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River Terrace Voluntary Corrective Measures Bioventing System Annual Report (3 of 3)

2017

Disposal of Samples

Samples are held at HEAL for a minimum of thirty days and then transferred to the HEAL warehouse for disposal. Analytical results are used to characterize their respective sample contamination level(s) so that the proper disposal can be performed. These wastes will be disposed of according to their hazard as well as their type and level of contamination. Refer to the Hall Environmental Analysis Laboratory Chemical Hygiene Plan and current Sample Disposal SOP for details regarding waste disposal.

Waste drums are provided by an outside agency. These drums are removed by the outside agency and disposed of in a proper manner.

The wastes that are determined to be non-hazardous are disposed of as non-hazardous waste in accordance with the Chemical Hygiene Plan and Sample Disposal SOP.

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6.0 Analytical Procedures

All analytical methods used at HEAL incorporate necessary and sufficient Quality Assurance and Quality Control practices. A Standard Operating Procedure (SOP) is used to provide the necessary criteria to yield acceptable results. These procedures are reviewed at least annually and revised as necessary and are attached as a pdf file in the Laboratory Information Management System (LIMS) for easy access by each analyst. The sample is often consumed or altered during the analytical process. Therefore, it is important that each step in the analytical process be correctly followed in order to yield valid data.

When unforeseen problems arise, the analyst, technical director, and, when necessary, laboratory manager meet to discuss the factors involved. The analytical requirements are evaluated and a suitable corrective action or resolution is established. The client is notified in the case narrative with the final report or before, if the validity of their result is in question.

List of Procedures Used

Typically, the procedures used by HEAL are EPA approved methodologies or 20th edition Standard Methods. However, proprietary methods for client specific samples are sometimes used. On occasion, multiple methods or multiple method revisions are used, in this event the SOP is written to include the requirements of all referenced methods. The following tables list EPA and Standard Methods Method numbers with their corresponding analytes and/or instrument classification.

Methodology	Matrix	Title of Method
180.1	DW NPW	"Turbidity (Nephelometric)"
200.2	DW NPW	"Sample Preparation Procedure For Spectrochemical Determination of Total Recoverable Elements"
200.7	DW NPW	"Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry"
200.8	DW NPW	"Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry."
245.1	DW NPW	"Mercury (Manual Cold Vapor Technique)"

Methods Utilized at HEAL

Drinking Water(DW) Non-Potable Water (NPW) Solids (S)

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300.0	DW NPW	"Determination of Inorganic Anions by Ion Chromatography"
413.2	S NPW S	"Oil and Grease"
418.1	NPW S	"Petroleum Hydrocarbons (Spectrophotometric, Infrared)"
504.1	DW	"EDB, DBCP and 123TCP in Water by Microextraction and Gas Chromatography"
524.2	DW	"Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry"
552.3	DW	"Determination of Haloacetic Acids and Dalapon in Drinking Water by Ion-Exchange Liquid-Solid Extraction and Gas Chromatography with an Electron Capture Detector"
624	NPW	Appendix A to Part 136 Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater Method 624- Purgeables"
1311	S	"Toxicity Characteristic Leaching Procedure"
1311ZHE	S	"Toxicity Characteristic Leaching Procedure"
1664A	NPW	"N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material) by Extraction and Gravimetry"
3005A	NPW	"Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by FLAA or ICP Spectroscopy"
3010A	NPW	"Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy"
3050B	S	"Acid Digestion of Sediment, Sludge, and Soils"
3510C	DW NPW	"Separatory Funnel Liquid-Liquid Extraction"
3540	S	"Soxhlet Extraction"
3545	S	"Pressurized Fluid Extraction(PFE)"
3665	NPW S	"Sulfuric Acid/Permanganate Cleanup"
5030B	NPW	"Purge-and-Trap for Aqueous Samples"
5035	s	"Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples"
6010B	NPW S	"Inductively Coupled Plasma-Atomic Emission Spectrometry"

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7471A s "Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)" 8021B "Aromatic and Halogenated Volatiles By Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors" 8015D NPW "Nonhalogenated Volatile Organics by Gas Chromatography" 8015D NPW "Nonhalogenated Volatile Organics by Gas Chromatography" 8081A NPW "Casoline Range and Diesel Range Organics) 8082 NPW "Organochlorine Pesticides by Gas Chromatography" 8260B NPW "Volatile Organic Compounds by Gas Chromatography" Mass Spectrometry (GC/MS)" 8270C NPW "Semivolatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)" 8310 NPW "Semivolatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)" 8310 NPW "Semivolatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)" 9060 NPW "Total Organic Carbon" 9067 NPW "Total Organic Carbon" 9095A S "Phenolics (Spectrophotometric, MBTH With Distillation)" 9095A S FOC/TOC WB SM2320 B NPW "Alkalinity" SM2540 B NPW "2540 Conductivity"	7470A	NPW	"Mercury in Liquid Waste (Manual Cold-Vapor Technique)"
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	SM4500-Norg	NPW	"4500-Norg" Total Kjeldahl Nitrogen (TKN)

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С	S	
SM5210 B	NPW	"5210 B. 5-day BOD Test"
SM5310 B	DW	"5310" Total Organic Carbon (TOC)
SM9223B	NPW	"0222 Enzyma Substrata Caliform Tast"
SIV19223D	DW	"9223 Enzyme Substrate Coliform Test"
8000B	NPW	"Determinative Chromategraphic Separations"
0000B	S	"Determinative Chromatographic Separations"
80000	NPW	"Determinetive Chromotographic Separations"
8000C	S	"Determinative Chromatographic Separations"

Criteria for Standard Operating Procedures

HEAL has Standard Operating Procedures (SOPs) for each of the test methods listed above. These SOPs are based upon the listed methods and detail the specific procedure and equipment utilized as well as the quality requirements necessary to prove the integrity of the data. SOPs are reviewed or revised every twelve months or sooner if necessary. The review/revision is documented in the Master SOP Logbook filed in the QA/QC Office. All SOPs are available in the LIMS under the Documents and SOPs menu.

Hand written corrections or alterations to SOPs are not permitted. In the event that a correction is needed and a revision is not immediately possible, a corrective action report will be generated documenting the correction or alteration, signed by the section Technical Director and the QA/QC Officer and will be scanned into the current SOP and will document the change until a new revision is possible.

Controlled documents such as calibration summary forms, analysis bench sheets, etc. are tracked as appendices in SOPs, through the Controlled Document Logbook with copies available through the LIMS or through the MOAL as bound logbooks.

Each HEAL test method SOP shall include or reference the following topics where applicable:

Identification of the test method; Applicable matrix or matrices; Limits of detection and quantitation; Scope and application, including parameters to be analyzed; Summary of the test method; Definitions; Interferences; Safety; Equipment and supplies; Reagents and standards;

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Sample collection, preservation, shipment and storage;

Quality control parameters;

Calibration and standardization;

Procedure;

Data analysis and calculations;

Method performance;

Pollution prevention;

Data assessment and acceptance criteria for quality control measures; Corrective actions for out-of-control data;

Contingencies for handling out-of-control or unacceptable data;

Waste management;

References; and

Any tables, diagrams, flowcharts and validation data.

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7.0 Calibration

All equipment and instrumentation used at HEAL are operated, maintained and calibrated according to manufacturers' guidelines, as well as criteria set forth in applicable analytical methodology. Personnel who have been properly trained in their procedures perform the operation and calibration. Brief descriptions of the calibration processes for our major laboratory equipment and instruments are found below.

Thermometers

The thermometers in the laboratory are used to measure the temperatures of the refrigerators, freezers, ovens, water baths, incubators, hot blocks, ambient laboratory conditions, TCLP Extractions, digestion blocks, and samples at the time of log-in. All NIST traceable thermometers are either removed from use upon their documented expiration date or they are checked annually with a NIST-certified thermometer and a correction factor is noted on each thermometer log. See the most current Login SOP for detailed procedures on this calibration procedure.

Data Loggers are used to record refrigerator temperatures. These data loggers are calibrated quarterly with NIST-certified thermometers.

The NIST thermometer should be recalibrated at least every five years or whenever the thermometer has been exposed to temperature extremes.

Refrigerators/Freezers

Each laboratory refrigerator or freezer contains a thermometer capable of measuring to a minimum precision of 0.1°C. The thermometers are kept with the bulb immersed in liquid. Each day of use, the temperatures of the refrigerators are recorded to insure that the refrigerators are within the required designated range. Samples are stored separately from the standards to reduce the risk of contamination.

See the current Catastrophic Failure SOP for the procedure regarding how to handle failed refrigerators or freezers.

Ovens

The ovens contain thermometers graduated by 1° C. The ovens are calibrated quarterly against NIST thermometers and checked each day of use as required and in whatever way is dictated by or appropriate for the method in use.

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Analytical and Table Top Balances

The table top balances are capable of weighing to a minimum precision of 0.01 grams. The analytical balances are capable of weighing to a minimum precision of 0.0001 grams. Records are kept of daily calibration checks for the balances in use. Working weights are used in these checks. The balances are annually certified by an outside source and the certifications are on file with the QA/QCO.

Balances, unless otherwise indicated by method specific SOPs, will be checked each day of use with at least two weights that will bracket the working range of the balance for the day. Daily balance checks will be done using working weights that are calibrated annually against Class S weights. Class S weights are calibrated by an external provider as required. The Class S weights are used once a year, or more frequently if required, to assign values to the Working Weights. During the daily balance checks, the working weights are compared to their assigned values and must pass in order to validate the calibration of the balance. The assigned values, as well as the daily checks, for the working weights are recorded in the balance logbook for each balance.

Instrument Calibration

An instrument calibration is the relationship between the known concentrations of a set of calibration standards introduced into an analytical instrument and the measured response they produce. Calibration curve standards are a prepared series of aliquots at various known concentration levels from a primary source reference standard. Specific mathematical types of calibration techniques are outlined in SW-846 8000B and/or 8000C. The entire initial calibration must be performed prior to sample analyses.

The lowest standard in the calibration curve must be at or below the required reporting limit.

Refer to the current SOP to determine the minimum requirement for calibration points.

Most compounds tend to be linear and a linear approach should be favored when linearity is suggested by the calibration data. Non-linear calibration should be considered only when a linear approach cannot be applied. It is not acceptable to use an alternate calibration procedure when a compound fails to perform in the usual manner. When this occurs, it is indicative of instrument issues or operator error.

If a non-linear calibration curve fit is employed, a minimum of six calibration levels must be used for second-order (quadratic) curves.

Page 31 of 59 Quality Assurance Plan 10.0 Effective March 11th, 2016 When more than 5 levels of standards are analyzed in anticipation of using second-order calibration curves, all calibration points MUST be used regardless of the calibration option employed. The highest or lowest calibration point may be excluded for the purpose of narrowing the calibration range and meeting the requirements for a specific calibration option. Otherwise, unjustified exclusion of calibration data is expressly forbidden.

Initial Calibration Verification (ICV) samples are from a source independent of the calibration standards and are analyzed after calibration to verify the calibration curve.

Analytical methods vary in QC acceptance criteria. HEAL follows the method specific guidelines for QC acceptance. The specific acceptance criteria are outlined in the analytical methods and their corresponding SOPs.

pH Meter

The pH meter measures to a precision of 0.01 pH units. The pH calibration logbook contains the calibration before each use, or each day of use, if used more than once per day. It is calibrated using a minimum of 3 certified buffers. Also available with the pH meter is a magnetic stirrer with a temperature sensor. See the current pH SOP (SM4500 H+ B) for specific details regarding calibration of the pH probe.

Other Analytical Instrumentation and Equipment

The conductivity probe is calibrated as needed and checked daily when in use.

Eppendorf (or equivalent brands) pipettes are checked gravimetrically prior to use.

Standards

All of the source reference standards used are ordered from a reliable commercial vendor. A Certificate of Analysis (CoA), which verifies the quality of the standard, accompanies the standards from the vendor. The Certificates of Analysis are dated and stored on file by the Technical Directors or their designee. These standards are traceable to the National Institute of Standards (NIST). When salts are purchased and used as standards the certificate of purity must be obtained from the vendor and filed with the CoAs.

All standard solutions, calibration curve preparations, and all other quality control solutions are labeled in a manner that can be traced back to the original source reference standard. All source reference standards are entered into the LIMS with an appropriate description of the standard. Dilutions of the source reference standard (or any mixes of the source standards) are fully tracked in the LIMS. Standards are labeled with the date opened for use and with an expiration date.

Page 32 of 59 Quality Assurance Plan 10.0 Effective March 11th, 2016 As part of the quality assurance procedures at HEAL, analysts strictly adhere to manufacturer recommendations for storage times/expiration dates and policies of analytical standards and quality control solutions.

Reagents

HEAL ensures that the reagents used are of acceptable quality for their intended purpose. This is accomplished by ordering high quality reagents and adhering to good laboratory practices so as to minimize contamination or chemical degradation. All reagents must meet any specifications noted in the analytical method. Refer to the current Purchase of Consumables SOP for details on how this is accomplished and documented.

Upon receipt, all reagents are assigned a separate ID number, and logged into the LIMS. All reagents shall be labeled with the date received into the laboratory and again with the date opened for use. Recommended shelf life, as defined by the manufacturer, shall be documented and controlled. Dilutions or solutions prepared shall be clearly labeled, dated, and initialed. These solutions are traceable back to their primary reagents and do not extend beyond the expiration date listed for the primary reagent.

All gases used with an instrument shall meet specifications of the manufacturer. All safety requirements that relate to maximum and/or minimum allowed pressure, fitting types, and leak test frequency, shall be followed. When a new tank of gas is placed in use, it shall be checked for leaks and the date put in use will be written in the instrument maintenance logbook.

HEAL continuously monitors the quality of the reagent water and provides the necessary indicators for maintenance of the purification systems in order to assure that the quality of laboratory reagent water meets established criteria for all analytical methods. The majority of HEAL methods utilize medium quality deionized reagent water maintained at a resistivity greater than $1M\Omega$ in accordance with SM1080.

Reagent blank samples are also analyzed to ensure that no contamination is present at detectable levels. The frequency of reagent blank analysis is typically the same as calibration verification samples. Refrigerator storage blanks are stored in the volatiles refrigerator for a period of one week and analyzed and replaced once a week.

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8.0 Maintenance

Maintenance logbooks are kept for each major instrument and all support equipment in order to document all repair and maintenance. In the front of the logbook, the following information is included:

Unique Name of the Item or Equipment Manufacturer Type of Instrument Model Number Serial Number Date Received and Date Placed into Service Location of Instrument Condition of Instrument Upon Receipt

For routine maintenance, the following information shall be included in the log:

Maintenance Date Maintenance Description Maintenance Performed by Initials

A manufacturer service agreement (or equivalent) covers most major instrumentation to assure prompt and reliable response to maintenance needs beyond HEAL instrument operator capabilities.

Refer to the current Maintenance and Troubleshooting SOP for each section in the laboratory for further information.

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9.0 Data Integrity

For HEAL's policy on ethics and data integrity, see section 3.0 of this document. Upon being hired, and annually thereafter, all employees at HEAL undergo documented data integrity training. All new employees sign an Ethics and Data Integrity Agreement, documenting their understanding of the high standards of integrity required at HEAL and outlining their responsibilities in regards to ethics and data integrity. See the current Document Control Logbook for a copy of this agreement.

In instances of ethical concern, analysts are required to report the known or suspected concern to their Technical Director, the Laboratory Manager, or the QA/QCO. This will be done in a confidential and receptive environment, allowing all employees to privately discuss ethical issues or report items of ethical concern.

Once reported and documented, the ethical concern will be immediately elevated to the Laboratory Manager and the need for an investigation, analyst remediation, or termination will be determined on a case-by-case basis.

All reported instances of ethical concern will be thoroughly documented and handled in a manner sufficient to rectify any breaches in data integrity with an emphasis on preventing similar incidences from happening in the future.

10.0 Quality Control

Internal Quality Control Checks

HEAL utilizes various internal quality control checks, including duplicates, matrix spikes, matrix spike duplicates, method blanks, laboratory control spikes, laboratory control spike duplicates, surrogates, internal standards, calibration standards, quality control charts, proficiency tests and calculated measurement uncertainty.

Refer to the current method SOP to determine the frequency and requirements of all quality controls. In the event that the frequency of analysis is not indicated in the method specific SOP, duplicate samples, laboratory control spikes (LCS), Method Blanks (MB), and matrix spikes and matrix spike duplicates (MS/MSD) are analyzed for every batch of twenty samples.

When sample volume is limited on a test that requires an MS/MSD an LCSD shall be analyzed to demonstrate precision and accuracy and when possible a sample duplicate will be analyzed.

Duplicates are identical tests repeated for the same sample or matrix spike in order to determine the precision of the test method. A Relative Percent Difference (RPD) is calculated as a measure of this precision. Unless indicated in the SOP, the default acceptance limit is </= 20%.

Matrix Spikes and Matrix Spike Duplicates are spiked samples (MS/MSD) that are evaluated with a known added quantity of a target compound. This is to help determine the accuracy of the analyses and to determine the matrix effects on analyte recovery. A percent recovery is calculated to assess the quality of the accuracy. In the event that the acceptance criteria is not outlined in the SOP, a default limit of 70-130% will be utilized. When an MSD is employed an RPD is calculated and when not indicated in the SOP shall be acceptable at </

In an effort to evaluate all received matricies, MS/MSD samples are chosen randomly. Notable exceptions to this policy are when a client requests the MS/MSD be analyzed utilizing their sample or in the event the matrix requires such a significant dilution that utilizing it as an MS/MSD is impractical.

When appropriate for the method, a Method Blank should be analyzed with each batch of samples processed to assess contamination levels in the laboratory. MBs consist of all the reagents measured and treated as they are with samples, except without the samples. This enables the laboratory to ensure clean reagents and procedures. Guidelines should be in place for accepting or rejecting data based on the level of contamination in the blank. In the event that these guidelines are not dictated by the SOP or in client specific work plans, the MB should be less than the MDL reported for the analyte being reported.

Page 36 of 59 Quality Assurance Plan 10.0 Effective March 11th, 2016 It is important to note that the LIMS qualifies samples for Method Blank failures when the amount in the blank is greater than the sample's listed PQL.

A Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) are reagent blanks, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. It is generally used to establish intra-laboratory or analyst-specific precision and bias or to assess the performance of all or a portion of the measurement system. Guidelines are outlined in each SOP for the frequency and pass fail requirements for LCS and LCSDs. These limits can be set utilizing control charts as discussed below.

Surrogates are utilized when dictated by method and are substances with properties that mimic the analytes of interest. The surrogate is an analyte that is unlikely to be found in environmental samples. Refer to the appropriate Method and SOP for guidelines on pass/fail requirements for surrogates.

Internal Standards are utilized when dictated by the method and are known amounts of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method. Refer to the appropriate Method and SOP for guidelines on pass/fail requirements for Internal Standards.

Proficiency Test (PT) Samples are samples provided by an unbiased third party. They are typically analyzed twice a year, between five and seven months apart, or at any other interval as defined in the method SOP. They contain a pre-determined concentration of the target compound, which is unknown to HEAL. HEAL's management and all analysts shall ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities and frequency of analysis as used for routine analysis of that analyte. When analyzing a PT, HEAL shall employ the same calibration, laboratory quality control and acceptance criteria, sequence of analytical steps, number of replicates and other procedures as used when analyzing routine samples. PT results are reported as normal samples, within the working range of the associated calibration curve. In the event an analyte concentration is less than the PQL, the result shall be reported as less than the PQL.

With regards to analyzing PT Samples HEAL shall not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which we seek accreditation, or are accredited. HEAL shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation, or is accredited. Laboratory management or staff will not communicate with any individual at another laboratory concerning the PT sample. Laboratory management or staff shall not attempt to obtain the assigned value of any PT sample from the PT Provider.

Upon receiving a Not Acceptable PT result for any analyte, a root cause analysis is conducted and the cause of the failure determined and corrected. As defined by TNI, two

out of the past three PTs must be acceptable to maintain accreditation for any given analyte. If this requirement is not met, a successful history will be reestablished by the analysis of an additional PT sample. For accredited tests, the PT provider will be notified, when the PT is for corrective action purposes. The analysis dates of successive PT samples for the same TNI accredited analyte shall be at least fifteen days apart.

Calibration standards are standards run to calibrate. Once the calibration is established the same standards can be analyzed as Continuing Calibration Verifications (CCV), used to confirm the consistency of the instrumentation. Calibration standards can be utilized at the beginning and end of each batch, or more frequently as required. Typically Continuing Calibration Blanks (CCB) are run in conjunction with CCVs. Refer to the current method SOP for frequency and pass/fail requirements of CCVs and CCBs.

Control Limits are limits of acceptable ranges of the values of quality control checks. The control limits approximate a 99% confidence interval around the mean recovery. Any matrix spike, surrogate, or LCS results outside of the control limits require further evaluation and assessment. This should begin with the comparison of the results from the samples or matrix spike with the LCS results. If the recoveries of the analytes in the LCS are outside of the control limits, then the problem may lie with the application of the extraction, with cleanup procedures, or with the chromatographic procedure. Once the problem has been identified and addressed, corrective action may include reanalysis of samples or reextraction followed by reanalysis. When the LCS results are within the control limits, the issue may be related to the sample matrix or to the use of an inappropriate extraction, cleanup, and/or determinative method for the matrix. If the results are to be used for regulatory compliance monitoring, then steps must be taken to demonstrate that the analytes of concern can be determined in the sample matrix at the levels of interest. Data generated with laboratory control samples that fall outside of the established control limits are judged to be generated during an "out-of-control" situation. These data are considered suspect and shall be repeated or reported with qualifiers.

Control limits are to be updated only by Technical Directors, Section Supervisors or the Quality Assurance Officer. Control limits should be established and updated according to the requirements of the method being utilized. When the method does not specify, and control limits are to be generated or updated for a test, the following guidelines shall be utilized.

Limits should typically be generated utilizing the most recent 20-40 data values. In order to obtain an even distribution across multiple instruments and to include more than a single day's worth of data, surrogate limits should be generated using around 100 data values. The data values used shall not reuse values that were included in the previous Control Limit update. The data values shall also be reviewed by the LIMS for any Grubbs Outliers, and if identified, the outliers must be removed prior to generating new limits. The results used to update control limits should meet all other QC criteria associated with the determinative method. For example, MS/MSD recoveries from a GC/MS procedure should be generated from samples analyzed after a valid tune and a valid initial calibration that includes all

analytes of interest. Additionally, no analyte should be reported when it is beyond the working range of the calibration currently in use. MS/MSD and surrogate limits should be generated using the same set of extraction, cleanup, and analysis procedures.

