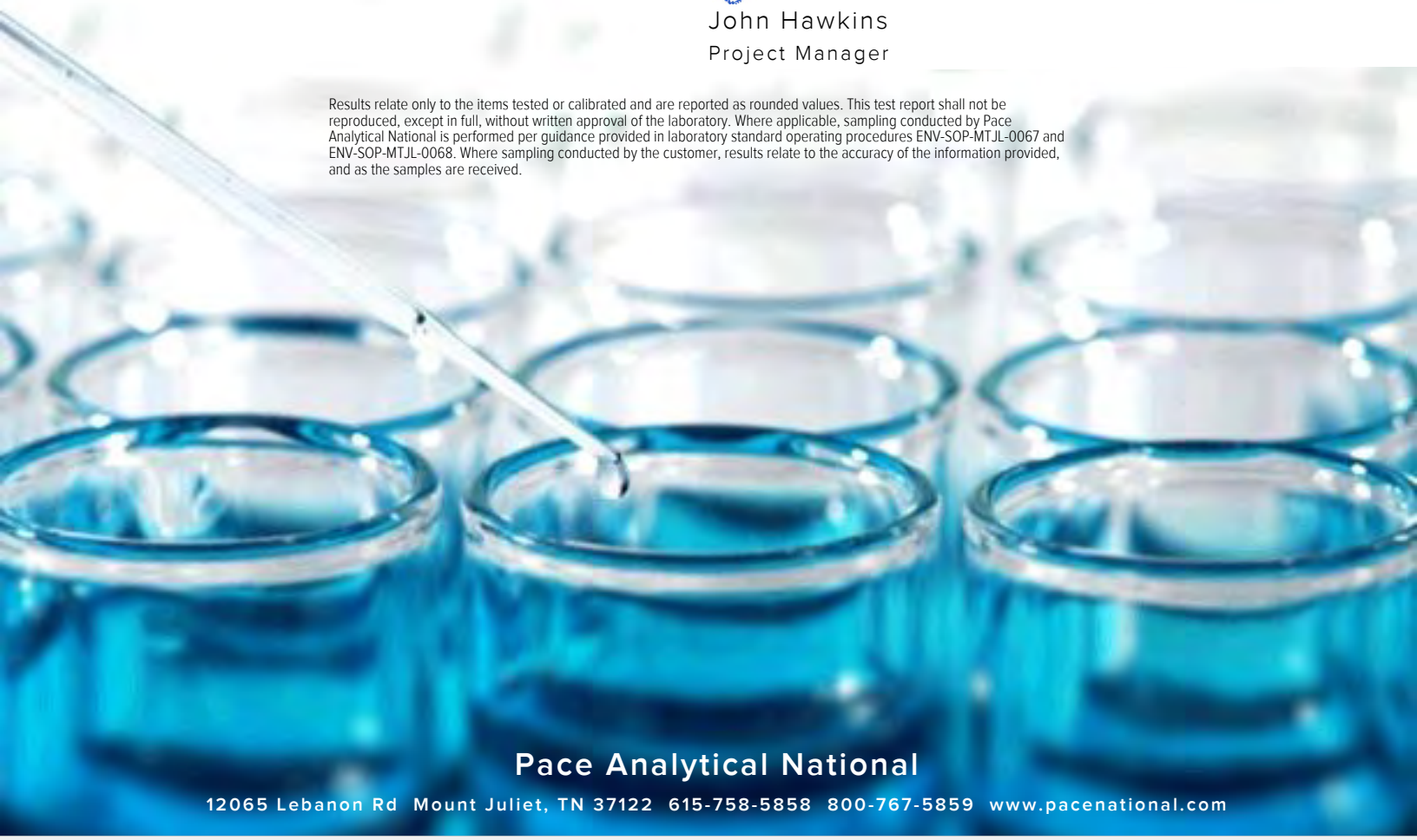
Sample Delivery Group:	L1489852
Samples Received:	05/05/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2205139-001F CTB TO CITY POTW L1489852-01 Waste

			Collected by	Collected date/time	Received date/time	
				05/03/22 09:50	05/05/22 09:30	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1861430	1	05/11/22 10:37	05/11/22 10:37	JDG	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1869952	1	05/26/22 17:58	05/27/22 17:22	JMB	Mt. Juliet, TN

2205139-001G CTB TO CITY POTW L1489852-02 GW

			Collected by	Collected date/time	Received date/time	
				05/03/22 09:50	05/05/22 09:30	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1867653	1	05/26/22 10:44	05/26/22 10:44	ARD	Mt. Juliet, TN

2205139-001H CTB TO CITY POTW L1489852-03 GW

			Collected by	Collected date/time	Received date/time	
				05/03/22 09:50	05/05/22 09:30	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500 CN E-2016	WG1860938	1	05/10/22 08:15	05/11/22 15:46	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1862549	1	05/13/22 20:09	05/13/22 20:09	SMW	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1861674	1	05/11/22 11:00	05/11/22 11:00	JAR	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1860681	1	05/09/22 02:12	05/09/22 02:12	WOS	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		5/11/2022 10:37:31 AM	WG1861430
Fluid	1		5/11/2022 10:37:31 AM	WG1861430
Initial pH	5.40		5/11/2022 10:37:31 AM	WG1861430
Final pH	4.81		5/11/2022 10:37:31 AM	WG1861430

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND	Q	0.00200	1	1	05/27/2022 17:22	WG1869952
2,4-D	ND	Q	0.00200	10	1	05/27/2022 17:22	WG1869952
(S) 2,4-Dichlorophenyl Acetic Acid	*71.8*		*14.0-158*			*05/27/2022 17:22*	WG1869952

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	192	T8	1	05/26/2022 10:44	WG1867653

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.00500	1	05/11/2022 15:46	WG1860938

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND	Q	0.0500	1	05/13/2022 20:09	WG1862549

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.57	T8	1	05/11/2022 11:00	WG1861674

Sample Narrative:

L1489852-03 WG1861674: 7.57 at 20.7C

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170		1	05/09/2022 02:12	WG1860681

L1489852-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1489852-02 05/26/22 10:44 • (DUP) R3796262-3 05/26/22 10:44

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	192	193	1	1.40		20

L1492639-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1492639-02 05/26/22 10:44 • (DUP) R3796262-4 05/26/22 10:44

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	203	205	1	1.30		20

L1494466-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1494466-01 05/26/22 10:44 • (DUP) R3796262-5 05/26/22 10:44

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	164	161	1	3.60		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3796262-1 05/26/22 10:44 • (LCSD) R3796262-2 05/26/22 10:44

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	105	105	97.1	97.6	90.0-110			0.500	20

Method Blank (MB)

(MB) R3790754-1 05/11/22 15:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1489579-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1489579-04 05/11/22 15:34 • (DUP) R3790754-5 05/11/22 15:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1489597-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1489597-02 05/11/22 15:43 • (DUP) R3790754-8 05/11/22 15:44

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3790754-2 05/11/22 15:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.102	102	87.1-120	

L1489502-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489502-02 05/11/22 15:22 • (MS) R3790754-3 05/11/22 15:23 • (MSD) R3790754-4 05/11/22 15:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.107	0.106	103	102	1	90.0-110			0.939	20

L1489579-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489579-05 05/11/22 15:38 • (MS) R3790754-6 05/11/22 15:39 • (MSD) R3790754-7 05/11/22 15:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0937	0.0983	93.7	98.3	1	90.0-110			4.79	20

Method Blank (MB)

(MB) R3791753-1 05/13/22 19:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3791753-2 05/13/22 19:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.566	113	85.0-115	

Received by OCD: 3/6/2023 7:46:22 AM

Laboratory Control Sample (LCS)

(LCS) R3790799-1 05/11/22 11:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 21.4C

Released to Imaging: 5/24/2023 4:44:56 PM

L1489904-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1489904-01 05/09/22 02:12 • (DUP) R3789441-3 05/09/22 02:12

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 200	DNF at 200	1	0.000		10

L1491064-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1491064-02 05/09/22 02:12 • (DUP) R3789441-4 05/09/22 02:12

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3789441-1 05/09/22 02:12 • (LCSD) R3789441-2 05/09/22 02:12

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	128	130	102	103	96.0-104			1.55	10

Method Blank (MB)

(MB) R3797335-1 05/27/22 15:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*78.0*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3797335-2 05/27/22 16:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0426	85.2	50.0-125	
2,4-D	0.0500	0.0447	89.4	50.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*87.4*	*14.0-158*	

L1489852-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489852-01 05/27/22 17:22 • (MS) R3797335-3 05/27/22 17:37 • (MSD) R3797335-4 05/27/22 17:51

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0450	0.0425	90.0	85.0	1	50.0-125			5.71	20
2,4-D	0.0500	ND	0.0473	0.0448	94.6	89.6	1	50.0-120			5.43	20
(S) 2,4-Dichlorophenyl Acetic Acid					*99.4*	*89.2*		*14.0-158*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

F184

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

L1489852

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2205139-001F	CTB to City POTW	1LAMGU	Aqueous	5/3/2022 9:50:00 AM	1	8151TCLP *RUSH 7 DAY TAT*
2	2205139-001G	CTB to City POTW	125HDP	Aqueous	5/3/2022 9:50:00 AM	1	ORP *RUSH 7 DAY TAT*
3	2205139-001H	CTB to City POTW	500HDPE	Aqueous	5/3/2022 9:50:00 AM	3	RCI *RUSH 7 DAY TAT*

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: JCA	Date: 5/4/2022	Time: 8:16 AM	Received By:	Date: 5/5/22	Time: 930
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 4.4 to = 4.4 °C Attempt to Cool ? _____
Comments: JAA6

Released to Imaging: 5/24/2023 4:44:56 PM

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A88292** RunNo: **88292**
Prep Date: Analysis Date: **5/26/2022** SeqNo: **3131248** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	48	1.0	50.00	0	95.6	85	115			
Magnesium	49	1.0	50.00	0	98.9	85	115			
Potassium	49	1.0	50.00	0	98.6	85	115			
Sodium	49	1.0	50.00	0	98.2	85	115			

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW** Batch ID: **A88292** RunNo: **88292**
Prep Date: Analysis Date: **5/26/2022** SeqNo: **3131374** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LLLCS** SampType: **LCSLL** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC** Batch ID: **A88292** RunNo: **88292**
Prep Date: Analysis Date: **5/26/2022** SeqNo: **3131376** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.47	1.0	0.5000	0	93.9	50	150			J
Magnesium	0.50	1.0	0.5000	0	99.6	50	150			J
Potassium	0.63	1.0	0.5000	0	126	50	150			J
Sodium	0.44	1.0	0.5000	0	88.8	50	150			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R87761**	RunNo: **87761**
Prep Date:	Analysis Date: **5/4/2022**	SeqNo: **3108567** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R87761**	RunNo: **87761**
Prep Date:	Analysis Date: **5/4/2022**	SeqNo: **3108568** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.8	90	110			
Nitrogen, Nitrite (As N)	1.0	0.10	1.000	0	99.8	90	110			
Bromide	2.5	0.10	2.500	0	98.5	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	102	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.6	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R87965**	RunNo: **87965**
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3118216** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R87965**	RunNo: **87965**
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3118217** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	10	0.50	10.00	0	103	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R88075**	RunNo: **88075**
Prep Date:	Analysis Date: **5/17/2022**	SeqNo: **3122483** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS**	SampType: **lcs**			TestCode: **EPA Method 300.0: Anions**						
Client ID: **LCSW**	Batch ID: **R88075**			RunNo: **88075**						
Prep Date:	Analysis Date: **5/17/2022**			SeqNo: **3122484**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	106	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67304**	SampType: **MBLK**	TestCode: **EPA Method 6020A: Total Metals**
Client ID: **PBW**	Batch ID: **67304**	RunNo: **87858**
Prep Date: **5/5/2022**	Analysis Date: **5/9/2022**	SeqNo: **3112795** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-67304**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: Total Metals**
Client ID: **BatchQC**	Batch ID: **67304**	RunNo: **87858**
Prep Date: **5/5/2022**	Analysis Date: **5/9/2022**	SeqNo: **3112796** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00090	0.0010	0.001000	0	90.4	70	130			J
Lead	0.00095	0.0010	0.001000	0	94.8	70	130			J
Selenium	0.00094	0.0010	0.001000	0	94.1	70	130			J

Sample ID: **MSLCS-67304**	SampType: **LCS**	TestCode: **EPA Method 6020A: Total Metals**
Client ID: **LCSW**	Batch ID: **67304**	RunNo: **87858**
Prep Date: **5/5/2022**	Analysis Date: **5/9/2022**	SeqNo: **3112797** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0010	0.05000	0	97.8	80	120			
Lead	0.048	0.0010	0.05000	0	96.1	80	120			
Selenium	0.049	0.0010	0.05000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67352**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **67352**	RunNo: **88093**
Prep Date: **5/9/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123060** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		97.8	73	119			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		73.0	36.6	84.1			

Sample ID: **MB-67352**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **67352**	RunNo: **88093**
Prep Date: **5/9/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123061** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		96.1	73	119			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		74.2	36.6	84.1			

Sample ID: **LCS-67352**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **67352**	RunNo: **88093**
Prep Date: **5/9/2022**	Analysis Date: **5/18/2022**	SeqNo: **3123062** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00049	0.00010	0.0005000	0	97.3	56.3	126			
gamma-BHC (Lindane)	0.00044	0.00010	0.0005000	0	87.9	45.8	103			
Heptachlor	0.00036	0.00010	0.0005000	0	71.3	33.7	104			
Heptachlor epoxide	0.00046	0.00010	0.0005000	0	91.8	50.1	116			
Methoxychlor	0.00053	0.00010	0.0005000	0	106	15	203			
Surr: Decachlorobiphenyl	0.0023		0.002500		92.3	73	119			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		71.5	36.6	84.1			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-67352** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **67352** RunNo: **88093**
Prep Date: **5/9/2022** Analysis Date: **5/18/2022** SeqNo: **3123063** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00049	0.00010	0.0005000	0	97.4	56.3	126			
gamma-BHC (Lindane)	0.00045	0.00010	0.0005000	0	89.6	45.8	103			
Heptachlor	0.00036	0.00010	0.0005000	0	72.3	33.7	104			
Heptachlor epoxide	0.00046	0.00010	0.0005000	0	92.8	50.1	116			
Methoxychlor	0.00054	0.00010	0.0005000	0	109	15	203			
Surr: Decachlorobiphenyl	0.0023		0.002500		91.2	73	119			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		76.0	36.6	84.1			

Sample ID: **LCSD-67352** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **67352** RunNo: **88093**
Prep Date: **5/9/2022** Analysis Date: **5/18/2022** SeqNo: **3123064** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00047	0.00010	0.0005000	0	94.4	56.3	126	3.01	20	
gamma-BHC (Lindane)	0.00042	0.00010	0.0005000	0	83.2	45.8	103	5.60	20	
Heptachlor	0.00034	0.00010	0.0005000	0	68.6	33.7	104	3.84	20	
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	90.7	50.1	116	1.26	20	
Methoxychlor	0.00054	0.00010	0.0005000	0	107	15	203	1.22	20	
Surr: Decachlorobiphenyl	0.0024		0.002500		94.7	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0017		0.002500		68.0	36.6	84.1	0	0	

Sample ID: **LCSD-67352** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **67352** RunNo: **88093**
Prep Date: **5/9/2022** Analysis Date: **5/18/2022** SeqNo: **3123065** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00049	0.00010	0.0005000	0	97.2	56.3	126	0.192	20	
gamma-BHC (Lindane)	0.00041	0.00010	0.0005000	0	82.8	45.8	103	7.90	20	
Heptachlor	0.00035	0.00010	0.0005000	0	69.2	33.7	104	4.31	20	
Heptachlor epoxide	0.00044	0.00010	0.0005000	0	88.0	50.1	116	5.31	20	
Methoxychlor	0.00052	0.00010	0.0005000	0	104	15	203	5.00	20	
Surr: Decachlorobiphenyl	0.0024		0.002500		94.4	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0017		0.002500		68.4	36.6	84.1	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs 2** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **TC87719** RunNo: **87719**
Prep Date: Analysis Date: **5/4/2022** SeqNo: **3108956** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.019	0.50	0.02000	0	97.4	70	130			J
1,1-Dichloroethene	0.017	0.70	0.02000	0	87.2	70	130			J
Trichloroethene (TCE)	0.019	0.50	0.02000	0	95.0	70	130			J
Chlorobenzene	0.020	100	0.02000	0	99.7	70	130			J
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		102	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		102	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		103	70	130			
Surr: Toluene-d8	0.0097		0.01000		96.8	70	130			

Sample ID: **mb 2** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **TC87719** RunNo: **87719**
Prep Date: Analysis Date: **5/4/2022** SeqNo: **3108957** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.011		0.01000		105	70	130			
Surr: 4-Bromofluorobenzene	0.0098		0.01000		98.2	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		104	70	130			
Surr: Toluene-d8	0.0096		0.01000		95.8	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-67375** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **67375** RunNo: **87921**
Prep Date: **5/10/2022** Analysis Date: **5/11/2022** SeqNo: **3116520** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.14		0.2000		68.1	15	118			
Surr: Phenol-d5	0.095		0.2000		47.3	15	92.9			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		75.7	15	150			
Surr: Nitrobenzene-d5	0.082		0.1000		82.3	15	136			
Surr: 2-Fluorobiphenyl	0.074		0.1000		74.4	15	134			
Surr: 4-Terphenyl-d14	0.10		0.1000		99.6	15	168			

Sample ID: **lcs-67375** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **67375** RunNo: **87921**
Prep Date: **5/10/2022** Analysis Date: **5/11/2022** SeqNo: **3116521** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.079	0.00051	0.1000	0	79.4	19	106			
3+4-Methylphenol	0.17	0.00045	0.2000	0	83.8	16.3	112			
2,4-Dinitrotoluene	0.058	0.00062	0.1000	0	57.9	15	99.6			
Hexachlorobenzene	0.075	0.00066	0.1000	0	74.6	41.8	111			
Hexachlorobutadiene	0.064	0.00082	0.1000	0	63.7	15	91.5			
Hexachloroethane	0.069	0.00045	0.1000	0	69.2	15	87.5			
Nitrobenzene	0.076	0.00051	0.1000	0	76.5	19.3	114			
Pentachlorophenol	0.066	0.00059	0.1000	0	65.9	29	103			
Pyridine	0.030	0.00093	0.1000	0	29.8	15	92.6			
2,4,5-Trichlorophenol	0.082	0.00062	0.1000	0	82.3	25.2	114			
2,4,6-Trichlorophenol	0.082	0.00043	0.1000	0	81.8	25.7	112			
Cresols, Total	0.25	0.00051	0.3000	0	82.4	15	145			
Surr: 2-Fluorophenol	0.13		0.2000		64.2	15	118			
Surr: Phenol-d5	0.089		0.2000		44.6	15	92.9			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.6	15	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-67375** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **67375** RunNo: **87921**
Prep Date: **5/10/2022** Analysis Date: **5/11/2022** SeqNo: **3116521** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.079		0.1000		78.9	15	136			
Surr: 2-Fluorobiphenyl	0.075		0.1000		74.7	15	134			
Surr: 4-Terphenyl-d14	0.092		0.1000		92.1	15	168			

Sample ID: **2205139-001bms** SampType: **MS** TestCode: **EPA Method 8270C TCLP**
Client ID: **CTB to City POTW** Batch ID: **67375** RunNo: **87921**
Prep Date: **5/10/2022** Analysis Date: **5/11/2022** SeqNo: **3116523** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.069	0.00051	0.1000	0	69.1	15.8	101			
3+4-Methylphenol	0.14	0.00045	0.2000	0	71.8	16.9	97.9			
2,4-Dinitrotoluene	0.049	0.00062	0.1000	0	48.9	20.1	90.5			
Hexachlorobenzene	0.070	0.00066	0.1000	0	70.4	34	108			
Hexachlorobutadiene	0.055	0.00082	0.1000	0	54.7	15	99.7			
Hexachloroethane	0.061	0.00045	0.1000	0	60.6	15	86.4			
Nitrobenzene	0.068	0.00051	0.1000	0	68.3	15	109			
Pentachlorophenol	0.058	0.00059	0.1000	0	58.3	15	130			
Pyridine	0.031	0.00093	0.1000	0	31.2	15	82			
2,4,5-Trichlorophenol	0.070	0.00062	0.1000	0	70.4	28.1	105			
2,4,6-Trichlorophenol	0.069	0.00043	0.1000	0	69.2	21.5	110			
Cresols, Total	0.21	0.00051	0.3000	0	70.9	15	127			
Surr: 2-Fluorophenol	0.11		0.2000		56.6	15	118			
Surr: Phenol-d5	0.077		0.2000		38.5	15	92.9			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		69.0	15	150			
Surr: Nitrobenzene-d5	0.072		0.1000		71.6	15	136			
Surr: 2-Fluorobiphenyl	0.065		0.1000		65.4	15	134			
Surr: 4-Terphenyl-d14	0.092		0.1000		92.1	15	168			

Sample ID: **2205139-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **CTB to City POTW** Batch ID: **67375** RunNo: **87921**
Prep Date: **5/10/2022** Analysis Date: **5/11/2022** SeqNo: **3116524** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.074	0.00051	0.1000	0	74.2	15.8	101	7.08	20	
3+4-Methylphenol	0.15	0.00045	0.2000	0	75.3	16.9	97.9	4.71	20	
2,4-Dinitrotoluene	0.054	0.00062	0.1000	0	53.9	20.1	90.5	9.88	20	
Hexachlorobenzene	0.076	0.00066	0.1000	0	76.2	34	108	7.96	20	
Hexachlorobutadiene	0.060	0.00082	0.1000	0	60.0	15	99.7	9.34	20	
Hexachloroethane	0.064	0.00045	0.1000	0	63.9	15	86.4	5.23	20	
Nitrobenzene	0.077	0.00051	0.1000	0	77.4	15	109	12.5	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2205139-001bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **CTB to City POTW** Batch ID: **67375** RunNo: **87921**
Prep Date: **5/10/2022** Analysis Date: **5/11/2022** SeqNo: **3116524** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.065	0.00059	0.1000	0	65.4	15	130	11.6	20	
Pyridine	0.038	0.00093	0.1000	0	38.2	15	82	20.2	20	R
2,4,5-Trichlorophenol	0.076	0.00062	0.1000	0	75.7	28.1	105	7.29	20	
2,4,6-Trichlorophenol	0.077	0.00043	0.1000	0	76.7	21.5	110	10.3	20	
Cresols, Total	0.22	0.00051	0.3000	0	74.9	15	127	5.48	20	
Surr: 2-Fluorophenol	0.12		0.2000		61.0	15	118	0	0	
Surr: Phenol-d5	0.083		0.2000		41.3	15	92.9	0	0	
Surr: 2,4,6-Tribromophenol	0.14		0.2000		71.9	15	150	0	0	
Surr: Nitrobenzene-d5	0.081		0.1000		80.8	15	136	0	0	
Surr: 2-Fluorobiphenyl	0.074		0.1000		73.6	15	134	0	0	
Surr: 4-Terphenyl-d14	0.097		0.1000		96.7	15	168	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 98.6uS eC**	SampType: **lcs**		TestCode: **SM2510B: Specific Conductance**		
Client ID: **LCSW**	Batch ID: **R87793**		RunNo: **87793**		
Prep Date:	Analysis Date: **5/5/2022**		SeqNo: **3110321**	Units: **µmhos/cm**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	98.60	0	103	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67364** SampType: **MBLK** TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW** Batch ID: **67364** RunNo: **87868**
Prep Date: **5/10/2022** Analysis Date: **5/10/2022** SeqNo: **3113352** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-67364** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC** Batch ID: **67364** RunNo: **87868**
Prep Date: **5/10/2022** Analysis Date: **5/10/2022** SeqNo: **3113353** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00016	0.00020	0.0001500	0	109	50	150			J

Sample ID: **LCS-67364** SampType: **LCS** TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW** Batch ID: **67364** RunNo: **87868**
Prep Date: **5/10/2022** Analysis Date: **5/10/2022** SeqNo: **3113354** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.00020	0.005000	0	105	85	115			

Sample ID: **2205139-001EMS** SampType: **MS** TestCode: **EPA Method 7470A: Mercury**
Client ID: **CTB to City POTW** Batch ID: **67364** RunNo: **87868**
Prep Date: **5/10/2022** Analysis Date: **5/10/2022** SeqNo: **3113356** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	75	125			

Sample ID: **2205139-001EMSD** SampType: **MSD** TestCode: **EPA Method 7470A: Mercury**
Client ID: **CTB to City POTW** Batch ID: **67364** RunNo: **87868**
Prep Date: **5/10/2022** Analysis Date: **5/10/2022** SeqNo: **3113357** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.00020	0.005000	0	105	75	125	0.840	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**

01-Jun-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67304**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **67304**	RunNo: **87803**
Prep Date: **5/5/2022**	Analysis Date: **5/6/2022**	SeqNo: **3111347** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	0.0025	0.0060								J

Sample ID: **LCS-67304**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **67304**	RunNo: **87803**
Prep Date: **5/5/2022**	Analysis Date: **5/6/2022**	SeqNo: **3111349** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.53	0.0020	0.5000	0	106	80	120			
Cadmium	0.51	0.0020	0.5000	0	103	80	120			
Chromium	0.51	0.0060	0.5000	0	101	80	120			

Sample ID: **LCSD-67304**	SampType: **LCSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSS02**	Batch ID: **67304**	RunNo: **87803**
Prep Date: **5/5/2022**	Analysis Date: **5/6/2022**	SeqNo: **3111350** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.53	0.0020	0.5000	0	106	80	120	0.197	20	
Cadmium	0.52	0.0020	0.5000	0	103	80	120	0.333	20	
Chromium	0.51	0.0060	0.5000	0	102	80	120	0.436	20	

Sample ID: **MB-67304**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **67304**	RunNo: **87805**
Prep Date: **5/5/2022**	Analysis Date: **5/10/2022**	SeqNo: **3115164** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	0.0050								

Sample ID: **LCS-67304**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **67304**	RunNo: **87805**
Prep Date: **5/5/2022**	Analysis Date: **5/10/2022**	SeqNo: **3115166** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.11	0.0050	0.1000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCSD-67304** SampType: **LCSD** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSS02** Batch ID: **67304** RunNo: **87805**
Prep Date: **5/5/2022** Analysis Date: **5/10/2022** SeqNo: **3115167** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.10	0.0050	0.1000	0	100	80	120	5.24	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87793**	RunNo: **87793**							
Prep Date:	Analysis Date: **5/5/2022**	SeqNo: **3110242**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87793**	RunNo: **87793**							
Prep Date:	Analysis Date: **5/5/2022**	SeqNo: **3110243**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.40	20.00	80.00	0	95.5	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87793**	RunNo: **87793**							
Prep Date:	Analysis Date: **5/5/2022**	SeqNo: **3110265**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87793**	RunNo: **87793**							
Prep Date:	Analysis Date: **5/5/2022**	SeqNo: **3110266**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.28	20.00	80.00	0	95.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67311**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **67311**	RunNo: **87823**
Prep Date: **5/6/2022**	Analysis Date: **5/8/2022**	SeqNo: **3110935** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-67311**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **67311**	RunNo: **87823**
Prep Date: **5/6/2022**	Analysis Date: **5/8/2022**	SeqNo: **3110936** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205139**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67312**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **67312**	RunNo: **87820**							
Prep Date: **5/6/2022**	Analysis Date: **5/7/2022**	SeqNo: **3110863**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-67312**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **67312**	RunNo: **87820**							
Prep Date: **5/6/2022**	Analysis Date: **5/7/2022**	SeqNo: **3110864**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	100	4.0	92.40	0	108	83.44	119.05			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2205139 | RcptNo: 1

Received By: Juan Rojas 5/4/2022 7:05:00 AM

Completed By: Sean Livingston 5/4/2022 8:08:39 AM

Reviewed By: TML 5/4/22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 3 2 (<2 or >12 unless noted)

Adjusted? NO

Checked by: JMS 5/4/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

16. Additional remarks: Poured off 125ml from sample 0013 1 of 2 unpreserved amber for orp analysis. JMS 5/4/22.

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.4	Good				

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time: Standard Rush X

Project Name: PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager: Randy Dade

Sampler: Brady Hubbard

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.4-0=0.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2205139	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
5/3/22	9:50	Liquid	CTB to City POTW	**	**	001	X						
5/3/22	9:50	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
5/3/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none				X				
5/3/22	9:50	Liquid	CTB to City POTW	***	***					X			
5/3/22	9:50	Liquid	CTB to City POTW	1-250ml P	HNO3						X		
5/3/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none							X	
5/3/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none								X

Date: 5-3-22 Time: 11:00 Relinquished by: Brady Hubbard / Brady Hubbard Received by: [signature] Date: 5/3/22 Time: 1100

Date: 5/3/22 Time: 1900 Relinquished by: [signature] Received by: [signature] Date: 5/4/22 Time: 7:05

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 01, 2022

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2205485

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/11/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2205485**
Date: **6/1/2022**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2205485**
Date Reported: **6/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 5/10/2022 9:50:00 AM
Lab ID: 2205485-001 **Matrix:** AQUEOUS **Received Date:** 5/11/2022 7:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	5/20/2022 11:24:39 AM	67469
Endrin	ND	0.000049	0.020		mg/L	1	5/20/2022 11:24:39 AM	67469
gamma-BHC (Lindane)	ND	0.000041	0.40		mg/L	1	5/20/2022 11:24:39 AM	67469
Heptachlor	ND	0.000041	0.0080		mg/L	1	5/20/2022 11:24:39 AM	67469
Heptachlor epoxide	ND	0.000047	0.0080		mg/L	1	5/20/2022 11:24:39 AM	67469
Methoxychlor	ND	0.000046	10		mg/L	1	5/20/2022 11:24:39 AM	67469
Toxaphene	ND	0.00050	0.50		mg/L	1	5/20/2022 11:24:39 AM	67469
Surr: Decachlorobiphenyl	79.8	0	73-119		%Rec	1	5/20/2022 11:24:39 AM	67469
Surr: Tetrachloro-m-xylene	57.9	0	36.6-84.1		%Rec	1	5/20/2022 11:24:39 AM	67469
EPA METHOD 300.0: ANIONS							Analyst: **CAS**	
Fluoride	2.1	0.040	0.10		mg/L	1	5/11/2022 8:32:46 PM	R87931
Chloride	51	5.0	10		mg/L	20	5/11/2022 9:11:22 PM	R87931
Nitrogen, Nitrite (As N)	ND	0.0053	0.10		mg/L	1	5/11/2022 8:32:46 PM	R87931
Bromide	ND	0.050	0.10		mg/L	1	5/11/2022 8:32:46 PM	R87931
Nitrogen, Nitrate (As N)	1.4	0.010	0.10		mg/L	1	5/11/2022 8:32:46 PM	R87931
Phosphorus, Orthophosphate (As P)	ND	5.0	10	H	mg/L	20	5/17/2022 2:12:51 PM	R88075
Sulfate	1200	12	25	*	mg/L	50	5/17/2022 1:34:14 PM	R88075
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **ELS**	
Calcium	340	0.57	5.0		mg/L	5	5/26/2022 12:16:31 PM	A88292
Magnesium	100	0.34	5.0		mg/L	5	5/26/2022 12:16:31 PM	A88292
Potassium	2.8	0.16	1.0		mg/L	1	5/26/2022 12:14:51 PM	A88292
Sodium	57	0.33	1.0		mg/L	1	5/26/2022 12:14:51 PM	A88292
EPA METHOD 6020A: TOTAL METALS							Analyst: **DBK**	
Arsenic	0.0014	0.00050	5.0	J	mg/L	1	5/14/2022 4:03:47 PM	67405
Lead	0.00058	0.00050	5.0	J	mg/L	1	5/14/2022 4:03:47 PM	67405
Selenium	0.0040	0.00050	1.0	J	mg/L	1	5/14/2022 4:03:47 PM	67405
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	5/13/2022 12:21:55 PM	67447
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **JRR**	
Barium	0.033	0.0011	100	J	mg/L	1	5/13/2022 10:35:54 AM	67405
Cadmium	ND	0.0012	1.0		mg/L	1	5/13/2022 10:35:54 AM	67405
Chromium	ND	0.0017	5.0		mg/L	1	5/13/2022 10:35:54 AM	67405
Silver	0.0058	0.0013	5.0	J	mg/L	1	5/13/2022 10:35:54 AM	67405
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.00051	200		mg/L	1	5/20/2022 11:55:34 AM	67499
3+4-Methylphenol	ND	0.00045	200		mg/L	1	5/20/2022 11:55:34 AM	67499

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2205485**
Date Reported: **6/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 5/10/2022 9:50:00 AM
Lab ID: 2205485-001 **Matrix:** AQUEOUS **Received Date:** 5/11/2022 7:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.00062	0.13		mg/L	1	5/20/2022 11:55:34 AM	67499
Hexachlorobenzene	ND	0.00066	0.13		mg/L	1	5/20/2022 11:55:34 AM	67499
Hexachlorobutadiene	ND	0.00082	0.50		mg/L	1	5/20/2022 11:55:34 AM	67499
Hexachloroethane	ND	0.00045	3.0		mg/L	1	5/20/2022 11:55:34 AM	67499
Nitrobenzene	ND	0.00051	2.0		mg/L	1	5/20/2022 11:55:34 AM	67499
Pentachlorophenol	ND	0.00059	100		mg/L	1	5/20/2022 11:55:34 AM	67499
Pyridine	ND	0.00093	5.0	E	mg/L	1	5/20/2022 11:55:34 AM	67499
2,4,5-Trichlorophenol	ND	0.00062	400		mg/L	1	5/20/2022 11:55:34 AM	67499
2,4,6-Trichlorophenol	ND	0.00043	2.0		mg/L	1	5/20/2022 11:55:34 AM	67499
Cresols, Total	ND	0.00051	200		mg/L	1	5/20/2022 11:55:34 AM	67499
Surr: 2-Fluorophenol	59.3	0	15-118		%Rec	1	5/20/2022 11:55:34 AM	67499
Surr: Phenol-d5	39.9	0	15-92.9		%Rec	1	5/20/2022 11:55:34 AM	67499
Surr: 2,4,6-Tribromophenol	56.8	0	15-150		%Rec	1	5/20/2022 11:55:34 AM	67499
Surr: Nitrobenzene-d5	71.2	0	15-136		%Rec	1	5/20/2022 11:55:34 AM	67499
Surr: 2-Fluorobiphenyl	64.7	0	15-134		%Rec	1	5/20/2022 11:55:34 AM	67499
Surr: 4-Terphenyl-d14	80.7	0	15-168		%Rec	1	5/20/2022 11:55:34 AM	67499
TCLP VOLATILES BY 8260B							Analyst: **BRM**	
Benzene	ND	0.00023	0.50		mg/L	200	5/13/2022 2:48:06 PM	B88001
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	5/13/2022 2:48:06 PM	B88001
2-Butanone	ND	0.0020	200		mg/L	200	5/13/2022 2:48:06 PM	B88001
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	5/13/2022 2:48:06 PM	B88001
Chloroform	ND	0.00013	6.0		mg/L	200	5/13/2022 2:48:06 PM	B88001
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	5/13/2022 2:48:06 PM	B88001
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	5/13/2022 2:48:06 PM	B88001
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	5/13/2022 2:48:06 PM	B88001
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	5/13/2022 2:48:06 PM	B88001
Vinyl chloride	ND	0.00032	0.20		mg/L	200	5/13/2022 2:48:06 PM	B88001
Chlorobenzene	ND	0.00016	100		mg/L	200	5/13/2022 2:48:06 PM	B88001
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%Rec	200	5/13/2022 2:48:06 PM	B88001
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	200	5/13/2022 2:48:06 PM	B88001
Surr: Dibromofluoromethane	106	0	70-130		%Rec	200	5/13/2022 2:48:06 PM	B88001
Surr: Toluene-d8	101	0	70-130		%Rec	200	5/13/2022 2:48:06 PM	B88001
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **CAS**	
Conductivity	2100	10	10		µmhos/c	1	5/12/2022 4:47:08 PM	R87963
SM4500-H+B / 9040C: PH							Analyst: **CAS**	
pH	7.65			H	pH units	1	5/12/2022 4:47:08 PM	R87963
SM2320B: ALKALINITY							Analyst: **CAS**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2205485**
Date Reported: **6/1/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2205485-001 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 5/10/2022 9:50:00 AM
Received Date: 5/11/2022 7:15:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	59.36	20.00	20.00		mg/L Ca	1	5/12/2022 4:47:08 PM	R87963
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	5/12/2022 4:47:08 PM	R87963
Total Alkalinity (as CaCO3)	59.36	20.00	20.00		mg/L Ca	1	5/12/2022 4:47:08 PM	R87963
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9977	0	0			1	5/23/2022 1:15:00 PM	R88203
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	1970	20.0	20.0	*	mg/L	1	5/16/2022 11:03:00 AM	67452
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	12	4.0	4.0		mg/L	1	5/18/2022 12:04:00 PM	67509

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	CTB to City POTW 2205485-001											
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	57	2.48										
Potassium	2.8	0.07										
Calcium	340	16.97										
Magnesium	100	8.23										
Total Cations		27.75										
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	1200	24.98										
Chloride	51	1.44										
Bicarbonate (CaCO3)	59.36	1.19	-									
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)												
Nitrate (N)	1.4	0.10			-							
Fluoride	2.1	0.11										
Bromide												
Total Anions		27.82										
Elect. Cond. (µMhos/cm)	2100											
CATION/ANION RATIO		1.00										
% Difference		0										
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	1970											
TDS (calculated)	1795											
Ratio meas TDS:calc TDS		1.1										
Ratio Meas. TDS:EC		0.94										
Ratio Calc. TDS:EC		0.85										
Ratio of anion sum:EC		1.3										
Ratio of cation sum:EC		1.3										

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

May 30, 2022

Hall Environmental Analysis Laboratory

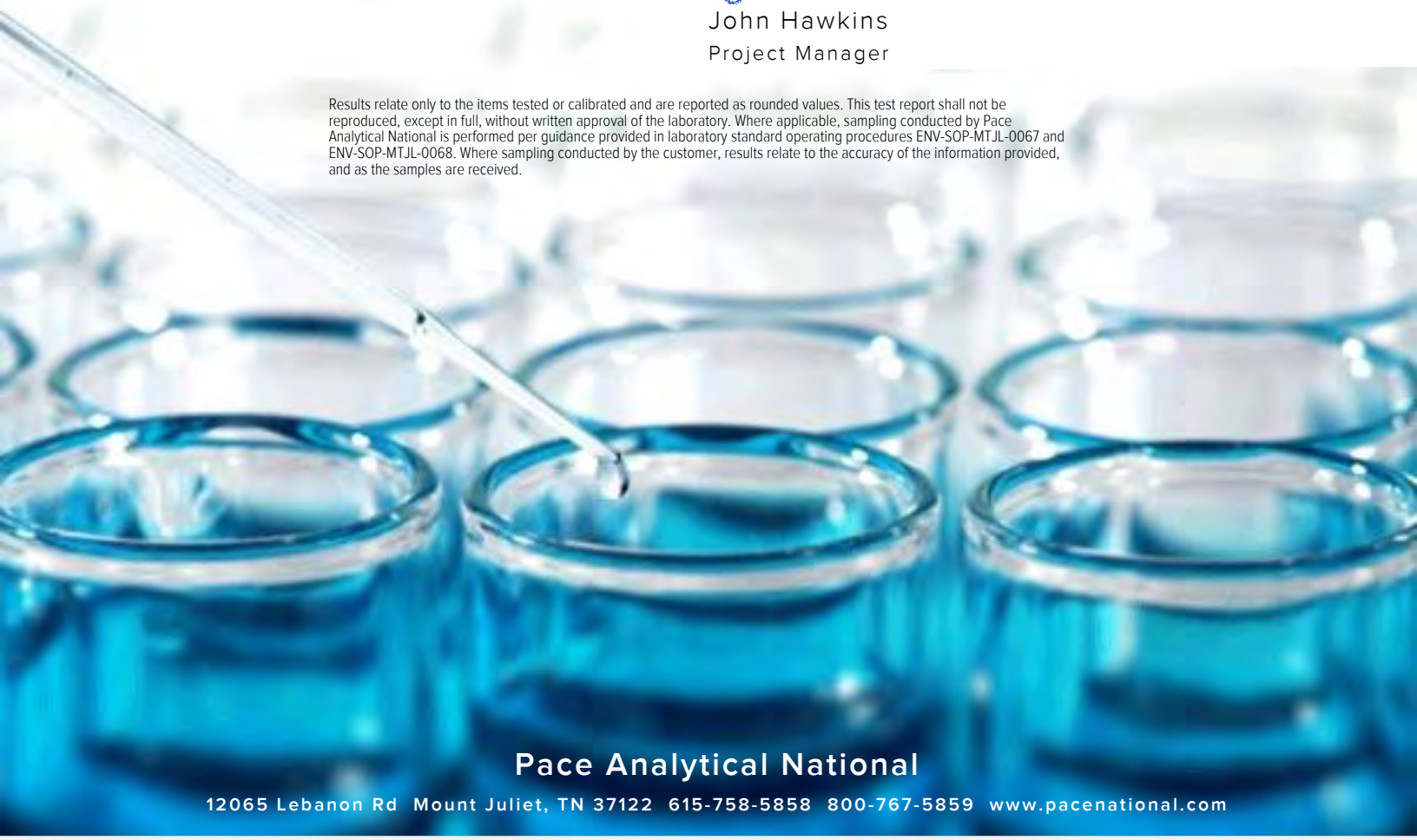
Sample Delivery Group:	L1492639
Samples Received:	05/12/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2205485-001F CTB TO POTW L1492639-01 Waste

Collected by	Collected date/time	Received date/time
	05/10/22 09:50	05/12/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1867863	1	05/23/22 08:48	05/23/22 08:48	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1869952	1	05/26/22 17:58	05/27/22 18:21	JMB	Mt. Juliet, TN

2205485-001H CTB TO POTW L1492639-02 GW

Collected by	Collected date/time	Received date/time
	05/10/22 09:50	05/12/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1867653	1	05/26/22 10:44	05/26/22 10:44	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1865548	1	05/19/22 06:59	05/19/22 17:16	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1862542	1	05/13/22 02:37	05/13/22 02:37	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1863582	1	05/14/22 08:25	05/14/22 08:25	EPW	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1864747	1	05/16/22 22:00	05/16/22 22:00	WOS	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		5/23/2022 8:48:27 AM	WG1867863
Fluid	N/A		5/23/2022 8:48:27 AM	WG1867863
Initial pH	N/A		5/23/2022 8:48:27 AM	WG1867863
Final pH	N/A		5/23/2022 8:48:27 AM	WG1867863

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	05/27/2022 18:21	WG1869952
2,4-D	ND		0.00200	10	1	05/27/2022 18:21	WG1869952
(S) 2,4-Dichlorophenyl Acetic Acid	*78.6*		*14.0-158*			*05/27/2022 18:21*	WG1869952

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	203	T8	1	05/26/2022 10:44	WG1867653

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND		0.00500	1	05/19/2022 17:16	WG1865548

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	05/13/2022 02:37	WG1862542

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.88	T8	1	05/14/2022 08:25	WG1863582

Sample Narrative:

L1492639-02 WG1863582: 7.88 at 20.4C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	05/16/2022 22:00	WG1864747

L1489852-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1489852-02 05/26/22 10:44 • (DUP) R3796262-3 05/26/22 10:44

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	192	193	1	1.40		20

L1492639-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1492639-02 05/26/22 10:44 • (DUP) R3796262-4 05/26/22 10:44

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	203	205	1	1.30		20

L1494466-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1494466-01 05/26/22 10:44 • (DUP) R3796262-5 05/26/22 10:44

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	164	161	1	3.60		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3796262-1 05/26/22 10:44 • (LCSD) R3796262-2 05/26/22 10:44

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	105	105	97.1	97.6	90.0-110			0.500	20

Method Blank (MB)

(MB) R3793943-1 05/19/22 16:51

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1492151-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1492151-07 05/19/22 17:04 • (DUP) R3793943-5 05/19/22 17:05

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1492580-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1492580-02 05/19/22 17:12 • (DUP) R3793943-8 05/19/22 17:15

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3793943-2 05/19/22 16:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.100	100	87.1-120	

L1492151-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1492151-06 05/19/22 16:59 • (MS) R3793943-3 05/19/22 17:00 • (MSD) R3793943-4 05/19/22 17:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.101	0.0996	101	99.6	1	90.0-110			1.40	20

L1492546-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1492546-02 05/19/22 17:07 • (MS) R3793943-6 05/19/22 17:08 • (MSD) R3793943-7 05/19/22 17:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	0.00563	0.0995	0.0864	93.9	80.8	1	90.0-110		J6	14.1	20

Method Blank (MB)

(MB) R3791415-1 05/13/22 02:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3791415-2 05/13/22 02:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.522	104	85.0-115	

L1490345-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1490345-03 05/14/22 08:25 • (DUP) R3791793-2 05/14/22 08:25

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Corrosivity by pH	5.75	5.74	1	0.174		1

Sample Narrative:

OS: 5.75 at 20.7C

DUP: 5.74 at 20.6C

Laboratory Control Sample (LCS)

(LCS) R3791793-1 05/14/22 08:25

Analyte	Spike Amount su	LCS Result su	LCS Rec. %	Rec. Limits %	LCS Qualifier
Corrosivity by pH	10.0	9.94	99.4	99.0-101	

Sample Narrative:

LCS: 9.94 at 20.7C

L1493446-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1493446-02 05/16/22 22:00 • (DUP) R3792895-3 05/16/22 22:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3792895-1 05/16/22 22:00 • (LCSD) R3792895-2 05/16/22 22:00

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	130	128	103	101	96.0-104			1.55	10

Method Blank (MB)

(MB) R3797335-1 05/27/22 15:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*78.0*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3797335-2 05/27/22 16:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0426	85.2	50.0-125	
2,4-D	0.0500	0.0447	89.4	50.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*87.4*	*14.0-158*	

L1489852-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1489852-01 05/27/22 17:22 • (MS) R3797335-3 05/27/22 17:37 • (MSD) R3797335-4 05/27/22 17:51

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0450	0.0425	90.0	85.0	1	50.0-125			5.71	20
2,4-D	0.0500	ND	0.0473	0.0448	94.6	89.6	1	50.0-120			5.43	20
(S) 2,4-Dichlorophenyl Acetic Acid					*99.4*	*89.2*		*14.0-158*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

M002

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2205485-001F	CTB to City POTW	1LAMGU	Aqueous	5/10/2022 9:50:00 AM	1	8151TCLP *RUSH 7 DAY TAT* -01
2	2205485-001H	CTB to City POTW	500HDPE	Aqueous	5/10/2022 9:50:00 AM	3	RCI, ORP *RUSH 7 DAY TAT* -02

LU492639

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: SGL	Date: 5/11/2022	Time: 8:52 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 5-12-22	Time: 0900

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 1.2°+0.1=1.3°C Attempt to Cool ? _____
Comments: _____

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A88292** RunNo: **88292**
Prep Date: Analysis Date: **5/26/2022** SeqNo: **3131248** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	48	1.0	50.00	0	95.6	85	115			
Magnesium	49	1.0	50.00	0	98.9	85	115			
Potassium	49	1.0	50.00	0	98.6	85	115			
Sodium	49	1.0	50.00	0	98.2	85	115			

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW** Batch ID: **A88292** RunNo: **88292**
Prep Date: Analysis Date: **5/26/2022** SeqNo: **3131374** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LLLCS** SampType: **LCSLL** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC** Batch ID: **A88292** RunNo: **88292**
Prep Date: Analysis Date: **5/26/2022** SeqNo: **3131376** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.47	1.0	0.5000	0	93.9	50	150			J
Magnesium	0.50	1.0	0.5000	0	99.6	50	150			J
Potassium	0.63	1.0	0.5000	0	126	50	150			J
Sodium	0.44	1.0	0.5000	0	88.8	50	150			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R87931** RunNo: **87931**
Prep Date: Analysis Date: **5/11/2022** SeqNo: **3117017** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R87931** RunNo: **87931**
Prep Date: Analysis Date: **5/11/2022** SeqNo: **3117018** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	101	90	110			
Chloride	4.7	0.50	5.000	0	93.4	90	110			
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	98.7	90	110			
Bromide	2.5	0.10	2.500	0	98.7	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			

Sample ID: **2205485-001CMS** SampType: **ms** TestCode: **EPA Method 300.0: Anions**
Client ID: **CTB to City POTW** Batch ID: **R87931** RunNo: **87931**
Prep Date: Analysis Date: **5/11/2022** SeqNo: **3117035** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.90	0.10	1.000	0	89.6	83.4	105			
Bromide	2.3	0.10	2.500	0	92.5	91.2	106			
Nitrogen, Nitrate (As N)	4.1	0.10	2.500	1.415	105	93.5	110			

Sample ID: **2205485-001CMSD** SampType: **msd** TestCode: **EPA Method 300.0: Anions**
Client ID: **CTB to City POTW** Batch ID: **R87931** RunNo: **87931**
Prep Date: Analysis Date: **5/11/2022** SeqNo: **3117036** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.89	0.10	1.000	0	89.4	83.4	105	0.291	20	
Bromide	2.3	0.10	2.500	0	92.6	91.2	106	0.125	20	
Nitrogen, Nitrate (As N)	4.0	0.10	2.500	1.415	105	93.5	110	0.0519	20	

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R88075** RunNo: **88075**
Prep Date: Analysis Date: **5/17/2022** SeqNo: **3122483** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R88075** RunNo: **88075**
Prep Date: Analysis Date: **5/17/2022** SeqNo: **3122483** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R88075** RunNo: **88075**
Prep Date: Analysis Date: **5/17/2022** SeqNo: **3122484** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.0	90	110			
Sulfate	10	0.50	10.00	0	104	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**

01-Jun-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67405** SampType: **MBLK** TestCode: **EPA Method 6020A: Total Metals**
Client ID: **PBW** Batch ID: **67405** RunNo: **87984**
Prep Date: **5/11/2022** Analysis Date: **5/13/2022** SeqNo: **3118775** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0010								

Sample ID: **MSLLLCS-67405** SampType: **LCSLL** TestCode: **EPA Method 6020A: Total Metals**
Client ID: **BatchQC** Batch ID: **67405** RunNo: **87984**
Prep Date: **5/11/2022** Analysis Date: **5/13/2022** SeqNo: **3118776** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0011	0.0010	0.001000	0	106	70	130			

Sample ID: **MSLCS-67405** SampType: **LCS** TestCode: **EPA Method 6020A: Total Metals**
Client ID: **LCSW** Batch ID: **67405** RunNo: **87984**
Prep Date: **5/11/2022** Analysis Date: **5/13/2022** SeqNo: **3118777** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.051	0.0010	0.05000	0	102	80	120			

Sample ID: **MSLCSD-67405** SampType: **LCSD** TestCode: **EPA Method 6020A: Total Metals**
Client ID: **LCSS02** Batch ID: **67405** RunNo: **87984**
Prep Date: **5/11/2022** Analysis Date: **5/13/2022** SeqNo: **3118778** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.051	0.0010	0.05000	0	101	80	120	0.381	20	

Sample ID: **MSLLLCS-67405** SampType: **LCSLL** TestCode: **EPA Method 6020A: Total Metals**
Client ID: **BatchQC** Batch ID: **67405** RunNo: **87991**
Prep Date: **5/11/2022** Analysis Date: **5/14/2022** SeqNo: **3118935** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00094	0.0010	0.001000	0	93.6	70	130			J
Selenium	0.0011	0.0010	0.001000	0	105	70	130			

Sample ID: **MSLCS-67405** SampType: **LCS** TestCode: **EPA Method 6020A: Total Metals**
Client ID: **LCSW** Batch ID: **67405** RunNo: **87991**
Prep Date: **5/11/2022** Analysis Date: **5/14/2022** SeqNo: **3118936** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0010	0.05000	0	98.5	80	120			
Selenium	0.048	0.0010	0.05000	0	95.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MSLCSD-67405** SampType: **LCSD** TestCode: **EPA Method 6020A: Total Metals**
Client ID: **LCSS02** Batch ID: **67405** RunNo: **87991**
Prep Date: **5/11/2022** Analysis Date: **5/14/2022** SeqNo: **3118937** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0010	0.05000	0	98.7	80	120	0.200	20	
Selenium	0.048	0.0010	0.05000	0	96.1	80	120	0.706	20	

Sample ID: **MB-67405** SampType: **MBLK** TestCode: **EPA Method 6020A: Total Metals**
Client ID: **PBW** Batch ID: **67405** RunNo: **87991**
Prep Date: **5/11/2022** Analysis Date: **5/14/2022** SeqNo: **3118944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67469**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **67469**	RunNo: **88161**
Prep Date: **5/16/2022**	Analysis Date: **5/20/2022**	SeqNo: **3125571** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0022		0.002500		87.9	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		63.9	36.6	84.1			

Sample ID: **MB-67469**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **67469**	RunNo: **88161**
Prep Date: **5/16/2022**	Analysis Date: **5/20/2022**	SeqNo: **3125572** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0022		0.002500		87.3	73	119			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		64.4	36.6	84.1			

Sample ID: **LCS-67469**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **67469**	RunNo: **88161**
Prep Date: **5/16/2022**	Analysis Date: **5/20/2022**	SeqNo: **3125573** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00039	0.00010	0.0005000	0	77.7	56.3	126			
gamma-BHC (Lindane)	0.00034	0.00010	0.0005000	0	67.4	45.8	103			
Heptachlor	0.00031	0.00010	0.0005000	0	61.5	33.7	104			
Heptachlor epoxide	0.00038	0.00010	0.0005000	0	75.2	50.1	116			
Methoxychlor	0.00046	0.00010	0.0005000	0	91.2	15	203			
Surr: Decachlorobiphenyl	0.0021		0.002500		85.4	73	119			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		58.9	36.6	84.1			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-67469** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **67469** RunNo: **88161**
Prep Date: **5/16/2022** Analysis Date: **5/20/2022** SeqNo: **3125574** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00041	0.00010	0.0005000	0	82.1	56.3	126			
gamma-BHC (Lindane)	0.00033	0.00010	0.0005000	0	65.4	45.8	103			
Heptachlor	0.00030	0.00010	0.0005000	0	59.9	33.7	104			
Heptachlor epoxide	0.00035	0.00010	0.0005000	0	70.5	50.1	116			
Methoxychlor	0.00044	0.00010	0.0005000	0	89.0	15	203			
Surr: Decachlorobiphenyl	0.0022		0.002500		86.0	73	119			
Surr: Tetrachloro-m-xylene	0.0014		0.002500		57.7	36.6	84.1			

Sample ID: **LCSD-67469** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **67469** RunNo: **88161**
Prep Date: **5/16/2022** Analysis Date: **5/20/2022** SeqNo: **3125575** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00040	0.00010	0.0005000	0	80.6	56.3	126	3.67	20	
gamma-BHC (Lindane)	0.00033	0.00010	0.0005000	0	65.5	45.8	103	2.92	20	
Heptachlor	0.00030	0.00010	0.0005000	0	59.0	33.7	104	4.11	20	
Heptachlor epoxide	0.00038	0.00010	0.0005000	0	75.9	50.1	116	0.935	20	
Methoxychlor	0.00046	0.00010	0.0005000	0	91.9	15	203	0.806	20	
Surr: Decachlorobiphenyl	0.0021		0.002500		82.3	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0013		0.002500		52.0	36.6	84.1	0	0	

Sample ID: **LCSD-67469** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **67469** RunNo: **88161**
Prep Date: **5/16/2022** Analysis Date: **5/20/2022** SeqNo: **3125576** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00041	0.00010	0.0005000	0	83.0	56.3	126	1.08	20	
gamma-BHC (Lindane)	0.00033	0.00010	0.0005000	0	65.5	45.8	103	0.0651	20	
Heptachlor	0.00030	0.00010	0.0005000	0	59.6	33.7	104	0.553	20	
Heptachlor epoxide	0.00037	0.00010	0.0005000	0	74.9	50.1	116	6.05	20	
Methoxychlor	0.00051	0.00010	0.0005000	0	102	15	203	13.7	20	
Surr: Decachlorobiphenyl	0.0021		0.002500		82.4	73	119	0	0	
Surr: Tetrachloro-m-xylene	0.0013		0.002500		52.1	36.6	84.1	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **B88001** RunNo: **88001**
Prep Date: Analysis Date: **5/13/2022** SeqNo: **3119390** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.018	0.00023	0.02000	0	90.6	70	130			
1,1-Dichloroethene	0.017	0.00020	0.02000	0	82.5	70	130			
Trichloroethene (TCE)	0.017	0.00020	0.02000	0	83.3	70	130			
Chlorobenzene	0.019	0.00016	0.02000	0	93.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.0089		0.01000		89.5	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		103	70	130			
Surr: Dibromofluoromethane	0.0092		0.01000		91.9	70	130			
Surr: Toluene-d8	0.011		0.01000		110	70	130			

Sample ID: **2205485-001a ms** SampType: **MS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **CTB to City POTW** Batch ID: **B88001** RunNo: **88001**
Prep Date: Analysis Date: **5/13/2022** SeqNo: **3119392** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	4.0	0.50	4.000	0	101	70	130			
1,1-Dichloroethene	3.6	0.70	4.000	0	89.0	70	130			
Trichloroethene (TCE)	3.8	0.50	4.000	0	95.2	70	130			
Chlorobenzene	3.9	1.0	4.000	0	98.3	70	130			
Surr: 1,2-Dichloroethane-d4	1.9		2.000		94.1	70	130			
Surr: 4-Bromofluorobenzene	2.0		2.000		101	70	130			
Surr: Dibromofluoromethane	2.0		2.000		99.5	70	130			
Surr: Toluene-d8	2.1		2.000		104	70	130			

Sample ID: **2205485-001a msd** SampType: **MSD** TestCode: **TCLP Volatiles by 8260B**
Client ID: **CTB to City POTW** Batch ID: **B88001** RunNo: **88001**
Prep Date: Analysis Date: **5/13/2022** SeqNo: **3119393** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.8	0.50	4.000	0	95.1	70	130	5.56	20	
1,1-Dichloroethene	3.3	0.70	4.000	0	83.3	70	130	6.65	20	
Trichloroethene (TCE)	3.5	0.50	4.000	0	86.8	70	130	9.24	20	
Chlorobenzene	3.8	1.0	4.000	0	95.1	70	130	3.32	20	
Surr: 1,2-Dichloroethane-d4	1.8		2.000		90.5	70	130	0	0	
Surr: 4-Bromofluorobenzene	2.0		2.000		102	70	130	0	0	
Surr: Dibromofluoromethane	1.9		2.000		96.7	70	130	0	0	
Surr: Toluene-d8	2.0		2.000		102	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **B88001**	RunNo: **88001**
Prep Date:	Analysis Date: **5/13/2022**	SeqNo: **3119396** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.0084		0.01000		84.0	70	130			
Surr: 4-Bromofluorobenzene	0.0097		0.01000		97.2	70	130			
Surr: Dibromofluoromethane	0.0093		0.01000		92.8	70	130			
Surr: Toluene-d8	0.0099		0.01000		99.4	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-67499** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **67499** RunNo: **88155**
Prep Date: **5/17/2022** Analysis Date: **5/20/2022** SeqNo: **3125441** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.11		0.2000		57.2	15	118			
Surr: Phenol-d5	0.076		0.2000		38.1	15	92.9			
Surr: 2,4,6-Tribromophenol	0.11		0.2000		56.1	15	150			
Surr: Nitrobenzene-d5	0.070		0.1000		69.8	15	136			
Surr: 2-Fluorobiphenyl	0.058		0.1000		57.6	15	134			
Surr: 4-Terphenyl-d14	0.083		0.1000		83.3	15	168			

Sample ID: **lcs-67499** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **67499** RunNo: **88155**
Prep Date: **5/17/2022** Analysis Date: **5/20/2022** SeqNo: **3125442** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.065	0.00051	0.1000	0	64.7	19	106			
3+4-Methylphenol	0.14	0.00045	0.2000	0	68.1	16.3	112			
2,4-Dinitrotoluene	0.047	0.00062	0.1000	0	47.3	15	99.6			
Hexachlorobenzene	0.063	0.00066	0.1000	0	63.2	41.8	111			
Hexachlorobutadiene	0.052	0.00082	0.1000	0	52.3	15	91.5			
Hexachloroethane	0.057	0.00045	0.1000	0	57.5	15	87.5			
Nitrobenzene	0.066	0.00051	0.1000	0	66.3	19.3	114			
Pentachlorophenol	0.063	0.00059	0.1000	0	62.6	29	103			
Pyridine	0.011	0.00093	0.1000	0	11.3	15	92.6			S
2,4,5-Trichlorophenol	0.071	0.00062	0.1000	0	71.1	25.2	114			
2,4,6-Trichlorophenol	0.063	0.00043	0.1000	0	63.4	25.7	112			
Cresols, Total	0.20	0.00051	0.3000	0	67.0	15	145			
Surr: 2-Fluorophenol	0.11		0.2000		55.0	15	118			
Surr: Phenol-d5	0.075		0.2000		37.7	15	92.9			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		68.2	15	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-67499** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **67499** RunNo: **88155**
Prep Date: **5/17/2022** Analysis Date: **5/20/2022** SeqNo: **3125442** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.070		0.1000		70.3	15	136			
Surr: 2-Fluorobiphenyl	0.065		0.1000		64.6	15	134			
Surr: 4-Terphenyl-d14	0.080		0.1000		80.2	15	168			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 98.6uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**							
Client ID: **LCSW**	Batch ID: **R87963**	RunNo: **87963**							
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3117929**	Units: **µmhos/cm**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	98.60	0	104	85	115			

Sample ID: **2205485-001C dup**	SampType: **dup**	TestCode: **SM2510B: Specific Conductance**							
Client ID: **CTB to City POTW**	Batch ID: **R87963**	RunNo: **87963**							
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3117931**	Units: **µmhos/cm**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	2100	10						0.709	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67447**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**							
Client ID: **PBW**	Batch ID: **67447**	RunNo: **87979**							
Prep Date: **5/13/2022**	Analysis Date: **5/13/2022**	SeqNo: **3118595**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-67447**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**							
Client ID: **BatchQC**	Batch ID: **67447**	RunNo: **87979**							
Prep Date: **5/13/2022**	Analysis Date: **5/13/2022**	SeqNo: **3118596**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00014	0.00020	0.0001500	0	91.1	50	150			J