All generated limits should be evaluated for appropriateness. Where limits have been established for MS/MSD samples, the LCS/LCSD limits should fall within those limits, as the LCS/LCSD are prepared in a clean matrix. Surrogate limits should be updated using all sample types and should be evaluated to ensure that all instruments as well as a reasonable dispersion across days are represented by the data. LCS/LCSD recovery limits should be evaluated to verify that they are neither inappropriately wide nor unreasonably tight. The default LCS/LCSD acceptance limits of 70-130% and RPD of 20% (or those limits specified by the method for LCS/LCSD and/or CCV acceptability), should be used to help make this evaluation. Technical directors may choose to use warning limits when they feel their generated limits are too wide (the lower limit of which cannot be <15%), or default LCS/limits have become arbitrarily tight.

Once new Control Limits have been established and updated in the LIMS, the Control Charts shall be printed and reviewed by the appropriate section supervisor and primary analyst performing the analysis for possible trends and compared to the previous Control Charts. The technical director initials the control charts, indicating that they have been reviewed and that the updated Limits have been determined to be accurate and appropriate. Any manual alterations to the limits will be documented and justified on the printed control chart. These initialed charts are then filed in the QA/QCO office.

Once established, control limits should be reviewed after every 20-30 data values and updated at least every six months, provided that there are sufficient points to do so. The limits used to evaluate results shall be those in place at the time that the sample was analyzed. Once limits are updated, those limits apply to all subsequent analyses.

When updating surrogate control limits, all data, regardless of sample/QC type, shall be updated together and assigned one set of limits for the same method/matrix.

In the event that there are insufficient data points to update limits that are over a year old, the default limits, as established in the method or SOP, shall be re-instated. Refer to the requirements in SW-846 method 8000B and 8000C for further guidance on generating control limits.

Calculated Measurement Uncertainty is calculated annually using LCSs in order to determine the laboratory specific uncertainty associated with each test method. These uncertainty values are available to our clients upon request and are utilized as a trending tool internally to determine the effectiveness of new variables introduced into the procedure over time.

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Client Requested QC

Occasionally certain clients will require QC that is not defined by or covered in the SOPs. These special requests will be issued to all analysts and data reviewers in writing and the analysts and data reviewers will be provided with guidance on how to properly document the client requested deviation/QC in their preparation and analytical batches.

Precision, Accuracy, Detection Levels

Precision

The laboratory uses sample duplicates, laboratory control spike duplicates, and matrix spike duplicates to assess precision in terms of relative percent difference (RPD). HEAL requires the RPD to fall within the 99% confidence interval of established control charts or an RPD of less than 20% if control charts are not available. RPD's greater than these limits are considered out-of-control and require an appropriate response.

RPD = 2 x (Sample Result – Duplicate Result) X 100 (Sample Result + Duplicate Result)

Accuracy

The accuracy of an analysis refers to the difference between the calculated value and the actual value of a measurement. The accuracy of a laboratory result is evaluated by comparing the measured amount of QC reference material recovered from a sample and the known amount added. Control limits can be established for each analytical method and sample matrix. Recoveries are assessed to determine the method efficiency and/or the matrix effect.

Analytical accuracy is expressed as the Percent Recovery (%R) of an analyte or parameter. A known amount of analyte is added to an environmental sample before the sample is prepared and subsequently analyzed. The equation used to calculate percent recovery is:

%Recovery = {(concentration* recovered)/(concentration* added)} X 100

*or amount

HEAL requires that the Percent Recovery to fall within the 99 % confidence interval of established control limits. A value that falls outside of the confidence interval requires a warning and process evaluation. The confidence intervals are calculated by determining the mean and sample standard deviation. If control limits are not available, the range of 80 to 120% is used unless the specific method dictates

otherwise. Percent Recoveries outside of this range mandate additional action such as analyses by Method of Standard Additions, additional sample preparation(s) where applicable, method changes, and out-of-control action or data qualification.

Detection Limit

Current practices at HEAL define the Detection Limit (DL) as the smallest amount that can be detected above the baseline noise in a procedure within a stated confidence level.

HEAL presently utilizes a Method Detection Limit (MDL), and a Practical Quantitation Limit (PQL).

The MDL is a measure of the sensitivity of an analytical method. MDL studies are required annually for each quality system matrix, technology and analyte, unless indicated otherwise in the referenced method. An MDL determination (as required in 40CFR part 136 Appendix B) consists of replicate spiked samples carried through all necessary preparation steps. The spike concentration is three times the standard deviation of three replicates of spikes. At least seven replicates are spiked and analyzed and their standard deviation(s) calculated. Routine variability is critical in passing the 10 times rule and is best achieved by running the MDLs over different days and when possible over several calibration events. Standard Methods and those methods used for drinking water analysis must have MDL studies that are performed over a period of at least three days in order to include day to day variations. The method detection limit (MDL) can be calculated using the standard deviation according to the formula:

where t (99%) is the Student's t-value for the 99% confidence interval. The t-value depends on the number of trials used in calculating the sample standard deviation, so choose the appropriate value according to the number of trials.

Number of Trials	t(99%)
6	3.36
7	3.14
8	3.00
9	2.90

The calculated MDL must not be less than 10 times the spiked amount or the study must be performed again with a lower concentration.

Where there are multiple MDL values for the same test method in the LIMS the highest MDL value is utilized.

The PQL is significant because different laboratories can produce different MDLs although they may employ the same analytical procedures, instruments and sample matrices. The PQL is about two to five times the MDL and represents a practical, and routinely achievable, reporting level with a good certainty that the reported value is reliable. It is often determined by regulatory limits. The reported PQL for a sample is dependent on the dilution factor utilized during sample analysis.

In the event that an analyte will not be reported less than the PQL, an MDL study is not required and a PQL check shall be done, at least annually, in place of the MDL study. The PQL check shall consist of a QC sample spiked at or below the PQL. All sample-processing and analysis steps of the analytical method shall be included in the PQL check and shall be done for each quality system matrix, technology, and analyte. A successful check is one where the recovery of each analyte is within the established method acceptance criteria. When this criterion is not defined by the method or SOP, a default limit of +/-50% shall be utilized.

Quality Control Parameter Calculations

Mean

The sample mean is also known as the arithmetic average. It can be calculated by adding all of the appropriate values together, and dividing this sum by the number of values.

Average = $(\Sigma x_I) / n$

 x_1 = the value x in the Ith trial n = the number of trials

Standard Deviation

The sample standard deviation, represented by s, is a measure of dispersion. The dispersion is considered to be the difference between the average and each of the values x_i . The variance, s^2 , can be calculated by summing the squares of the differences and dividing by the number of differences. The sample standard deviation, s, can be found by taking the square root of the variance.

Page 42 of 59 Quality Assurance Plan 10.0 Effective March 11th, 2016 Standard deviation = s = $\left[\sum (x_1 - average)^2 / (n - 1)\right]^{\frac{1}{2}}$

Percent Recovery (LCS and LCSD)

Percent Recovery = <u>(Spike Sample Result)</u> X100 (Spike Added)

Percent Recovery (MS, MSD)

Percent Recovery = (Spike Sample Result – Sample Result) X100 (Spike Added)

Control Limits

Control Limits are calculated by the LIMS using the average percent recovery (x), and the standard deviation (s).

Upper Control Limit = x + 3sLower Control Limit = x - 3s

These control limits approximate a 99% confidence interval around the mean recovery.

Grubbs Outliers

Grubbs Outliers are calculated by the LIMS during the generation of control limits and uncertainties. An outlier is an observation that appears to deviate markedly from other observations in the sample set and are removed, unless documented otherwise.

Identify both the lowest and highest values in the sample set. Use the following equations to determine the T values.

$$T = \frac{x_{max} - x_{mean}}{sd}$$

$$T = \frac{x_{mean} - x_{min}}{sd}$$

Compare the T values to the Grubbs' critical value table. If either value of T is greater than the critical value (assuming a 5% risk) for the sample size, the point(s) must be dropped then the calculation repeated for both the lowest and highest value using the new mean and standard deviation.

The Grubbs test is repeated until there are no longer any outliers detected. Keep in mind you must have at least 20 data points available to generate your limits.

RPD (Relative Percent Difference)

Analytical precision is expressed as a percentage of the difference between the results of duplicate samples for a given analyst. Relative percent difference (RPD) is calculated as follows:

RPD = 2 x (Sample Result – Duplicate Result) X 100 (Sample Result + Duplicate Result)

Uncertainty Measurements

Uncertainty, as defined by ISO, is the parameter associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement. Ultimately, uncertainty measurements are used to state how good a test result is and to allow the end user of the data to properly interpret their reported data. All procedures allow for some uncertainty. For most analyses, the components and estimates of uncertainty are reduced by following well-established test methods. To further reduce uncertainty, results generally are not reported below the lowest calibration point (PQL) or above the highest calibration point (UQL). Understanding that there are many influential quantities affecting a measurement result, so many in fact that it is impossible to identify all of them, HEAL calculates measurement uncertainty are kept on file in the method folders in the QA/QC office.

Measurement Uncertainty contributors are those that may be determined statistically. These shall be generated by estimating the overall uncertainty in the entire analytical process by measuring the dispersion of values obtained from laboratory control samples over time. At least 20 of the most recent LCS data points are gathered. The standard deviation(s) is calculated using these LCS data points. Since it can be assumed that the possible estimated values of the spikes are approximately normally distributed with approximate standard deviation(s), the unknown value of the spike is believed to lie in 95% confidence interval, corresponding to an uncertainty range of +/- 2(s).

Page 44 of 59 Quality Assurance Plan 10.0 Effective March 11th, 2016 Calculate standard deviation (s) and 95% confidence interval according to the following formulae:

$$s = \sqrt{\frac{\sum (x - \overline{x})^2}{(n-1)}}$$

Where: s = standard deviation

x = number in series

 \overline{x} = calculated mean of series

n = number of samples taken

95% confidence = $2 \times s$

Example: Assuming that after gathering 20 of the most recent LCS results for Bromide, we have calculated the standard deviations of the values and achieved a result of 0.0326, our measurement of uncertainty for Bromide (at 95% confidence = $2 \times s$) is 0.0652.

Total Nitrogen

Total nitrogen is calculated as follows:

Total Nitrogen = TKN + NO₂ + NO₃

Langelier Saturation Index

The Langelier Saturation Index (LSI) is calculated as follows:

Solids Factor (SF) =(Log10[TDS] - 1) / 10 Ca Hardness Factor (HF) = Log10([Ca] x 2.497) - 0.4 Alkalinity Factor (AF) = Log10[Alkalinity] Temp. Factor (TF) = -13.12 x Log10(°C + 273) + 34.55 pHs (pH @ saturation) =(9.3 + SF + TF) - (HF + AF) LSI = pH - pH_s

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Calibration Calculations

1. Response Factor or Calibration Factor:

$$RF= ((A_x)(C_{is}))/((A_{is})(C_x)) \qquad CF=(A_x)/(C_x)$$

a. Average RF or CF

 $RF_{AVE} = \Sigma RF_i / n$

- b. Standard Deviation s = SQRT { [Σ (RF_i - RF_{AVE})²] / (n-1) }
- c. Relative Standard Deviation

RSD = s / RFAVE

Where:

 A_x = Area of the compound C_x = Concentration of the compound A_{is} = Area of the internal standard C_{is} = Concentration of the internal standard n = number of pairs of data RF_i = Response Factor (or other determined value) RF_{AVE} = Average of all the response factors Σ = the sum of all the individual values

2. Linear Regression



a. Slope (m)

 $\mathbf{m} = (\mathbf{n} \Sigma \mathbf{x}_i \mathbf{y}_i - (\mathbf{n} \Sigma \mathbf{x}_i)^* (\mathbf{n} \Sigma \mathbf{y}_i)) / (\mathbf{n} \Sigma \mathbf{x}_i^2 - (\Sigma \mathbf{x}_i)^2)$

b. Intercept (b)

 $b = y_{AVE} - m^*(x_{AVE})$

c. Correlation Coefficient (cc)

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 $CC (r) = \{ \Sigma((x_i-x_{ave})^*(y_i-y_{ave})) \} / \{ SQRT((\Sigma(x_i-x_{ave})^2)^*(\Sigma(y_i-y_{ave})^2)) \}$ $CC (r) = [(\Sigma w * \Sigma wxy) - (\Sigma wx * \Sigma wy)] / (sqrt(([(\Sigma w * \Sigma wx^2) - (\Sigma wx * \Sigma wx)] * [(\Sigma w * \Sigma wy^2) - (\Sigma wy * \Sigma wy)]))]$

d. Coefficient of Determination

 $COD(r^2) = CC^*CC$

Where:

- y = Response (Area) Ratio A_x/A_{is}
- x = Concentration Ratio C_x/C_{is}
- m = slope
- b = intercept
- n = number of replicate x,y pairs
- x_i = individual values for independent variable
- y_i = individual values for dependent variable
- Σ = the sum of all the individual values
- xave = average of the x values
- yave = average of the y values
- w = weighting factor, for equal weighting w=1
- 3. Quadratic Regression

$$y = ax^2 + bx + c$$

a. Coefficient of Determination

$$\mathsf{COD}\;(r^2) = (\;\Sigma(y_i \text{-} y_{ave})^2 - \{[(n-1)/(n-p)] * [\Sigma(y_i \text{-} Y_i)^2]\}\;) \;/\;\Sigma(y_i \text{-} y_{ave})^2$$

Where:

- y = Response (Area) Ratio Ax/Ais
- x = Concentration Ratio C_x/C_{is}
- $a = x^2$ coefficient
- b = x coefficient
- c = intercept
- y_i = individual values for each dependent variable
- xi = individual values for each independent variable
- yave = average of the y values
- n = number of pairs of data

p = number of parameters in the polynomial equation (I.e., 3 for third order, 2 for second order)

Page 47 of 59 Quality Assurance Plan 10.0 Effective March 11th, 2016 $Yi = ((2^*a^*(C_x/C_{is})^2) - b^2 + b + (4^*a^*c))/(4a)$

b. Coefficients (a,b,c) of a Quadratic Regression

 $a = S_{(x2y)}S_{(xx)}-S_{(xy)}S_{(xx2)} / S_{(xx)}S_{(x2x2)}-[S_{(xx2)}]^2$

 $b = S_{(xy)}S_{(x2x2)} - S_{(x2y)}S_{(xx2)} / S_{(xx)}S_{(x2x2)} - [S_{(xx2)}]^2$

$$c = [(\Sigma yw)/n] - b^*[(\Sigma xw)/n] - a^*[\Sigma(x^2w)/n]$$

Where:

n = number of replicate x,y pairs x = x values y = y values w = S⁻² / (Σ S⁻²/n) S_(xx) = (Σ x²w) - [(Σ xw)² / n] S_(xy) = (Σ xyw) - [(Σ xw)*(Σ yw) / n] S_(x2y) = (Σ x³w) - [(Σ xw)*(Σ x²w) / n] S_(x2y) = (Σ x²yw) - [(Σ x²w)*(Σ yw) / n] S_(x2x2) = (Σ x⁴w) - [(Σ x²w)² / n] Or If unweighted calibration, w=1 S(xx) = (Sx2) - [(Sx)2 / n] S(xy) = (Sxy) - [(Sx)*(Sy) / n] S(x2y) = (Sx3) - [(Sx)*(Sy2) / n] S(x2y) = (Sx2y) - [(Sx2)*(Sy) / n] S(x2x2) = (Sx4) - [(Sx2)*(Sy) / n]

Weighting

Weighting of 1/x or $1/x^2$ is permissible for linear calibrations. Weighting shall not be employed for quadratic calibrations. When weighting, use the above equations by substituting x for 1/x or $1/x^2$.

Concentration Calculations

On-Column Concentration for Average RRF Calibration using Internal Standard

On-Column Concentration $C_x = ((A_x)(C_{is}))/((A_{is})(RF_{AVE}))$

On-Column Concentration for Average CF Calibration using External Standard

On-Column Concentration $C_x = (A_x)/(CF_{AVE})$

On-Column Concentration for Linear Calibration

Page 48 of 59 Quality Assurance Plan 10.0 Effective March 11th, 2016 If determining an external standard, then exclude the A_{is} and C_{is} for internal standards On-Column Concentration $C_x = ((Absolute\{[(A_x)/(A_{is})] - b\})/m) * C_{is}$

Where: m = slope

b = intercept

 A_x = Area of the Sample

C_{is} = Concentration of the Internal Standard

Ais = Area of the Internal Standard

On-Column Concentration for Quadratic Calibration

If determining an external standard, then exclude the A_{is} and C_{is} for internal standards On-Column Concentration =[(+SQRT(b²-(4*a*(c-y)))-b)/(2*a)] * C_{is}

Where: $a = x^2$ coefficient

- b = x coefficient
- c = intercept
- $y = Area Ratio = A_x/A_{is}$

Cis = Concentration of the Internal Standard

Final Concentration (Wet Weight)

Concentration for Extracted Samples = (<u>On-Column Conc</u>)(<u>Dilution</u>)(<u>Final Volume</u>) (Initial Amount)(Injection Volume) Concentration for Purged Samples = (<u>On-Column Conc</u>)(<u>Purged Amount</u>)(<u>Dilution</u>) (Purged Amount)

Dry Weight Concentration

Dry Weight Concentration = Final Concentration Wet Weight *100 % Solids

Percent Difference

% Difference= <u>Absolute(Continuing Calibration RRF - Average RRF</u>) * 100 Average RRF

Percent Drift

% Drift= <u>Absolute(Calculated Concentration - Theoretical Concentration)</u> * 100 Theoretical Concentration

Dilution Factor

Dilution Factor =(Volume of Solvent + Solute) / Volume of Solute

Relative Retention Time

RRT =RT of Compound / RT of ISTD

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Breakdown Percent

Breakdown = <u>Area of DDD + Area of DDE</u> Average (DDT, DDE and DDD)

-or-

<u>Area of Endrin Ketone + Area of Endrin Aldehyde</u> Average (Endrin, Endrin Ketone, Endrin Aldehyde)

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11.0 Data Reduction, Validation, Reporting, and Record Keeping

All data reported must be of the highest possible accuracy and quality. During the processes of data reduction, validation, and report generation, all work is thoroughly checked to insure that error is minimized.

Data Reduction

The analyst who generated the data usually performs the data reduction. The calculations include evaluation of surrogate recoveries (where applicable), and other miscellaneous calculations related to the sample quantitation.

If the results are computer generated, then the formulas must be confirmed by hand calculations, at minimum, one per batch.

See the current Data Validation SOP for details regarding data reduction.

Validation

A senior analyst, most often the section supervisor, validates the data. All data undergoes peer review. If an error is detected, it is brought to the analyst's attention so that he or she can rectify the error, and perform further checks to ensure that all data for that batch is sound. Previous and/or common mistakes are stringently monitored throughout the validation process. Data is reported using appropriate significant figure criteria. In most cases, two significant digits are utilized, but three significant digits can be used in QC calculations. Significant digits are not rounded until after the last step of a sample calculation. All final reports undergo a review by the laboratory manager, the project manager, or their designee, to provide a logical review of all results before they are released to the client.

If data is to be manually transferred between media, the transcribed data is checked by a peer. This includes data typing, computer data entry, chromatographic data transfer, data table inclusion to a cover letter, or when data results are combined with other data fields.

All hand-written data from run logs, analytical standard logbooks, hand-entered data logbooks, or on instrument-generated chromatograms, are systematically archived should the need for future retrieval arise.

See the current Data Validation SOP for details regarding data validation.

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Reports and Records

All records at HEAL are retained and maintained through the procedures outlined in the most recent version of the Records Control SOP.

Sample reports are compiled by the Laboratory Information Management System (LIMS). Most data is transferred directly from the instruments to the LIMS. After being processed by the analyst and reviewed by a data reviewer, final reports are approved and signed by the senior laboratory management. A comparative analysis of the data is performed at this point. For example, if TKN and NH3 are analyzed on the same sample, the NH3 result should never be greater than the TKN result. Lab results and reports are released only to appropriately designated individuals. Release of the data can be by fax, email, electronic deliverables, or mailed hard copy.

When a project is completed, the final report, chain of custody, any relevant supporting data, and the quality assurance/control worksheets are scanned as a .pdf file onto the main server. Original client folders are kept on file and are arranged by project number. Additionally, all electronic data is backed up routinely on the HEAL main server. The backup includes raw data, chromatograms, and report documents. Hard copies of chromatograms are stored separately according to the instrument and the analysis date. All records and analytical data reports are retained in a secure location as permanent records for a minimum period of five years (unless specified otherwise in a client contract). Access to archived information shall be documented with an access log. Access to archived electronic reports and data will be password protected. In the event that HEAL transfers ownership or terminates business practices, complete records will be maintained or transferred according to the client's instructions.

After issuance, the original report shall remain unchanged. If a correction to the report is necessary, then an additional document shall be issued. This document shall have a title of "Addendum to Test Report or Correction to Original Report", or equivalent. Demonstration of original report integrity comes in two forms. First, the report date is included on each page of the final report. Second, each page is numbered in sequential order, making the addition or omission of any data page(s) readily detectable.

When final Arizona Compliance work order reports contain data analyzed at subcontracted laboratories, the final report to the client will include the sub-contracted laboratories report in its entirety. This includes but is not limited to cover sheets, qualifiers, data, chain of custodies and any included QC. All sub-contracted data is scanned into the LIMS and archived through the same process as in-house generated records.

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12.0 Corrective Action

Refer to the most recent version of the Data Validation SOP for the procedure utilized in filling out a Corrective Action Report. A blank copy of the corrective action report is available in the current Document Control Logbook.

The limits that have been defined for data acceptability also form the basis for corrective action initiation. Initiation of corrective action occurs when the data generated from continuing calibration standard, sample surrogate recovery, laboratory control spike, matrix spike, or sample duplicates exceed acceptance criteria. If corrective action is necessary, the analyst or the section supervisor will coordinate to take the following guidelines into consideration in order to determine and correct the measurement system deficiency:

Check all calculations and data measurements systems (Calibrations, reagents, instrument performance checks, etc.).

Assure that proper procedures were followed.

Unforeseen problems that arise during sample preparation and/or sample analysis that lead to treating a sample differently from documented procedures shall be documented with a corrective action report. The section supervisor and laboratory manager shall be made aware of the problem at the time of the occurrence. See the appropriate SOP regarding departures from documented procedures.