Sample ID: **LCS-67447**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**							
Client ID: **LCSW**	Batch ID: **67447**	RunNo: **87979**							
Prep Date: **5/13/2022**	Analysis Date: **5/13/2022**	SeqNo: **3118597**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67405** SampType: **MBLK** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW** Batch ID: **67405** RunNo: **87997**
Prep Date: **5/11/2022** Analysis Date: **5/13/2022** SeqNo: **3119300** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-67405** SampType: **LCS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW** Batch ID: **67405** RunNo: **87997**
Prep Date: **5/11/2022** Analysis Date: **5/13/2022** SeqNo: **3119302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.0020	0.5000	0	105	80	120			
Cadmium	0.52	0.0020	0.5000	0	104	80	120			
Chromium	0.51	0.0060	0.5000	0	103	80	120			
Silver	0.11	0.0050	0.1000	0	110	80	120			

Sample ID: **2205485-001EMS** SampType: **MS** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **CTB to City POTW** Batch ID: **67405** RunNo: **87997**
Prep Date: **5/11/2022** Analysis Date: **5/13/2022** SeqNo: **3119310** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.0020	0.5000	0.03303	93.3	75	125			
Cadmium	0.47	0.0020	0.5000	0	93.9	75	125			
Chromium	0.45	0.0060	0.5000	0	89.4	75	125			
Silver	0.11	0.0050	0.1000	0.005805	107	75	125			

Sample ID: **2205485-001EMSD** SampType: **MSD** TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **CTB to City POTW** Batch ID: **67405** RunNo: **87997**
Prep Date: **5/11/2022** Analysis Date: **5/13/2022** SeqNo: **3119311** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.53	0.0020	0.5000	0.03303	99.2	75	125	5.83	20	
Cadmium	0.50	0.0020	0.5000	0	100	75	125	6.71	20	
Chromium	0.48	0.0060	0.5000	0	96.3	75	125	7.44	20	
Silver	0.12	0.0050	0.1000	0.005805	115	75	125	6.70	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2205485-001C dup** SampType: **dup** TestCode: **SM4500-H+B / 9040C: pH**
Client ID: **CTB to City POTW** Batch ID: **R87963** RunNo: **87963**
Prep Date: Analysis Date: **5/12/2022** SeqNo: **3117941** Units: **pH units**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.68									H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87963**	RunNo: **87963**							
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3117895**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87963**	RunNo: **87963**							
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3117896**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.64	20.00	80.00	0	95.8	90	110			

Sample ID: **2205485-001C dup**	SampType: **dup**	TestCode: **SM2320B: Alkalinity**							
Client ID: **CTB to City POTW**	Batch ID: **R87963**	RunNo: **87963**							
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3117913**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	59.52	20.00						0.269	20	

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R87963**	RunNo: **87963**							
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3117918**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R87963**	RunNo: **87963**							
Prep Date:	Analysis Date: **5/12/2022**	SeqNo: **3117919**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.04	20.00	80.00	0	95.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67452**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **67452**	RunNo: **88016**
Prep Date: **5/13/2022**	Analysis Date: **5/16/2022**	SeqNo: **3119755** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-67452**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **67452**	RunNo: **88016**
Prep Date: **5/13/2022**	Analysis Date: **5/16/2022**	SeqNo: **3119756** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1050	20.0	1000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2205485**
01-Jun-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-67509**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **67509**	RunNo: **88084**							
Prep Date: **5/17/2022**	Analysis Date: **5/18/2022**	SeqNo: **3122846**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-67509**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **67509**	RunNo: **88084**							
Prep Date: **5/17/2022**	Analysis Date: **5/18/2022**	SeqNo: **3122847**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	100	4.0	92.40	0	113	83.44	119.05			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2205485 | RcptNo: 1

Received By: Juan Rojas 5/11/2022 7:15:00 AM

Completed By: Sean Livingston 5/11/2022 8:06:17 AM

Reviewed By: HRA 5.11.22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 3 2 (<2 or >12 unless noted)

Adjusted? ne

Checked by CM 5/11/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.7	Good				

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

Standard Rush X

Project Name:

PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:

Randy Dade

Sampler: Brady Hubbard

On Ice: ☑ Yes ☐ No

Sample Temperature: 6.7-0=0.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2205485	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
5/10/22	9:50	Liquid	CTB to City POTW	**	**	001	X						
5/10/22	9:50	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
5/10/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none				X				
5/10/22	9:50	Liquid	CTB to City POTW	***	***					X			
5/10/22	9:50	Liquid	CTB to City POTW	1-250ml P	HNO3						X		
5/10/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none							X	
5/10/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none								X

Date	Time	Relinquished by	Received by	Date	Time
5-10-22	11:30	Brady Hubbard		5/10/22	1130
5/10/22	1900			5/11/22	7:15

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 29, 2022

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2206D72

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/24/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2206D72**
Date: **7/29/2022**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2206D72**
Date Reported: **7/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 6/23/2022 9:45:00 AM
Lab ID: 2206D72-001 **Matrix:** AQUEOUS **Received Date:** 6/24/2022 8:16:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	7/15/2022 10:20:07 AM	68482
Endrin	ND	0.000062	0.020		mg/L	1	7/15/2022 10:20:07 AM	68482
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	7/15/2022 10:20:07 AM	68482
Heptachlor	ND	0.000041	0.0080		mg/L	1	7/15/2022 10:20:07 AM	68482
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	7/15/2022 10:20:07 AM	68482
Methoxychlor	ND	0.000075	10		mg/L	1	7/15/2022 10:20:07 AM	68482
Toxaphene	ND	0.00050	0.50		mg/L	1	7/15/2022 10:20:07 AM	68482
Surr: Decachlorobiphenyl	46.3	0	48.4-132	S	%Rec	1	7/15/2022 10:20:07 AM	68482
Surr: Tetrachloro-m-xylene	29.5	0	29.4-106		%Rec	1	7/15/2022 10:20:07 AM	68482
EPA METHOD 300.0: ANIONS							Analyst: **JMT**	
Fluoride	2.2	0.80	2.0		mg/L	20	6/24/2022 10:31:51 PM	R89034
Chloride	78	5.0	10		mg/L	20	6/24/2022 10:31:51 PM	R89034
Nitrogen, Nitrite (As N)	6.5	0.29	2.0	*	mg/L	20	6/24/2022 10:31:51 PM	R89034
Bromide	ND	0.050	0.10		mg/L	1	6/24/2022 10:18:59 PM	R89034
Nitrogen, Nitrate (As N)	3.4	0.020	0.10		mg/L	1	6/24/2022 10:18:59 PM	R89034
Phosphorus, Orthophosphate (As P)	2.4	0.25	0.50		mg/L	1	6/24/2022 10:18:59 PM	R89034
Sulfate	940	5.0	10	*	mg/L	20	6/24/2022 10:31:51 PM	R89034
EPA METHOD 200.7: DISSOLVED METALS							Analyst: **JLF**	
Calcium	230	0.57	5.0		mg/L	5	6/30/2022 11:10:18 AM	B89154
Magnesium	72	0.34	5.0		mg/L	5	6/30/2022 11:10:18 AM	B89154
Potassium	1.9	0.16	1.0		mg/L	1	6/27/2022 3:16:54 PM	B89068
Sodium	71	1.7	5.0		mg/L	5	6/30/2022 11:10:18 AM	B89154
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	0.0015	0.00050	5.0	J	mg/L	1	6/30/2022 5:40:57 PM	68432
Lead	ND	0.00050	5.0		mg/L	1	6/30/2022 5:40:57 PM	68432
Selenium	0.0028	0.00050	1.0	J	mg/L	1	6/30/2022 5:40:57 PM	68432
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	7/6/2022 10:49:40 AM	68557
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.022	0.0011	100	J	mg/L	1	6/29/2022 11:08:05 AM	68432
Cadmium	ND	0.0012	1.0		mg/L	1	6/29/2022 11:08:05 AM	68432
Chromium	0.0020	0.0017	5.0	J	mg/L	1	6/29/2022 11:08:05 AM	68432
Silver	0.0035	0.0013	5.0	J	mg/L	1	6/29/2022 11:08:05 AM	68432
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.0050	200		mg/L	1	7/14/2022 1:31:52 AM	68477
3+4-Methylphenol	ND	0.0051	200		mg/L	1	7/14/2022 1:31:52 AM	68477

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206D72**
Date Reported: **7/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2206D72-001 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 6/23/2022 9:45:00 AM
Received Date: 6/24/2022 8:16:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	7/14/2022 1:31:52 AM	68477
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	7/14/2022 1:31:52 AM	68477
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	7/14/2022 1:31:52 AM	68477
Hexachloroethane	ND	0.014	3.0		mg/L	1	7/14/2022 1:31:52 AM	68477
Nitrobenzene	ND	0.0049	2.0		mg/L	1	7/14/2022 1:31:52 AM	68477
Pentachlorophenol	ND	0.027	100		mg/L	1	7/14/2022 1:31:52 AM	68477
Pyridine	ND	0.014	5.0		mg/L	1	7/14/2022 1:31:52 AM	68477
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	7/14/2022 1:31:52 AM	68477
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	7/14/2022 1:31:52 AM	68477
Cresols, Total	ND	0.027	200		mg/L	1	7/14/2022 1:31:52 AM	68477
Surr: 2-Fluorophenol	35.2	0	18.1-88.9		%Rec	1	7/14/2022 1:31:52 AM	68477
Surr: Phenol-d5	25.8	0	17-61.5		%Rec	1	7/14/2022 1:31:52 AM	68477
Surr: 2,4,6-Tribromophenol	39.5	0	29.8-104		%Rec	1	7/14/2022 1:31:52 AM	68477
Surr: Nitrobenzene-d5	44.9	0	22.2-111		%Rec	1	7/14/2022 1:31:52 AM	68477
Surr: 2-Fluorobiphenyl	40.8	0	24.6-96.3		%Rec	1	7/14/2022 1:31:52 AM	68477
Surr: 4-Terphenyl-d14	52.5	0	53.4-124	S	%Rec	1	7/14/2022 1:31:52 AM	68477
TCLP VOLATILES BY 8260B							Analyst: **BRM**	
Benzene	ND	0.00023	0.50		mg/L	200	7/2/2022 10:32:25 AM	D89211
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	7/2/2022 10:32:25 AM	D89211
2-Butanone	ND	0.0020	200		mg/L	200	7/2/2022 10:32:25 AM	D89211
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	7/2/2022 10:32:25 AM	D89211
Chloroform	ND	0.00013	6.0		mg/L	200	7/2/2022 10:32:25 AM	D89211
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	7/2/2022 10:32:25 AM	D89211
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	7/2/2022 10:32:25 AM	D89211
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	7/2/2022 10:32:25 AM	D89211
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	7/2/2022 10:32:25 AM	D89211
Vinyl chloride	ND	0.00032	0.20		mg/L	200	7/2/2022 10:32:25 AM	D89211
Chlorobenzene	ND	0.00016	100		mg/L	200	7/2/2022 10:32:25 AM	D89211
Surr: 1,2-Dichloroethane-d4	103	0	70-130		%Rec	200	7/2/2022 10:32:25 AM	D89211
Surr: 4-Bromofluorobenzene	99.9	0	70-130		%Rec	200	7/2/2022 10:32:25 AM	D89211
Surr: Dibromofluoromethane	106	0	70-130		%Rec	200	7/2/2022 10:32:25 AM	D89211
Surr: Toluene-d8	102	0	70-130		%Rec	200	7/2/2022 10:32:25 AM	D89211
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **CAS**	
Conductivity	1800	10	10		µmhos/c	1	6/27/2022 6:54:51 PM	R89067
SM4500-H+B / 9040C: PH							Analyst: **CAS**	
pH	6.97			H	pH units	1	6/27/2022 6:54:51 PM	R89067
SM2320B: ALKALINITY							Analyst: **CAS**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206D72**
Date Reported: **7/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2206D72-001 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 6/23/2022 9:45:00 AM
Received Date: 6/24/2022 8:16:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	34.24	20.00	20.00		mg/L Ca	1	6/27/2022 6:54:51 PM	R89067
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	6/27/2022 6:54:51 PM	R89067
Total Alkalinity (as CaCO3)	34.24	20.00	20.00		mg/L Ca	1	6/27/2022 6:54:51 PM	R89067
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9962	0	0			1	6/30/2022 3:28:00 PM	R89169
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**	
Total Dissolved Solids	1470	20.0	20.0	*	mg/L	1	7/1/2022 2:56:00 PM	68466
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	6.0	4.0	4.0		mg/L	1	6/30/2022 9:28:00 AM	68440

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2206D72**
Date Reported: **7/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date:
Lab ID: 2206D72-002 **Matrix:** AQUEOUS **Received Date:** 6/24/2022 8:16:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
TCLP VOLATILES BY 8260B							Analyst: **BRM**	
Benzene	ND	0.00023	0.50		mg/L	1	7/2/2022 10:59:28 AM	D89211
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	1	7/2/2022 10:59:28 AM	D89211
2-Butanone	ND	0.0020	200		mg/L	1	7/2/2022 10:59:28 AM	D89211
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	1	7/2/2022 10:59:28 AM	D89211
Chloroform	ND	0.00013	6.0		mg/L	1	7/2/2022 10:59:28 AM	D89211
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	1	7/2/2022 10:59:28 AM	D89211
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	1	7/2/2022 10:59:28 AM	D89211
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	1	7/2/2022 10:59:28 AM	D89211
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	1	7/2/2022 10:59:28 AM	D89211
Vinyl chloride	ND	0.00032	0.20		mg/L	1	7/2/2022 10:59:28 AM	D89211
Chlorobenzene	ND	0.00016	100		mg/L	1	7/2/2022 10:59:28 AM	D89211
Surr: 1,2-Dichloroethane-d4	103	0	70-130		%Rec	1	7/2/2022 10:59:28 AM	D89211
Surr: 4-Bromofluorobenzene	107	0	70-130		%Rec	1	7/2/2022 10:59:28 AM	D89211
Surr: Dibromofluoromethane	106	0	70-130		%Rec	1	7/2/2022 10:59:28 AM	D89211
Surr: Toluene-d8	102	0	70-130		%Rec	1	7/2/2022 10:59:28 AM	D89211

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	CTB to City POTW 2206D72-001											
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	71	3.09										
Potassium	1.9	0.05										
Calcium	230	11.48										
Magnesium	72	5.93										
Total Cations		20.54										
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	940	19.57										
Chloride	78	2.20										
Bicarbonate (CaCO3)	34.24	0.68	-									
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)	6.5	0.46										
Nitrate (N)	3.4	0.24			-							
Fluoride	2.2	0.12										
Bromide												
Total Anions		23.28										
Elect. Cond. (µMhos/cm)	1800											
CATION/ANION RATIO		0.88										
% Difference		6										
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	1470											
TDS (calculated)	1431											
Ratio meas TDS:calc TDS		1.0										
Ratio Meas. TDS:EC		0.82										
Ratio Calc. TDS:EC		0.79										
Ratio of anion sum:EC		1.3										
Ratio of cation sum:EC		1.1										

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

July 13, 2022

Hall Environmental Analysis Laboratory

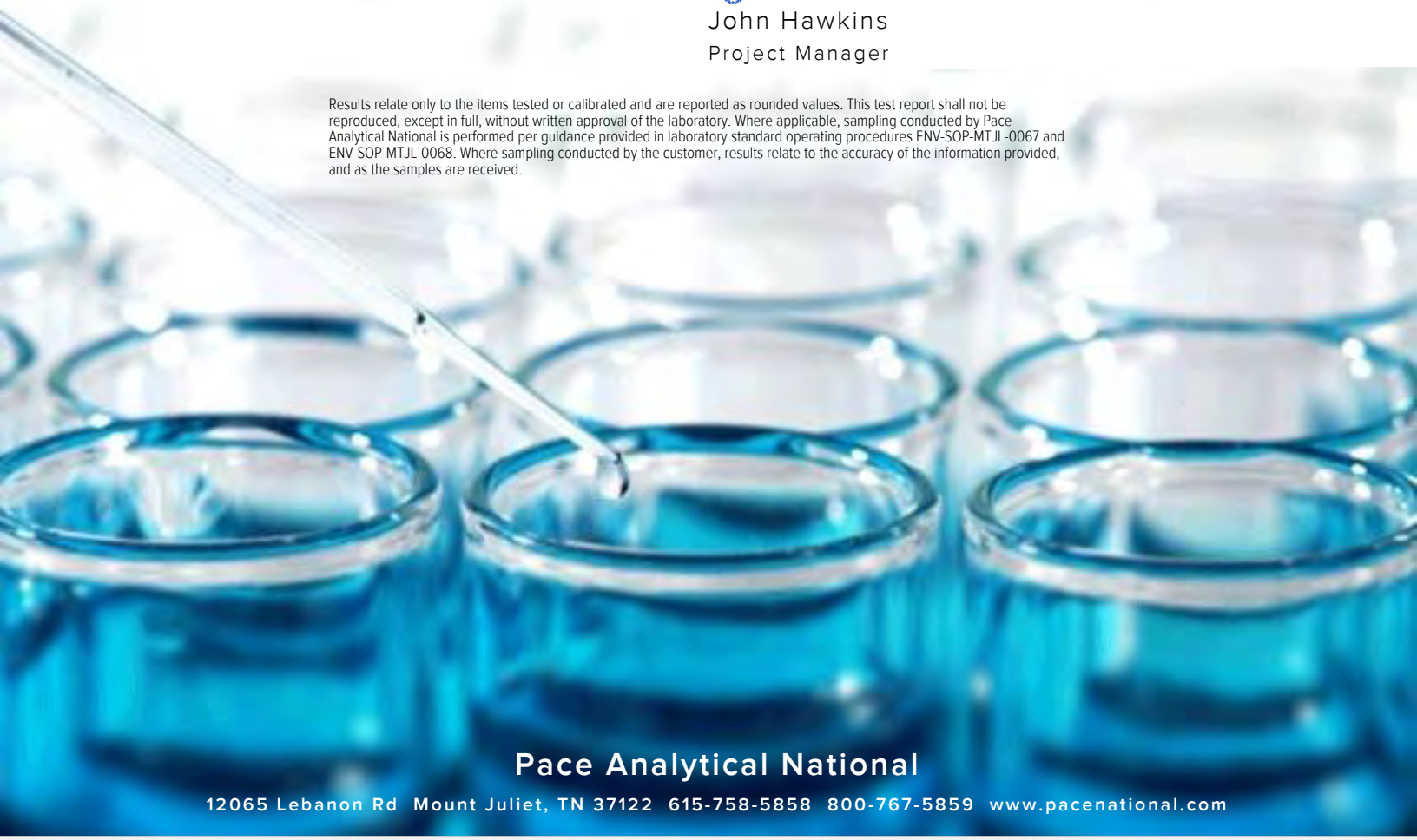
Sample Delivery Group:	L1508843
Samples Received:	06/25/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2206D72-001F CTB TO CITY POTW L1508843-01 Waste

Collected by	Collected date/time	Received date/time
	06/23/22 09:45	06/25/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1887211	1	06/29/22 14:47	06/29/22 14:47	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1890402	1	07/06/22 08:43	07/07/22 04:57	CCW	Mt. Juliet, TN

2206D72-001H CTB TO CITY POTW L1508843-02 GW

Collected by	Collected date/time	Received date/time
	06/23/22 09:45	06/25/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1891794	1	07/13/22 13:16	07/13/22 13:16	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1888930	1	07/03/22 19:45	07/04/22 23:12	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1886849	1	06/28/22 16:05	06/28/22 16:05	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1890536	1	07/07/22 11:00	07/07/22 11:00	GI	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1886988	1	06/29/22 03:30	06/29/22 03:30	CRB	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		6/29/2022 2:47:32 PM	WG1887211
Fluid	N/A		6/29/2022 2:47:32 PM	WG1887211
Initial pH	N/A		6/29/2022 2:47:32 PM	WG1887211
Final pH	N/A		6/29/2022 2:47:32 PM	WG1887211

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND	J4	0.00200	1	1	07/07/2022 04:57	WG1890402
2,4-D	ND	J4	0.00200	10	1	07/07/2022 04:57	WG1890402
(S) 2,4-Dichlorophenyl Acetic Acid	*250*	J1	*14.0-158*			*07/07/2022 04:57*	WG1890402

Sample Narrative:

L1508843-01 WG1890402: Duplicate Analysis performed due to QC failure. Reporting most compliant data.

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	198	T8	1	07/13/2022 13:16	WG1891794

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	0.00939		0.00500	1	07/04/2022 23:12	WG1888930

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	06/28/2022 16:05	WG1886849

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
pH	6.96	T8	1	07/07/2022 11:00	WG1890536

Sample Narrative:

L1508843-02 WG1890536: 6.96 at 23.5C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	06/29/2022 03:30	WG1886988

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

L1505736-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1505736-01 07/13/22 13:16 • (DUP) R3814296-3 07/13/22 13:16

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	176	176	1	0.700		20

L1508843-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1508843-02 07/13/22 13:16 • (DUP) R3814296-4 07/13/22 13:16

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	198	197	1	1.00		20

L1510492-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1510492-01 07/13/22 13:16 • (DUP) R3814296-5 07/13/22 13:16

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	-83.5	-82.3	1	0.000		20

L1512255-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1512255-02 07/13/22 13:16 • (DUP) R3814296-6 07/13/22 13:16

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	166	166	1	0.500		20

L1512255-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512255-03 07/13/22 13:16 • (DUP) R3814296-7 07/13/22 13:16

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	93.6	91.3	1	2.30		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3814296-1 07/13/22 13:16 • (LCSD) R3814296-2 07/13/22 13:16

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	107	110	99.2	102	90.0-110			2.70	20

Method Blank (MB)

(MB) R3810635-1 07/04/22 22:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1507944-17 Original Sample (OS) • Duplicate (DUP)

(OS) L1507944-17 07/04/22 23:03 • (DUP) R3810635-3 07/04/22 23:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1509495-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1509495-01 07/04/22 23:19 • (DUP) R3810635-8 07/04/22 23:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3810635-2 07/04/22 22:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0977	97.7	87.1-120	

L1508969-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1508969-02 07/04/22 23:13 • (MS) R3810635-4 07/04/22 23:14 • (MSD) R3810635-5 07/04/22 23:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.100	0.0956	100	95.6	1	90.0-110			4.50	20

L1509137-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1509137-01 07/04/22 23:42 • (MS) R3810635-9 07/04/22 23:43 • (MSD) R3810635-10 07/04/22 23:44

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0771	0.0932	77.1	93.2	1	90.0-110	J6		18.9	20

Method Blank (MB)

(MB) R3808505-1 06/28/22 15:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3808505-2 06/28/22 15:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.500	100	85.0-115	

L1507314-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1507314-02 07/07/22 11:00 • (DUP) R3811898-2 07/07/22 11:00

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	8.97	8.98	1	0.111		1

Sample Narrative:
OS: 8.97 at 23.6C
DUP: 8.98 at 23.6C

L1507314-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1507314-03 07/07/22 11:00 • (DUP) R3811898-3 07/07/22 11:00

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	8.91	8.90	1	0.112		1

Sample Narrative:
OS: 8.91 at 23.7C
DUP: 8.9 at 23.6C

Laboratory Control Sample (LCS)

(LCS) R3811898-1 07/07/22 11:00

Analyte	Spike Amount su	LCS Result su	LCS Rec. %	Rec. Limits %	LCS Qualifier
pH	10.0	9.91	99.1	99.0-101	

Sample Narrative:
LCS: 9.91 at 23.6C

L1507562-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1507562-01 06/29/22 03:30 • (DUP) R3808637-3 06/29/22 03:30

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

L1508054-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1508054-01 06/29/22 03:30 • (DUP) R3808637-4 06/29/22 03:30

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3808637-1 06/29/22 03:30 • (LCSD) R3808637-2 06/29/22 03:30

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	130	126	103	99.7	96.0-104			3.14	10

Method Blank (MB)

(MB) R3812961-1 07/06/22 23:15

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*106*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3812961-2 07/06/22 23:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0120	24.0	50.0-125	J4
2,4-D	0.0500	0.0105	21.0	50.0-120	J4
(S) 2,4-Dichlorophenyl Acetic Acid			*121*	*14.0-158*	

L1510403-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1510403-06 07/07/22 08:09 • (MS) R3812961-3 07/07/22 08:24 • (MSD) R3812961-4 07/07/22 08:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0112	0.0119	22.4	23.8	1	50.0-125	J6	J6	6.06	20
2,4-D	0.0500	ND	0.0104	0.0113	20.8	22.6	1	50.0-120	J6	J6	8.29	20
(S) 2,4-Dichlorophenyl Acetic Acid					*114*	*117*		*14.0-158*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRACTOR:	Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX:	(615) 758-5859
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

L1508893

RCV 7/2

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2206D72-001F	CTB to City POTW	1LAMGU	Aqueous	6/23/2022 9:45:00 AM	1	8151TCLP *RUSH 5 DAY TAT* -01
2	2206D72-001H	CTB to City POTW	500HDPE	Aqueous	6/23/2022 9:45:00 AM	3	RCI, ORP *RUSH 5 DAY TAT* -02

H123

TRK: 5755 8089 4432 Count: 4

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres. Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: Sal	Date: 6/24/2022	Time: 10:14 AM	Received By: Zoe Pena	Date: 6-25-22	Time: 09:00
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 0.4+0=0.4 Attempt to Cool ?

Comments

Released to Imaging: 5/24/2023 4:44:56 PM

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-B**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B89068**	RunNo: **89068**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3164612** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	ND	1.0								

Sample ID: **LLLCS-B**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC**	Batch ID: **B89068**	RunNo: **89068**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3164613** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.48	1.0	0.5000	0	96.7	50	150			J

Sample ID: **LCS-B**	SampType: **LCS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **B89068**	RunNo: **89068**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3164614** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	51	1.0	50.00	0	101	85	115			

Sample ID: **2206D72-001DMS**	SampType: **MS**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **CTB to City POTW**	Batch ID: **B89068**	RunNo: **89068**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3164670** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	54	1.0	50.00	1.893	104	70	130			

Sample ID: **2206D72-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **CTB to City POTW**	Batch ID: **B89068**	RunNo: **89068**
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3164671** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	54	1.0	50.00	1.893	104	70	130	0.177	20	

Sample ID: **MB-B**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B89154**	RunNo: **89154**
Prep Date:	Analysis Date: **6/30/2022**	SeqNo: **3168576** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Sodium	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LLLCS-B** SampType: **LCSLL** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **BatchQC** Batch ID: **B89154** RunNo: **89154**
Prep Date: Analysis Date: **6/30/2022** SeqNo: **3168577** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.51	1.0	0.5000	0	102	50	150			J
Magnesium	0.52	1.0	0.5000	0	105	50	150			J
Sodium	0.66	1.0	0.5000	0	133	50	150			J

Sample ID: **LCS-B** SampType: **LCS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **LCSW** Batch ID: **B89154** RunNo: **89154**
Prep Date: Analysis Date: **6/30/2022** SeqNo: **3168578** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	97.2	85	115			
Magnesium	50	1.0	50.00	0	99.5	85	115			
Sodium	48	1.0	50.00	0	96.2	85	115			

Sample ID: **2206D72-001DMS** SampType: **MS** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **CTB to City POTW** Batch ID: **B89154** RunNo: **89154**
Prep Date: Analysis Date: **6/30/2022** SeqNo: **3168646** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	490	5.0	250.0	233.1	104	70	130			
Magnesium	320	5.0	250.0	71.64	101	70	130			
Sodium	320	5.0	250.0	70.77	99.4	70	130			

Sample ID: **2206D72-001DMSD** SampType: **MSD** TestCode: **EPA Method 200.7: Dissolved Metals**
Client ID: **CTB to City POTW** Batch ID: **B89154** RunNo: **89154**
Prep Date: Analysis Date: **6/30/2022** SeqNo: **3168647** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	480	5.0	250.0	233.1	99.0	70	130	2.76	20	
Magnesium	320	5.0	250.0	71.64	98.1	70	130	2.50	20	
Sodium	310	5.0	250.0	70.77	96.6	70	130	2.21	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R89034** RunNo: **89034**
Prep Date: Analysis Date: **6/24/2022** SeqNo: **3162075** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R89034** RunNo: **89034**
Prep Date: Analysis Date: **6/24/2022** SeqNo: **3162076** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	102	90	110			
Chloride	4.7	0.50	5.000	0	93.2	90	110			
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	98.5	90	110			
Bromide	2.5	0.10	2.500	0	98.3	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	103	90	110			
Phosphorus, Orthophosphate (As P	4.5	0.50	5.000	0	90.3	90	110			
Sulfate	10	0.50	10.00	0	101	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68432** SampType: **MBLK** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW** Batch ID: **68432** RunNo: **89181**
Prep Date: **6/28/2022** Analysis Date: **6/30/2022** SeqNo: **3170044** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-68432** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **68432** RunNo: **89181**
Prep Date: **6/28/2022** Analysis Date: **6/30/2022** SeqNo: **3170045** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00078	0.0010	0.001000	0	77.9	70	130			J
Lead	0.00096	0.0010	0.001000	0	96.1	70	130			J
Selenium	0.00082	0.0010	0.001000	0	82.4	70	130			J

Sample ID: **MSLCS-68432** SampType: **LCS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW** Batch ID: **68432** RunNo: **89181**
Prep Date: **6/28/2022** Analysis Date: **6/30/2022** SeqNo: **3170046** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.046	0.0010	0.05000	0	92.6	80	120			
Lead	0.045	0.0010	0.05000	0	89.2	80	120			
Selenium	0.048	0.0010	0.05000	0	95.7	80	120			

Sample ID: **2206D72-001EMSLL** SampType: **MS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **CTB to City POTW** Batch ID: **68432** RunNo: **89181**
Prep Date: **6/28/2022** Analysis Date: **6/30/2022** SeqNo: **3170048** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0010	0.05000	0.001500	95.3	75	125			
Lead	0.043	0.0010	0.05000	0	86.0	75	125			
Selenium	0.048	0.0010	0.05000	0.002834	90.1	75	125			

Sample ID: **2206D72-001EMSDL** SampType: **MSD** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **CTB to City POTW** Batch ID: **68432** RunNo: **89181**
Prep Date: **6/28/2022** Analysis Date: **6/30/2022** SeqNo: **3170049** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0010	0.05000	0.001500	94.8	75	125	0.507	20	
Lead	0.042	0.0010	0.05000	0	84.2	75	125	2.03	20	
Selenium	0.048	0.0010	0.05000	0.002834	90.2	75	125	0.170	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68482** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **68482** RunNo: **89521**
Prep Date: **6/30/2022** Analysis Date: **7/15/2022** SeqNo: **3187540** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0016		0.002500		63.6	48.4	132			
Surr: Tetrachloro-m-xylene	0.00073		0.002500		29.1	29.4	106			S

Sample ID: **MB-68482** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **68482** RunNo: **89521**
Prep Date: **6/30/2022** Analysis Date: **7/15/2022** SeqNo: **3187543** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0015		0.002500		59.7	48.4	132			
Surr: Tetrachloro-m-xylene	0.00072		0.002500		28.8	29.4	106			S

Sample ID: **LCS-68482** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **68482** RunNo: **89521**
Prep Date: **6/30/2022** Analysis Date: **7/15/2022** SeqNo: **3187544** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00038	0.00010	0.0005000	0	75.0	56.3	126			
gamma-BHC (Lindane)	0.00030	0.00010	0.0005000	0	59.4	45.8	103			
Heptachlor	0.00018	0.00010	0.0005000	0	36.6	33.7	104			
Heptachlor epoxide	0.00033	0.00010	0.0005000	0	65.8	50.1	116			
Methoxychlor	0.00042	0.00010	0.0005000	0	84.4	15	203			
Surr: Decachlorobiphenyl	0.0016		0.002500		62.8	48.4	132			
Surr: Tetrachloro-m-xylene	0.0010		0.002500		42.0	29.4	106			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-68482** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **68482** RunNo: **89521**
Prep Date: **6/30/2022** Analysis Date: **7/15/2022** SeqNo: **3187547** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00036	0.00010	0.0005000	0	71.4	56.3	126			
gamma-BHC (Lindane)	0.00030	0.00010	0.0005000	0	59.9	45.8	103			
Heptachlor	0.00018	0.00010	0.0005000	0	36.9	33.7	104			
Heptachlor epoxide	0.00033	0.00010	0.0005000	0	65.3	50.1	116			
Methoxychlor	0.00038	0.00010	0.0005000	0	76.8	15	203			
Surr: Decachlorobiphenyl	0.0015		0.002500		58.3	48.4	132			
Surr: Tetrachloro-m-xylene	0.0010		0.002500		41.9	29.4	106			

Sample ID: **LCSD-68482** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **68482** RunNo: **89521**
Prep Date: **6/30/2022** Analysis Date: **7/15/2022** SeqNo: **3187604** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	91.2	56.3	126	19.5	20	
gamma-BHC (Lindane)	0.00032	0.00010	0.0005000	0	64.9	45.8	103	8.75	20	
Heptachlor	0.00027	0.00010	0.0005000	0	54.7	33.7	104	39.6	20	R
Heptachlor epoxide	0.00040	0.00010	0.0005000	0	80.0	50.1	116	19.4	20	
Methoxychlor	0.00052	0.00010	0.0005000	0	103	15	203	20.0	20	R
Surr: Decachlorobiphenyl	0.0020		0.002500		81.7	48.4	132	0	0	
Surr: Tetrachloro-m-xylene	0.0013		0.002500		50.8	29.4	106	0	0	

Sample ID: **LCSD-68482** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **68482** RunNo: **89521**
Prep Date: **6/30/2022** Analysis Date: **7/15/2022** SeqNo: **3187605** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00043	0.00010	0.0005000	0	86.3	56.3	126	18.9	20	
gamma-BHC (Lindane)	0.00034	0.00010	0.0005000	0	68.6	45.8	103	13.6	20	
Heptachlor	0.00028	0.00010	0.0005000	0	55.1	33.7	104	39.7	20	R
Heptachlor epoxide	0.00039	0.00010	0.0005000	0	78.8	50.1	116	18.7	20	
Methoxychlor	0.00046	0.00010	0.0005000	0	91.7	15	203	17.6	20	
Surr: Decachlorobiphenyl	0.0019		0.002500		76.1	48.4	132	0	0	
Surr: Tetrachloro-m-xylene	0.0013		0.002500		50.5	29.4	106	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs2** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **D89211** RunNo: **89211**
Prep Date: Analysis Date: **7/2/2022** SeqNo: **3171195** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.021	0.00023	0.02000	0	105	70	130			
1,1-Dichloroethene	0.019	0.00020	0.02000	0	97.5	70	130			
Trichloroethene (TCE)	0.020	0.00020	0.02000	0	102	70	130			
Chlorobenzene	0.019	0.00016	0.02000	0	96.3	70	130			
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		100	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		109	70	130			
Surr: Dibromofluoromethane	0.0099		0.01000		98.8	70	130			
Surr: Toluene-d8	0.0095		0.01000		95.1	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **D89211** RunNo: **89211**
Prep Date: Analysis Date: **7/2/2022** SeqNo: **3171201** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.011		0.01000		106	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		104	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		103	70	130			
Surr: Toluene-d8	0.0098		0.01000		97.8	70	130			

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68477** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **68477** RunNo: **89411**
Prep Date: **6/30/2022** Analysis Date: **7/14/2022** SeqNo: **3183325** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.10		0.2000		52.0	18.1	88.9			
Surr: Phenol-d5	0.077		0.2000		38.6	17	61.5			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		62.8	29.8	104			
Surr: Nitrobenzene-d5	0.064		0.1000		63.6	22.2	111			
Surr: 2-Fluorobiphenyl	0.055		0.1000		55.1	24.6	96.3			
Surr: 4-Terphenyl-d14	0.074		0.1000		74.0	53.4	124			

Sample ID: **LCS-68477** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **68477** RunNo: **89411**
Prep Date: **6/30/2022** Analysis Date: **7/14/2022** SeqNo: **3183326** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.057	0.00010	0.1000	0	56.9	19	106			
3+4-Methylphenol	0.12	0.00010	0.2000	0	58.0	16.3	112			
2,4-Dinitrotoluene	0.046	0.00010	0.1000	0	45.6	15	99.6			
Hexachlorobenzene	0.054	0.00010	0.1000	0	54.4	41.8	111			
Hexachlorobutadiene	0.042	0.00010	0.1000	0	42.1	15	91.5			
Hexachloroethane	0.053	0.00010	0.1000	0	53.0	15	87.5			
Nitrobenzene	0.057	0.00010	0.1000	0	56.6	19.3	114			
Pentachlorophenol	0.050	0.00010	0.1000	0	50.2	29	103			
Pyridine	0.033	0.00010	0.1000	0	33.2	15	92.6			
2,4,5-Trichlorophenol	0.057	0.00010	0.1000	0	57.1	25.2	114			
2,4,6-Trichlorophenol	0.059	0.00010	0.1000	0	58.7	25.7	112			
Cresols, Total	0.17	0.00010	0.3000	0	57.7	15	145			
Surr: 2-Fluorophenol	0.093		0.2000		46.7	18.1	88.9			
Surr: Phenol-d5	0.069		0.2000		34.7	17	61.5			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		59.4	29.8	104			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-68477** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **68477** RunNo: **89411**
Prep Date: **6/30/2022** Analysis Date: **7/14/2022** SeqNo: **3183326** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.063		0.1000		62.6	22.2	111			
Surr: 2-Fluorobiphenyl	0.055		0.1000		55.2	24.6	96.3			
Surr: 4-Terphenyl-d14	0.072		0.1000		72.3	53.4	124			

Sample ID: **2206D72-001BMS** SampType: **MS** TestCode: **EPA Method 8270C TCLP**
Client ID: **CTB to City POTW** Batch ID: **68477** RunNo: **89411**
Prep Date: **6/30/2022** Analysis Date: **7/14/2022** SeqNo: **3183328** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.029	0.00010	0.1000	0	29.4	15.8	101			
3+4-Methylphenol	0.058	0.00010	0.2000	0	29.0	16.9	97.9			
2,4-Dinitrotoluene	0.022	0.00010	0.1000	0	22.4	20.1	90.5			
Hexachlorobenzene	0.028	0.00010	0.1000	0	27.6	34	108			S
Hexachlorobutadiene	0.021	0.00010	0.1000	0	21.1	15	99.7			
Hexachloroethane	0.026	0.00010	0.1000	0	26.1	15	86.4			
Nitrobenzene	0.028	0.00010	0.1000	0	27.7	15	109			
Pentachlorophenol	0.022	0.00010	0.1000	0	21.9	15	130			
Pyridine	0.0020	0.00010	0.1000	0	1.98	15	82			S
2,4,5-Trichlorophenol	0.029	0.00010	0.1000	0	29.2	28.1	105			
2,4,6-Trichlorophenol	0.029	0.00010	0.1000	0	28.6	21.5	110			
Cresols, Total	0.088	0.00010	0.3000	0	29.2	15	127			
Surr: 2-Fluorophenol	0.044		0.2000		22.1	18.1	88.9			
Surr: Phenol-d5	0.034		0.2000		17.2	17	61.5			
Surr: 2,4,6-Tribromophenol	0.056		0.2000		28.1	29.8	104			S
Surr: Nitrobenzene-d5	0.030		0.1000		30.3	22.2	111			
Surr: 2-Fluorobiphenyl	0.028		0.1000		28.0	24.6	96.3			
Surr: 4-Terphenyl-d14	0.038		0.1000		38.5	53.4	124			S

Sample ID: **2206D72-001BMSD** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **CTB to City POTW** Batch ID: **68477** RunNo: **89411**
Prep Date: **6/30/2022** Analysis Date: **7/14/2022** SeqNo: **3183329** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.050	0.00010	0.1000	0	50.5	15.8	101	52.7	20	R
3+4-Methylphenol	0.10	0.00010	0.2000	0	51.5	16.9	97.9	55.8	20	R
2,4-Dinitrotoluene	0.040	0.00010	0.1000	0	40.3	20.1	90.5	57.1	20	R
Hexachlorobenzene	0.050	0.00010	0.1000	0	50.3	34	108	58.3	20	R
Hexachlorobutadiene	0.037	0.00010	0.1000	0	37.1	15	99.7	54.9	20	R
Hexachloroethane	0.049	0.00010	0.1000	0	48.9	15	86.4	60.7	20	R
Nitrobenzene	0.049	0.00010	0.1000	0	48.7	15	109	55.2	20	R

Qualifiers:

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B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2206D72-001BMSD** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **CTB to City POTW** Batch ID: **68477** RunNo: **89411**
Prep Date: **6/30/2022** Analysis Date: **7/14/2022** SeqNo: **3183329** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.035	0.00010	0.1000	0	34.7	15	130	45.2	20	R
Pyridine	0.036	0.00010	0.1000	0	35.7	15	82	179	20	R
2,4,5-Trichlorophenol	0.052	0.00010	0.1000	0	51.8	28.1	105	56.0	20	R
2,4,6-Trichlorophenol	0.051	0.00010	0.1000	0	50.8	21.5	110	55.8	20	R
Cresols, Total	0.15	0.00010	0.3000	0	51.2	15	127	54.8	20	R
Surr: 2-Fluorophenol	0.081		0.2000		40.6	18.1	88.9	0	0	
Surr: Phenol-d5	0.059		0.2000		29.7	17	61.5	0	0	
Surr: 2,4,6-Tribromophenol	0.10		0.2000		49.8	29.8	104	0	0	
Surr: Nitrobenzene-d5	0.054		0.1000		54.3	22.2	111	0	0	
Surr: 2-Fluorobiphenyl	0.050		0.1000		49.5	24.6	96.3	0	0	
Surr: 4-Terphenyl-d14	0.072		0.1000		72.0	53.4	124	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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QC SUMMARY REPORT
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29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 99.6uS eC**	SampType: **lcs**		TestCode: **SM2510B: Specific Conductance**		
Client ID: **LCSW**	Batch ID: **R89067**		RunNo: **89067**		
Prep Date:	Analysis Date: **6/27/2022**		SeqNo: **3163778**	Units: **µmhos/cm**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	10	99.60	0	99.8	85	115			

Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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Client: Navajo Refining Company
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Sample ID: **MB-68557** SampType: **MBLK** TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW** Batch ID: **68557** RunNo: **89254**
Prep Date: **7/5/2022** Analysis Date: **7/6/2022** SeqNo: **3173465** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-68557** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC** Batch ID: **68557** RunNo: **89254**
Prep Date: **7/5/2022** Analysis Date: **7/6/2022** SeqNo: **3173466** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00013	0.00020	0.0001500	0	84.7	50	150			J

Sample ID: **LCS-68557** SampType: **LCS** TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW** Batch ID: **68557** RunNo: **89254**
Prep Date: **7/5/2022** Analysis Date: **7/6/2022** SeqNo: **3173467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.8	85	115			

Qualifiers:

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H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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S	% Recovery outside of range due to dilution or matrix interference		

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Sample ID: **MB-68432**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **68432**	RunNo: **89148**
Prep Date: **6/28/2022**	Analysis Date: **6/29/2022**	SeqNo: **3168304** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-68432**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **68432**	RunNo: **89148**
Prep Date: **6/28/2022**	Analysis Date: **6/29/2022**	SeqNo: **3168306** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.0020	0.5000	0	94.2	80	120			
Cadmium	0.47	0.0020	0.5000	0	93.8	80	120			
Chromium	0.47	0.0060	0.5000	0	94.8	80	120			
Silver	0.096	0.0050	0.1000	0	96.2	80	120			

Sample ID: **MB-68432**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **68432**	RunNo: **89325**
Prep Date: **6/28/2022**	Analysis Date: **7/7/2022**	SeqNo: **3177043** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-68432**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **68432**	RunNo: **89325**
Prep Date: **6/28/2022**	Analysis Date: **7/7/2022**	SeqNo: **3177045** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.47	0.0020	0.5000	0	93.4	80	120			
Cadmium	0.47	0.0020	0.5000	0	94.0	80	120			
Chromium	0.47	0.0060	0.5000	0	93.7	80	120			
Silver	0.094	0.0050	0.1000	0	94.4	80	120			

Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R89067**	RunNo: **89067**							
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163706**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R89067**	RunNo: **89067**							
Prep Date:	Analysis Date: **6/27/2022**	SeqNo: **3163707**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	73.88	20.00	80.00	0	92.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68466**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **68466**	RunNo: **89192**
Prep Date: **6/30/2022**	Analysis Date: **7/1/2022**	SeqNo: **3170479** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-68466**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **68466**	RunNo: **89192**
Prep Date: **6/30/2022**	Analysis Date: **7/1/2022**	SeqNo: **3170480** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	999	20.0	1000	0	99.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2206D72**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68440**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **68440**	RunNo: **89139**							
Prep Date: **6/29/2022**	Analysis Date: **6/30/2022**	SeqNo: **3167517**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-68440**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **68440**	RunNo: **89139**							
Prep Date: **6/29/2022**	Analysis Date: **6/30/2022**	SeqNo: **3167518**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	94	4.0	92.40	0	102	83.44	119.05			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2206D72 | RcptNo: 1

Received By: Kasandra Payan 6/24/2022 8:16:00 AM

Completed By: Sean Livingston 6/24/2022 10:11:33 AM

Reviewed By: IO 6/24/24

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 3 1 (2 or >12 unless noted)

Adjusted? NO

Checked by: 6-24-22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.8	Good				
2	2.0	Good				

Received by OCD: 5/24/2023 7:46:22 AM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
Standard Rush X

Project Name:
PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard
On Ice: ☑ Yes ☐ No 2.2-0.2=2.0°
Sample Temperature: ~~12.0-0.2=11.8~~ 1.0-0.2=0.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2206072	Analysis Request: Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
6/23/22	9:45	Liquid	CTB to City POTW	**	**	001	X						
6/23/22	9:45	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
6/23/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none				X				
6/23/22	9:45	Liquid	CTB to City POTW	***	***					X			
6/23/22	9:45	Liquid	CTB to City POTW	1-250ml P	HNO3						X		
6/23/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none							X	
6/23/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none								X

Date	Time	Relinquished by	Received by	Date	Time
6/23/22	11:33	Brady Hubbard		6/23/22	1133
6/23/22	1900		courier	6.24.22	8:16

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 5/24/2023 4:44:56 PM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 29, 2022

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX:

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2207011

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 2 sample(s) on 7/1/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2207011**
Date: **7/29/2022**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Notes Regarding EPA Method 8270TCLP:
Hexachlorobenzene and Pyridine had low recoveries in the Laboratory control spike. The samples were reextracted to confirm the nondetect result.

Analytical Report
Lab Order **2207011**
Date Reported: **7/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 6/30/2022 9:45:00 AM
Lab ID: 2207011-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	7/15/2022 12:19:01 PM	68615
Endrin	ND	0.000062	0.020		mg/L	1	7/15/2022 12:19:01 PM	68615
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	7/15/2022 12:19:01 PM	68615
Heptachlor	ND	0.000041	0.0080		mg/L	1	7/15/2022 12:19:01 PM	68615
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	7/15/2022 12:19:01 PM	68615
Methoxychlor	ND	0.000075	10		mg/L	1	7/15/2022 12:19:01 PM	68615
Toxaphene	ND	0.00050	0.50		mg/L	1	7/15/2022 12:19:01 PM	68615
Surr: Decachlorobiphenyl	37.8	0	48.4-132	S	%Rec	1	7/15/2022 12:19:01 PM	68615
Surr: Tetrachloro-m-xylene	26.4	0	29.4-106	S	%Rec	1	7/15/2022 12:19:01 PM	68615
EPA METHOD 300.0: ANIONS							Analyst: **JTT**	
Fluoride	1.3	0.023	0.10		mg/L	1	7/1/2022 12:38:23 PM	R89222
Chloride	100	5.0	10		mg/L	20	7/1/2022 1:16:59 PM	R89222
Nitrogen, Nitrite (As N)	ND	0.0096	0.10		mg/L	1	7/1/2022 12:38:23 PM	R89222
Bromide	ND	0.050	0.10		mg/L	1	7/1/2022 12:38:23 PM	R89222
Nitrogen, Nitrate (As N)	3.4	0.020	0.10		mg/L	1	7/1/2022 12:38:23 PM	R89222
Phosphorus, Orthophosphate (As P)	7.3	5.0	10	J	mg/L	20	7/1/2022 1:16:59 PM	R89222
Sulfate	810	5.0	10	*	mg/L	20	7/1/2022 1:16:59 PM	R89222
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	0.0014	0.00050	5.0	J	mg/L	1	7/8/2022 2:48:57 PM	68616
Lead	ND	0.00050	5.0		mg/L	1	7/8/2022 2:48:57 PM	68616
Selenium	0.0025	0.00050	1.0	J	mg/L	1	7/8/2022 2:48:57 PM	68616
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	7/6/2022 10:56:04 AM	68557
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	200	0.29	5.0		mg/L	5	7/11/2022 1:36:33 PM	A89369
Magnesium	60	0.034	1.0		mg/L	1	7/11/2022 1:26:12 PM	A89369
Potassium	1.8	0.21	1.0		mg/L	1	7/11/2022 1:26:12 PM	A89369
Sodium	83	0.42	1.0		mg/L	1	7/11/2022 1:26:12 PM	A89369
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.019	0.0011	100	J	mg/L	1	7/11/2022 1:19:53 PM	68616
Cadmium	ND	0.0012	1.0		mg/L	1	7/11/2022 1:19:53 PM	68616
Chromium	0.0045	0.0017	5.0	J	mg/L	1	7/11/2022 1:19:53 PM	68616
Silver	0.0036	0.0025	5.0	J	mg/L	2	7/11/2022 2:43:20 PM	68616
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.0050	200		mg/L	1	7/14/2022 7:22:16 PM	68583
3+4-Methylphenol	ND	0.0051	200		mg/L	1	7/14/2022 7:22:16 PM	68583

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2207011**
Date Reported: **7/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 6/30/2022 9:45:00 AM
Lab ID: 2207011-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	7/14/2022 7:22:16 PM	68583
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	7/14/2022 7:22:16 PM	68583
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	7/14/2022 7:22:16 PM	68583
Hexachloroethane	ND	0.014	3.0		mg/L	1	7/14/2022 7:22:16 PM	68583
Nitrobenzene	ND	0.0049	2.0		mg/L	1	7/14/2022 7:22:16 PM	68583
Pentachlorophenol	ND	0.027	100		mg/L	1	7/14/2022 7:22:16 PM	68583
Pyridine	ND	0.014	5.0		mg/L	1	7/14/2022 7:22:16 PM	68583
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	7/14/2022 7:22:16 PM	68583
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	7/14/2022 7:22:16 PM	68583
Cresols, Total	ND	0.027	200		mg/L	1	7/14/2022 7:22:16 PM	68583
Surr: 2-Fluorophenol	54.5	0	18.1-88.9		%Rec	1	7/14/2022 7:22:16 PM	68583
Surr: Phenol-d5	38.6	0	17-61.5		%Rec	1	7/14/2022 7:22:16 PM	68583
Surr: 2,4,6-Tribromophenol	59.4	0	29.8-104		%Rec	1	7/14/2022 7:22:16 PM	68583
Surr: Nitrobenzene-d5	63.5	0	22.2-111		%Rec	1	7/14/2022 7:22:16 PM	68583
Surr: 2-Fluorobiphenyl	56.4	0	24.6-96.3		%Rec	1	7/14/2022 7:22:16 PM	68583
Surr: 4-Terphenyl-d14	76.7	0	53.4-124		%Rec	1	7/14/2022 7:22:16 PM	68583
TCLP VOLATILES BY 8260B							Analyst: **RAA**	
Benzene	ND	0.00023	0.50		mg/L	200	7/8/2022 8:55:44 PM	T89365
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	7/8/2022 8:55:44 PM	T89365
2-Butanone	ND	0.0020	200		mg/L	200	7/8/2022 8:55:44 PM	T89365
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	7/8/2022 8:55:44 PM	T89365
Chloroform	ND	0.00013	6.0		mg/L	200	7/8/2022 8:55:44 PM	T89365
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	7/8/2022 8:55:44 PM	T89365
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	7/8/2022 8:55:44 PM	T89365
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	7/8/2022 8:55:44 PM	T89365
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	7/8/2022 8:55:44 PM	T89365
Vinyl chloride	ND	0.00032	0.20		mg/L	200	7/8/2022 8:55:44 PM	T89365
Chlorobenzene	0.050	0.00016	100	J	mg/L	200	7/8/2022 8:55:44 PM	T89365
Surr: 1,2-Dichloroethane-d4	104	0	70-130		%Rec	200	7/8/2022 8:55:44 PM	T89365
Surr: 4-Bromofluorobenzene	110	0	70-130		%Rec	200	7/8/2022 8:55:44 PM	T89365
Surr: Dibromofluoromethane	108	0	70-130		%Rec	200	7/8/2022 8:55:44 PM	T89365
Surr: Toluene-d8	100	0	70-130		%Rec	200	7/8/2022 8:55:44 PM	T89365
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **LRN**	
Conductivity	1700	10	10		µmhos/c	1	7/5/2022 3:59:06 PM	R89223
SM4500-H+B / 9040C: PH							Analyst: **LRN**	
pH	7.65			H	pH units	1	7/5/2022 3:59:06 PM	R89223
SM2320B: ALKALINITY							Analyst: **LRN**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix
E	Estimated value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference

Analytical Report
Lab Order **2207011**
Date Reported: **7/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 6/30/2022 9:45:00 AM
Lab ID: 2207011-001 **Matrix:** AQUEOUS **Received Date:** 7/1/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **LRN**	
Bicarbonate (As CaCO3)	65.76	20.00	20.00		mg/L Ca	1	7/5/2022 3:59:06 PM	R89223
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	7/5/2022 3:59:06 PM	R89223
Total Alkalinity (as CaCO3)	65.76	20.00	20.00		mg/L Ca	1	7/5/2022 3:59:06 PM	R89223
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9976	0	0			1	7/15/2022 3:51:00 PM	R89563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JMT**	
Total Dissolved Solids	1380	20.0	20.0	*	mg/L	1	7/8/2022 9:36:00 AM	68577
SM 2540D: TSS							Analyst: **JMT**	
Suspended Solids	7.0	4.0	4.0		mg/L	1	7/7/2022 8:28:00 AM	68605

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2207011**
Date Reported: **7/29/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: TRIP BLANK
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date:
Lab ID: 2207011-002
Matrix: TRIP BLANK
Received Date: 7/1/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
TCLP VOLATILES BY 8260B							Analyst: **RAA**	
Benzene	ND	0.00023	0.50		mg/L	1	7/8/2022 9:22:55 PM	T89365
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	1	7/8/2022 9:22:55 PM	T89365
2-Butanone	ND	0.0020	200		mg/L	1	7/8/2022 9:22:55 PM	T89365
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	1	7/8/2022 9:22:55 PM	T89365
Chloroform	ND	0.00013	6.0		mg/L	1	7/8/2022 9:22:55 PM	T89365
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	1	7/8/2022 9:22:55 PM	T89365
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	1	7/8/2022 9:22:55 PM	T89365
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	1	7/8/2022 9:22:55 PM	T89365
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	1	7/8/2022 9:22:55 PM	T89365
Vinyl chloride	ND	0.00032	0.20		mg/L	1	7/8/2022 9:22:55 PM	T89365
Chlorobenzene	ND	0.00016	100		mg/L	1	7/8/2022 9:22:55 PM	T89365
Surr: 1,2-Dichloroethane-d4	106	0	70-130		%Rec	1	7/8/2022 9:22:55 PM	T89365
Surr: 4-Bromofluorobenzene	109	0	70-130		%Rec	1	7/8/2022 9:22:55 PM	T89365
Surr: Dibromofluoromethane	106	0	70-130		%Rec	1	7/8/2022 9:22:55 PM	T89365
Surr: Toluene-d8	99.1	0	70-130		%Rec	1	7/8/2022 9:22:55 PM	T89365

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	CTB to City POTW 2207011-001											
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	83	3.61										
Potassium	1.8	0.05										
Calcium	200	9.98										
Magnesium	60	4.94										
Total Cations		18.57										
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	810	16.86										
Chloride	100	2.82										
Bicarbonate (CaCO3)	65.76	1.31	-									
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)												
Nitrate (N)	3.4	0.24			-							
Fluoride	1.3	0.07										
Bromide												
Total Anions		21.31										
Elect. Cond. (µMhos/cm)	1700											
CATION/ANION RATIO		0.87										
% Difference		7										
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	1380											
TDS (calculated)	1311											
Ratio meas TDS:calc TDS		1.1										
Ratio Meas. TDS:EC		0.81										
Ratio Calc. TDS:EC		0.77										
Ratio of anion sum:EC		1.3										
Ratio of cation sum:EC		1.1										

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

July 22, 2022

Hall Environmental Analysis Laboratory

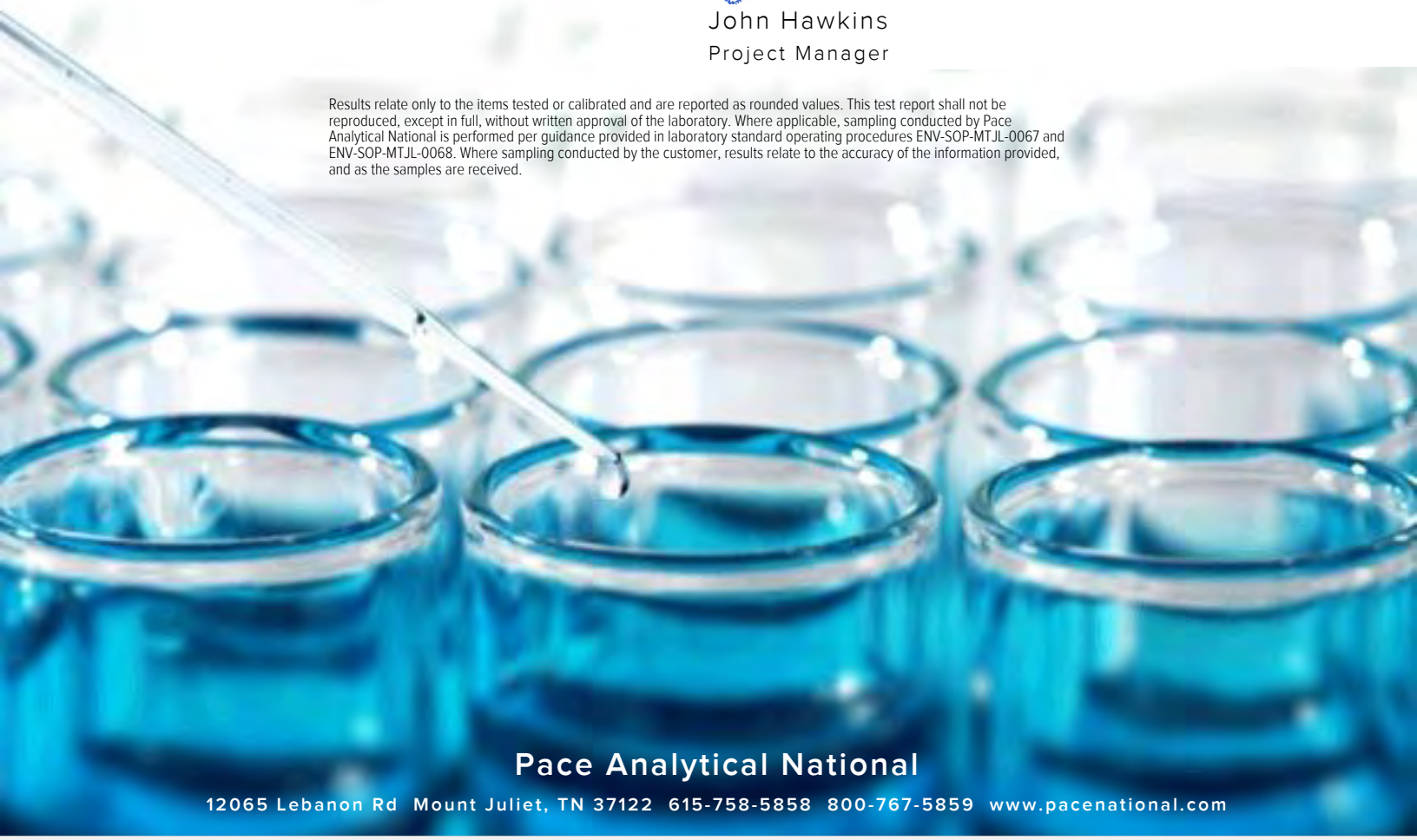
Sample Delivery Group:	L1512045
Samples Received:	07/06/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2207011-001F CTB TO CITY POTW L1512045-01 Waste

Collected by	Collected date/time	Received date/time
	06/30/22 09:45	07/06/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1890371	1	07/07/22 10:07	07/07/22 10:07	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1895649	1	07/15/22 09:10	07/16/22 01:56	JMB	Mt. Juliet, TN

2207011-001H CTB TO CITY POTW L1512045-02 WW

Collected by	Collected date/time	Received date/time
	06/30/22 09:45	07/06/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1897784	1	07/22/22 06:10	07/22/22 06:10	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1893803	1	07/12/22 19:14	07/13/22 11:10	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1893400	1	07/11/22 22:44	07/11/22 22:44	CRB	Mt. Juliet, TN
Wet Chemistry by Method 4500H+ B-2011	WG1891814	1	07/08/22 16:26	07/08/22 16:26	NTG	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1892737	1	07/11/22 03:00	07/11/22 03:00	RMR	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1512045-02	2207011-001H CTB TO CITY POTW	4500 CN E-2016

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/7/2022 10:07:01 AM	WG1890371
Fluid	1		7/7/2022 10:07:01 AM	WG1890371
Initial pH	N/A		7/7/2022 10:07:01 AM	WG1890371
Final pH	N/A		7/7/2022 10:07:01 AM	WG1890371

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND	J4	0.00200	1	1	07/16/2022 01:56	WG1895649
2,4-D	ND	J4	0.00200	10	1	07/16/2022 01:56	WG1895649
(S) 2,4-Dichlorophenyl Acetic Acid	*77.8*		*14.0-158*			*07/16/2022 01:56*	WG1895649

Sample Narrative:

L1512045-01 WG1895649: Duplicate Analysis performed due to QC failure. Results confirm.