Continuing calibration standards below acceptance criteria cannot be used for reporting analytical data unless method specific criteria states otherwise.

Continuing calibration standards above acceptance criteria can be used to report data as long as the failure is isolated to a single standard and the corresponding samples are nondetect for the failing analyte.

Samples with non-compliant surrogate recoveries should be reanalyzed, unless deemed unnecessary by the supervisor for matrix, historical data, or other analysis-related anomalies.

Laboratory and Matrix Spike acceptance criteria vary significantly depending on method and matrix. Analysts and supervisors meet and discuss appropriate corrective action measures as spike failures occur.

In the event that results must be reported with associated QC failures, the data must be qualified appropriately to notify the end user of the QC failure.

Sample duplicates with RPD values outside control limits require supervisor evaluation and possible reanalysis.

Page 53 of 59 Quality Assurance Plan 10.0 Effective March 11th, 2016 A second mechanism for initiation of corrective action is that resulting from Quality Assurance performance audits, system audits, inter- and intra-laboratory comparison studies. Corrective Actions initiated through this mechanism will be monitored and coordinated by the laboratory QA/QCO.

All corrective action forms are entered in the LIMS and included with the raw data for peer review, signed by the technical director of the section and included in the case narrative to the client whose samples were affected. All Corrective action forms in the LIMS are reviewed by the QA/QCO.

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13.0 Quality Assurance Audits, Reports and Complaints

Internal/External Systems' Audits, Performance Evaluations, and Complaints

Several procedures are used to assess the effectiveness of the quality control system. One of these methods includes internal performance evaluations, which are conducted by the use of control samples, replicate measurements, and control charts. External performance audits, which are conducted by the use of inter-laboratory checks, such as participation in laboratory evaluation programs and performance evaluation samples available from a NELAC-accredited Proficiency Standard Vendor, are another method.

Proficiency samples will be obtained twice per year from an appropriate vendor for all tests and matrices for which we are accredited and for which PTs are available. HEAL participates in soil, waste water, drinking water, and underground storage tank PT studies. Copies of results are available upon request. HEAL's management and all analysts shall ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities, and frequency of analysis as used for routine analysis of that analyte. When analyzing a PT, HEAL shall employ the same calibration, laboratory quality control and acceptance criteria, sequence of analytical steps, number of replicates, and other procedures as used when analyzing routine samples.

With regards to analyzing PT Samples, HEAL shall not send any PT sample, or portion of a PT sample, to another laboratory for any analysis for which we seek accreditation, or are accredited. HEAL shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks accreditation, or is accredited. Laboratory management or staff will not communicate with any individual at another laboratory concerning the PT sample. Laboratory management or staff shall not attempt to obtain the assigned value of any PT sample from the PT Provider.

Internal Audits are performed annually by the QA/QCO in accordance with the current Internal Audit SOP. The system audit consists of a qualitative inspection of the QA system in the laboratory and an assessment of the adequacy of the physical facilities for sampling, calibration, and measurement. This audit includes a careful evaluation and review of laboratory quality control procedures. Internal audits are performed using the guidelines outlined below, which include, but are not limited to:

- 1. Review of staff qualifications, demonstration of capability, and personnel training programs
- 2. Storage and handling of reagents, standards, and samples
- 3. Standard preparation logbook and LIMS procedures
- 4. Extraction logbooks
- 5. Raw data logbooks
- 6. Analytical logbooks or batch printouts and instrument maintenance logbooks

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- 7. Data review procedures
- 8. Corrective action procedures
- 9. Review of data packages, which is performed regularly by the lab manager/QA Officer.

The QA/QCO will conduct these audits on an annual basis.

Management Reviews

HEAL management shall periodically, and at least annually, conduct a review of the laboratory's quality system and environmental testing activities to ensure their continuing suitability and effectiveness, and to introduce necessary changes or improvements. The review shall take account of:

- 1. the suitability and implementation of policies and procedures
- 2. reports from managerial and supervisory personnel
- 3. the outcome of recent internal audits
- 4. corrective and preventive actions
- 5. assessments by external bodies
- 6. the results of inter-laboratory comparisons or proficiency tests
- 7. changes in volume and type of work
- 8. client feed back
- 9. complaints
- 10. other relevant factors, such as laboratory health and safety, QC activities, resources, and staff training.

Findings from management reviews and the actions that arise from them shall be recorded and any corrective actions that arise shall be completed in an appropriate and agreed upon timescale.

Complaints

Complaints from clients are documented and given to the laboratory manager. The lab manager shall review the information and contact the client. If doubt is raised concerning the laboratory's policies or procedures, then an audit of the section or sections may be performed. All records of complaints and subsequent actions shall be maintained in the client compliant logbook for five years unless otherwise stated.

Internal and External Reports

The QA/QCO is responsible for preparation and submission of quality assurance reports to the appropriate management personnel as problems and issues arise. These reports

include the assessment of measurement systems, data precision and accuracy, and the results of performance and system audits. Additionally, they include significant QA problems, corrective actions, and recommended resolution measures. Reports of these Quality Assurance Audits describe the particular activities audited, procedures utilized in the examination and evaluation of laboratory records, and data validation procedures. Finally, there are procedures for evaluating the performance of Quality Control and Quality Assurance activities, and laboratory deficiencies and the implementation of corrective actions with the review requirements.

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14.0 References (Analytical Protocols Utilized at HEAL)

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- 2. <u>Diagnosis & Improvement of Saline & Alkali Soils</u>, Agriculture Handbook No. 60, USDA, 1954
- 3. <u>Environmental Perspective on the Emerging Oil Shale Industry</u>, EPA Oil & Shale Research Group.
- 4. <u>Field and Laboratory Methods Applicable to Overburdens and Mine Soils</u>, USEPA, EPA-600/2-78-054, March 1978
- 5. Handbook of Chemistry and Physics, 62nd Edition, CRC Press, Inc. 1981-1982.
- 6. <u>Handbook on Reference Methods for Soil Testing.</u> The Council on Soil Testing & Plant Analysis, 1980 and 1992
- 7. <u>Laboratory Procedures for Analyses of Oilfield Waste</u>. Department of Natural Resources, Office of Conservation, Injection and Mining Division, Louisiana, August 1988
- 8. Langelier index calculation. http://www.corrosion-doctors.org/NaturalWaters/Langelier.htm.
- 9. <u>Manual for the Certification of Laboratories Analyzing Drinking Water, Criteria and procedures</u> <u>Quality Assurance Fifth Edition, U.S. Environmental Protection Agency, January 2005.</u>
- 10. <u>Manual of Operating Procedures for the Analysis of Selected Soil, Water, Plant Tissue and</u> <u>Wastes Chemical and physical Parameter.</u> Soil, Water, and Plant Analysis Laboratory, Dept. of Soil and Water Science, The University of Arizona, August 1989
- 11. The Merck Index, Eleventh Edition, Merck & Co., Inc. 1989.
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- 13. <u>Methods for the Determination of Metals in Environmental Samples</u>, USEPA, EPA-600/4-91-010, June 1991
- 14. <u>Methods of Soil Analysis</u>: Parts 1 & 2, 2nd Edition, Agronomy Society of America, Monograph 9
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- 17. <u>Quality Systems for Analytical Services, Revision 2.2</u>, U.S. Department of Energy, October 2006.
- 18. <u>Sampling Procedures and Chemical Methods in Use at the U.S. Salinity Laboratory for</u> <u>Characterizing Salt-Affected Soils and Water.</u> USDA Salinity Laboratory.
- 19. <u>Soil Survey Laboratory Methods Manual.</u> Soil Survey Laboratory Staff. Soil Survey Investigations Report No. 42, version 2.0, August 1992.
- 20. <u>Soil Testing Methods Used at Colorado State University for the Evaluation of Fertility,</u> <u>Salinity and Trace Element Toxicity,</u> Technical Bulletin LT B88-2 January, 1988
- 21. Standard Methods for the Examination of Water and Wastewater:
 - a. AOHA, AWWA, and WPCG; 20th Edition, 1999
 - b. APHA, AWWA, and WEF; 21st Edition, 2005
 - c. APHA, AWWA, and WEF; 22nd Edition, 2011
 - d. APHA, AWWA, and WEF; Online
- 22. <u>Technical Notes on Drinking Water Methods</u>, U.S. Environmental Protection Agency, October 1994.
- 23. <u>Test Methods for Evaluating Solid Waste: Physical/Chemical Methods</u>, USEPA SW-846, 3rd Edition, Updates I, II, IIA, IIB, III, December, 1996.

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Appendix D



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

May 20, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: FAX

RE: River Terrace Low Flow 4/28/16

OrderNo.: 1604C71

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 6 sample(s) on 4/29/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 5/20/2016

 CLIENT:
 Western Refining Southwest, Inc.
 Client Sample ID: TP-5

 Project:
 River Terrace Low Flow 4/28/16
 Collection Date: 4/28/2016 9:50:00 AM

 Lab ID:
 1604C71-001
 Matrix: AQUEOUS
 Received Date: 4/29/2016 7:00:00 AM

 Analyses
 Result
 PQL Qual Units
 DF
 Date Analyzed

Analyses	Kesuit	I QL Qual Units		DF	Date Analyzeu	
EPA METHOD 8015D: DIESEL RAN	IGE					Analyst: KJH
Diesel Range Organics (DRO)	1.4	0.20		mg/L	1	5/2/2016 2:51:49 PM
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	5/2/2016 2:51:49 PM
Surr: DNOP	104	63.2-161		%Rec	1	5/2/2016 2:51:49 PM
EPA METHOD 8015D: GASOLINE F	RANGE					Analyst: NSB
Gasoline Range Organics (GRO)	11	0.50		mg/L	10	4/29/2016 5:14:49 PM
Surr: BFB	193	66.4-120	S	%Rec	10	4/29/2016 5:14:49 PM
EPA 6010B: TOTAL RECOVERABL	E METALS					Analyst: MED
Lead	0.027	0.0050		mg/L	1	5/3/2016 11:42:43 AM
EPA METHOD 8260: VOLATILES S	HORT LIST					Analyst: BCN
Benzene	ND	10		µg/L	10	4/29/2016 7:18:15 PM
Toluene	ND	10		µg/L	10	4/29/2016 7:18:15 PM
Ethylbenzene	300	10		µg/L	10	4/29/2016 7:18:15 PM
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	4/29/2016 7:18:15 PM
Xylenes, Total	1800	15		µg/L	10	4/29/2016 7:18:15 PM
Surr: 1,2-Dichloroethane-d4	96.1	70-130		%Rec	10	4/29/2016 7:18:15 PM
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	10	4/29/2016 7:18:15 PM
Surr: Dibromofluoromethane	100	70-130		%Rec	10	4/29/2016 7:18:15 PM
Surr: Toluene-d8	101	70-130		%Rec	10	4/29/2016 7:18:15 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 12
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1604C71 Date Reported: 5/20/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Project:** River Terrace Low Flow 4/28/16 Client Sample ID: DW-3 Collection Date: 4/28/2016 10:35:00 AM

3							
Lab ID: 1604C71-002	Matrix:	AQUEOUS	Received D	Received Date: 4/29/2016 7:00:00 AM			
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed		
EPA METHOD 8015D: DIESEL RAN	GE				Analyst: KJH		
Diesel Range Organics (DRO)	0.35	0.20	mg/L	1	5/2/2016 3:56:37 PM		
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	5/2/2016 3:56:37 PM		
Surr: DNOP	101	63.2-161	%Rec	1	5/2/2016 3:56:37 PM		
EPA METHOD 8015D: GASOLINE R	RANGE				Analyst: NSB		
Gasoline Range Organics (GRO)	0.33	0.050	mg/L	1	5/2/2016 4:43:59 PM		
Surr: BFB	322	66.4-120	S %Rec	1	5/2/2016 4:43:59 PM		
EPA 6010B: TOTAL RECOVERABL	E METALS				Analyst: MED		
Lead	0.014	0.0050	mg/L	1	5/3/2016 11:47:00 AM		
EPA METHOD 8260: VOLATILES S	HORT LIST				Analyst: AG		
Benzene	4.9	1.0	µg/L	1	5/5/2016 2:41:22 PM		
Toluene	ND	1.0	µg/L	1	5/5/2016 2:41:22 PM		
Ethylbenzene	34	1.0	µg/L	1	5/5/2016 2:41:22 PM		
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	5/5/2016 2:41:22 PM		
Xylenes, Total	11	1.5	µg/L	1	5/5/2016 2:41:22 PM		
Surr: 1,2-Dichloroethane-d4	94.9	70-130	%Rec	1	5/5/2016 2:41:22 PM		
Surr: 4-Bromofluorobenzene	88.4	70-130	%Rec	1	5/5/2016 2:41:22 PM		
Surr: Dibromofluoromethane	86.8	70-130	%Rec	1	5/5/2016 2:41:22 PM		
Surr: Toluene-d8	97.4	70-130	%Rec	1	5/5/2016 2:41:22 PM		

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 12
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1604C71 Date Reported: 5/20/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: River Terrace Low Flow 4/28/16

Client Sample ID: MW-49 Collection Date: 4/28/2016 11:25:00 AM Received Date: 4/29/2016 7:00:00 AM

Lab ID: 1604C71-003	Matrix:	AQUEOUS	Received Date: 4/29/2016 7:00:00 AM			
Analyses	Result	PQL Qual	Units	DF	Date Analyzed	
EPA METHOD 8015D: DIESEL RAN	GE				Analyst: KJH	
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	5/2/2016 4:18:19 PM	
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	5/2/2016 4:18:19 PM	
Surr: DNOP	101	63.2-161	%Rec	1	5/2/2016 4:18:19 PM	
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	4/29/2016 6:52:20 PM	
Surr: BFB	92.5	66.4-120	%Rec	1	4/29/2016 6:52:20 PM	
EPA 6010B: TOTAL RECOVERABL	E METALS				Analyst: MED	
Lead	0.040	0.0050	mg/L	1	5/3/2016 11:48:24 AM	
EPA METHOD 8260: VOLATILES SI	HORT LIST				Analyst: BCN	
Benzene	ND	1.0	µg/L	1	4/29/2016 9:13:03 PM	
Toluene	ND	1.0	µg/L	1	4/29/2016 9:13:03 PM	
Ethylbenzene	ND	1.0	µg/L	1	4/29/2016 9:13:03 PM	
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	4/29/2016 9:13:03 PM	
Xylenes, Total	ND	1.5	µg/L	1	4/29/2016 9:13:03 PM	
Surr: 1,2-Dichloroethane-d4	97.2	70-130	%Rec	1	4/29/2016 9:13:03 PM	
Surr: 4-Bromofluorobenzene	105	70-130	%Rec	1	4/29/2016 9:13:03 PM	
Surr: Dibromofluoromethane	91.0	70-130	%Rec	1	4/29/2016 9:13:03 PM	
Surr: Toluene-d8	106	70-130	%Rec	1	4/29/2016 9:13:03 PM	

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 12
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Lab Order 1604C/1 Date Reported: 5/20/2016

 CLIENT:
 Western Refining Southwest, Inc.
 Client Sample ID: TP-6

 Project:
 River Terrace Low Flow 4/28/16
 Collection Date: 4/28/2016 12:00:00 PM

 Lab ID:
 1604C71-004
 Matrix: AQUEOUS
 Received Date: 4/29/2016 7:00:00 AM

 Analyses
 Result
 PQL
 Qual
 Units
 DF
 Date Analyzed

 EPA METHOD 8015D:
 DIESEL RANGE
 Analyst:
 Analyses
 Analyses
 Analyses

EPA METHOD 8015D: DIESEL RANGE						Analyst: KJH
Diesel Range Organics (DRO)	0.75	0.20		mg/L	1	5/2/2016 4:40:04 PM
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	5/2/2016 4:40:04 PM
Surr: DNOP	101	63.2-161		%Rec	1	5/2/2016 4:40:04 PM
EPA METHOD 8015D: GASOLINE RAN	IGE					Analyst: NSB
Gasoline Range Organics (GRO)	0.99	0.050		mg/L	1	4/29/2016 10:08:43 PM
Surr: BFB	579	66.4-120	S	%Rec	1	4/29/2016 10:08:43 PM
EPA 6010B: TOTAL RECOVERABLE N	IETALS					Analyst: MED
Lead	0.033	0.0050		mg/L	1	5/3/2016 11:49:56 AM
EPA METHOD 8260: VOLATILES SHO	RT LIST					Analyst: BCN
Benzene	ND	1.0		µg/L	1	4/29/2016 9:41:53 PM
Toluene	ND	1.0		µg/L	1	4/29/2016 9:41:53 PM
Ethylbenzene	68	1.0		µg/L	1	4/29/2016 9:41:53 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/29/2016 9:41:53 PM
Xylenes, Total	ND	1.5		µg/L	1	4/29/2016 9:41:53 PM
Surr: 1,2-Dichloroethane-d4	91.5	70-130		%Rec	1	4/29/2016 9:41:53 PM
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	4/29/2016 9:41:53 PM
Surr: Dibromofluoromethane	91.3	70-130		%Rec	1	4/29/2016 9:41:53 PM
Surr: Toluene-d8	106	70-130		%Rec	1	4/29/2016 9:41:53 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 4 of 12
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 5/20/2016

 CLIENT:
 Western Refining Southwest, Inc.
 Client Sample ID: TP-8

 Project:
 River Terrace Low Flow 4/28/16
 Collection Date: 4/28/2016 1:35:00 PM

 Lab ID:
 1604C71-005
 Matrix: AQUEOUS
 Received Date: 4/29/2016 7:00:00 AM

 Analyses
 Result
 PQL
 Qual
 Units
 DF
 Date Analyzed

		e	•			2
EPA METHOD 8015D: DIESEL RANG	Ε					Analyst: KJH
Diesel Range Organics (DRO)	1.0	0.20		mg/L	1	5/2/2016 5:01:57 PM
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	5/2/2016 5:01:57 PM
Surr: DNOP	95.1	63.2-161		%Rec	1	5/2/2016 5:01:57 PM
EPA METHOD 8015D: GASOLINE RA	NGE					Analyst: NSB
Gasoline Range Organics (GRO)	2.9	0.25		mg/L	5	4/29/2016 10:33:24 PM
Surr: BFB	187	66.4-120	S	%Rec	5	4/29/2016 10:33:24 PM
EPA 6010B: TOTAL RECOVERABLE	METALS					Analyst: MED
Lead	0.034	0.0050		mg/L	1	5/3/2016 11:51:17 AM
EPA METHOD 8260: VOLATILES SH	ORT LIST					Analyst: BCN
Benzene	ND	5.0		µg/L	5	4/29/2016 10:10:39 PM
Toluene	ND	5.0		µg/L	5	4/29/2016 10:10:39 PM
Ethylbenzene	29	5.0		µg/L	5	4/29/2016 10:10:39 PM
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	4/29/2016 10:10:39 PM
Xylenes, Total	26	7.5		µg/L	5	4/29/2016 10:10:39 PM
Surr: 1,2-Dichloroethane-d4	91.9	70-130		%Rec	5	4/29/2016 10:10:39 PM
Surr: 4-Bromofluorobenzene	94.3	70-130		%Rec	5	4/29/2016 10:10:39 PM
Surr: Dibromofluoromethane	85.3	70-130		%Rec	5	4/29/2016 10:10:39 PM
Surr: Toluene-d8	107	70-130		%Rec	5	4/29/2016 10:10:39 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 5 of 12
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project:

River Terrace Low Flow 4/28/16

Date Reported: 5/20/2016
Client Sample ID: TP-9

Collection Date: 4/28/2016 2:30:00 PM Received Date: 4/29/2016 7:00:00 AM

Lab ID: 1604C71-006	Matrix:	AQUEOUS	Received D	Date: 4/29/2	016 7:00:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RAN	GE				Analyst: KJH
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	5/2/2016 5:23:42 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	5/2/2016 5:23:42 PM
Surr: DNOP	112	63.2-161	%Rec	1	5/2/2016 5:23:42 PM
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst: NSB
Gasoline Range Organics (GRO)	0.092	0.050	mg/L	1	4/29/2016 11:22:38 PM
Surr: BFB	131	66.4-120	S %Rec	1	4/29/2016 11:22:38 PM
EPA 6010B: TOTAL RECOVERABL	E METALS				Analyst: MED
Lead	0.052	0.0050	mg/L	1	5/3/2016 11:52:45 AM
EPA METHOD 8260: VOLATILES SI	HORT LIST				Analyst: BCN
Benzene	ND	1.0	µg/L	1	4/29/2016 10:39:22 PM
Toluene	ND	1.0	µg/L	1	4/29/2016 10:39:22 PM
Ethylbenzene	ND	1.0	µg/L	1	4/29/2016 10:39:22 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	4/29/2016 10:39:22 PM
Xylenes, Total	ND	1.5	µg/L	1	4/29/2016 10:39:22 PM
Surr: 1,2-Dichloroethane-d4	96.4	70-130	%Rec	1	4/29/2016 10:39:22 PM
Surr: 4-Bromofluorobenzene	104	70-130	%Rec	1	4/29/2016 10:39:22 PM
Surr: Dibromofluoromethane	95.0	70-130	%Rec	1	4/29/2016 10:39:22 PM
Surr: Toluene-d8	105	70-130	%Rec	1	4/29/2016 10:39:22 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 6 of 12
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

WO#:	1604C71
	20-May-16

	Western Refining Southwest, Inc. River Terrace Low Flow 4/28/16													
Sample ID 1604C71-001	CMS SampT	ype: MS	S	Tes										
Client ID: TP-5	Batch	n ID: 25	096	F	RunNo: 3	3916								
Prep Date: 5/2/2016	Analysis D	ate: 5/	2/2016	5	SeqNo: 1	045539	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
viesel Range Organics (DRO)	3.8	0.20	2.500	1.389	97.9	73.3	174							
Surr: DNOP	0.24	161												
Sample ID 1604C71-001														
Client ID: TP-5														
Prep Date: 5/2/2016	5/2/2016 Analysis Date: 5/2/2016 SeqNo: 1045540 Units: mg/L													
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
iesel Range Organics (DRO)	3.8	0.20	2.500	1.389	98.1	73.3	174	0.154	20					
Surr: DNOP	0.24		63.2	161	0	0								
Sample ID LCS-25096	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Diese	l Range						
Client ID: LCSW	Batch	n ID: 25	096	F	RunNo: 3	3916								
Prep Date: 5/2/2016	Analysis D	ate: 5/	/2/2016	S	SeqNo: 1	045546	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
iesel Range Organics (DRO)	2.3	0.20	2.500	0	93.7	65.4	162							
Surr: DNOP	0.20		0.2500		80.3	63.2	161							
Sample ID MB-25096	SampT	ype: M	BLK	Tes	tCode: El	PA Method	8015D: Diese	l Range						
Client ID: PBW	Batch	n ID: 25	096	F	RunNo: 3	3916								
Prep Date: 5/2/2016	Analysis D	ate: 5/	/2/2016	5	SeqNo: 1	045547	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
viesel Range Organics (DRO)	ND	0.20												
Notor Oil Range Organics (MRO		2.5												
Surr: DNOP	0.40		0.5000		79.6	63.2	161							

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- W Sample container temperature is out of limit as specified

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WO#:	1604C71
	20-May-16

Client ID:PBWBatch ID:A33897RunNo:33897Prep Date:Analysis Date:4/29/2016SeqNo:1044018	od 8015D: Gasoline Range Units: mg/L													
Prep Date: Analysis Date: 4/29/2016 SeqNo: 1044018	Units: mg/L													
	Units: mg/L													
Analyte Result PQL SPK value SPK Ref Val %REC LowLim	it HighLimit %RPD RPDLimit Qual													
Gasoline Range Organics (GRO) ND 0.050														
Surr: BFB 18 20.00 90.1 66	4 120													
Sample ID 2.5UG GRO LCS SampType: LCS TestCode: EPA Metho	od 8015D: Gasoline Range													
Client ID: LCSW Batch ID: A33897 RunNo: 33897	-													
Prep Date: Analysis Date: 4/29/2016 SeqNo: 1044019	Units: mg/L													
Analyte Result PQL SPK value SPK Ref Val %REC LowLin	it HighLimit %RPD RPDLimit Qual													
Gasoline Range Organics (GRO) 0.45 0.050 0.5000 0 90.7 8	0 120													
Surr: BFB 21 20.00 105 66.	4 120													
ple ID 1604C71-001BMS SampType: MS TestCode: EPA Method 8015D: Gasoline Range														
D: TP-5 Batch ID: A33897 RunNo: 33897														
Prep Date: Analysis Date: 4/29/2016 SeqNo: 1044021	Units: mg/L													
Analyte Result PQL SPK value SPK Ref Val %REC LowLim	it HighLimit %RPD RPDLimit Qual													
	0 130													
Surr: BFB 410 200.0 203 66.	4 120 S													
Sample ID 1604C71-001BMSD SampType: MSD TestCode: EPA Metho	od 8015D: Gasoline Range													
Client ID: TP-5 Batch ID: A33897 RunNo: 33897														
Prep Date: Analysis Date: 4/29/2016 SeqNo: 1044022	Units: mg/L													
Analyte Result PQL SPK value SPK Ref Val %REC LowLin	it HighLimit %RPD RPDLimit Qual													
Gasoline Range Organics (GRO) 16 0.50 5.000 11.09 91.0 7	0 130 1.81 20													
Surr: BFB 400 200.0 201 66.	4 120 0 0 S													
Sample ID 5ML RB SampType: MBLK TestCode: EPA Metho	od 8015D: Gasoline Range													
Client ID: PBW Batch ID: R33934 RunNo: 33934														
Prep Date: Analysis Date: 5/2/2016 SeqNo: 1045461	Units: mg/L													
Analyte Result PQL SPK value SPK Ref Val %REC LowLin	it HighLimit %RPD RPDLimit Qual													
Gasoline Range Organics (GRO) ND 0.050 Surr: BFB 18 20.00 88.5 66.	4 120													
Sample ID 2.5UG GRO LCS SampType: LCS TestCode: EPA Metho	od 8015D: Gasoline Range													
Client ID: LCSW Batch ID: R33934 RunNo: 33934														
Prep Date: Analysis Date: 5/2/2016 SeqNo: 1045462	Units: mg/L													
Analyte Result PQL SPK value SPK Ref Val %REC LowLin	it HighLimit %RPD RPDLimit Qual													

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Client: Project:		Refining S rrace Low											
Sample ID 2.5UG	BID 2.5UG GRO LCS SampType: LCS TestCode: EPA Method 8015D: Gasoline Range												
Client ID: LCSV	v	Batcl	n ID: R3	3934	F	RunNo: 3	3934						
Prep Date:		Analysis E	Date: 5/	2/2016	S	SeqNo: 1	045462	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Range Organ	nics (GRO)	0.46 0.050 0.5000 0 92.6 80 120											
Surr: BFB		19		20.00		66.4	120						

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WO#: 1604C71 20-May-16

	Refining S rrace Low															
Sample ID rb	Samp	Гуре: МЕ	BLK	Tes	stCode: El	PA Method	8260: Volatil	es Short L	.ist							
Client ID: PBW	Batc	h ID: R3	3898	F	RunNo: 33898											
Prep Date:	Analysis [Date: 4/	29/2016	Ş	SeqNo: 1	044053	Units: µg/L									
Analyte	Result PQL SPK value			SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual						
Benzene	ND	1.0														
Toluene	ND	1.0														
Ethylbenzene	ND	1.0														
Methyl tert-butyl ether (MTBE)	ND	1.0														
Xylenes, Total	ND	1.5														
Surr: 1,2-Dichloroethane-d4	9.5		10.00		94.6	70	130									
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130									
Surr: Dibromofluoromethane	9.0		10.00		90.0	70	130									
Surr: Toluene-d8	11		10.00		107	70	130									
Sample ID 100ng Ics3	Samp	Гуре: LC	s	Tes	stCode: El	PA Method	8260: Volatil	es Short L	.ist							
Client ID: LCSW	Batc	Batch ID: R33898 RunNo: 33898														
Prep Date:	Analysis E	Date: 4/	29/2016	Ś	Units: µg/L											
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual						
Benzene	18	1.0	20.00	0	90.5	70	130									
Toluene	19	1.0	20.00	0	93.7	70	130									
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.4	70	130									
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130									
Surr: Dibromofluoromethane	10		10.00		101	70	130									
Surr: Toluene-d8	10		10.00		99.9	70	130									
Sample ID 1604c71-001ams	Samp	Гуре: М	6	Tes	stCode: El	PA Method	8260: Volatil	es Short L	.ist							
Client ID: TP-5	Batc	h ID: R3	3898	F	RunNo: 3	3898										
Prep Date:	Analysis E	Date: 4/	29/2016	5	SeqNo: 1	044070	Units: µg/L									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual						
Benzene	180	10	200.0	1.024	88.2	70	130									
Toluene	190	10	200.0	1.702	93.8	70	130									
Surr: 1,2-Dichloroethane-d4	97		100.0		97.0	70	130									
Surr: 4-Bromofluorobenzene	98		100.0		97.5	70	130									
Surr: Dibromofluoromethane	100		100.0		103	70	130									
Surr: Toluene-d8	100		100.0		99.9	70	130									
Sample ID 1604c71-001amsc	I Samp	Гуре: М	SD	Tes	stCode: El	PA Method	8260: Volatil	es Short L	_ist							
Client ID: TP-5	Batc	h ID: R3	3898	F	RunNo: 3	3898										
Prep Date:	Analysis [Date: 4/	29/2016	Ś	SeqNo: 1	044071	Units: µg/L									
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual																
		10	200.0	1.024	85.5	70	130	3.03	20							

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WO#:	1604C71
	20-May-16

	n Refining S Terrace Low													
Sample ID 1604c71-001am	sd SampT	уре: М	SD	Tes	tCode: El	PA Method	8260: Volatile	es Short L	.ist					
Client ID: TP-5	Batch	n ID: R3	3898	RunNo: 33898										
Prep Date:	Analysis D)ate: 4/	29/2016	S	SeqNo: 1	044071	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
Toluene	190	10	200.0	1.702	95.3	70	130	1.59	20					
Surr: 1,2-Dichloroethane-d4	95		100.0		95.1	70	130	0	0					
Surr: 4-Bromofluorobenzene	100		100.0		101	70	130	0	0					
Surr: Dibromofluoromethane	94		100.0		93.8	70	130	0	0					
Surr: Toluene-d8	100		100.0		104	70	130	0	0					
Sample ID 100ng Ics SampType: LCS TestCode: EPA Method 8260: Volatiles Short List														
Client ID: LCSW	Batch	n ID: A3	4023	F	RunNo: 34023									
Prep Date:	Analysis D)ate: 5/	5/2016	S	SeqNo: 1	048388	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
Benzene	21	1.0	20.00	0	105	70	130							
Toluene	20	20 1.0		0	101	70	130							
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130							
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130							
Surr: Dibromofluoromethane	10		10.00		101	70	130							
Surr: Toluene-d8	9.6		10.00		95.9	70	130							
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8260: Volatile	es Short L	.ist					
Client ID: PBW	Batch	n ID: A3	4023	F	RunNo: 3	4023								
Prep Date:	Analysis D	0ate: 5/	5/2016	S	SeqNo: 1	048389	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
Benzene	ND	1.0												
Toluene	ND	1.0												
Ethylbenzene	ND	1.0												
Methyl tert-butyl ether (MTBE)	ND	1.0												
Kylenes, Total	ND	1.5												
Surr: 1,2-Dichloroethane-d4	,2-Dichloroethane-d4 9.4 10.00 94.3 70 130													
Surr: 4-Bromofluorobenzene	romofluorobenzene 10 10.00 100 70 130													
	9.6		10.00		96.1	70	130							
Surr: Dibromofluoromethane	9.0		10.00		00.1	10	100							

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WO#:	1604C71
	20-May-16

Client:	Western Refining Southwest, Inc. River Terrace Low Flow 4/28/16														
Project:	River Ter	race Low Flow	w 4/28/16												
Sample ID	MB-25107	SampType	MBLK	Tes	tCode: EP/	A 6010B: 1	Total Recover	able Meta	als						
Client ID:	PBW	Batch ID:	25107	F	RunNo: 339	941									
Prep Date:	5/2/2016	Analysis Date:	: 5/3/2016 SeqNo: 1045836 Units: mg/L												
Analyte		Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit C													
Lead	ND 0.0050														
Sample ID	LCS-25107 SampType: LCS TestCode: EPA 6010B: Total Recoverable Metals														
Client ID:	LCSW	Batch ID:	25107	F	RunNo: 339	941									
Prep Date:	5/2/2016 Analysis Date: 5/3/2016 SeqNo: 1045840 Units: mg/L														
Analyte	Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qua														
Lead		0.52 0.00	050 0.5000	0	104	80	120								
Sample ID	1604C71-001DMS	SampType	MS	Tes	tCode: EP/	A 6010B: 1	Total Recover	able Meta	als						
Client ID:	TP-5	Batch ID:	25107	F	RunNo: 339	941									
Prep Date:	5/2/2016	Analysis Date:	5/3/2016	S	GeqNo: 104	46263	Units: mg/L								
Analyte		Result PO	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual					
Lead		0.51 0.00	0.5000	0.02745	97.2	75	125								
Sample ID	1604C71-001DMS	SampType:	MSD	Tes	tCode: EP	A 6010B: 1	Fotal Recover	able Meta	als						
Client ID:	TP-5	Batch ID:	25107	F	RunNo: 339	941									
Prep Date:	5/2/2016	Analysis Date:	5/3/2016	S	eqNo: 104	46264	Units: mg/L								
Analyte		Result PO	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual					
Lead		0.53 0.00	0.5000	0.02745	101	75	125	3.31	20						

Qualifiers:

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HALL ENVIRONMENTAL ANALYSIS LABORATORY	TEL: 505-345-397;	l Analysis Laborator 4901 Hawkins N uquerque, NM 8716 5 FAX: 505-345-410 allenvironmental.com	^{7E} 99 Sam	ple Log-In Ch	eck List
Client Name: Western Refining Southw	Work Order Number	: 1604C71		RcptNo: 1	
Received by/date: CM 04/29	116	<u> </u>			
Logged By: Anne Thorne	4/29/2016 7:00:00 AM		Anne Arm	~	
Completed By: Anne Thorne	4/29/2016		anne Am		
Reviewed By:	04/29/11		and from		
Chain of Custody					
1 Custody seals intact on sample bottles?		Yes	No 🗌	Not Present 🔽	
Is Chain of Custody complete?		Yes 🖌	No 🗌	Not Present	
3. How was the sample delivered?		<u>Courier</u>			
<u>Log In</u>					
 Was an attempt made to cool the samples? 		Yes 🗹	No 🗌	NA 🗌	
		169 💽			
5. Were all samples received at a temperature	of >0° C to 6.0°C	Yes 🔽	No 🗌		
6. Sample(s) in proper container(s)?		Yes 🖌	No 🗔		
		res 💌			
7. Sufficient sample volume for indicated test(s		Yes 🗹	No 🗌	1	
8. Are samples (except VOA and ONG) properi	y preserved?	Yes V	No 🗹		1
_9. Was preservative added to bottles?	All mon	Yes 🗹	NO 🔽 NZ ACCEPT	THE SH HANS	zer 74/1/1/85
R_METALS ANAU (815) ALDEOS / MIL 10. VOA vials have zero headspace?		Yes	No 🗌	No VOA Vials V	and and and
11. Were any sample containers received broke	1?	Yes	No 🗹 🛛		INC TO ADA
12 Doop paragraph motor by state to a		ر نے		# of preserved bottles checked	April
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes 🗹	No 🗌	for pH:	1,2 unless noted)
13. Are matrices correctly identified on Chain of (Custody?	Yes 🗹	No 🗌	Adjusted?	tes_
14. Is it clear what analyses were requested?		Yes 🗹	No 🗌	#	
15. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes 🖌	No 🗌	Checked by:	\mathbf{Y}
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Special Handling (if applicable)					`
16. Was client notified of all discrepancies with th	is order?	Yes	No 🗹		
Person Notified:	Date				
By Whom:	Via: [eMail Phor	ne 🗌 Fax	In Person	
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17. Additional remarks:					
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	HALL ENVIRONMENTAL	ANALYSIS LABORATORY	www.hallenvironmental.com	4901 Hawkins NE - Albuquerque, NM 87109	5 Fax 505-345-4107	A		S	CB,	9 G,	308 31, X 1, X	ة 1,±C (At 88 راار راار	8310 015 8 Metals 6 (F,CI,Ni 2 (YOA) E 5 esticide (YOA) E Ext. 801 Ext. 801 Ext. 801 (Y o	AAC 2001 4 18 808 - 01 0 15 M 15	R(82 82 82 82 82 82 70 70 70 70 70 70 70 70 70 70 70 70 70	×	×	×								this serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.
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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

March 03, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4166 FAX (505) 632-3911

RE: GAC-1/13/16

OrderNo.: 1601453

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 1/14/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued February 04, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> 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.

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1601453 Date Reported: 3/3/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

GAC-1/13/16

Project:

Client Sample ID: GAC-Inlet Collection Date: 1/13/2016 11:00:00 AM Received Date: 1/14/2016 8:00:00 AM

Lab ID: 1601453-001	Matrix:	AQUEOUS	Received	Date: 1/1	4/2016 8:00:00 AM	
Analyses	Result	PQL Q	Qual Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANG	GE				Analyst	KJH
Diesel Range Organics (DRO)	0.79	0.20	mg/L	1	1/18/2016 11:42:13 AM	23253
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	1/18/2016 11:42:13 AM	23253
Surr: DNOP	111	63.2-161	%Rec	1	1/18/2016 11:42:13 AM	23253
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst	NSB
Gasoline Range Organics (GRO)	1.1	0.25	mg/L	5	1/19/2016 2:30:39 PM	R31540
Surr: BFB	123	49.5-130	%Rec	5	1/19/2016 2:30:39 PM	R31540
EPA METHOD 8260: VOLATILES SH	IORT LIST				Analyst	AG
Benzene	ND	5.0	µg/L	5	1/19/2016 8:07:11 PM	R31533
Toluene	ND	5.0	μg/L	5	1/19/2016 8:07:11 PM	R31533
Ethylbenzene	22	5.0	μg/L	5	1/19/2016 8:07:11 PM	R31533
Methyl tert-butyl ether (MTBE)	ND	5.0	μg/L	5	1/19/2016 8:07:11 PM	R31533
Xylenes, Total	42	7.5	μg/L	5	1/19/2016 8:07:11 PM	R31533
Surr: 1,2-Dichloroethane-d4	98.9	70-130	%Rec	5	1/19/2016 8:07:11 PM	R31533
Surr: 4-Bromofluorobenzene	81.2	70-130	%Rec	5	1/19/2016 8:07:11 PM	R31533
Surr: Dibromofluoromethane	105	70-130	%Rec	5	1/19/2016 8:07:11 PM	R31533
Surr: Toluene-d8	98.1	70-130	%Rec	5	1/19/2016 8:07:11 PM	R31533

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Oualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method B

- * Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 7 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Analytical Report Lab Order 1601453

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 3/3/2016 Client Sample ID: GAC-Lead

CLIENT: Western Refining Southwest, Inc.

Project: GAC-1/13/16 Lab ID: 1601453-002

Collection Date: 1/13/2016 11:20:00 AM Received Date: 1/14/2016 8:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RAN	GE				Analyst	: KJH
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	1/18/2016 12:47:03 PM	23253
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	1/18/2016 12:47:03 PM	23253
Surr: DNOP	105	63.2-161	%Rec	1	1/18/2016 12:47:03 PM	23253
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	1/19/2016 2:53:26 PM	R3154
Surr: BFB	87.4	49.5-130	%Rec	1	1/19/2016 2:53:26 PM	R3154
EPA METHOD 8260: VOLATILES SH	HORT LIST				Analyst	: AG
Benzene	ND	1.0	µg/L	1	1/19/2016 8:36:01 PM	R3153
Toluene	ND	1.0	µg/L	1	1/19/2016 8:36:01 PM	R3153
Ethylbenzene	ND	1.0	µg/L	1	1/19/2016 8:36:01 PM	R3153
Methyl tert-butyl ether (MTBE)	2.8	1.0	µg/L	1	1/19/2016 8:36:01 PM	R3153
Xylenes, Total	ND	1.5	µg/L	1	1/19/2016 8:36:01 PM	R3153
Surr: 1,2-Dichloroethane-d4	101	70-130	%Rec	1	1/19/2016 8:36:01 PM	R3153
Surr: 4-Bromofluorobenzene	98.8	70-130	%Rec	1	1/19/2016 8:36:01 PM	R3153
Surr: Dibromofluoromethane	108	70-130	%Rec	1	1/19/2016 8:36:01 PM	R3153
Surr: Toluene-d8	95.9	70-130	%Rec	1	1/19/2016 8:36:01 PM	R3153

Matrix: AQUEOUS

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	An
	D	Sample Diluted Due to Matrix	Е	Val
	Н	Holding times for preparation or analysis exceeded	J	An
	ND	Not Detected at the Reporting Limit	Р	Sar
	R	RPD outside accepted recovery limits	RL	Rep
	S	% Recovery outside of range due to dilution or matrix	W	Sar

- nalyte detected in the associated Method Blank alue above quantitation range
- nalyte detected below quantitation limits Page 2 of 7 ample pH Not In Range
- eporting Detection Limit
- Sample container temperature is out of limit as specified W

Analytical Report Lab Order 1601453 Date Reported: 3/3/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

GAC-1/13/16

Project:

Client Sample ID: GAC-Lag Collection Date: 1/13/2016 11:40:00 AM Received Date: 1/14/2016 8:00:00 AM

Lab ID: 1601453-003	Matrix:	AQUEOUS	Received	Date: 1/1	4/2016 8:00:00 AM	
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE	E				Analyst	: KJH
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	1/18/2016 1:08:21 PM	23253
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	1/18/2016 1:08:21 PM	23253
Surr: DNOP	111	63.2-161	%Rec	1	1/18/2016 1:08:21 PM	23253
EPA METHOD 8015D: GASOLINE RAI	NGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	1/19/2016 3:16:14 PM	R31540
Surr: BFB	84.9	49.5-130	%Rec	1	1/19/2016 3:16:14 PM	R31540
EPA METHOD 8260: VOLATILES SHO	RT LIST				Analyst	: AG
Benzene	ND	1.0	µg/L	1	1/19/2016 9:04:45 PM	R31533
Toluene	ND	1.0	µg/L	1	1/19/2016 9:04:45 PM	R31533
Ethylbenzene	ND	1.0	µg/L	1	1/19/2016 9:04:45 PM	R31533
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	1/19/2016 9:04:45 PM	R31533
Xylenes, Total	ND	1.5	µg/L	1	1/19/2016 9:04:45 PM	R31533
Surr: 1,2-Dichloroethane-d4	98.1	70-130	%Rec	1	1/19/2016 9:04:45 PM	R31533
Surr: 4-Bromofluorobenzene	101	70-130	%Rec	1	1/19/2016 9:04:45 PM	R31533
Surr: Dibromofluoromethane	106	70-130	%Rec	1	1/19/2016 9:04:45 PM	R31533
Surr: Toluene-d8	93.8	70-130	%Rec	1	1/19/2016 9:04:45 PM	R31533

					e unu unu preser (unen niter
Qualifiers:	*	Value exceeds Maximum Contaminant Level.]	B Analy	te detected in the associated Metho

- * Value exceeds Maximum Contaminant Level.
 - D Sample Diluted Due to Matrix
 - Н Holding times for preparation or analysis exceeded
 - ND Not Detected at the Reporting Limit
 - R RPD outside accepted recovery limits
 - % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 3 of 7 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