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	292	T8	1	07/22/2022 06:10	WG1897784

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND		0.00500	1	07/13/2022 11:10	WG1893803

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND	Q	0.0500	1	07/11/2022 22:44	WG1893400

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	8.10	T8	1	07/08/2022 16:26	WG1891814

Sample Narrative:

L1512045-02 WG1891814: 8.1 at 22.7C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	07/11/2022 03:00	WG1892737

L1511985-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1511985-01 07/22/22 06:10 • (DUP) R3817981-3 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	119	110	1	9.40		20

L1511985-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1511985-02 07/22/22 06:10 • (DUP) R3817981-4 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	119	126	1	6.60		20

L1512045-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1512045-02 07/22/22 06:10 • (DUP) R3817981-5 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	292	287	1	5.20		20

L1512783-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-02 07/22/22 06:10 • (DUP) R3817981-6 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	230	227	1	3.00		20

L1512783-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-03 07/22/22 06:10 • (DUP) R3817981-7 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	184	185	1	1.70		20

L1512783-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-04 07/22/22 06:10 • (DUP) R3817981-8 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	190	188	1	1.30		20

L1512783-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-05 07/22/22 06:10 • (DUP) R3817981-9 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	185	185	1	0.700		20

L1512783-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-06 07/22/22 06:10 • (DUP) R3817981-10 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	197	197	1	0.500		20

L1512783-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-07 07/22/22 06:10 • (DUP) R3817981-11 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	200	198	1	2.00		20

L1512783-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-08 07/22/22 06:10 • (DUP) R3817981-12 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	186	185	1	0.800		20

L1513237-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-02 07/22/22 06:10 • (DUP) R3817981-13 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	188	187	1	0.900		20

L1513237-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-03 07/22/22 06:10 • (DUP) R3817981-14 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	188	187	1	1.00		20

L1513237-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-04 07/22/22 06:10 • (DUP) R3817981-15 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	193	194	1	1.10		20

L1513237-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-05 07/22/22 06:10 • (DUP) R3817981-16 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	198	197	1	0.100		20

L1513237-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-06 07/22/22 06:10 • (DUP) R3817981-17 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	194	194	1	0.600		20

L1513237-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-07 07/22/22 06:10 • (DUP) R3817981-18 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	195	196	1	0.900		20

L1513691-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1513691-02 07/22/22 06:10 • (DUP) R3817981-19 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	204	211	1	6.60		20

L1514857-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-01 07/22/22 06:10 • (DUP) R3817981-20 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	439	437	1	1.40		20

L1514857-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-02 07/22/22 06:10 • (DUP) R3817981-21 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	319	317	1	2.10		20

L1514857-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-03 07/22/22 06:10 • (DUP) R3817981-22 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	331	331	1	0.300		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3817981-1 07/22/22 06:10 • (LCSD) R3817981-2 07/22/22 06:10

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	107	113	98.9	104	90.0-110			5.70	20

Method Blank (MB)

(MB) R3814178-1 07/13/22 10:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1511782-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1511782-03 07/13/22 10:48 • (DUP) R3814178-3 07/13/22 10:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	53.3	P1	20

L1511925-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1511925-02 07/13/22 10:58 • (DUP) R3814178-6 07/13/22 10:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.00605	ND	1	200	P1	20

Laboratory Control Sample (LCS)

(LCS) R3814178-2 07/13/22 10:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0936	93.6	87.1-120	

L1511782-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1511782-03 07/13/22 10:48 • (MS) R3814178-4 07/13/22 10:52 • (MSD) R3814178-5 07/13/22 10:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0948	0.0919	92.8	89.9	1	90.0-110		J6	3.11	20

L1511925-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1511925-02 07/13/22 10:58 • (MS) R3814178-7 07/13/22 11:00 • (MSD) R3814178-8 07/13/22 11:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	0.00605	0.0971	0.0935	91.1	87.5	1	90.0-110		J6	3.78	20

Method Blank (MB)

(MB) R3813408-1 07/11/22 22:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

L1511885-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1511885-01 07/11/22 22:38 • (DUP) R3813408-3 07/11/22 22:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3813408-2 07/11/22 22:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.534	107	85.0-115	

L1511985-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1511985-02 07/11/22 22:39 • (MS) R3813408-4 07/11/22 22:40 • (MSD) R3813408-5 07/11/22 22:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	0.500	ND	0.442	0.439	88.4	87.8	1	80.0-120			0.681	20

Received by OCD: 3/6/2023 7:46:22 AM

Laboratory Control Sample (LCS)

(LCS) R3812662-1 07/08/22 16:26

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 24C

Released to Imaging: 5/24/2023 4:44:56 PM

L1511699-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1511699-01 07/11/22 03:00 • (DUP) R3813342-3 07/11/22 03:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	138	138	1	0.000		10

L1511807-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1511807-01 07/11/22 03:00 • (DUP) R3813342-4 07/11/22 03:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3813342-1 07/11/22 03:00 • (LCSD) R3813342-2 07/11/22 03:00

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	122	130	96.8	103	96.0-104			6.35	10

Method Blank (MB)

(MB) R3815849-1 07/16/22 01:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*70.8*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3815849-2 07/16/22 01:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.00831	16.6	50.0-125	J4
2,4-D	0.0500	0.00820	16.4	50.0-120	J4
(S) 2,4-Dichlorophenyl Acetic Acid			*94.2*	*14.0-158*	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

L-145

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

6/5/2045

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2207011-001F	CTB to City POTW	1LAMGU	Aqueous	6/30/2022 9:45:00 AM	1	8151TCLP *RUSH 7 DAY TAT* -01
2	2207011-001H	CTB to City POTW	500HDPE	Aqueous	6/30/2022 9:45:00 AM	3	RCI, ORP *RUSH 7 DAY TAT* -01

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

01C

Relinquished By:	Date: 7/1/2022	Time: 8:33 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: M. Walsh	7/6/22	Time: 915

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

1.8+0=.8

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

TRK# 5755 8089 4259

Released to Imaging: 5/24/2023 4:44:56 PM

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R89222**	RunNo: **89222**
Prep Date:	Analysis Date: **7/1/2022**	SeqNo: **3171610** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R89222**	RunNo: **89222**
Prep Date:	Analysis Date: **7/1/2022**	SeqNo: **3171611** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.55	0.10	0.5000	0	110	90	110			
Chloride	5.0	0.50	5.000	0	99.9	90	110			
Nitrogen, Nitrite (As N)	1.0	0.10	1.000	0	103	90	110			
Bromide	2.6	0.10	2.500	0	104	90	110			
Nitrogen, Nitrate (As N)	2.7	0.10	2.500	0	108	90	110			
Phosphorus, Orthophosphate (As P)	4.8	0.50	5.000	0	95.2	90	110			
Sulfate	11	0.50	10.00	0	107	90	110			

Sample ID: **2207011-001CMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **CTB to City POTW**	Batch ID: **R89222**	RunNo: **89222**
Prep Date:	Analysis Date: **7/1/2022**	SeqNo: **3171625** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.88	0.10	1.000	0	87.9	83.4	105			
Bromide	2.3	0.10	2.500	0	93.3	91.2	106			

Sample ID: **2207011-001CMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **CTB to City POTW**	Batch ID: **R89222**	RunNo: **89222**
Prep Date:	Analysis Date: **7/1/2022**	SeqNo: **3171626** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.88	0.10	1.000	0	88.3	83.4	105	0.409	20	
Bromide	2.3	0.10	2.500	0	93.7	91.2	106	0.432	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68616**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **68616**	RunNo: **89337**
Prep Date: **7/7/2022**	Analysis Date: **7/8/2022**	SeqNo: **3177790** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-68616**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **68616**	RunNo: **89337**
Prep Date: **7/7/2022**	Analysis Date: **7/8/2022**	SeqNo: **3177791** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00099	0.0010	0.001000	0	98.7	70	130			J
Lead	0.0010	0.0010	0.001000	0	103	70	130			
Selenium	0.00081	0.0010	0.001000	0	81.2	70	130			J

Sample ID: **MSLCS-68616**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **68616**	RunNo: **89337**
Prep Date: **7/7/2022**	Analysis Date: **7/8/2022**	SeqNo: **3177792** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0010	0.05000	0	98.2	80	120			
Lead	0.048	0.0010	0.05000	0	96.1	80	120			
Selenium	0.052	0.0010	0.05000	0	105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**
29-Jul-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68615**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **68615**	RunNo: **89521**
Prep Date: **7/7/2022**	Analysis Date: **7/15/2022**	SeqNo: **3187541** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0015		0.002500		61.7	48.4	132			
Surr: Tetrachloro-m-xylene	0.00096		0.002500		38.5	29.4	106			

Sample ID: **MB-68615**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **68615**	RunNo: **89521**
Prep Date: **7/7/2022**	Analysis Date: **7/15/2022**	SeqNo: **3187542** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0015		0.002500		58.1	48.4	132			
Surr: Tetrachloro-m-xylene	0.00096		0.002500		38.3	29.4	106			

Sample ID: **LCS-68615**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **68615**	RunNo: **89521**
Prep Date: **7/7/2022**	Analysis Date: **7/15/2022**	SeqNo: **3187545** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00035	0.00010	0.0005000	0	70.3	56.3	126			
gamma-BHC (Lindane)	0.00028	0.00010	0.0005000	0	56.5	45.8	103			
Heptachlor	0.00019	0.00010	0.0005000	0	37.7	33.7	104			
Heptachlor epoxide	0.00031	0.00010	0.0005000	0	62.3	50.1	116			
Methoxychlor	0.00039	0.00010	0.0005000	0	77.3	15	203			
Surr: Decachlorobiphenyl	0.0015		0.002500		60.1	48.4	132			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		45.3	29.4	106			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-68615**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **68615**	RunNo: **89521**
Prep Date: **7/7/2022**	Analysis Date: **7/15/2022**	SeqNo: **3187546** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00034	0.00010	0.0005000	0	68.5	56.3	126			
gamma-BHC (Lindane)	0.00029	0.00010	0.0005000	0	57.8	45.8	103			
Heptachlor	0.00019	0.00010	0.0005000	0	38.0	33.7	104			
Heptachlor epoxide	0.00031	0.00010	0.0005000	0	61.7	50.1	116			
Methoxychlor	0.00035	0.00010	0.0005000	0	70.4	15	203			
Surr: Decachlorobiphenyl	0.0020		0.002500		78.5	48.4	132			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		46.0	29.4	106			

Sample ID: **LCSD-68615**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **68615**	RunNo: **89521**
Prep Date: **7/7/2022**	Analysis Date: **7/15/2022**	SeqNo: **3187602** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	92.6	56.3	126	27.5	20	R
gamma-BHC (Lindane)	0.00037	0.00010	0.0005000	0	74.6	45.8	103	27.6	20	R
Heptachlor	0.00026	0.00010	0.0005000	0	51.2	33.7	104	30.4	20	R
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	82.6	50.1	116	28.0	20	R
Methoxychlor	0.00052	0.00010	0.0005000	0	104	15	203	29.6	20	R
Surr: Decachlorobiphenyl	0.0021		0.002500		83.9	48.4	132	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		57.8	29.4	106	0	0	

Sample ID: **LCSD-68615**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **68615**	RunNo: **89521**
Prep Date: **7/7/2022**	Analysis Date: **7/15/2022**	SeqNo: **3187606** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00045	0.00010	0.0005000	0	90.7	56.3	126	27.9	20	R
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	75.3	45.8	103	26.4	20	R
Heptachlor	0.00026	0.00010	0.0005000	0	52.3	33.7	104	31.7	20	R
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	82.8	50.1	116	29.2	20	R
Methoxychlor	0.00044	0.00010	0.0005000	0	88.4	15	203	22.6	20	R
Surr: Decachlorobiphenyl	0.0020		0.002500		80.4	48.4	132	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		57.2	29.4	106	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW**	Batch ID: **T89365**	RunNo: **89365**
Prep Date:	Analysis Date: **7/8/2022**	SeqNo: **3178937** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.022	0.50	0.02000	0	108	70	130			J
1,1-Dichloroethene	0.020	0.70	0.02000	0	99.6	70	130			J
Trichloroethene (TCE)	0.021	0.50	0.02000	0	107	70	130			J
Chlorobenzene	0.020	100	0.02000	0	100	70	130			J
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		101	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		109	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		102	70	130			
Surr: Toluene-d8	0.0097		0.01000		96.7	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **T89365**	RunNo: **89365**
Prep Date:	Analysis Date: **7/8/2022**	SeqNo: **3178945** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.011		0.01000		106	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		104	70	130			
Surr: Toluene-d8	0.0098		0.01000		98.5	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68583**	SampType: **MBLK**	TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW**	Batch ID: **68583**	RunNo: **89498**
Prep Date: **7/6/2022**	Analysis Date: **7/14/2022**	SeqNo: **3184667** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.11		0.2000		56.4	18.1	88.9			
Surr: Phenol-d5	0.083		0.2000		41.3	17	61.5			
Surr: 2,4,6-Tribromophenol	0.11		0.2000		56.7	29.8	104			
Surr: Nitrobenzene-d5	0.067		0.1000		67.0	22.2	111			
Surr: 2-Fluorobiphenyl	0.063		0.1000		63.3	24.6	96.3			
Surr: 4-Terphenyl-d14	0.074		0.1000		74.4	53.4	124			

Sample ID: **LCS-68583**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **68583**	RunNo: **89498**
Prep Date: **7/6/2022**	Analysis Date: **7/14/2022**	SeqNo: **3184668** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.041	0.00010	0.1000	0	40.6	19	106			
3+4-Methylphenol	0.080	0.00010	0.2000	0	40.1	16.3	112			
2,4-Dinitrotoluene	0.033	0.00010	0.1000	0	32.7	15	99.6			
Hexachlorobenzene	0.037	0.00010	0.1000	0	37.3	41.8	111			S
Hexachlorobutadiene	0.030	0.00010	0.1000	0	30.3	15	91.5			
Hexachloroethane	0.037	0.00010	0.1000	0	37.0	15	87.5			
Nitrobenzene	0.039	0.00010	0.1000	0	39.3	19.3	114			
Pentachlorophenol	0.031	0.00010	0.1000	0	31.1	29	103			
Pyridine	0.0081	0.00010	0.1000	0	8.09	15	92.6			S
2,4,5-Trichlorophenol	0.042	0.00010	0.1000	0	42.4	25.2	114			
2,4,6-Trichlorophenol	0.041	0.00010	0.1000	0	41.4	25.7	112			
Cresols, Total	0.12	0.00010	0.3000	0	40.3	15	145			
Surr: 2-Fluorophenol	0.063		0.2000		31.7	18.1	88.9			
Surr: Phenol-d5	0.048		0.2000		23.9	17	61.5			
Surr: 2,4,6-Tribromophenol	0.068		0.2000		34.2	29.8	104			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-68583**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **68583**	RunNo: **89498**
Prep Date: **7/6/2022**	Analysis Date: **7/14/2022**	SeqNo: **3184668** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.042		0.1000		42.1	22.2	111			
Surr: 2-Fluorobiphenyl	0.039		0.1000		38.8	24.6	96.3			
Surr: 4-Terphenyl-d14	0.049		0.1000		48.9	53.4	124			S

Sample ID: **LCS-68583**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **68583**	RunNo: **89501**
Prep Date: **7/6/2022**	Analysis Date: **7/15/2022**	SeqNo: **3184914** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.040	0.00010	0.1000	0	39.9	19	106			
3+4-Methylphenol	0.077	0.00010	0.2000	0	38.5	16.3	112			
2,4-Dinitrotoluene	0.033	0.00010	0.1000	0	32.9	15	99.6			
Hexachlorobenzene	0.035	0.00010	0.1000	0	34.9	41.8	111			S
Hexachlorobutadiene	0.030	0.00010	0.1000	0	29.5	15	91.5			
Hexachloroethane	0.036	0.00010	0.1000	0	36.2	15	87.5			
Nitrobenzene	0.041	0.00010	0.1000	0	41.4	19.3	114			
Pentachlorophenol	0.034	0.00010	0.1000	0	34.0	29	103			
Pyridine	0.0032	0.00010	0.1000	0	3.19	15	92.6			S
2,4,5-Trichlorophenol	0.043	0.00010	0.1000	0	43.2	25.2	114			
2,4,6-Trichlorophenol	0.042	0.00010	0.1000	0	42.3	25.7	112			
Cresols, Total	0.12	0.00010	0.3000	0	39.0	15	145			
Surr: 2-Fluorophenol	0.063		0.2000		31.7	18.1	88.9			
Surr: Phenol-d5	0.047		0.2000		23.4	17	61.5			
Surr: 2,4,6-Tribromophenol	0.069		0.2000		34.6	29.8	104			
Surr: Nitrobenzene-d5	0.044		0.1000		43.9	22.2	111			
Surr: 2-Fluorobiphenyl	0.039		0.1000		39.1	24.6	96.3			
Surr: 4-Terphenyl-d14	0.047		0.1000		46.5	53.4	124			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID:	**lcs 99.6 uS eC**	SampType:	**lcs**	TestCode:	**SM2510B: Specific Conductance**					
Client ID:	**LCSW**	Batch ID:	**R89223**	RunNo:	**89223**					
Prep Date:		Analysis Date:	**7/5/2022**	SeqNo:	**3172967**	Units:	**µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.60	0	102	85	115			

Sample ID:	**2207011-001C DUP**	SampType:	**DUP**	TestCode:	**SM2510B: Specific Conductance**					
Client ID:	**CTB to City POTW**	Batch ID:	**R89223**	RunNo:	**89223**					
Prep Date:		Analysis Date:	**7/5/2022**	SeqNo:	**3173014**	Units:	**µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	1700	10						0.638	20	

Sample ID:	**lcs-2 99.6uS eC**	SampType:	**lcs**	TestCode:	**SM2510B: Specific Conductance**					
Client ID:	**LCSW**	Batch ID:	**R89223**	RunNo:	**89223**					
Prep Date:		Analysis Date:	**7/5/2022**	SeqNo:	**3173022**	Units:	**µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	110	10	99.60	0	107	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68557**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW**	Batch ID: **68557**	RunNo: **89254**
Prep Date: **7/5/2022**	Analysis Date: **7/6/2022**	SeqNo: **3173465** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-68557**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC**	Batch ID: **68557**	RunNo: **89254**
Prep Date: **7/5/2022**	Analysis Date: **7/6/2022**	SeqNo: **3173466** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00013	0.00020	0.0001500	0	84.7	50	150			J

Sample ID: **LCS-68557**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW**	Batch ID: **68557**	RunNo: **89254**
Prep Date: **7/5/2022**	Analysis Date: **7/6/2022**	SeqNo: **3173467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.8	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A89369**	RunNo: **89369**
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3179049** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A89369**	RunNo: **89369**
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3179051** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	97.6	80	120			
Magnesium	49	1.0	50.00	0	97.7	80	120			
Potassium	48	1.0	50.00	0	97.0	80	120			
Sodium	49	1.0	50.00	0	98.0	80	120			

Sample ID: **2207011-001DMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **CTB to City POTW**	Batch ID: **A89369**	RunNo: **89369**
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3179064** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	50	1.0	50.00	1.830	95.6	75	125			

Sample ID: **2207011-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **CTB to City POTW**	Batch ID: **A89369**	RunNo: **89369**
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3179065** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	48	1.0	50.00	1.830	93.0	75	125	2.65	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68616**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **68616**	RunNo: **89369**
Prep Date: **7/7/2022**	Analysis Date: **7/11/2022**	SeqNo: **3179046** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-68616**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **68616**	RunNo: **89369**
Prep Date: **7/7/2022**	Analysis Date: **7/11/2022**	SeqNo: **3179048** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.44	0.0020	0.5000	0	88.5	80	120			
Cadmium	0.45	0.0020	0.5000	0	89.3	80	120			
Chromium	0.44	0.0060	0.5000	0	88.0	80	120			
Silver	0.093	0.0050	0.1000	0	93.2	80	120			

Sample ID: **2207011-001EMS**	SampType: **MS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **CTB to City POTW**	Batch ID: **68616**	RunNo: **89369**
Prep Date: **7/7/2022**	Analysis Date: **7/11/2022**	SeqNo: **3179061** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0.01901	92.2	75	125			
Cadmium	0.47	0.0020	0.5000	0	94.6	75	125			
Chromium	0.47	0.0060	0.5000	0.004475	93.2	75	125			

Sample ID: **2207011-001EMSD**	SampType: **MSD**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **CTB to City POTW**	Batch ID: **68616**	RunNo: **89369**
Prep Date: **7/7/2022**	Analysis Date: **7/11/2022**	SeqNo: **3179062** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.45	0.0020	0.5000	0.01901	86.1	75	125	6.59	20	
Cadmium	0.44	0.0020	0.5000	0	88.3	75	125	6.91	20	
Chromium	0.43	0.0060	0.5000	0.004475	85.7	75	125	8.32	20	

Sample ID: **2207011-001EMS**	SampType: **MS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **CTB to City POTW**	Batch ID: **68616**	RunNo: **89369**
Prep Date: **7/7/2022**	Analysis Date: **7/11/2022**	SeqNo: **3179099** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.11	0.010	0.1000	0.003647	106	75	125			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID:	**2207011-001EMSD**	SampType:	**MSD**	TestCode:	**EPA 6010B: TCLP Metals**					
Client ID:	**CTB to City POTW**	Batch ID:	**68616**	RunNo:	**89369**					
Prep Date:	**7/7/2022**	Analysis Date:	**7/11/2022**	SeqNo:	**3179100**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.11	0.010	0.1000	0.003647	104	75	125	2.17	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID:	**2207011-001C DUP**	SampType:	**DUP**	TestCode:	**SM4500-H+B / 9040C: pH**
Client ID:	**CTB to City POTW**	Batch ID:	**R89223**	RunNo:	**89223**
Prep Date:		Analysis Date:	**7/5/2022**	SeqNo:	**3172935** Units: **pH units**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.73									H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R89223**	RunNo: **89223**							
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3172885**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R89223**	RunNo: **89223**							
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3172886**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.12	20.00	80.00	0	97.6	90	110			

Sample ID: **2207011-001C DUP**	SampType: **DUP**	TestCode: **SM2320B: Alkalinity**							
Client ID: **CTB to City POTW**	Batch ID: **R89223**	RunNo: **89223**							
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3172899**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	65.00	20.00						1.16	20	

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R89223**	RunNo: **89223**							
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3172903**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R89223**	RunNo: **89223**							
Prep Date:	Analysis Date: **7/5/2022**	SeqNo: **3172904**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.56	20.00	80.00	0	95.7	90	110			

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID:	**2207011-001CDUP**	SampType:	**DUP**	TestCode:	**Specific Gravity**
Client ID:	**CTB to City POTW**	Batch ID:	**R89563**	RunNo:	**89563**
Prep Date:		Analysis Date:	**7/15/2022**	SeqNo:	**3188014** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9946	0						0.301	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68577**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **68577**	RunNo: **89323**
Prep Date: **7/6/2022**	Analysis Date: **7/8/2022**	SeqNo: **3176779** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-68577**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **68577**	RunNo: **89323**
Prep Date: **7/6/2022**	Analysis Date: **7/8/2022**	SeqNo: **3176780** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207011**

29-Jul-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68605**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**
Client ID: **PBW**	Batch ID: **68605**	RunNo: **89301**
Prep Date: **7/6/2022**	Analysis Date: **7/7/2022**	SeqNo: **3175955** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-68605**	SampType: **LCS**	TestCode: **SM 2540D: TSS**
Client ID: **LCSW**	Batch ID: **68605**	RunNo: **89301**
Prep Date: **7/6/2022**	Analysis Date: **7/7/2022**	SeqNo: **3175956** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	87	4.0	92.40	0	94.2	83.44	119.05			

Qualifiers:

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PQL	Practical Quanitative Limit
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B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2207011 | RcptNo: 1

Received By: Juan Rojas 7/1/2022 6:50:00 AM

Completed By: Sean Livingston 7/1/2022 8:36:05 AM

Reviewed By: 7-1-22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.8	Good				

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
Standard Rush X

Project Name:
PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard
On Ice: ☑ Yes ☐ No
Sample Temperature: 6-9-6-1-2-0-5

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2207011	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
6/30/22	9:45	Liquid	CTB to City POTW	**	**	001	X						
6/30/22	9:45	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
6/30/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none				X				
6/30/22	9:45	Liquid	CTB to City POTW	***	***					X			
6/30/22	9:45	Liquid	CTB to City POTW	1-250ml P	HNO3						X		
6/30/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none							X	
6/30/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none								X
			Trip Blank per sample bottle rn 7/1/22			-002							

Date	Time	Relinquished by	Received by	Date	Time
6-30-22	11:10	Brady Hubbard		6/30/22	1110
6-30-22	1900		courier	7/1/22	6:50

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 24, 2022

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2207304

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/8/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued August 01, 2022.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE
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TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2207304**
Date: **10/24/2022**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2207304**
Date Reported: **10/24/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 7/7/2022 9:45:00 AM
Lab ID: 2207304-001 **Matrix:** AQUEOUS **Received Date:** 7/8/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	7/18/2022 1:20:38 PM	68767
Endrin	ND	0.000062	0.020		mg/L	1	7/18/2022 1:20:38 PM	68767
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	7/18/2022 1:20:38 PM	68767
Heptachlor	ND	0.000041	0.0080		mg/L	1	7/18/2022 1:20:38 PM	68767
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	7/18/2022 1:20:38 PM	68767
Methoxychlor	ND	0.000075	10		mg/L	1	7/18/2022 1:20:38 PM	68767
Toxaphene	ND	0.00050	0.50		mg/L	1	7/18/2022 1:20:38 PM	68767
Surr: Decachlorobiphenyl	65.1	0	48.4-132		%Rec	1	7/18/2022 1:20:38 PM	68767
Surr: Tetrachloro-m-xylene	38.6	0	29.4-106		%Rec	1	7/18/2022 1:20:38 PM	68767
EPA METHOD 300.0: ANIONS							Analyst: **JTT**	
Fluoride	2.1	0.46	2.0		mg/L	20	7/8/2022 2:53:13 PM	R89353
Chloride	81	5.0	10		mg/L	20	7/8/2022 2:53:13 PM	R89353
Nitrogen, Nitrite (As N)	ND	0.0096	0.10		mg/L	1	7/8/2022 2:40:21 PM	R89353
Bromide	ND	0.050	0.10		mg/L	1	7/8/2022 2:40:21 PM	R89353
Nitrogen, Nitrate (As N)	1.7	0.020	0.10		mg/L	1	7/8/2022 2:40:21 PM	R89353
Phosphorus, Orthophosphate (As P)	7.5	5.0	10	J	mg/L	20	7/8/2022 2:53:13 PM	R89353
Sulfate	1200	12	25	*	mg/L	50	7/14/2022 11:17:44 PM	R89489
EPA METHOD 6020A: TCLP METALS							Analyst: **DBK**	
Arsenic	0.0013	0.00050	5.0	J	mg/L	1	7/29/2022 4:21:34 PM	68941
Lead	ND	0.0025	5.0		mg/L	5	7/29/2022 4:36:15 PM	68941
Selenium	0.0040	0.00050	1.0	J	mg/L	1	7/29/2022 4:21:34 PM	68941
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	7/8/2022 3:20:26 PM	68642
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	330	0.29	5.0		mg/L	5	7/11/2022 1:38:34 PM	A89369
Magnesium	100	0.17	5.0		mg/L	5	7/11/2022 1:38:34 PM	A89369
Potassium	2.6	0.21	1.0		mg/L	1	7/11/2022 1:32:49 PM	A89369
Sodium	77	0.42	1.0		mg/L	1	7/11/2022 1:32:49 PM	A89369
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.023	0.0011	100	J	mg/L	1	7/25/2022 1:21:53 PM	68941
Cadmium	ND	0.0012	1.0		mg/L	1	7/25/2022 1:21:53 PM	68941
Chromium	0.0035	0.0017	5.0	J	mg/L	1	7/28/2022 9:58:57 AM	68941
Silver	0.0062	0.0013	5.0	J	mg/L	1	7/25/2022 1:21:53 PM	68941
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.050	200		mg/L	1	7/18/2022 5:15:03 PM	68749
3+4-Methylphenol	ND	0.051	200		mg/L	1	7/18/2022 5:15:03 PM	68749

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
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Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2207304**
Date Reported: **10/24/2022**

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 7/7/2022 9:45:00 AM
Lab ID: 2207304-001 **Matrix:** AQUEOUS **Received Date:** 7/8/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
2,4-Dinitrotoluene	ND	0.049	0.13		mg/L	1	7/18/2022 5:15:03 PM	68749
Hexachlorobenzene	ND	0.19	0.13		mg/L	1	7/18/2022 5:15:03 PM	68749
Hexachlorobutadiene	ND	0.17	0.50		mg/L	1	7/18/2022 5:15:03 PM	68749
Hexachloroethane	ND	0.14	3.0		mg/L	1	7/18/2022 5:15:03 PM	68749
Nitrobenzene	ND	0.049	2.0		mg/L	1	7/18/2022 5:15:03 PM	68749
Pentachlorophenol	ND	0.27	100		mg/L	1	7/18/2022 5:15:03 PM	68749
Pyridine	ND	0.14	5.0		mg/L	1	7/18/2022 5:15:03 PM	68749
2,4,5-Trichlorophenol	ND	0.063	400		mg/L	1	7/18/2022 5:15:03 PM	68749
2,4,6-Trichlorophenol	ND	0.059	2.0		mg/L	1	7/18/2022 5:15:03 PM	68749
Cresols, Total	ND	0.27	200		mg/L	1	7/18/2022 5:15:03 PM	68749
Surr: 2-Fluorophenol	43.6	0	18.1-88.9		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: Phenol-d5	33.9	0	17-61.5		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: 2,4,6-Tribromophenol	51.0	0	29.8-104		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: Nitrobenzene-d5	53.0	0	22.2-111		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: 2-Fluorobiphenyl	46.7	0	24.6-96.3		%Rec	1	7/18/2022 5:15:03 PM	68749
Surr: 4-Terphenyl-d14	65.7	0	53.4-124		%Rec	1	7/18/2022 5:15:03 PM	68749
TCLP VOLATILES BY 8260B							Analyst: **RAA**	
Benzene	ND	0.00023	0.50		mg/L	200	7/8/2022 9:50:03 PM	T89365
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	7/8/2022 9:50:03 PM	T89365
2-Butanone	ND	0.0020	200		mg/L	200	7/8/2022 9:50:03 PM	T89365
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	7/8/2022 9:50:03 PM	T89365
Chloroform	ND	0.00013	6.0		mg/L	200	7/8/2022 9:50:03 PM	T89365
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	7/8/2022 9:50:03 PM	T89365
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	7/8/2022 9:50:03 PM	T89365
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	7/8/2022 9:50:03 PM	T89365
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	7/8/2022 9:50:03 PM	T89365
Vinyl chloride	ND	0.00032	0.20		mg/L	200	7/8/2022 9:50:03 PM	T89365
Chlorobenzene	0.046	0.00016	100	J	mg/L	200	7/8/2022 9:50:03 PM	T89365
Surr: 1,2-Dichloroethane-d4	105	0	70-130		%Rec	200	7/8/2022 9:50:03 PM	T89365
Surr: 4-Bromofluorobenzene	108	0	70-130		%Rec	200	7/8/2022 9:50:03 PM	T89365
Surr: Dibromofluoromethane	109	0	70-130		%Rec	200	7/8/2022 9:50:03 PM	T89365
Surr: Toluene-d8	98.9	0	70-130		%Rec	200	7/8/2022 9:50:03 PM	T89365
EPA 8151: CHLORINATED HERBICIDES							Analyst: **PAC**	
2,4,5-TP (Silvex)	ND	0.0020	0.0020		mg/L	1	7/20/2022 6:10:00 PM	R90043
2,4-D	ND	0.0020	0.0020		mg/L	1	7/20/2022 6:10:00 PM	R90043
CORROSIVITY							Analyst: **PAC**	
pH	8.06				su	1	7/14/2022 11:00:00 AM	R90043

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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Analytical Report
Lab Order **2207304**
Date Reported: **10/24/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 7/7/2022 9:45:00 AM
Lab ID: 2207304-001 **Matrix:** AQUEOUS **Received Date:** 7/8/2022 6:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
IGNITABILITY METHOD 1010							Analyst: **PAC**	
Ignitability	>170				°F	1	7/13/2022 12:59:00 AM	R90043
OXIDATION REDUCTION POTENTIAL							Analyst: **PAC**	
Oxidation-Reduction Potential	200				mV	1	7/22/2022 6:10:00 AM	R90043
CYANIDE, REACTIVE							Analyst: **PAC**	
Cyanide, Reactive	ND	0.00500	0.00500		mg/L	1	7/14/2022 12:09:00 PM	R90043
SULFIDE, REACTIVE							Analyst: **PAC**	
Reactive Sulfide	ND	0.050	0.050		mg/L	1	7/15/2022 10:39:00 AM	R90043
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **MRA**	
Conductivity	2300	10	10		µmhos/c	1	7/11/2022 1:45:57 PM	R89444
SM4500-H+B / 9040C: PH							Analyst: **MRA**	
pH	8.02			H	pH units	1	7/11/2022 1:45:57 PM	R89444
SM2320B: ALKALINITY							Analyst: **MRA**	
Bicarbonate (As CaCO3)	110.8	20.00	20.00		mg/L Ca	1	7/11/2022 1:45:57 PM	R89444
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	7/11/2022 1:45:57 PM	R89444
Total Alkalinity (as CaCO3)	110.8	20.00	20.00		mg/L Ca	1	7/11/2022 1:45:57 PM	R89444
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9967	0	0			1	7/15/2022 3:51:00 PM	R89563
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **JMT**	
Total Dissolved Solids	2090	20.0	20.0	*	mg/L	1	7/12/2022 3:08:00 PM	68680
SM 2540D: TSS							Analyst: **JMT**	
Suspended Solids	ND	4.0	4.0		mg/L	1	7/14/2022 12:38:00 PM	68755

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	CTB to City POTW 2207304-001											
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	77	3.35										
Potassium	2.6	0.07										
Calcium	330	16.47										
Magnesium	100	8.23										
Total Cations		28.11										
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	1200	24.98										
Chloride	81	2.28										
Bicarbonate (CaCO3)	110.8	2.21	-									
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)												
Nitrate (N)	1.7	0.12			-							
Fluoride	2.1	0.11										
Bromide												
Total Anions		29.72										
Elect. Cond. (µMhos/cm)	2300											
CATION/ANION RATIO		0.95										
% Difference		3										
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	2090											
TDS (calculated)	1867											
Ratio meas TDS:calc TDS		1.1										
Ratio Meas. TDS:EC		0.91										
Ratio Calc. TDS:EC		0.81										
Ratio of anion sum:EC		1.3										
Ratio of cation sum:EC		1.2										

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

July 22, 2022

Hall Environmental Analysis Laboratory

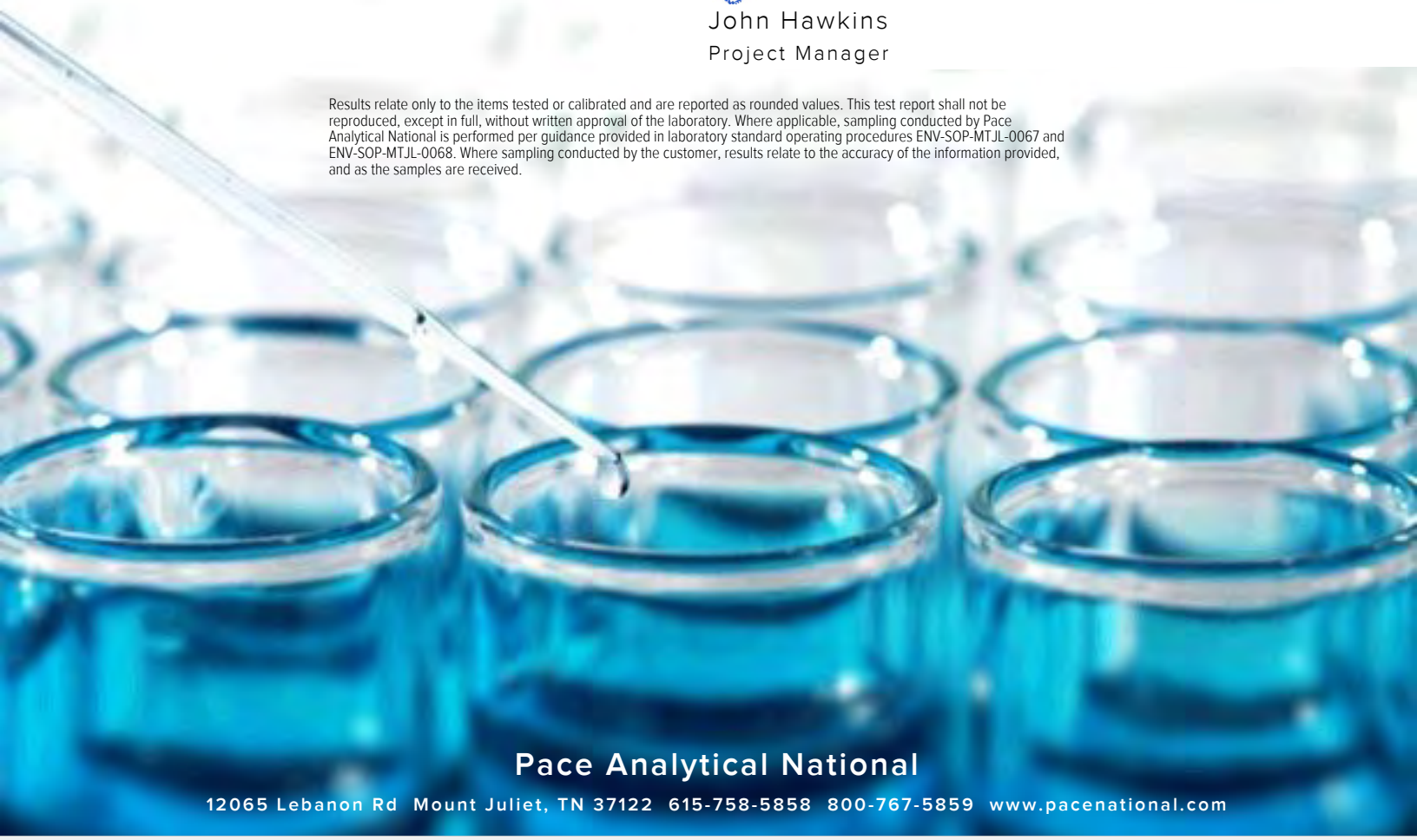
Sample Delivery Group:	L1513691
Samples Received:	07/12/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2207304-001F CTB TO CITY POTW L1513691-01 Waste

			Collected by	Collected date/time	Received date/time	
				07/07/22 09:45	07/12/22 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1893423	1	07/13/22 13:11	07/13/22 13:11	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1897565	1	07/20/22 09:03	07/20/22 18:10	KLA	Mt. Juliet, TN

2207304-001H CTB TO CITY POTW L1513691-02 GW

			Collected by	Collected date/time	Received date/time	
				07/07/22 09:45	07/12/22 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1897784	1	07/22/22 06:10	07/22/22 06:10	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1893603	1	07/13/22 21:21	07/14/22 12:09	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1897617	1	07/15/22 10:39	07/15/22 10:39	JAR	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1894936	1	07/14/22 11:00	07/14/22 11:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1893915	1	07/13/22 00:59	07/13/22 00:59	WOS	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/13/2022 1:11:50 PM	WG1893423
Fluid	1		7/13/2022 1:11:50 PM	WG1893423
Initial pH	N/A		7/13/2022 1:11:50 PM	WG1893423
Final pH	N/A		7/13/2022 1:11:50 PM	WG1893423

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	07/20/2022 18:10	WG1897565
2,4-D	ND		0.00200	10	1	07/20/2022 18:10	WG1897565
(S) 2,4-Dichlorophenyl Acetic Acid	*75.0*		*14.0-158*			*07/20/2022 18:10*	WG1897565

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	204	T8	1	07/22/2022 06:10	WG1897784

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND	J6	0.00500	1	07/14/2022 12:09	WG1893603

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND	Q	0.0500	1	07/15/2022 10:39	WG1897617

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
pH	8.06	T8	1	07/14/2022 11:00	WG1894936

Sample Narrative:

L1513691-02 WG1894936: 8.06 at 19.9C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	07/13/2022 00:59	WG1893915

L1511985-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1511985-01 07/22/22 06:10 • (DUP) R3817981-3 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	119	110	1	9.40		20

L1511985-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1511985-02 07/22/22 06:10 • (DUP) R3817981-4 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	119	126	1	6.60		20

L1512045-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1512045-02 07/22/22 06:10 • (DUP) R3817981-5 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	292	287	1	5.20		20

L1512783-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-02 07/22/22 06:10 • (DUP) R3817981-6 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	230	227	1	3.00		20

L1512783-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-03 07/22/22 06:10 • (DUP) R3817981-7 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	184	185	1	1.70		20

L1512783-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-04 07/22/22 06:10 • (DUP) R3817981-8 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	190	188	1	1.30		20

L1512783-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-05 07/22/22 06:10 • (DUP) R3817981-9 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	185	185	1	0.700		20

L1512783-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-06 07/22/22 06:10 • (DUP) R3817981-10 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	197	197	1	0.500		20

L1512783-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-07 07/22/22 06:10 • (DUP) R3817981-11 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	200	198	1	2.00		20

L1512783-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1512783-08 07/22/22 06:10 • (DUP) R3817981-12 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	186	185	1	0.800		20

L1513237-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-02 07/22/22 06:10 • (DUP) R3817981-13 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	188	187	1	0.900		20

L1513237-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-03 07/22/22 06:10 • (DUP) R3817981-14 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	188	187	1	1.00		20

L1513237-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-04 07/22/22 06:10 • (DUP) R3817981-15 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	193	194	1	1.10		20

L1513237-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-05 07/22/22 06:10 • (DUP) R3817981-16 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	198	197	1	0.100		20

L1513237-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-06 07/22/22 06:10 • (DUP) R3817981-17 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	194	194	1	0.600		20

L1513237-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1513237-07 07/22/22 06:10 • (DUP) R3817981-18 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	195	196	1	0.900		20

L1513691-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1513691-02 07/22/22 06:10 • (DUP) R3817981-19 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	204	211	1	6.60		20

L1514857-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-01 07/22/22 06:10 • (DUP) R3817981-20 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	439	437	1	1.40		20

L1514857-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-02 07/22/22 06:10 • (DUP) R3817981-21 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	319	317	1	2.10		20

L1514857-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1514857-03 07/22/22 06:10 • (DUP) R3817981-22 07/22/22 06:10

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	331	331	1	0.300		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3817981-1 07/22/22 06:10 • (LCSD) R3817981-2 07/22/22 06:10

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	108	107	113	98.9	104	90.0-110			5.70	20

Method Blank (MB)

(MB) R3814752-1 07/14/22 11:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1513651-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1513651-01 07/14/22 12:07 • (DUP) R3814752-5 07/14/22 12:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1513935-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1513935-01 07/14/22 12:16 • (DUP) R3814752-8 07/14/22 12:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.0110	ND	1	200	P1	20

Laboratory Control Sample (LCS)

(LCS) R3814752-2 07/14/22 11:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0934	93.4	87.1-120	

L1513622-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1513622-02 07/14/22 12:03 • (MS) R3814752-3 07/14/22 12:04 • (MSD) R3814752-4 07/14/22 12:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0968	0.0966	96.8	96.6	1	90.0-110			0.207	20

L1513691-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1513691-02 07/14/22 12:09 • (MS) R3814752-6 07/14/22 12:11 • (MSD) R3814752-7 07/14/22 12:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0955	0.0783	95.5	78.3	1	90.0-110		J6	19.8	20

Method Blank (MB)

(MB) R3816793-1 07/15/22 10:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

L1513691-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1513691-02 07/15/22 10:39 • (DUP) R3816793-4 07/15/22 10:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3816793-2 07/15/22 10:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.473	94.6	85.0-115	

L1512611-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1512611-01 07/14/22 11:00 • (DUP) R3814730-2 07/14/22 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.23	8.24	1	0.121		1

Sample Narrative:

OS: 8.23 at 18.4C

DUP: 8.24 at 18.9C

L1514124-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1514124-01 07/14/22 11:00 • (DUP) R3814730-3 07/14/22 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.57	9.57	1	0.000		1

Sample Narrative:

OS: 9.57 at 20.5C

DUP: 9.57 at 20.8C

Laboratory Control Sample (LCS)

(LCS) R3814730-1 07/14/22 11:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 21.6C

L1513551-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1513551-01 07/13/22 00:59 • (DUP) R3813976-3 07/13/22 00:59

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3813976-1 07/13/22 00:59 • (LCSD) R3813976-2 07/13/22 00:59

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	126	130	99.9	103	96.0-104			3.13	10

Method Blank (MB)

(MB) R3817546-1 07/20/22 17:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*65.6*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3817546-2 07/20/22 17:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0402	80.4	50.0-125	
2,4-D	0.0500	0.0436	87.2	50.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*71.0*	*14.0-158*	

L1513691-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1513691-01 07/20/22 18:10 • (MS) R3817546-3 07/20/22 18:25 • (MSD) R3817546-4 07/20/22 18:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0344	0.0370	68.8	74.0	1	50.0-125			7.28	20
2,4-D	0.0500	ND	0.0448	0.0502	89.6	100	1	50.0-120		E	11.4	20
(S) 2,4-Dichlorophenyl Acetic Acid					*86.8*	*96.2*		*14.0-158*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

H087

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2207304-001F	CTB to City POTW	1LAMGU	Aqueous	7/7/2022 9:45:00 AM	1	8151TCLP *RUSH 7 DAY TAT*
2	2207304-001H	CTB to City POTW	500HDPE	Aqueous	7/7/2022 9:45:00 AM	3	RCI, ORP *RUSH 7 DAY TAT*

051369 1 -01 -02

Fedex TRK: 5755 8089 4215

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 7/8/2022	Time: 9:02 AM	Received By: Zac Parra	Date: 7-12-22	Time: 0930
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 0.1 +0 = 0.1 °C Attempt to Cool ? _____

Comments: _____

Released to Imaging: 5/24/2023 4:44:56 PM

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R89353**	RunNo: **89353**
Prep Date:	Analysis Date: **7/8/2022**	SeqNo: **3178441** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R89353**	RunNo: **89353**
Prep Date:	Analysis Date: **7/8/2022**	SeqNo: **3178442** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	101	90	110			
Chloride	4.7	0.50	5.000	0	93.2	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	97.4	90	110			
Bromide	2.5	0.10	2.500	0	98.2	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.8	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R89489**	RunNo: **89489**
Prep Date:	Analysis Date: **7/14/2022**	SeqNo: **3186155** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R89489**	RunNo: **89489**
Prep Date:	Analysis Date: **7/14/2022**	SeqNo: **3186156** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	10	0.50	10.00	0	101	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68941**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **68941**	RunNo: **89902**
Prep Date: **7/20/2022**	Analysis Date: **7/29/2022**	SeqNo: **3202579** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLCS-68941**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **68941**	RunNo: **89902**
Prep Date: **7/20/2022**	Analysis Date: **7/29/2022**	SeqNo: **3202580** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.048	0.0010	0.05000	0	96.4	80	120			
Lead	0.047	0.0010	0.05000	0	94.8	80	120			
Selenium	0.049	0.0010	0.05000	0	98.8	80	120			

Sample ID: **MSLLLCS-68941**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **68941**	RunNo: **89902**
Prep Date: **7/20/2022**	Analysis Date: **7/29/2022**	SeqNo: **3202581** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00087	0.0010	0.001000	0	87.4	70	130			J
Lead	0.00095	0.0010	0.001000	0	94.5	70	130			J
Selenium	0.00093	0.0010	0.001000	0	93.3	70	130			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-68767** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **68767** RunNo: **89586**
Prep Date: **7/14/2022** Analysis Date: **7/18/2022** SeqNo: **3191034** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00045	0.00010	0.0005000	0	89.8	56.3	126			
gamma-BHC (Lindane)	0.00032	0.00010	0.0005000	0	64.4	45.8	103			
Heptachlor	0.00027	0.00010	0.0005000	0	54.3	33.7	104			
Heptachlor epoxide	0.00039	0.00010	0.0005000	0	77.9	50.1	116			
Methoxychlor	0.00054	0.00010	0.0005000	0	107	15	203			
Surr: Decachlorobiphenyl	0.0021		0.002500		83.1	48.4	132			
Surr: Tetrachloro-m-xylene	0.0012		0.002500		48.9	29.4	106			

Sample ID: **LCS-68767** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **68767** RunNo: **89586**
Prep Date: **7/14/2022** Analysis Date: **7/18/2022** SeqNo: **3191035** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	87.3	56.3	126			
gamma-BHC (Lindane)	0.00033	0.00010	0.0005000	0	66.0	45.8	103			
Heptachlor	0.00028	0.00010	0.0005000	0	55.3	33.7	104			
Heptachlor epoxide	0.00038	0.00010	0.0005000	0	76.8	50.1	116			
Methoxychlor	0.00051	0.00010	0.0005000	0	101	15	203			
Surr: Decachlorobiphenyl	0.0020		0.002500		79.6	48.4	132			
Surr: Tetrachloro-m-xylene	0.0012		0.002500		49.5	29.4	106			

Sample ID: **LCSD-68767** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **68767** RunNo: **89586**
Prep Date: **7/14/2022** Analysis Date: **7/18/2022** SeqNo: **3191036** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00043	0.00010	0.0005000	0	86.7	56.3	126	3.43	20	
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	69.2	45.8	103	7.16	20	
Heptachlor	0.00030	0.00010	0.0005000	0	60.0	33.7	104	9.89	20	
Heptachlor epoxide	0.00040	0.00010	0.0005000	0	79.0	50.1	116	1.49	20	
Methoxychlor	0.00051	0.00010	0.0005000	0	102	15	203	5.16	20	
Surr: Decachlorobiphenyl	0.0021		0.002500		82.4	48.4	132	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		57.0	29.4	106	0	0	

Sample ID: **LCSD-68767** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **68767** RunNo: **89586**
Prep Date: **7/14/2022** Analysis Date: **7/18/2022** SeqNo: **3191037** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00043	0.00010	0.0005000	0	85.8	56.3	126	1.80	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCSD-68767** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **68767** RunNo: **89586**
Prep Date: **7/14/2022** Analysis Date: **7/18/2022** SeqNo: **3191037** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	70.1	45.8	103	5.97	20	
Heptachlor	0.00030	0.00010	0.0005000	0	60.3	33.7	104	8.55	20	
Heptachlor epoxide	0.00039	0.00010	0.0005000	0	77.2	50.1	116	0.549	20	
Methoxychlor	0.00047	0.00010	0.0005000	0	94.8	15	203	6.41	20	
Surr: Decachlorobiphenyl	0.0020		0.002500		79.3	48.4	132	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		56.8	29.4	106	0	0	

Sample ID: **MB-68767** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **68767** RunNo: **89586**
Prep Date: **7/14/2022** Analysis Date: **7/18/2022** SeqNo: **3191038** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0020		0.002500		80.4	48.4	132			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		71.8	29.4	106			

Sample ID: **MB-68767** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **68767** RunNo: **89586**
Prep Date: **7/14/2022** Analysis Date: **7/18/2022** SeqNo: **3191043** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0019		0.002500		76.8	48.4	132			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		70.7	29.4	106			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T89365** RunNo: **89365**
Prep Date: Analysis Date: **7/8/2022** SeqNo: **3178937** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.022	0.50	0.02000	0	108	70	130			J
1,1-Dichloroethene	0.020	0.70	0.02000	0	99.6	70	130			J
Trichloroethene (TCE)	0.021	0.50	0.02000	0	107	70	130			J
Chlorobenzene	0.020	100	0.02000	0	100	70	130			J
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		101	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		109	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		102	70	130			
Surr: Toluene-d8	0.0097		0.01000		96.7	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T89365** RunNo: **89365**
Prep Date: Analysis Date: **7/8/2022** SeqNo: **3178945** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.011		0.01000		106	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		104	70	130			
Surr: Toluene-d8	0.0098		0.01000		98.5	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68749** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **68749** RunNo: **89585**
Prep Date: **7/13/2022** Analysis Date: **7/18/2022** SeqNo: **3190692** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.078		0.2000		39.2	18.1	88.9			
Surr: Phenol-d5	0.059		0.2000		29.3	17	61.5			
Surr: 2,4,6-Tribromophenol	0.083		0.2000		41.7	29.8	104			
Surr: Nitrobenzene-d5	0.049		0.1000		48.6	22.2	111			
Surr: 2-Fluorobiphenyl	0.044		0.1000		44.5	24.6	96.3			
Surr: 4-Terphenyl-d14	0.060		0.1000		59.6	53.4	124			

Sample ID: **LCS-68749** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **68749** RunNo: **89585**
Prep Date: **7/13/2022** Analysis Date: **7/18/2022** SeqNo: **3190693** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.057	0.00010	0.1000	0	56.7	19	106			
3+4-Methylphenol	0.12	0.00010	0.2000	0	57.7	16.3	112			
2,4-Dinitrotoluene	0.040	0.00010	0.1000	0	40.2	15	99.6			
Hexachlorobenzene	0.048	0.00010	0.1000	0	47.7	41.8	111			
Hexachlorobutadiene	0.040	0.00010	0.1000	0	39.7	15	91.5			
Hexachloroethane	0.052	0.00010	0.1000	0	51.8	15	87.5			
Nitrobenzene	0.052	0.00010	0.1000	0	52.0	19.3	114			
Pentachlorophenol	0.041	0.00010	0.1000	0	41.2	29	103			
Pyridine	0.020	0.00010	0.1000	0	19.9	15	92.6			
2,4,5-Trichlorophenol	0.051	0.00010	0.1000	0	51.4	25.2	114			
2,4,6-Trichlorophenol	0.052	0.00010	0.1000	0	52.1	25.7	112			
Cresols, Total	0.17	0.00010	0.3000	0	57.3	15	145			
Surr: 2-Fluorophenol	0.094		0.2000		46.8	18.1	88.9			
Surr: Phenol-d5	0.069		0.2000		34.4	17	61.5			
Surr: 2,4,6-Tribromophenol	0.096		0.2000		48.1	29.8	104			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-68749** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **68749** RunNo: **89585**
Prep Date: **7/13/2022** Analysis Date: **7/18/2022** SeqNo: **3190693** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.058		0.1000		58.0	22.2	111			
Surr: 2-Fluorobiphenyl	0.053		0.1000		52.9	24.6	96.3			
Surr: 4-Terphenyl-d14	0.059		0.1000		59.3	53.4	124			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 99.6uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**							
Client ID: **LCSW**	Batch ID: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182163**	Units: **µmhos/cm**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.60	0	103	85	115			

Sample ID: **2207304-001C dup**	SampType: **dup**	TestCode: **SM2510B: Specific Conductance**							
Client ID: **CTB to City POTW**	Batch ID: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182172**	Units: **µmhos/cm**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	2300	10						0.0175	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**

24-Oct-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68642** SampType: **MBLK** TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW** Batch ID: **68642** RunNo: **89336**
Prep Date: **7/8/2022** Analysis Date: **7/8/2022** SeqNo: **3177845** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-68642** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC** Batch ID: **68642** RunNo: **89336**
Prep Date: **7/8/2022** Analysis Date: **7/8/2022** SeqNo: **3177846** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000098	0.00020	0.0001500	0	65.1	50	150			J

Sample ID: **LCS-68642** SampType: **LCS** TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW** Batch ID: **68642** RunNo: **89336**
Prep Date: **7/8/2022** Analysis Date: **7/8/2022** SeqNo: **3177847** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0043	0.00020	0.005000	0	85.1	85	115			

Sample ID: **2207304-001EMS** SampType: **MS** TestCode: **EPA Method 7470A: Mercury**
Client ID: **CTB to City POTW** Batch ID: **68642** RunNo: **89336**
Prep Date: **7/8/2022** Analysis Date: **7/8/2022** SeqNo: **3177849** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0042	0.020	0.005000	0	84.1	75	125			J

Sample ID: **2207304-001EMSD** SampType: **MSD** TestCode: **EPA Method 7470A: Mercury**
Client ID: **CTB to City POTW** Batch ID: **68642** RunNo: **89336**
Prep Date: **7/8/2022** Analysis Date: **7/8/2022** SeqNo: **3177852** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0042	0.020	0.005000	0	84.4	75	125	0.349	20	J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A89369**	RunNo: **89369**
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3179049** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A89369**	RunNo: **89369**
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3179051** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	97.6	80	120			
Magnesium	49	1.0	50.00	0	97.7	80	120			
Potassium	48	1.0	50.00	0	97.0	80	120			
Sodium	49	1.0	50.00	0	98.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**

24-Oct-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68941**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **68941**	RunNo: **89807**
Prep Date: **7/20/2022**	Analysis Date: **7/25/2022**	SeqNo: **3197955** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-68941**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **68941**	RunNo: **89807**
Prep Date: **7/20/2022**	Analysis Date: **7/25/2022**	SeqNo: **3197957** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.41	0.0020	0.5000	0	81.4	80	120			
Cadmium	0.41	0.0020	0.5000	0	82.0	80	120			
Silver	0.082	0.0050	0.1000	0	81.9	80	120			

Sample ID: **MB-68941**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **68941**	RunNo: **89895**
Prep Date: **7/20/2022**	Analysis Date: **7/28/2022**	SeqNo: **3202278** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	ND	0.0060								

Sample ID: **LCS-68941**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **68941**	RunNo: **89895**
Prep Date: **7/20/2022**	Analysis Date: **7/28/2022**	SeqNo: **3202280** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.47	0.0060	0.5000	0	93.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2207304-001C dup** SampType: **dup** TestCode: **SM4500-H+B / 9040C: pH**
Client ID: **CTB to City POTW** Batch ID: **R89444** RunNo: **89444**
Prep Date: Analysis Date: **7/11/2022** SeqNo: **3182215** Units: **pH units**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.04									H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**

24-Oct-22

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182112**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182113**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.00	20.00	80.00	0	97.5	90	110			

Sample ID: **2207304-001C dup**	SampType: **dup**	TestCode: **SM2320B: Alkalinity**							
Client ID: **CTB to City POTW**	Batch ID: **R89444**	RunNo: **89444**							
Prep Date:	Analysis Date: **7/11/2022**	SeqNo: **3182120**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	110.8	20.00						0.0722	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Estimated value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix interference		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68680**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **PBW**	Batch ID: **68680**	RunNo: **89415**							
Prep Date: **7/11/2022**	Analysis Date: **7/12/2022**	SeqNo: **3180827**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-68680**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **LCSW**	Batch ID: **68680**	RunNo: **89415**							
Prep Date: **7/11/2022**	Analysis Date: **7/12/2022**	SeqNo: **3180828**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2207304**
24-Oct-22

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-68755** SampType: **MBLK** TestCode: **SM 2540D: TSS**
Client ID: **PBW** Batch ID: **68755** RunNo: **89509**
Prep Date: **7/13/2022** Analysis Date: **7/14/2022** SeqNo: **3185593** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-68755** SampType: **LCS** TestCode: **SM 2540D: TSS**
Client ID: **LCSW** Batch ID: **68755** RunNo: **89509**
Prep Date: **7/13/2022** Analysis Date: **7/14/2022** SeqNo: **3185594** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	90	4.0	92.40	0	97.4	83.44	119.05			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix interference
B	Analyte detected in the associated Method Blank
E	Estimated value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining Work Order Number: 2207304 RcptNo: 1

Received By: Juan Rojas 7/8/2022 6:50:00 AM

Completed By: Sean Livingston 7/8/2022 8:58:48 AM

Reviewed By: KPH 7.8.22

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preserved added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: 3 3 (<2 or >12 unless noted)
Adjusted? NO
Checked by: JR 7/8/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.4	Good				

Released to Imaging: 5/24/2023 11:11:36 PM

Received by OCD: 3/6/2023 7:46:22 AM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
Standard Rush X

Project Name:
PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.5-0.1=2.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2207304	Analysis Request: Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
7/7/22	9:45	Liquid	CTB to City POTW	**	**	001	X						
7/7/22	9:45	Liquid	CTB to City POTW	3-40ml VOA	HCL			X					
7/7/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none				X				
7/7/22	9:45	Liquid	CTB to City POTW	***	***					X			
7/7/22	9:45	Liquid	CTB to City POTW	1-250ml P	HNO3						X		
7/7/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none							X	
7/7/22	9:45	Liquid	CTB to City POTW	1-1L Amber	none								X

Date	Time	Relinquished by	Received by	Date	Time
7-7-22	11:09	Brady Hubbard			
7/7/22	1900			7/8/22	6:50

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 09, 2022

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX:

RE: Quarterly WDW 1 2 3 4 Inj Well OrderNo.: 2209H25

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/30/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2209H25**
Date: **11/9/2022**

CLIENT: Navajo Refining Company
Project: Quarterly WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". All TCLP compounds are reported as totals in this report, at the TCLP Limits, since the low solids content did not require filtration. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2209H25**
Date Reported: **11/9/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 9/28/2022 11:18:00 PM
Lab ID: 2209H25-001 **Matrix:** AQUEOUS **Received Date:** 9/30/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	10/20/2022 10:53:00 AM	70615
Endrin	ND	0.000062	0.020		mg/L	1	10/20/2022 10:53:00 AM	70615
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	10/20/2022 10:53:00 AM	70615
Heptachlor	ND	0.000041	0.0080		mg/L	1	10/20/2022 10:53:00 AM	70615
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	10/20/2022 10:53:00 AM	70615
Methoxychlor	ND	0.000075	10		mg/L	1	10/20/2022 10:53:00 AM	70615
Toxaphene	ND	0.00050	0.50		mg/L	1	10/20/2022 10:53:00 AM	70615
Surr: Decachlorobiphenyl	55.0	0	40.9-111		%Rec	1	10/20/2022 10:53:00 AM	70615
Surr: Tetrachloro-m-xylene	77.3	0	15-107		%Rec	1	10/20/2022 10:53:00 AM	70615
EPA METHOD 300.0: ANIONS							Analyst: **JMT**	
Fluoride	65	0.92	2.0	*	mg/L	20	9/30/2022 1:53:36 PM	R91467
Chloride	490	25	50	*	mg/L	100	10/3/2022 1:19:11 PM	R91508
Nitrogen, Nitrite (As N)	0.31	0.057	0.50	J	mg/L	5	9/30/2022 1:15:01 PM	R91467
Bromide	0.45	0.25	0.50	J	mg/L	5	9/30/2022 1:15:01 PM	R91467
Nitrogen, Nitrate (As N)	2.5	0.10	0.50		mg/L	5	9/30/2022 1:15:01 PM	R91467
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	9/30/2022 1:15:01 PM	R91467
Sulfate	2300	25	50	*	mg/L	100	10/3/2022 1:19:11 PM	R91508
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.027	0.0025	5.0	J	mg/L	5	10/19/2022 2:08:07 PM	70719
Lead	ND	0.0025	5.0		mg/L	5	10/19/2022 2:08:07 PM	70719
Selenium	0.040	0.0025	1.0	J	mg/L	5	10/19/2022 2:08:07 PM	70719
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	10/10/2022 3:50:37 PM	70693
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	400	0.29	5.0		mg/L	5	10/12/2022 12:52:32 PM	A91762
Magnesium	130	0.17	5.0		mg/L	5	10/12/2022 12:52:32 PM	A91762
Potassium	230	1.0	5.0		mg/L	5	10/12/2022 12:52:32 PM	A91762
Sodium	880	4.2	10		mg/L	10	10/12/2022 1:28:12 PM	A91762
EPA 6010B: TCLP							Analyst: **JRR**	
Barium	0.049	0.0011	100	J	mg/L	1	10/12/2022 1:36:42 PM	70719
Cadmium	ND	0.0012	1.0		mg/L	1	10/12/2022 1:36:42 PM	70719
Chromium	ND	0.0017	5.0		mg/L	1	10/12/2022 1:36:42 PM	70719
Silver	0.0058	0.0013	5.0	J	mg/L	1	10/12/2022 1:36:42 PM	70719
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.0050	200		mg/L	1	10/14/2022 12:10:38 AM	70605
3+4-Methylphenol	ND	0.0051	200		mg/L	1	10/14/2022 12:10:38 AM	70605