WO#:	1601453
	03-Mar-16

Client:		Refining S	outhwe	st, Inc.							
Project:	GAC-1/1	3/16									
Sample ID	MB-23253 SampType: MBLK				Tes	TestCode: EPA Method 8015D: Diesel Range					
Client ID:	PBW	Batch	h ID: 23	253	F	RunNo: 3	1488				
Prep Date:	1/18/2016	Analysis D	Date: 1 /	18/2016	S	eqNo: 9	63872	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Organics (DRO)	ND	0.20								
Motor Oil Rang	e Organics (MRO)	ND	2.5								
Surr: DNOP		0.53		0.5000		106	63.2	161			
Sample ID	LCS-23253	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	LCSW	Batch	h ID: 23	253	F	RunNo: 3	1488				
Prep Date:	1/18/2016	Analysis D	Date: 1 /	18/2016	S	eqNo: 9	63934	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Organics (DRO)	2.3	0.20	2.500	0	91.5	65.4	162			
Surr: DNOP		0.23		0.2500		93.5	63.2	161			
Sample ID	1601453-001BMS	SampT	уре: М	6	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC-Inlet	Batch	h ID: 23	253	F	RunNo: 3	1488				
Prep Date:	1/18/2016	Analysis D	Date: 1/	18/2016	5	SeqNo: 9	63968	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Organics (DRO)	3.1	0.20	2.500	0.7934	91.0	73.3	174			
Surr: DNOP		0.24		0.2500		95.9	63.2	161			
Sample ID	1601453-001BMS	D SampT	уре: М	SD .	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC-Inlet	Batch	h ID: 23	253	F	RunNo: 3	1488				
Prep Date:	1/18/2016	Analysis D	Date: 1/	18/2016	5	eqNo: 9	64050	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Organics (DRO)	3.2	0.20	2.500	0.7934	95.9	73.3	174	3.90	20	
Surr: DNOP		0.25		0.2500		101	63.2	161	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 4 of 7
- 0- -

Client:WesternProject:GAC-1/1	Refining S 3/16	outhwe	st, Inc.							
Sample ID 5ML RB	SampT	ype: M	BLK	Tes	tCode: E	PA Method	8015D: Gasol	line Rang	e	
Client ID: PBW	Batch	n ID: R3	31540	F	unNo: 3	31540				
Prep Date:	Analysis D	ate: 1/	/19/2016	S	eqNo: 9	965293	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		90.6	49.5	130			
Sample ID 2.5UG GRO LCS	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Gasol	line Rang	e	
Client ID: LCSW	Batch	n ID: R3	31540	F	unNo: 3	31540				
Prep Date:	Analysis D	ate: 1/	/19/2016	S	eqNo:	965294	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.47	0.050	0.5000	0	94.8	80	120			
Surr: BFB	21		20.00		103	49.5	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 7

Client:WesternProject:GAC-1/	n Refining So /13/16	outhwe	st, Inc.							
Sample ID rb2	SampTy	ype: MI	3LK	Test	TestCode: EPA Method 8260: Volatiles Short List					
Client ID: PBW	Batch	ID: A3	1485	R	RunNo: 3	1485				
Prep Date:	Analysis Da	ate: 1/	/15/2016	S	SeqNo: 9	63779	Units: %Re	с		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.4	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.5	70	130			
Surr: Toluene-d8	9.8		10.00		98.2	70	130			
Sample ID 100ng lcs2	Sample ID 100ng Ics2 SampType: LCS TestCode: EPA Method 8260: Volatiles Short List									
Client ID: LCSW	Batch	ID: A3	1485	R	RunNo: 3	1485				
Prep Date:	Analysis Da	ate: 1/	/15/2016	S	BeqNo: 9	63780	Units: %Re	с		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.6	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.8	70	130			
Surr: Dibromofluoromethane	8.7		10.00		86.9	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			
			_	_						-
Sample ID 100ng lcs2	SampTy			Test	tCode: El	PA Method	8260: Volatil	es Short L	.ist	
Sample ID 100ng Ics2 Client ID: LCSW		ype: LC			tCode: El RunNo: 3 [,]		8260: Volatil	les Short L	ist	
_		ID: A3	31514	R		1514	8260: Volatil Units: %Re		ist	
Client ID: LCSW	Batch	ID: A3	31514 /18/2016	R	RunNo: 3 ′	1514			.ist RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4	Batch Analysis Da	ID: A3 ate: 1/	8 1514 / 18/2016 SPK value 10.00	R S	RunNo: 3 SeqNo: 9 <u>%REC</u> 95.9	1514 64373	Units: %Re HighLimit 130	с		Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene	Batch Analysis Da Result 9.6 9.7	ID: A3 ate: 1/	31514 /18/2016 SPK value 10.00 10.00	R S	RunNo: 3 SeqNo: 9 <u>%REC</u> 95.9 96.5	1514 64373 LowLimit 70 70	Units: % Re HighLimit 130 130	с		Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane	Batch Analysis Da Result 9.6 9.7 10	ID: A3 ate: 1/	31514 /18/2016 SPK value 10.00 10.00 10.00	R S	RunNo: 3 SeqNo: 9 <u>%REC</u> 95.9 96.5 100	1514 64373 LowLimit 70 70 70	Units: %Re HighLimit 130 130 130	с		Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene	Batch Analysis Da Result 9.6 9.7	ID: A3 ate: 1/	31514 /18/2016 SPK value 10.00 10.00	R S	RunNo: 3 SeqNo: 9 <u>%REC</u> 95.9 96.5	1514 64373 LowLimit 70 70	Units: % Re HighLimit 130 130	с		Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane	Batch Analysis Da Result 9.6 9.7 10	ate: 1/ PQL	31514 /18/2016 SPK value 10.00 10.00 10.00 10.00	R SPK Ref Val	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5	1514 64373 LowLimit 70 70 70 70 70	Units: %Re HighLimit 130 130 130	c %RPD	RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8	Batch Analysis Da Result 9.6 9.7 10 9.4 SampTy	ate: 1/ PQL	1514 /18/2016 SPK value 10.00 10.00 10.00 BLK	R SPK Ref Val	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5	1514 64373 LowLimit 70 70 70 70 70 PA Method	Units: %Re HighLimit 130 130 130 130	c %RPD	RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID rb3	Batch Analysis Da Result 9.6 9.7 10 9.4 SampTy	ype: ME	31514 /18/2016 SPK value 10.00 10.00 10.00 BLK 31514	R SPK Ref Val Test R	RunNo: 3 SeqNo: 9 <u>%REC</u> 95.9 96.5 100 93.5 tCode: Ef	1514 64373 200 70 70 70 70 70 PA Method 1514	Units: %Re HighLimit 130 130 130 130	c %RPD les Short L	RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID rb3 Client ID: PBW	Batch Analysis Da Result 9.6 9.7 10 9.4 SampTy Batch Analysis Da	ype: ME ate: 1/ PQL ype: ME ID: A3 ate: 1/	A1514 (18/2016 SPK value 10.00 10.00 10.00 10.00 BLK A1514 (19/2016	R SPK Ref Val Test R	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5 tCode: Ef RunNo: 3 SeqNo: 9	1514 64373 LowLimit 70 70 70 70 PA Method 1514 64374	Units: %Re HighLimit 130 130 130 130 8260: Volatil Units: %Re	c %RPD les Short L	RPDLimit	Qual
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID rb3 Client ID: PBW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4	Batch Analysis Da Result 9.6 9.7 10 9.7 10 9.4 SampTy Batch Analysis Da Result 9.9	ype: ME ate: 1/ PQL ype: ME ID: A3 ate: 1/	B1514 /18/2016 SPK value 10.00 10.00 10.00 10.00 BLK S1514 /19/2016 SPK value 10.00	R SPK Ref Val Test R S	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5 tCode: Ef RunNo: 3 SeqNo: 9 %REC 98.6	1514 64373 200 70 70 70 70 70 PA Method 1514 64374 LowLimit 70	Units: %Re HighLimit 130 130 130 8260: Volatil Units: %Re HighLimit 130	c %RPD les Short L c	RPDLimit .ist	
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID rb3 Client ID: PBW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene	Batch Analysis Da Result 9.6 9.7 10 9.4 SampTy Batch Analysis Da Result 9.9 10	ype: ME ate: 1/ PQL ype: ME ID: A3 ate: 1/	A1514 /18/2016 SPK value 10.00 10.00 10.00 BLK B1514 /19/2016 SPK value 10.00 10.00 10.00	R SPK Ref Val Test R S	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5 tCode: Ef RunNo: 3 SeqNo: 9 %REC 98.6 99.5	1514 64373 200 70 70 70 70 PA Method 1514 64374 LowLimit 70 70	Units: %Re HighLimit 130 130 130 8260: Volatil Units: %Re HighLimit 130 130	c %RPD les Short L c	RPDLimit .ist	
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane -d4 Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID rb3 Client ID: PBW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4	Batch Analysis Da Result 9.6 9.7 10 9.4 SampTy Batch Analysis Da Result 9.9 10 10	ype: ME ate: 1/ PQL ype: ME ID: A3 ate: 1/	A1514 (18/2016 SPK value 10.00 10.00 10.00 BLK A1514 (19/2016 SPK value 10.00 10.00 10.00 10.00	R SPK Ref Val Test R S	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5 tCode: Ef RunNo: 3 SeqNo: 9 %REC 98.6 99.5 103	1514 64373 200 70 70 70 70 PA Method 1514 64374 LowLimit 70 70 70 70	Units: %Re HighLimit 130 130 130 130 8260: Volatil Units: %Re HighLimit 130 130 130	c %RPD les Short L c	RPDLimit .ist	
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID rb3 Client ID: PBW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene	Batch Analysis Da Result 9.6 9.7 10 9.4 SampTy Batch Analysis Da Result 9.9 10	ype: ME ate: 1/ PQL ype: ME ID: A3 ate: 1/	A1514 /18/2016 SPK value 10.00 10.00 10.00 BLK B1514 /19/2016 SPK value 10.00 10.00 10.00	R SPK Ref Val Test R S	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5 tCode: Ef RunNo: 3 SeqNo: 9 %REC 98.6 99.5	1514 64373 200 70 70 70 70 PA Method 1514 64374 LowLimit 70 70	Units: %Re HighLimit 130 130 130 8260: Volatil Units: %Re HighLimit 130 130	c %RPD les Short L c	RPDLimit .ist	
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane -d4 Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID rb3 Client ID: PBW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4	Batch Analysis Da Result 9.6 9.7 10 9.4 SampTy Batch Analysis Da Result 9.9 10 10	ype: ME 1D: A3 ate: 1/ PQL ype: ME 1D: A3 ate: 1/ PQL	A1514 (18/2016 SPK value 10.00 10.00 10.00 10.00 BLK A1514 (19/2016 SPK value 10.00 10.00 10.00 10.00 10.00	R SPK Ref Val Test R SPK Ref Val	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5 tCode: E RunNo: 3 SeqNo: 9 %REC 98.6 99.5 103 94.1	1514 64373 70 70 70 70 PA Method 1514 64374 LowLimit 70 70 70 70 70	Units: %Re HighLimit 130 130 130 130 8260: Volatil Units: %Re HighLimit 130 130 130	c %RPD les Short L c %RPD	RPDLimit ist RPDLimit	
Client ID: LCSW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane-d4 Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID rb3 Client ID: PBW Prep Date: Analyte Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane-d4	Batch Analysis Da Result 9.6 9.7 10 9.4 SampTy Batch Analysis Da Result 9.9 10 10 9.4 SampTy	ype: ME 1D: A3 ate: 1/ PQL ype: ME 1D: A3 ate: 1/ PQL	A1514 (18/2016 SPK value 10.00 10.00 10.00 BLK SPK value 10.00 10.00 10.00 10.00 10.00 10.00 25	R SPK Ref Val Test SPK Ref Val	RunNo: 3 SeqNo: 9 %REC 95.9 96.5 100 93.5 tCode: E RunNo: 3 SeqNo: 9 %REC 98.6 99.5 103 94.1	1514 64373 20 70 70 70 70 70 70 70 1514 64374 LowLimit 70 70 70 70 70 70 70	Units: %Re HighLimit 130 130 130 130 8260: Volatil Units: %Re HighLimit 130 130 130 130	c %RPD les Short L c %RPD	RPDLimit ist RPDLimit	

Qualifiers:

Analyte

Prep Date:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

Analysis Date: 1/19/2016

PQL

Result

- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range

SeqNo: 965174

- J Analyte detected below quantitation limits
- P Sample pH Not In Range

SPK value SPK Ref Val %REC LowLimit

- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Units: µg/L

HighLimit

%RPD

RPDLimit

Page 6 of 7

Qual

WO#:	1601453
	03-Mar-16

Client:WesternProject:GAC-1/	n Refining S /13/16	outhwe	st, Inc.							
Sample ID 100ng Ics	s	TestCode: EPA Method 8260: Volatiles Short List								
Client ID: LCSW	CSW Batch ID: R31533 RunNo: 31533									
Prep Date:	Analysis D	Date: 1/	/19/2016	S	SeqNo: 9	65174	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	110	70	130			
Toluene	22	1.0	20.00	0	111	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.8		10.00		98.2	70	130			
Sample ID rb	SampT	уре: М	BLK	Tes	tCode: E	PA Method	8260: Volatile	es Short L	.ist	
Sample ID rb Client ID: PBW	•	ype: MI 1 ID: R3			tCode: El RunNo: 3		8260: Volatile	es Short L	.ist	
•	•	n ID: R3	1533	F		1533	8260: Volatile Units: μg/L	es Short L	ist	
Client ID: PBW	Batcl	n ID: R3	31533 (19/2016	F	RunNo: 3	1533		es Short L %RPD	.ist RPDLimit	Qual
Client ID: PBW Prep Date:	Batcl Analysis D	n ID: R3 Date: 1 /	31533 (19/2016	F	RunNo: 3 SeqNo: 9	1533 65175	Units: µg/L			Qual
Client ID: PBW Prep Date: Analyte	Batcl Analysis D Result	n ID: R3 Date: 1 / PQL	31533 (19/2016	F	RunNo: 3 SeqNo: 9	1533 65175	Units: µg/L			Qual
Client ID: PBW Prep Date: Analyte Benzene	Batcl Analysis D Result ND	n ID: R3 Date: 1 / PQL 1.0	31533 (19/2016	F	RunNo: 3 SeqNo: 9	1533 65175	Units: µg/L			Qual
Client ID: PBW Prep Date: Analyte Benzene Toluene	Batcl Analysis E Result ND ND	n ID: R3 Date: 1 / <u>PQL</u> 1.0 1.0	31533 (19/2016	F	RunNo: 3 SeqNo: 9	1533 65175	Units: µg/L			Qual
Client ID: PBW Prep Date: Analyte Benzene Toluene Ethylbenzene	Batcl Analysis E Result ND ND ND	Date: 1 / Pate: 1 / PQL 1.0 1.0 1.0	31533 (19/2016	F	RunNo: 3 SeqNo: 9	1533 65175	Units: µg/L			Qual
Client ID: PBW Prep Date: Analyte Benzene Toluene Ethylbenzene Methyl tert-butyl ether (MTBE)	Analysis D Result ND ND ND ND ND	Date: 1/ PQL 1.0 1.0 1.0 1.0 1.0	31533 (19/2016	F	RunNo: 3 SeqNo: 9	1533 65175	Units: µg/L			Qual
Client ID: PBW Prep Date: Analyte Benzene Toluene Ethylbenzene Methyl tert-butyl ether (MTBE) Xylenes, Total	Analysis D Result ND ND ND ND ND ND	Date: 1/ PQL 1.0 1.0 1.0 1.0 1.0	9 1533 / 19/2016 SPK value	F	RunNo: 3 GeqNo: 9 %REC	1533 65175 LowLimit	Units: µg/L HighLimit			Qual
Client ID: PBW Prep Date: Analyte Benzene Toluene Ethylbenzene Methyl tert-butyl ether (MTBE) Xylenes, Total Surr: 1,2-Dichloroethane-d4	Batcl Analysis D Result ND ND ND ND ND 9.7	Date: 1/ PQL 1.0 1.0 1.0 1.0 1.0	1533 19/2016 SPK value 10.00	F	RunNo: 3 SeqNo: 9 %REC 96.5	1533 65175 LowLimit	Units: µg/L HighLimit			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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 7

	HALL
ШĒ	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: Western Refining Southw Work Order Numbe	er: 1601453		RcptNo: 1	
Received by/date: SF 01/14/16				
Logged By: Lindsay Mangin 1/14/2016 8:00:00 Al	M	Julyther		
Completed By: Lindsay Mangin 1/14/2016 10:22:26 /	M	And Hard		
Reviewed By:	ſ	0.00		
Chain of Custody	ý			
1 Custody seals intact on sample bottles?	Yes 🗌	No 🗌	Not Present 🗹	
2. Is Chain of Custody complete?	Yes 🔽	No 🗔	Not Present	
3. How was the sample delivered?	Courier			
Log In				
4. Was an attempt made to cool the samples?	Yes 🔽	No 🗌		
 Were all samples received at a temperature of >0° C to 6.0°C 	Yes 🗹	No 🗌	NA 🗆	
6. Sample(s) in proper container(s)?	Yes 🗹	No 🗆		
7. Sufficient sample volume for indicated test(s)?	Yes 🗹	No 🗌		
8. Are samples (except VOA and ONG) properly preserved?	Yes 🗹	No 🗌		
9. Was preservative added to bottles?	Yes 🗌	No 🔽	NA 🗌	
10. VOA vials have zero headspace?	Yes 🗹	No 🗆	No VOA Vials	
11. Were any sample containers received broken?	Yes 🗌	No 🗹	# of preserved	
12 Dece sesses under metels bettle lebels?	Yes 🗹	No 🗆	bottles checked for pH:	
 Does paperwork match bottle labels? (Note discrepancies on chain of custody) 	165 🖭		(<2 or >12 unless r	oted)
13. Are matrices correctly identified on Chain of Custody?	Yes 🗸	No 🗌	Adjusted?	_
14. Is it clear what analyses were requested?	Yes 🗸	No 🗌		
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No 🗆	Checked by:	-2
Special Handling (if applicable)		(c) 444		
16. 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:				
17. Additional remarks:				
18. <u>Cooler Information</u>				
Cooler No Temp C Condition Seal Intact Seal No	Seal Date	Signed By		
1 1.4 Good Yes		the second second second second		



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

February 04, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4166 FAX (505) 632-3911

RE: GAC-1/13/16

OrderNo.: 1601453

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 1/14/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1601453 Date Reported: 2/4/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

GAC-1/13/16

Project:

Client Sample ID: GAC-Inlet Collection Date: 1/13/2016 11:00:00 AM Received Date: 1/14/2016 8:00:00 AM

Lab ID: 1601453-001	Matrix:	AQUEOUS	Received	Date: 1/1	4/2016 8:00:00 AM	
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE					Analyst	КЈН
Diesel Range Organics (DRO)	0.79	0.20	mg/L	1	1/18/2016 11:42:13 AM	23253
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	1/18/2016 11:42:13 AM	23253
Surr: DNOP	111	63.2-161	%Rec	1	1/18/2016 11:42:13 AM	23253
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst	NSB
Gasoline Range Organics (GRO)	1.1	0.25	mg/L	5	1/19/2016 2:30:39 PM	R31540
Surr: BFB	123	49.5-130	%Rec	5	1/19/2016 2:30:39 PM	R31540
EPA METHOD 8260: VOLATILES SHOR	T LIST				Analyst	AG
Benzene	ND	2.5	µg/L	5	1/19/2016 8:07:11 PM	R31533
Toluene	ND	5.0	µg/L	5	1/19/2016 8:07:11 PM	R31533
Ethylbenzene	22	5.0	µg/L	5	1/19/2016 8:07:11 PM	R31533
Xylenes, Total	42	7.5	µg/L	5	1/19/2016 8:07:11 PM	R31533
Surr: 1,2-Dichloroethane-d4	98.9	70-130	%Rec	5	1/19/2016 8:07:11 PM	R31533
Surr: 4-Bromofluorobenzene	81.2	70-130	%Rec	5	1/19/2016 8:07:11 PM	R31533
Surr: Dibromofluoromethane	105	70-130	%Rec	5	1/19/2016 8:07:11 PM	R31533
Surr: Toluene-d8	98.1	70-130	%Rec	5	1/19/2016 8:07:11 PM	R31533

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the
	D	Sample Diluted Due to Matrix	Е	Value above quantitati
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below

- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- % Recovery outside of range due to dilution or matrix S
- he associated Method Blank
- ation range
- ow quantitation limits Page 1 of 7
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Analytical Report Lab Order 1601453 Date Reported: 2/4/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project:

GAC-1/13/16

Client Sample ID: GAC-Lead Collection Date: 1/13/2016 11:20:00 AM Received Date: 1/14/2016 8:00:00 AM

Lab ID: 1601453-002	Matrix:	AQUEOUS	Received	Date: 1/1	4/2016 8:00:00 AM	
Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE					Analyst	KJH
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	1/18/2016 12:47:03 PM	23253
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	1/18/2016 12:47:03 PM	23253
Surr: DNOP	105	63.2-161	%Rec	1	1/18/2016 12:47:03 PM	23253
EPA METHOD 8015D: GASOLINE RANG	θE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	1/19/2016 2:53:26 PM	R31540
Surr: BFB	87.4	49.5-130	%Rec	1	1/19/2016 2:53:26 PM	R31540
EPA METHOD 8260: VOLATILES SHOR	T LIST				Analyst	AG
Benzene	ND	1.0	µg/L	1	1/19/2016 8:36:01 PM	R31533
Toluene	ND	1.0	µg/L	1	1/19/2016 8:36:01 PM	R31533
Ethylbenzene	ND	1.0	µg/L	1	1/19/2016 8:36:01 PM	R31533
Xylenes, Total	ND	1.5	µg/L	1	1/19/2016 8:36:01 PM	R31533
Surr: 1,2-Dichloroethane-d4	101	70-130	%Rec	1	1/19/2016 8:36:01 PM	R31533
Surr: 4-Bromofluorobenzene	98.8	70-130	%Rec	1	1/19/2016 8:36:01 PM	R31533
Surr: Dibromofluoromethane	108	70-130	%Rec	1	1/19/2016 8:36:01 PM	R31533
Surr: Toluene-d8	95.9	70-130	%Rec	1	1/19/2016 8:36:01 PM	R31533

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Metho

- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 7 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Analytical Report Lab Order 1601453

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 2/4/2016

CLIENT: Western Refining Southwest, Inc.