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2209H25**
Date Reported: **11/9/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 9/28/2022 11:18:00 PM
Lab ID: 2209H25-001 **Matrix:** AQUEOUS **Received Date:** 9/30/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	10/14/2022 12:10:38 AM	70605
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	10/14/2022 12:10:38 AM	70605
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	10/14/2022 12:10:38 AM	70605
Hexachloroethane	ND	0.014	3.0		mg/L	1	10/14/2022 12:10:38 AM	70605
Nitrobenzene	ND	0.0049	2.0		mg/L	1	10/14/2022 12:10:38 AM	70605
Pentachlorophenol	ND	0.027	100		mg/L	1	10/14/2022 12:10:38 AM	70605
Pyridine	ND	0.014	5.0		mg/L	1	10/14/2022 12:10:38 AM	70605
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	10/14/2022 12:10:38 AM	70605
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	10/14/2022 12:10:38 AM	70605
Cresols, Total	ND	0.027	200		mg/L	1	10/14/2022 12:10:38 AM	70605
Surr: 2-Fluorophenol	61.6	0	18.1-88.9		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: Phenol-d5	45.3	0	17-61.5		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: 2,4,6-Tribromophenol	87.2	0	29.8-104		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: Nitrobenzene-d5	71.4	0	22.2-111		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: 2-Fluorobiphenyl	61.8	0	24.6-96.3		%Rec	1	10/14/2022 12:10:38 AM	70605
Surr: 4-Terphenyl-d14	90.8	0	53.4-124		%Rec	1	10/14/2022 12:10:38 AM	70605
TCLP VOLATILES BY 8260B							Analyst: **BRM**	
Benzene	ND	0.00023	0.50		mg/L	200	10/11/2022 9:34:52 PM	A91711
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	10/11/2022 9:34:52 PM	A91711
2-Butanone	ND	0.0020	200		mg/L	200	10/11/2022 9:34:52 PM	A91711
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	10/11/2022 9:34:52 PM	A91711
Chloroform	ND	0.00013	6.0		mg/L	200	10/11/2022 9:34:52 PM	A91711
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	10/11/2022 9:34:52 PM	A91711
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	10/11/2022 9:34:52 PM	A91711
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	10/11/2022 9:34:52 PM	A91711
Trichloroethene (TCE)	0.036	0.00020	0.50	J	mg/L	200	10/11/2022 9:34:52 PM	A91711
Vinyl chloride	ND	0.00032	0.20		mg/L	200	10/11/2022 9:34:52 PM	A91711
Chlorobenzene	ND	0.00016	100		mg/L	200	10/11/2022 9:34:52 PM	A91711
Surr: 1,2-Dichloroethane-d4	122	0	70-130		%Rec	200	10/11/2022 9:34:52 PM	A91711
Surr: 4-Bromofluorobenzene	105	0	70-130		%Rec	200	10/11/2022 9:34:52 PM	A91711
Surr: Dibromofluoromethane	103	0	70-130		%Rec	200	10/11/2022 9:34:52 PM	A91711
Surr: Toluene-d8	106	0	70-130		%Rec	200	10/11/2022 9:34:52 PM	A91711
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JTT**	
Conductivity	6900	10	10		µmhos/c	1	10/4/2022 3:32:18 PM	R91537
SM4500-H+B / 9040C: PH							Analyst: **JTT**	
pH	8.04			H	pH units	1	10/4/2022 3:32:18 PM	R91537
SM2320B: ALKALINITY							Analyst: **JTT**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2209H25**
Date Reported: **11/9/2022**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: Quarterly WDW 1 2 3 4 Inj Well
Collection Date: 9/28/2022 11:18:00 PM
Lab ID: 2209H25-001 **Matrix:** AQUEOUS **Received Date:** 9/30/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **JTT**	
Bicarbonate (As CaCO3)	582.9	20.00	20.00		mg/L Ca	1	10/4/2022 3:32:18 PM	R91537
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	10/4/2022 3:32:18 PM	R91537
Total Alkalinity (as CaCO3)	582.9	20.00	20.00		mg/L Ca	1	10/4/2022 3:32:18 PM	R91537
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9989	0	0			1	10/3/2022 2:34:00 PM	R91481
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	5120	200	200	*D	mg/L	1	10/5/2022 8:58:00 AM	70542
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	28	4.0	4.0		mg/L	1	10/4/2022 11:09:00 AM	70560

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	VDW-1,2,3&4 Effluen 2209H25-001											
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	880	38.28										
Potassium	230	5.88										
Calcium	400	19.96										
Magnesium	130	10.70										
Total Cations		74.82										
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2300	47.89										
Chloride	490	13.82										
Bicarbonate (CaCO3)	582.9	11.65	-									
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)	0.31	0.02										
Nitrate (N)	2.5	0.18			-							
Fluoride	65	3.42										
Bromide	0.45	0.01										
Total Anions		76.98										
Elect. Cond. (µMhos/cm)	6900											
CATION/ANION RATIO		0.97										
% Difference		1										
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	5120											
TDS (calculated)	4856											
Ratio meas TDS:calc TDS		1.1										
Ratio Meas. TDS:EC		0.74										
Ratio Calc. TDS:EC		0.70										
Ratio of anion sum:EC		1.1										
Ratio of cation sum:EC		1.1										

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

October 21, 2022

Hall Environmental Analysis Laboratory

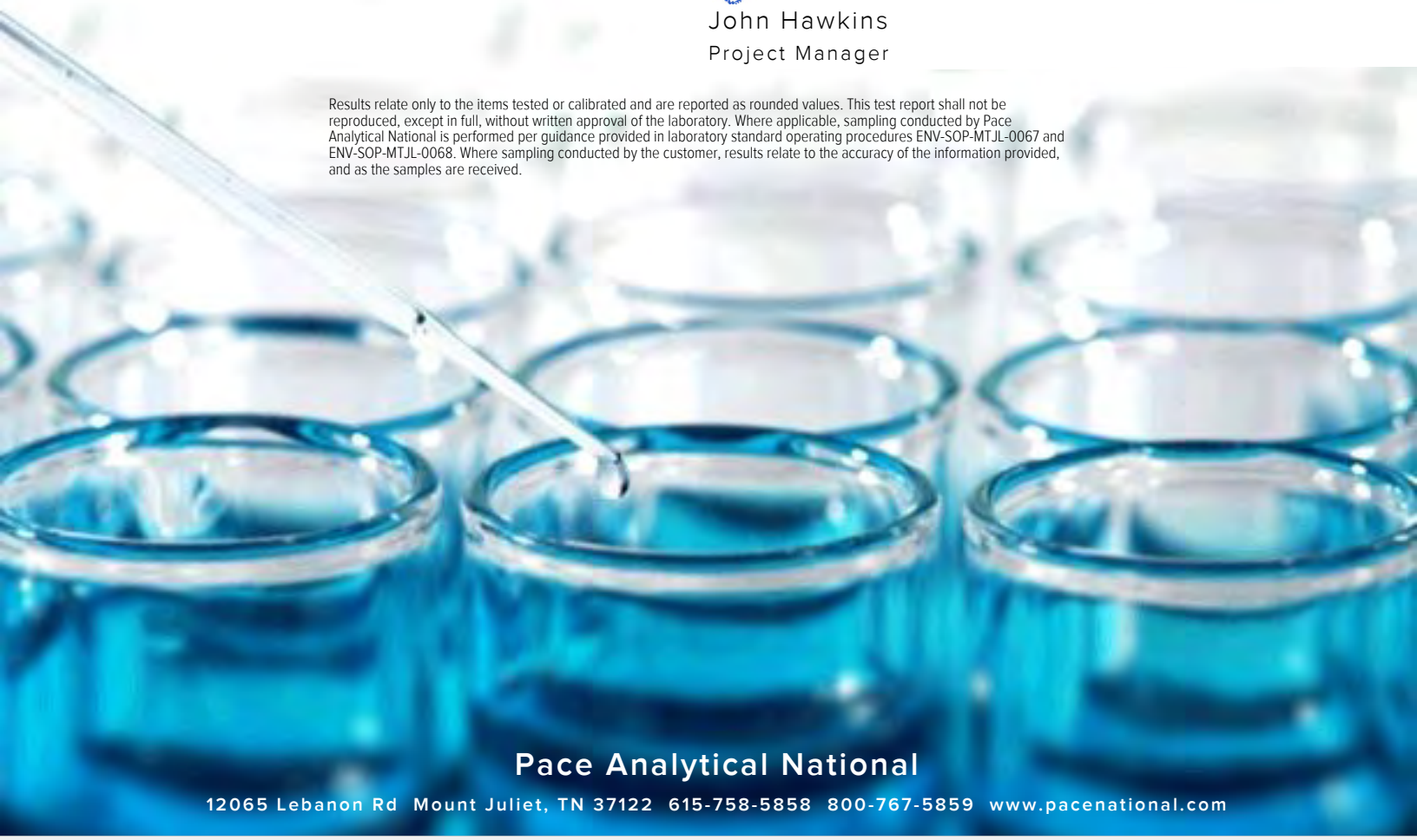
Sample Delivery Group:	L1542745
Samples Received:	10/04/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2209H25-001FG WDW-1,2,3 & 4 EFFLUENT L1542745-01 GW

Collected by	Collected date/time	Received date/time
	09/28/22 23:18	10/04/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1937384	1	10/06/22 11:56	10/06/22 11:56	JTM	Mt. Juliet, TN
Wet Chemistry by Method 2580	WG1946070	1	10/21/22 07:45	10/21/22 07:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1937600	1	10/06/22 17:42	10/07/22 12:41	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1937427	1	10/05/22 12:02	10/05/22 12:02	JAR	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1941732	1	10/12/22 17:00	10/12/22 17:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1937917	1	10/06/22 03:00	10/06/22 03:00	AAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (LCMS) by Method SW-846 8321	WG1938291	2	10/09/22 14:25	10/13/22 17:54	MSB	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1542745-01	2209H25-001FG WDW-1,2,3 & 4 EFFLUENT	4500 CN E-2016

The following analysis were performed from an unpreserved, insufficiently or inadequately preserved sample.

Lab Sample ID	Project Sample ID	Method
L1542745-01	2209H25-001FG WDW-1,2,3 & 4 EFFLUENT	4500 CN E-2016

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		10/6/2022 11:56:16 AM	WG1937384
Fluid	1		10/6/2022 11:56:16 AM	WG1937384
Initial pH	N/A		10/6/2022 11:56:16 AM	WG1937384
Final pH	N/A		10/6/2022 11:56:16 AM	WG1937384

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	mV				
ORP	129	T8	1	10/21/2022 07:45	WG1946070

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Reactive Cyanide	0.0207		0.00500	1	10/07/2022 12:41	WG1937600

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Reactive Sulfide	ND	J6	0.0500	1	10/05/2022 12:02	WG1937427

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	su				
pH	7.83	T8	1	10/12/2022 17:00	WG1941732

Sample Narrative:

L1542745-01 WG1941732: 7.83 at 19.1C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	deg F				
Flashpoint	DNF at 170		1	10/06/2022 03:00	WG1937917

Semi-Volatile Organic Compounds (LCMS) by Method SW-846 8321

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
2,4-D	ND		0.0400	10	2	10/13/2022 17:54	WG1938291
2,4,5-TP (Silvex)	ND		0.0400	1	2	10/13/2022 17:54	WG1938291
(S) 2,4-DB-D3	*129*		*70.0-130*			*10/13/2022 17:54*	WG1938291

L1542745-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542745-01 10/21/22 07:45 • (DUP) R3851271-3 10/21/22 07:45

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	129	130	1	1.00		20

L1547426-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1547426-06 10/21/22 07:45 • (DUP) R3851271-4 10/21/22 07:45

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	286	289	1	3.70		20

L1547868-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1547868-01 10/21/22 07:45 • (DUP) R3851271-5 10/21/22 07:45

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	336	336	1	0.100		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3851271-1 10/21/22 07:45 • (LCSD) R3851271-2 10/21/22 07:45

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	109	111	110	102	101	90.0-110			0.500	20

Method Blank (MB)

(MB) R3845870-1 10/07/22 12:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1542733-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542733-01 10/07/22 12:22 • (DUP) R3845870-3 10/07/22 12:23

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1542734-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1542734-02 10/07/22 12:30 • (DUP) R3845870-6 10/07/22 12:31

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3845870-2 10/07/22 12:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0985	98.5	87.1-120	

L1542733-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1542733-02 10/07/22 12:24 • (MS) R3845870-4 10/07/22 12:25 • (MSD) R3845870-5 10/07/22 12:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0880	0.0881	88.0	88.1	1	90.0-110	J6	J6	0.114	20

Sample Narrative:

MS: Matrix spike failure due to matrix interference.

MSD: Matrix spike failure due to matrix interference.

Received by OCD: 3/6/2023 7:46:22 AM

Wet Chemistry by Method 4500 CN E-2016

L1542745-01

L1542742-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1542742-01 10/07/22 12:32 • (MS) R3845870-7 10/07/22 12:33 • (MSD) R3845870-8 10/07/22 12:34

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0957	0.0953	93.7	93.3	1	90.0-110			0.419	20

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Method Blank (MB)

(MB) R3844889-1 10/05/22 11:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

L1542751-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542751-01 10/05/22 12:04 • (DUP) R3844889-5 10/05/22 12:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3844889-2 10/05/22 11:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.526	105	85.0-115	

L1542745-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1542745-01 10/05/22 12:02 • (MS) R3844889-3 10/05/22 12:03 • (MSD) R3844889-4 10/05/22 12:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	0.500	ND	0.414	0.397	82.8	79.4	1	80.0-120		J6	4.19	20

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L1542782-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542782-01 10/12/22 17:00 • (DUP) R3847780-2 10/12/22 17:00

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	7.54	7.53	1	0.133		1

Sample Narrative:
OS: 7.54 at 19C
DUP: 7.53 at 19.1C

Laboratory Control Sample (LCS)

(LCS) R3847780-1 10/12/22 17:00

Analyte	Spike Amount su	LCS Result su	LCS Rec. %	Rec. Limits %	LCS Qualifier
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:
LCS: 9.9 at 20.4C

Released to Imaging: 5/24/2023 4:44:56 PM

L1534417-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1534417-01 10/06/22 03:00 • (DUP) R3845562-3 10/06/22 03:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

L1542757-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1542757-01 10/06/22 03:00 • (DUP) R3845562-4 10/06/22 03:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3845562-1 10/06/22 03:00 • (LCSD) R3845562-2 10/06/22 03:00

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	128	124	101	98.1	96.0-104			3.18	10

Method Blank (MB)

(MB) R3848141-2 10/13/22 11:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U		0.0133	0.0400
2,4,5-TP (Silvex)	U		0.0133	0.0400
(S) 2,4-DB-D3	*259*	J1		*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3848141-1 10/13/22 11:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4-D	0.200	0.194	97.0	70.0-130	
2,4,5-TP (Silvex)	0.200	0.260	130	70.0-130	
(S) 2,4-DB-D3			*270*	*70.0-130*	J1

L1539727-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1539727-01 10/13/22 12:07 • (MS) R3848141-3 10/13/22 12:28 • (MSD) R3848141-4 10/13/22 12:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4-D	0.200	ND	0.188	0.210	94.0	105	2	70.0-130			11.1	30
2,4,5-TP (Silvex)	0.200	ND	0.281	0.298	141	149	2	70.0-130	J5	J5	5.87	30
(S) 2,4-DB-D3					*135*	*134*		*70.0-130*	J1	J1		

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

1046

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR:	Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX:	(615) 758-5859
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

LIS42745

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2209H25-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	9/28/2022 11:18:00 PM	1	8151TCLP
2	2209H25-001G	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	9/28/2022 11:18:00 PM	3	RCI, ORP

For

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 9/30/2022	Time: 10:29 AM	Received By:	Date: 10/4/22	Time: 0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 4.9 °C Attempt to Cool ? _____

Comments: _____

Released to Imaging: 5/24/2023 4:44:56 PM

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R91467**	RunNo: **91467**
Prep Date:	Analysis Date: **9/30/2022**	SeqNo: **3275657** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R91467**	RunNo: **91467**
Prep Date:	Analysis Date: **9/30/2022**	SeqNo: **3275665** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	109	90	110			
Nitrogen, Nitrite (As N)	0.99	0.10	1.000	0	99.3	90	110			
Bromide	2.5	0.10	2.500	0	99.8	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	104	90	110			
Phosphorus, Orthophosphate (As P)	4.6	0.50	5.000	0	92.8	90	110			

Sample ID: **2209H25-001CMS**	SampType: **ms**	TestCode: **EPA Method 300.0: Anions**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **R91467**	RunNo: **91467**
Prep Date:	Analysis Date: **9/30/2022**	SeqNo: **3275681** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	4.7	0.50	5.000	0.3110	87.0	83.4	110			
Bromide	12	0.50	12.50	0.4460	94.6	89.4	110			
Nitrogen, Nitrate (As N)	15	0.50	12.50	2.517	100	89.5	113			
Phosphorus, Orthophosphate (As P)	21	2.5	25.00	0	85.6	80.1	109			

Sample ID: **2209H25-001CMSD**	SampType: **msd**	TestCode: **EPA Method 300.0: Anions**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **R91467**	RunNo: **91467**
Prep Date:	Analysis Date: **9/30/2022**	SeqNo: **3275682** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	4.7	0.50	5.000	0.3110	87.5	83.4	110	0.535	20	
Bromide	12	0.50	12.50	0.4460	94.9	89.4	110	0.236	20	
Nitrogen, Nitrate (As N)	15	0.50	12.50	2.517	101	89.5	113	0.322	20	
Phosphorus, Orthophosphate (As P)	22	2.5	25.00	0	86.4	80.1	109	0.902	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R91508**	RunNo: **91508**
Prep Date:	Analysis Date: **10/3/2022**	SeqNo: **3277697** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R91508**	RunNo: **91508**
Prep Date:	Analysis Date: **10/3/2022**	SeqNo: **3277698** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.8	90	110			
Sulfate	9.6	0.50	10.00	0	96.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70719**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **70719**	RunNo: **91792**
Prep Date: **10/10/2022**	Analysis Date: **10/13/2022**	SeqNo: **3290983** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								

Sample ID: **MSLLLCS-70719**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **70719**	RunNo: **91792**
Prep Date: **10/10/2022**	Analysis Date: **10/13/2022**	SeqNo: **3290984** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00089	0.0010	0.001000	0	89.3	70	130			J

Sample ID: **MSLCS-70719**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **70719**	RunNo: **91792**
Prep Date: **10/10/2022**	Analysis Date: **10/13/2022**	SeqNo: **3290985** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0010	0.05000	0	99.5	80	120			

Sample ID: **MB-70719**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **70719**	RunNo: **91927**
Prep Date: **10/10/2022**	Analysis Date: **10/19/2022**	SeqNo: **3297606** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-70719**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **70719**	RunNo: **91927**
Prep Date: **10/10/2022**	Analysis Date: **10/19/2022**	SeqNo: **3297607** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00095	0.0010	0.001000	0	94.9	70	130			J
Selenium	0.00085	0.0010	0.001000	0	85.1	70	130			J

Sample ID: **MSLCS-70719**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **70719**	RunNo: **91927**
Prep Date: **10/10/2022**	Analysis Date: **10/19/2022**	SeqNo: **3297610** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.048	0.0010	0.05000	0	96.9	80	120			
Selenium	0.048	0.0010	0.05000	0	96.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70615**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299347** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0026		0.002500		102	40.9	111			
Surr: Tetrachloro-m-xylene	0.0024		0.002500		95.4	15	107			

Sample ID: **MB-70615**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299348** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0026		0.002500		103	40.9	111			
Surr: Tetrachloro-m-xylene	0.0023		0.002500		93.2	15	107			

Sample ID: **LCS-70615**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **70615**	RunNo: **91950**
Prep Date: **10/5/2022**	Analysis Date: **10/20/2022**	SeqNo: **3299349** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00050	0.00010	0.0005000	0	99.6	56.3	126			
gamma-BHC (Lindane)	0.00045	0.00010	0.0005000	0	89.9	45.8	103			
Heptachlor	0.00035	0.00010	0.0005000	0	69.3	33.7	104			
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	93.9	50.1	116			
Methoxychlor	0.00050	0.00010	0.0005000	0	99.9	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		95.8	40.9	111			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		83.6	15	107			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **LCS-70615** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSW** Batch ID: **70615** RunNo: **91950**

Prep Date: **10/5/2022** Analysis Date: **10/20/2022** SeqNo: **3299350** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.5	56.3	126			
gamma-BHC (Lindane)	0.00046	0.00010	0.0005000	0	91.2	45.8	103			
Heptachlor	0.00034	0.00010	0.0005000	0	68.8	33.7	104			
Heptachlor epoxide	0.00046	0.00010	0.0005000	0	91.7	50.1	116			
Methoxychlor	0.00048	0.00010	0.0005000	0	96.2	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		96.5	40.9	111			
Surr: Tetrachloro-m-xylene	0.0020		0.002500		81.4	15	107			

Sample ID: **LCSD-70615** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSS02** Batch ID: **70615** RunNo: **91950**

Prep Date: **10/5/2022** Analysis Date: **10/20/2022** SeqNo: **3299351** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.7	56.3	126	3.96	20	
gamma-BHC (Lindane)	0.00044	0.00010	0.0005000	0	87.8	45.8	103	2.36	20	
Heptachlor	0.00032	0.00010	0.0005000	0	64.0	33.7	104	7.92	20	
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	90.4	50.1	116	3.77	20	
Methoxychlor	0.00053	0.00010	0.0005000	0	105	15	203	5.02	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		88.0	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.2	15	107	0	0	

Sample ID: **LCSD-70615** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**

Client ID: **LCSS02** Batch ID: **70615** RunNo: **91950**

Prep Date: **10/5/2022** Analysis Date: **10/20/2022** SeqNo: **3299352** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	91.0	56.3	126	9.03	20	
gamma-BHC (Lindane)	0.00044	0.00010	0.0005000	0	88.2	45.8	103	1.87	20	
Heptachlor	0.00032	0.00010	0.0005000	0	64.1	33.7	104	7.79	20	
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.1	50.1	116	5.24	20	
Methoxychlor	0.00046	0.00010	0.0005000	0	92.8	15	203	7.42	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		88.1	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0018		0.002500		70.7	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW**	Batch ID: **A91711**	RunNo: **91711**
Prep Date:	Analysis Date: **10/11/2022**	SeqNo: **3286772** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.018	0.010	0.02000	0	89.0	70	130			
1,1-Dichloroethene	0.018	0.010	0.02000	0	90.6	70	130			
Trichloroethene (TCE)	0.018	0.010	0.02000	0	91.8	70	130			
Chlorobenzene	0.018	0.010	0.02000	0	90.0	70	130			
Surr: 1,2-Dichloroethane-d4	0.014		0.01000		138	70	130			S
Surr: 4-Bromofluorobenzene	0.010		0.01000		102	70	130			
Surr: Dibromofluoromethane	0.012		0.01000		118	70	130			
Surr: Toluene-d8	0.010		0.01000		102	70	130			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **A91711**	RunNo: **91711**
Prep Date:	Analysis Date: **10/11/2022**	SeqNo: **3286774** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	0.00025	0.50								J
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.012		0.01000		122	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		113	70	130			
Surr: Dibromofluoromethane	0.010		0.01000		103	70	130			
Surr: Toluene-d8	0.011		0.01000		108	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70605**	SampType: **MBLK**	TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW**	Batch ID: **70605**	RunNo: **91785**
Prep Date: **10/5/2022**	Analysis Date: **10/13/2022**	SeqNo: **3291329** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		58.3	18.1	88.9			
Surr: Phenol-d5	0.088		0.2000		43.8	17	61.5			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		66.2	29.8	104			
Surr: Nitrobenzene-d5	0.066		0.1000		65.7	22.2	111			
Surr: 2-Fluorobiphenyl	0.059		0.1000		59.1	24.6	96.3			
Surr: 4-Terphenyl-d14	0.082		0.1000		81.9	53.4	124			

Sample ID: **LCS-70605**	SampType: **LCS**	TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW**	Batch ID: **70605**	RunNo: **91785**
Prep Date: **10/5/2022**	Analysis Date: **10/13/2022**	SeqNo: **3291330** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.069	0.00010	0.1000	0	69.5	19	106			
3+4-Methylphenol	0.15	0.00010	0.2000	0	74.6	16.3	112			
2,4-Dinitrotoluene	0.048	0.00010	0.1000	0	48.3	15	99.6			
Hexachlorobenzene	0.063	0.00010	0.1000	0	62.7	41.8	111			
Hexachlorobutadiene	0.027	0.00010	0.1000	0	27.3	15	91.5			
Hexachloroethane	0.029	0.00010	0.1000	0	29.0	15	87.5			
Nitrobenzene	0.063	0.00010	0.1000	0	62.8	19.3	114			
Pentachlorophenol	0.060	0.00010	0.1000	0	60.0	29	103			
Pyridine	0.046	0.00010	0.1000	0	45.6	15	92.6			
2,4,5-Trichlorophenol	0.071	0.00010	0.1000	0	70.7	25.2	114			
2,4,6-Trichlorophenol	0.066	0.00010	0.1000	0	65.8	25.7	112			
Cresols, Total	0.22	0.00010	0.3000	0	72.9	15	145			
Surr: 2-Fluorophenol	0.11		0.2000		55.5	18.1	88.9			
Surr: Phenol-d5	0.083		0.2000		41.7	17	61.5			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		69.2	29.8	104			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **LCS-70605**	SampType: **LCS**			TestCode: **EPA Method 8270C TCLP**						
Client ID: **LCSW**	Batch ID: **70605**			RunNo: **91785**						
Prep Date: **10/5/2022**	Analysis Date: **10/13/2022**			SeqNo: **3291330**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.068		0.1000		67.7	22.2	111			
Surr: 2-Fluorobiphenyl	0.064		0.1000		64.2	24.6	96.3			
Surr: 4-Terphenyl-d14	0.087		0.1000		87.0	53.4	124			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID:	**lcs-1 99.4uS eC**	SampType:	**LCS**	TestCode:	**SM2510B: Specific Conductance**					
Client ID:	**LCSW**	Batch ID:	**R91537**	RunNo:	**91537**					
Prep Date:		Analysis Date:	**10/4/2022**	SeqNo:	**3279123**	Units:	**µmhos/cm**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	10	99.40	0	99.8	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70693**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW**	Batch ID: **70693**	RunNo: **91673**
Prep Date: **10/10/2022**	Analysis Date: **10/10/2022**	SeqNo: **3284866** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-70693**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC**	Batch ID: **70693**	RunNo: **91673**
Prep Date: **10/10/2022**	Analysis Date: **10/10/2022**	SeqNo: **3284867** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00020	0.00020	0.0001500	0	135	50	150			

Sample ID: **LCS-70693**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW**	Batch ID: **70693**	RunNo: **91673**
Prep Date: **10/10/2022**	Analysis Date: **10/10/2022**	SeqNo: **3284868** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A91762**	RunNo: **91762**
Prep Date:	Analysis Date: **10/12/2022**	SeqNo: **3289919** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A91762**	RunNo: **91762**
Prep Date:	Analysis Date: **10/12/2022**	SeqNo: **3289921** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	52	1.0	50.00	0	103	80	120			
Magnesium	52	1.0	50.00	0	105	80	120			
Potassium	52	1.0	50.00	0	104	80	120			
Sodium	51	1.0	50.00	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70719**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP**
Client ID: **PBW**	Batch ID: **70719**	RunNo: **91762**
Prep Date: **10/10/2022**	Analysis Date: **10/12/2022**	SeqNo: **3293715** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-70719**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP**
Client ID: **LCSW**	Batch ID: **70719**	RunNo: **91762**
Prep Date: **10/10/2022**	Analysis Date: **10/12/2022**	SeqNo: **3293717** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.48	0.0020	0.5000	0	96.5	80	120			
Cadmium	0.48	0.0020	0.5000	0	96.2	80	120			
Chromium	0.48	0.0060	0.5000	0	96.7	80	120			
Silver	0.099	0.0050	0.1000	0	99.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**
Client ID: **PBW**	Batch ID: **R91537**	RunNo: **91537**
Prep Date:	Analysis Date: **10/4/2022**	SeqNo: **3279059** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW**	Batch ID: **R91537**	RunNo: **91537**
Prep Date:	Analysis Date: **10/4/2022**	SeqNo: **3279060** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.64	20.00	80.00	0	97.0	90	110			

Sample ID: **mb-2 alk**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**
Client ID: **PBW**	Batch ID: **R91537**	RunNo: **91537**
Prep Date:	Analysis Date: **10/4/2022**	SeqNo: **3279082** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW**	Batch ID: **R91537**	RunNo: **91537**
Prep Date:	Analysis Date: **10/4/2022**	SeqNo: **3279083** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.52	20.00	80.00	0	96.9	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID:	**2209H25-001CDUP**	SampType:	**DUP**	TestCode:	**Specific Gravity**
Client ID:	**WDW-1,2,3 & 4 Efflu**	Batch ID:	**R91481**	RunNo:	**91481**
Prep Date:		Analysis Date:	**10/3/2022**	SeqNo:	**3276457** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9998	0						0.0901	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70542**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **70542**	RunNo: **91532**
Prep Date: **10/3/2022**	Analysis Date: **10/5/2022**	SeqNo: **3278878** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-70542**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **70542**	RunNo: **91532**
Prep Date: **10/3/2022**	Analysis Date: **10/5/2022**	SeqNo: **3278879** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2209H25**

09-Nov-22

Client: Navajo Refining Company

Project: Quarterly WDW 1 2 3 4 Inj Well

Sample ID: **MB-70560**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**
Client ID: **PBW**	Batch ID: **70560**	RunNo: **91514**
Prep Date: **10/3/2022**	Analysis Date: **10/4/2022**	SeqNo: **3277855** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-70560**	SampType: **LCS**	TestCode: **SM 2540D: TSS**
Client ID: **LCSW**	Batch ID: **70560**	RunNo: **91514**
Prep Date: **10/3/2022**	Analysis Date: **10/4/2022**	SeqNo: **3277856** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	98	4.0	91.90	0	107	83.89	119.7			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining Work Order Number: 2209H25 RcptNo: 1

Received By: Juan Rojas 9/30/2022 7:30:00 AM

Completed By: Sean Livingston 9/30/2022 10:19:20 AM

Reviewed By: SR 9/30/22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☑	No ☐	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

HNO3

of preserved bottles checked for pH: 3 2 (<2 or >12 unless noted)

Adjusted? yes

Checked by: KPG 9.30.22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks: Added 0.5ml of HNO_3 to sample 001E.

Filtered for 001D, adding ~0.4mL HNO3 for dissolved metals analysis, checked for proper pH< 2 - KPG 9.30.22

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.5	Good				

Filter Lot # FJ4820x5

Released to Imaging: 5/24/2023 4:44:56 PM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
Standard X Rush

Project Name:
Quarterly WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard
On Ice: ☑ Yes ☐ No
Sample Temperature: 0.3+1.2=0.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 2209425	Analysis Request: Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	X						
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			X					
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				X				
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					X			
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						X		
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							X	
9/28/22	23:18	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								X

Date	Time	Relinquished by	Received by	Date	Time
9.29.22	06:00	Brady Hubbard			
9/29/22	1400			9/29/22	600

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

0010 filtered from unpreserved bottle

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 20, 2023

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2211E05

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 4 sample(s) on 11/29/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 06, 2023.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2211E05**
Date: **1/20/2023**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". Even though the low solids content did not require filtration, all TCLP compounds are reported as both total and filtered, at the TCLP limits. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2211E05-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 11/28/2022 10:10:00 AM
Received Date: 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **mb**	
Chlordane	ND	0.0025	0.030		mg/L	1	12/8/2022 9:07:42 AM	71840
Endrin	ND	0.00031	0.020		mg/L	1	12/8/2022 9:07:42 AM	71840
gamma-BHC (Lindane)	ND	0.00027	0.40		mg/L	1	12/8/2022 9:07:42 AM	71840
Heptachlor	ND	0.00021	0.0080		mg/L	1	12/8/2022 9:07:42 AM	71840
Heptachlor epoxide	ND	0.00026	0.0080		mg/L	1	12/8/2022 9:07:42 AM	71840
Methoxychlor	ND	0.00038	10		mg/L	1	12/8/2022 9:07:42 AM	71840
Toxaphene	ND	0.0025	0.50		mg/L	1	12/8/2022 9:07:42 AM	71840
Surr: Decachlorobiphenyl	77.5	0	40.9-111		%Rec	1	12/8/2022 9:07:42 AM	71840
Surr: Tetrachloro-m-xylene	90.6	0	15-107		%Rec	1	12/8/2022 9:07:42 AM	71840
EPA METHOD 300.0: ANIONS							Analyst: **NAI**	
Fluoride	47	0.92	2.0	*	mg/L	20	12/1/2022 11:57:21 PM	R92979
Chloride	340	5.0	10	*	mg/L	20	12/1/2022 11:57:21 PM	R92979
Bromide	ND	0.25	0.50		mg/L	5	12/1/2022 11:44:56 PM	R92979
Phosphorus, Orthophosphate (As P)	ND	5.0	10	H	mg/L	20	12/1/2022 11:57:21 PM	R92979
Sulfate	2300	25	50	*	mg/L	100	12/9/2022 11:33:48 AM	R93187
Nitrate+Nitrite as N	0.93	0.11	1.0	J	mg/L	5	12/2/2022 12:59:25 AM	R92979
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.012	0.0025	5.0	J	mg/L	5	12/6/2022 1:25:14 PM	71785
Lead	ND	0.0025	5.0		mg/L	5	12/6/2022 1:25:14 PM	71785
Selenium	0.024	0.0025	1.0	J	mg/L	5	12/6/2022 1:25:14 PM	71785
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	0.00011	0.000091	0.020	J	mg/L	1	12/9/2022 5:28:34 PM	71977
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	380	0.29	5.0		mg/L	5	12/6/2022 5:07:46 PM	A93075
Magnesium	130	0.17	5.0		mg/L	5	12/6/2022 5:07:46 PM	A93075
Potassium	160	1.0	5.0		mg/L	5	12/6/2022 5:07:46 PM	A93075
Sodium	690	4.2	10		mg/L	10	12/7/2022 5:34:01 PM	A93168
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.037	0.0011	100	J	mg/L	1	12/6/2022 3:55:34 PM	71785
Cadmium	ND	0.0012	1.0		mg/L	1	12/6/2022 3:55:34 PM	71785
Chromium	0.011	0.0017	5.0	J	mg/L	1	12/6/2022 3:55:34 PM	71785
Silver	0.0082	0.0013	5.0	J	mg/L	1	12/6/2022 3:55:34 PM	71785
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.0050	200		mg/L	1	12/8/2022 4:19:50 PM	71838
3+4-Methylphenol	ND	0.0051	200		mg/L	1	12/8/2022 4:19:50 PM	71838
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	12/8/2022 4:19:50 PM	71838

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2211E05-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 11/28/2022 10:10:00 AM
Received Date: 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	12/8/2022 4:19:50 PM	71838
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	12/8/2022 4:19:50 PM	71838
Hexachloroethane	ND	0.014	3.0		mg/L	1	12/8/2022 4:19:50 PM	71838
Nitrobenzene	ND	0.0049	2.0		mg/L	1	12/8/2022 4:19:50 PM	71838
Pentachlorophenol	ND	0.027	100		mg/L	1	12/8/2022 4:19:50 PM	71838
Pyridine	ND	0.014	5.0		mg/L	1	12/8/2022 4:19:50 PM	71838
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	12/8/2022 4:19:50 PM	71838
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	12/8/2022 4:19:50 PM	71838
Cresols, Total	ND	0.027	200		mg/L	1	12/8/2022 4:19:50 PM	71838
Surr: 2-Fluorophenol	52.9	0	18.1-88.9		%Rec	1	12/8/2022 4:19:50 PM	71838
Surr: Phenol-d5	40.8	0	17-61.5		%Rec	1	12/8/2022 4:19:50 PM	71838
Surr: 2,4,6-Tribromophenol	93.8	0	29.8-104		%Rec	1	12/8/2022 4:19:50 PM	71838
Surr: Nitrobenzene-d5	65.3	0	22.2-111		%Rec	1	12/8/2022 4:19:50 PM	71838
Surr: 2-Fluorobiphenyl	59.5	0	24.6-96.3		%Rec	1	12/8/2022 4:19:50 PM	71838
Surr: 4-Terphenyl-d14	104	0	53.4-124		%Rec	1	12/8/2022 4:19:50 PM	71838
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	12/1/2022 2:30:00 PM	T92985
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	12/1/2022 2:30:00 PM	T92985
2-Butanone	ND	0.0020	200		mg/L	200	12/1/2022 2:30:00 PM	T92985
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	12/1/2022 2:30:00 PM	T92985
Chloroform	ND	0.00013	6.0		mg/L	200	12/1/2022 2:30:00 PM	T92985
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	12/1/2022 2:30:00 PM	T92985
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	12/1/2022 2:30:00 PM	T92985
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	12/1/2022 2:30:00 PM	T92985
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	12/1/2022 2:30:00 PM	T92985
Vinyl chloride	ND	0.00032	0.20		mg/L	200	12/1/2022 2:30:00 PM	T92985
Chlorobenzene	ND	0.00016	100		mg/L	200	12/1/2022 2:30:00 PM	T92985
Surr: 1,2-Dichloroethane-d4	93.9	0	70-130		%Rec	200	12/1/2022 2:30:00 PM	T92985
Surr: 4-Bromofluorobenzene	93.8	0	70-130		%Rec	200	12/1/2022 2:30:00 PM	T92985
Surr: Dibromofluoromethane	94.0	0	70-130		%Rec	200	12/1/2022 2:30:00 PM	T92985
Surr: Toluene-d8	92.5	0	70-130		%Rec	200	12/1/2022 2:30:00 PM	T92985
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JTT**	
Conductivity	6100	10	10		µmhos/c	1	12/1/2022 3:06:53 PM	R92959
SM4500-H+B / 9040C: PH							Analyst: **JTT**	
pH	7.86			H	pH units	1	12/1/2022 3:06:53 PM	R92959
SM2320B: ALKALINITY							Analyst: **JTT**	
Bicarbonate (As CaCO3)	563.6	20.00	20.00		mg/L Ca	1	12/1/2022 3:06:53 PM	R92959

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2211E05-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 11/28/2022 10:10:00 AM
Received Date: 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **JTT**	
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/1/2022 3:06:53 PM	R29259
Total Alkalinity (as CaCO3)	563.6	20.00	20.00		mg/L Ca	1	12/1/2022 3:06:53 PM	R29259
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	1.007	0	0			1	11/30/2022 12:38:00 P	R29208
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	4420	200	200	*D	mg/L	1	12/2/2022 4:15:00 PM	71767
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	30	8.0	8.0	D	mg/L	1	12/2/2022 10:57:00 AM	71794

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 11/28/2022 9:50:00 AM
Lab ID: 2211E05-002 **Matrix:** AQUEOUS **Received Date:** 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **mb**	
Chlordane	ND	0.00050	0.030		mg/L	1	12/8/2022 9:20:50 AM	71840
Endrin	ND	0.000062	0.020		mg/L	1	12/8/2022 9:20:50 AM	71840
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	12/8/2022 9:20:50 AM	71840
Heptachlor	ND	0.000041	0.0080		mg/L	1	12/8/2022 9:20:50 AM	71840
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	12/8/2022 9:20:50 AM	71840
Methoxychlor	ND	0.000075	10		mg/L	1	12/8/2022 9:20:50 AM	71840
Toxaphene	ND	0.00050	0.50		mg/L	1	12/8/2022 9:20:50 AM	71840
Surr: Decachlorobiphenyl	85.9	0	40.9-111		%Rec	1	12/8/2022 9:20:50 AM	71840
Surr: Tetrachloro-m-xylene	66.8	0	15-107		%Rec	1	12/8/2022 9:20:50 AM	71840
EPA METHOD 300.0: ANIONS							Analyst: **NAI**	
Fluoride	1.2	0.23	0.50		mg/L	5	12/2/2022 12:09:46 AM	R92979
Chloride	59	1.2	2.5		mg/L	5	12/2/2022 12:09:46 AM	R92979
Bromide	ND	0.25	0.50		mg/L	5	12/2/2022 12:09:46 AM	R92979
Phosphorus, Orthophosphate (As P)	1.6	1.2	2.5	JH	mg/L	5	12/2/2022 12:09:46 AM	R92979
Sulfate	600	5.0	10	*	mg/L	20	12/2/2022 12:22:11 AM	R92979
Nitrate+Nitrite as N	0.87	0.11	1.0	J	mg/L	5	12/2/2022 1:11:49 AM	R92979
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.0010	0.00050	5.0	J	mg/L	1	12/5/2022 1:41:39 PM	71785
Lead	ND	0.00050	5.0		mg/L	1	12/6/2022 1:29:22 PM	71785
Selenium	0.0027	0.00050	1.0	J	mg/L	1	12/5/2022 1:41:39 PM	71785
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	0.00010	0.000091	0.020	J	mg/L	1	12/9/2022 5:30:43 PM	71977
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	180	0.29	5.0		mg/L	5	12/6/2022 5:13:49 PM	A93075
Magnesium	61	0.034	1.0		mg/L	1	12/6/2022 5:10:44 PM	A93075
Potassium	1.5	0.21	1.0		mg/L	1	12/6/2022 5:10:44 PM	A93075
Sodium	50	0.42	1.0		mg/L	1	12/6/2022 5:10:44 PM	A93075
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.017	0.0011	100	J	mg/L	1	12/6/2022 4:23:10 PM	71785
Cadmium	ND	0.0012	1.0		mg/L	1	12/6/2022 4:23:10 PM	71785
Chromium	ND	0.0017	5.0		mg/L	1	12/15/2022 12:59:19 P	71785
Silver	0.0048	0.0013	5.0	J	mg/L	1	12/6/2022 4:23:10 PM	71785
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.0050	200		mg/L	1	12/8/2022 5:01:13 PM	71838
3+4-Methylphenol	ND	0.0051	200		mg/L	1	12/8/2022 5:01:13 PM	71838
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	12/8/2022 5:01:13 PM	71838

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 11/28/2022 9:50:00 AM
Lab ID: 2211E05-002 **Matrix:** AQUEOUS **Received Date:** 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	12/8/2022 5:01:13 PM	71838
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	12/8/2022 5:01:13 PM	71838
Hexachloroethane	ND	0.014	3.0		mg/L	1	12/8/2022 5:01:13 PM	71838
Nitrobenzene	ND	0.0049	2.0		mg/L	1	12/8/2022 5:01:13 PM	71838
Pentachlorophenol	ND	0.027	100		mg/L	1	12/8/2022 5:01:13 PM	71838
Pyridine	ND	0.014	5.0		mg/L	1	12/8/2022 5:01:13 PM	71838
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	12/8/2022 5:01:13 PM	71838
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	12/8/2022 5:01:13 PM	71838
Cresols, Total	ND	0.027	200		mg/L	1	12/8/2022 5:01:13 PM	71838
Surr: 2-Fluorophenol	48.7	0	18.1-88.9		%Rec	1	12/8/2022 5:01:13 PM	71838
Surr: Phenol-d5	37.0	0	17-61.5		%Rec	1	12/8/2022 5:01:13 PM	71838
Surr: 2,4,6-Tribromophenol	68.3	0	29.8-104		%Rec	1	12/8/2022 5:01:13 PM	71838
Surr: Nitrobenzene-d5	57.7	0	22.2-111		%Rec	1	12/8/2022 5:01:13 PM	71838
Surr: 2-Fluorobiphenyl	49.9	0	24.6-96.3		%Rec	1	12/8/2022 5:01:13 PM	71838
Surr: 4-Terphenyl-d14	96.5	0	53.4-124		%Rec	1	12/8/2022 5:01:13 PM	71838
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	12/1/2022 2:53:00 PM	T92985
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	12/1/2022 2:53:00 PM	T92985
2-Butanone	ND	0.0020	200		mg/L	200	12/1/2022 2:53:00 PM	T92985
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	12/1/2022 2:53:00 PM	T92985
Chloroform	ND	0.00013	6.0		mg/L	200	12/1/2022 2:53:00 PM	T92985
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	12/1/2022 2:53:00 PM	T92985
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	12/1/2022 2:53:00 PM	T92985
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	12/1/2022 2:53:00 PM	T92985
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	12/1/2022 2:53:00 PM	T92985
Vinyl chloride	ND	0.00032	0.20		mg/L	200	12/1/2022 2:53:00 PM	T92985
Chlorobenzene	ND	0.00016	100		mg/L	200	12/1/2022 2:53:00 PM	T92985
Surr: 1,2-Dichloroethane-d4	93.2	0	70-130		%Rec	200	12/1/2022 2:53:00 PM	T92985
Surr: 4-Bromofluorobenzene	94.8	0	70-130		%Rec	200	12/1/2022 2:53:00 PM	T92985
Surr: Dibromofluoromethane	97.4	0	70-130		%Rec	200	12/1/2022 2:53:00 PM	T92985
Surr: Toluene-d8	92.8	0	70-130		%Rec	200	12/1/2022 2:53:00 PM	T92985
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JTT**	
Conductivity	1500	10	10		µmhos/c	1	12/1/2022 3:29:22 PM	R92959
SM4500-H+B / 9040C: PH							Analyst: **JTT**	
pH	8.26			H	pH units	1	12/1/2022 3:29:22 PM	R92959
SM2320B: ALKALINITY							Analyst: **JTT**	
Bicarbonate (As CaCO3)	155.4	20.00	20.00		mg/L Ca	1	12/1/2022 3:29:22 PM	R92959

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2211E05-002 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 11/28/2022 9:50:00 AM
Received Date: 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **JTT**	
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/1/2022 3:29:22 PM	R92959
Total Alkalinity (as CaCO3)	155.4	20.00	20.00		mg/L Ca	1	12/1/2022 3:29:22 PM	R92959
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9995	0	0			1	11/30/2022 12:38:00 P	R92908
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	1160	20.0	20.0	*	mg/L	1	12/2/2022 4:15:00 PM	71767
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	ND	4.0	4.0		mg/L	1	12/2/2022 10:57:00 AM	71794

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2211E05-003 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent- Filtere
Collection Date: 11/28/2022 10:10:00 AM
Received Date: 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **mb**	
Chlordane	ND	0.00050	0.030		mg/L	1	12/8/2022 9:34:00 AM	71840
Endrin	ND	0.000062	0.020		mg/L	1	12/8/2022 9:34:00 AM	71840
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	12/8/2022 9:34:00 AM	71840
Heptachlor	ND	0.000041	0.0080		mg/L	1	12/8/2022 9:34:00 AM	71840
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	12/8/2022 9:34:00 AM	71840
Methoxychlor	ND	0.000075	10		mg/L	1	12/8/2022 9:34:00 AM	71840
Toxaphene	ND	0.00050	0.50		mg/L	1	12/8/2022 9:34:00 AM	71840
Surr: Decachlorobiphenyl	55.3	0	40.9-111		%Rec	1	12/8/2022 9:34:00 AM	71840
Surr: Tetrachloro-m-xylene	27.8	0	15-107		%Rec	1	12/8/2022 9:34:00 AM	71840
EPA METHOD 8151: HERBICIDES TCLP							Analyst: **SB**	
2,4,5-TP (Silvex)	ND	0.010	1.0		mg/L	1	12/9/2022 6:56:55 AM	71824
2,4-D	ND	0.10	10		mg/L	1	12/9/2022 6:56:55 AM	71824
Surr: 2,4-Dichlorophenylacetic acid	146	0	70-130	S	%Rec	1	12/9/2022 6:56:55 AM	71824
EPA METHOD 7470A: TCLP MERCURY							Analyst: **VP**	
Mercury	ND	0.000092	0.020		mg/L	1	12/2/2022 1:28:12 PM	71802
EPA METHOD 6010B: TCLP METALS							Analyst: **JRR**	
Arsenic	ND	0.028	5.0		mg/L	1	12/9/2022 9:31:31 AM	71973
Barium	0.046	0.0045	100	J	mg/L	1	12/9/2022 9:31:31 AM	71973
Cadmium	ND	0.0067	1.0		mg/L	1	12/9/2022 9:31:31 AM	71973
Chromium	ND	0.0031	5.0		mg/L	1	12/9/2022 9:31:31 AM	71973
Lead	ND	0.0099	5.0		mg/L	1	12/9/2022 9:31:31 AM	71973
Selenium	ND	0.061	1.0		mg/L	1	12/9/2022 9:31:31 AM	71973
Silver	0.0076	0.0023	5.0	J	mg/L	1	12/9/2022 9:31:31 AM	71973
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.0050	200		mg/L	1	12/8/2022 5:42:32 PM	71838
3+4-Methylphenol	ND	0.0051	200		mg/L	1	12/8/2022 5:42:32 PM	71838
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	12/8/2022 5:42:32 PM	71838
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	12/8/2022 5:42:32 PM	71838
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	12/8/2022 5:42:32 PM	71838
Hexachloroethane	ND	0.014	3.0		mg/L	1	12/8/2022 5:42:32 PM	71838
Nitrobenzene	ND	0.0049	2.0		mg/L	1	12/8/2022 5:42:32 PM	71838
Pentachlorophenol	ND	0.027	100		mg/L	1	12/8/2022 5:42:32 PM	71838
Pyridine	ND	0.014	5.0		mg/L	1	12/8/2022 5:42:32 PM	71838
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	12/8/2022 5:42:32 PM	71838
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	12/8/2022 5:42:32 PM	71838
Cresols, Total	ND	0.027	200		mg/L	1	12/8/2022 5:42:32 PM	71838
Surr: 2-Fluorophenol	56.3	0	18.1-88.9		%Rec	1	12/8/2022 5:42:32 PM	71838

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent- Filtere
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 11/28/2022 10:10:00 AM
Lab ID: 2211E05-003 **Matrix:** AQUEOUS **Received Date:** 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
Surr: Phenol-d5	44.0	0	17-61.5		%Rec	1	12/8/2022 5:42:32 PM	71838
Surr: 2,4,6-Tribromophenol	80.0	0	29.8-104		%Rec	1	12/8/2022 5:42:32 PM	71838
Surr: Nitrobenzene-d5	64.7	0	22.2-111		%Rec	1	12/8/2022 5:42:32 PM	71838
Surr: 2-Fluorobiphenyl	54.8	0	24.6-96.3		%Rec	1	12/8/2022 5:42:32 PM	71838
Surr: 4-Terphenyl-d14	92.5	0	53.4-124		%Rec	1	12/8/2022 5:42:32 PM	71838
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	12/1/2022 1:44:00 PM	T92985
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	12/1/2022 1:44:00 PM	T92985
2-Butanone	ND	0.0020	200		mg/L	200	12/1/2022 1:44:00 PM	T92985
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	12/1/2022 1:44:00 PM	T92985
Chloroform	ND	0.00013	6.0		mg/L	200	12/1/2022 1:44:00 PM	T92985
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	12/1/2022 1:44:00 PM	T92985
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	12/1/2022 1:44:00 PM	T92985
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	12/1/2022 1:44:00 PM	T92985
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	12/1/2022 1:44:00 PM	T92985
Vinyl chloride	ND	0.00032	0.20		mg/L	200	12/1/2022 1:44:00 PM	T92985
Chlorobenzene	ND	0.00016	100		mg/L	200	12/1/2022 1:44:00 PM	T92985
Surr: 1,2-Dichloroethane-d4	92.3	0	70-130		%Rec	200	12/1/2022 1:44:00 PM	T92985
Surr: 4-Bromofluorobenzene	95.8	0	70-130		%Rec	200	12/1/2022 1:44:00 PM	T92985
Surr: Dibromofluoromethane	93.3	0	70-130		%Rec	200	12/1/2022 1:44:00 PM	T92985
Surr: Toluene-d8	94.0	0	70-130		%Rec	200	12/1/2022 1:44:00 PM	T92985

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2211E05-004 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW- Filtered
Collection Date: 11/28/2022 9:50:00 AM
Received Date: 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **mb**	
Chlordane	ND	0.00050	0.030		mg/L	1	12/8/2022 9:47:08 AM	71840
Endrin	ND	0.000062	0.020		mg/L	1	12/8/2022 9:47:08 AM	71840
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	12/8/2022 9:47:08 AM	71840
Heptachlor	ND	0.000041	0.0080		mg/L	1	12/8/2022 9:47:08 AM	71840
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	12/8/2022 9:47:08 AM	71840
Methoxychlor	ND	0.000075	10		mg/L	1	12/8/2022 9:47:08 AM	71840
Toxaphene	ND	0.00050	0.50		mg/L	1	12/8/2022 9:47:08 AM	71840
Surr: Decachlorobiphenyl	85.8	0	40.9-111		%Rec	1	12/8/2022 9:47:08 AM	71840
Surr: Tetrachloro-m-xylene	69.4	0	15-107		%Rec	1	12/8/2022 9:47:08 AM	71840
EPA METHOD 8151: HERBICIDES TCLP							Analyst: **SB**	
2,4,5-TP (Silvex)	ND	0.010	1.0		mg/L	1	12/9/2022 7:48:46 AM	71824
2,4-D	ND	0.10	10		mg/L	1	12/9/2022 7:48:46 AM	71824
Surr: 2,4-Dichlorophenylacetic acid	96.4	0	70-130		%Rec	1	12/9/2022 7:48:46 AM	71824
EPA METHOD 7470A: TCLP MERCURY							Analyst: **VP**	
Mercury	ND	0.000092	0.020		mg/L	1	12/2/2022 1:30:22 PM	71802
EPA METHOD 6010B: TCLP METALS							Analyst: **JRR**	
Arsenic	ND	0.028	5.0		mg/L	1	12/9/2022 9:32:48 AM	71973
Barium	0.022	0.0045	100	J	mg/L	1	12/9/2022 9:32:48 AM	71973
Cadmium	ND	0.0067	1.0		mg/L	1	12/9/2022 9:32:48 AM	71973
Chromium	ND	0.0031	5.0		mg/L	1	12/9/2022 9:32:48 AM	71973
Lead	ND	0.0099	5.0		mg/L	1	12/9/2022 9:32:48 AM	71973
Selenium	ND	0.061	1.0		mg/L	1	12/9/2022 9:32:48 AM	71973
Silver	0.0037	0.0023	5.0	J	mg/L	1	12/9/2022 9:32:48 AM	71973
EPA METHOD 8270C TCLP							Analyst: **JME**	
2-Methylphenol	ND	0.0050	200		mg/L	1	12/8/2022 6:24:13 PM	71838
3+4-Methylphenol	ND	0.0051	200		mg/L	1	12/8/2022 6:24:13 PM	71838
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	12/8/2022 6:24:13 PM	71838
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	12/8/2022 6:24:13 PM	71838
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	12/8/2022 6:24:13 PM	71838
Hexachloroethane	ND	0.014	3.0		mg/L	1	12/8/2022 6:24:13 PM	71838
Nitrobenzene	ND	0.0049	2.0		mg/L	1	12/8/2022 6:24:13 PM	71838
Pentachlorophenol	ND	0.027	100		mg/L	1	12/8/2022 6:24:13 PM	71838
Pyridine	ND	0.014	5.0		mg/L	1	12/8/2022 6:24:13 PM	71838
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	12/8/2022 6:24:13 PM	71838
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	12/8/2022 6:24:13 PM	71838
Cresols, Total	ND	0.027	200		mg/L	1	12/8/2022 6:24:13 PM	71838
Surr: 2-Fluorophenol	59.0	0	18.1-88.9		%Rec	1	12/8/2022 6:24:13 PM	71838

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2211E05**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2211E05-004 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW- Filtered
Collection Date: 11/28/2022 9:50:00 AM
Received Date: 11/29/2022 7:40:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **JME**	
Surr: Phenol-d5	44.6	0	17-61.5		%Rec	1	12/8/2022 6:24:13 PM	71838
Surr: 2,4,6-Tribromophenol	78.9	0	29.8-104		%Rec	1	12/8/2022 6:24:13 PM	71838
Surr: Nitrobenzene-d5	74.1	0	22.2-111		%Rec	1	12/8/2022 6:24:13 PM	71838
Surr: 2-Fluorobiphenyl	62.3	0	24.6-96.3		%Rec	1	12/8/2022 6:24:13 PM	71838
Surr: 4-Terphenyl-d14	96.4	0	53.4-124		%Rec	1	12/8/2022 6:24:13 PM	71838
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	12/1/2022 2:07:00 PM	T92985
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	12/1/2022 2:07:00 PM	T92985
2-Butanone	ND	0.0020	200		mg/L	200	12/1/2022 2:07:00 PM	T92985
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	12/1/2022 2:07:00 PM	T92985
Chloroform	ND	0.00013	6.0		mg/L	200	12/1/2022 2:07:00 PM	T92985
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	12/1/2022 2:07:00 PM	T92985
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	12/1/2022 2:07:00 PM	T92985
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	12/1/2022 2:07:00 PM	T92985
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	12/1/2022 2:07:00 PM	T92985
Vinyl chloride	ND	0.00032	0.20		mg/L	200	12/1/2022 2:07:00 PM	T92985
Chlorobenzene	ND	0.00016	100		mg/L	200	12/1/2022 2:07:00 PM	T92985
Surr: 1,2-Dichloroethane-d4	93.3	0	70-130		%Rec	200	12/1/2022 2:07:00 PM	T92985
Surr: 4-Bromofluorobenzene	95.7	0	70-130		%Rec	200	12/1/2022 2:07:00 PM	T92985
Surr: Dibromofluoromethane	95.3	0	70-130		%Rec	200	12/1/2022 2:07:00 PM	T92985
Surr: Toluene-d8	93.9	0	70-130		%Rec	200	12/1/2022 2:07:00 PM	T92985

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	VDW-1,2,3 &4 Effluen 2211E05-001		CTB to City POTW 2211E05-002									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	690	30.01	50	2.17								
Potassium	160	4.09	1.5	0.04								
Calcium	380	18.96	180	8.98								
Magnesium	130	10.70	61	5.02								
Total Cations		63.77		16.22								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2300	47.89	600	12.49								
Chloride	340	9.59	59	1.66								
Bicarbonate (CaCO3)	563.6	11.26	155.4	3.11								
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)												
Nitrate (N)	0.93	0.07	0.87	0.06	-							
Fluoride	47	2.47	1.2	0.06								
Bromide												
Total Anions		71.28		17.39								
Elect. Cond. (µMhos/cm)	6100		1500									
CATION/ANION RATIO		0.89		0.93								
% Difference		6		3								
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	4420		1160									
TDS (calculated)	4389		1050									
Ratio meas TDS:calc TDS		1.0		1.1								
Ratio Meas. TDS:EC		0.72		0.77								
Ratio Calc. TDS:EC		0.72		0.70								
Ratio of anion sum:EC		1.2		1.2								
Ratio of cation sum:EC		1.0		1.1								

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

December 13, 2022

Hall Environmental Analysis Laboratory

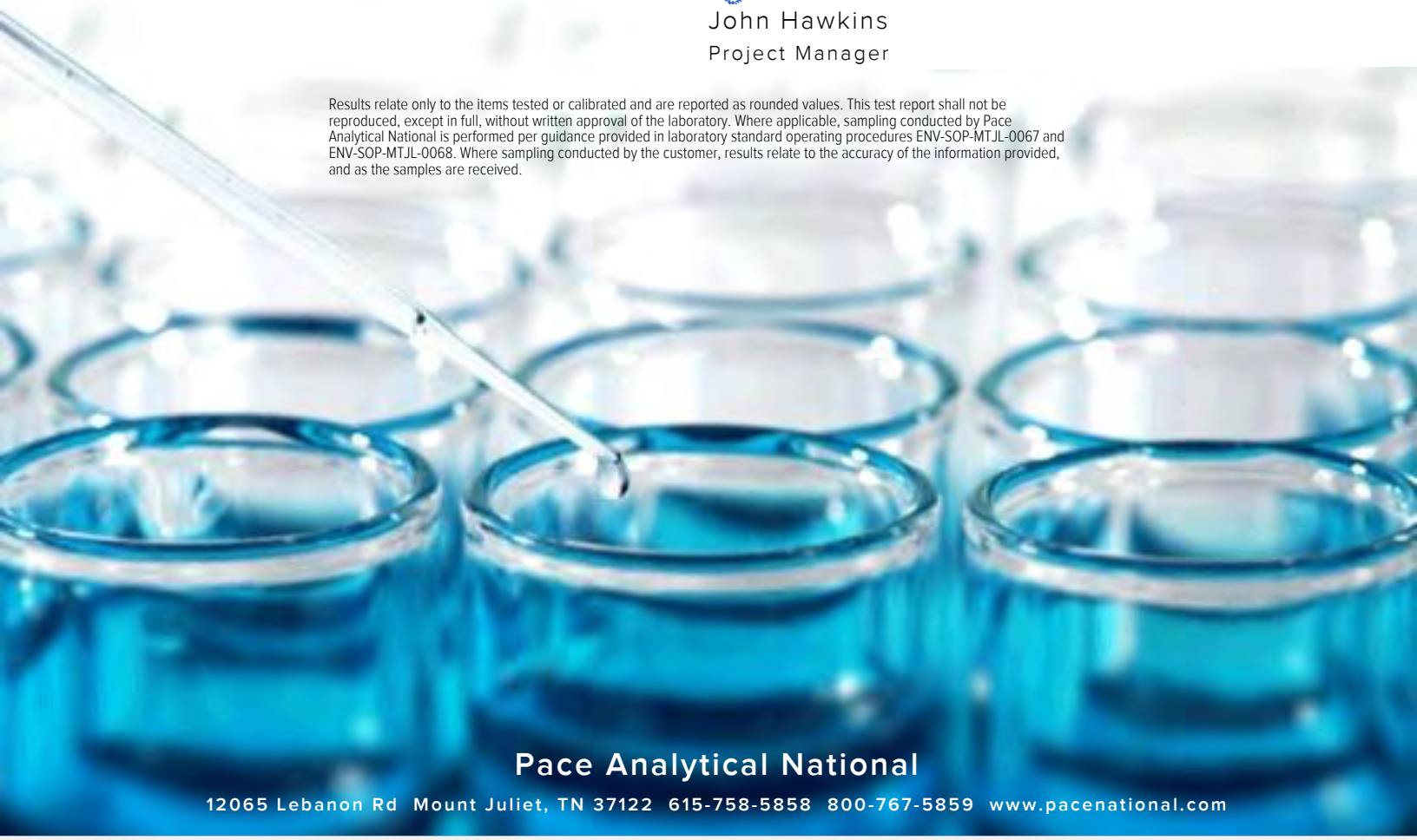
Sample Delivery Group:	L1562692
Samples Received:	12/01/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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211E05-001F WDW-1,2,3 & 4 EFFLUENT L1562692-01 Waste

			Collected by	Collected date/time	Received date/time	
				11/28/22 10:10	12/01/22 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1967664	1	12/01/22 13:49	12/01/22 13:49	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1970905	1	12/08/22 18:27	12/09/22 14:38	CCW	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1970905	1	12/08/22 18:27	12/10/22 19:35	HMH	Mt. Juliet, TN

211E05-001G WDW-1,2,3 & 4 EFFLUENT L1562692-02 WW

			Collected by	Collected date/time	Received date/time	
				11/28/22 10:10	12/01/22 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1968146	1	12/08/22 08:09	12/08/22 08:09	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1967953	1	12/04/22 17:36	12/06/22 12:33	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1969451	1	12/05/22 11:59	12/05/22 11:59	JAR	Mt. Juliet, TN
Wet Chemistry by Method 4500H+ B-2011	WG1967837	1	12/02/22 10:30	12/02/22 10:30	KAD	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1969665	1	12/06/22 01:00	12/06/22 01:00	WOS	Mt. Juliet, TN

211E05-002F CTB TO CITY POTW L1562692-03 Waste

			Collected by	Collected date/time	Received date/time	
				11/28/22 09:50	12/01/22 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1967664	1	12/01/22 13:49	12/01/22 13:49	JWS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1970905	1	12/08/22 18:27	12/09/22 15:11	CCW	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1970905	1	12/08/22 18:27	12/10/22 19:46	HMH	Mt. Juliet, TN

211E05-002G CTB TO CITY POTW L1562692-04 WW

			Collected by	Collected date/time	Received date/time	
				11/28/22 09:50	12/01/22 09:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1968146	1	12/08/22 08:09	12/08/22 08:09	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1967953	1	12/04/22 17:36	12/06/22 12:36	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1969451	1	12/05/22 11:59	12/05/22 11:59	JAR	Mt. Juliet, TN
Wet Chemistry by Method 4500H+ B-2011	WG1967837	1	12/02/22 10:30	12/02/22 10:30	KAD	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1969665	1	12/06/22 01:00	12/06/22 01:00	WOS	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1562692-02	211E05-001G WDW-1,2,3 & 4 EFFLUENT	4500 S2 D-2011
L1562692-04	211E05-002G CTB TO CITY POTW	4500 S2 D-2011

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		12/1/2022 1:49:16 PM	WG1967664
Fluid	1		12/1/2022 1:49:16 PM	WG1967664
Initial pH	N/A		12/1/2022 1:49:16 PM	WG1967664
Final pH	N/A		12/1/2022 1:49:16 PM	WG1967664

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	12/09/2022 14:38	WG1970905
2,4-D	0.00772		0.00200	10	1	12/10/2022 19:35	WG1970905
(S) 2,4-Dichlorophenyl Acetic Acid	*75.2*		*14.0-158*			*12/09/2022 14:38*	WG1970905
(S) 2,4-Dichlorophenyl Acetic Acid	*79.2*		*14.0-158*			*12/10/2022 19:35*	WG1970905

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	165	T8	1	12/08/2022 08:09	WG1968146

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	0.0120		0.00500	1	12/06/2022 12:33	WG1967953

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	12/05/2022 11:59	WG1969451

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	7.66	T8	1	12/02/2022 10:30	WG1967837

Sample Narrative:

L1562692-02 WG1967837: 7.66 at 19.8C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	12/06/2022 01:00	WG1969665

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		12/1/2022 1:49:16 PM	WG1967664
Fluid	1		12/1/2022 1:49:16 PM	WG1967664
Initial pH	N/A		12/1/2022 1:49:16 PM	WG1967664
Final pH	N/A		12/1/2022 1:49:16 PM	WG1967664

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	12/09/2022 15:11	WG1970905
2,4-D	0.00581		0.00200	10	1	12/10/2022 19:46	WG1970905
(S) 2,4-Dichlorophenyl Acetic Acid	*67.4*		*14.0-158*			*12/09/2022 15:11*	WG1970905
(S) 2,4-Dichlorophenyl Acetic Acid	*75.4*		*14.0-158*			*12/10/2022 19:46*	WG1970905

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	194	T8	1	12/08/2022 08:09	WG1968146

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	0.00544		0.00500	1	12/06/2022 12:36	WG1967953

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	12/05/2022 11:59	WG1969451

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	8.33	T8	1	12/02/2022 10:30	WG1967837

Sample Narrative:

L1562692-04 WG1967837: 8.33 at 19.5C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	12/06/2022 01:00	WG1969665

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

L1562692-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1562692-02 12/08/22 08:09 • (DUP) R3869467-3 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	165	165	1	0.600		20

L1562692-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1562692-04 12/08/22 08:09 • (DUP) R3869467-4 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	194	194	1	0.500		20

L1564442-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1564442-01 12/08/22 08:09 • (DUP) R3869467-5 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	630	637	1	7.50		20

L1564552-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1564552-01 12/08/22 08:09 • (DUP) R3869467-6 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	283	276	1	7.00		20

L1564552-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1564552-02 12/08/22 08:09 • (DUP) R3869467-7 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	307	311	1	3.50		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3869467-1 12/08/22 08:09 • (LCSD) R3869467-2 12/08/22 08:09

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	98.0	104	106	106	108	90.0-110			1.50	20

Method Blank (MB)

(MB) R3868625-1 12/06/22 11:59

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1561793-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1561793-03 12/06/22 12:08 • (DUP) R3868625-5 12/06/22 12:09

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1561815-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1561815-02 12/06/22 12:15 • (DUP) R3868625-8 12/06/22 12:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.142	0.151	1	6.14		20

Laboratory Control Sample (LCS)

(LCS) R3868625-2 12/06/22 12:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0966	96.6	87.1-120	

L1561793-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1561793-02 12/06/22 12:04 • (MS) R3868625-3 12/06/22 12:05 • (MSD) R3868625-4 12/06/22 12:06

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	0.0108	0.0935	0.0924	82.7	81.6	1	90.0-110	J6	J6	1.18	20

Sample Narrative:

MS: Matrix spike failure due to matrix.

MSD: Matrix spike failure due to matrix.

L1561801-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1561801-02 12/06/22 12:12 • (MS) R3868625-6 12/06/22 12:13 • (MSD) R3868625-7 12/06/22 12:14

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0923	0.0911	89.1	87.9	1	90.0-110	J6	J6	1.31	20

Sample Narrative:

MS: Matrix spike failure due to matrix.

MSD: Matrix spike failure due to matrix.

Method Blank (MB)

(MB) R3868196-1 12/05/22 11:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3868196-2 12/05/22 11:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.533	107	85.0-115	

Laboratory Control Sample (LCS)

(LCS) R3867408-1 12/02/22 10:30

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 20.6C

L1563063-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1563063-05 12/06/22 01:00 • (DUP) R3868849-3 12/06/22 01:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
Flashpoint	81.9	79.9	1	2.47		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3868849-1 12/06/22 01:00 • (LCSD) R3868849-2 12/06/22 01:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	128	130	102	103	96.0-104			1.55	10

Method Blank (MB)

(MB) R3870389-1 12/09/22 14:15

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*68.2*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3870389-2 12/09/22 14:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0380	76.0	50.0-125	
2,4-D	0.0500	0.0569	114	50.0-120	E
(S) 2,4-Dichlorophenyl Acetic Acid			*76.2*	*14.0-158*	

L1562692-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1562692-01 12/09/22 14:38 • (MS) R3870389-3 12/09/22 14:49 • (MSD) R3870389-4 12/09/22 15:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0451	0.0426	90.2	85.2	1	50.0-125			5.70	20
2,4-D	0.0500	0.00768	0.0605	0.0545	106	93.6	1	50.0-120	E	E	10.4	20
(S) 2,4-Dichlorophenyl Acetic Acid					*89.4*	*82.6*		*14.0-158*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS L1562692
1	2211E05-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	11/28/2022 10:10:00 AM	1	8151TCLP -01
2	2211E05-001G	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	11/28/2022 10:10:00 AM	3	RCI, ORP -02
3	2211E05-002F	CTB to City POTW	1LAMGU	Aqueous	11/28/2022 9:50:00 AM	1	8151TCLP -03
4	2211E05-002G	CTB to City POTW	500HDPE	Aqueous	11/28/2022 9:50:00 AM	3	RCI, ORP -04

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N	GBAG	
Sufficient volume sent:	Y N	3.3 FO = 3.3	
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

D/C

Relinquished By:	Date: 11/30/2022	Time: 8:40 AM	Received By:	Date: 12-1-22	Time: 0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☒ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R92979**	RunNo: **92979**
Prep Date:	Analysis Date: **12/1/2022**	SeqNo: **3347881** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R92979**	RunNo: **92979**
Prep Date:	Analysis Date: **12/1/2022**	SeqNo: **3347882** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	101	90	110			
Chloride	4.7	0.50	5.000	0	94.0	90	110			
Bromide	2.4	0.10	2.500	0	97.4	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.7	90	110			
Sulfate	9.6	0.50	10.00	0	96.1	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	99.8	90	110			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93187**	RunNo: **93187**
Prep Date:	Analysis Date: **12/9/2022**	SeqNo: **3357664** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R93187**	RunNo: **93187**
Prep Date:	Analysis Date: **12/9/2022**	SeqNo: **3357665** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.6	0.50	10.00	0	95.8	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71785** SampType: **MBLK** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW** Batch ID: **71785** RunNo: **93013**
Prep Date: **11/30/2022** Analysis Date: **12/5/2022** SeqNo: **3349809** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0010								

Sample ID: **MSLLLCS-71785** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **71785** RunNo: **93013**
Prep Date: **11/30/2022** Analysis Date: **12/5/2022** SeqNo: **3349810** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00091	0.0010	0.001000	0	91.1	70	130			J

Sample ID: **MSLCS-71785** SampType: **LCS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW** Batch ID: **71785** RunNo: **93013**
Prep Date: **11/30/2022** Analysis Date: **12/5/2022** SeqNo: **3349811** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.048	0.0010	0.05000	0	96.8	80	120			

Sample ID: **MSLCSD-71785** SampType: **LCSD** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSS02** Batch ID: **71785** RunNo: **93013**
Prep Date: **11/30/2022** Analysis Date: **12/5/2022** SeqNo: **3349812** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.049	0.0010	0.05000	0	97.2	80	120	0.474	20	

Sample ID: **MB-71785** SampType: **MBLK** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW** Batch ID: **71785** RunNo: **93051**
Prep Date: **11/30/2022** Analysis Date: **12/6/2022** SeqNo: **3351252** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-71785** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **71785** RunNo: **93051**
Prep Date: **11/30/2022** Analysis Date: **12/6/2022** SeqNo: **3351253** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.00060	0.0010	0.001000	0	60.5	70	130			JS

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MSLCS-71785**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **71785**	RunNo: **93051**
Prep Date: **11/30/2022**	Analysis Date: **12/6/2022**	SeqNo: **3351254** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.047	0.0010	0.05000	0	93.4	80	120			

Sample ID: **MSLCSD-71785**	SampType: **LCSD**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSS02**	Batch ID: **71785**	RunNo: **93051**
Prep Date: **11/30/2022**	Analysis Date: **12/6/2022**	SeqNo: **3351255** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.050	0.0010	0.05000	0	99.1	80	120	5.92	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71840** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **71840** RunNo: **93116**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3354163** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		94.4	40.9	111			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		63.5	15	107			

Sample ID: **LCS-71840** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **71840** RunNo: **93116**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3354164** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00052	0.00010	0.0005000	0	103	56.3	126			
gamma-BHC (Lindane)	0.00048	0.00010	0.0005000	0	95.6	45.8	103			
Heptachlor	0.00023	0.00010	0.0005000	0	45.2	33.7	104			
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	94.0	50.1	116			
Methoxychlor	0.00055	0.00010	0.0005000	0	111	15	203			
Surr: Decachlorobiphenyl	0.0022		0.002500		87.9	40.9	111			
Surr: Tetrachloro-m-xylene	0.0010		0.002500		41.7	15	107			

Sample ID: **LCSD-71840** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **71840** RunNo: **93116**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3354165** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00050	0.020	0.0005000	0	99.5	56.3	126	3.79	20	J
gamma-BHC (Lindane)	0.00044	0.40	0.0005000	0	87.1	45.8	103	9.32	20	J
Heptachlor	0.00020	0.0080	0.0005000	0	39.8	33.7	104	12.8	20	J
Heptachlor epoxide	0.00044	0.0080	0.0005000	0	87.7	50.1	116	6.89	20	J
Methoxychlor	0.00055	10	0.0005000	0	110	15	203	1.14	20	J
Surr: Decachlorobiphenyl	0.0023		0.002500		91.3	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		55.1	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71840** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **71840** RunNo: **93116**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3354166** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		96.1	40.9	111			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.0	15	107			

Sample ID: **LCS-71840** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **71840** RunNo: **93116**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3354167** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00050	0.00010	0.0005000	0	101	56.3	126			
gamma-BHC (Lindane)	0.00049	0.00010	0.0005000	0	97.7	45.8	103			
Heptachlor	0.00022	0.00010	0.0005000	0	44.8	33.7	104			
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	93.7	50.1	116			
Methoxychlor	0.00054	0.00010	0.0005000	0	107	15	203			
Surr: Decachlorobiphenyl	0.0023		0.002500		90.2	40.9	111			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		42.5	15	107			

Sample ID: **LCSD-71840** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **71840** RunNo: **93116**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3354168** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00049	0.00010	0.0005000	0	97.3	56.3	126	3.57	20	
gamma-BHC (Lindane)	0.00044	0.00010	0.0005000	0	87.8	45.8	103	10.8	20	
Heptachlor	0.00020	0.00010	0.0005000	0	39.5	33.7	104	12.6	20	
Heptachlor epoxide	0.00044	0.00010	0.0005000	0	87.7	50.1	116	6.59	20	
Methoxychlor	0.00054	0.00010	0.0005000	0	107	15	203	0.128	20	
Surr: Decachlorobiphenyl	0.0023		0.002500		93.6	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0013		0.002500		53.9	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71824**	SampType: **MBLK**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **PBW**	Batch ID: **71824**	RunNo: **93158**							
Prep Date: **12/5/2022**	Analysis Date: **12/9/2022**	SeqNo: **3356399**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	ND	1.0								
2,4-D	ND	10								
Surr: 2,4-Dichlorophenylacetic aci	0.023		0.02500		91.1	70	130			

Sample ID: **LCS-71824**	SampType: **LCS**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **LCSW**	Batch ID: **71824**	RunNo: **93158**							
Prep Date: **12/5/2022**	Analysis Date: **12/9/2022**	SeqNo: **3356402**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.010	0.00010	0.01000	0	101	70	130			
2,4-D	0.011	0.00010	0.01000	0	111	70	130			
Surr: 2,4-Dichlorophenylacetic aci	0.024		0.02500		94.3	70	130			

Sample ID: **LCSD-71824**	SampType: **LCSD**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **LCSS02**	Batch ID: **71824**	RunNo: **93158**							
Prep Date: **12/5/2022**	Analysis Date: **12/9/2022**	SeqNo: **3356403**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.0094	0.00010	0.01000	0	93.9	70	130	7.37	20	
2,4-D	0.011	0.00010	0.01000	0	107	70	130	3.94	20	
Surr: 2,4-Dichlorophenylacetic aci	0.023		0.02500		91.4	70	130	0	20	

Sample ID: **MB-71824**	SampType: **MBLK**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **PBW**	Batch ID: **71824**	RunNo: **93158**							
Prep Date: **12/5/2022**	Analysis Date: **12/9/2022**	SeqNo: **3356589**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	ND	1.0								
2,4-D	ND	10								
Surr: 2,4-Dichlorophenylacetic aci	0.023		0.02500		92.3	70	130			

Sample ID: **LCS-71824**	SampType: **LCS**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **LCSW**	Batch ID: **71824**	RunNo: **93158**							
Prep Date: **12/5/2022**	Analysis Date: **12/9/2022**	SeqNo: **3356590**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.010	0.00010	0.01000	0	103	70	130			
2,4-D	0.0090	0.00010	0.01000	0	89.7	70	130			
Surr: 2,4-Dichlorophenylacetic aci	0.024		0.02500		95.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCSD-71824** SampType: **LCSD** TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **LCSS02** Batch ID: **71824** RunNo: **93158**
Prep Date: **12/5/2022** Analysis Date: **12/9/2022** SeqNo: **3356591** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.0095	0.00010	0.01000	0	94.9	70	130	8.36	20	
2,4-D	0.0084	0.00010	0.01000	0	84.4	70	130	6.00	20	
Surr: 2,4-Dichlorophenylacetic aci	0.023		0.02500		93.0	70	130	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T92985** RunNo: **92985**
Prep Date: Analysis Date: **12/1/2022** SeqNo: **3349863** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.018	0.50	0.02000	0	89.2	70	130			J
1,1-Dichloroethene	0.018	0.70	0.02000	0	90.1	70	130			J
Trichloroethene (TCE)	0.017	0.50	0.02000	0	85.5	70	130			J
Chlorobenzene	0.020	100	0.02000	0	98.6	70	130			J
Surr: 1,2-Dichloroethane-d4	0.0091		0.01000		90.6	70	130			
Surr: 4-Bromofluorobenzene	0.0099		0.01000		99.0	70	130			
Surr: Dibromofluoromethane	0.0091		0.01000		91.5	70	130			
Surr: Toluene-d8	0.0094		0.01000		94.0	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T92985** RunNo: **92985**
Prep Date: Analysis Date: **12/1/2022** SeqNo: **3349864** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.0092		0.01000		92.2	70	130			
Surr: 4-Bromofluorobenzene	0.0096		0.01000		95.5	70	130			
Surr: Dibromofluoromethane	0.0094		0.01000		94.3	70	130			
Surr: Toluene-d8	0.0094		0.01000		93.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71838** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **71838** RunNo: **93138**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3355095** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.11		0.2000		57.0	18.1	88.9			
Surr: Phenol-d5	0.085		0.2000		42.7	17	61.5			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		72.3	29.8	104			
Surr: Nitrobenzene-d5	0.068		0.1000		68.4	22.2	111			
Surr: 2-Fluorobiphenyl	0.058		0.1000		58.4	24.6	96.3			
Surr: 4-Terphenyl-d14	0.11		0.1000		107	53.4	124			

Sample ID: **LCS-71838** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **71838** RunNo: **93138**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3355096** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.053	0.00010	0.1000	0	52.7	19	106			
3+4-Methylphenol	0.11	0.00010	0.2000	0	54.6	16.3	112			
2,4-Dinitrotoluene	0.046	0.00010	0.1000	0	45.6	15	99.6			
Hexachlorobenzene	0.069	0.00010	0.1000	0	68.8	41.8	111			
Hexachlorobutadiene	0.027	0.00010	0.1000	0	26.8	15	91.5			
Hexachloroethane	0.030	0.00010	0.1000	0	29.6	15	87.5			
Nitrobenzene	0.050	0.00010	0.1000	0	50.1	19.3	114			
Pentachlorophenol	0.065	0.00010	0.1000	0	65.1	29	103			
Pyridine	0.031	0.00010	0.1000	0	30.8	15	92.6			
2,4,5-Trichlorophenol	0.057	0.00010	0.1000	0	57.4	25.2	114			
2,4,6-Trichlorophenol	0.058	0.00010	0.1000	0	57.6	25.7	112			
Cresols, Total	0.16	0.00010	0.3000	0	54.0	15	145			
Surr: 2-Fluorophenol	0.086		0.2000		42.9	18.1	88.9			
Surr: Phenol-d5	0.065		0.2000		32.5	17	61.5			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.5	29.8	104			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-71838** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **71838** RunNo: **93138**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3355096** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.057		0.1000		57.2	22.2	111			
Surr: 2-Fluorobiphenyl	0.050		0.1000		50.5	24.6	96.3			
Surr: 4-Terphenyl-d14	0.091		0.1000		90.8	53.4	124			

Sample ID: **LCSD-71838** SampType: **LCSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSS02** Batch ID: **71838** RunNo: **93138**
Prep Date: **12/5/2022** Analysis Date: **12/8/2022** SeqNo: **3355097** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.058	0.00010	0.1000	0	58.2	19	106	9.78	20	
3+4-Methylphenol	0.12	0.00010	0.2000	0	59.9	16.3	112	9.21	20	
2,4-Dinitrotoluene	0.050	0.00010	0.1000	0	49.8	15	99.6	8.63	20	
Hexachlorobenzene	0.074	0.00010	0.1000	0	73.6	41.8	111	6.73	20	
Hexachlorobutadiene	0.034	0.00010	0.1000	0	33.7	15	91.5	22.7	20	R
Hexachloroethane	0.035	0.00010	0.1000	0	35.3	15	87.5	17.6	20	
Nitrobenzene	0.054	0.00010	0.1000	0	53.9	19.3	114	7.36	20	
Pentachlorophenol	0.072	0.00010	0.1000	0	72.3	29	103	10.5	20	
Pyridine	0.035	0.00010	0.1000	0	34.9	15	92.6	12.2	20	
2,4,5-Trichlorophenol	0.067	0.00010	0.1000	0	66.8	25.2	114	15.1	20	
2,4,6-Trichlorophenol	0.065	0.00010	0.1000	0	65.0	25.7	112	12.1	20	
Cresols, Total	0.18	0.00010	0.3000	0	59.3	15	145	9.39	20	
Surr: 2-Fluorophenol	0.091		0.2000		45.6	18.1	88.9	0	20	
Surr: Phenol-d5	0.068		0.2000		34.0	17	61.5	0	20	
Surr: 2,4,6-Tribromophenol	0.15		0.2000		77.0	29.8	104	0	20	
Surr: Nitrobenzene-d5	0.060		0.1000		60.3	22.2	111	0	20	
Surr: 2-Fluorobiphenyl	0.055		0.1000		55.0	24.6	96.3	0	20	
Surr: 4-Terphenyl-d14	0.10		0.1000		103	53.4	124	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 99.4uS eC**	SampType: **LCS**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R92959**	RunNo: **92959**
Prep Date:	Analysis Date: **12/1/2022**	SeqNo: **3347152** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.40	0	101	85	115			

Sample ID: **lcs-2 99.4uS eC**	SampType: **LCS**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R92959**	RunNo: **92959**
Prep Date:	Analysis Date: **12/1/2022**	SeqNo: **3347178** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.40	0	101	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**

20-Jan-23

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71977**	SampType: **MBLK**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW**	Batch ID: **71977**	RunNo: **93189**
Prep Date: **12/9/2022**	Analysis Date: **12/9/2022**	SeqNo: **3357856** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-71977**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC**	Batch ID: **71977**	RunNo: **93189**
Prep Date: **12/9/2022**	Analysis Date: **12/9/2022**	SeqNo: **3357857** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00020	0.00020	0.0001500	0	135	50	150			

Sample ID: **LCS-71977**	SampType: **LCS**	TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW**	Batch ID: **71977**	RunNo: **93189**
Prep Date: **12/9/2022**	Analysis Date: **12/9/2022**	SeqNo: **3357858** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	0	98.4	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71802**	SampType: **MBLK**	TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **PBW**	Batch ID: **71802**	RunNo: **92992**
Prep Date: **12/1/2022**	Analysis Date: **12/2/2022**	SeqNo: **3348327** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID: **LCSLL-71802**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **BatchQC**	Batch ID: **71802**	RunNo: **92992**
Prep Date: **12/1/2022**	Analysis Date: **12/2/2022**	SeqNo: **3348328** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00020	0.020	0.0001500	0	133	50	150			J

Sample ID: **LCS-71802**	SampType: **LCS**	TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **LCSW**	Batch ID: **71802**	RunNo: **92992**
Prep Date: **12/1/2022**	Analysis Date: **12/2/2022**	SeqNo: **3348329** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.020	0.005000	0	104	85	115			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A93075**	RunNo: **93075**
Prep Date:	Analysis Date: **12/6/2022**	SeqNo: **3352138** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A93075**	RunNo: **93075**
Prep Date:	Analysis Date: **12/6/2022**	SeqNo: **3352140** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	47	1.0	50.00	0	94.0	80	120			
Magnesium	52	1.0	50.00	0	104	80	120			
Potassium	53	1.0	50.00	0	106	80	120			
Sodium	54	1.0	50.00	0	109	80	120			

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A93168**	RunNo: **93168**
Prep Date:	Analysis Date: **12/7/2022**	SeqNo: **3357058** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	1.1	1.0								

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A93168**	RunNo: **93168**
Prep Date:	Analysis Date: **12/7/2022**	SeqNo: **3357063** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	50	1.0	50.00	0	101	80	120			B

Sample ID: **LCSD-A**	SampType: **LCSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSS02**	Batch ID: **A93168**	RunNo: **93168**
Prep Date:	Analysis Date: **12/7/2022**	SeqNo: **3357064** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	52	1.0	50.00	0	103	80	120	2.33	20	B

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71973**	SampType: **MBLK**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **71973**	RunNo: **93150**
Prep Date: **12/8/2022**	Analysis Date: **12/9/2022**	SeqNo: **3355925** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID: **LCS-71973**	SampType: **LCS**	TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **71973**	RunNo: **93150**
Prep Date: **12/8/2022**	Analysis Date: **12/9/2022**	SeqNo: **3355927** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	5.0	0.5000	0	103	80	120			J
Barium	0.46	100	0.5000	0	92.6	80	120			J
Cadmium	0.48	1.0	0.5000	0	97.0	80	120			J
Chromium	0.47	5.0	0.5000	0	93.4	80	120			J
Lead	0.47	5.0	0.5000	0	93.3	80	120			J
Selenium	0.52	1.0	0.5000	0	104	80	120			J
Silver	0.10	5.0	0.1000	0	101	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71785** SampType: **MBLK** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **71785** RunNo: **93075**
Prep Date: **11/30/2022** Analysis Date: **12/6/2022** SeqNo: **3352132** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-71785** SampType: **LCS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **71785** RunNo: **93075**
Prep Date: **11/30/2022** Analysis Date: **12/6/2022** SeqNo: **3352137** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.41	0.0020	0.5000	0	82.7	80	120			
Chromium	0.40	0.0060	0.5000	0	80.1	80	120			
Silver	0.088	0.0050	0.1000	0	87.5	80	120			

Sample ID: **2211E05-001EMS** SampType: **MS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **71785** RunNo: **93075**
Prep Date: **11/30/2022** Analysis Date: **12/6/2022** SeqNo: **3352167** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.088	0.0050	0.1000	0.008212	79.6	75	125			

Sample ID: **2211E05-001EMSD** SampType: **MSD** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **71785** RunNo: **93075**
Prep Date: **11/30/2022** Analysis Date: **12/6/2022** SeqNo: **3352168** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.086	0.0050	0.1000	0.008212	77.8	75	125	2.09	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **MBLK**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R92959**	RunNo: **92959**							
Prep Date:	Analysis Date: **12/1/2022**	SeqNo: **3347136**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **LCS**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R92959**	RunNo: **92959**							
Prep Date:	Analysis Date: **12/1/2022**	SeqNo: **3347137**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.96	20.00	80.00	0	97.5	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71767** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW** Batch ID: **71767** RunNo: **92991**
Prep Date: **11/30/2022** Analysis Date: **12/2/2022** SeqNo: **3348279** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-71767** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW** Batch ID: **71767** RunNo: **92991**
Prep Date: **11/30/2022** Analysis Date: **12/2/2022** SeqNo: **3348280** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Sample ID: **2211E05-002CDUP** SampType: **DUP** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **CTB to City POTW** Batch ID: **71767** RunNo: **92991**
Prep Date: **11/30/2022** Analysis Date: **12/2/2022** SeqNo: **3348285** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1160	20.0						0.0864	10	*

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2211E05**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71794**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **71794**	RunNo: **92971**							
Prep Date: **12/1/2022**	Analysis Date: **12/2/2022**	SeqNo: **3347568**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-71794**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **71794**	RunNo: **92971**							
Prep Date: **12/1/2022**	Analysis Date: **12/2/2022**	SeqNo: **3347569**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	93	4.0	91.90	0	101	83.89	119.7			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Navajo Refining Company** Work Order Number: **2211E05** RcptNo: **1**

Received By: **Juan Rojas** **11/29/2022 7:40:00 AM**

Completed By: **Desiree Dominguez** **11/29/2022 12:48:22 PM**

Reviewed By: 11-29-22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	FedEx		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 8; 2
(<2 or >12 unless noted)
Adjusted? yes
Checked by: DAD 11/29/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

For sample 003 poured off and filtered from unreserved volume provided from sample 001. For sample 004 poured off and filtered from unreserved volume provided from sample 002. For metals analysis added ~0.5 HNO_3 to 003 & 004 For pH <2. -DAD 11/29/22

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.5	Good				
2	0.4	Good				

Received by OCD: 3/6/2023 7:46:22 AM

Released to Imaging: 5/24/2023 4:44:56 PM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☐ Standard ☐ Rush

Project Name:

PSP WDW-1, 2, 3 & 4 Inj Well

Project #:

Project Manager:

Randy Dade

Sampler:

On Ice: ☑ Yes ☐ No

of Coolers: 2

Cooler Temp(including CF): 1.4 +0.1 = 1.5

0.3 +0.1 = 0.4

HEAL No. 2211E05

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type		Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds			WDW-1,2,3+4 Effluent -	Filtered - 003		CTB to City POTW -	Filtered - 004
11/28/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	-001	x													
11/28/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			x												
11/28/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				x											
11/28/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					x										
11/28/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						x									
11/28/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							x								
11/28/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								x							
11/28/2022	9:50	Liquid	CTB to City POTW	**	**	-002	x													
11/28/2022	9:50	Liquid	CTB to City POTW	3-40ml VOA	HCL			x												
11/28/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none				x											
11/28/2022	9:50	Liquid	CTB to City POTW	***	***					x										
11/28/2022	9:50	Liquid	CTB to City POTW	1-250ml P	HNO3						x									
11/28/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none							x								
11/28/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none								x							

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
11.28.22	1:50pm	Brady Hubbard				
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
				FedEx	11/29/22	7:40

Remarks: Dissolved Cations by EPA Method 200.7.

1-500ml unpreserved p, 1-125ml H2SO4 p, 1-125ml HNO3 p.*1-500ml unpreserved p, 1-500ml NaOH p, 1-500ml NaOH/ZnAcetate p

RDU FEED RATE : 8826 BPD

Suffices for Q4 Quarterly WDW- 1, 2, 3 & 4 Inj Well

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 20, 2023

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2212220

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 4 sample(s) on 12/6/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2212220**
Date: **1/20/2023**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". Even though the low solids content did not require filtration, all TCLP compounds are reported as both total and filtered, at the TCLP limits. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

EPA Method 8270:
The matrix spike and matrix spike duplicate had a low recovery for pyridine

EPA Method 8270:
The two filtered samples for WDW-1,2,3 & 4 Effluent and CTB to City POTW were associated with a laboratory control spike that had low recoveries for pentachlorophenol, 2,4,5-trichlorophenol and 2,4,6-Trichlorophenol.

"H" flags denote that the extraction holding time was exceeded.

"S" flags denote that the surrogate/spike recovery was outside of the standard limits.

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/5/2022 10:10:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **mb**	
Chlordane	ND	0.00050	0.030		mg/L	1	12/27/2022 10:07:43 A	71988
Endrin	ND	0.000062	0.020		mg/L	1	12/27/2022 10:07:43 A	71988
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	12/27/2022 10:07:43 A	71988
Heptachlor	ND	0.000041	0.0080		mg/L	1	12/27/2022 10:07:43 A	71988
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	12/27/2022 10:07:43 A	71988
Methoxychlor	ND	0.000075	10		mg/L	1	12/27/2022 10:07:43 A	71988
Toxaphene	ND	0.00050	0.50		mg/L	1	12/27/2022 10:07:43 A	71988
Surr: Decachlorobiphenyl	75.6	0	40.9-111		%Rec	1	12/27/2022 10:07:43 A	71988
Surr: Tetrachloro-m-xylene	100	0	15-107		%Rec	1	12/27/2022 10:07:43 A	71988
EPA METHOD 300.0: ANIONS							Analyst: **JTT**	
Fluoride	19	0.92	2.0	*	mg/L	20	12/7/2022 2:50:56 AM	R93070
Chloride	340	25	50	*	mg/L	100	12/7/2022 11:06:33 AM	R93118
Nitrogen, Nitrite (As N)	0.17	0.057	0.50	J	mg/L	5	12/7/2022 2:38:31 AM	R93070
Bromide	0.84	0.25	0.50		mg/L	5	12/7/2022 2:38:31 AM	R93070
Nitrogen, Nitrate (As N)	1.0	0.10	0.50		mg/L	5	12/7/2022 2:38:31 AM	R93070
Phosphorus, Orthophosphate (As P)	ND	25	50	H	mg/L	100	12/7/2022 3:45:33 PM	R93119
Sulfate	2000	25	50	*	mg/L	100	12/7/2022 11:06:33 AM	R93118
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.020	0.00050	5.0	J	mg/L	1	12/14/2022 1:21:53 PM	71959
Lead	ND	0.00050	5.0		mg/L	1	12/14/2022 11:10:52 A	71959
Selenium	0.022	0.00050	1.0	J	mg/L	1	12/15/2022 10:24:02 A	71959
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	12/23/2022 4:07:31 PM	72298
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	380	0.29	5.0		mg/L	5	12/12/2022 1:47:06 PM	A93237
Magnesium	130	0.17	5.0		mg/L	5	12/12/2022 1:47:06 PM	A93237
Potassium	100	1.0	5.0		mg/L	5	12/12/2022 1:47:06 PM	A93237
Sodium	750	4.2	10		mg/L	10	12/12/2022 2:02:15 PM	A93237
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.040	0.0011	100	J	mg/L	1	12/12/2022 11:25:45 A	71959
Cadmium	ND	0.0012	1.0		mg/L	1	12/12/2022 11:25:45 A	71959
Chromium	ND	0.0017	5.0		mg/L	1	12/12/2022 11:25:45 A	71959
Silver	0.012	0.0013	5.0	J	mg/L	1	12/12/2022 11:25:45 A	71959
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.050	200		mg/L	1	12/12/2022 2:07:22 PM	71935
3+4-Methylphenol	ND	0.051	200		mg/L	1	12/12/2022 2:07:22 PM	71935

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/5/2022 10:10:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.049	0.13		mg/L	1	12/12/2022 2:07:22 PM	71935
Hexachlorobenzene	ND	0.19	0.13		mg/L	1	12/12/2022 2:07:22 PM	71935
Hexachlorobutadiene	ND	0.17	0.50		mg/L	1	12/12/2022 2:07:22 PM	71935
Hexachloroethane	ND	0.14	3.0		mg/L	1	12/12/2022 2:07:22 PM	71935
Nitrobenzene	ND	0.049	2.0		mg/L	1	12/12/2022 2:07:22 PM	71935
Pentachlorophenol	ND	0.27	100		mg/L	1	12/12/2022 2:07:22 PM	71935
Pyridine	ND	0.14	5.0		mg/L	1	12/12/2022 2:07:22 PM	71935
2,4,5-Trichlorophenol	ND	0.063	400		mg/L	1	12/12/2022 2:07:22 PM	71935
2,4,6-Trichlorophenol	ND	0.059	2.0		mg/L	1	12/12/2022 2:07:22 PM	71935
Cresols, Total	ND	0.27	200		mg/L	1	12/12/2022 2:07:22 PM	71935
Surr: 2-Fluorophenol	1.34	0	18.1-88.9	S	%Rec	1	12/12/2022 2:07:22 PM	71935
Surr: Phenol-d5	6.24	0	17-61.5	S	%Rec	1	12/12/2022 2:07:22 PM	71935
Surr: 2,4,6-Tribromophenol	4.15	0	29.8-104	S	%Rec	1	12/12/2022 2:07:22 PM	71935
Surr: Nitrobenzene-d5	57.9	0	22.2-111		%Rec	1	12/12/2022 2:07:22 PM	71935
Surr: 2-Fluorobiphenyl	53.1	0	24.6-96.3		%Rec	1	12/12/2022 2:07:22 PM	71935
Surr: 4-Terphenyl-d14	94.3	0	53.4-124		%Rec	1	12/12/2022 2:07:22 PM	71935
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	12/6/2022 7:13:00 PM	T93064
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	12/6/2022 7:13:00 PM	T93064
2-Butanone	ND	0.0020	200		mg/L	200	12/6/2022 7:13:00 PM	T93064
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	12/6/2022 7:13:00 PM	T93064
Chloroform	ND	0.00013	6.0		mg/L	200	12/6/2022 7:13:00 PM	T93064
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	12/6/2022 7:13:00 PM	T93064
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	12/6/2022 7:13:00 PM	T93064
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	12/6/2022 7:13:00 PM	T93064
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	12/6/2022 7:13:00 PM	T93064
Vinyl chloride	ND	0.00032	0.20		mg/L	200	12/6/2022 7:13:00 PM	T93064
Chlorobenzene	ND	0.00016	100		mg/L	200	12/6/2022 7:13:00 PM	T93064
Surr: 1,2-Dichloroethane-d4	92.6	0	70-130		%Rec	200	12/6/2022 7:13:00 PM	T93064
Surr: 4-Bromofluorobenzene	96.5	0	70-130		%Rec	200	12/6/2022 7:13:00 PM	T93064
Surr: Dibromofluoromethane	94.9	0	70-130		%Rec	200	12/6/2022 7:13:00 PM	T93064
Surr: Toluene-d8	90.9	0	70-130		%Rec	200	12/6/2022 7:13:00 PM	T93064
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **MRA**	
Conductivity	5800	10	10		µmhos/c	1	12/8/2022 12:08:24 PM	R93143
SM4500-H+B / 9040C: PH							Analyst: **MRA**	
pH	7.82			H	pH units	1	12/8/2022 12:08:24 PM	R93143
SM2320B: ALKALINITY							Analyst: **MRA**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/5/2022 10:10:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **MRA**	
Bicarbonate (As CaCO3)	538.1	20.00	20.00		mg/L Ca	1	12/8/2022 12:08:24 PM	R93143
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/8/2022 12:08:24 PM	R93143
Total Alkalinity (as CaCO3)	538.1	20.00	20.00		mg/L Ca	1	12/8/2022 12:08:24 PM	R93143
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9956	0	0			1	12/12/2022 2:29:00 PM	R93206
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	4210	200	200	*D	mg/L	1	12/9/2022 9:11:00 AM	71907
SM 2540D: TSS							Analyst: **SNS**	
Suspended Solids	25	4.0	4.0		mg/L	1	12/9/2022 1:12:00 PM	71942

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 12/5/2022 9:50:00 AM
Lab ID: 2212220-002 **Matrix:** AQUEOUS **Received Date:** 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **mb**	
Chlordane	ND	0.00050	0.030		mg/L	1	12/27/2022 10:20:50 A	71988
Endrin	ND	0.000062	0.020		mg/L	1	12/27/2022 10:20:50 A	71988
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	12/27/2022 10:20:50 A	71988
Heptachlor	ND	0.000041	0.0080		mg/L	1	12/27/2022 10:20:50 A	71988
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	12/27/2022 10:20:50 A	71988
Methoxychlor	ND	0.000075	10		mg/L	1	12/27/2022 10:20:50 A	71988
Toxaphene	ND	0.00050	0.50		mg/L	1	12/27/2022 10:20:50 A	71988
Surr: Decachlorobiphenyl	81.2	0	40.9-111		%Rec	1	12/27/2022 10:20:50 A	71988
Surr: Tetrachloro-m-xylene	72.9	0	15-107		%Rec	1	12/27/2022 10:20:50 A	71988
EPA METHOD 300.0: ANIONS							Analyst: **JTT**	
Fluoride	1.4	0.23	0.50		mg/L	5	12/7/2022 3:03:21 AM	R93070
Chloride	33	1.2	2.5		mg/L	5	12/7/2022 3:03:21 AM	R93070
Nitrogen, Nitrite (As N)	ND	0.057	0.50		mg/L	5	12/7/2022 3:03:21 AM	R93070
Bromide	ND	0.25	0.50		mg/L	5	12/7/2022 3:03:21 AM	R93070
Nitrogen, Nitrate (As N)	0.94	0.10	0.50		mg/L	5	12/7/2022 3:03:21 AM	R93070
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0	H	mg/L	10	12/7/2022 3:57:57 PM	R93119
Sulfate	820	5.0	10	*	mg/L	20	12/7/2022 3:15:46 AM	R93070
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.0010	0.00050	5.0	J	mg/L	1	12/14/2022 1:34:49 PM	71959
Lead	ND	0.00050	5.0		mg/L	1	12/14/2022 11:15:03 A	71959
Selenium	0.0023	0.00050	1.0	J	mg/L	1	12/15/2022 10:25:28 A	71959
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	12/23/2022 4:09:40 PM	72298
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	220	0.29	5.0		mg/L	5	12/12/2022 1:56:05 PM	A93237
Magnesium	75	0.034	1.0		mg/L	1	12/12/2022 2:05:16 PM	A93237
Potassium	2.0	0.21	1.0		mg/L	1	12/12/2022 2:05:16 PM	A93237
Sodium	39	0.42	1.0		mg/L	1	12/12/2022 2:05:16 PM	A93237
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.016	0.0011	100	J	mg/L	1	12/12/2022 11:40:13 A	71959
Cadmium	ND	0.0012	1.0		mg/L	1	12/12/2022 11:40:13 A	71959
Chromium	0.0033	0.0017	5.0	J	mg/L	1	12/12/2022 11:40:13 A	71959
Silver	0.0068	0.0013	5.0	J	mg/L	1	12/12/2022 11:40:13 A	71959
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.050	200		mg/L	1	12/12/2022 4:11:18 PM	71935
3+4-Methylphenol	ND	0.051	200		mg/L	1	12/12/2022 4:11:18 PM	71935

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-002 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 12/5/2022 9:50:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.049	0.13		mg/L	1	12/12/2022 4:11:18 PM	71935
Hexachlorobenzene	ND	0.19	0.13		mg/L	1	12/12/2022 4:11:18 PM	71935
Hexachlorobutadiene	ND	0.17	0.50		mg/L	1	12/12/2022 4:11:18 PM	71935
Hexachloroethane	ND	0.14	3.0		mg/L	1	12/12/2022 4:11:18 PM	71935
Nitrobenzene	ND	0.049	2.0		mg/L	1	12/12/2022 4:11:18 PM	71935
Pentachlorophenol	ND	0.27	100		mg/L	1	12/12/2022 4:11:18 PM	71935
Pyridine	ND	0.14	5.0		mg/L	1	12/12/2022 4:11:18 PM	71935
2,4,5-Trichlorophenol	ND	0.063	400		mg/L	1	12/12/2022 4:11:18 PM	71935
2,4,6-Trichlorophenol	ND	0.059	2.0		mg/L	1	12/12/2022 4:11:18 PM	71935
Cresols, Total	ND	0.27	200		mg/L	1	12/12/2022 4:11:18 PM	71935
Surr: 2-Fluorophenol	12.0	0	18.1-88.9	S	%Rec	1	12/12/2022 4:11:18 PM	71935
Surr: Phenol-d5	24.8	0	17-61.5		%Rec	1	12/12/2022 4:11:18 PM	71935
Surr: 2,4,6-Tribromophenol	11.9	0	29.8-104	S	%Rec	1	12/12/2022 4:11:18 PM	71935
Surr: Nitrobenzene-d5	56.4	0	22.2-111		%Rec	1	12/12/2022 4:11:18 PM	71935
Surr: 2-Fluorobiphenyl	45.6	0	24.6-96.3		%Rec	1	12/12/2022 4:11:18 PM	71935
Surr: 4-Terphenyl-d14	88.0	0	53.4-124		%Rec	1	12/12/2022 4:11:18 PM	71935
TCLP VOLATILES BY 8260B							Analyst: **CCM**	
Benzene	ND	0.00023	0.50		mg/L	200	12/6/2022 7:35:00 PM	T93064
1,2-Dichloroethane (EDC)	ND	0.00025	0.50		mg/L	200	12/6/2022 7:35:00 PM	T93064
2-Butanone	ND	0.0020	200		mg/L	200	12/6/2022 7:35:00 PM	T93064
Carbon Tetrachloride	ND	0.00018	0.50		mg/L	200	12/6/2022 7:35:00 PM	T93064
Chloroform	ND	0.00013	6.0		mg/L	200	12/6/2022 7:35:00 PM	T93064
1,4-Dichlorobenzene	ND	0.00021	7.5		mg/L	200	12/6/2022 7:35:00 PM	T93064
1,1-Dichloroethene	ND	0.00020	0.70		mg/L	200	12/6/2022 7:35:00 PM	T93064
Tetrachloroethene (PCE)	ND	0.00036	0.70		mg/L	200	12/6/2022 7:35:00 PM	T93064
Trichloroethene (TCE)	ND	0.00020	0.50		mg/L	200	12/6/2022 7:35:00 PM	T93064
Vinyl chloride	ND	0.00032	0.20		mg/L	200	12/6/2022 7:35:00 PM	T93064
Chlorobenzene	ND	0.00016	100		mg/L	200	12/6/2022 7:35:00 PM	T93064
Surr: 1,2-Dichloroethane-d4	90.5	0	70-130		%Rec	200	12/6/2022 7:35:00 PM	T93064
Surr: 4-Bromofluorobenzene	93.6	0	70-130		%Rec	200	12/6/2022 7:35:00 PM	T93064
Surr: Dibromofluoromethane	94.7	0	70-130		%Rec	200	12/6/2022 7:35:00 PM	T93064
Surr: Toluene-d8	91.4	0	70-130		%Rec	200	12/6/2022 7:35:00 PM	T93064
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **MRA**	
Conductivity	1600	10	10		µmhos/c	1	12/8/2022 12:30:33 PM	R93143
SM4500-H+B / 9040C: PH							Analyst: **MRA**	
pH	7.65			H	pH units	1	12/8/2022 12:30:33 PM	R93143
SM2320B: ALKALINITY							Analyst: **MRA**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-002 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 12/5/2022 9:50:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **MRA**	
Bicarbonate (As CaCO3)	61.80	20.00	20.00		mg/L Ca	1	12/8/2022 12:30:33 PM	R93143
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/8/2022 12:30:33 PM	R93143
Total Alkalinity (as CaCO3)	61.80	20.00	20.00		mg/L Ca	1	12/8/2022 12:30:33 PM	R93143
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9980	0	0			1	12/12/2022 2:29:00 PM	R93206
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	1410	20.0	20.0	*	mg/L	1	12/9/2022 9:11:00 AM	71907
SM 2540D: TSS							Analyst: **SNS**	
Suspended Solids	ND	4.0	4.0		mg/L	1	12/9/2022 1:12:00 PM	71942

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-003 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent-Filtere
Collection Date: 12/5/2022 10:10:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030	H	mg/L	1	1/5/2023 11:59:40 AM	72280
Endrin	ND	0.000062	0.020	H	mg/L	1	1/5/2023 11:59:40 AM	72280
gamma-BHC (Lindane)	ND	0.000054	0.40	H	mg/L	1	1/5/2023 11:59:40 AM	72280
Heptachlor	ND	0.000041	0.0080	H	mg/L	1	1/5/2023 11:59:40 AM	72280
Heptachlor epoxide	ND	0.000051	0.0080	H	mg/L	1	1/5/2023 11:59:40 AM	72280
Methoxychlor	ND	0.000075	10	H	mg/L	1	1/5/2023 11:59:40 AM	72280
Toxaphene	ND	0.00050	0.50	H	mg/L	1	1/5/2023 11:59:40 AM	72280
Surr: Decachlorobiphenyl	75.2	0	40.9-111	H	%Rec	1	1/5/2023 11:59:40 AM	72280
Surr: Tetrachloro-m-xylene	79.3	0	15-107	H	%Rec	1	1/5/2023 11:59:40 AM	72280
EPA METHOD 8151: HERBICIDES TCLP							Analyst: **SB**	
2,4,5-TP (Silvex)	ND	1.0	1.0	H	mg/L	1	12/22/2022 11:34:29 P	72185
2,4-D	ND	10	10	H	mg/L	1	12/22/2022 11:34:29 P	72185
Surr: 2,4-Dichlorophenylacetic acid	212	0	70-130	SH	%Rec	1	12/22/2022 11:34:29 P	72185
EPA METHOD 7470A: TCLP MERCURY							Analyst: **VP**	
Mercury	ND	0.000092	0.020		mg/L	1	12/29/2022 12:50:02 P	72362
EPA METHOD 6010B: TCLP METALS							Analyst: **JRR**	
Arsenic	ND	0.028	5.0		mg/L	1	12/22/2022 9:54:50 AM	72262
Barium	0.055	0.0045	100	J	mg/L	1	12/22/2022 9:54:50 AM	72262
Cadmium	ND	0.0067	1.0		mg/L	1	12/22/2022 9:54:50 AM	72262
Chromium	ND	0.0031	5.0		mg/L	1	12/22/2022 9:54:50 AM	72262
Lead	ND	0.0099	5.0		mg/L	1	12/22/2022 9:54:50 AM	72262
Selenium	ND	0.061	1.0		mg/L	1	12/22/2022 9:54:50 AM	72262
Silver	0.0071	0.0023	5.0	J	mg/L	1	12/22/2022 9:54:50 AM	72262
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.0050	200	H	mg/L	1	1/5/2023 2:54:33 PM	72267
3+4-Methylphenol	ND	0.0051	200	H	mg/L	1	1/5/2023 2:54:33 PM	72267
2,4-Dinitrotoluene	ND	0.0049	0.13	H	mg/L	1	1/5/2023 2:54:33 PM	72267
Hexachlorobenzene	ND	0.019	0.13	H	mg/L	1	1/5/2023 2:54:33 PM	72267
Hexachlorobutadiene	ND	0.017	0.50	H	mg/L	1	1/5/2023 2:54:33 PM	72267
Hexachloroethane	ND	0.014	3.0	H	mg/L	1	1/5/2023 2:54:33 PM	72267
Nitrobenzene	ND	0.0049	2.0	H	mg/L	1	1/5/2023 2:54:33 PM	72267
Pentachlorophenol	ND	0.027	100	EH	mg/L	1	1/5/2023 2:54:33 PM	72267
Pyridine	ND	0.014	5.0	H	mg/L	1	1/5/2023 2:54:33 PM	72267
2,4,5-Trichlorophenol	ND	0.0063	400	EH	mg/L	1	1/5/2023 2:54:33 PM	72267
2,4,6-Trichlorophenol	ND	0.0059	2.0	EH	mg/L	1	1/5/2023 2:54:33 PM	72267
Cresols, Total	ND	0.027	200	H	mg/L	1	1/5/2023 2:54:33 PM	72267
Surr: 2-Fluorophenol	54.1	0	18.1-88.9	H	%Rec	1	1/5/2023 2:54:33 PM	72267

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-003 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent-Filtere
Collection Date: 12/5/2022 10:10:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
Surr: Phenol-d5	43.1	0	17-61.5	H	%Rec	1	1/5/2023 2:54:33 PM	72267
Surr: 2,4,6-Tribromophenol	97.2	0	29.8-104	H	%Rec	1	1/5/2023 2:54:33 PM	72267
Surr: Nitrobenzene-d5	69.9	0	22.2-111	H	%Rec	1	1/5/2023 2:54:33 PM	72267
Surr: 2-Fluorobiphenyl	59.2	0	24.6-96.3	H	%Rec	1	1/5/2023 2:54:33 PM	72267
Surr: 4-Terphenyl-d14	101	0	53.4-124	H	%Rec	1	1/5/2023 2:54:33 PM	72267
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
1,2-Dichloroethane (EDC)	ND	0.50	0.50	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
2-Butanone	ND	200	200	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
Carbon Tetrachloride	ND	0.50	0.50	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
Chloroform	ND	6.0	6.0	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
1,4-Dichlorobenzene	ND	7.5	7.5	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
1,1-Dichloroethene	ND	0.70	0.70	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
Tetrachloroethene (PCE)	ND	0.70	0.70	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
Trichloroethene (TCE)	ND	0.50	0.50	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
Vinyl chloride	ND	0.20	0.20	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
Chlorobenzene	ND	100	100	H	mg/L	200	12/23/2022 7:52:12 PM	T93557
Surr: 1,2-Dichloroethane-d4	106	0	70-130	H	%Rec	200	12/23/2022 7:52:12 PM	T93557
Surr: 4-Bromofluorobenzene	114	0	70-130	H	%Rec	200	12/23/2022 7:52:12 PM	T93557
Surr: Dibromofluoromethane	90.8	0	70-130	H	%Rec	200	12/23/2022 7:52:12 PM	T93557
Surr: Toluene-d8	107	0	70-130	H	%Rec	200	12/23/2022 7:52:12 PM	T93557

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-004 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW-Filtered
Collection Date: 12/5/2022 9:50:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030	H	mg/L	1	1/5/2023 12:12:45 PM	72280
Endrin	ND	0.000062	0.020	H	mg/L	1	1/5/2023 12:12:45 PM	72280
gamma-BHC (Lindane)	ND	0.000054	0.40	H	mg/L	1	1/5/2023 12:12:45 PM	72280
Heptachlor	ND	0.000041	0.0080	H	mg/L	1	1/5/2023 12:12:45 PM	72280
Heptachlor epoxide	ND	0.000051	0.0080	H	mg/L	1	1/5/2023 12:12:45 PM	72280
Methoxychlor	ND	0.000075	10	H	mg/L	1	1/5/2023 12:12:45 PM	72280
Toxaphene	ND	0.00050	0.50	H	mg/L	1	1/5/2023 12:12:45 PM	72280
Surr: Decachlorobiphenyl	81.2	0	40.9-111	H	%Rec	1	1/5/2023 12:12:45 PM	72280
Surr: Tetrachloro-m-xylene	66.2	0	15-107	H	%Rec	1	1/5/2023 12:12:45 PM	72280
EPA METHOD 8151: HERBICIDES TCLP							Analyst: **SB**	
2,4,5-TP (Silvex)	ND	1.0	1.0	H	mg/L	1	12/23/2022 12:00:15 A	72185
2,4-D	ND	10	10	H	mg/L	1	12/23/2022 12:00:15 A	72185
Surr: 2,4-Dichlorophenylacetic acid	102	0	70-130	H	%Rec	1	12/23/2022 12:00:15 A	72185
EPA METHOD 7470A: TCLP MERCURY							Analyst: **VP**	
Mercury	ND	0.000092	0.020		mg/L	1	12/29/2022 12:56:25 P	72362
EPA METHOD 6010B: TCLP METALS							Analyst: **JRR**	
Arsenic	ND	0.028	5.0		mg/L	1	12/22/2022 9:56:47 AM	72262
Barium	0.022	0.0045	100	J	mg/L	1	12/22/2022 9:56:47 AM	72262
Cadmium	ND	0.0067	1.0		mg/L	1	12/22/2022 9:56:47 AM	72262
Chromium	ND	0.0031	5.0		mg/L	1	12/22/2022 9:56:47 AM	72262
Lead	ND	0.0099	5.0		mg/L	1	12/22/2022 9:56:47 AM	72262
Selenium	ND	0.061	1.0		mg/L	1	12/22/2022 9:56:47 AM	72262
Silver	0.0040	0.0023	5.0	J	mg/L	1	12/22/2022 9:56:47 AM	72262
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.0050	200	H	mg/L	1	1/5/2023 4:58:16 PM	72267
3+4-Methylphenol	ND	0.0051	200	H	mg/L	1	1/5/2023 4:58:16 PM	72267
2,4-Dinitrotoluene	ND	0.0049	0.13	H	mg/L	1	1/5/2023 4:58:16 PM	72267
Hexachlorobenzene	ND	0.019	0.13	H	mg/L	1	1/5/2023 4:58:16 PM	72267
Hexachlorobutadiene	ND	0.017	0.50	H	mg/L	1	1/5/2023 4:58:16 PM	72267
Hexachloroethane	ND	0.014	3.0	H	mg/L	1	1/5/2023 4:58:16 PM	72267
Nitrobenzene	ND	0.0049	2.0	H	mg/L	1	1/5/2023 4:58:16 PM	72267
Pentachlorophenol	ND	0.027	100	EH	mg/L	1	1/5/2023 4:58:16 PM	72267
Pyridine	ND	0.014	5.0	H	mg/L	1	1/5/2023 4:58:16 PM	72267
2,4,5-Trichlorophenol	ND	0.0063	400	EH	mg/L	1	1/5/2023 4:58:16 PM	72267
2,4,6-Trichlorophenol	ND	0.0059	2.0	EH	mg/L	1	1/5/2023 4:58:16 PM	72267
Cresols, Total	ND	0.027	200	H	mg/L	1	1/5/2023 4:58:16 PM	72267
Surr: 2-Fluorophenol	35.3	0	18.1-88.9	H	%Rec	1	1/5/2023 4:58:16 PM	72267

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212220**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212220-004 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW-Filtered
Collection Date: 12/5/2022 9:50:00 AM
Received Date: 12/6/2022 7:30:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
Surr: Phenol-d5	33.6	0	17-61.5	H	%Rec	1	1/5/2023 4:58:16 PM	72267
Surr: 2,4,6-Tribromophenol	32.9	0	29.8-104	H	%Rec	1	1/5/2023 4:58:16 PM	72267
Surr: Nitrobenzene-d5	55.4	0	22.2-111	H	%Rec	1	1/5/2023 4:58:16 PM	72267
Surr: 2-Fluorobiphenyl	45.7	0	24.6-96.3	H	%Rec	1	1/5/2023 4:58:16 PM	72267
Surr: 4-Terphenyl-d14	94.3	0	53.4-124	H	%Rec	1	1/5/2023 4:58:16 PM	72267
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
1,2-Dichloroethane (EDC)	ND	0.50	0.50	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
2-Butanone	ND	200	200	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
Carbon Tetrachloride	ND	0.50	0.50	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
Chloroform	ND	6.0	6.0	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
1,4-Dichlorobenzene	ND	7.5	7.5	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
1,1-Dichloroethene	ND	0.70	0.70	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
Tetrachloroethene (PCE)	ND	0.70	0.70	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
Trichloroethene (TCE)	ND	0.50	0.50	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
Vinyl chloride	ND	0.20	0.20	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
Chlorobenzene	ND	100	100	H	mg/L	200	12/23/2022 8:20:43 PM	T93557
Surr: 1,2-Dichloroethane-d4	98.6	0	70-130	H	%Rec	200	12/23/2022 8:20:43 PM	T93557
Surr: 4-Bromofluorobenzene	113	0	70-130	H	%Rec	200	12/23/2022 8:20:43 PM	T93557
Surr: Dibromofluoromethane	87.4	0	70-130	H	%Rec	200	12/23/2022 8:20:43 PM	T93557
Surr: Toluene-d8	106	0	70-130	H	%Rec	200	12/23/2022 8:20:43 PM	T93557

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	VDW-1,2,3 &4 Effluen 2212220-001		CTB to City POTW 2212220-002									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	750	32.62	39	1.70								
Potassium	100	2.56	2.0	0.05								
Calcium	380	18.96	220	10.98								
Magnesium	130	10.70	75	6.17								
Total Cations		64.84		18.90								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2000	41.64	820	17.07								
Chloride	340	9.59	33	0.93								
Bicarbonate (CaCO3)	538.1	10.75	61.80	1.24								
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)	0.17	0.01										
Nitrate (N)	1.0	0.07	0.94	0.07	-							
Fluoride	19	1.00	1.4	0.07								
Bromide	0.84	0.01										
Total Anions		63.08		19.38								
Elect. Cond. (µMhos/cm)	5800		1600									
CATION/ANION RATIO		1.03		0.98								
% Difference		1		1								
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	4210		1410									
TDS (calculated)	4047		1232									
Ratio meas TDS:calc TDS		1.0		1.1								
Ratio Meas. TDS:EC		0.73		0.88								
Ratio Calc. TDS:EC		0.70		0.77								
Ratio of anion sum:EC		1.1		1.2								
Ratio of cation sum:EC		1.1		1.2								

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Anatek Labs, Inc.

1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - Fax (208) 8829246 - email moscow@anateklabs.com
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - fax (509) 838-4433 - email spokane@anateklabs.com

Client:	Hall Environmental Analysis Lab	Work Order:	MCL0240
Address:	4901 Hawkins NE Suite D	Project:	2212220
	Albuquerque, NM 87109	Reported:	1/5/2023 12:50
Attn:	Andy Freeman		

Analytical Results Report

Sample Location:	2212220-001F (WDW-1,2,3 &4 Effluent)		
Lab/Sample Number:	MCL0240-01	Collect Date:	12/05/22 10:10
Date Received:	12/07/22 11:31	Collected By:	
Matrix:	Water		

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
TCLP Organics							
TCLP 2,4,5-TP (Silvex)	ND	ppm	0.0100	12/13/22 15:44	SAT	EPA 8151A	
TCLP 2,4-D	ND	ppm	0.0100	12/13/22 15:44	SAT	EPA 8151A	
TCLP Pentachlorophenol	ND	ppm	0.00500	12/13/22 15:44	SAT	EPA 8151A	

Anatek Labs, Inc.

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Analytical Results Report

(Continued)

Sample Location:	2212220-002F (CTB to City POTW)		
Lab/Sample Number:	MCL0240-02	Collect Date:	12/05/22 09:50
Date Received:	12/07/22 11:31	Collected By:	
Matrix:	Water		

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
TCLP Organics							
TCLP 2,4,5-TP (Silvex)	ND	ppm	0.0100	12/13/22 16:17	SAT	EPA 8151A	
TCLP 2,4-D	ND	ppm	0.0100	12/13/22 16:17	SAT	EPA 8151A	
TCLP Pentachlorophenol	ND	ppm	0.00500	12/13/22 16:17	SAT	EPA 8151A	

Authorized Signature,



Justin Doty For Todd Taruscio, Laboratory Manager

PQL	Practical Quantitation Limit
ND	Not Detected
MCL	EPA's Maximum Contaminant Level
Dry	Sample results reported on a dry weight basis
*	Not a state-certified analyte

This report shall not be reproduced except in full, without the written approval of the laboratory
The results reported related only to the samples indicated.

Anatek Labs, Inc.