GAC-1/13/16

1601453-003

Project:

Lab ID:

Client Sample ID: GAC-Lag Collection Date: 1/13/2016 11:40:00 AM Received Date: 1/14/2016 8:00:00 AM

Analyses	Result	PQL Q	ual Units	DF	Date Analyzed	Batch	
EPA METHOD 8015D: DIESEL RAN	GE				Analyst	: KJH	
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	1/18/2016 1:08:21 PM	23253	
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	1/18/2016 1:08:21 PM	23253	
Surr: DNOP	111	63.2-161	%Rec	1	1/18/2016 1:08:21 PM	23253	
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst	: NSB	
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	1/19/2016 3:16:14 PM	R31540	
Surr: BFB	84.9	49.5-130	%Rec	1	1/19/2016 3:16:14 PM	R31540	
EPA METHOD 8260: VOLATILES SI	HORT LIST				Analyst	: AG	
Benzene	ND	1.0	µg/L	1	1/19/2016 9:04:45 PM	R31533	
Toluene	ND	1.0	µg/L	1	1/19/2016 9:04:45 PM	R31533	
Ethylbenzene	ND	1.0	µg/L	1	1/19/2016 9:04:45 PM	R31533	
Xylenes, Total	ND	1.5	µg/L	1	1/19/2016 9:04:45 PM	R31533	
Surr: 1,2-Dichloroethane-d4	98.1	70-130	%Rec	1	1/19/2016 9:04:45 PM	R31533	
Surr: 4-Bromofluorobenzene	101	70-130	%Rec	1	1/19/2016 9:04:45 PM	R31533	
Surr: Dibromofluoromethane	106	70-130	%Rec	1	1/19/2016 9:04:45 PM	R31533	
Surr: Toluene-d8	93.8	70-130	%Rec	1	1/19/2016 9:04:45 PM	R31533	

Matrix: AQUEOUS

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte
	_		_	

- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#:	1601453

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04-Feb-16

Client: Project:	Western GAC-1/1	Refining So 3/16	outhwe	st, Inc.								
Sample ID	MB-23253	SampT	ype: ME	BLK	TestCode: EPA Method 8015D: Diesel Range							
Client ID:	PBW	Batch	n ID: 23	253	F	RunNo: 3	1488					
Prep Date:	1/18/2016	Analysis D	ate: 1/	18/2016	S	SeqNo: 9	63872	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range (Organics (DRO)	ND	0.20									
Motor Oil Rang	e Organics (MRO)	ND	2.5									
Surr: DNOP		0.53		0.5000		106	63.2	161				
Sample ID	LCS-23253	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Diese	l Range			
Client ID:	LCSW	Batch	n ID: 23	253	F	RunNo: 3	1488					
Prep Date:	1/18/2016	Analysis D	ate: 1/	18/2016	S	eqNo: 9	63934	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range (Organics (DRO)	2.3	0.20	2.500	0	91.5	65.4	162				
Surr: DNOP		0.23		0.2500		93.5	63.2	161				
Sample ID	1601453-001BMS	SampT	ype: MS	6	Tes	tCode: E	PA Method	8015D: Diese	l Range			
Client ID:	GAC-Inlet	Batch	n ID: 23	253	F	RunNo: 3	1488					
Prep Date:	1/18/2016	Analysis D	ate: 1/	18/2016	S	eqNo: 9	63968	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range (Drganics (DRO)	3.1	0.20	2.500	0.7934	91.0	73.3	174				
Surr: DNOP		0.24		0.2500		95.9	63.2	161				
Sample ID	1601453-001BMS	D SampT	уре: М	SD	Tes	tCode: E	PA Method	8015D: Diese	l Range			
Client ID:	GAC-Inlet	Batch	n ID: 23	253	F	RunNo: 3	1488					
Prep Date:	1/18/2016	Analysis D	ate: 1/	18/2016	S	eqNo: 9	64050	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range (Organics (DRO)	3.2	0.20	2.500	0.7934	95.9	73.3	174	3.90	20		
Surr: DNOP		0.25		0.2500		101	63.2	161	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 7

Client:WesternProject:GAC-1/1	Refining S 3/16	outhwe	st, Inc.							
Sample ID 5ML RB	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBW	Batch ID: R31540			F	RunNo: 3	1540				
Prep Date:	Analysis D	0ate: 1 /	19/2016	S	eqNo: 9	65293	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		90.6	49.5	130			
Sample ID 2.5UG GRO LCS	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSW	Batch	n ID: R3	1540	F	RunNo: 3	1540				
Prep Date:	Analysis D)ate: 1/	19/2016	S	eqNo: 9	65294	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.47	0.050	0.5000	0	94.8	80	120			
Surr: BFB	21		20.00		103	49.5	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Client:WesternProject:GAC-1/	Refining Southwes 13/16	t, Inc.							
Sample ID rb2	SampType: MB	LK	Test	Code: EF	PA Method	8260: Volatil	es Short L	.ist	
Client ID: PBW	Batch ID: A31		R	unNo: 3'	1485				
Prep Date:	Analysis Date: 1/1	15/2016	S	eqNo: 90	63779	Units: %Red	•		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10	10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.9	10.00		99.4	70	130			
Surr: Dibromofluoromethane	9.7	10.00		97.5	70	130			
Surr: Toluene-d8	9.8	10.00		98.2	70	130			
Sample ID 100ng Ics2	Sample ID 100ng Ics2 SampType: LCS TestCode: EPA Method 8260						es Short L	.ist	
Client ID: LCSW	Batch ID: A31	1485	R	unNo: 3'	1485				
Prep Date:	Analysis Date: 1/1	15/2016	S	eqNo: 90	63780	Units: %Red	•		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.9	10.00		98.6	70	130			
Surr: 4-Bromofluorobenzene	9.7	10.00		96.8	70	130			
Surr: Dibromofluoromethane	8.7	10.00		86.9	70	130			
Surr: Toluene-d8	9.8	10.00		97.9	70	130			
Sample ID 100ng Ics2	SampType: LCS	S	Test	Code: EF	PA Method	8260: Volatil	es Short L	.ist	
Client ID: LCSW	Batch ID: A31	1514	RunNo: 31514						
Prep Date:	Analysis Date: 1/1	18/2016	S	eqNo: 9	64373	Units: %Red			
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.6	10.00		95.9	70	130			
Surr: 4-Bromofluorobenzene	9.7	10.00		96.5	70	130			
Surr: Dibromofluoromethane	10	10.00		100	70	130			
Surr: Toluene-d8	9.4	10.00		93.5	70	130			
Sample ID rb3	SampType: MB	LK	Test	Code: EF	PA Method	8260: Volatil	es Short L	.ist	
Client ID: PBW	Batch ID: A31	1514	R	unNo: 3'	1514				
Prep Date:	Analysis Date: 1/1	19/2016	S	eqNo: 9	64374	Units: %Red	•		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.9	10.00		98.6	70	130			
Surr: 4-Bromofluorobenzene	10	10.00		99.5	70	130			
Surr: Dibromofluoromethane	10	10.00		103	70	130			
Surr: Toluene-d8	9.4	10.00		94.1	70	130			
Sample ID 100ng Ics	SampType: LC	S	Test	Code: EF	PA Method	8260: Volatil	es Short L	.ist	
Client ID: LCSW	Batch ID: R31	1533	R	unNo: 3	1533				
Prep Date:	Analysis Date: 1/1	19/2016	S	eqNo: 90	65174	Units: µg/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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Qual

RPDLimit

Client: Project:	Western Refinit GAC-1/13/16	ng South	wes	st, Inc.						
Sample ID 100ng	l cs Sa	impType:	LC	S	Tes	tCode: El	PA Method	8260: Volatile	es Short L	ist
Client ID: LCSW	E	Batch ID:	R3	1533	F	RunNo: 3	1533			
Prep Date:	Analy	sis Date:	1/	19/2016	S	SeqNo: 9	65174	Units: µg/L		
Analyte	Res	ult PC	ΩL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RP
Benzene	2	22	1.0	20.00	0	110	70	130		
Toluene	2	22	1.0	20.00	0	111	70	130		
Surr: 1,2-Dichloroetha	ne-d4 9	.9		10.00		99.1	70	130		
Surr: 4-Bromofluorobe	nzene	10		10.00		101	70	130		
Surr: Dibromofluorome	ethane ·	11		10.00		106	70	130		
Surr: Toluene-d8	9	.8		10.00		98.2	70	130		

Sample ID rb	ole ID rb SampType: MBLK				TestCode: EPA Method 8260: Volatiles Short List								
Client ID: PBW	Batcl	h ID: R3	1533	F	RunNo: 3	1533							
Prep Date:	Analysis E	Date: 1/	19/2016	S	SeqNo: 9	65175	Units: µg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Benzene	ND	1.0											
Toluene	ND	1.0											
Ethylbenzene	ND	1.0											
Xylenes, Total	ND	1.5											
Surr: 1,2-Dichloroethane-d4	9.7		10.00		96.5	70	130						
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130						
Surr: Dibromofluoromethane	9.6		10.00		96.4	70	130						
Surr: Toluene-d8	9.4		10.00		94.2	70	130						

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 7

	HALL
- -	ENVIRONMENTAL
-77	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: Western Refining Southw Work Order Number	r: 1601453		ReptNo: 1
Received by/date: SF 01/4/16			
Logged By: Lindsay Mangin 1/14/2016 8:00:00 AN	1	Julythas	
Completed By: Lindsay Mangin 1/14/2016 10:22:26 A	м	And Hand	
Reviewed By: 0114/11	n	0 . 0	
Chain of Custody	V		
1. Custody seals intact on sample bottles?	Yes 🗌	No 🗌	Not Present 🗹
2. Is Chain of Custody complete?	Yes 🗹	No 🗌	Not Present
3. How was the sample delivered?	Courier		
Log In			
4. Was an attempt made to cool the samples?	Yes 🔽	No 🗌	
 Were all samples received at a temperature of >0° C to 6.0°C 	Yes 🔽	No 🗌	NA 🗆
6. Sample(s) in proper container(s)?	Yes 🗹	No 🗌	
7. Sufficient sample volume for indicated test(s)?	Yes 🗹	No 🗌	
8. Are samples (except VOA and ONG) properly preserved?	Yes 🗹	No 🗌	
9. Was preservative added to bottles?	Yes 🗌	No 🔽	NA 🗌
10. VOA vials have zero headspace?	Yes 🗹	No 🗆	No VOA Vials
11. Were any sample containers received broken?	Yes	No 🗹	# of preserved
12. Does paperwork match bottle labels?	Yes 🗸	No 🗆	bottles checked for pH:
(Note discrepancies on chain of custody)			(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes 🗸	No	Adjusted?
14. Is it clear what analyses were requested?	Yes 🗸	No 🗌	ob- to the
 Were all holding times able to be met? (If no, notify customer for authorization.) 	Yes 🗹	No 🗌	Checked by:
Special Handling (if applicable)			
16. 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:			
17. Additional remarks:			
18. Cooler Information		<	
Cooler No Temp C Condition Seal Intact Seal No	Seal Date	Signed By	
1 1.4 Good Yes			



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

March 09, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

RE: GAC 2-24-16

OrderNo.: 1602B06

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 2/26/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1602B06

Date Reported: 3/9/2016

Page 1 of 7

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Ir	nc.		Clier	nt Sampl	le ID: GA	C-Lag					
Project: GAC 2-24-16		Collection Date: 2/24/2016 2:35:00 PM									
Lab ID: 1602B06-001	Matrix:	AQUEOU	S R	eceived	Date: 2/20	5/2016	8:00:00 AM				
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID			
EPA METHOD 8015D: DIESEL RANGE							Analyst: KJH				
Diesel Range Organics (DRO)	ND	0.20	0.20		mg/L	1	2/29/2016 2:52:14 PM	23973			
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	2/29/2016 2:52:14 PM	23973			
Surr: DNOP	124	0	63.2-161		%Rec	1	2/29/2016 2:52:14 PM	23973			
EPA METHOD 8015D: GASOLINE RANG	E						Analyst: NSB				
Gasoline Range Organics (GRO)	ND	0.025	0.050		mg/L	1	3/1/2016 3:20:00 PM	A32486			
Surr: BFB	77.6	0	49.5-130		%Rec	1	3/1/2016 3:20:00 PM	A32486			
EPA METHOD 8260: VOLATILES SHORT	LIST						Analyst: DJF				
Benzene	ND	0.48	5.0	D	µg/L	5	2/29/2016 1:09:24 PM	A32476			
Toluene	ND	0.45	5.0	D	µg/L	5	2/29/2016 1:09:24 PM	A32476			
Ethylbenzene	ND	0.56	5.0	D	µg/L	5	2/29/2016 1:09:24 PM	A32476			
Methyl tert-butyl ether (MTBE)	ND	1.1	5.0	D	µg/L	5	2/29/2016 1:09:24 PM	A32476			
Xylenes, Total	ND	1.6	7.5	D	µg/L	5	2/29/2016 1:09:24 PM	A32476			
Surr: 1,2-Dichloroethane-d4	96.0	0	70-130	D	%Rec	5	2/29/2016 1:09:24 PM	A32476			
Surr: 4-Bromofluorobenzene	109	0	70-130	D	%Rec	5	2/29/2016 1:09:24 PM	A32476			
Surr: Dibromofluoromethane	101	0	70-130	D	%Rec	5	2/29/2016 1:09:24 PM	A32476			
Surr: Toluene-d8	103	0	70-130	D	%Rec	5	2/29/2016 1:09:24 PM	A32476			

Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
Sample Diluted Due to Matrix	E	Value above quantitation range
Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
Not Detected at the Reporting Limit	Р	Sample pH Not In Range
RPD outside accepted recovery limits	RL	Reporting Detection Limit
% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified
	Sample Diluted Due to Matrix Holding times for preparation or analysis exceeded Not Detected at the Reporting Limit RPD outside accepted recovery limits	Sample Diluted Due to MatrixEHolding times for preparation or analysis exceededJNot Detected at the Reporting LimitPRPD outside accepted recovery limitsRL

Analytical Report Lab Order 1602B06

Date Reported: 3/9/2016

Page 2 of 7

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, In	c.		Clier	nt Sampl	e ID: GA	C-Lead	l			
Project: GAC 2-24-16		Collection Date: 2/24/2016 2:25:00 PM								
Lab ID: 1602B06-002	Matrix:	AQUEOU	S R	eceived l	Date: 2/26	5/2016	8:00:00 AM			
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID		
EPA METHOD 8015D: DIESEL RANGE							Analyst: KJH			
Diesel Range Organics (DRO)	ND	0.20	0.20		mg/L	1	2/29/2016 3:57:44 PM	23973		
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	2/29/2016 3:57:44 PM	23973		
Surr: DNOP	123	0	63.2-161		%Rec	1	2/29/2016 3:57:44 PM	23973		
EPA METHOD 8015D: GASOLINE RANGE	E						Analyst: NSB			
Gasoline Range Organics (GRO)	ND	0.025	0.050		mg/L	1	2/29/2016 5:22:38 PM	R32473		
Surr: BFB	85.8	0	49.5-130		%Rec	1	2/29/2016 5:22:38 PM	R32473		
EPA METHOD 8260: VOLATILES SHORT	LIST						Analyst: DJF			
Benzene	ND	0.096	1.0		µg/L	1	2/29/2016 2:34:40 PM	A32476		
Toluene	ND	0.089	1.0		µg/L	1	2/29/2016 2:34:40 PM	A32476		
Ethylbenzene	ND	0.11	1.0		µg/L	1	2/29/2016 2:34:40 PM	A32476		
Methyl tert-butyl ether (MTBE)	2.1	0.21	1.0		µg/L	1	2/29/2016 2:34:40 PM	A32476		
Xylenes, Total	ND	0.32	1.5		µg/L	1	2/29/2016 2:34:40 PM	A32476		
Surr: 1,2-Dichloroethane-d4	97.2	0	70-130		%Rec	1	2/29/2016 2:34:40 PM	A32476		
Surr: 4-Bromofluorobenzene	106	0	70-130		%Rec	1	2/29/2016 2:34:40 PM	A32476		
Surr: Dibromofluoromethane	103	0	70-130		%Rec	1	2/29/2016 2:34:40 PM	A32476		
Surr: Toluene-d8	107	0	70-130		%Rec	1	2/29/2016 2:34:40 PM	A32476		

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
1	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
1	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
Ň	١D	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
]	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1602B06

Date Reported: 3/9/2016

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, In	ic.		Clie	nt Sampl	le ID: GA	C-Inlet		
Project: GAC 2-24-16			Со	llection 1	Date: 2/24	4/2016	2:17:00 PM	
Lab ID: 1602B06-003	Matrix:	AQUEOU	S R	eceived	Date: 2/2	6/2016	8:00:00 AM	
Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
PA METHOD 8015D: DIESEL RANGE							Analyst: KJH	
Diesel Range Organics (DRO)	4.5	0.20	0.20		mg/L	1	2/29/2016 4:19:36 PM	23973
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	2/29/2016 4:19:36 PM	23973
Surr: DNOP	117	0	63.2-161		%Rec	1	2/29/2016 4:19:36 PM	23973
PA METHOD 8015D: GASOLINE RANGI	E						Analyst: NSB	
Gasoline Range Organics (GRO)	0.60	0.025	0.050		mg/L	1	2/29/2016 5:46:59 PM	R32473
Surr: BFB	208	0	49.5-130	S	%Rec	1	2/29/2016 5:46:59 PM	R32473
PA METHOD 8260: VOLATILES SHORT	LIST						Analyst: DJF	
Benzene	0.75	0.096	1.0	J	µg/L	1	2/29/2016 3:03:00 PM	A32476
Toluene	0.29	0.089	1.0	J	µg/L	1	2/29/2016 3:03:00 PM	A32476
Ethylbenzene	17	0.11	1.0		µg/L	1	2/29/2016 3:03:00 PM	A32476
Methyl tert-butyl ether (MTBE)	ND	0.21	1.0		µg/L	1	2/29/2016 3:03:00 PM	A32476
Xylenes, Total	3.8	0.32	1.5		µg/L	1	2/29/2016 3:03:00 PM	A32476
Surr: 1,2-Dichloroethane-d4	93.3	0	70-130		%Rec	1	2/29/2016 3:03:00 PM	A32476
Surr: 4-Bromofluorobenzene	97.5	0	70-130		%Rec	1	2/29/2016 3:03:00 PM	A32476
Surr: Dibromofluoromethane	98.0	0	70-130		%Rec	1	2/29/2016 3:03:00 PM	A32476
Surr: Toluene-d8	105	0	70-130		%Rec	1	2/29/2016 3:03:00 PM	A32476

Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
Sample Diluted Due to Matrix	Е	Value above quantitation range
Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
Not Detected at the Reporting Limit	Р	Sample pH Not In Range
RPD outside accepted recovery limits	RL	Reporting Detection Limit
% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified
	Sample Diluted Due to Matrix Holding times for preparation or analysis exceeded Not Detected at the Reporting Limit RPD outside accepted recovery limits	Sample Diluted Due to MatrixEHolding times for preparation or analysis exceededJNot Detected at the Reporting LimitPRPD outside accepted recovery limitsRL

WO#:	1602B06
	09-Mar-16

Client: Project:	Western I GAC 2-24	Refining So 4-16	outhwe	st, Inc.									
Sample ID	LCS-23973	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015D: Diese	l Range				
Client ID:	LCSW	Batch	ID: 23	973	F	RunNo: 3	2458						
Prep Date:	2/29/2016	Analysis D	ate: 2 /	29/2016	S	eqNo: 9	93032	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Diesel Range (Organics (DRO)	3.1	0.20	2.500	0	126	65.4	162					
Surr: DNOP		0.29		0.2500		116	63.2	161					
Sample ID	MB-23973	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Diese	l Range				
Client ID:	PBW	Batch	ID: 23	973	F	RunNo: 3	2458						
Prep Date:	2/29/2016	Analysis D	ate: 2 /	29/2016	S	eqNo: 9	93033	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
•	Organics (DRO)	ND	0.20										
	je Organics (MRO)	ND	2.5										
Surr: DNOP		0.60		0.5000		121	63.2	161					
Sample ID	1602B06-001BMS	SampT	ype: M \$	6	Tes	tCode: El	PA Method	8015D: Diese	l Range				
Client ID:	GAC-Lag	Batch	ID: 23	973	F	RunNo: 3	32458						
Prep Date:	2/29/2016	Analysis D	ate: 2 /	29/2016	S	eqNo: 9	93100	Units: mg/L					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Diesel Range (Organics (DRO)	3.0	0.20	2.500	0	120	73.3	174					
Surr: DNOP		0.27		0.0500		440	~~~~	161					
		0.27		0.2500		110	63.2	101					
Sample ID	1602B06-001BMS		ype: M \$		Tes	-		8015D: Diese	l Range				
Sample ID Client ID:		D SampT	ype: M\$	SD		-	PA Method		l Range				
· ·	GAC-Lag	D SampT	ID: 23	SD 973	F	tCode: El	PA Method 2458		I Range				
Client ID: Prep Date: Analyte	GAC-Lag 2/29/2016	D SampT Batch Analysis D Result	ID: 23 ate: 2 / PQL	SD 973 29/2016 SPK value	F	tCode: El	PA Method 2458 93101 LowLimit	8015D: Diese	I Range %RPD	RPDLimit	Qual		
Client ID: Prep Date: Analyte	GAC-Lag	D SampT Batch Analysis D	ID: 23 ate: 2/	SD 973 29/2016	ਜ 2	tCode: El RunNo: 32 SeqNo: 99	PA Method 2458 93101	8015D: Diese Units: mg/L	C	RPDLimit 20 0	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1602B06
	09-Mar-16