1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - Fax (208) 8829246 - email moscow@anateklabs.com
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - fax (509) 838-4433 - email spokane@anateklabs.com

Quality Control Data

TCLP Organics

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCL0510 - Herbicides										
Blank (BCL0510-BLK1)					Prepared & Analyzed: 12/13/2022					
TCLP 2,4-D	ND		0.0100	ppm						
TCLP 2,4,5-TP (Silvex)	ND		0.0100	ppm						
TCLP Pentachlorophenol	ND		0.00500	ppm						
LCS (BCL0510-BS1)					Prepared & Analyzed: 12/13/2022					
TCLP 2,4-D	0.0513		0.0100	ppm	0.0500		103	70-130		
TCLP 2,4,5-TP (Silvex)	0.0118		0.0100	ppm	0.0125		94.8	70-130		
TCLP Pentachlorophenol	0.00503		0.00500	ppm	0.00500		101	70-130		
Matrix Spike (BCL0510-MS1)		**Source: MCL0240-02**			Prepared & Analyzed: 12/13/2022					
TCLP 2,4-D	0.0488		0.0100	ppm	0.0500	ND	97.7	70-130		
TCLP 2,4,5-TP (Silvex)	0.0115		0.0100	ppm	0.0125	ND	91.7	70-130		
TCLP Pentachlorophenol	0.00476		0.00500	ppm	0.00500	ND	95.2	70-130		
Matrix Spike Dup (BCL0510-MSD1)		**Source: MCL0240-02**			Prepared & Analyzed: 12/13/2022					
TCLP 2,4-D	0.0501		0.0100	ppm	0.0500	ND	100	70-130	2.53	25
TCLP 2,4,5-TP (Silvex)	0.0118		0.0100	ppm	0.0125	ND	94.6	70-130	3.12	25
TCLP Pentachlorophenol	0.00491		0.00500	ppm	0.00500	ND	98.2	70-130	3.08	25

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environ

Website: w

MCL0240

Due: 12/21/22

SUB CONTRATOR: **Anatek ID**	COMPANY: **Anatek Labs, Inc.**	PHONE: **(208) 883-2839**	FAX: **(208) 882-9246**
ADDRESS: **1282 Alturas Dr**		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: **Moscow, ID 83843**			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2212220-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	12/5/2022 10:10:00 AM	1	8151TCLP
2	2212220-002F	CTB to City POTW	1LAMGU	Aqueous	12/5/2022 9:50:00 AM	1	8151TCLP

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 12/6/2022	Time: 10:51 AM	Received By:	Date: 12/7/22	Time: 11:31
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

MCL0240

Due: 12/21/22

Anatek Labs, Inc.

Sample Receipt and Preservation Form

Client Name: Hall

TAT: (Normal) RUSH: _____ days

Samples Received From: (FedEx) UPS USPS Client Courier Other: _____

Custody Seal on Cooler/Box: (Yes) No Custody Seals Intact: (Yes) No N/A

Number of Coolers/Boxes: 1 Type of Ice: Wet Ice (Ice Packs) Dry Ice None

Packing Material: (Bubble Wrap) Bags Foam/Peanuts (Paper) None Other: _____

Cooler Temp As Read (°C): 2.2 Cooler Temp Corrected (°C): _____ Thermometer Used: IR-5

				Comments:
Samples Received Intact?	(Yes)	No	N/A	
Chain of Custody Present/Complete?	(Yes)	No	N/A	
Labels and Chains Agree?	(Yes)	No	N/A	
Samples Received Within Hold Time?	(Yes)	No	N/A	
Correct Containers Received?	(Yes)	No	N/A	
Anatek Bottles Used?	Yes	No	(Unknown)	
Total Number of Sample Bottles Received: 2				

				Initial pH:	pH Paper ID:
Samples Properly Preserved?	Yes	No	(N/A)	<2 or	
If No, record preservation and pH-after details					
VOC Vials Free of Headspace (<6mm)?	Yes	No	(N/A)		
VOC Trip Blanks Present?	Yes	No	(N/A)		

Record preservatives (and lot numbers, if known) for containers below:

Notes, comments, etc. (also use this space if contacting the client - record names and date/time)

8151 TCLP-gIL x2

Received/Inspected By: JKI Date/Time: 12/7/22 11:31

Form F19.01 - Eff 1 Dec 2022

Page 1 of 1

Pace Analytical®

ANALYTICAL REPORT

December 13, 2022

Hall Environmental Analysis Laboratory

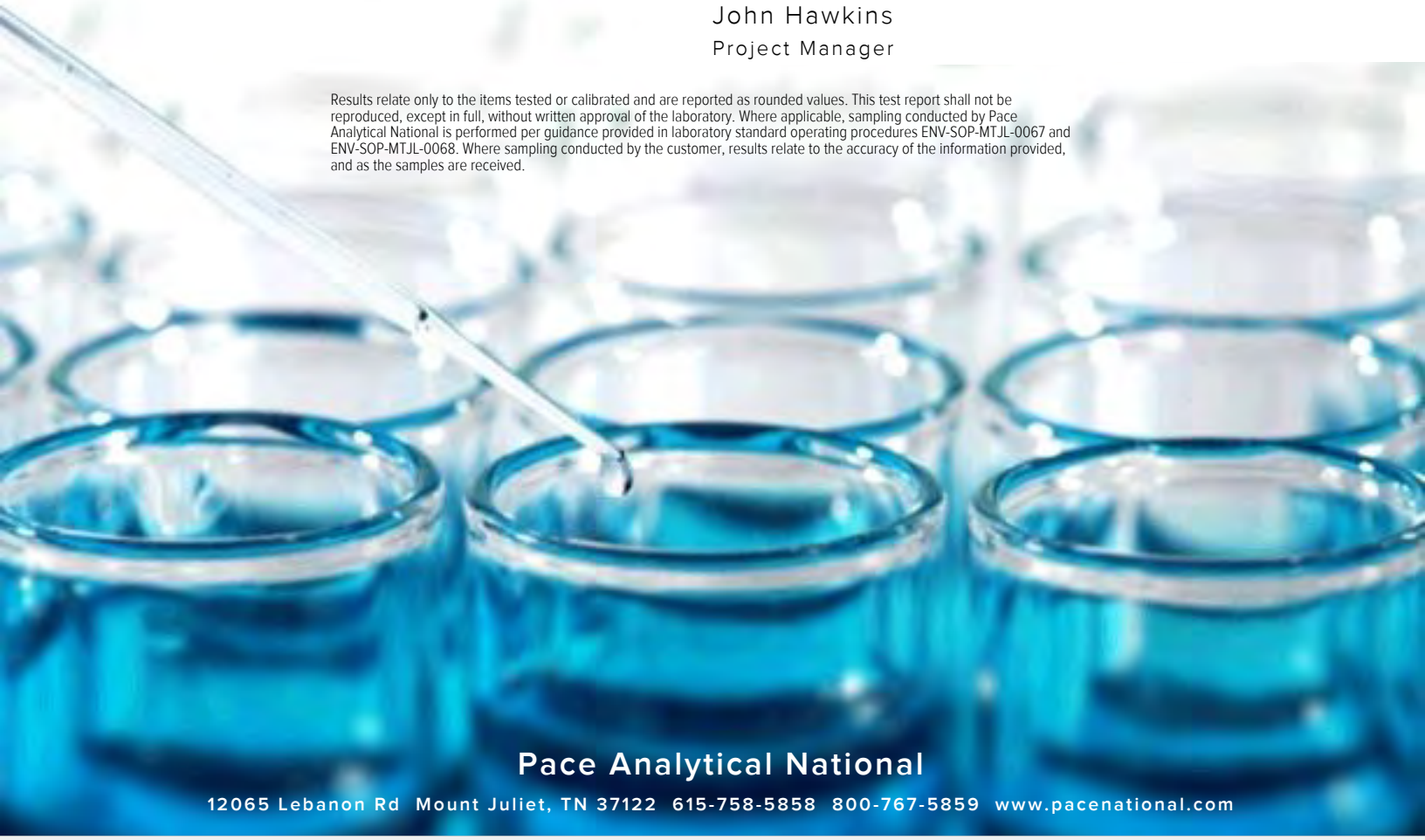
Sample Delivery Group:	L1564552
Samples Received:	12/07/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2212220-001G WDW-1,2,3 & 4 EFFLUENT L1564552-01 GW

Collected by	Collected date/time	Received date/time
	12/05/22 10:10	12/07/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1968146	1	12/08/22 08:09	12/08/22 08:09	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1970528	1	12/08/22 03:15	12/09/22 13:22	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1971569	1	12/08/22 17:16	12/08/22 17:16	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1971042	1	12/09/22 09:44	12/09/22 09:44	KAD	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1970875	1	12/08/22 03:00	12/08/22 03:00	WOS	Mt. Juliet, TN

2212220-002G CTB TO CITY POTW L1564552-02 GW

Collected by	Collected date/time	Received date/time
	12/05/22 09:50	12/07/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1968146	1	12/08/22 08:09	12/08/22 08:09	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1970528	1	12/08/22 03:15	12/09/22 13:23	JCS	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1971569	1	12/08/22 17:17	12/08/22 17:17	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1971042	1	12/09/22 09:44	12/09/22 09:44	KAD	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1970875	1	12/08/22 03:00	12/08/22 03:00	WOS	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1564552-01	2212220-001G WDW-1,2,3 & 4 EFFLUENT	4500 S2 D-2011
L1564552-02	2212220-002G CTB TO CITY POTW	4500 S2 D-2011

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	283	T8	1	12/08/2022 08:09	WG1968146

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	0.0113		0.00500	1	12/09/2022 13:22	WG1970528

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	12/08/2022 17:16	WG1971569

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
pH	7.81	T8	1	12/09/2022 09:44	WG1971042

Sample Narrative:

L1564552-01 WG1971042: 7.81 at 20.2C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	12/08/2022 03:00	WG1970875

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	307	T8	1	12/08/2022 08:09	WG1968146

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND	J6	0.00500	1	12/09/2022 13:23	WG1970528

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	12/08/2022 17:17	WG1971569

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
pH	7.80	T8	1	12/09/2022 09:44	WG1971042

Sample Narrative:

L1564552-02 WG1971042: 7.8 at 20.2C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	12/08/2022 03:00	WG1970875

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

L1562692-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1562692-02 12/08/22 08:09 • (DUP) R3869467-3 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	165	165	1	0.600		20

L1562692-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1562692-04 12/08/22 08:09 • (DUP) R3869467-4 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	194	194	1	0.500		20

L1564442-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1564442-01 12/08/22 08:09 • (DUP) R3869467-5 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	630	637	1	7.50		20

L1564552-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1564552-01 12/08/22 08:09 • (DUP) R3869467-6 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	283	276	1	7.00		20

L1564552-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1564552-02 12/08/22 08:09 • (DUP) R3869467-7 12/08/22 08:09

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	307	311	1	3.50		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3869467-1 12/08/22 08:09 • (LCSD) R3869467-2 12/08/22 08:09

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	98.0	104	106	106	108	90.0-110			1.50	20

Method Blank (MB)

(MB) R3870174-1 12/09/22 13:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1564480-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1564480-02 12/09/22 13:15 • (DUP) R3870174-5 12/09/22 13:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1564495-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1564495-01 12/09/22 13:17 • (DUP) R3870174-6 12/09/22 13:18

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	200	P1	20

Laboratory Control Sample (LCS)

(LCS) R3870174-2 12/09/22 13:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.0991	99.1	87.1-120	

L1564433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1564433-01 12/09/22 13:09 • (MS) R3870174-3 12/09/22 13:10 • (MSD) R3870174-4 12/09/22 13:11

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0967	0.0918	96.7	91.8	1	90.0-110			5.20	20

L1564552-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1564552-02 12/09/22 13:23 • (MS) R3870174-7 12/09/22 13:26 • (MSD) R3870174-8 12/09/22 13:27

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0909	0.0907	88.8	88.6	1	90.0-110	J6	J6	0.220	20

Received by OCD: 3/6/2023 7:46:22 AM

Method Blank (MB)

(MB) R3869828-1 12/08/22 17:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3869828-2 12/08/22 17:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.532	106	85.0-115	

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

L1564542-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1564542-01 12/09/22 09:44 • (DUP) R3870032-2 12/09/22 09:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.62	7.61	1	0.131		1

Sample Narrative:
OS: 7.62 at 20.3C
DUP: 7.61 at 20.3C

L1564772-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1564772-01 12/09/22 09:44 • (DUP) R3870032-3 12/09/22 09:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.86	7.88	1	0.254		1

Sample Narrative:
OS: 7.86 at 20.1C
DUP: 7.88 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3870032-1 12/09/22 09:44

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:
LCS: 9.9 at 20.8C

Released to Imaging: 5/24/2023 4:44:56 PM

L1564803-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1564803-03 12/08/22 03:00 • (DUP) R3869818-3 12/08/22 03:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
Flashpoint	DNF at 200	DNF at 200	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3869818-1 12/08/22 03:00 • (LCSD) R3869818-2 12/08/22 03:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	129	127	103	101	96.0-104			1.56	10

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

H139

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

LR564552

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2212220-001G	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	12/5/2022 10:10:00 AM	3	RCI, ORP -01
2	2212220-002G	CTB to City POTW	500HDPE	Aqueous	12/5/2022 9:50:00 AM	3	RCI, ORP -02

CN = Chlorine – 0
pH 712

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N	Temp: GBAZ	
Sufficient volume sent:	Y N	0.1+0 = 0.1	
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 12/6/2022	Time: 10:54 AM	Received By:	Date: 12-7-22	Time: 9:30
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: FedEx TRK#: 7706 95 49670

of containers: 6 Trip Blank: No

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93070**	RunNo: **93070**
Prep Date:	Analysis Date: **12/6/2022**	SeqNo: **3351927** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R93070**	RunNo: **93070**
Prep Date:	Analysis Date: **12/6/2022**	SeqNo: **3351928** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	102	90	110			
Chloride	4.6	0.50	5.000	0	91.4	90	110			
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	94.4	90	110			
Bromide	2.4	0.10	2.500	0	94.2	90	110			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	97.9	90	110			
Sulfate	9.4	0.50	10.00	0	93.7	90	110			

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93118**	RunNo: **93118**
Prep Date:	Analysis Date: **12/7/2022**	SeqNo: **3354238** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R93118**	RunNo: **93118**
Prep Date:	Analysis Date: **12/7/2022**	SeqNo: **3354243** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.5	0.50	5.000	0	90.1	90	110			
Sulfate	9.2	0.50	10.00	0	92.1	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93119**	RunNo: **93119**
Prep Date:	Analysis Date: **12/7/2022**	SeqNo: **3354349** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93119**	RunNo: **93119**
Prep Date:	Analysis Date: **12/7/2022**	SeqNo: **3354349** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R93119**	RunNo: **93119**
Prep Date:	Analysis Date: **12/7/2022**	SeqNo: **3354350** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71959** SampType: **MBLK** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW** Batch ID: **71959** RunNo: **93281**
Prep Date: **12/8/2022** Analysis Date: **12/14/2022** SeqNo: **3362248** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-71959** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **71959** RunNo: **93281**
Prep Date: **12/8/2022** Analysis Date: **12/14/2022** SeqNo: **3362249** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0011	0.0010	0.001000	0	109	70	130			
Lead	0.00096	0.0010	0.001000	0	95.5	70	130			J

Sample ID: **MSLCS-71959** SampType: **LCS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW** Batch ID: **71959** RunNo: **93281**
Prep Date: **12/8/2022** Analysis Date: **12/14/2022** SeqNo: **3362250** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0010	0.05000	0	99.2	80	120			
Lead	0.051	0.0010	0.05000	0	102	80	120			
Selenium	0.051	0.0010	0.05000	0	103	80	120			

Sample ID: **MSLLLCS-71959** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **71959** RunNo: **93281**
Prep Date: **12/8/2022** Analysis Date: **12/14/2022** SeqNo: **3362251** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.0013	0.0010	0.001000	0	125	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71988** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **71988** RunNo: **93751**
Prep Date: **12/9/2022** Analysis Date: **12/27/2022** SeqNo: **3384023** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0020		0.002500		78.9	40.9	111			
Surr: Tetrachloro-m-xylene	0.0014		0.002500		55.9	15	107			

Sample ID: **LCS-71988** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **71988** RunNo: **93751**
Prep Date: **12/9/2022** Analysis Date: **12/27/2022** SeqNo: **3384027** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	88.3	56.3	126			
gamma-BHC (Lindane)	0.00036	0.00010	0.0005000	0	71.6	45.8	103			
Heptachlor	0.00034	0.00010	0.0005000	0	68.3	33.7	104			
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	82.5	50.1	116			
Methoxychlor	0.00047	0.00010	0.0005000	0	94.4	15	203			
Surr: Decachlorobiphenyl	0.0022		0.002500		89.5	40.9	111			
Surr: Tetrachloro-m-xylene	0.0017		0.002500		70.0	15	107			

Sample ID: **LCSD-71988** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **71988** RunNo: **93751**
Prep Date: **12/9/2022** Analysis Date: **12/27/2022** SeqNo: **3384028** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00047	0.00010	0.0005000	0	94.1	56.3	126	6.34	20	
gamma-BHC (Lindane)	0.00043	0.00010	0.0005000	0	85.2	45.8	103	17.4	20	
Heptachlor	0.00032	0.00010	0.0005000	0	64.1	33.7	104	6.35	20	
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.3	50.1	116	7.91	20	
Methoxychlor	0.00050	0.00010	0.0005000	0	100	15	203	6.17	20	
Surr: Decachlorobiphenyl	0.0021		0.002500		86.0	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0016		0.002500		65.1	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71988** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **71988** RunNo: **93751**
Prep Date: **12/9/2022** Analysis Date: **12/27/2022** SeqNo: **3384075** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0021		0.002500		82.5	40.9	111			
Surr: Tetrachloro-m-xylene	0.0014		0.002500		55.3	15	107			

Sample ID: **LCS-71988** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **71988** RunNo: **93751**
Prep Date: **12/9/2022** Analysis Date: **12/27/2022** SeqNo: **3384076** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	91.7	56.3	126			
gamma-BHC (Lindane)	0.00039	0.00010	0.0005000	0	78.1	45.8	103			
Heptachlor	0.00036	0.00010	0.0005000	0	72.4	33.7	104			
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.6	50.1	116			
Methoxychlor	0.00049	0.00010	0.0005000	0	98.0	15	203			
Surr: Decachlorobiphenyl	0.0023		0.002500		93.0	40.9	111			
Surr: Tetrachloro-m-xylene	0.0017		0.002500		69.5	15	107			

Sample ID: **LCSD-71988** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **71988** RunNo: **93751**
Prep Date: **12/9/2022** Analysis Date: **12/27/2022** SeqNo: **3384077** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00050	0.00010	0.0005000	0	100	56.3	126	8.71	20	
gamma-BHC (Lindane)	0.00046	0.00010	0.0005000	0	92.2	45.8	103	16.5	20	
Heptachlor	0.00034	0.00010	0.0005000	0	68.6	33.7	104	5.41	20	
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	94.0	50.1	116	8.13	20	
Methoxychlor	0.00051	0.00010	0.0005000	0	103	15	203	4.81	20	
Surr: Decachlorobiphenyl	0.0023		0.002500		90.3	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0017		0.002500		66.7	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72280** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384697** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		93.1	40.9	111			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		84.4	15	107			

Sample ID: **MB-72280** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384698** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		96.3	40.9	111			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		83.8	15	107			

Sample ID: **LCS-72280** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384699** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00045	0.00010	0.0005000	0	89.7	56.3	126			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.0	45.8	103			
Heptachlor	0.00026	0.00010	0.0005000	0	51.2	33.7	104			
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	82.4	50.1	116			
Methoxychlor	0.00049	0.00010	0.0005000	0	98.6	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		94.2	40.9	111			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.4	15	107			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-72280** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384700** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.3	56.3	126			
gamma-BHC (Lindane)	0.00042	0.00010	0.0005000	0	83.2	45.8	103			
Heptachlor	0.00028	0.00010	0.0005000	0	55.1	33.7	104			
Heptachlor epoxide	0.00044	0.00010	0.0005000	0	87.2	50.1	116			
Methoxychlor	0.00050	0.00010	0.0005000	0	101	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		98.0	40.9	111			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		61.9	15	107			

Sample ID: **LCSD-72280** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384701** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	88.4	56.3	126	1.40	20	
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	69.5	45.8	103	8.88	20	
Heptachlor	0.00029	0.00010	0.0005000	0	58.4	33.7	104	13.2	20	
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	81.2	50.1	116	1.51	20	
Methoxychlor	0.00048	0.00010	0.0005000	0	95.9	15	203	2.77	20	
Surr: Decachlorobiphenyl	0.0023		0.002500		91.1	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0012		0.002500		46.6	15	107	0	0	

Sample ID: **LCSD-72280** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384702** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	92.2	56.3	126	3.28	20	
gamma-BHC (Lindane)	0.00040	0.00010	0.0005000	0	79.9	45.8	103	4.05	20	
Heptachlor	0.00032	0.00010	0.0005000	0	63.1	33.7	104	13.5	20	
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.8	50.1	116	0.448	20	
Methoxychlor	0.00050	0.00010	0.0005000	0	99.1	15	203	1.78	20	
Surr: Decachlorobiphenyl	0.0024		0.002500		95.0	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0012		0.002500		46.7	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72185**	SampType: **MBLK**	TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **PBW**	Batch ID: **72185**	RunNo: **93499**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376751** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	ND	1.0								
2,4-D	ND	10								
Surr: 2,4-Dichlorophenylacetic aci	0.027		0.02500		108	70	130			

Sample ID: **0.0075 PPM**	SampType: **LCS**	TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **LCSW**	Batch ID: **72185**	RunNo: **93499**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376754** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.0078	0.00010	0.007500	0	104	70	130			
2,4-D	0.0071	0.00010	0.007500	0	95.3	70	130			
Surr: 2,4-Dichlorophenylacetic aci	0.0073		0.007500		97.4	70	130			

Sample ID: **0.0075 PPM**	SampType: **LCS**	TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **LCSW**	Batch ID: **72185**	RunNo: **93499**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376764** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.0078	0.00010	0.007500	0	104	70	130			
2,4-D	0.0063	0.00010	0.007500	0	83.7	70	130			
Surr: 2,4-Dichlorophenylacetic aci	0.0075		0.007500		99.4	70	130			

Sample ID: **MB-72185**	SampType: **MBLK**	TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **PBW**	Batch ID: **72185**	RunNo: **93499**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376765** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	ND	1.0								
2,4-D	ND	10								
Surr: 2,4-Dichlorophenylacetic aci	0.027		0.02500		109	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T93064** RunNo: **93064**
Prep Date: Analysis Date: **12/6/2022** SeqNo: **3351858** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.021	0.50	0.02000	0	104	70	130			J
1,1-Dichloroethene	0.021	0.70	0.02000	0	105	70	130			J
Trichloroethene (TCE)	0.020	0.50	0.02000	0	100	70	130			J
Chlorobenzene	0.022	100	0.02000	0	108	70	130			J
Surr: 1,2-Dichloroethane-d4	0.0091		0.01000		90.9	70	130			
Surr: 4-Bromofluorobenzene	0.010		0.01000		100	70	130			
Surr: Dibromofluoromethane	0.0093		0.01000		92.5	70	130			
Surr: Toluene-d8	0.0092		0.01000		92.4	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T93064** RunNo: **93064**
Prep Date: Analysis Date: **12/6/2022** SeqNo: **3351859** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.0092		0.01000		91.8	70	130			
Surr: 4-Bromofluorobenzene	0.0096		0.01000		95.6	70	130			
Surr: Dibromofluoromethane	0.0097		0.01000		96.5	70	130			
Surr: Toluene-d8	0.0093		0.01000		92.5	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T93557** RunNo: **93557**
Prep Date: Analysis Date: **12/23/2022** SeqNo: **3375396** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb**	SampType: **MBLK**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW**	Batch ID: **T93557**	RunNo: **93557**
Prep Date:	Analysis Date: **12/23/2022**	SeqNo: **3375396** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		102	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		110	70	130			
Surr: Dibromofluoromethane	0.0093		0.01000		93.0	70	130			
Surr: Toluene-d8	0.011		0.01000		107	70	130			

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW**	Batch ID: **T93557**	RunNo: **93557**
Prep Date:	Analysis Date: **12/23/2022**	SeqNo: **3376279** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.023	0.010	0.02000	0	114	70	130			
1,1-Dichloroethene	0.021	0.010	0.02000	0	103	70	130			
Trichloroethene (TCE)	0.020	0.010	0.02000	0	101	70	130			
Chlorobenzene	0.020	0.010	0.02000	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		104	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		112	70	130			
Surr: Dibromofluoromethane	0.0095		0.01000		94.6	70	130			
Surr: Toluene-d8	0.010		0.01000		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-72267** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384444** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.074		0.2000		37.1	18.1	88.9			
Surr: Phenol-d5	0.059		0.2000		29.3	17	61.5			
Surr: 2,4,6-Tribromophenol	0.099		0.2000		49.6	29.8	104			
Surr: Nitrobenzene-d5	0.045		0.1000		45.2	22.2	111			
Surr: 2-Fluorobiphenyl	0.034		0.1000		33.7	24.6	96.3			
Surr: 4-Terphenyl-d14	0.073		0.1000		72.5	53.4	124			

Sample ID: **lcs-72267** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384445** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.072	0.0010	0.1000	0	71.9	19	106			
3+4-Methylphenol	0.14	0.0010	0.2000	0	68.7	16.3	112			
2,4-Dinitrotoluene	0.063	0.0010	0.1000	0	62.5	15	99.6			
Hexachlorobenzene	0.082	0.0010	0.1000	0	82.3	41.8	111			
Hexachlorobutadiene	0.042	0.0010	0.1000	0	42.1	15	91.5			
Hexachloroethane	0.044	0.0010	0.1000	0	44.5	15	87.5			
Nitrobenzene	0.070	0.0010	0.1000	0	70.0	19.3	114			
Pentachlorophenol	0.021	0.0010	0.1000	0	21.2	29	103			S
Pyridine	0.056	0.0010	0.1000	0	56.2	15	92.6			
2,4,5-Trichlorophenol	0.020	0.0010	0.1000	0	20.2	25.2	114			S
2,4,6-Trichlorophenol	0.018	0.0010	0.1000	0	18.5	25.7	112			S
Cresols, Total	0.21	0.0010	0.3000	0	69.8	15	145			
Surr: 2-Fluorophenol	0.024		0.2000		12.2	18.1	88.9			S
Surr: Phenol-d5	0.055		0.2000		27.4	17	61.5			
Surr: 2,4,6-Tribromophenol	0.044		0.2000		21.8	29.8	104			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-72267** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384445** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.075		0.1000		75.3	22.2	111			
Surr: 2-Fluorobiphenyl	0.058		0.1000		58.5	24.6	96.3			
Surr: 4-Terphenyl-d14	0.11		0.1000		107	53.4	124			

Sample ID: **2212220-003bms** SampType: **MS** TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384447** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.058	0.0010	0.1000	0	57.5	15.8	101			H
3+4-Methylphenol	0.12	0.0010	0.2000	0	61.4	16.9	97.9			H
2,4-Dinitrotoluene	0.057	0.0010	0.1000	0	57.2	20.1	90.5			H
Hexachlorobenzene	0.067	0.0010	0.1000	0	66.5	34	108			H
Hexachlorobutadiene	0.038	0.0010	0.1000	0	38.0	15	99.7			H
Hexachloroethane	0.039	0.0010	0.1000	0	39.0	15	86.4			H
Nitrobenzene	0.057	0.0010	0.1000	0	57.1	15	109			H
Pentachlorophenol	0.070	0.0010	0.1000	0	70.0	15	130			H
Pyridine	0.0093	0.0010	0.1000	0	9.26	15	82			SH
2,4,5-Trichlorophenol	0.072	0.0010	0.1000	0	72.1	28.1	105			H
2,4,6-Trichlorophenol	0.068	0.0010	0.1000	0	68.3	21.5	110			H
Cresols, Total	0.18	0.0010	0.3000	0	60.1	15	127			H
Surr: 2-Fluorophenol	0.085		0.2000		42.7	18.1	88.9			H
Surr: Phenol-d5	0.068		0.2000		34.2	17	61.5			H
Surr: 2,4,6-Tribromophenol	0.16		0.2000		78.7	29.8	104			H
Surr: Nitrobenzene-d5	0.062		0.1000		61.7	22.2	111			H
Surr: 2-Fluorobiphenyl	0.053		0.1000		53.1	24.6	96.3			H
Surr: 4-Terphenyl-d14	0.086		0.1000		85.8	53.4	124			H

Sample ID: **2212220-003bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384448** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.064	0.0010	0.1000	0	63.5	15.8	101	9.94	20	H
3+4-Methylphenol	0.13	0.0010	0.2000	0	66.9	16.9	97.9	8.70	20	H
2,4-Dinitrotoluene	0.060	0.0010	0.1000	0	60.4	20.1	90.5	5.30	20	H
Hexachlorobenzene	0.062	0.0010	0.1000	0	62.0	34	108	7.10	20	H
Hexachlorobutadiene	0.036	0.0010	0.1000	0	36.1	15	99.7	5.19	20	H
Hexachloroethane	0.040	0.0010	0.1000	0	40.4	15	86.4	3.42	20	H
Nitrobenzene	0.061	0.0010	0.1000	0	61.0	15	109	6.63	20	H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2212220-003bmsd** SampType: **MSD** TestCode: **EPA Method 8270C TCLP**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384448** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.070	0.0010	0.1000	0	70.1	15	130	0.143	20	H
Pyridine	0.012	0.0010	0.1000	0	12.4	15	82	28.8	20	RSH
2,4,5-Trichlorophenol	0.075	0.0010	0.1000	0	74.5	28.1	105	3.25	20	H
2,4,6-Trichlorophenol	0.069	0.0010	0.1000	0	69.3	21.5	110	1.47	20	H
Cresols, Total	0.20	0.0010	0.3000	0	65.8	15	127	9.10	20	H
Surr: 2-Fluorophenol	0.095		0.2000		47.7	18.1	88.9	0	0	H
Surr: Phenol-d5	0.075		0.2000		37.6	17	61.5	0	0	H
Surr: 2,4,6-Tribromophenol	0.15		0.2000		76.6	29.8	104	0	0	H
Surr: Nitrobenzene-d5	0.065		0.1000		64.7	22.2	111	0	0	H
Surr: 2-Fluorobiphenyl	0.060		0.1000		59.6	24.6	96.3	0	0	H
Surr: 4-Terphenyl-d14	0.092		0.1000		92.2	53.4	124	0	0	H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 99.4uS eC**	SampType: **lcs**		TestCode: **SM2510B: Specific Conductance**		
Client ID: **LCSW**	Batch ID: **R93143**		RunNo: **93143**		
Prep Date:	Analysis Date: **12/8/2022**		SeqNo: **3355383**	Units: **µmhos/cm**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	99	10	99.40	0	99.9	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**

20-Jan-23

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72298** SampType: **MBLK** TestCode: **EPA Method 7470A: Mercury**

Client ID: **PBW** Batch ID: **72298** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374388** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000094	0.00020								J

Sample ID: **LCS-72298** SampType: **LCS** TestCode: **EPA Method 7470A: Mercury**

Client ID: **LCSW** Batch ID: **72298** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374394** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0057	0.00020	0.005000	0	114	85	115			

Sample ID: **LCSLL-72298** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**

Client ID: **BatchQC** Batch ID: **72298** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374396** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00017	0.00020	0.0001500	0	115	50	150			J

Sample ID: **2212220-002EMS** SampType: **MS** TestCode: **EPA Method 7470A: Mercury**

Client ID: **CTB to City POTW** Batch ID: **72298** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374471** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	75	125			

Sample ID: **2212220-002EMSD** SampType: **MSD** TestCode: **EPA Method 7470A: Mercury**

Client ID: **CTB to City POTW** Batch ID: **72298** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374472** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	103	75	125	1.76	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72362** SampType: **MBLK** TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **PBW** Batch ID: **72362** RunNo: **93613**
Prep Date: **12/28/2022** Analysis Date: **12/29/2022** SeqNo: **3378122** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID: **LCSLL-72362** SampType: **LCSLL** TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **BatchQC** Batch ID: **72362** RunNo: **93613**
Prep Date: **12/28/2022** Analysis Date: **12/29/2022** SeqNo: **3378123** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00019	0.020	0.0001500	0	129	50	150			J

Sample ID: **LCS-72362** SampType: **LCS** TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **LCSW** Batch ID: **72362** RunNo: **93613**
Prep Date: **12/28/2022** Analysis Date: **12/29/2022** SeqNo: **3378124** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.020	0.005000	0	100	85	115			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A93237**	RunNo: **93237**
Prep Date:	Analysis Date: **12/12/2022**	SeqNo: **3360414** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A93237**	RunNo: **93237**
Prep Date:	Analysis Date: **12/12/2022**	SeqNo: **3360416** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	52	1.0	50.00	0	103	80	120			
Magnesium	52	1.0	50.00	0	105	80	120			
Potassium	52	1.0	50.00	0	105	80	120			
Sodium	53	1.0	50.00	0	105	80	120			

Sample ID: **2212220-001DMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **A93237**	RunNo: **93237**
Prep Date:	Analysis Date: **12/12/2022**	SeqNo: **3360458** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	390	5.0	250.0	134.5	102	75	125			
Potassium	360	5.0	250.0	102.3	102	75	125			

Sample ID: **2212220-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **A93237**	RunNo: **93237**
Prep Date:	Analysis Date: **12/12/2022**	SeqNo: **3360459** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	390	5.0	250.0	134.5	101	75	125	0.509	20	
Potassium	360	5.0	250.0	102.3	102	75	125	0.122	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72262** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **72262** RunNo: **93496**
Prep Date: **12/21/2022** Analysis Date: **12/22/2022** SeqNo: **3372566** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID: **LCS-72262** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **72262** RunNo: **93496**
Prep Date: **12/21/2022** Analysis Date: **12/22/2022** SeqNo: **3372568** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.54	5.0	0.5000	0	108	80	120			J
Barium	0.47	100	0.5000	0	93.6	80	120			J
Cadmium	0.52	1.0	0.5000	0	104	80	120			J
Chromium	0.48	5.0	0.5000	0	95.4	80	120			J
Lead	0.45	5.0	0.5000	0	89.9	80	120			J
Selenium	0.55	1.0	0.5000	0	110	80	120			J
Silver	0.11	5.0	0.1000	0	106	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71959**	SampType: **MBLK**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW**	Batch ID: **71959**	RunNo: **93237**
Prep Date: **12/8/2022**	Analysis Date: **12/12/2022**	SeqNo: **3360411** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-71959**	SampType: **LCS**	TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW**	Batch ID: **71959**	RunNo: **93237**
Prep Date: **12/8/2022**	Analysis Date: **12/12/2022**	SeqNo: **3360413** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.41	0.0020	0.5000	0	81.2	80	120			
Cadmium	0.42	0.0020	0.5000	0	83.8	80	120			
Chromium	0.40	0.0060	0.5000	0	80.2	80	120			
Silver	0.084	0.0050	0.1000	0	84.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R93143**	RunNo: **93143**							
Prep Date:	Analysis Date: **12/8/2022**	SeqNo: **3355333**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R93143**	RunNo: **93143**							
Prep Date:	Analysis Date: **12/8/2022**	SeqNo: **3355334**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.96	20.00	80.00	0	95.0	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2212220-001CDUP** SampType: **DUP** TestCode: **Specific Gravity**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **R93206** RunNo: **93206**
Prep Date: Analysis Date: **12/12/2022** SeqNo: **3358605** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9989	0						0.331	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71907**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **PBW**	Batch ID: **71907**	RunNo: **93177**							
Prep Date: **12/7/2022**	Analysis Date: **12/9/2022**	SeqNo: **3357138**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-71907**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **LCSW**	Batch ID: **71907**	RunNo: **93177**							
Prep Date: **12/7/2022**	Analysis Date: **12/9/2022**	SeqNo: **3357139**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212220**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-71942**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **71942**	RunNo: **93176**							
Prep Date: **12/8/2022**	Analysis Date: **12/9/2022**	SeqNo: **3357114**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-71942**	SampType: **LCSD**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSS02**	Batch ID: **71942**	RunNo: **93176**							
Prep Date: **12/8/2022**	Analysis Date: **12/9/2022**	SeqNo: **3357115**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	88	4.0	91.90	0	95.8	83.89	119.7			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2212220 | RcptNo: 1

Received By: Juan Rojas 12/6/2022 7:30:00 AM

Completed By: Sean Livingston 12/6/2022 9:00:38 AM

Reviewed By: 12-6-22

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
   Samples not frozen.
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

of preserved bottles checked for pH: 6 4 (<2 or >12 unless noted)
Adjusted? yes
Checked by: KPG 12.06.22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks: Added 0.4ml of H2SO4 to sample 001C-002C for pH <2 - KPG 12.06.22
17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	-1.8	Good				
2	0.0	Good				

Received by OCD: 3/6/2023 7:46:22 AM

Released to Imaging: 5/24/2023 4:44:56 PM

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: PSP WDW-1, 2, 3 & 4 Inj Well

Project #:

Project Manager: Randy Dade

Sampler:

On Ice: ☑ Yes ☐ No

of Coolers: 1

Cooler Temp(including CF): 1.6+0.2=1.8 (0.1-0.1=0)

HEAL No. 2212220

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds	Filtered 8260, 8051, 8151, 8044, 8270	ID -003 E -004	
12/5/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	x									001
12/5/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL		x								
12/5/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none			x							
12/5/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***				x						
12/5/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3					x					
12/5/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none						x				
12/5/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							x			
12/5/2022	9:50	Liquid	CTB to City POTW	**	**	x									002
12/5/2022	9:50	Liquid	CTB to City POTW	3-40ml VOA	HCL		x								
12/5/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none			x							
12/5/2022	9:50	Liquid	CTB to City POTW	***	***				x						
12/5/2022	9:50	Liquid	CTB to City POTW	1-250ml P	HNO3					x					
12/5/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none						x				
12/5/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none							x			

Date	Time	Relinquished by	Received by	Via	Date	Time
12-5-22	12:15	Brady Hibbard			12/5/22	1215
12/5/22	1900			Courier	12/6/22	7:30

Remarks: Dissolved Cations by EPA Method 200.7.
1-500ml unpreserved p, 1-125ml H2SO4 p, 1-125ml HNO3 p.*1-500ml unpreserved p, 1-500ml NaOH p, 1-500ml NaOH/ZnAcetate p

RDU FEED RATE : 9000 BPD

not Frozen Jn 12/6/22

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 20, 2023

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2212731

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 4 sample(s) on 12/13/2022 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2212731**
Date: **1/20/2023**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". Even though the low solids content did not require filtration, all TCLP compounds are reported as both total and filtered, at the TCLP limits. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

EPA Method 8270:
The matrix spike and matrix spike duplicate had a low recovery for pyridine

EPA Method 8270:
The two filtered samples for WDW-1,2,3 & 4 Effluent and CTB to City POTW were associated with a laboratory control spike that had low recoveries for pentachlorophenol, 2,4,5-trichlorophenol and 2,4,6-Trichlorophenol.

"H" flags denote that the extraction holding time was exceeded.

"S" flags denote that the surrogate/spike recovery was outside of the standard limits.

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212731-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/12/2022 10:10:00 AM
Received Date: 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **mb**	
Chlordane	ND	0.00050	0.030		mg/L	1	12/27/2022 9:02:02 AM	72137
Endrin	ND	0.000062	0.020		mg/L	1	12/27/2022 9:02:02 AM	72137
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	12/27/2022 9:02:02 AM	72137
Heptachlor	ND	0.000041	0.0080		mg/L	1	12/27/2022 9:02:02 AM	72137
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	12/27/2022 9:02:02 AM	72137
Methoxychlor	ND	0.000075	10		mg/L	1	12/27/2022 9:02:02 AM	72137
Toxaphene	ND	0.00050	0.50		mg/L	1	12/27/2022 9:02:02 AM	72137
Surr: Decachlorobiphenyl	33.5	0	40.9-111	S	%Rec	1	12/27/2022 9:02:02 AM	72137
Surr: Tetrachloro-m-xylene	54.1	0	15-107		%Rec	1	12/27/2022 9:02:02 AM	72137
EPA METHOD 300.0: ANIONS							Analyst: **JTT**	
Fluoride	34	0.92	2.0	*	mg/L	20	12/13/2022 5:04:45 PM	R93258
Chloride	340	25	50	*	mg/L	100	12/29/2022 9:21:06 PM	R93618
Nitrogen, Nitrite (As N)	ND	0.057	0.50		mg/L	5	12/13/2022 4:52:25 PM	R93258
Bromide	0.90	0.25	0.50		mg/L	5	12/13/2022 4:52:25 PM	R93258
Nitrogen, Nitrate (As N)	0.91	0.10	0.50		mg/L	5	12/13/2022 4:52:25 PM	R93258
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5		mg/L	5	12/13/2022 4:52:25 PM	R93258
Sulfate	2100	25	50	*	mg/L	100	12/29/2022 9:21:06 PM	R93618
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.022	0.00050	5.0	J	mg/L	1	12/14/2022 1:50:43 PM	72042
Lead	ND	0.00050	5.0		mg/L	1	12/14/2022 11:52:42 A	72042
Selenium	0.021	0.00050	1.0	J	mg/L	1	12/15/2022 12:03:38 P	72042
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	12/23/2022 3:11:47 PM	72297
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	400	0.29	5.0		mg/L	5	12/21/2022 3:39:44 PM	A93491
Magnesium	120	0.17	5.0		mg/L	5	12/21/2022 3:39:44 PM	A93491
Potassium	140	1.0	5.0		mg/L	5	12/21/2022 3:39:44 PM	A93491
Sodium	710	4.2	10		mg/L	10	1/3/2023 10:03:35 AM	A93678
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.047	0.0011	100	J	mg/L	1	12/15/2022 1:26:24 PM	72042
Cadmium	ND	0.0012	1.0		mg/L	1	12/15/2022 1:26:24 PM	72042
Chromium	ND	0.0017	5.0		mg/L	1	12/15/2022 1:26:24 PM	72042
Silver	0.0066	0.0025	5.0	J	mg/L	2	12/29/2022 10:50:43 A	72042
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.0050	200		mg/L	1	12/20/2022 2:40:52 PM	72115
3+4-Methylphenol	ND	0.0051	200		mg/L	1	12/20/2022 2:40:52 PM	72115

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212731-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/12/2022 10:10:00 AM
Received Date: 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	12/20/2022 2:40:52 PM	72115
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	12/20/2022 2:40:52 PM	72115
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	12/20/2022 2:40:52 PM	72115
Hexachloroethane	ND	0.014	3.0		mg/L	1	12/20/2022 2:40:52 PM	72115
Nitrobenzene	ND	0.0049	2.0		mg/L	1	12/20/2022 2:40:52 PM	72115
Pentachlorophenol	ND	0.027	100		mg/L	1	12/20/2022 2:40:52 PM	72115
Pyridine	ND	0.014	5.0		mg/L	1	12/20/2022 2:40:52 PM	72115
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	12/20/2022 2:40:52 PM	72115
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	12/20/2022 2:40:52 PM	72115
Cresols, Total	ND	0.027	200		mg/L	1	12/20/2022 2:40:52 PM	72115
Surr: 2-Fluorophenol	35.5	0	18.1-88.9		%Rec	1	12/20/2022 2:40:52 PM	72115
Surr: Phenol-d5	27.3	0	17-61.5		%Rec	1	12/20/2022 2:40:52 PM	72115
Surr: 2,4,6-Tribromophenol	67.2	0	29.8-104		%Rec	1	12/20/2022 2:40:52 PM	72115
Surr: Nitrobenzene-d5	46.4	0	22.2-111		%Rec	1	12/20/2022 2:40:52 PM	72115
Surr: 2-Fluorobiphenyl	37.6	0	24.6-96.3		%Rec	1	12/20/2022 2:40:52 PM	72115
Surr: 4-Terphenyl-d14	74.9	0	53.4-124		%Rec	1	12/20/2022 2:40:52 PM	72115
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50		mg/L	200	12/23/2022 8:49:10 PM	T93557
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	12/23/2022 8:49:10 PM	T93557
2-Butanone	ND	200	200		mg/L	200	12/23/2022 8:49:10 PM	T93557
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	12/23/2022 8:49:10 PM	T93557
Chloroform	ND	6.0	6.0		mg/L	200	12/23/2022 8:49:10 PM	T93557
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	12/23/2022 8:49:10 PM	T93557
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	12/23/2022 8:49:10 PM	T93557
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	12/23/2022 8:49:10 PM	T93557
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	12/23/2022 8:49:10 PM	T93557
Vinyl chloride	ND	0.20	0.20		mg/L	200	12/23/2022 8:49:10 PM	T93557
Chlorobenzene	ND	100	100		mg/L	200	12/23/2022 8:49:10 PM	T93557
Surr: 1,2-Dichloroethane-d4	96.5	0	70-130		%Rec	200	12/23/2022 8:49:10 PM	T93557
Surr: 4-Bromofluorobenzene	111	0	70-130		%Rec	200	12/23/2022 8:49:10 PM	T93557
Surr: Dibromofluoromethane	85.7	0	70-130		%Rec	200	12/23/2022 8:49:10 PM	T93557
Surr: Toluene-d8	105	0	70-130		%Rec	200	12/23/2022 8:49:10 PM	T93557
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **CAS**	
Conductivity	5800	10	10		µmhos/c	1	12/15/2022 12:44:40 P	R93338
SM4500-H+B / 9040C: PH							Analyst: **CAS**	
pH	7.79			H	pH units	1	12/15/2022 12:44:40 P	R93338
SM2320B: ALKALINITY							Analyst: **CAS**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212731-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/12/2022 10:10:00 AM
Received Date: 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	511.1	20.00	20.00		mg/L Ca	1	12/15/2022 12:44:40 P	R93338
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/15/2022 12:44:40 P	R93338
Total Alkalinity (as CaCO3)	511.1	20.00	20.00		mg/L Ca	1	12/15/2022 12:44:40 P	R93338
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	1.001	0	0			1	12/30/2022 5:04:00 PM	R93653
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	4170	200	200	*HD	mg/L	1	12/20/2022 5:43:00 PM	72174
SM 2540D: TSS							Analyst: **SNS**	
Suspended Solids	30	8.0	8.0	D	mg/L	1	12/16/2022 2:25:00 PM	72122

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 12/12/2022 9:50:00 AM
Lab ID: 2212731-002 **Matrix:** AQUEOUS **Received Date:** 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **mb**	
Chlordane	ND	0.00050	0.030		mg/L	1	12/27/2022 9:15:11 AM	72137
Endrin	ND	0.000062	0.020		mg/L	1	12/27/2022 9:15:11 AM	72137
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	12/27/2022 9:15:11 AM	72137
Heptachlor	ND	0.000041	0.0080		mg/L	1	12/27/2022 9:15:11 AM	72137
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	12/27/2022 9:15:11 AM	72137
Methoxychlor	ND	0.000075	10		mg/L	1	12/27/2022 9:15:11 AM	72137
Toxaphene	ND	0.00050	0.50		mg/L	1	12/27/2022 9:15:11 AM	72137
Surr: Decachlorobiphenyl	75.1	0	40.9-111		%Rec	1	12/27/2022 9:15:11 AM	72137
Surr: Tetrachloro-m-xylene	63.8	0	15-107		%Rec	1	12/27/2022 9:15:11 AM	72137
EPA METHOD 300.0: ANIONS							Analyst: **JTT**	
Fluoride	1.1	0.046	0.10		mg/L	1	12/13/2022 5:17:07 PM	R93258
Chloride	35	5.0	10		mg/L	20	12/13/2022 5:29:27 PM	R93258
Nitrogen, Nitrite (As N)	0.037	0.011	0.10	J	mg/L	1	12/13/2022 5:17:07 PM	R93258
Bromide	ND	0.050	0.10		mg/L	1	12/13/2022 5:17:07 PM	R93258
Nitrogen, Nitrate (As N)	1.6	0.020	0.10		mg/L	1	12/13/2022 5:17:07 PM	R93258
Phosphorus, Orthophosphate (As P)	7.7	5.0	10	J	mg/L	20	12/13/2022 5:29:27 PM	R93258
Sulfate	690	5.0	10	*	mg/L	20	12/13/2022 5:29:27 PM	R93258
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.00086	0.00050	5.0	J	mg/L	1	12/14/2022 1:56:23 PM	72042
Lead	ND	0.00050	5.0		mg/L	1	12/14/2022 12:05:13 P	72042
Selenium	0.0029	0.00050	1.0	J	mg/L	1	12/15/2022 12:07:58 P	72042
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	12/23/2022 3:13:56 PM	72297
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	180	0.29	5.0		mg/L	5	12/21/2022 3:48:48 PM	A93491
Magnesium	54	0.17	5.0		mg/L	5	12/21/2022 3:48:48 PM	A93491
Potassium	1.8	0.21	1.0		mg/L	1	12/28/2022 3:46:02 PM	A93600
Sodium	37	0.42	1.0		mg/L	1	12/28/2022 3:46:02 PM	A93600
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.019	0.0011	100	J	mg/L	1	12/15/2022 1:28:26 PM	72042
Cadmium	ND	0.0012	1.0		mg/L	1	12/15/2022 1:28:26 PM	72042
Chromium	0.0033	0.0017	5.0	J	mg/L	1	12/15/2022 1:28:26 PM	72042
Silver	0.0030	0.0013	5.0	J	mg/L	1	12/29/2022 10:54:09 A	72042
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.0050	200		mg/L	1	12/20/2022 3:22:08 PM	72115
3+4-Methylphenol	ND	0.0051	200		mg/L	1	12/20/2022 3:22:08 PM	72115

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212731-002 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 12/12/2022 9:50:00 AM
Received Date: 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.0049	0.13		mg/L	1	12/20/2022 3:22:08 PM	72115
Hexachlorobenzene	ND	0.019	0.13		mg/L	1	12/20/2022 3:22:08 PM	72115
Hexachlorobutadiene	ND	0.017	0.50		mg/L	1	12/20/2022 3:22:08 PM	72115
Hexachloroethane	ND	0.014	3.0		mg/L	1	12/20/2022 3:22:08 PM	72115
Nitrobenzene	ND	0.0049	2.0		mg/L	1	12/20/2022 3:22:08 PM	72115
Pentachlorophenol	ND	0.027	100		mg/L	1	12/20/2022 3:22:08 PM	72115
Pyridine	ND	0.014	5.0		mg/L	1	12/20/2022 3:22:08 PM	72115
2,4,5-Trichlorophenol	ND	0.0063	400		mg/L	1	12/20/2022 3:22:08 PM	72115
2,4,6-Trichlorophenol	ND	0.0059	2.0		mg/L	1	12/20/2022 3:22:08 PM	72115
Cresols, Total	ND	0.027	200		mg/L	1	12/20/2022 3:22:08 PM	72115
Surr: 2-Fluorophenol	52.2	0	18.1-88.9		%Rec	1	12/20/2022 3:22:08 PM	72115
Surr: Phenol-d5	39.6	0	17-61.5		%Rec	1	12/20/2022 3:22:08 PM	72115
Surr: 2,4,6-Tribromophenol	73.5	0	29.8-104		%Rec	1	12/20/2022 3:22:08 PM	72115
Surr: Nitrobenzene-d5	64.0	0	22.2-111		%Rec	1	12/20/2022 3:22:08 PM	72115
Surr: 2-Fluorobiphenyl	58.9	0	24.6-96.3		%Rec	1	12/20/2022 3:22:08 PM	72115
Surr: 4-Terphenyl-d14	101	0	53.4-124		%Rec	1	12/20/2022 3:22:08 PM	72115
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50		mg/L	200	12/23/2022 9:17:36 PM	T93557
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	12/23/2022 9:17:36 PM	T93557
2-Butanone	ND	200	200		mg/L	200	12/23/2022 9:17:36 PM	T93557
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	12/23/2022 9:17:36 PM	T93557
Chloroform	ND	6.0	6.0		mg/L	200	12/23/2022 9:17:36 PM	T93557
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	12/23/2022 9:17:36 PM	T93557
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	12/23/2022 9:17:36 PM	T93557
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	12/23/2022 9:17:36 PM	T93557
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	12/23/2022 9:17:36 PM	T93557
Vinyl chloride	ND	0.20	0.20		mg/L	200	12/23/2022 9:17:36 PM	T93557
Chlorobenzene	ND	100	100		mg/L	200	12/23/2022 9:17:36 PM	T93557
Surr: 1,2-Dichloroethane-d4	104	0	70-130		%Rec	200	12/23/2022 9:17:36 PM	T93557
Surr: 4-Bromofluorobenzene	109	0	70-130		%Rec	200	12/23/2022 9:17:36 PM	T93557
Surr: Dibromofluoromethane	87.4	0	70-130		%Rec	200	12/23/2022 9:17:36 PM	T93557
Surr: Toluene-d8	103	0	70-130		%Rec	200	12/23/2022 9:17:36 PM	T93557
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **CAS**	
Conductivity	1300	10	10		µmhos/c	1	12/15/2022 1:06:21 PM	R93338
SM4500-H+B / 9040C: PH							Analyst: **CAS**	
pH	7.16			H	pH units	1	12/15/2022 1:06:21 PM	R93338
SM2320B: ALKALINITY							Analyst: **CAS**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 12/12/2022 9:50:00 AM
Lab ID: 2212731-002 **Matrix:** AQUEOUS **Received Date:** 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	25.72	20.00	20.00		mg/L Ca	1	12/15/2022 1:06:21 PM	R93338
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/15/2022 1:06:21 PM	R93338
Total Alkalinity (as CaCO3)	25.72	20.00	20.00		mg/L Ca	1	12/15/2022 1:06:21 PM	R93338
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9969	0	0			1	12/30/2022 5:04:00 PM	R93653
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	1080	20.0	20.0	*H	mg/L	1	12/20/2022 5:43:00 PM	72174
SM 2540D: TSS							Analyst: **SNS**	
Suspended Solids	ND	4.0	4.0		mg/L	1	12/16/2022 2:25:00 PM	72122

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212731-003 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent-Filtere
Collection Date: 12/12/2022 10:10:00 AM
Received Date: 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030	H	mg/L	1	1/5/2023 12:25:51 PM	72280
Endrin	ND	0.000062	0.020	H	mg/L	1	1/5/2023 12:25:51 PM	72280
gamma-BHC (Lindane)	ND	0.000054	0.40	H	mg/L	1	1/5/2023 12:25:51 PM	72280
Heptachlor	ND	0.000041	0.0080	H	mg/L	1	1/5/2023 12:25:51 PM	72280
Heptachlor epoxide	ND	0.000051	0.0080	H	mg/L	1	1/5/2023 12:25:51 PM	72280
Methoxychlor	ND	0.000075	10	H	mg/L	1	1/5/2023 12:25:51 PM	72280
Toxaphene	ND	0.00050	0.50	H	mg/L	1	1/5/2023 12:25:51 PM	72280
Surr: Decachlorobiphenyl	58.0	0	40.9-111	H	%Rec	1	1/5/2023 12:25:51 PM	72280
Surr: Tetrachloro-m-xylene	63.6	0	15-107	H	%Rec	1	1/5/2023 12:25:51 PM	72280
EPA METHOD 8151: HERBICIDES TCLP							Analyst: **SB**	
2,4,5-TP (Silvex)	ND	1.0	1.0	H	mg/L	1	12/23/2022 12:51:51 A	72185
2,4-D	ND	10	10	H	mg/L	1	12/23/2022 12:51:51 A	72185
Surr: 2,4-Dichlorophenylacetic acid	231	0	70-130	SH	%Rec	1	12/23/2022 12:51:51 A	72185
EPA METHOD 7470A: TCLP MERCURY							Analyst: **VP**	
Mercury	ND	0.000092	0.020		mg/L	1	12/29/2022 12:37:17 P	72362
EPA METHOD 6010B: TCLP METALS							Analyst: **JRR**	
Arsenic	0.030	0.028	5.0	J	mg/L	1	12/22/2022 10:05:53 A	72262
Barium	0.047	0.0045	100	J	mg/L	1	12/22/2022 10:05:53 A	72262
Cadmium	ND	0.0067	1.0		mg/L	1	12/22/2022 10:05:53 A	72262
Chromium	ND	0.0031	5.0		mg/L	1	12/22/2022 10:05:53 A	72262
Lead	ND	0.0099	5.0		mg/L	1	12/22/2022 10:05:53 A	72262
Selenium	ND	0.061	1.0		mg/L	1	12/22/2022 10:05:53 A	72262
Silver	0.0066	0.0023	5.0	J	mg/L	1	12/22/2022 10:05:53 A	72262
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.0050	200	H	mg/L	1	1/5/2023 8:24:07 PM	72267
3+4-Methylphenol	ND	0.0051	200	H	mg/L	1	1/5/2023 8:24:07 PM	72267
2,4-Dinitrotoluene	ND	0.0049	0.13	H	mg/L	1	1/5/2023 8:24:07 PM	72267
Hexachlorobenzene	ND	0.019	0.13	H	mg/L	1	1/5/2023 8:24:07 PM	72267
Hexachlorobutadiene	ND	0.017	0.50	H	mg/L	1	1/5/2023 8:24:07 PM	72267
Hexachloroethane	ND	0.014	3.0	H	mg/L	1	1/5/2023 8:24:07 PM	72267
Nitrobenzene	ND	0.0049	2.0	H	mg/L	1	1/5/2023 8:24:07 PM	72267
Pentachlorophenol	ND	0.027	100	EH	mg/L	1	1/5/2023 8:24:07 PM	72267
Pyridine	ND	0.014	5.0	H	mg/L	1	1/5/2023 8:24:07 PM	72267
2,4,5-Trichlorophenol	ND	0.0063	400	EH	mg/L	1	1/5/2023 8:24:07 PM	72267
2,4,6-Trichlorophenol	ND	0.0059	2.0	EH	mg/L	1	1/5/2023 8:24:07 PM	72267
Cresols, Total	ND	0.027	200	H	mg/L	1	1/5/2023 8:24:07 PM	72267
Surr: 2-Fluorophenol	45.3	0	18.1-88.9	H	%Rec	1	1/5/2023 8:24:07 PM	72267

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212731-003 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent-Filtere
Collection Date: 12/12/2022 10:10:00 AM
Received Date: 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
Surr: Phenol-d5	35.0	0	17-61.5	H	%Rec	1	1/5/2023 8:24:07 PM	72267
Surr: 2,4,6-Tribromophenol	72.9	0	29.8-104	H	%Rec	1	1/5/2023 8:24:07 PM	72267
Surr: Nitrobenzene-d5	58.0	0	22.2-111	H	%Rec	1	1/5/2023 8:24:07 PM	72267
Surr: 2-Fluorobiphenyl	47.2	0	24.6-96.3	H	%Rec	1	1/5/2023 8:24:07 PM	72267
Surr: 4-Terphenyl-d14	93.7	0	53.4-124	H	%Rec	1	1/5/2023 8:24:07 PM	72267
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50		mg/L	200	12/23/2022 9:45:59 PM	T93557
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	12/23/2022 9:45:59 PM	T93557
2-Butanone	ND	200	200		mg/L	200	12/23/2022 9:45:59 PM	T93557
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	12/23/2022 9:45:59 PM	T93557
Chloroform	ND	6.0	6.0		mg/L	200	12/23/2022 9:45:59 PM	T93557
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	12/23/2022 9:45:59 PM	T93557
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	12/23/2022 9:45:59 PM	T93557
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	12/23/2022 9:45:59 PM	T93557
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	12/23/2022 9:45:59 PM	T93557
Vinyl chloride	ND	0.20	0.20		mg/L	200	12/23/2022 9:45:59 PM	T93557
Chlorobenzene	ND	100	100		mg/L	200	12/23/2022 9:45:59 PM	T93557
Surr: 1,2-Dichloroethane-d4	99.6	0	70-130		%Rec	200	12/23/2022 9:45:59 PM	T93557
Surr: 4-Bromofluorobenzene	115	0	70-130		%Rec	200	12/23/2022 9:45:59 PM	T93557
Surr: Dibromofluoromethane	91.8	0	70-130		%Rec	200	12/23/2022 9:45:59 PM	T93557
Surr: Toluene-d8	105	0	70-130		%Rec	200	12/23/2022 9:45:59 PM	T93557

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212731-004 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW-Filtered
Collection Date: 12/12/2022 9:50:00 AM
Received Date: 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030	H	mg/L	1	1/5/2023 12:39:02 PM	72280
Endrin	ND	0.000062	0.020	H	mg/L	1	1/5/2023 12:39:02 PM	72280
gamma-BHC (Lindane)	ND	0.000054	0.40	H	mg/L	1	1/5/2023 12:39:02 PM	72280
Heptachlor	ND	0.000041	0.0080	H	mg/L	1	1/5/2023 12:39:02 PM	72280
Heptachlor epoxide	ND	0.000051	0.0080	H	mg/L	1	1/5/2023 12:39:02 PM	72280
Methoxychlor	ND	0.000075	10	H	mg/L	1	1/5/2023 12:39:02 PM	72280
Toxaphene	ND	0.00050	0.50	H	mg/L	1	1/5/2023 12:39:02 PM	72280
Surr: Decachlorobiphenyl	81.1	0	40.9-111	H	%Rec	1	1/5/2023 12:39:02 PM	72280
Surr: Tetrachloro-m-xylene	66.7	0	15-107	H	%Rec	1	1/5/2023 12:39:02 PM	72280
EPA METHOD 8151: HERBICIDES TCLP							Analyst: **SB**	
2,4,5-TP (Silvex)	ND	1.0	1.0	H	mg/L	1	12/23/2022 1:17:37 AM	72185
2,4-D	ND	10	10	H	mg/L	1	12/23/2022 1:17:37 AM	72185
Surr: 2,4-Dichlorophenylacetic acid	111	0	70-130	H	%Rec	1	12/23/2022 1:17:37 AM	72185
EPA METHOD 7470A: TCLP MERCURY							Analyst: **VP**	
Mercury	ND	0.000092	0.020		mg/L	1	12/29/2022 12:39:27 P	72362
EPA METHOD 6010B: TCLP METALS							Analyst: **JRR**	
Arsenic	ND	0.028	5.0		mg/L	1	12/22/2022 10:07:47 A	72262
Barium	0.017	0.0045	100	J	mg/L	1	12/22/2022 10:07:47 A	72262
Cadmium	ND	0.0067	1.0		mg/L	1	12/22/2022 10:07:47 A	72262
Chromium	ND	0.0031	5.0		mg/L	1	12/22/2022 10:07:47 A	72262
Lead	ND	0.0099	5.0		mg/L	1	12/22/2022 10:07:47 A	72262
Selenium	ND	0.061	1.0		mg/L	1	12/22/2022 10:07:47 A	72262
Silver	0.0030	0.0023	5.0	J	mg/L	1	12/22/2022 10:07:47 A	72262
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.0050	200	H	mg/L	1	1/5/2023 9:04:52 PM	72267
3+4-Methylphenol	ND	0.0051	200	H	mg/L	1	1/5/2023 9:04:52 PM	72267
2,4-Dinitrotoluene	ND	0.0049	0.13	H	mg/L	1	1/5/2023 9:04:52 PM	72267
Hexachlorobenzene	ND	0.019	0.13	H	mg/L	1	1/5/2023 9:04:52 PM	72267
Hexachlorobutadiene	ND	0.017	0.50	H	mg/L	1	1/5/2023 9:04:52 PM	72267
Hexachloroethane	ND	0.014	3.0	H	mg/L	1	1/5/2023 9:04:52 PM	72267
Nitrobenzene	ND	0.0049	2.0	H	mg/L	1	1/5/2023 9:04:52 PM	72267
Pentachlorophenol	ND	0.027	100	EH	mg/L	1	1/5/2023 9:04:52 PM	72267
Pyridine	ND	0.014	5.0	H	mg/L	1	1/5/2023 9:04:52 PM	72267
2,4,5-Trichlorophenol	ND	0.0063	400	EH	mg/L	1	1/5/2023 9:04:52 PM	72267
2,4,6-Trichlorophenol	ND	0.0059	2.0	EH	mg/L	1	1/5/2023 9:04:52 PM	72267
Cresols, Total	ND	0.027	200	H	mg/L	1	1/5/2023 9:04:52 PM	72267
Surr: 2-Fluorophenol	51.9	0	18.1-88.9	H	%Rec	1	1/5/2023 9:04:52 PM	72267

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212731**
Date Reported: **1/20/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212731-004 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW-Filtered
Collection Date: 12/12/2022 9:50:00 AM
Received Date: 12/13/2022 7:50:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
Surr: Phenol-d5	41.6	0	17-61.5	H	%Rec	1	1/5/2023 9:04:52 PM	72267
Surr: 2,4,6-Tribromophenol	67.3	0	29.8-104	H	%Rec	1	1/5/2023 9:04:52 PM	72267
Surr: Nitrobenzene-d5	63.2	0	22.2-111	H	%Rec	1	1/5/2023 9:04:52 PM	72267
Surr: 2-Fluorobiphenyl	54.5	0	24.6-96.3	H	%Rec	1	1/5/2023 9:04:52 PM	72267
Surr: 4-Terphenyl-d14	95.2	0	53.4-124	H	%Rec	1	1/5/2023 9:04:52 PM	72267
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50		mg/L	200	12/23/2022 10:14:21 P	T93557
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	12/23/2022 10:14:21 P	T93557
2-Butanone	ND	200	200		mg/L	200	12/23/2022 10:14:21 P	T93557
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	12/23/2022 10:14:21 P	T93557
Chloroform	ND	6.0	6.0		mg/L	200	12/23/2022 10:14:21 P	T93557
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	12/23/2022 10:14:21 P	T93557
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	12/23/2022 10:14:21 P	T93557
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	12/23/2022 10:14:21 P	T93557
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	12/23/2022 10:14:21 P	T93557
Vinyl chloride	ND	0.20	0.20		mg/L	200	12/23/2022 10:14:21 P	T93557
Chlorobenzene	ND	100	100		mg/L	200	12/23/2022 10:14:21 P	T93557
Surr: 1,2-Dichloroethane-d4	91.4	0	70-130		%Rec	200	12/23/2022 10:14:21 P	T93557
Surr: 4-Bromofluorobenzene	113	0	70-130		%Rec	200	12/23/2022 10:14:21 P	T93557
Surr: Dibromofluoromethane	85.5	0	70-130		%Rec	200	12/23/2022 10:14:21 P	T93557
Surr: Toluene-d8	106	0	70-130		%Rec	200	12/23/2022 10:14:21 P	T93557

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	/DW - 1,2,3 &4 Efflue 2212731-001		CTB to City POTW 2212731-002									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	710	30.88	37	1.61								
Potassium	140	3.58	1.8	0.05								
Calcium	400	19.96	180	8.98								
Magnesium	120	9.88	54	4.44								
Total Cations		64.30		15.08								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2100	43.72	690	14.37								
Chloride	340	9.59	35	0.99								
Bicarbonate (CaCO3)	511.1	10.21	25.72	0.51								
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)			0.037	0.00								
Nitrate (N)	0.91	0.06	1.6	0.11	-							
Fluoride	34	1.79	1.1	0.06								
Bromide	0.90	0.01										
Total Anions		65.39		16.04								
Elect. Cond. (µMhos/cm)	5800		1300									
CATION/ANION RATIO		0.98		0.94								
% Difference		1		3								
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	4170		1080									
TDS (calculated)	4156		1021									
Ratio meas TDS:calc TDS		1.0		1.1								
Ratio Meas. TDS:EC		0.72		0.83								
Ratio Calc. TDS:EC		0.72		0.79								
Ratio of anion sum:EC		1.1		1.2								
Ratio of cation sum:EC		1.1		1.2								

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

Pace Analytical®

ANALYTICAL REPORT

December 30, 2022

Hall Environmental Analysis Laboratory

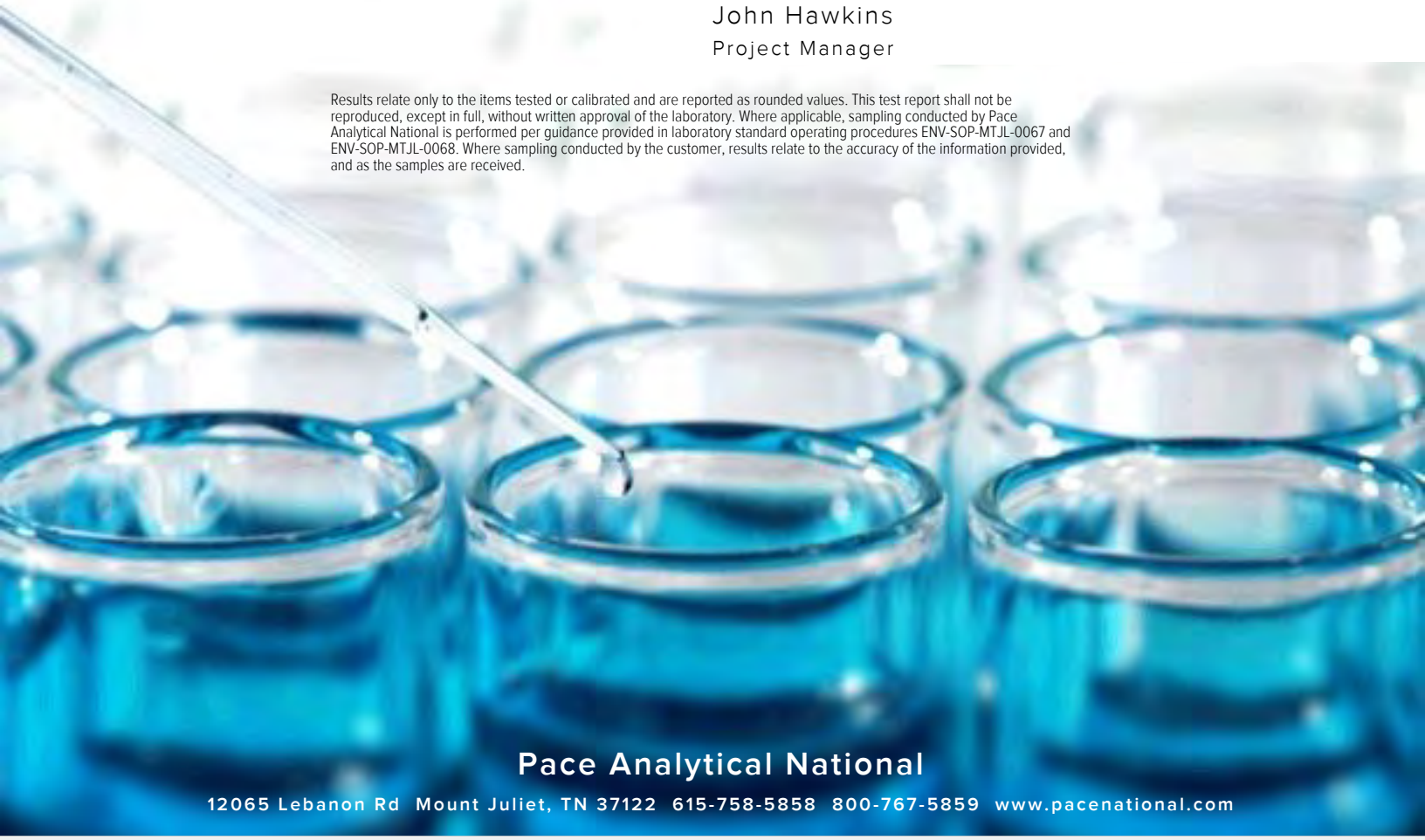
Sample Delivery Group:	L1567608
Samples Received:	12/14/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

2212731-001FG WDW-1,2,3 & 4 EFFLUENT L1567608-01 GW

Collected by	Collected date/time	Received date/time
	12/12/22 10:10	12/14/22 09:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1975409	1	12/16/22 10:48	12/16/22 10:48	BTP	Mt. Juliet, TN
Wet Chemistry by Method 2580	WG1975133	1	12/15/22 14:12	12/15/22 14:12	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1975196	1	12/20/22 18:30	12/21/22 00:07	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1975003	1.07	12/15/22 11:49	12/15/22 11:49	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1975892	1	12/20/22 11:25	12/20/22 11:25	KAD	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1976854	1	12/20/22 02:00	12/20/22 02:00	WOS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1977767	1	12/28/22 07:50	12/29/22 12:37	HMH	Mt. Juliet, TN

2212731-002FG CTB TO CITY POTW L1567608-02 GW

Collected by	Collected date/time	Received date/time
	12/12/22 09:50	12/14/22 09:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1975409	1	12/16/22 10:48	12/16/22 10:48	BTP	Mt. Juliet, TN
Wet Chemistry by Method 2580	WG1975133	1	12/15/22 14:12	12/15/22 14:12	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1975196	1	12/20/22 18:30	12/21/22 00:08	LDT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1975003	1.07	12/15/22 11:49	12/15/22 11:49	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1975892	1	12/20/22 11:25	12/20/22 11:25	KAD	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1976854	1	12/20/22 02:00	12/20/22 02:00	WOS	Mt. Juliet, TN
Chlorinated Acid Herbicides (GC) by Method 8151A	WG1977767	1	12/28/22 07:50	12/29/22 12:48	HMH	Mt. Juliet, TN

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Sample Delivery Group (SDG) Narrative

The following analysis were performed from an unpreserved, insufficiently or inadequately preserved sample.

Lab Sample ID	Project Sample ID	Method
L1567608-01	2212731-001FG WDW-1,2,3 & 4 EFFLUENT	4500 S2 D-2011
L1567608-02	2212731-002FG CTB TO CITY POTW	4500 S2 D-2011

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		12/16/2022 10:48:59 AM	WG1975409
Fluid	1		12/16/2022 10:48:59 AM	WG1975409
Initial pH	N/A		12/16/2022 10:48:59 AM	WG1975409
Final pH	N/A		12/16/2022 10:48:59 AM	WG1975409

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	mV				
ORP	95.8	T8	1	12/15/2022 14:12	WG1975133

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Reactive Cyanide	0.0151		0.00500	1	12/21/2022 00:07	WG1975196

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Reactive Sulfide	ND		0.0535	1.07	12/15/2022 11:49	WG1975003

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	su				
pH	7.77	T8	1	12/20/2022 11:25	WG1975892

Sample Narrative:

L1567608-01 WG1975892: 7.77 at 20C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	deg F				
Flashpoint	DNF at 170		1	12/20/2022 02:00	WG1976854

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
2,4,5-TP (Silvex)	ND		0.00200	1	1	12/29/2022 12:37	WG1977767
2,4-D	ND		0.00200	10	1	12/29/2022 12:37	WG1977767
(S) 2,4-Dichlorophenyl Acetic Acid	*89.6*		*14.0-158*			*12/29/2022 12:37*	WG1977767

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		12/16/2022 10:48:59 AM	WG1975409
Fluid	1		12/16/2022 10:48:59 AM	WG1975409
Initial pH	N/A		12/16/2022 10:48:59 AM	WG1975409
Final pH	N/A		12/16/2022 10:48:59 AM	WG1975409

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	mV				
ORP	263	T8	1	12/15/2022 14:12	WG1975133

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Reactive Cyanide	0.00590		0.00500	1	12/21/2022 00:08	WG1975196

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/l		mg/l			
Reactive Sulfide	ND		0.0535	1.07	12/15/2022 11:49	WG1975003

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	su				
pH	7.34	T8	1	12/20/2022 11:25	WG1975892

Sample Narrative:

L1567608-02 WG1975892: 7.34 at 20.3C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	deg F				
Flashpoint	DNF at 170		1	12/20/2022 02:00	WG1976854

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
2,4,5-TP (Silvex)	ND		0.00200	1	1	12/29/2022 12:48	WG1977767
2,4-D	ND		0.00200	10	1	12/29/2022 12:48	WG1977767
(S) 2,4-Dichlorophenyl Acetic Acid	*66.6*		*14.0-158*			*12/29/2022 12:48*	WG1977767

L1565234-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1565234-01 12/15/22 14:12 • (DUP) R3872259-3 12/15/22 14:12

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	182	191	1	8.90		20

L1567608-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1567608-01 12/15/22 14:12 • (DUP) R3872259-4 12/15/22 14:12

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	95.8	89.6	1	6.20		20

L1567608-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1567608-02 12/15/22 14:12 • (DUP) R3872259-5 12/15/22 14:12

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	263	271	1	7.80		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3872259-1 12/15/22 14:12 • (LCSD) R3872259-2 12/15/22 14:12

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	98.0	106	105	108	107	90.0-110			0.800	20

Method Blank (MB)

(MB) R3874139-1 12/20/22 23:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1567285-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1567285-02 12/20/22 23:45 • (DUP) R3874139-3 12/20/22 23:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1567308-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1567308-02 12/20/22 23:52 • (DUP) R3874139-6 12/20/22 23:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3874139-2 12/20/22 23:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.103	103	87.1-120	

L1567303-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1567303-02 12/20/22 23:47 • (MS) R3874139-4 12/20/22 23:48 • (MSD) R3874139-5 12/20/22 23:51

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.102	0.101	102	101	1	90.0-110			0.985	20

Method Blank (MB)

(MB) R3872134-1 12/15/22 11:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3872134-2 12/15/22 11:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.505	101	85.0-115	

L1567276-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1567276-01 12/20/22 11:25 • (DUP) R3873766-2 12/20/22 11:25

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.52	7.50	1	0.266		1

Sample Narrative:

OS: 7.52 at 19.7C

DUP: 7.5 at 19.8C

L1569123-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1569123-01 12/20/22 11:25 • (DUP) R3873766-3 12/20/22 11:25

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.24	7.22	1	0.277		1

Sample Narrative:

OS: 7.24 at 18.9C

DUP: 7.22 at 18.7C

Laboratory Control Sample (LCS)

(LCS) R3873766-1 12/20/22 11:25

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.93	99.3	99.0-101	

Sample Narrative:

LCS: 9.93 at 19.9C

L1561308-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1561308-02 12/20/22 02:00 • (DUP) R3874038-3 12/20/22 02:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

L1568236-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1568236-01 12/20/22 02:00 • (DUP) R3874038-4 12/20/22 02:00

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3874038-1 12/20/22 02:00 • (LCSD) R3874038-2 12/20/22 02:00

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	128	130	102	103	96.0-104			1.55	10

Method Blank (MB)

(MB) R3876784-1 12/29/22 10:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4,5-TP (Silvex)	U		0.000667	0.00200
2,4-D	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	*78.6*			*14.0-158*

Laboratory Control Sample (LCS)

(LCS) R3876784-2 12/29/22 10:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4,5-TP (Silvex)	0.0500	0.0385	77.0	50.0-125	
2,4-D	0.0500	0.0378	75.6	50.0-120	
(S) 2,4-Dichlorophenyl Acetic Acid			*74.0*	*14.0-158*	

L1569526-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1569526-01 12/29/22 15:11 • (MS) R3876784-3 12/29/22 15:22 • (MSD) R3876784-4 12/29/22 15:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4,5-TP (Silvex)	0.0500	ND	0.0109	0.0334	21.8	66.8	1	50.0-125	J6 P	J3	102	20
2,4-D	0.0500	ND	0.0393	0.0383	78.6	76.6	1	50.0-120			2.58	20
(S) 2,4-Dichlorophenyl Acetic Acid					*80.8*	*75.8*		*14.0-158*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P	RPD between the primary and confirmatory analysis exceeded 40%.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

B155

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

L1567608

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2212731-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	12/12/2022 10:10:00 AM	1	8151TCLP
2	2212731-001G	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	12/12/2022 10:10:00 AM	3	RCI, ORP
3	2212731-002F	CTB to City POTW	1LAMGU	Aqueous	12/12/2022 9:50:00 AM	1	8151TCLP
4	2212731-002G	CTB to City POTW	500HDPE	Aqueous	12/12/2022 9:50:00 AM	3	RCI, ORP

001
002

Sample Receipt Checklist

COC Seal Present/Intact: Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
RAD Screen <0.5 mR/hr: Y N

If Applicable
VOA Zero Headspace: Y N
Pres.Correct/Check: Y N

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 12/13/2022	Time: 9:16 AM	Received By:	Date: 12/14/22	Time: 0910
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples NFA 3.2 °C Attempt to Cool ? _____
Comments: _____

Released to Imaging: 5/24/2023 4:44:56 PM

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R93258** RunNo: **93258**
Prep Date: Analysis Date: **12/13/2022** SeqNo: **3361379** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R93258** RunNo: **93258**
Prep Date: Analysis Date: **12/13/2022** SeqNo: **3361380** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	106	90	110			
Chloride	4.7	0.50	5.000	0	93.5	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	96.6	90	110			
Bromide	2.4	0.10	2.500	0	97.1	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.1	90	110			
Sulfate	9.6	0.50	10.00	0	96.4	90	110			

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R93618** RunNo: **93618**
Prep Date: Analysis Date: **12/29/2022** SeqNo: **3379434** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.0	90	110			
Sulfate	9.5	0.50	10.00	0	94.9	90	110			

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R93618** RunNo: **93618**
Prep Date: Analysis Date: **12/29/2022** SeqNo: **3379435** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72042** SampType: **MBLK** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362252** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								

Sample ID: **MSLLLCS-72042** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362253** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00088	0.0010	0.001000	0	87.7	70	130			J
Lead	0.00077	0.0010	0.001000	0	76.9	70	130			J

Sample ID: **MSLCS-72042** SampType: **LCS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362254** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.051	0.0010	0.05000	0	102	80	120			
Lead	0.053	0.0010	0.05000	0	106	80	120			

Sample ID: **2212731-001EMSLL** SampType: **MS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362292** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.053	0.0010	0.05000	0	105	75	125			

Sample ID: **2212731-001EMSDL** SampType: **MSD** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362293** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.055	0.0010	0.05000	0	110	75	125	4.57	20	

Sample ID: **MB-72042** SampType: **MBLK** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362300** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.00051	0.0010								J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**

20-Jan-23

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MSLCS-72042** SampType: **LCS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.049	0.0010	0.05000	0	97.5	80	120			

Sample ID: **2212731-001EMSLL** SampType: **MS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362338** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.074	0.0010	0.05000	0.02161	106	75	125			

Sample ID: **2212731-001EMSDL** SampType: **MSD** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362339** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.075	0.0010	0.05000	0.02161	107	75	125	0.912	20	

Sample ID: **MSLLLCS-72042** SampType: **LCSLL** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC** Batch ID: **72042** RunNo: **93281**
Prep Date: **12/13/2022** Analysis Date: **12/14/2022** SeqNo: **3362538** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.0012	0.0010	0.001000	0	122	70	130			

Sample ID: **2212731-001EMSLL** SampType: **MS** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72042** RunNo: **93334**
Prep Date: **12/13/2022** Analysis Date: **12/15/2022** SeqNo: **3364671** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.079	0.0010	0.05000	0.02084	116	75	125			

Sample ID: **2212731-001EMSDL** SampType: **MSD** TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **WDW-1,2,3 & 4 Efflu** Batch ID: **72042** RunNo: **93334**
Prep Date: **12/13/2022** Analysis Date: **12/15/2022** SeqNo: **3364672** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.077	0.0010	0.05000	0.02084	113	75	125	2.27	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72137** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **72137** RunNo: **93751**
Prep Date: **12/16/2022** Analysis Date: **12/27/2022** SeqNo: **3383999** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		93.0	40.9	111			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		59.3	15	107			

Sample ID: **LCS-72137** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **72137** RunNo: **93751**
Prep Date: **12/16/2022** Analysis Date: **12/27/2022** SeqNo: **3384000** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00045	0.00010	0.0005000	0	89.0	56.3	126			
gamma-BHC (Lindane)	0.00033	0.00010	0.0005000	0	66.8	45.8	103			
Heptachlor	0.00023	0.00010	0.0005000	0	45.1	33.7	104			
Heptachlor epoxide	0.00039	0.00010	0.0005000	0	77.5	50.1	116			
Methoxychlor	0.00050	0.00010	0.0005000	0	101	15	203			
Surr: Decachlorobiphenyl	0.0022		0.002500		88.7	40.9	111			
Surr: Tetrachloro-m-xylene	0.0013		0.002500		50.5	15	107			

Sample ID: **LCSD-72137** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **72137** RunNo: **93751**
Prep Date: **12/16/2022** Analysis Date: **12/27/2022** SeqNo: **3384001** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00050	0.00010	0.0005000	0	99.9	56.3	126	11.5	20	
gamma-BHC (Lindane)	0.00039	0.00010	0.0005000	0	77.6	45.8	103	14.8	20	
Heptachlor	0.00027	0.00010	0.0005000	0	53.5	33.7	104	16.9	20	
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	90.6	50.1	116	15.6	20	
Methoxychlor	0.00054	0.00010	0.0005000	0	108	15	203	6.42	20	
Surr: Decachlorobiphenyl	0.0024		0.002500		96.3	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		55.3	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**

20-Jan-23

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72137**	SampType: **MBLK**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW**	Batch ID: **72137**	RunNo: **93751**
Prep Date: **12/16/2022**	Analysis Date: **12/27/2022**	SeqNo: **3384072** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		94.5	40.9	111			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		58.5	15	107			

Sample ID: **LCS-72137**	SampType: **LCS**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW**	Batch ID: **72137**	RunNo: **93751**
Prep Date: **12/16/2022**	Analysis Date: **12/27/2022**	SeqNo: **3384073** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	91.7	56.3	126			
gamma-BHC (Lindane)	0.00036	0.00010	0.0005000	0	71.6	45.8	103			
Heptachlor	0.00024	0.00010	0.0005000	0	47.9	33.7	104			
Heptachlor epoxide	0.00040	0.00010	0.0005000	0	79.1	50.1	116			
Methoxychlor	0.00049	0.00010	0.0005000	0	97.2	15	203			
Surr: Decachlorobiphenyl	0.0023		0.002500		92.3	40.9	111			
Surr: Tetrachloro-m-xylene	0.0013		0.002500		51.0	15	107			

Sample ID: **LCSD-72137**	SampType: **LCSD**	TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02**	Batch ID: **72137**	RunNo: **93751**
Prep Date: **12/16/2022**	Analysis Date: **12/27/2022**	SeqNo: **3384074** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00051	0.00010	0.0005000	0	103	56.3	126	11.3	20	
gamma-BHC (Lindane)	0.00043	0.00010	0.0005000	0	86.2	45.8	103	18.5	20	
Heptachlor	0.00028	0.00010	0.0005000	0	56.5	33.7	104	16.5	20	
Heptachlor epoxide	0.00047	0.00010	0.0005000	0	94.6	50.1	116	17.8	20	
Methoxychlor	0.00055	0.00010	0.0005000	0	109	15	203	11.8	20	
Surr: Decachlorobiphenyl	0.0025		0.002500		99.1	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0014		0.002500		56.2	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72280** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384697** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		93.1	40.9	111			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		84.4	15	107			

Sample ID: **MB-72280** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384698** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		96.3	40.9	111			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		83.8	15	107			

Sample ID: **LCS-72280** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384699** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00045	0.00010	0.0005000	0	89.7	56.3	126			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.0	45.8	103			
Heptachlor	0.00026	0.00010	0.0005000	0	51.2	33.7	104			
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	82.4	50.1	116			
Methoxychlor	0.00049	0.00010	0.0005000	0	98.6	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		94.2	40.9	111			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.4	15	107			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-72280** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384700** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.3	56.3	126			
gamma-BHC (Lindane)	0.00042	0.00010	0.0005000	0	83.2	45.8	103			
Heptachlor	0.00028	0.00010	0.0005000	0	55.1	33.7	104			
Heptachlor epoxide	0.00044	0.00010	0.0005000	0	87.2	50.1	116			
Methoxychlor	0.00050	0.00010	0.0005000	0	101	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		98.0	40.9	111			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		61.9	15	107			

Sample ID: **LCSD-72280** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384701** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	88.4	56.3	126	1.40	20	
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	69.5	45.8	103	8.88	20	
Heptachlor	0.00029	0.00010	0.0005000	0	58.4	33.7	104	13.2	20	
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	81.2	50.1	116	1.51	20	
Methoxychlor	0.00048	0.00010	0.0005000	0	95.9	15	203	2.77	20	
Surr: Decachlorobiphenyl	0.0023		0.002500		91.1	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0012		0.002500		46.6	15	107	0	0	

Sample ID: **LCSD-72280** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384702** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	92.2	56.3	126	3.28	20	
gamma-BHC (Lindane)	0.00040	0.00010	0.0005000	0	79.9	45.8	103	4.05	20	
Heptachlor	0.00032	0.00010	0.0005000	0	63.1	33.7	104	13.5	20	
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.8	50.1	116	0.448	20	
Methoxychlor	0.00050	0.00010	0.0005000	0	99.1	15	203	1.78	20	
Surr: Decachlorobiphenyl	0.0024		0.002500		95.0	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0012		0.002500		46.7	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**

20-Jan-23

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72185**	SampType: **MBLK**	TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **PBW**	Batch ID: **72185**	RunNo: **93499**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376751** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	ND	1.0								
2,4-D	ND	10								
Surr: 2,4-Dichlorophenylacetic aci	0.027		0.02500		108	70	130			

Sample ID: **0.0075 PPM**	SampType: **LCS**	TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **LCSW**	Batch ID: **72185**	RunNo: **93499**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376754** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.0078	0.00010	0.007500	0	104	70	130			
2,4-D	0.0071	0.00010	0.007500	0	95.3	70	130			
Surr: 2,4-Dichlorophenylacetic aci	0.0073		0.007500		97.4	70	130			

Sample ID: **0.0075 PPM**	SampType: **LCS**	TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **LCSW**	Batch ID: **72185**	RunNo: **93499**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376764** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.0078	0.00010	0.007500	0	104	70	130			
2,4-D	0.0063	0.00010	0.007500	0	83.7	70	130			
Surr: 2,4-Dichlorophenylacetic aci	0.0075		0.007500		99.4	70	130			

Sample ID: **MB-72185**	SampType: **MBLK**	TestCode: **EPA Method 8151: Herbicides TCLP**
Client ID: **PBW**	Batch ID: **72185**	RunNo: **93499**
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376765** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	ND	1.0								
2,4-D	ND	10								
Surr: 2,4-Dichlorophenylacetic aci	0.027		0.02500		109	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T93557** RunNo: **93557**
Prep Date: Analysis Date: **12/23/2022** SeqNo: **3375396** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		102	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		110	70	130			
Surr: Dibromofluoromethane	0.0093		0.01000		93.0	70	130			
Surr: Toluene-d8	0.011		0.01000		107	70	130			

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T93557** RunNo: **93557**
Prep Date: Analysis Date: **12/23/2022** SeqNo: **3376279** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.023	0.010	0.02000	0	114	70	130			
1,1-Dichloroethene	0.021	0.010	0.02000	0	103	70	130			
Trichloroethene (TCE)	0.020	0.010	0.02000	0	101	70	130			
Chlorobenzene	0.020	0.010	0.02000	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	0.010		0.01000		104	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		112	70	130			
Surr: Dibromofluoromethane	0.0095		0.01000		94.6	70	130			
Surr: Toluene-d8	0.010		0.01000		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-72115** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **72115** RunNo: **93435**
Prep Date: **12/15/2022** Analysis Date: **12/20/2022** SeqNo: **3369931** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.10		0.2000		50.7	18.1	88.9			
Surr: Phenol-d5	0.077		0.2000		38.7	17	61.5			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		75.5	29.8	104			
Surr: Nitrobenzene-d5	0.062		0.1000		61.6	22.2	111			
Surr: 2-Fluorobiphenyl	0.051		0.1000		50.8	24.6	96.3			
Surr: 4-Terphenyl-d14	0.096		0.1000		96.5	53.4	124			

Sample ID: **lcs-72115** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **72115** RunNo: **93435**
Prep Date: **12/15/2022** Analysis Date: **12/20/2022** SeqNo: **3369932** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.049	0.00010	0.1000	0	49.3	19	106			
3+4-Methylphenol	0.10	0.00010	0.2000	0	51.9	16.3	112			
2,4-Dinitrotoluene	0.041	0.00010	0.1000	0	41.4	15	99.6			
Hexachlorobenzene	0.070	0.00010	0.1000	0	70.2	41.8	111			
Hexachlorobutadiene	0.024	0.00010	0.1000	0	24.0	15	91.5			
Hexachloroethane	0.027	0.00010	0.1000	0	27.0	15	87.5			
Nitrobenzene	0.046	0.00010	0.1000	0	46.3	19.3	114			
Pentachlorophenol	0.074	0.00010	0.1000	0	73.8	29	103			
Pyridine	0.023	0.00010	0.1000	0	23.5	15	92.6			
2,4,5-Trichlorophenol	0.055	0.00010	0.1000	0	54.7	25.2	114			
2,4,6-Trichlorophenol	0.051	0.00010	0.1000	0	51.5	25.7	112			
Cresols, Total	0.15	0.00010	0.3000	0	51.0	15	145			
Surr: 2-Fluorophenol	0.076		0.2000		37.9	18.1	88.9			
Surr: Phenol-d5	0.060		0.2000		30.0	17	61.5			
Surr: 2,4,6-Tribromophenol	0.11		0.2000		56.9	29.8	104			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-72115** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **72115** RunNo: **93435**
Prep Date: **12/15/2022** Analysis Date: **12/20/2022** SeqNo: **3369932** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.050		0.1000		49.5	22.2	111			
Surr: 2-Fluorobiphenyl	0.041		0.1000		41.2	24.6	96.3			
Surr: 4-Terphenyl-d14	0.10		0.1000		101	53.4	124			

Sample ID: **mb-72267** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384444** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.074		0.2000		37.1	18.1	88.9			
Surr: Phenol-d5	0.059		0.2000		29.3	17	61.5			
Surr: 2,4,6-Tribromophenol	0.099		0.2000		49.6	29.8	104			
Surr: Nitrobenzene-d5	0.045		0.1000		45.2	22.2	111			
Surr: 2-Fluorobiphenyl	0.034		0.1000		33.7	24.6	96.3			
Surr: 4-Terphenyl-d14	0.073		0.1000		72.5	53.4	124			

Sample ID: **lcs-72267** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384445** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.072	0.0010	0.1000	0	71.9	19	106			
3+4-Methylphenol	0.14	0.0010	0.2000	0	68.7	16.3	112			
2,4-Dinitrotoluene	0.063	0.0010	0.1000	0	62.5	15	99.6			
Hexachlorobenzene	0.082	0.0010	0.1000	0	82.3	41.8	111			
Hexachlorobutadiene	0.042	0.0010	0.1000	0	42.1	15	91.5			
Hexachloroethane	0.044	0.0010	0.1000	0	44.5	15	87.5			
Nitrobenzene	0.070	0.0010	0.1000	0	70.0	19.3	114			

Qualifiers:

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ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-72267** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384445** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Pentachlorophenol	0.021	0.0010	0.1000	0	21.2	29	103			S
Pyridine	0.056	0.0010	0.1000	0	56.2	15	92.6			
2,4,5-Trichlorophenol	0.020	0.0010	0.1000	0	20.2	25.2	114			S
2,4,6-Trichlorophenol	0.018	0.0010	0.1000	0	18.5	25.7	112			S
Cresols, Total	0.21	0.0010	0.3000	0	69.8	15	145			
Surr: 2-Fluorophenol	0.024		0.2000		12.2	18.1	88.9			S
Surr: Phenol-d5	0.055		0.2000		27.4	17	61.5			
Surr: 2,4,6-Tribromophenol	0.044		0.2000		21.8	29.8	104			S
Surr: Nitrobenzene-d5	0.075		0.1000		75.3	22.2	111			
Surr: 2-Fluorobiphenyl	0.058		0.1000		58.5	24.6	96.3			
Surr: 4-Terphenyl-d14	0.11		0.1000		107	53.4	124			

Qualifiers:

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D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
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J	Analyte detected below quantitation limits
P	Sample pH Not In Range
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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 99.4uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R93338**	RunNo: **93338**
Prep Date:	Analysis Date: **12/15/2022**	SeqNo: **3364797** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.40	0	103	85	115			

Sample ID: **2212731-002C dup**	SampType: **dup**	TestCode: **SM2510B: Specific Conductance**
Client ID: **CTB to City POTW**	Batch ID: **R93338**	RunNo: **93338**
Prep Date:	Analysis Date: **12/15/2022**	SeqNo: **3364802** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	1300	10						0.497	20	

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**

20-Jan-23

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72297** SampType: **MBLK** TestCode: **EPA Method 7470A: Mercury**

Client ID: **PBW** Batch ID: **72297** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374385** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-72297** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**

Client ID: **BatchQC** Batch ID: **72297** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374386** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00027	0.00020	0.0001500	0	181	50	150			S

Sample ID: **LCS-72297** SampType: **LCS** TestCode: **EPA Method 7470A: Mercury**

Client ID: **LCSW** Batch ID: **72297** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374387** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0056	0.00020	0.005000	0	111	85	115			

Sample ID: **LCSLL-72297** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**

Client ID: **BatchQC** Batch ID: **72297** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374391** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00026	0.00020	0.0001500	0	173	50	150			S

Sample ID: **LCSLL-72297** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**

Client ID: **BatchQC** Batch ID: **72297** RunNo: **93535**

Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374441** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00011	0.00020	0.0001500	0	76.5	50	150			J

Qualifiers:

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S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72362**	SampType: **MBLK**	TestCode: **EPA Method 7470A: TCLP Mercury**							
Client ID: **PBW**	Batch ID: **72362**	RunNo: **93613**							
Prep Date: **12/28/2022**	Analysis Date: **12/29/2022**	SeqNo: **3378122**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID: **LCSLL-72362**	SampType: **LCSLL**	TestCode: **EPA Method 7470A: TCLP Mercury**							
Client ID: **BatchQC**	Batch ID: **72362**	RunNo: **93613**							
Prep Date: **12/28/2022**	Analysis Date: **12/29/2022**	SeqNo: **3378123**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00019	0.020	0.0001500	0	129	50	150			J

Sample ID: **LCS-72362**	SampType: **LCS**	TestCode: **EPA Method 7470A: TCLP Mercury**							
Client ID: **LCSW**	Batch ID: **72362**	RunNo: **93613**							
Prep Date: **12/28/2022**	Analysis Date: **12/29/2022**	SeqNo: **3378124**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.020	0.005000	0	100	85	115			J

Qualifiers:

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PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A93491**	RunNo: **93491**
Prep Date:	Analysis Date: **12/21/2022**	SeqNo: **3372353** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A93491**	RunNo: **93491**
Prep Date:	Analysis Date: **12/21/2022**	SeqNo: **3372355** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	54	1.0	50.00	0	108	80	120			
Magnesium	51	1.0	50.00	0	102	80	120			
Potassium	49	1.0	50.00	0	98.8	80	120			

Sample ID: **2212731-001DMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **A93491**	RunNo: **93491**
Prep Date:	Analysis Date: **12/21/2022**	SeqNo: **3372357** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	370	5.0	50.00	119.5	506	75	125			S
Potassium	390	5.0	50.00	143.1	501	75	125			S

Sample ID: **2212731-001DMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **WDW-1,2,3 & 4 Efflu**	Batch ID: **A93491**	RunNo: **93491**
Prep Date:	Analysis Date: **12/21/2022**	SeqNo: **3372358** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	400	5.0	50.00	119.5	567	75	125	7.91	20	S
Potassium	430	5.0	50.00	143.1	569	75	125	8.23	20	S

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A93600**	RunNo: **93600**
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377522** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	ND	1.0								
Sodium	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**

20-Jan-23

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A93600**	RunNo: **93600**
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377524** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	51	1.0	50.00	0	102	80	120			
Sodium	50	1.0	50.00	0	100	80	120			

Sample ID: **2212731-002DMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **CTB to City POTW**	Batch ID: **A93600**	RunNo: **93600**
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377535** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	56	1.0	50.00	1.757	109	75	125			
Sodium	90	1.0	50.00	37.28	105	75	125			

Sample ID: **2212731-002DMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **CTB to City POTW**	Batch ID: **A93600**	RunNo: **93600**
Prep Date:	Analysis Date: **12/28/2022**	SeqNo: **3377536** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	59	1.0	50.00	1.757	114	75	125	4.36	20	
Sodium	94	1.0	50.00	37.28	114	75	125	5.07	20	

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A93678**	RunNo: **93678**
Prep Date:	Analysis Date: **1/3/2023**	SeqNo: **3381160** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID: **LCS-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A93678**	RunNo: **93678**
Prep Date:	Analysis Date: **1/3/2023**	SeqNo: **3381162** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	47	1.0	50.00	0	94.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72262** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **72262** RunNo: **93496**
Prep Date: **12/21/2022** Analysis Date: **12/22/2022** SeqNo: **3372566** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID: **LCS-72262** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **72262** RunNo: **93496**
Prep Date: **12/21/2022** Analysis Date: **12/22/2022** SeqNo: **3372568** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.54	5.0	0.5000	0	108	80	120			J
Barium	0.47	100	0.5000	0	93.6	80	120			J
Cadmium	0.52	1.0	0.5000	0	104	80	120			J
Chromium	0.48	5.0	0.5000	0	95.4	80	120			J
Lead	0.45	5.0	0.5000	0	89.9	80	120			J
Selenium	0.55	1.0	0.5000	0	110	80	120			J
Silver	0.11	5.0	0.1000	0	106	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72042** SampType: **MBLK** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **72042** RunNo: **93353**
Prep Date: **12/13/2022** Analysis Date: **12/15/2022** SeqNo: **3365878** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	0.0012	0.0020								J
Chromium	ND	0.0060								

Sample ID: **LCS-72042** SampType: **LCS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **72042** RunNo: **93353**
Prep Date: **12/13/2022** Analysis Date: **12/15/2022** SeqNo: **3365880** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.51	0.0020	0.5000	0	102	80	120			
Cadmium	0.51	0.0020	0.5000	0	103	80	120			
Chromium	0.51	0.0060	0.5000	0	103	80	120			

Sample ID: **MB-72042** SampType: **MBLK** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **72042** RunNo: **93600**
Prep Date: **12/13/2022** Analysis Date: **12/28/2022** SeqNo: **3377358** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	0.0050								

Sample ID: **LCS-72042** SampType: **LCS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **72042** RunNo: **93600**
Prep Date: **12/13/2022** Analysis Date: **12/28/2022** SeqNo: **3377360** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.092	0.0050	0.1000	0	91.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2212731-002C dup** SampType: **dup** TestCode: **SM4500-H+B / 9040C: pH**
Client ID: **CTB to City POTW** Batch ID: **R93338** RunNo: **93338**
Prep Date: Analysis Date: **12/15/2022** SeqNo: **3364816** Units: **pH units**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.26									H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R93338**	RunNo: **93338**							
Prep Date:	Analysis Date: **12/15/2022**	SeqNo: **3364763**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R93338**	RunNo: **93338**							
Prep Date:	Analysis Date: **12/15/2022**	SeqNo: **3364764**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.56	20.00	80.00	0	94.4	90	110			

Sample ID: **2212731-002C dup**	SampType: **dup**	TestCode: **SM2320B: Alkalinity**							
Client ID: **CTB to City POTW**	Batch ID: **R93338**	RunNo: **93338**							
Prep Date:	Analysis Date: **12/15/2022**	SeqNo: **3364769**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	25.44	20.00						1.09	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**
20-Jan-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72174**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **PBW**	Batch ID: **72174**	RunNo: **93440**							
Prep Date: **12/19/2022**	Analysis Date: **12/20/2022**	SeqNo: **3370085**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-72174**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **LCSW**	Batch ID: **72174**	RunNo: **93440**							
Prep Date: **12/19/2022**	Analysis Date: **12/20/2022**	SeqNo: **3370086**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	982	20.0	1000	0	98.2	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2212731**

20-Jan-23

Client: Navajo Refining Company

Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72122**	SampType: **MBLK**	TestCode: **SM 2540D: TSS**							
Client ID: **PBW**	Batch ID: **72122**	RunNo: **93354**							
Prep Date: **12/15/2022**	Analysis Date: **12/16/2022**	SeqNo: **3366219**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-72122**	SampType: **LCS**	TestCode: **SM 2540D: TSS**							
Client ID: **LCSW**	Batch ID: **72122**	RunNo: **93354**							
Prep Date: **12/15/2022**	Analysis Date: **12/16/2022**	SeqNo: **3366220**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	84	4.0	91.90	0	91.4	83.89	119.7			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2212731 | RcptNo: 1

Received By: Sean Livingston 12/13/2022 7:50:00 AM S Livingston

Completed By: Sean Livingston 12/13/2022 9:18:06 AM S Livingston

Reviewed By: KPA 12.13.22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preserved added to bottles?	Yes ☑	No ☑ JR 12.13.22	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 6 4 (≤2 or ≥12 unless noted)

Adjusted? Yes

Checked by: JR 12.13.22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks: Added 0.5 ml of HNO3 to Sample 001E. and added 0.4 ml of HNO3 to Sample 001D for ph less than 2.

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	-2.5	Good				
2	-2.0	Good				

Received by OCD: 3/6/2023 7:46:22 AM

Released to Imaging: 5/24/2023 4:44:56 PM

Chain of Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☑ Standard ☐ Rush

Project Name:

PSP WDW-1, 2, 3 & 4 Inj Well

Project #:

Project Manager:

Randy Dade

Sampler:

On Ice: ☑ Yes ☐ No

of Coolers: 1

Cooler Temp(including CF): -2.4-0.1=-2.5°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2212731	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds		Filtered 8260, 8270, 8151	8260 & 8270 and 8151		NO3, F, Cl, Br, SO4		
12/12/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	x													
12/12/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			x												
12/12/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				x											
12/12/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					x										
12/12/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						x									
12/12/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							x								
12/12/2022	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								x							
12/12/2022	9:50	Liquid	CTB to City POTW	**	**	002	x													
12/12/2022	9:50	Liquid	CTB to City POTW	3-40ml VOA	HCL			x												
12/12/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none				x											
12/12/2022	9:50	Liquid	CTB to City POTW	***	***					x										
12/12/2022	9:50	Liquid	CTB to City POTW	1-250ml P	HNO3						x									
12/12/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none							x								
12/12/2022	9:50	Liquid	CTB to City POTW	1-1L Amber	none								x							

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12-12-22	11:13	Brady Hibbard				
					12/12/22	1113
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12/12/22	1900		Sea	Courier	12/13/22	7:50

Remarks: Dissolved Cations by EPA Method 200.7.
1-500ml unpreserved p, 1-125ml H2SO4 p, 1-125ml HNO3 p.*1-500ml unpreserved p, 1-500ml NaOH p, 1-500ml NaOH/ZnAcetate p

RDU FEED RATE : 6300 BPD

-1.9-0.1=-2.0°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 07, 2023

Randy Dade

Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: PSP WDW 1 2 3 4 Inj Well OrderNo.: 2212B32

Dear Randy Dade:

Hall Environmental Analysis Laboratory received 4 sample(s) on 12/20/2022 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued January 20, 2023.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,



Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **2212B32**
Date: **2/7/2023**

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Analytical Notes:
Full list TCLP was requested for the two samples in this report. Per the TCLP Method 1311, "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run". Even though the low solids content did not require filtration, all TCLP compounds are reported as both total and filtered, at the TCLP limits. The TCLP term is used in the method header; this is used to represent that the compounds listed are the specific TCLP compounds and that these compounds are reported at the TCLP regulatory limits.
The cations were filtered using a 0.45um filter for the C/A balance determination.

Analytical Notes Regarding 8151.
The 1-L amber bottle for CTB to City POTW was broken during shipping. The 8151 test cannot be performed.

EPA Method 8270:
The two filtered samples for WDW-1,2,3 & 4 Effluent and CTB to City POTW were associated with a laboratory control spike that had low recoveries for pentachlorophenol, 2,4,5-trichlorophenol and 2,4,6-Trichlorophenol.

"S" flags denote that the surrogate/spike recovery was outside of the standard limits.

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 12/19/2022 10:10:00 AM
Lab ID: 2212B32-001 **Matrix:** AQUEOUS **Received Date:** 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	1/5/2023 12:52:09 PM	72280
Endrin	ND	0.000062	0.020		mg/L	1	1/5/2023 12:52:09 PM	72280
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	1/5/2023 12:52:09 PM	72280
Heptachlor	ND	0.000041	0.0080		mg/L	1	1/5/2023 12:52:09 PM	72280
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	1/5/2023 12:52:09 PM	72280
Methoxychlor	ND	0.000075	10		mg/L	1	1/5/2023 12:52:09 PM	72280
Toxaphene	ND	0.00050	0.50		mg/L	1	1/5/2023 12:52:09 PM	72280
Surr: Decachlorobiphenyl	52.5	0	40.9-111		%Rec	1	1/5/2023 12:52:09 PM	72280
Surr: Tetrachloro-m-xylene	63.8	0	15-107		%Rec	1	1/5/2023 12:52:09 PM	72280
EPA METHOD 300.0: ANIONS							Analyst: **CAS**	
Fluoride	24	0.92	2.0	*	mg/L	20	12/20/2022 10:58:42 P	R93450
Chloride	520	25	50	*	mg/L	100	1/5/2023 12:25:07 AM	A93728
Nitrogen, Nitrite (As N)	0.092	0.057	0.50	J	mg/L	5	12/20/2022 10:45:49 P	R93450
Bromide	0.72	0.25	0.50		mg/L	5	12/20/2022 10:45:49 P	R93450
Nitrogen, Nitrate (As N)	0.78	0.10	0.50		mg/L	5	12/20/2022 10:45:49 P	R93450
Phosphorus, Orthophosphate (As P)	ND	1.2	2.5	H	mg/L	5	1/10/2023 1:03:16 PM	R93860
Sulfate	2000	25	50	*	mg/L	100	1/5/2023 12:25:07 AM	A93728
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.017	0.0025	5.0	J	mg/L	5	12/22/2022 12:20:35 P	72238
Lead	ND	0.0025	5.0		mg/L	5	12/22/2022 12:20:35 P	72238
Selenium	0.013	0.0025	1.0	J	mg/L	5	12/28/2022 11:57:52 A	72238
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	12/23/2022 3:16:06 PM	72297
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	400	0.29	5.0		mg/L	5	12/21/2022 3:50:25 PM	A93491
Magnesium	120	0.17	5.0		mg/L	5	12/21/2022 3:50:25 PM	A93491
Potassium	130	1.0	5.0		mg/L	5	12/21/2022 3:50:25 PM	A93491
Sodium	710	4.2	10		mg/L	10	12/28/2022 3:51:16 PM	A93600
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.042	0.0011	100	J	mg/L	1	12/29/2022 12:10:33 P	72238
Cadmium	ND	0.0012	1.0		mg/L	1	12/29/2022 12:10:33 P	72238
Chromium	ND	0.0017	1.0		mg/L	1	12/29/2022 12:10:33 P	72238
Silver	0.0065	0.0013	5.0	J	mg/L	1	12/29/2022 2:15:50 PM	72238
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.050	200		mg/L	1	1/6/2023 11:24:00 AM	72267
3+4-Methylphenol	ND	0.051	200		mg/L	1	1/6/2023 11:24:00 AM	72267

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212B32-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/19/2022 10:10:00 AM
Received Date: 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.049	0.13		mg/L	1	1/6/2023 11:24:00 AM	72267
Hexachlorobenzene	ND	0.19	0.13		mg/L	1	1/6/2023 11:24:00 AM	72267
Hexachlorobutadiene	ND	0.17	0.50		mg/L	1	1/6/2023 11:24:00 AM	72267
Hexachloroethane	ND	0.14	3.0		mg/L	1	1/6/2023 11:24:00 AM	72267
Nitrobenzene	ND	0.049	2.0		mg/L	1	1/6/2023 11:24:00 AM	72267
Pentachlorophenol	ND	0.27	100	E	mg/L	1	1/6/2023 11:24:00 AM	72267
Pyridine	ND	0.14	5.0		mg/L	1	1/6/2023 11:24:00 AM	72267
2,4,5-Trichlorophenol	ND	0.063	400	E	mg/L	1	1/6/2023 11:24:00 AM	72267
2,4,6-Trichlorophenol	ND	0.059	2.0	E	mg/L	1	1/6/2023 11:24:00 AM	72267
Cresols, Total	ND	0.27	200		mg/L	1	1/6/2023 11:24:00 AM	72267
Surr: 2-Fluorophenol	38.1	0	18.1-88.9		%Rec	1	1/6/2023 11:24:00 AM	72267
Surr: Phenol-d5	30.5	0	17-61.5		%Rec	1	1/6/2023 11:24:00 AM	72267
Surr: 2,4,6-Tribromophenol	74.3	0	29.8-104		%Rec	1	1/6/2023 11:24:00 AM	72267
Surr: Nitrobenzene-d5	48.6	0	22.2-111		%Rec	1	1/6/2023 11:24:00 AM	72267
Surr: 2-Fluorobiphenyl	43.0	0	24.6-96.3		%Rec	1	1/6/2023 11:24:00 AM	72267
Surr: 4-Terphenyl-d14	93.8	0	53.4-124		%Rec	1	1/6/2023 11:24:00 AM	72267
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50		mg/L	200	12/30/2022 3:08:59 PM	T93662
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	12/30/2022 3:08:59 PM	T93662
2-Butanone	ND	200	200		mg/L	200	12/30/2022 3:08:59 PM	T93662
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	12/30/2022 3:08:59 PM	T93662
Chloroform	ND	6.0	6.0		mg/L	200	12/30/2022 3:08:59 PM	T93662
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	12/30/2022 3:08:59 PM	T93662
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	12/30/2022 3:08:59 PM	T93662
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	12/30/2022 3:08:59 PM	T93662
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	12/30/2022 3:08:59 PM	T93662
Vinyl chloride	ND	0.20	0.20		mg/L	200	12/30/2022 3:08:59 PM	T93662
Chlorobenzene	ND	100	100		mg/L	200	12/30/2022 3:08:59 PM	T93662
Surr: 1,2-Dichloroethane-d4	88.8	0	70-130		%Rec	200	12/30/2022 3:08:59 PM	T93662
Surr: 4-Bromofluorobenzene	115	0	70-130		%Rec	200	12/30/2022 3:08:59 PM	T93662
Surr: Dibromofluoromethane	92.3	0	70-130		%Rec	200	12/30/2022 3:08:59 PM	T93662
Surr: Toluene-d8	106	0	70-130		%Rec	200	12/30/2022 3:08:59 PM	T93662
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **CAS**	
Conductivity	5800	10	10		µmhos/c	1	12/21/2022 4:39:38 PM	R93481
SM4500-H+B / 9040C: PH							Analyst: **CAS**	
pH	7.66			H	pH units	1	12/21/2022 4:39:38 PM	R93481
SM2320B: ALKALINITY							Analyst: **CAS**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212B32-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent
Collection Date: 12/19/2022 10:10:00 AM
Received Date: 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	370.5	20.00	20.00		mg/L Ca	1	12/21/2022 4:39:38 PM	R93481
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/21/2022 4:39:38 PM	R93481
Total Alkalinity (as CaCO3)	370.5	20.00	20.00		mg/L Ca	1	12/21/2022 4:39:38 PM	R93481
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9954	0	0			1	12/30/2022 5:04:00 PM	R93653
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	4350	40.0	40.0	*D	mg/L	1	12/28/2022 10:20:00 A	72286
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	38	8.0	8.0	D	mg/L	1	12/23/2022 11:03:00 A	72294

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 12/19/2022 9:50:00 AM
Lab ID: 2212B32-002 **Matrix:** AQUEOUS **Received Date:** 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	1/5/2023 1:05:14 PM	72280
Endrin	ND	0.000062	0.020		mg/L	1	1/5/2023 1:05:14 PM	72280
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	1/5/2023 1:05:14 PM	72280
Heptachlor	ND	0.000041	0.0080		mg/L	1	1/5/2023 1:05:14 PM	72280
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	1/5/2023 1:05:14 PM	72280
Methoxychlor	ND	0.000075	10		mg/L	1	1/5/2023 1:05:14 PM	72280
Toxaphene	ND	0.00050	0.50		mg/L	1	1/5/2023 1:05:14 PM	72280
Surr: Decachlorobiphenyl	61.5	0	40.9-111		%Rec	1	1/5/2023 1:05:14 PM	72280
Surr: Tetrachloro-m-xylene	47.3	0	15-107		%Rec	1	1/5/2023 1:05:14 PM	72280
EPA METHOD 300.0: ANIONS							Analyst: **CAS**	
Fluoride	1.7	0.046	0.10		mg/L	1	12/20/2022 11:11:33 P	R93450
Chloride	54	5.0	10		mg/L	20	12/20/2022 11:24:24 P	R93450
Nitrogen, Nitrite (As N)	ND	0.011	0.10		mg/L	1	12/20/2022 11:11:33 P	R93450
Bromide	ND	0.050	0.10		mg/L	1	12/20/2022 11:11:33 P	R93450
Nitrogen, Nitrate (As N)	1.5	0.020	0.10		mg/L	1	12/20/2022 11:11:33 P	R93450
Phosphorus, Orthophosphate (As P)	ND	5.0	10	H	mg/L	20	1/10/2023 1:41:51 PM	R93860
Sulfate	2200	25	50	*	mg/L	100	1/5/2023 12:37:59 AM	A93728
EPA METHOD 6020A: TCLP METALS							Analyst: **ELS**	
Arsenic	0.0013	0.00050	5.0	J	mg/L	1	12/22/2022 12:11:37 P	72238
Lead	ND	0.00050	5.0		mg/L	1	12/22/2022 12:11:37 P	72238
Selenium	0.0054	0.00050	1.0	J	mg/L	1	12/29/2022 8:38:24 AM	72238
EPA METHOD 7470A: MERCURY							Analyst: **VP**	
Mercury	ND	0.000091	0.020		mg/L	1	12/23/2022 3:18:16 PM	72297
EPA METHOD 6010B: DISSOLVED METALS							Analyst: **JRR**	
Calcium	320	0.29	5.0		mg/L	5	12/21/2022 3:52:05 PM	A93491
Magnesium	95	0.17	5.0		mg/L	5	12/21/2022 3:52:05 PM	A93491
Potassium	2.5	0.21	1.0		mg/L	1	12/21/2022 4:09:15 PM	A93491
Sodium	58	2.1	5.0		mg/L	5	1/3/2023 10:32:10 AM	A93678
EPA 6010B: TCLP METALS							Analyst: **JRR**	
Barium	0.023	0.0011	100	J	mg/L	1	12/29/2022 12:23:11 P	72238
Cadmium	ND	0.0012	1.0		mg/L	1	12/29/2022 12:23:11 P	72238
Chromium	ND	0.0017	1.0		mg/L	1	12/29/2022 12:23:11 P	72238
Silver	0.0060	0.0013	5.0	J	mg/L	1	12/29/2022 2:17:58 PM	72238
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.050	200		mg/L	1	1/6/2023 12:05:19 PM	72267
3+4-Methylphenol	ND	0.051	200		mg/L	1	1/6/2023 12:05:19 PM	72267

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: CTB to City POTW
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 12/19/2022 9:50:00 AM
Lab ID: 2212B32-002 **Matrix:** AQUEOUS **Received Date:** 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2,4-Dinitrotoluene	ND	0.049	0.13		mg/L	1	1/6/2023 12:05:19 PM	72267
Hexachlorobenzene	ND	0.19	0.13		mg/L	1	1/6/2023 12:05:19 PM	72267
Hexachlorobutadiene	ND	0.17	0.50		mg/L	1	1/6/2023 12:05:19 PM	72267
Hexachloroethane	ND	0.14	3.0		mg/L	1	1/6/2023 12:05:19 PM	72267
Nitrobenzene	ND	0.049	2.0		mg/L	1	1/6/2023 12:05:19 PM	72267
Pentachlorophenol	ND	0.27	100	E	mg/L	1	1/6/2023 12:05:19 PM	72267
Pyridine	ND	0.14	5.0		mg/L	1	1/6/2023 12:05:19 PM	72267
2,4,5-Trichlorophenol	ND	0.063	400	E	mg/L	1	1/6/2023 12:05:19 PM	72267
2,4,6-Trichlorophenol	ND	0.059	2.0	E	mg/L	1	1/6/2023 12:05:19 PM	72267
Cresols, Total	ND	0.27	200		mg/L	1	1/6/2023 12:05:19 PM	72267
Surr: 2-Fluorophenol	38.1	0	18.1-88.9		%Rec	1	1/6/2023 12:05:19 PM	72267
Surr: Phenol-d5	29.7	0	17-61.5		%Rec	1	1/6/2023 12:05:19 PM	72267
Surr: 2,4,6-Tribromophenol	53.1	0	29.8-104		%Rec	1	1/6/2023 12:05:19 PM	72267
Surr: Nitrobenzene-d5	51.1	0	22.2-111		%Rec	1	1/6/2023 12:05:19 PM	72267
Surr: 2-Fluorobiphenyl	41.7	0	24.6-96.3		%Rec	1	1/6/2023 12:05:19 PM	72267
Surr: 4-Terphenyl-d14	85.5	0	53.4-124		%Rec	1	1/6/2023 12:05:19 PM	72267
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50		mg/L	200	12/30/2022 3:37:40 PM	T93662
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	12/30/2022 3:37:40 PM	T93662
2-Butanone	ND	200	200		mg/L	200	12/30/2022 3:37:40 PM	T93662
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	12/30/2022 3:37:40 PM	T93662
Chloroform	ND	6.0	6.0		mg/L	200	12/30/2022 3:37:40 PM	T93662
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	12/30/2022 3:37:40 PM	T93662
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	12/30/2022 3:37:40 PM	T93662
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	12/30/2022 3:37:40 PM	T93662
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	12/30/2022 3:37:40 PM	T93662
Vinyl chloride	ND	0.20	0.20		mg/L	200	12/30/2022 3:37:40 PM	T93662
Chlorobenzene	ND	100	100		mg/L	200	12/30/2022 3:37:40 PM	T93662
Surr: 1,2-Dichloroethane-d4	94.9	0	70-130		%Rec	200	12/30/2022 3:37:40 PM	T93662
Surr: 4-Bromofluorobenzene	110	0	70-130		%Rec	200	12/30/2022 3:37:40 PM	T93662
Surr: Dibromofluoromethane	93.1	0	70-130		%Rec	200	12/30/2022 3:37:40 PM	T93662
Surr: Toluene-d8	107	0	70-130		%Rec	200	12/30/2022 3:37:40 PM	T93662
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **CAS**	
Conductivity	2100	10	10		µmhos/c	1	12/21/2022 5:06:38 PM	R93481
SM4500-H+B / 9040C: PH							Analyst: **CAS**	
pH	7.60			H	pH units	1	12/21/2022 5:06:38 PM	R93481
SM2320B: ALKALINITY							Analyst: **CAS**	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212B32-002 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW
Collection Date: 12/19/2022 9:50:00 AM
Received Date: 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
SM2320B: ALKALINITY							Analyst: **CAS**	
Bicarbonate (As CaCO3)	62.56	20.00	20.00		mg/L Ca	1	12/21/2022 5:06:38 PM	R93481
Carbonate (As CaCO3)	ND	2.000	2.000		mg/L Ca	1	12/21/2022 5:06:38 PM	R93481
Total Alkalinity (as CaCO3)	62.56	20.00	20.00		mg/L Ca	1	12/21/2022 5:06:38 PM	R93481
SPECIFIC GRAVITY							Analyst: **CAS**	
Specific Gravity	0.9980	0	0			1	12/30/2022 5:04:00 PM	R93653
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **SNS**	
Total Dissolved Solids	1940	20.0	20.0	*	mg/L	1	12/28/2022 10:20:00 A	72286
SM 2540D: TSS							Analyst: **KS**	
Suspended Solids	ND	4.0	4.0		mg/L	1	12/23/2022 11:03:00 A	72294

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Client Sample ID: WDW-1,2,3 & 4 Effluent-Filtere
Project: PSP WDW 1 2 3 4 Inj Well
Collection Date: 12/19/2022 10:10:00 AM
Lab ID: 2212B32-003 **Matrix:** AQUEOUS **Received Date:** 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00051	0.030		mg/L	1	1/5/2023 1:18:18 PM	72280
Endrin	ND	0.000064	0.020		mg/L	1	1/5/2023 1:18:18 PM	72280
gamma-BHC (Lindane)	ND	0.000055	0.41		mg/L	1	1/5/2023 1:18:18 PM	72280
Heptachlor	ND	0.000042	0.0082		mg/L	1	1/5/2023 1:18:18 PM	72280
Heptachlor epoxide	ND	0.000053	0.0082		mg/L	1	1/5/2023 1:18:18 PM	72280
Methoxychlor	ND	0.000077	10		mg/L	1	1/5/2023 1:18:18 PM	72280
Toxaphene	ND	0.00051	0.51		mg/L	1	1/5/2023 1:18:18 PM	72280
Surr: Decachlorobiphenyl	53.1	0	40.9-111		%Rec	1	1/5/2023 1:18:18 PM	72280
Surr: Tetrachloro-m-xylene	68.0	0	15-107		%Rec	1	1/5/2023 1:18:18 PM	72280
EPA METHOD 8151: HERBICIDES TCLP							Analyst: **SB**	
2,4,5-TP (Silvex)	ND	1.0	1.0		mg/L	1	12/23/2022 3:00:55 AM	72185
2,4-D	ND	10	10		mg/L	1	12/23/2022 3:00:55 AM	72185
Surr: 2,4-Dichlorophenylacetic acid	175	0	70-130	S	%Rec	1	12/23/2022 3:00:55 AM	72185
EPA METHOD 7470A: TCLP MERCURY							Analyst: **VP**	
Mercury	ND	0.000092	0.020		mg/L	1	12/29/2022 12:41:34 P	72362
EPA METHOD 6010B: TCLP METALS							Analyst: **JRR**	
Arsenic	ND	0.028	5.0		mg/L	1	12/22/2022 10:32:30 A	72262
Barium	0.054	0.0045	100	J	mg/L	1	12/22/2022 10:32:30 A	72262
Cadmium	ND	0.0067	1.0		mg/L	1	12/22/2022 10:32:30 A	72262
Chromium	ND	0.0031	5.0		mg/L	1	12/22/2022 10:32:30 A	72262
Lead	ND	0.0099	5.0		mg/L	1	12/22/2022 10:32:30 A	72262
Selenium	ND	0.061	1.0		mg/L	1	12/22/2022 10:32:30 A	72262
Silver	0.0067	0.0023	5.0	J	mg/L	1	12/22/2022 10:32:30 A	72262
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.050	200		mg/L	1	1/6/2023 12:46:37 PM	72267
3+4-Methylphenol	ND	0.051	200		mg/L	1	1/6/2023 12:46:37 PM	72267
2,4-Dinitrotoluene	ND	0.049	0.13		mg/L	1	1/6/2023 12:46:37 PM	72267
Hexachlorobenzene	ND	0.19	0.13		mg/L	1	1/6/2023 12:46:37 PM	72267
Hexachlorobutadiene	ND	0.17	0.50		mg/L	1	1/6/2023 12:46:37 PM	72267
Hexachloroethane	ND	0.14	3.0		mg/L	1	1/6/2023 12:46:37 PM	72267
Nitrobenzene	ND	0.049	2.0		mg/L	1	1/6/2023 12:46:37 PM	72267
Pentachlorophenol	ND	0.27	100	E	mg/L	1	1/6/2023 12:46:37 PM	72267
Pyridine	ND	0.14	5.0		mg/L	1	1/6/2023 12:46:37 PM	72267
2,4,5-Trichlorophenol	ND	0.063	400	E	mg/L	1	1/6/2023 12:46:37 PM	72267
2,4,6-Trichlorophenol	ND	0.059	2.0	E	mg/L	1	1/6/2023 12:46:37 PM	72267
Cresols, Total	ND	0.27	200		mg/L	1	1/6/2023 12:46:37 PM	72267
Surr: 2-Fluorophenol	54.2	0	18.1-88.9		%Rec	1	1/6/2023 12:46:37 PM	72267