Client:	Western	Refining S	outhwe	st, Inc.							
Project:	GAC 2-2	4-16									
Sample ID	5ML RB	SampT	уре: МЕ	BLK	Test	tCode: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	PBW	Batch	n ID: R3	2473	R	RunNo: 32	2473				
Prep Date:		Analysis D	ate: 2/	29/2016	S	eqNo: 9	93128	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	je Organics (GRO)	ND	0.050								
Surr: BFB		18		20.00		88.7	49.5	130			
Sample ID	2.5UG GRO LCS	SampT	ype: LC	S	Test	tCode: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	LCSW	Batch	n ID: R3	2473	R	RunNo: 32	2473				
Prep Date:		Analysis D	ate: 2/	29/2016	S	eqNo: 9	93129	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	0.45	0.050	0.5000	0	90.8	80	120			
Surr: BFB		21		20.00		104	49.5	130			
Surr: BFB Sample ID	5ML RB		ype: ME		Test			130 8015D: Gasol	ine Rang	e	
		SampT	ype: ME	BLK			PA Method		ine Rang	e	
Sample ID		SampT	n ID: A3	3LK 2486	R	tCode: EF	PA Method 2486		ine Rang	e	
Sample ID Client ID:		SampT Batch	n ID: A3	3LK 2486 1/2016	R	tCode: EF RunNo: 32 SeqNo: 99	PA Method 2486	8015D: Gasol	ine Rang %RPD	e RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Gasoline Rang		SampT Batch Analysis D Result ND	n ID: A3 Date: 3/	3LK 2486 1/2016 SPK value	R S	tCode: EF RunNo: 32 SeqNo: 99 %REC	PA Method 2486 93897 LowLimit	8015D: Gasol Units: mg/L HighLimit	U		Qual
Sample ID Client ID: Prep Date: Analyte	PBW	SampT Batch Analysis D Result	n ID: A3 Date: 3/ PQL	3LK 2486 1/2016	R S	tCode: EF RunNo: 32 SeqNo: 99	PA Method 2486 93897	8015D: Gasol Units: mg/L	U		Qual
Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB	PBW	SampT Batch Analysis D Result ND 18	n ID: A3 Date: 3/ PQL	3LK 2486 1/2016 SPK value 20.00	R S SPK Ref Val	tCode: EF RunNo: 32 SeqNo: 99 %REC 87.8	PA Method 2486 93897 LowLimit 49.5	8015D: Gasol Units: mg/L HighLimit	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB	PBW re Organics (GRO) 2.5UG GRO LCS	SampT Batch Analysis D Result ND 18 SampT	Date: 3 / Pate: 3 / PQL 0.050	BLK 2486 1/2016 SPK value 20.00	R S SPK Ref Val Test	tCode: EF RunNo: 32 SeqNo: 99 %REC 87.8	PA Method 2486 33897 LowLimit 49.5 PA Method	8015D: Gasol Units: mg/L HighLimit 130	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB Sample ID	PBW re Organics (GRO) 2.5UG GRO LCS	SampT Batch Analysis D Result ND 18 SampT	PQL 0.050 7ype: LC	3LK 2486 1/2016 SPK value 20.00 SS 2486	R S SPK Ref Val Test R	tCode: EF RunNo: 32 BeqNo: 99 %REC 87.8 tCode: EF	PA Method 2486 93897 LowLimit 49.5 PA Method 2486	8015D: Gasol Units: mg/L HighLimit 130	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB Sample ID Client ID: Prep Date: Analyte	PBW ge Organics (GRO) 2.5UG GRO LCS LCSW	SampT Batch Analysis D Result ND 18 SampT Batch	PQL 0.050 7ype: LC	BLK 2486 1/2016 SPK value 20.00 S 2486 1/2016	R S SPK Ref Val Test R	tCode: EF RunNo: 32 SeqNo: 99 %REC 87.8 tCode: EF RunNo: 32	PA Method 2486 93897 LowLimit 49.5 PA Method 2486	8015D: Gasol Units: mg/L HighLimit 130 8015D: Gasol	%RPD	RPDLimit	Qual
Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB Sample ID Client ID: Prep Date: Analyte	PBW re Organics (GRO) 2.5UG GRO LCS	SampT Batch Analysis D Result ND 18 SampT Batch Analysis D	PQL 0.050 7ype: LC 0.0te: 3/	BLK 2486 1/2016 SPK value 20.00 S 2486 1/2016	R SPK Ref Val Test R S	tCode: EF RunNo: 32 BeqNo: 99 %REC 87.8 tCode: EF RunNo: 32 BeqNo: 99	PA Method 2486 93897 LowLimit 49.5 PA Method 2486 93898	8015D: Gasol Units: mg/L HighLimit 130 8015D: Gasol Units: mg/L	%RPD	RPDLimit	

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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1602B06
	09-Mar-16

Client: Project:	Western GAC 2-2	Refining S 4-16	Southwe	st, Inc.							
Sample ID rb		Samp	Гуре: МЕ	BLK	Tes	tCode: El	PA Method	8260: Volatil	es Short L	_ist	
Client ID: PBV	/	Batc	h ID: A3	2476	F	RunNo: 3	2476				
Prep Date:		Analysis [Date: 2/	29/2016	5	eqNo: 9	93243	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		ND	1.0					5			
Toluene		ND	1.0								
Ethylbenzene		ND	1.0								
Methyl tert-butyl ethe	r (MTBE)	ND	1.0								
Xylenes, Total		ND	1.5								
Surr: 1,2-Dichloroe	thane-d4	10		10.00		99.6	70	130			
Surr: 4-Bromofluor	obenzene	11		10.00		109	70	130			
Surr: Dibromofluor	omethane	10		10.00		100	70	130			
Surr: Toluene-d8		11		10.00		105	70	130			
Sample ID 100	ng Ics	Samp	Гуре: LC	s	Tes	tCode: El	PA Method	8260: Volatil	es Short L	_ist	
Client ID: LCS	w	Batc	h ID: A3	2476	F	RunNo: 3	2476				
Prep Date:		Analysis [Date: 2/	29/2016	S	eqNo: 9	93244	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		21	1.0	20.00	0	103	70	130			
Toluene		23	1.0	20.00	0	113	70	130			
Surr: 1,2-Dichloroe	thane-d4	9.7		10.00		97.5	70	130			
Surr: 4-Bromofluor	obenzene	11		10.00		106	70	130			
Surr: Dibromofluor	omethane	9.6		10.00		95.8	70	130			
Surr: Toluene-d8		11		10.00		106	70	130			
Sample ID 160	2b06-001a ms	s Samp	Гуре: М	6	Tes	tCode: El	PA Method	8260: Volatil	es Short L	_ist	
Client ID: GAC	-Lag	Batc	h ID: A3	2476	F	RunNo: 3	2476				
Prep Date:		Analysis [Date: 2/	29/2016	5	SeqNo: 9	93246	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		110	5.0	100.0	0	110	70	130			D
Foluene		110	5.0	100.0	0	113	70	130			D
Surr: 1,2-Dichloroe		52		50.00		104	70	130			D
Surr: 4-Bromofluor		56		50.00		111	70	130			D
Surr: Dibromofluor	omethane	52		50.00		103	70	130			D
Surr: Toluene-d8		52		50.00		103	70	130			D
Sample ID 1602	2b06-001a ms	d Samp	Гуре: М	SD	Tes	tCode: El	PA Method	8260: Volatil	es Short L	_ist	
Client ID: GAC	-Lag	Batc	h ID: A3	2476	F	RunNo: 3	2476				
Prep Date:		Analysis [Date: 2/	29/2016	5	eqNo: 9	93247	Units: µg/L			
Analyte		Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		100	5.0	100.0	0	104	70	130	6.40	20	D

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 7

WO#:	1602B06
	09-Mar-16

Client:	Western Refining Southwest, Inc.
Project:	GAC 2-24-16

Sample ID 1602b06-001a ms	D 1602b06-001a msd SampType: MSD				TestCode: EPA Method 8260: Volatiles Short List					
Client ID: GAC-Lag	Batch ID: A32476			F	RunNo: 3	2476				
Prep Date: Analysis Date: 2/29/2016				S	eqNo: 9	93247	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	100	5.0	100.0	0	104	70	130	7.68	20	D
Surr: 1,2-Dichloroethane-d4	50		50.00		100	70	130	0	0	D
Surr: 4-Bromofluorobenzene	54		50.00		108	70	130	0	0	D
Surr: Dibromofluoromethane	51		50.00		103	70	130	0	0	D
Surr: Toluene-d8	51		50.00		101	70	130	0	0	D

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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 7

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: We	stern Refining Southw	Work Order Number:	1602B06		RcptNo: 1	
Received by/date:	TOL	02/2011	l			
	shiev Gallegos	/ / / 2/26/2016 8:00:00 AM	7	AJ		
	shley Gallegos	2/26/2016 10:15:06 AM		A		
Reviewed By:		02/26/16		0		
		00104/16		<u> </u>		
Chain of Custod	tact on sample bottles?		Yes 🗌	No 🗌	Not Present 🔽	
2. Is Chain of Custo			Yes 🗹	No 🗌	Not Present	
 B Onlain of Ousid How was the san 	-		<u>Courier</u>			
5. How was the sam			<u></u>			
<u>Log In</u>			_	_		
4. Was an attempt	made to cool the samples	?	Yes 🗹	No 🗔		
				No 🗌	NA 🗖	
5. Were all samples	s received at a temperatur	e of >0°C to 6.0°C	Yes 🗹			
6. Sample(s) in pro	oper container(s)?		Yes 🗹	No 🗌		
7. Sufficient sample	e volume for indicated test	(s)?	Yes 🗹	No 🗌		
8. Are samples (exc	cept VOA and ONG) prope	erly preserved?	Yes 🗹	No 🗌		
9. Was preservative	e added to bottles?		Yes 🗌	No 🗹	NA 🗌	
	haadanaaa 2		Yes 🔽	No 🗌	No VOA Vials	
10.VOA vials have a		kon?	Yes □	No 🗹 [
11. vvere any samp	le containers received brol	Kenr	163 —		# of preserved bottles checked	
12.Does paperwork	match bottle labels?		Yes 🔽	No 🗌	for pH:	
	cies on chain of custody)			No 🗔	(<2 ol Adjusted?	>12 unless noted)
	rectly identified on Chain o	of Custody?	Yes 🗹	No 🗔		
	nalyses were requested?		Yes ✔ Yes ✔		Checked by:	
	times able to be met? tomer for authorization.)		tes 💌			
• • •						
Special Handling	g (if applicable)					
16. Was client notifie	ed of all discrepancies with	h this order?	Yes 🗌	No 🗌	NA 🗹	_
Person No	otified:	Date				
By Whom:	:	Via:	eMail	Phone 🗌 Fax	In Person	
Regarding	Ľ			·		1
Client Inst	ructions:					
17. Additional rema	arks:			_		
18. <u>Cooler Informa</u>	ation					
Cooler No	Temp °C Condition		Seal Date	Signed By	ļ	
1	1.0 Good Y	/es		L]	

Project Name: 4901 Haw I Q O GAC - 3-34-1 I Validation) Froject Manager: - 3-34-1 I Validation) Project Manager: - 4901 Haw I Validation) Project Manager: - 3-34-1 I Validation) Project Manager: - 3-34-1 I Validation) Project Manager: - 3-34-1 Project Manager: - 3-34-1 - 4901 Haw I Validation) Sampler: Math Project Manager:	Chain-of-Custody Record lient: Western Refining	Turn-Around Time:	ime: Rush				ΪŚ	HALL ENVI ANALYSIS	N S S		BB	Ž Ö	HALL ENVIRONMENTAL ANALYSIS LABORATORY	Εē	귀〉	
CR4990 CAC CAC CAC CAC CAC 100 B704413 Piotatimi Piotatimi Tel. 506-346-3975 Fas 606-346-101 11 Piotatimi Piotatimi Piotatimi Piotatimi Piotatimi 12 Sample Reducest ID Containe Piotatimi Piotatimi Piotatimi 13 Piotatimi Piotatimi Piotatimi Piotatimi Piotatimi 14 Upti HCL -000 BTEX+MTBE Piotatimi Piotatimi 15 Piotatimi Piotatimi Piotatimi Piotatimi Piotatimi Piotatimi 15 Piotatimi Piotatimi Piotatimi Piotatimi Piotatimi Piotatimi 16 Auber Container Piotatimi Piotatimi Piotatimi Piotatimi 17 Piotatimi Piotatimi Pi		Project Name:					M	w.hal	lenvira	onmer	ital.cc	E				
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SAC-Lag 4 VOAs HCL -001 X 1 1-5004 Ander X 1 SAC-Lead 4 VOAs HCL -003 X 1 SAC-Luet 4 VOAs HCL -003 X 1 1-50044 Ander -003 X 1 Moute 212644 0200	Matrix	Container Type and #	^o reservative Type	HEAL No.		8015B						imə2) 0728	85108			Air Bubbles
SAC-Lead 4 VOA, HCL - COA XX 1 1 - 500 nL Amber XX 1 X 1 - 500 nL Amber XX 1 X 1 - 500 nL Amber - 203 XX 1 1 - 500 nL Amber - 203 XX 1 1 - 500 nL Amber - 203 XX 1 1 - 500 nL Amber - 203 XX 1 1 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2	HD GAC-1		FCL	-001		X					\times					
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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

March 16, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

RE: GAC 3-8-16

OrderNo.: 1603449

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 3/9/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report

Hall Environmental Analysis Laboratory, Inc.

Lab Order 1603449 Date Reported: 3/16/2016

CLIENT: Western Refining Southwest, In	nc.	(Client Sampl	e ID: Lag	
Project: GAC 3-8-16			Collection I	Date: 3/8/20	16 3:10:00 PM
Lab ID: 1603449-001	Matrix:	AQUEOUS	Received I	Date: 3/9/20	16 7:15:00 AM
Analyses	Result	PQL Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE					Analyst: TOM
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	3/9/2016 2:02:42 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	3/9/2016 2:02:42 PM
Surr: DNOP	90.7	63.2-161	%Rec	1	3/9/2016 2:02:42 PM
EPA METHOD 8015D: GASOLINE RANG	θE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	3/10/2016 3:46:44 PM
Surr: BFB	88.0	49.5-130	%Rec	1	3/10/2016 3:46:44 PM
EPA METHOD 8260: VOLATILES SHOR	T LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	3/11/2016 12:42:42 PM
Toluene	ND	1.0	µg/L	1	3/11/2016 12:42:42 PM
Ethylbenzene	ND	1.0	µg/L	1	3/11/2016 12:42:42 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	3/11/2016 12:42:42 PM
Xylenes, Total	ND	1.5	µg/L	1	3/11/2016 12:42:42 PM
Surr: 1,2-Dichloroethane-d4	95.3	70-130	%Rec	1	3/11/2016 12:42:42 PM
Surr: 4-Bromofluorobenzene	110	70-130	%Rec	1	3/11/2016 12:42:42 PM
Surr: Dibromofluoromethane	93.7	70-130	%Rec	1	3/11/2016 12:42:42 PM
Surr: Toluene-d8	97.9	70-130	%Rec	1	3/11/2016 12:42:42 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 7
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1603449

Hall Environmental Analysis Laboratory, Inc.

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Lab Order 1603449 Date Reported: 3/16/2016

CLIENT: Western Refining Southwest, I	nc.		Client Sample	e ID: Lead	
Project: GAC 3-8-16			Collection I	Date: 3/8/20	16 3:15:00 PM
Lab ID: 1603449-002	Matrix:	AQUEOUS	Received I	Date: 3/9/20	16 7:15:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE					Analyst: TOM
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	3/9/2016 3:07:11 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	3/9/2016 3:07:11 PM
Surr: DNOP	87.0	63.2-161	%Rec	1	3/9/2016 3:07:11 PM
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	3/10/2016 5:00:35 PM
Surr: BFB	83.4	49.5-130	%Rec	1	3/10/2016 5:00:35 PM
EPA METHOD 8260: VOLATILES SHOR	T LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	3/11/2016 1:10:58 PM
Toluene	ND	1.0	µg/L	1	3/11/2016 1:10:58 PM
Ethylbenzene	ND	1.0	µg/L	1	3/11/2016 1:10:58 PM
Methyl tert-butyl ether (MTBE)	1.7	1.0	µg/L	1	3/11/2016 1:10:58 PM
Xylenes, Total	ND	1.5	µg/L	1	3/11/2016 1:10:58 PM
Surr: 1,2-Dichloroethane-d4	98.5	70-130	%Rec	1	3/11/2016 1:10:58 PM
Surr: 4-Bromofluorobenzene	110	70-130	%Rec	1	3/11/2016 1:10:58 PM
Surr: Dibromofluoromethane	98.4	70-130	%Rec	1	3/11/2016 1:10:58 PM
Surr: Toluene-d8	103	70-130	%Rec	1	3/11/2016 1:10:58 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 7
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1603449

Hall Environmental Analysis Laboratory, Inc.

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Lab Order **1603449** Date Reported: **3/16/2016**

CLIENT: Western Refining Southwest, Ir	nc.		Clie	ent Samp	ole ID: Inlet	
Project: GAC 3-8-16			C	ollection	Date: 3/8/201	6 3:20:00 PM
Lab ID: 1603449-003	Matrix:	AQUEOUS	5 I	Received	Date: 3/9/201	5 7:15:00 AM
Analyses	Result	PQL (Qual U	Inits	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE						Analyst: TOM
Diesel Range Organics (DRO)	0.92	0.20	ı	mg/L	1	3/9/2016 3:28:44 PM
Motor Oil Range Organics (MRO)	ND	2.5	ı	mg/L	1	3/9/2016 3:28:44 PM
Surr: DNOP	92.3	63.2-161	0	%Rec	1	3/9/2016 3:28:44 PM
EPA METHOD 8015D: GASOLINE RANG	ε					Analyst: NSB
Gasoline Range Organics (GRO)	0.92	0.050	ı	mg/L	1	3/10/2016 5:25:07 PM
Surr: BFB	228	49.5-130	S G	%Rec	1	3/10/2016 5:25:07 PM
EPA METHOD 8260: VOLATILES SHOR	T LIST					Analyst: DJF
Benzene	ND	1.0	I	µg/L	1	3/11/2016 1:39:23 PM
Toluene	ND	1.0	I	µg/L	1	3/11/2016 1:39:23 PM
Ethylbenzene	12	1.0	1	µg/L	1	3/11/2016 1:39:23 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	1	µg/L	1	3/11/2016 1:39:23 PM
Xylenes, Total	8.5	1.5	1	µg/L	1	3/11/2016 1:39:23 PM
Surr: 1,2-Dichloroethane-d4	91.0	70-130	(%Rec	1	3/11/2016 1:39:23 PM
Surr: 4-Bromofluorobenzene	104	70-130	(%Rec	1	3/11/2016 1:39:23 PM
Surr: Dibromofluoromethane	89.5	70-130	0	%Rec	1	3/11/2016 1:39:23 PM
Surr: Toluene-d8	101	70-130	0	%Rec	1	3/11/2016 1:39:23 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 7
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Batch ID: 24165

PQL

0.20

SPK value SPK Ref Val

SPK value SPK Ref Val

0

0

2.500

0.2500

2.500

0.2500

Analysis Date: 3/9/2016

SampType: MSD

Batch ID: 24165

PQL

0.20

Analysis Date: 3/9/2016

Result

2.4

0.24

Result

2.4

0.24

Client: Project:	Western I GAC 3-8-	Refining S -16	outhwe	st, Inc.							
Sample ID MB-2	24165	SampT	ype: M	BLK	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID: PBW	1	Batch	n ID: 24	165	F	unNo: 3	2662				
Prep Date: 3/9/	/2016	Analysis D	ate: 3/	9/2016	S	eqNo: 9	99977	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organio	cs (DRO)	ND	0.20								
Motor Oil Range Orga	anics (MRO)	ND	2.5								
Surr: DNOP		0.35		0.5000		69.7	63.2	161			
Sample ID LCS	-24165	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID: LCS	w	Batch	n ID: 24	165	F	unNo: 3	2662				
Prep Date: 3/9/	/2016	Analysis D	ate: 3	9/2016	S	eqNo: 9	99978	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organio	cs (DRO)	2.3	0.20	2.500	0	92.0	65.4	162			
Surr: DNOP		0.23		0.2500		90.7	63.2	161			
Sample ID 1603	449-001BMS	SampT	уре: М	3	Tes	Code: El	PA Method	8015D: Diese	l Range		

RunNo: 32662

%REC

96.3

94.6

RunNo: 32662

%REC

94.8

94.8

SeqNo: 1000169

SeqNo: 1000168

LowLimit

LowLimit

73.3

63.2

73.3

63.2

TestCode: EPA Method 8015D: Diesel Range

Units: mg/L

HighLimit

174

161

Units: mg/L

HighLimit

174

161

%RPD

%RPD

1.57

0

RPDLimit

RPDLimit

20

0

Qual

Qual

Qualifiers:

Sample ID Client ID: Lag

Prep Date:

Surr: DNOP

Client ID:

Analyte

Surr: DNOP

Diesel Range Organics (DRO)

Analyte

3/9/2016

Sample ID 1603449-001BMSD

Lag

Prep Date: 3/9/2016

Diesel Range Organics (DRO)

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1603449

Page 5 of 7

16-Mar-16

Client: Project:	Western I GAC 3-8-	Refining So -16	outhwe	st, Inc.							
Sample ID	5ML RB	SampT	/pe: M	3LK	Test	tCode: El	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	PBW	Batch	ID: C3	2696	R	unNo: 3	2696				
Prep Date:		Analysis Da	ate: 3/	10/2016	S	eqNo: 1	001375	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Ranç Surr: BFB	ge Organics (GRO)	ND 18	0.050	20.00		89.0	49.5	130			
Sample ID	2.5UG GRO LCS	SampT	/pe: LC	s	Test	tCode: El	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	LCSW	Batch	ID: C3	2696	R	unNo: 3	2696				
Prep Date:		Analysis Da	ate: 3/	10/2016	S	eqNo: 1	001376	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
	ge Organics (GRO)	0.52	0.050	0.5000	0	104	80	120			
Surr: BFB		21		20.00		104	49.5	130			
Sample ID	1603449-001AMS	SampT	/pe: M \$	6	Test	tCode: E	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	Lag	Batch	ID: C3	2696	RunNo: 32696						
Prep Date:		Analysis Da	ate: 3/	10/2016	S	eqNo: 1	001379	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	ge Organics (GRO)	0.52	0.050	0.5000	0	103	70	130			
Surr: BFB		20		20.00		102	49.5	130			
						102	10.0				
Sample ID	1603449-001AMSI) SampTy	/pe: M \$		Test	-		8015D: Gasol	line Rang	e	
Sample ID Client ID:			/pe: M \$ ID: C3	SD		-	PA Method		line Rang	e	
•	Lag		ID: C3	SD 32696	R	Code: El	PA Method 2696		line Rang	e	
Client ID:	Lag	Batch	ID: C3	SD 32696 110/2016	R	Code: El	PA Method 2696	8015D: Gasol	line Rang	e RPDLimit	Qual
Client ID: Prep Date: Analyte	Lag	Batch Analysis Da	ID: C3 ate: 3/	SD 32696 110/2016	R	Code: El RunNo: 32 SeqNo: 10	PA Method 2696 001380	8015D: Gasol Units: mg/L	U		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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#:	1603449
	16 Man 16