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212B32-003 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,3 & 4 Effluent-Filtere
Collection Date: 12/19/2022 10:10:00 AM
Received Date: 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
Surr: Phenol-d5	43.4	0	17-61.5		%Rec	1	1/6/2023 12:46:37 PM	72267
Surr: 2,4,6-Tribromophenol	82.6	0	29.8-104		%Rec	1	1/6/2023 12:46:37 PM	72267
Surr: Nitrobenzene-d5	65.2	0	22.2-111		%Rec	1	1/6/2023 12:46:37 PM	72267
Surr: 2-Fluorobiphenyl	54.0	0	24.6-96.3		%Rec	1	1/6/2023 12:46:37 PM	72267
Surr: 4-Terphenyl-d14	93.3	0	53.4-124		%Rec	1	1/6/2023 12:46:37 PM	72267
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50		mg/L	200	12/30/2022 4:06:24 PM	T93662
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	12/30/2022 4:06:24 PM	T93662
2-Butanone	ND	200	200		mg/L	200	12/30/2022 4:06:24 PM	T93662
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	12/30/2022 4:06:24 PM	T93662
Chloroform	ND	6.0	6.0		mg/L	200	12/30/2022 4:06:24 PM	T93662
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	12/30/2022 4:06:24 PM	T93662
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	12/30/2022 4:06:24 PM	T93662
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	12/30/2022 4:06:24 PM	T93662
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	12/30/2022 4:06:24 PM	T93662
Vinyl chloride	ND	0.20	0.20		mg/L	200	12/30/2022 4:06:24 PM	T93662
Chlorobenzene	ND	100	100		mg/L	200	12/30/2022 4:06:24 PM	T93662
Surr: 1,2-Dichloroethane-d4	95.9	0	70-130		%Rec	200	12/30/2022 4:06:24 PM	T93662
Surr: 4-Bromofluorobenzene	113	0	70-130		%Rec	200	12/30/2022 4:06:24 PM	T93662
Surr: Dibromofluoromethane	92.4	0	70-130		%Rec	200	12/30/2022 4:06:24 PM	T93662
Surr: Toluene-d8	104	0	70-130		%Rec	200	12/30/2022 4:06:24 PM	T93662

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212B32-004 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW-Filtered
Collection Date: 12/19/2022 9:50:00 AM
Received Date: 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8081: PESTICIDES TCLP							Analyst: **JME**	
Chlordane	ND	0.00050	0.030		mg/L	1	1/5/2023 1:31:26 PM	72280
Endrin	ND	0.000062	0.020		mg/L	1	1/5/2023 1:31:26 PM	72280
gamma-BHC (Lindane)	ND	0.000054	0.40		mg/L	1	1/5/2023 1:31:26 PM	72280
Heptachlor	ND	0.000041	0.0080		mg/L	1	1/5/2023 1:31:26 PM	72280
Heptachlor epoxide	ND	0.000051	0.0080		mg/L	1	1/5/2023 1:31:26 PM	72280
Methoxychlor	ND	0.000075	10		mg/L	1	1/5/2023 1:31:26 PM	72280
Toxaphene	ND	0.00050	0.50		mg/L	1	1/5/2023 1:31:26 PM	72280
Surr: Decachlorobiphenyl	85.9	0	40.9-111		%Rec	1	1/5/2023 1:31:26 PM	72280
Surr: Tetrachloro-m-xylene	68.3	0	15-107		%Rec	1	1/5/2023 1:31:26 PM	72280
EPA METHOD 8151: HERBICIDES TCLP							Analyst: **SB**	
2,4,5-TP (Silvex)	ND	1.0	1.0		mg/L	1	12/23/2022 3:26:43 AM	72185
2,4-D	ND	10	10		mg/L	1	12/23/2022 3:26:43 AM	72185
Surr: 2,4-Dichlorophenylacetic acid	109	0	70-130		%Rec	1	12/23/2022 3:26:43 AM	72185
EPA METHOD 7470A: TCLP MERCURY							Analyst: **VP**	
Mercury	ND	0.000092	0.020		mg/L	1	12/29/2022 12:43:41 P	72362
EPA METHOD 6010B: TCLP METALS							Analyst: **JRR**	
Arsenic	ND	0.028	5.0		mg/L	1	12/22/2022 10:34:12 A	72262
Barium	0.030	0.0045	100	J	mg/L	1	12/22/2022 10:34:12 A	72262
Cadmium	ND	0.0067	1.0		mg/L	1	12/22/2022 10:34:12 A	72262
Chromium	ND	0.0031	5.0		mg/L	1	12/22/2022 10:34:12 A	72262
Lead	ND	0.0099	5.0		mg/L	1	12/22/2022 10:34:12 A	72262
Selenium	ND	0.061	1.0		mg/L	1	12/22/2022 10:34:12 A	72262
Silver	0.0055	0.0023	5.0	J	mg/L	1	12/22/2022 10:34:12 A	72262
EPA METHOD 8270C TCLP							Analyst: **DAM**	
2-Methylphenol	ND	0.050	200		mg/L	1	1/6/2023 1:28:09 PM	72267
3+4-Methylphenol	ND	0.051	200		mg/L	1	1/6/2023 1:28:09 PM	72267
2,4-Dinitrotoluene	ND	0.049	0.13		mg/L	1	1/6/2023 1:28:09 PM	72267
Hexachlorobenzene	ND	0.19	0.13		mg/L	1	1/6/2023 1:28:09 PM	72267
Hexachlorobutadiene	ND	0.17	0.50		mg/L	1	1/6/2023 1:28:09 PM	72267
Hexachloroethane	ND	0.14	3.0		mg/L	1	1/6/2023 1:28:09 PM	72267
Nitrobenzene	ND	0.049	2.0		mg/L	1	1/6/2023 1:28:09 PM	72267
Pentachlorophenol	ND	0.27	100	E	mg/L	1	1/6/2023 1:28:09 PM	72267
Pyridine	ND	0.14	5.0		mg/L	1	1/6/2023 1:28:09 PM	72267
2,4,5-Trichlorophenol	ND	0.063	400	E	mg/L	1	1/6/2023 1:28:09 PM	72267
2,4,6-Trichlorophenol	ND	0.059	2.0	E	mg/L	1	1/6/2023 1:28:09 PM	72267
Cresols, Total	ND	0.27	200		mg/L	1	1/6/2023 1:28:09 PM	72267
Surr: 2-Fluorophenol	40.6	0	18.1-88.9		%Rec	1	1/6/2023 1:28:09 PM	72267

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2212B32**
Date Reported: **2/7/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well
Lab ID: 2212B32-004 **Matrix:** AQUEOUS

Client Sample ID: CTB to City POTW-Filtered
Collection Date: 12/19/2022 9:50:00 AM
Received Date: 12/20/2022 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C TCLP							Analyst: **DAM**	
Surr: Phenol-d5	31.8	0	17-61.5		%Rec	1	1/6/2023 1:28:09 PM	72267
Surr: 2,4,6-Tribromophenol	55.4	0	29.8-104		%Rec	1	1/6/2023 1:28:09 PM	72267
Surr: Nitrobenzene-d5	53.2	0	22.2-111		%Rec	1	1/6/2023 1:28:09 PM	72267
Surr: 2-Fluorobiphenyl	41.7	0	24.6-96.3		%Rec	1	1/6/2023 1:28:09 PM	72267
Surr: 4-Terphenyl-d14	89.1	0	53.4-124		%Rec	1	1/6/2023 1:28:09 PM	72267
TCLP VOLATILES BY 8260B							Analyst: **JR**	
Benzene	ND	0.50	0.50		mg/L	200	12/30/2022 4:35:07 PM	T93662
1,2-Dichloroethane (EDC)	ND	0.50	0.50		mg/L	200	12/30/2022 4:35:07 PM	T93662
2-Butanone	ND	200	200		mg/L	200	12/30/2022 4:35:07 PM	T93662
Carbon Tetrachloride	ND	0.50	0.50		mg/L	200	12/30/2022 4:35:07 PM	T93662
Chloroform	ND	6.0	6.0		mg/L	200	12/30/2022 4:35:07 PM	T93662
1,4-Dichlorobenzene	ND	7.5	7.5		mg/L	200	12/30/2022 4:35:07 PM	T93662
1,1-Dichloroethene	ND	0.70	0.70		mg/L	200	12/30/2022 4:35:07 PM	T93662
Tetrachloroethene (PCE)	ND	0.70	0.70		mg/L	200	12/30/2022 4:35:07 PM	T93662
Trichloroethene (TCE)	ND	0.50	0.50		mg/L	200	12/30/2022 4:35:07 PM	T93662
Vinyl chloride	ND	0.20	0.20		mg/L	200	12/30/2022 4:35:07 PM	T93662
Chlorobenzene	ND	100	100		mg/L	200	12/30/2022 4:35:07 PM	T93662
Surr: 1,2-Dichloroethane-d4	96.3	0	70-130		%Rec	200	12/30/2022 4:35:07 PM	T93662
Surr: 4-Bromofluorobenzene	109	0	70-130		%Rec	200	12/30/2022 4:35:07 PM	T93662
Surr: Dibromofluoromethane	91.9	0	70-130		%Rec	200	12/30/2022 4:35:07 PM	T93662
Surr: Toluene-d8	107	0	70-130		%Rec	200	12/30/2022 4:35:07 PM	T93662

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	VDW-1,2,3 &4 Effluen 2212B32-001		CTB to City POTW 2212B32-002									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	710	30.88	58	2.52								
Potassium	130	3.32	2.5	0.06								
Calcium	400	19.96	320	15.97								
Magnesium	120	9.88	95	7.82								
Total Cations		64.04		26.37								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	2000	41.64	2200	45.80								
Chloride	520	14.67	54	1.52								
Bicarbonate (CaCO3)	370.5	7.40	62.56	1.25								
Carbonate (CaCO3)												
Phosphate (P)												
Nitrite (N)	0.092	0.01										
Nitrate (N)	0.78	0.06	1.5	0.11	-							
Fluoride	24	1.26	1.7	0.09								
Bromide	0.72	0.01										
Total Anions		65.05		48.77								
Elect. Cond. (µMhos/cm)	5800		2100									
CATION/ANION RATIO		0.98		0.54								
% Difference		1		30								
TOTAL DISSOLVED SOLIDS RATIOS												
TDS (measured)	4350		1940									
TDS (calculated)	4130		2775									
Ratio meas TDS:calc TDS		1.1		0.7								
Ratio Meas. TDS:EC		0.75		0.92								
Ratio Calc. TDS:EC		0.71		1.32								
Ratio of anion sum:EC		1.1		2.3								
Ratio of cation sum:EC		1.1		1.3								

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS -- 1.0-1.2. Ratio Calculated TDS:EC -- 0.55-0.7. Ratio Measured TDS:EC--0.55-0.7. Ratio of anion sum:EC -- 0.9-1.1.

Ratio of cation sum:EC -- 0.9-1.1

ANALYTICAL REPORT

February 03, 2023

Revised Report

Hall Environmental Analysis Laboratory

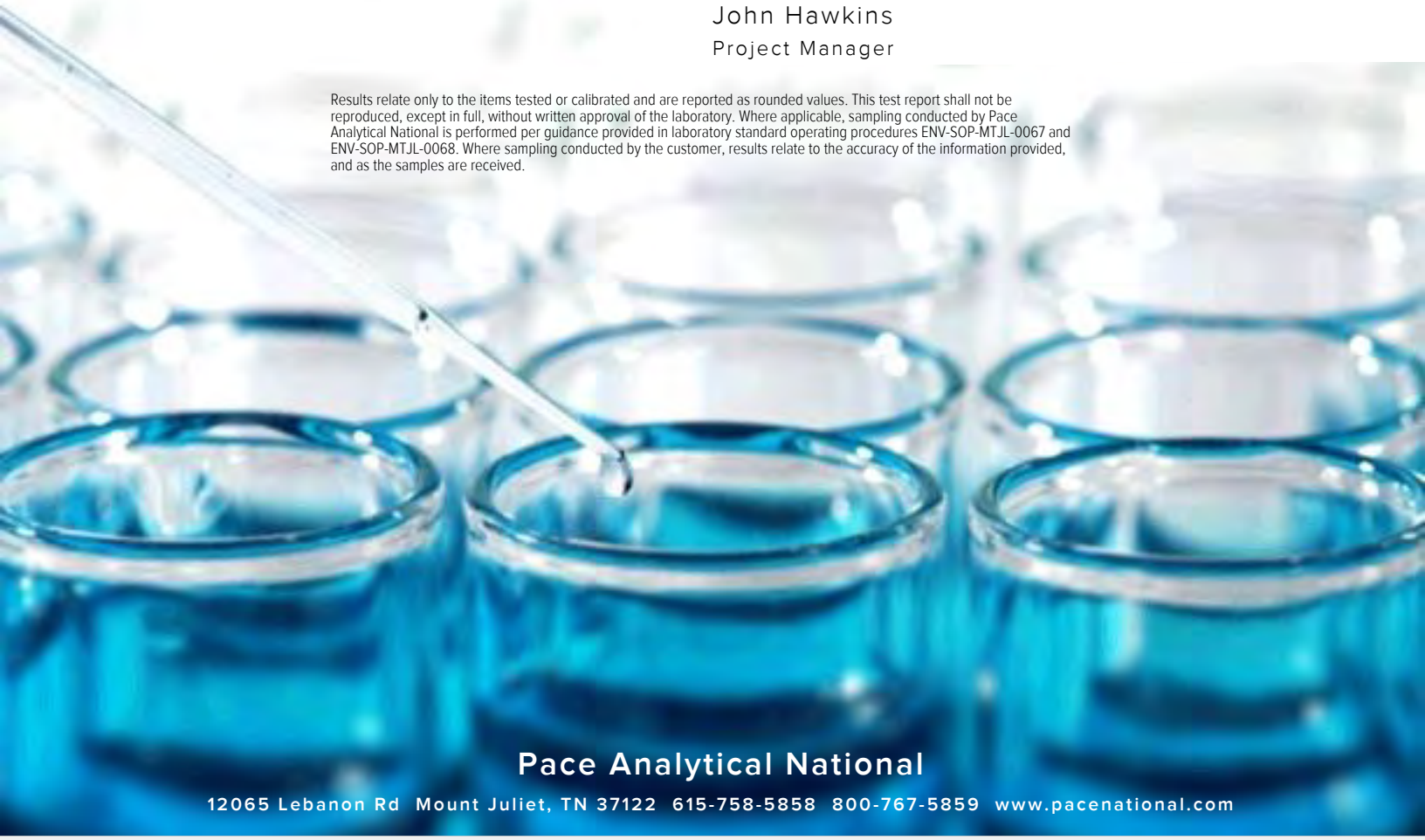
Sample Delivery Group:	L1569837
Samples Received:	12/21/2022
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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2212B32-001F WDW-1,2,3,& 4 EFFLUENT L1569837-01 WW

Collected by | Collected date/time 12/19/22 10:10 | Received date/time 12/21/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG1978097	1	12/22/22 14:07	12/22/22 14:07	JTM	Mt. Juliet, TN
Wet Chemistry by Method 4500H+ B-2011	WG1982838	1	01/04/23 11:45	01/04/23 11:45	JAR	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1984023	1	01/05/23 20:09	01/05/23 20:09	CRB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (LCMS) by Method SW-846 8321	WG1978527	1	12/28/22 23:50	12/30/22 12:20	JNJ	Mt. Juliet, TN

2212B32-001G WDW-1,2,3,& 4 EFFLUENT L1569837-02 GW

Collected by | Collected date/time 12/19/22 10:10 | Received date/time 12/21/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1981271	1	12/30/22 08:07	12/30/22 08:07	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1979336	1	12/24/22 16:52	12/26/22 17:30	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1978443	1	12/22/22 03:38	12/22/22 03:38	CRB	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1981124	1	12/29/22 23:39	12/29/22 23:39	CRB	Mt. Juliet, TN

2212B32-002G CTB TO CITY POTW L1569837-03 GW

Collected by | Collected date/time 12/19/22 09:50 | Received date/time 12/21/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1981271	1	12/30/22 08:07	12/30/22 08:07	ARD	Mt. Juliet, TN
Wet Chemistry by Method 4500 CN E-2016	WG1979336	1	12/24/22 16:52	12/26/22 17:31	CAT	Mt. Juliet, TN
Wet Chemistry by Method 4500 S2 D-2011	WG1978443	1	12/22/22 03:39	12/22/22 03:39	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1979726	1	12/27/22 14:05	12/27/22 14:05	ARD	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1978305	1	12/22/22 03:38	12/22/22 03:38	TQP	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



John Hawkins
Project Manager

Report Revision History

Level II Report - Version 1: 01/06/23 09:39

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 4500 CN E-2016.
All Reactive Sulfide results reported in the attached report were determined as totals using method 4500 S2 D-2011.

Revised per client request

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

Lab Sample ID	Project Sample ID	Method
L1569837-02	2212B32-001G WDW-1,2,3,& 4 EFFLUENT	4500 S2 D-2011
L1569837-03	2212B32-002G CTB TO CITY POTW	4500 S2 D-2011

The following analysis were performed from an unpreserved, insufficiently or inadequately preserved sample.

Lab Sample ID	Project Sample ID	Method
L1569837-02	2212B32-001G WDW-1,2,3,& 4 EFFLUENT	4500 CN E-2016

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		12/22/2022 2:07:26 PM	WG1978097
Fluid	1		12/22/2022 2:07:26 PM	WG1978097
Initial pH	7.30		12/22/2022 2:07:26 PM	WG1978097
Final pH	4.91		12/22/2022 2:07:26 PM	WG1978097

Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	su				
Corrosivity by pH	7.26	T8	1	01/04/2023 11:45	WG1982838

Sample Narrative:

L1569837-01 WG1982838: 7.26 at 18C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	deg F				
Flashpoint	DNF at 170		1	01/05/2023 20:09	WG1984023

Semi-Volatile Organic Compounds (LCMS) by Method SW-846 8321

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
	mg/l		mg/l	mg/l			
2,4-D	ND		0.0200	10	1	12/30/2022 12:20	WG1978527
2,4,5-TP (Silvex)	ND		0.0200	1	1	12/30/2022 12:20	WG1978527
(S) 2,4-DB-D3	*105*		*70.0-130*			*12/30/2022 12:20*	WG1978527

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	338	T8	1	12/30/2022 08:07	WG1981271

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	0.0140		0.00500	1	12/26/2022 17:30	WG1979336

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	0.0750		0.0500	1	12/22/2022 03:38	WG1978443

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	12/29/2022 23:39	WG1981124

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	362	T8	1	12/30/2022 08:07	WG1981271

Wet Chemistry by Method 4500 CN E-2016

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Cyanide	ND		0.00500	1	12/26/2022 17:31	WG1979336

Wet Chemistry by Method 4500 S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Reactive Sulfide	ND		0.0500	1	12/22/2022 03:39	WG1978443

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
pH	7.70	T8	1	12/27/2022 14:05	WG1979726

Sample Narrative:

L1569837-03 WG1979726: 7.7 at 18.8C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 170		1	12/22/2022 03:38	WG1978305

L1569837-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1569837-02 12/30/22 08:07 • (DUP) R3876722-3 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	338	340	1	1.80		20

L1569837-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1569837-03 12/30/22 08:07 • (DUP) R3876722-4 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	362	363	1	1.30		20

L1569894-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-01 12/30/22 08:07 • (DUP) R3876722-5 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	340	344	1	4.20		20

L1569894-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-02 12/30/22 08:07 • (DUP) R3876722-6 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	343	343	1	0.100		20

L1569894-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-04 12/30/22 08:07 • (DUP) R3876722-7 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	347	348	1	0.100		20

L1569894-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-05 12/30/22 08:07 • (DUP) R3876722-8 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	521	520	1	0.600		20

L1569894-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-06 12/30/22 08:07 • (DUP) R3876722-9 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	335	334	1	0.500		20

L1569894-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-07 12/30/22 08:07 • (DUP) R3876722-10 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	346	346	1	0.200		20

L1569894-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-08 12/30/22 08:07 • (DUP) R3876722-11 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	346	346	1	0.100		20

L1569894-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-09 12/30/22 08:07 • (DUP) R3876722-12 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	661	668	1	7.30		20

L1569894-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-10 12/30/22 08:07 • (DUP) R3876722-13 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	444	444	1	0.100		20

L1569894-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-11 12/30/22 08:07 • (DUP) R3876722-14 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	543	543	1	0.300		20

L1569894-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-12 12/30/22 08:07 • (DUP) R3876722-15 12/30/22 08:07

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	476	476	1	0.200		20

L1569894-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-13 12/30/22 08:07 • (DUP) R3876722-16 12/30/22 08:07

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	395	396	1	0.400		20

L1569894-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-14 12/30/22 08:07 • (DUP) R3876722-17 12/30/22 08:07

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	391	391	1	0.100		20

L1569894-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-15 12/30/22 08:07 • (DUP) R3876722-18 12/30/22 08:07

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	400	400	1	0.300		20

L1569894-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-16 12/30/22 08:07 • (DUP) R3876722-19 12/30/22 08:07

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	544	545	1	0.300		20

L1569894-17 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-17 12/30/22 08:07 • (DUP) R3876722-20 12/30/22 08:07

	Original Result	DUP Result	Dilution	DUP Diff	DUP Qualifier	DUP Diff Limits
Analyte	mV	mV		mV		mV
ORP	531	530	1	1.20		20

L1569894-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-18 12/30/22 08:07 • (DUP) R3876722-21 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	397	396	1	0.300		20

L1569894-19 Original Sample (OS) • Duplicate (DUP)

(OS) L1569894-19 12/30/22 08:07 • (DUP) R3876722-22 12/30/22 08:07

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	403	403	1	0.200		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3876722-1 12/30/22 08:07 • (LCSD) R3876722-2 12/30/22 08:07

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	98.0	107	103	109	105	90.0-110			3.20	20

Method Blank (MB)

(MB) R3875478-1 12/26/22 17:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.00180	0.00500

L1569738-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1569738-02 12/26/22 17:28 • (DUP) R3875478-3 12/26/22 17:29

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1569879-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1569879-02 12/26/22 17:38 • (DUP) R3875478-6 12/26/22 17:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3875478-2 12/26/22 17:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	0.100	0.104	104	87.1-120	

L1569837-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1569837-03 12/26/22 17:31 • (MS) R3875478-4 12/26/22 17:34 • (MSD) R3875478-5 12/26/22 17:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	ND	0.0948	0.0932	94.8	93.2	1	90.0-110			1.70	20

Received by OCD: 3/6/2023 7:46:22 AM

Method Blank (MB)

(MB) R3874646-1 12/22/22 03:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.0250	0.0500

Laboratory Control Sample (LCS)

(LCS) R3874646-2 12/22/22 03:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	0.500	0.458	91.6	85.0-115	

L1569873-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1569873-04 12/22/22 03:39 • (MS) R3874646-3 12/22/22 03:39 • (MSD) R3874646-4 12/22/22 03:39

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	0.500	ND	0.430	0.419	86.0	83.8	1	80.0-120			2.59	20

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

Laboratory Control Sample (LCS)

(LCS) R3877886-1 01/04/23 11:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 20.6C

Released to Imaging: 5/24/2023 4:44:56 PM

L1570532-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1570532-01 12/27/22 14:05 • (DUP) R3875770-3 12/27/22 14:05

Analyte	Original Result su	DUP Result su	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
pH	7.89	7.87	1	0.254		1

Sample Narrative:

OS: 7.89 at 18.6C

DUP: 7.87 at 18.4C

Laboratory Control Sample (LCS)

(LCS) R3875770-1 12/27/22 14:05

Analyte	Spike Amount su	LCS Result su	LCS Rec. %	Rec. Limits %	LCS Qualifier
pH	10.0	9.91	99.1	99.0-101	

Sample Narrative:

LCS: 9.91 at 19.6C

L1569837-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1569837-03 12/22/22 03:38 • (DUP) R3874642-3 12/22/22 03:38

Analyte	Original Result deg F	DUP Result deg F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3874642-1 12/22/22 03:38 • (LCSD) R3874642-2 12/22/22 03:38

Analyte	Spike Amount deg F	LCS Result deg F	LCSD Result deg F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Flashpoint	126	129	131	102	104	96.0-104			1.54	10

L1569837-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1569837-02 12/29/22 23:39 • (DUP) R3876672-3 12/29/22 23:39

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3876672-1 12/29/22 23:39 • (LCSD) R3876672-2 12/29/22 23:39

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	124	128	98.8	102	96.0-104			3.16	10

L1569837-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1569837-01 01/05/23 20:09 • (DUP) R3878465-3 01/05/23 20:09

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
Flashpoint	DNF at 170	DNF at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3878465-1 01/05/23 20:09 • (LCSD) R3878465-2 01/05/23 20:09

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	129	127	102	100	96.0-104			1.57	10

Method Blank (MB)

(MB) R3876878-2 12/30/22 10:15

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U		0.00667	0.0200
2,4,5-TP (Silvex)	U		0.00667	0.0200
(S) 2,4-DB-D3	*113*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3876878-1 12/30/22 09:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
2,4-D	0.200	0.188	94.0	70.0-130	
2,4,5-TP (Silvex)	0.200	0.178	89.0	70.0-130	
(S) 2,4-DB-D3			*116*	*70.0-130*	

L1567931-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1567931-01 12/30/22 10:33 • (MS) R3876878-3 12/30/22 10:51 • (MSD) R3876878-4 12/30/22 11:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4-D	0.200	ND	0.194	0.195	97.0	97.5	1	70.0-130			0.514	30
2,4,5-TP (Silvex)	0.200	ND	0.199	0.195	99.5	97.5	1	70.0-130			2.03	30
(S) 2,4-DB-D3					*115*	*117*		*70.0-130*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/6/2023 7:46:22 AM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: www.hallenvironmental.com

SUB CONTRATOR:	Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				

L1569837

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	2212B32-001F	WDW-1,2,3 & 4 Effluent	1LAMGU	Aqueous	12/19/2022 10:10:00 AM	1	8151TCLP	-01
2	2212B32-001G	WDW-1,2,3 & 4 Effluent	500HDPE	Aqueous	12/19/2022 10:10:00 AM	3	RCI, ORP	-02
3	2212B32-002F	CTB to City POTW	1LAMGU	Aqueous	12/19/2022 9:50:00 AM	1	8151TCLP	
4	2212B32-002G	CTB to City POTW	500HDPE	Aqueous	12/19/2022 9:50:00 AM	3	RCI, ORP	-03

L-170

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 12/20/2022	Time: 9:46 AM	Received By: [illegible]	Date:	Time: 0800
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

Released to Imaging: 5/24/2023 4:44:56 PM

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

12/21 L1569837 HALLENVANM

R5

Time estimate: oh **Time spent:** oh

Members

NF Nicolle Faulk (responsible) JVH John V Hawkins

~~Due on *28 December 2022 5:00 PM* for target *Done*~~ (Was done by Nicolle Faulk at 29 December 2022 2:02 PM)

- [ ] Parameter(s) past holding time
- [ ] Temperature not in range
- [ ] Improper container type
- [ ] pH not in range
- [ ] Insufficient sample volume
- [ ] Sample is biphasic
- [ ] Vials received with headspace
- [x] Broken container
- [ ] Sufficient sample remains
- [ ] If broken container: Insufficient packing material around container
- [ ] If broken container: Insufficient packing material inside cooler
- [ ] If broken container: Improper handling by carrier:_____
- [ ] If broken container: Sample was frozen
- [ ] If broken container: Container lid not intact
- [ ] Client informed by Call
- [ ] Client informed by Email
- [ ] Client informed by Voicemail
- [x] Date/Time:12-29-22 1:55
- [x] PM initials:__JVH_____
- [x] Client Contact:____Michelle_____

Comments

Nicolle Faulk *21 December 2022 1:44 PM*

1. item #3 on COC is broken
2. on item #2, we received a container that the lid says NAOH and the side label say NAOH.. & a container that says NAOH on the lid but unpres on the side label. Both containers are greater than 12 when check for preservation

Nicolle Faulk *29 December 2022 7:53 AM*

any word?

John V Hawkins *29 December 2022 1:56 PM*

Proceed with analysis as NAOH preserved

Page 572 of 608

Released to Imaging: 5/24/2023 4:44:56 PM

Received by OCD: 3/6/2023 7:46:22 AM

Nicolle Faulk *29 December 2022 2:02 PM*

done.

John V Hawkins *30 December 2022 11:00 AM*

See instructions from client below

Hi John,

1. item #3 on COC is broken – Please note and cancel this sample.
2. on item #2, we received a container that the lid says NAOH and the side label say NAOH.. & a container that says NAOH on the lid but unpres on the side label. Both containers are greater than 12 when check for preservation. Please perform the Reactive CN and Reactive sulfide analysis from the plastic preserved bottles. For the Ignibability and corrosivity can you take volume from 2212B32-001F. This is the same sample. You should have extra unpreserved volume remaining from this sample to analyze for ignitability and corrosivity.

Thank you,

Andy Freeman - Hall Environmental, 4901 Hawkins NE, Albuquerque, NM 87109, 505-345-3975, 505-345-4107 fax

Nicolle Faulk *30 December 2022 11:38 AM*

done. Flash & CRSV is QC and cannot be removed

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93450**	RunNo: **93450**
Prep Date:	Analysis Date: **12/20/2022**	SeqNo: **3370561** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R93450**	RunNo: **93450**
Prep Date:	Analysis Date: **12/20/2022**	SeqNo: **3370562** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	103	90	110			
Chloride	4.6	0.50	5.000	0	92.4	90	110			
Nitrogen, Nitrite (As N)	0.95	0.10	1.000	0	94.8	90	110			
Bromide	2.4	0.10	2.500	0	94.8	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	98.4	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A93728**	RunNo: **93728**
Prep Date:	Analysis Date: **1/4/2023**	SeqNo: **3383396** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A93728**	RunNo: **93728**
Prep Date:	Analysis Date: **1/4/2023**	SeqNo: **3383397** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.0	90	110			
Sulfate	9.6	0.50	10.00	0	96.3	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R93860**	RunNo: **93860**
Prep Date:	Analysis Date: **1/10/2023**	SeqNo: **3388284** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Orthophosphate (As P	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R93860**	RunNo: **93860**							
Prep Date:	Analysis Date: **1/10/2023**	SeqNo: **3388285**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72238**	SampType: **MBLK**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **PBW**	Batch ID: **72238**	RunNo: **93516**
Prep Date: **12/20/2022**	Analysis Date: **12/22/2022**	SeqNo: **3373486** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID: **MSLLLCS-72238**	SampType: **LCSLL**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **BatchQC**	Batch ID: **72238**	RunNo: **93516**
Prep Date: **12/20/2022**	Analysis Date: **12/22/2022**	SeqNo: **3373487** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0012	0.0010	0.001000	0	115	70	130			
Lead	0.00091	0.0010	0.001000	0	91.4	70	130			J
Selenium	0.0010	0.0010	0.001000	0	103	70	130			

Sample ID: **MSLCS-72238**	SampType: **LCS**	TestCode: **EPA Method 6020A: TCLP Metals**
Client ID: **LCSW**	Batch ID: **72238**	RunNo: **93516**
Prep Date: **12/20/2022**	Analysis Date: **12/22/2022**	SeqNo: **3373488** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.051	0.0010	0.05000	0	101	80	120			
Lead	0.048	0.0010	0.05000	0	95.9	80	120			
Selenium	0.049	0.0010	0.05000	0	98.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72280** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384697** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		93.1	40.9	111			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		84.4	15	107			

Sample ID: **MB-72280** SampType: **MBLK** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **PBW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384698** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0024		0.002500		96.3	40.9	111			
Surr: Tetrachloro-m-xylene	0.0021		0.002500		83.8	15	107			

Sample ID: **LCS-72280** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384699** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00045	0.00010	0.0005000	0	89.7	56.3	126			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.0	45.8	103			
Heptachlor	0.00026	0.00010	0.0005000	0	51.2	33.7	104			
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	82.4	50.1	116			
Methoxychlor	0.00049	0.00010	0.0005000	0	98.6	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		94.2	40.9	111			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.4	15	107			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-72280** SampType: **LCS** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSW** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384700** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00048	0.00010	0.0005000	0	95.3	56.3	126			
gamma-BHC (Lindane)	0.00042	0.00010	0.0005000	0	83.2	45.8	103			
Heptachlor	0.00028	0.00010	0.0005000	0	55.1	33.7	104			
Heptachlor epoxide	0.00044	0.00010	0.0005000	0	87.2	50.1	116			
Methoxychlor	0.00050	0.00010	0.0005000	0	101	15	203			
Surr: Decachlorobiphenyl	0.0024		0.002500		98.0	40.9	111			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		61.9	15	107			

Sample ID: **LCSD-72280** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384701** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	88.4	56.3	126	1.40	20	
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	69.5	45.8	103	8.88	20	
Heptachlor	0.00029	0.00010	0.0005000	0	58.4	33.7	104	13.2	20	
Heptachlor epoxide	0.00041	0.00010	0.0005000	0	81.2	50.1	116	1.51	20	
Methoxychlor	0.00048	0.00010	0.0005000	0	95.9	15	203	2.77	20	
Surr: Decachlorobiphenyl	0.0023		0.002500		91.1	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0012		0.002500		46.6	15	107	0	0	

Sample ID: **LCSD-72280** SampType: **LCSD** TestCode: **EPA Method 8081: Pesticides TCLP**
Client ID: **LCSS02** Batch ID: **72280** RunNo: **93759**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384702** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	92.2	56.3	126	3.28	20	
gamma-BHC (Lindane)	0.00040	0.00010	0.0005000	0	79.9	45.8	103	4.05	20	
Heptachlor	0.00032	0.00010	0.0005000	0	63.1	33.7	104	13.5	20	
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.8	50.1	116	0.448	20	
Methoxychlor	0.00050	0.00010	0.0005000	0	99.1	15	203	1.78	20	
Surr: Decachlorobiphenyl	0.0024		0.002500		95.0	40.9	111	0	0	
Surr: Tetrachloro-m-xylene	0.0012		0.002500		46.7	15	107	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72185**	SampType: **MBLK**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **PBW**	Batch ID: **72185**	RunNo: **93499**							
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376751**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	ND	1.0								
2,4-D	ND	10								
Surr: 2,4-Dichlorophenylacetic aci	0.027		0.02500		108	70	130			

Sample ID: **0.0075 PPM**	SampType: **LCS**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **LCSW**	Batch ID: **72185**	RunNo: **93499**							
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376754**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.0078	0.00010	0.007500	0	104	70	130			
2,4-D	0.0071	0.00010	0.007500	0	95.3	70	130			
Surr: 2,4-Dichlorophenylacetic aci	0.0073		0.007500		97.4	70	130			

Sample ID: **0.0075 PPM**	SampType: **LCS**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **LCSW**	Batch ID: **72185**	RunNo: **93499**							
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376764**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	0.0078	0.00010	0.007500	0	104	70	130			
2,4-D	0.0063	0.00010	0.007500	0	83.7	70	130			
Surr: 2,4-Dichlorophenylacetic aci	0.0075		0.007500		99.4	70	130			

Sample ID: **MB-72185**	SampType: **MBLK**	TestCode: **EPA Method 8151: Herbicides TCLP**							
Client ID: **PBW**	Batch ID: **72185**	RunNo: **93499**							
Prep Date: **12/22/2022**	Analysis Date: **12/22/2022**	SeqNo: **3376765**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,5-TP (Silvex)	ND	1.0								
2,4-D	ND	10								
Surr: 2,4-Dichlorophenylacetic aci	0.027		0.02500		109	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **100ng lcs** SampType: **LCS** TestCode: **TCLP Volatiles by 8260B**
Client ID: **LCSW** Batch ID: **T93662** RunNo: **93662**
Prep Date: Analysis Date: **12/30/2022** SeqNo: **3380275** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.021	0.010	0.02000	0	105	70	130			
1,1-Dichloroethene	0.020	0.010	0.02000	0	99.8	70	130			
Trichloroethene (TCE)	0.021	0.010	0.02000	0	103	70	130			
Chlorobenzene	0.021	0.010	0.02000	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	0.0095		0.01000		94.7	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		111	70	130			
Surr: Dibromofluoromethane	0.0094		0.01000		94.2	70	130			
Surr: Toluene-d8	0.010		0.01000		104	70	130			

Sample ID: **mb** SampType: **MBLK** TestCode: **TCLP Volatiles by 8260B**
Client ID: **PBW** Batch ID: **T93662** RunNo: **93662**
Prep Date: Analysis Date: **12/30/2022** SeqNo: **3380280** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Chlorobenzene	ND	100								
Surr: 1,2-Dichloroethane-d4	0.0085		0.01000		85.0	70	130			
Surr: 4-Bromofluorobenzene	0.011		0.01000		114	70	130			
Surr: Dibromofluoromethane	0.0089		0.01000		88.6	70	130			
Surr: Toluene-d8	0.011		0.01000		106	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-72267** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384444** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.074		0.2000		37.1	18.1	88.9			
Surr: Phenol-d5	0.059		0.2000		29.3	17	61.5			
Surr: 2,4,6-Tribromophenol	0.099		0.2000		49.6	29.8	104			
Surr: Nitrobenzene-d5	0.045		0.1000		45.2	22.2	111			
Surr: 2-Fluorobiphenyl	0.034		0.1000		33.7	24.6	96.3			
Surr: 4-Terphenyl-d14	0.073		0.1000		72.5	53.4	124			

Sample ID: **lcs-72267** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384445** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.072	0.0010	0.1000	0	71.9	19	106			
3+4-Methylphenol	0.14	0.0010	0.2000	0	68.7	16.3	112			
2,4-Dinitrotoluene	0.063	0.0010	0.1000	0	62.5	15	99.6			
Hexachlorobenzene	0.082	0.0010	0.1000	0	82.3	41.8	111			
Hexachlorobutadiene	0.042	0.0010	0.1000	0	42.1	15	91.5			
Hexachloroethane	0.044	0.0010	0.1000	0	44.5	15	87.5			
Nitrobenzene	0.070	0.0010	0.1000	0	70.0	19.3	114			
Pentachlorophenol	0.021	0.0010	0.1000	0	21.2	29	103			S
Pyridine	0.056	0.0010	0.1000	0	56.2	15	92.6			
2,4,5-Trichlorophenol	0.020	0.0010	0.1000	0	20.2	25.2	114			S
2,4,6-Trichlorophenol	0.018	0.0010	0.1000	0	18.5	25.7	112			S
Cresols, Total	0.21	0.0010	0.3000	0	69.8	15	145			
Surr: 2-Fluorophenol	0.024		0.2000		12.2	18.1	88.9			S
Surr: Phenol-d5	0.055		0.2000		27.4	17	61.5			
Surr: 2,4,6-Tribromophenol	0.044		0.2000		21.8	29.8	104			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-72267** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSW** Batch ID: **72267** RunNo: **93749**
Prep Date: **12/22/2022** Analysis Date: **1/5/2023** SeqNo: **3384445** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.075		0.1000		75.3	22.2	111			
Surr: 2-Fluorobiphenyl	0.058		0.1000		58.5	24.6	96.3			
Surr: 4-Terphenyl-d14	0.11		0.1000		107	53.4	124			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **lcs-1 99.4uS eC**	SampType: **lcs**		TestCode: **SM2510B: Specific Conductance**		
Client ID: **LCSW**	Batch ID: **R93481**		RunNo: **93481**		
Prep Date:	Analysis Date: **12/21/2022**		SeqNo: **3371544**	Units: **µmhos/cm**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.40	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72297** SampType: **MBLK** TestCode: **EPA Method 7470A: Mercury**
Client ID: **PBW** Batch ID: **72297** RunNo: **93535**
Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374385** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCSLL-72297** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC** Batch ID: **72297** RunNo: **93535**
Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374386** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00027	0.00020	0.0001500	0	181	50	150			S

Sample ID: **LCS-72297** SampType: **LCS** TestCode: **EPA Method 7470A: Mercury**
Client ID: **LCSW** Batch ID: **72297** RunNo: **93535**
Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374387** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0056	0.00020	0.005000	0	111	85	115			

Sample ID: **LCSLL-72297** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC** Batch ID: **72297** RunNo: **93535**
Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374391** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00026	0.00020	0.0001500	0	173	50	150			S

Sample ID: **LCSLL-72297** SampType: **LCSLL** TestCode: **EPA Method 7470A: Mercury**
Client ID: **BatchQC** Batch ID: **72297** RunNo: **93535**
Prep Date: **12/23/2022** Analysis Date: **12/23/2022** SeqNo: **3374441** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00011	0.00020	0.0001500	0	76.5	50	150			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72362** SampType: **MBLK** TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **PBW** Batch ID: **72362** RunNo: **93613**
Prep Date: **12/28/2022** Analysis Date: **12/29/2022** SeqNo: **3378122** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID: **LCSLL-72362** SampType: **LCSLL** TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **BatchQC** Batch ID: **72362** RunNo: **93613**
Prep Date: **12/28/2022** Analysis Date: **12/29/2022** SeqNo: **3378123** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00019	0.020	0.0001500	0	129	50	150			J

Sample ID: **LCS-72362** SampType: **LCS** TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **LCSW** Batch ID: **72362** RunNo: **93613**
Prep Date: **12/28/2022** Analysis Date: **12/29/2022** SeqNo: **3378124** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.020	0.005000	0	100	85	115			J

Sample ID: **2212B32-004CMS** SampType: **MS** TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **CTB to City POTW-F** Batch ID: **72362** RunNo: **93613**
Prep Date: **12/28/2022** Analysis Date: **12/29/2022** SeqNo: **3378129** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.020	0.005000	0	98.7	75	125			J

Sample ID: **2212B32-004CMSD** SampType: **MSD** TestCode: **EPA Method 7470A: TCLP Mercury**
Client ID: **CTB to City POTW-F** Batch ID: **72362** RunNo: **93613**
Prep Date: **12/28/2022** Analysis Date: **12/29/2022** SeqNo: **3378130** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.020	0.005000	0	98.6	75	125	0.148	20	J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-A** SampType: **MBLK** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW** Batch ID: **A93491** RunNo: **93491**
Prep Date: Analysis Date: **12/21/2022** SeqNo: **3372353** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								

Sample ID: **LCS-A** SampType: **LCS** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A93491** RunNo: **93491**
Prep Date: Analysis Date: **12/21/2022** SeqNo: **3372355** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	54	1.0	50.00	0	108	80	120			
Magnesium	51	1.0	50.00	0	102	80	120			
Potassium	49	1.0	50.00	0	98.8	80	120			

Sample ID: **MB-A** SampType: **MBLK** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW** Batch ID: **A93600** RunNo: **93600**
Prep Date: Analysis Date: **12/28/2022** SeqNo: **3377522** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID: **LCS-A** SampType: **LCS** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A93600** RunNo: **93600**
Prep Date: Analysis Date: **12/28/2022** SeqNo: **3377524** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	50	1.0	50.00	0	100	80	120			

Sample ID: **MB-A** SampType: **MBLK** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW** Batch ID: **A93678** RunNo: **93678**
Prep Date: Analysis Date: **1/3/2023** SeqNo: **3381160** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID: **LCS-A** SampType: **LCS** TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW** Batch ID: **A93678** RunNo: **93678**
Prep Date: Analysis Date: **1/3/2023** SeqNo: **3381162** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	47	1.0	50.00	0	94.1	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2212B32-002DMS**	SampType: **MS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **CTB to City POTW**	Batch ID: **A93678**	RunNo: **93678**
Prep Date:	Analysis Date: **1/3/2023**	SeqNo: **3381177** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	320	5.0	250.0	57.67	105	75	125			

Sample ID: **2212B32-002DMSD**	SampType: **MSD**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **CTB to City POTW**	Batch ID: **A93678**	RunNo: **93678**
Prep Date:	Analysis Date: **1/3/2023**	SeqNo: **3381178** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	310	5.0	250.0	57.67	101	75	125	3.33	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72262** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **72262** RunNo: **93496**
Prep Date: **12/21/2022** Analysis Date: **12/22/2022** SeqNo: **3372566** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID: **LCS-72262** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **72262** RunNo: **93496**
Prep Date: **12/21/2022** Analysis Date: **12/22/2022** SeqNo: **3372568** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.54	5.0	0.5000	0	108	80	120			J
Barium	0.47	100	0.5000	0	93.6	80	120			J
Cadmium	0.52	1.0	0.5000	0	104	80	120			J
Chromium	0.48	5.0	0.5000	0	95.4	80	120			J
Lead	0.45	5.0	0.5000	0	89.9	80	120			J
Selenium	0.55	1.0	0.5000	0	110	80	120			J
Silver	0.11	5.0	0.1000	0	106	80	120			J

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72238** SampType: **MBLK** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **72238** RunNo: **93600**
Prep Date: **12/20/2022** Analysis Date: **12/28/2022** SeqNo: **3377364** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Silver	ND	0.0050								

Sample ID: **LCS-72238** SampType: **LCS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **72238** RunNo: **93600**
Prep Date: **12/20/2022** Analysis Date: **12/28/2022** SeqNo: **3377366** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.44	0.0020	0.5000	0	87.3	80	120			
Cadmium	0.44	0.0020	0.5000	0	87.2	80	120			
Chromium	0.44	0.0060	0.5000	0	87.7	80	120			
Silver	0.088	0.0050	0.1000	0	87.5	80	120			

Sample ID: **MB-72238** SampType: **MBLK** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **72238** RunNo: **93615**
Prep Date: **12/20/2022** Analysis Date: **12/29/2022** SeqNo: **3378301** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								

Sample ID: **LCS-72238** SampType: **LCS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **72238** RunNo: **93615**
Prep Date: **12/20/2022** Analysis Date: **12/29/2022** SeqNo: **3378303** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.46	0.0020	0.5000	0	91.7	80	120			
Cadmium	0.42	0.0020	0.5000	0	84.9	80	120			
Chromium	0.43	0.0060	0.5000	0	85.2	80	120			

Sample ID: **MB-72238** SampType: **MBLK** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **72238** RunNo: **93615**
Prep Date: **12/20/2022** Analysis Date: **12/29/2022** SeqNo: **3378403** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	0.0050								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **LCS-72238** SampType: **LCS** TestCode: **EPA 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **72238** RunNo: **93615**
Prep Date: **12/20/2022** Analysis Date: **12/29/2022** SeqNo: **3378405** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.098	0.0050	0.1000	0	97.8	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R93481**	RunNo: **93481**							
Prep Date:	Analysis Date: **12/21/2022**	SeqNo: **3371498**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R93481**	RunNo: **93481**							
Prep Date:	Analysis Date: **12/21/2022**	SeqNo: **3371499**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	75.68	20.00	80.00	0	94.6	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **2212B32-002CDUP** SampType: **DUP** TestCode: **Specific Gravity**
Client ID: **CTB to City POTW** Batch ID: **R93653** RunNo: **93653**
Prep Date: Analysis Date: **12/30/2022** SeqNo: **3379947** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9994	0						0.140	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72286**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **PBW**	Batch ID: **72286**	RunNo: **93562**							
Prep Date: **12/22/2022**	Analysis Date: **12/28/2022**	SeqNo: **3375930**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-72286**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **LCSW**	Batch ID: **72286**	RunNo: **93562**							
Prep Date: **12/22/2022**	Analysis Date: **12/28/2022**	SeqNo: **3375931**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2212B32**
07-Feb-23

Client: Navajo Refining Company
Project: PSP WDW 1 2 3 4 Inj Well

Sample ID: **MB-72294** SampType: **MBLK** TestCode: **SM 2540D: TSS**
Client ID: **PBW** Batch ID: **72294** RunNo: **93519**
Prep Date: **12/22/2022** Analysis Date: **12/23/2022** SeqNo: **3373660** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0								

Sample ID: **LCS-72294** SampType: **LCS** TestCode: **SM 2540D: TSS**
Client ID: **LCSW** Batch ID: **72294** RunNo: **93519**
Prep Date: **12/22/2022** Analysis Date: **12/23/2022** SeqNo: **3373661** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	94	4.0	91.90	0	102	83.89	119.7			

Sample ID: **2212B32-002CDUP** SampType: **DUP** TestCode: **SM 2540D: TSS**
Client ID: **CTB to City POTW** Batch ID: **72294** RunNo: **93519**
Prep Date: **12/22/2022** Analysis Date: **12/23/2022** SeqNo: **3373665** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Suspended Solids	ND	4.0						0	10	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Navajo Refining | Work Order Number: 2212B32 | RcptNo: 1

Received By: Kasandra Jimena Garcia 12/20/2022 9:00:00 AM

Completed By: Sean Livingston 12/20/2022 9:41:11 AM

Reviewed By: 12.20.22

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	FedEx		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☑	No ☐	NA ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

of preserved bottles checked for pH: 6 4 (6 5) (<2 or >12 unless noted)

Adjusted? NO

Checked by: JN 12/20/22

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks: Sample 002G 2 of 3 did not ph. JN 12/20/22.

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good				
2	0.7	Good				

Received by OCD: 3/6/2023 7:46:22 AM

Released to Imaging: 5/24/2023 4:44:56 PM

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159

Artesia, NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
Standard Rush

Project Name:
PSP WDW-1, 2, 3 &4 Inj Well

Project #: P.O. # 251841

Project Manager:
Randy Dade

Sampler: Brady Hubbard
On Ice: ☑ Yes ☐ No
Sample Temperature: 0.8 + 0.2 = 1.0

HEAL No. 2212832

0.5 + 0.2 = 0.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	Specific Gravity, C/A Balance, ORP, pH, TSS	8260 TCLP Compounds	8270 TCLP Compounds	RCI	RCRA 8 Metals	8081 TCLP Compounds	8151 TCLP Compounds	Filtered 8260 TCLP	Filtered 8270 TCLP	Filtered EDB-DCA
12/19/02	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	**	**	001	X									
12/19/22	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	3-40ml VOA	HCL			X								
12/19/22	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none				X							
12/19/22	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	***	***					X						
12/19/22	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-250ml P	HNO3						X					
12/19/22	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none							X				
12/19/22	10:10	Liquid	WDW-1, 2, 3 & 4 Effluent	1-1L Amber	none								X			
12/19/22	9:50	Liquid	CTB to City POTW	**	**	002	X									
12/19/22	9:50	Liquid	CTB to City POTW	3-40ml VOA	HCL			X								
12/19/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none				X							
12/19/22	9:50	Liquid	CTB to City POTW	***	***					X						
12/19/22	9:50	Liquid	CTB to City POTW	1-250ml P	HNO3						X					
12/19/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none							X				
12/19/22	9:50	Liquid	CTB to City POTW	1-1L Amber	none								X			

Date	Time	Relinquished by	Received by	Date	Time
12-19-22	12:53	Brady Hubbard	Fedex	12-20-22	9:00
		Relinquished by:	Received by:		

Remarks: Dissolved Cations by EPA Method 200.7. **1-500ml unpreserved plastic, 1-125ml H2SO4 plastic, 1-125ml HNO3 plastic. *** 1-500ml unpreserved plastic, 1-500ml NaOH plastic, 1-500ml NaOH/ZnAcetate plastic.

RDU FEED RATE: 6100 BPD

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

APPENDIX B

ProUCL Output for Chloride

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.12/23/2023 5:24:18 PM
From File	WDW_pre RDU.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chloride

General Statistics

Total Number of Observations	14	Number of Distinct Observations	13
		Number of Missing Observations	0
Minimum	390	Mean	580.7
Maximum	860	Median	545
SD	148.6	Std. Error of Mean	39.7
Coefficient of Variation	0.256	Skewness	0.556

Normal GOF Test

Shapiro Wilk Test Statistic	0.935	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.874	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.159	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.226	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	651	95% Adjusted-CLT UCL (Chen-1995)	652.3
		95% Modified-t UCL (Johnson-1978)	652

Gamma GOF Test

A-D Test Statistic	0.308	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.734	tected data appear Gamma Distributed at 5% Significance Le
K-S Test Statistic	0.143	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.228	tected data appear Gamma Distributed at 5% Significance Le

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	17.05	k star (bias corrected MLE)	13.45
Theta hat (MLE)	34.05	Theta star (bias corrected MLE)	43.18
nu hat (MLE)	477.5	nu star (bias corrected)	376.5
MLE Mean (bias corrected)	580.7	MLE Sd (bias corrected)	158.4
		Approximate Chi Square Value (0.05)	332.6
Adjusted Level of Significance	0.0312	Adjusted Chi Square Value	327.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	657.5	95% Adjusted Gamma UCL (use when n<50)	668.5

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.874	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.126	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.226	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.966	Mean of logged Data	6.335
Maximum of Logged Data	6.757	SD of logged Data	0.251

Assuming Lognormal Distribution

95% H-UCL	662.2	90% Chebyshev (MVUE) UCL	698.4
95% Chebyshev (MVUE) UCL	751.7	97.5% Chebyshev (MVUE) UCL	825.8
99% Chebyshev (MVUE) UCL	971.4		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	646	95% Jackknife UCL	651
95% Standard Bootstrap UCL	643.2	95% Bootstrap-t UCL	660.8
95% Hall's Bootstrap UCL	647.4	95% Percentile Bootstrap UCL	646.4
95% BCA Bootstrap UCL	647.1		
90% Chebyshev(Mean, Sd) UCL	699.8	95% Chebyshev(Mean, Sd) UCL	753.8
97.5% Chebyshev(Mean, Sd) UCL	828.7	99% Chebyshev(Mean, Sd) UCL	975.8

Suggested UCL to Use

95% Student's-t UCL 651

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
owever, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistici

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.12/23/2023 5:40:50 PM
From File	WDW_post RDU.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chloride

General Statistics

Total Number of Observations	5	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	340	Mean	406
Maximum	520	Median	340
SD	90.99	Std. Error of Mean	40.69
Coefficient of Variation	0.224	Skewness	0.67

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.733	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.366	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	492.8	95% Adjusted-CLT UCL (Chen-1995)	486
		95% Modified-t UCL (Johnson-1978)	494.8

Gamma GOF Test

A-D Test Statistic	0.834	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.679	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.392	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.357	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	26.02	k star (bias corrected MLE)	10.54
Theta hat (MLE)	15.6	Theta star (bias corrected MLE)	38.51
nu hat (MLE)	260.2	nu star (bias corrected)	105.4

MLE Mean (bias corrected)	406	MLE Sd (bias corrected)	125
		Approximate Chi Square Value (0.05)	82.72
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	73.96

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	517.4	95% Adjusted Gamma UCL (use when n<50)	578.7

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.726	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.366	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.343	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.829	Mean of logged Data	5.987
Maximum of Logged Data	6.254	SD of logged Data	0.217

Assuming Lognormal Distribution

95% H-UCL	519.7	90% Chebyshev (MVUE) UCL	524
95% Chebyshev (MVUE) UCL	577.6	97.5% Chebyshev (MVUE) UCL	651.9
99% Chebyshev (MVUE) UCL	797.8		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	472.9	95% Jackknife UCL	492.8
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	528.1	95% Chebyshev(Mean, Sd) UCL	583.4
97.5% Chebyshev(Mean, Sd) UCL	660.1	99% Chebyshev(Mean, Sd) UCL	810.9

Suggested UCL to Use

95% Student's-t UCL	492.8	or 95% Modified-t UCL	494.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistici

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.12/23/2023 5:42:09 PM
From File	CTB_pre_rdu.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chloride

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	78	Mean	86.33
Maximum	100	Median	81
SD	11.93	Std. Error of Mean	6.888
Coefficient of Variation	0.138	Skewness	1.61

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.85	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.339	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	106.4	95% Adjusted-CLT UCL (Chen-1995)	104.5
		95% Modified-t UCL (Johnson-1978)	107.5

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	82.05	k star (bias corrected MLE)	N/A
Theta hat (MLE)	1.052	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	492.3	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.861	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.333	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.357	Mean of logged Data	4.452
Maximum of Logged Data	4.605	SD of logged Data	0.134

Assuming Lognormal Distribution

95% H-UCL	114	90% Chebyshev (MVUE) UCL	106.3
95% Chebyshev (MVUE) UCL	115.3	97.5% Chebyshev (MVUE) UCL	127.9
99% Chebyshev (MVUE) UCL	152.6		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	97.66	95% Jackknife UCL	106.4
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	107	95% Chebyshev(Mean, Sd) UCL	116.4
97.5% Chebyshev(Mean, Sd) UCL	129.3	99% Chebyshev(Mean, Sd) UCL	154.9

Suggested UCL to Use

95% Student's-t UCL	106.4

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistici

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.12/23/2023 5:43:25 PM
From File	CTB_post rdu.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chloride

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	33	Mean	45.25
Maximum	59	Median	44.5
SD	13.18	Std. Error of Mean	6.588
Coefficient of Variation	0.291	Skewness	0.103

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.851	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.282	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	60.75	95% Adjusted-CLT UCL (Chen-1995)	56.45
		95% Modified-t UCL (Johnson-1978)	60.81

Gamma GOF Test

A-D Test Statistic	0.483	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	tected data appear Gamma Distributed at 5% Significance Le
K-S Test Statistic	0.311	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.395	tected data appear Gamma Distributed at 5% Significance Le

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	15.5	k star (bias corrected MLE)	4.041
Theta hat (MLE)	2.92	Theta star (bias corrected MLE)	11.2
nu hat (MLE)	124	nu star (bias corrected)	32.33

MLE Mean (bias corrected)	45.25	MLE Sd (bias corrected)	22.51
		Approximate Chi Square Value (0.05)	20.33
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	71.95	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.847	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.276	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.497	Mean of logged Data	3.78
Maximum of Logged Data	4.078	SD of logged Data	0.296

Assuming Lognormal Distribution

95% H-UCL	73.4	90% Chebyshev (MVUE) UCL	65.22
95% Chebyshev (MVUE) UCL	74.27	97.5% Chebyshev (MVUE) UCL	86.82
99% Chebyshev (MVUE) UCL	111.5		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	56.09	95% Jackknife UCL	60.75
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	65.01	95% Chebyshev(Mean, Sd) UCL	73.96
97.5% Chebyshev(Mean, Sd) UCL	86.39	99% Chebyshev(Mean, Sd) UCL	110.8

Suggested UCL to Use

95% Student's-t UCL	60.75

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL
Recommendations are based upon data size, data distribution, and skewness.
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However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistici

Classical Oneway ANOVA

Date/Time of Computation ProUCL 5.12/23/2023 5:45:42 PM
From File WDW ANOVA.xls
Full Precision OFF

Chloride

Group	Obs	Mean	SD	Variance
pre-rdu	14	580.7	148.6	22069
post-rdu	5	406	90.99	8280
Grand Statistics (All data)	19	534.7	155	24026

Classical One-Way Analysis of Variance Table

Source	SS	DOF	MS	V.R.(F Stat)	P-Value
Between Groups	112461	1	112461	5.974	0.0257
Within Groups	320013	17	18824		
Total	432474	18			

Pooled Standard Deviation 137.2
R-Sq 0.26

Note: A p-value <= 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance

A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are comparable.

Classical Oneway ANOVA

Date/Time of Computation ProUCL 5.12/23/2023 5:47:24 PM
From File CTB ANOVA.xls
Full Precision OFF

Chloride

Group	Obs	Mean	SD	Variance
pre-rdu	3	86.33	11.93	142.3
post-rdu	4	45.25	13.18	173.6
Grand Statistics (All data)	7	62.86	24.83	616.5

Classical One-Way Analysis of Variance Table

Source	SS	DOF	MS	V.R.(F Stat)	P-Value
Between Groups	2893	1	2893	17.96	0.00818
Within Groups	805.4	5	161.1		
Total	3699	6			

Pooled Standard Deviation 12.69
R-Sq 0.782

Note: A p-value <= 0.05 (or some other selected level) suggests that there are significant differences in mean/median characteristics of the various groups at 0.05 or other selected level of significance

A p-value > 0.05 (or other selected level) suggests that mean/median characteristics of the various groups are comparable.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 193317

COMMENTS

Operator: HF Sinclair Navajo Refining LLC ATTN: GENERAL COUNSEL Dallas, TX 75201	OGRID: 15694
	Action Number: 193317
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

COMMENTS

Created By	Comment	Comment Date
cchavez	Renewable Diesel Unit (RDU) Installation Pre vs Post Installation Effluent Monitoring Evaluation for WDW-1; WDW-2; WDW-3 & WDW-4. Three more quarters of sampling to complete evaluation review.	5/24/2023

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1000 Rio Brazos Rd., Aztec, NM 87410
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CONDITIONS

Action 193317

CONDITIONS

Operator: HF Sinclair Navajo Refining LLC ATTN: GENERAL COUNSEL Dallas, TX 75201	OGRID: 15694
	Action Number: 193317
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
cchavez	1. Initial and major phase of RDU effluent evaluation was completed successfully with final OCD evaluation to be completed subsequent to COAs No. 2 & 3 below. 2. Three more quarterly sampling events are required to complete the RDU Installation Effluent Evaluation. 3. Significant exceedances to regulatory levels of toxic parameters during remaining sampling requires resampling to verify or confirm that an exceedance has actually occurred (to be addressed with OCD).	5/24/2023