Client: Western Project: GAC 3	n Refining S -8-16	outhwe	st, Inc.							
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260: Volatile	es Short I	_ist	
Client ID: PBW	Batch	n ID: A3	2762	F	RunNo: 32762					
Prep Date:	Analysis D)ate: 3/	11/2016	:	SeqNo: 1	1002963	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0					5			
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		90.8	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		114	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.6	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			
Sample ID 100ng Ics b	SampT	ype: LC	S	Tes	tCode: E	PA Method	8260: Volatile	es Short I	_ist	
Client ID: LCSW	Batch	n ID: A3	2762	F	RunNo: 3	32762				
Prep Date:	Analysis D	0ate: 3/	11/2016	:	SeqNo: 1	1002964	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.5	70	130			
Toluene	20	1.0	20.00	0	98.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.3		10.00		92.7	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		111	70	130			
Surr: Dibromofluoromethane	9.1		10.00		90.9	70	130			
Surr: Toluene-d8	9.8		10.00		98.3	70	130			
Sample ID 1603449-001a m	is SampT	туре: М	3	Tes	tCode: E	PA Method	8260: Volatil	es Short I	_ist	
Client ID: Lag	Batch	n ID: A3	2762	F	RunNo: 3	32762				
Prep Date:	Analysis D	0ate: 3/	11/2016	:	SeqNo: 1	1002966	Units: µg/L			
Analyte	Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.2	70	130			
Toluene	19	1.0	20.00	0	97.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.1	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		110	70	130			
Surr: Dibromofluoromethane	9.5		10.00		94.7	70	130			
Surr: Toluene-d8	9.3		10.00		93.5	70	130			
Sample ID 1603449-001a m	nsd SampT	туре: М	SD	Tes	tCode: E	PA Method	8260: Volatile	es Short I	_ist	
Client ID: Lag	Batch	n ID: A3	2762	F	RunNo: 3	32762				
Prep Date:	Analysis D)ate: 3/	11/2016	\$	SeqNo: 1	1002967	Units: µg/L			
Analyte	Result	PQL		SPK Ref Val	%REC		HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.0	70	130	6.43	20	
Qualifiers:										
 * Value exceeds Maximum 	Contaminant l	Level.		B Analyte	detected	in the associa	ted Method Bla	nk		
D Sample Diluted Due to M	latrix			E Value a	bove quar	ntitation range				

- Sample Diluted Due to Matrix D
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- \mathbf{S} % Recovery outside of range due to dilution or matrix
- Value above quantitation range E
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1603449
	16-Mar-16

Client:	Western Refining Southwest, Inc.
Project:	GAC 3-8-16

Sample ID 1603449-001a msd SampType: MSD			TestCode: EPA Method 8260: Volatiles Short List							
Client ID: Lag	Batch	ID: A3	2762	F	RunNo: 3	2762				
Prep Date:	Analysis Da	ate: 3 /	11/2016	S	SeqNo: 1	002967	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	20	1.0	20.00	0	102	70	130	4.84	20	
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.1	70	130	0	0	
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130	0	0	
Surr: Dibromofluoromethane	9.4		10.00		93.7	70	130	0	0	
Surr: Toluene-d8	9.7		10.00		97.4	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 7

ENVIRONMENTAL ANALYSIS LABORATORY TEL: 505-3-	nmental Analysis Laborat 4901 Hawkins Albuquerque, NM 87 45-3975 FAX: 505-345-4 www.halienvironmental.c	NE 109 Sam 107	ple Log-In Cheo	ck List
Client Name: Western Refining Southw Work Order N	lumber: 1603449	and and the	RcptNo: 1	
Received by/date: 03/09/11	Q			
Logged By: Lindsay Mangin 3/9/2016 7:15:0	00 AM	Higo		
Completed By: Lindsay Mangin 3/9/2016 8:24:1	8 AM	Auto		
Reviewed By: Q 63/69/16		000		
Chain of Custody			0	
1. Custody seals intact on sample bottles?	Yes 🗌	No 🗆	Not Present 🗹	
2. Is Chain of Custody complete?	Yes 🗹	No 🗆	Not Present	
3. How was the sample delivered?	Courier			
<u>Log In</u>				
4. Was an attempt made to cool the samples?	Yes 🗹	No 🗌	NA 🗌	
5. Were all samples received at a temperature of >0° C to 6.0°		No 🗔		
5. Were all samples received at a temperature of >0 °C to 6.0	C Yes 🗹	NO		
6. Sample(s) in proper container(s)?	Yes 🔽	No 🗌		
7. Sufficient sample volume for indicated test(s)?	Yes 🔽	No 🗆		
8. Are samples (except VOA and ONG) properly preserved?	Yes 🗹	No 🗆		
9. Was preservative added to bottles?	Yes 🗌	No 🔽	NA 🗌	
10.VOA vials have zero headspace?	Yes 🗹	No 🗆	No VOA Vials 🗌	
11. Were any sample containers received broken?	Yes	No 🔽	# of preserved	
10 -		1	bottles checked	
 Does paperwork match bottle labels? (Note discrepancies on chain of custody) 	Yes 🔽	No 🗌	for pH: (<2 or >12	unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes 🗹	No 🗌	Adjusted?	3/2
14, Is it clear what analyses were requested?	Yes 🗹	No 🗆		
 Were all holding times able to be met? (If no, notify customer for authorization.) 	Yes 🗸	No 🗌	Checked by:	
Special Handling (if applicable)				
16. Was client notified of all discrepancies with this order?	Yes 🗌	No 🗌	NA 🗹	
Person Notified:	Date			
By Whom:	Via: 🗌 eMail 🗌 P	hone 🗌 Fax	In Person	
Regarding:				
Client Instructions:				
17. Additional remarks:				
18. Cooler Information				
Cooler No Temp °C Condition Seal Intact Seal 1 1.1 Good Yes Yes	No Seal Date	Signed By		
1 1.1 Good Yes				

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

April 26, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

OrderNo.: 1604448

RE: GAC-Lead 4-7-16

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/12/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1604448 Date Reported: 4/26/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: GAC-Lead 4-7-16

Client Sample ID: GAC-Lead Collection Date: 4/7/2016 2:35:00 PM Received Date: 4/12/2016 8:45:00 AM

Lab ID: 1604448-001	Matrix:	AQUEOUS	Received D	ate: 4/12/2	016 8:45:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RAN	GE				Analyst: JME
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	4/14/2016 12:31:48 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	4/14/2016 12:31:48 PM
Surr: DNOP	130	63.2-161	%Rec	1	4/14/2016 12:31:48 PM
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	4/12/2016 4:14:16 PM
Surr: BFB	92.6	66.4-120	%Rec	1	4/12/2016 4:14:16 PM
EPA METHOD 8260: VOLATILES SH	HORT LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	4/18/2016 2:19:40 PM
Toluene	ND	1.0	µg/L	1	4/18/2016 2:19:40 PM
Ethylbenzene	ND	1.0	µg/L	1	4/18/2016 2:19:40 PM
Xylenes, Total	ND	1.5	µg/L	1	4/18/2016 2:19:40 PM
Surr: 1,2-Dichloroethane-d4	105	70-130	%Rec	1	4/18/2016 2:19:40 PM
Surr: 4-Bromofluorobenzene	102	70-130	%Rec	1	4/18/2016 2:19:40 PM
Surr: Dibromofluoromethane	102	70-130	%Rec	1	4/18/2016 2:19:40 PM
Surr: Toluene-d8	99.6	70-130	%Rec	1	4/18/2016 2:19:40 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 7
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1604448 Date Reported: 4/26/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: GAC-Lead 4-7-16

Client Sample ID: GAC-Inlet Collection Date: 4/7/2016 2:25:00 PM Received Date: 4/12/2016 8:45:00 AM

Lab ID: 1604448-002	Matrix:	AQUEOUS	Received D	ate: 4/12/2	016 8:45:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RAN	GE				Analyst: JME
Diesel Range Organics (DRO)	1.9	0.20	mg/L	1	4/14/2016 2:35:05 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	4/14/2016 2:35:05 PM
Surr: DNOP	109	63.2-161	%Rec	1	4/14/2016 2:35:05 PM
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst: NSB
Gasoline Range Organics (GRO)	1.2	0.050	mg/L	1	4/12/2016 5:27:44 PM
Surr: BFB	290	66.4-120	S %Rec	1	4/12/2016 5:27:44 PM
EPA METHOD 8260: VOLATILES SH	HORT LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	4/18/2016 2:47:49 PM
Toluene	ND	1.0	µg/L	1	4/18/2016 2:47:49 PM
Ethylbenzene	12	1.0	µg/L	1	4/18/2016 2:47:49 PM
Xylenes, Total	15	1.5	µg/L	1	4/18/2016 2:47:49 PM
Surr: 1,2-Dichloroethane-d4	102	70-130	%Rec	1	4/18/2016 2:47:49 PM
Surr: 4-Bromofluorobenzene	106	70-130	%Rec	1	4/18/2016 2:47:49 PM
Surr: Dibromofluoromethane	99.9	70-130	%Rec	1	4/18/2016 2:47:49 PM
Surr: Toluene-d8	98.2	70-130	%Rec	1	4/18/2016 2:47:49 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 7
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

	estern Refining South AC-Lead 4-7-16	west, Inc.							
Sample ID MB-24771	SampType:	MBLK	Tes	tCode: EF	PA Method	8015D: Diese	l Range		
Client ID: PBW	Batch ID:	24771	F	RunNo: 33	8517				
Prep Date: 4/13/2016	Analysis Date:	4/14/2016	5	GeqNo: 10	31260	Units: mg/L			
Analyte	Result PC	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO		20							
Motor Oil Range Organics (M	- /	2.5		4.40		101			
Surr: DNOP	0.74	0.5000		148	63.2	161			
Sample ID LCS-24771	SampType:	LCS	Tes	tCode: EF	PA Method	8015D: Diese	l Range		
Client ID: LCSW	Batch ID:	24771	F	RunNo: 33	8517				
Prep Date: 4/13/2016	Analysis Date:	4/14/2016	5	SeqNo: 10	31261	Units: mg/L			
Analyte	Result PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO) 3.5 0.	20 2.500	0	140	65.4	162			
Surr: DNOP	0.37	0.2500		149	63.2	161			
Sample ID 24771-LCS	2 SampType:	LCS	Tes	tCode: EF	PA Method	8015D: Diese	l Range		
Client ID: LCSW	Batch ID:	24771	F	RunNo: 33	3517				
Prep Date: 4/13/2016	Analysis Date:	4/14/2016	S	SeqNo: 10	31490	Units: mg/L			
Analyte	Result PG	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO) 3.1 0.	20 2.500	0	124	65.4	162			
Surr: DNOP	0.31	0.2500		126	63.2	161			
Sample ID 24771-LCS	3 SampType:	LCS	Tes	tCode: EF	A Method	8015D: Diese	l Range		
Client ID: LCSW	Batch ID:	24771	F	RunNo: 33	8517				
Prep Date: 4/13/2016	Analysis Date:	4/14/2016	S	SeqNo: 10)31491	Units: mg/L			
Analyte	Result PC	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO) 3.3 0.	20 2.500	0	134	65.4	162			
Surr: DNOP	0.33	0.2500		133	63.2	161			
Sample ID 24771-LCS	4 SampType:	LCS	Tes	tCode: EF	A Method	8015D: Diese	l Range		
Client ID: LCSW	Batch ID:	24771	F	RunNo: 33	3517		-		
Prep Date: 4/13/2016	Analysis Date:	4/14/2016	S	SeqNo: 10	31492	Units: mg/L			
Analyte	Result PC	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO) 3.2 0.	20 2.500	0	128	65.4	162			
Surr: DNOP	0.32	0.2500		129	63.2	161			

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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Client: Project:	Western I GAC-Lea	Refining So d 4-7-16	outhwe	st, Inc.							
Sample ID	1604448-001BMS	SampT	ype: M \$	6	Tes	tCode: E	PA Method	8015D: Diese	el Range		
Client ID:	GAC-Lead	Batch	ID: 24	771	F	RunNo: 3	3517				
Prep Date:	4/13/2016	Analysis D	ate: 4/	14/2016	S	SeqNo: 1	032110	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Organics (DRO)	3.1	0.20	2.500	0	123	73.3	174			
Surr: DNOP		0.23		0.2500		93.5	63.2	161			
Sample ID	1604448-001BMS	SampT	ype: M \$	SD	Tes	tCode: E	PA Method	8015D: Diese	el Range		
Client ID:	GAC-Lead	Batch	ID: 24	771	F	RunNo: 3	3517				
Prep Date:	4/13/2016	Analysis Da	ate: 4/	14/2016	5	SeqNo: 1	032111	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Organics (DRO)	3.3	0.20	2.500	0	131	73.3	174	6.26	20	
Surr: DNOP		0.24		0.2500		97.0	63.2	161	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 4 of 7

Analysis Date: 4/12/2016

SampType: MSD

Batch ID: A33471

Analysis Date: 4/12/2016

PQL

0.050

PQL

0.050

SPK value SPK Ref Val

SPK value SPK Ref Val

0.02540

0.02540

0.5000

20.00

0.5000

20.00

Result

Result

0.51

20

0.51

20

Client: Project:	Western I GAC-Lea	Refining S ad 4-7-16	Southwe	st, Inc.							
Sample ID	5ML RB	Samp	Гуре: МІ	BLK	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBW	Batc	h ID: A3	3471	F	RunNo: 3	3471				
Prep Date:		Analysis [Date: 4	12/2016	S	eqNo: 1	029510	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	je Organics (GRO)	ND	0.050								
Surr: BFB		18		20.00		88.5	66.4	120			
Sample ID	2.5UG GRO LCS	Samp	Гуре: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Sample ID Client ID:			Гуре: LC h ID: A3			tCode: E RunNo: 3		8015D: Gaso	line Rang	e	
	LCSW		h ID: A3	3471	F		3471	8015D: Gaso	line Rang	e	
Client ID:	LCSW	Batc	h ID: A3	3471 12/2016	F	RunNo: 3	3471		line Rang %RPD	e RPDLimit	Qual
Client ID: Prep Date: Analyte	LCSW	Batc Analysis [h ID: A3 Date: 4	3471 12/2016	ਜ 2	RunNo: 3 SeqNo: 1	3471 029511	Units: mg/L	Ū		Qual
Client ID: Prep Date: Analyte	LCSW	Batc Analysis [Result	h ID: A3 Date: 4/	3471 12/2016 SPK value	F S SPK Ref Val	RunNo: 3 SeqNo: 1 %REC	3471 029511 LowLimit	Units: mg/L HighLimit	Ū		Qual
Client ID: Prep Date: Analyte Gasoline Rang	LCSW Je Organics (GRO)	Batc Analysis I Result 0.47 20	h ID: A3 Date: 4/	3471 12/2016 SPK value 0.5000 20.00	F S SPK Ref Val 0	RunNo: 3 BeqNo: 1 <u>%REC</u> 94.5 100	3471 029511 LowLimit 80 66.4	Units: mg/L HighLimit 120	%RPD	RPDLimit	Qual

SeqNo: 1029520

%REC

97.4

101

RunNo: 33471

%REC

96.0

102

SeqNo: 1029521

LowLimit

LowLimit

70

66.4

70

TestCode: EPA Method 8015D: Gasoline Range

66.4

Units: mg/L

HighLimit

Units: mg/L

HighLimit

130

120

130

120

%RPD

%RPD

1.42

0

RPDLimit

RPDLimit

20

0

Page 5 of 7

Qual

Qual

Qualifiers:

Prep Date:

Gasoline Range Organics (GRO)

Gasoline Range Organics (GRO)

Sample ID 1604448-001AMSD

GAC-Lead

Analyte

Surr: BFB

Client ID:

Prep Date:

Surr: BFB

Analyte

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#:	1604448
	26-Apr-16

	n Refining S	Southwe	st, Inc.							
Project: GAC-L	lead 4-7-16									
Sample ID rb	SampT	Type: ME	BLK	Tes	tCode: El	PA Method	8260: Volatil	es Short L	₋ist	
Client ID: PBW	Batc	h ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis E	Date: 4/	18/2016	S	SeqNo: 1	034233	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	9.9		10.00		98.6	70	130			
Sample ID 100ng Ics	Samp	Type: LC	S	Tes	tCode: El	PA Method	8260: Volatil	es Short L	_ist	
Client ID: LCSW	Batc	h ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis [Date: 4/	18/2016	S	SeqNo: 1	034234	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	116	70	130			
Toluene	22	1.0	20.00	0	110	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		99.8	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			
Sample ID 1604448-001a n	ns SampT	Гуре: М	6	Tes	tCode: El	PA Method	8260: Volatil	es Short L	_ist	
Client ID: GAC-Lead	Batc	h ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis E	Date: 4/	18/2016	5	SeqNo: 1	034236	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	0	119	70	130			
Toluene	23	1.0	20.00	0	115	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			
Sample ID 1604448-001a n	nsd Samp]	Гуре: МS	SD	Tes	tCode: El	PA Method	8260: Volatil	es Short L	ist	
Client ID: GAC-Lead	Batc	h ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis E	Date: 4/	18/2016	S	SeqNo: 1	034237	Units: µg/L			
Analyte	Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Denzone	23	1.0	20.00	0	115	70	130	2.91	20	
Benzene	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 6 of 7

WO#: 1604448 26-Apr-16

Client: Western Refining Southwest, Inc. **Project:**

GAC-Lead 4-7-16

Sample ID 1604448-001a m	sd SampT	ype: MS	SD	Tes	tCode: E	PA Method	8260: Volatile	es Short L	.ist	
Client ID: GAC-Lead	Batch	n ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis D	ate: 4/	18/2016	5	SeqNo: 1	034237	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		103	70	130	0	0	
Surr: Toluene-d8	9.8		10.00		97.9	70	130	0	0	

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 7

Client Name: Western/Refining Southw	Work Order Number:	16044	48	95.22C	RcptNo: 1	1
Nin	nulistica					
Received by/date:	UTITAN			A		
Logged By: Ashley Gallegos	4/12/2016 8:45:00 AM			AF		
Completed By: Ashley Gallegos	4/12/2016 10:20:56 AM			AJ		
Reviewed By:	4/12/16			4,473		
Chain of Custody						
1. Custody seals intact on sample bottles?		100		No 🗌	Not Present 🔽	
2. Is Chain of Custody complete?		Yes	~	No	Not Present	
3. How was the sample delivered?		FedE	×			
Log In						
4. Was an attempt made to cool the samples?		Yes	•	No 🗌	NA 🗆	
5. Were all samples received at a temperature	of >0° C to 6.0°C	Yes	•	No 🗌		
6. Sample(s) in proper container(s)?		Yes	•	No 🗌		
7. Sufficient sample volume for indicated test(5)?	Yes	\checkmark	No 🗌		
8. Are samples (except VOA and ONG) proper	ly preserved?	Yes	\checkmark	No 🗌		
9. Was preservative added to bottles?		Yes		No 🗹	NA 🗌	
10. VOA vials have zero headspace?		Yes		No 🗆	No VOA Vials	
11. Were any sample containers received brok	en?	Yes		No 🗹	# of preserved	
12 -		Vee		No 🗔	bottles checked for pH:	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes	×.		1003863200200	>12 unless noted)
13. Are matrices correctly identified on Chain of	Custody?	Yes	V	No 🗆	Adjusted?	
14. Is it clear what analyses were requested?		Yes	~	No 🗌		
15. Were all holding times able to be met?		Yes		No 🗌	Checked by:	
(If no, notify customer for authorization.)						
Special Handling (if applicable)						
16. Was client notified of all discrepancies with	this order?	Yes		No 🗌	NA 🗹	2
Person Notified:	Date	-				
By Whom:	Via: [eMa	ail 🗌	Phone 🗌 Fax	In Person	
Regarding:						
Client Instructions:						
17. Additional remarks:						-

Client: Western Refining Mailing Address: #50 CR 4990 Bloomfield, NM 87413 Phone #: 505-632-4135	;					1			Ì		į		HALL ENVIRONMENIAL	
ress: #50 CR 4990 Bloomfield, NM 87413 05-632-4135	X	X Standard	C Rush			Г	A	IAI	XS	ISI	A	Ő	ANALYSIS LABORATORY	RY
ress: #50 CR 4990 Bloomfield, NM 87413 605-632-4135	Proj	Project Name:	: GAC - Lead	ead			>	ww.hs	llenvi	www.hallenvironmental.com	ntal.cc	E		
Bloomfield, NM 87413 505-632-4135	Date:		4-7-	16	4	901 H	awkin	s NE	- Alb	4901 Hawkins NE - Albuquerque, NM 87109	ue, N	M 871	60	
505-632-4135	Proj	Project #:				Tel. 505-345-3975	5-345	-3975		Fax 505-345-4107	5-345	4107		
	PO	PO#12615519	519						Analy	Analysis Request	quest			
email or Fax#;	Proj	Project Manager:	ger:		_		-	-		-	_	-		
QA/QC Package:	alidation)							(SM		00.0012004			p	
	San	Sampler:				_	2000					~~~~	apu	
EDD (Type)	On Ice:	ice:	Z Yes	ON []						0.00			19JX	
	San	Sample Temperature:	oerature: (9				-	2.1.1.2			0.425 044	a c	~~~
Time Matrix Sample Request ID		Container Type and #	Preservativ e Type	HEAL NO.	BTEX + MT	RTEX + M 3∂†08 H91	tPH (Meth	PAH (8310 PAH (8310	М 8 АЯЭЯ), T) snoinA 1808 Pesti	OV) 80858	m92) 0728	90155 DR	Air Bubble:
1475 H20 GAC - Lead		5 VOA	HCI	100-		×				_	×			
1435 H20 GAC - Lead		1-500-ml Amber	Cool									×		
425 H20 GAC -Inlet			HCI	-003		×				_	×			
1425 H20 GAC -Inlet		1-500-ml Amber	Cool									×		
						_							_	
														-
,		1	V					-						
Time: Relinquished by	Rece	Received by:	A	Allizillo ORUS	Remarks	is:								
Time: Relinquished by:	Rec	Received by:	2	Date Time										



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

May 04, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

OrderNo.: 1604448

RE: GAC-Lead 4-7-16

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/12/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued April 26, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> 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.

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1604448 Date Reported: 5/4/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

GAC-Lead 4-7-16

1604448-001

Project:

Lab ID:

Client Sample ID: GAC-Lead Collection Date: 4/7/2016 2:35:00 PM

Received Date: 4/12/2016 8:45:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RAN	GE				Analysi	: JME
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	4/14/2016 12:31:48 PN	24771
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	4/14/2016 12:31:48 PN	24771
Surr: DNOP	130	63.2-161	%Rec	1	4/14/2016 12:31:48 PN	24771
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	4/12/2016 4:14:16 PM	A33471
Surr: BFB	92.6	66.4-120	%Rec	1	4/12/2016 4:14:16 PM	A33471
EPA METHOD 8260: VOLATILES SI	HORT LIST				Analyst	DJF
Benzene	ND	1.0	µg/L	1	4/18/2016 2:19:40 PM	A33608
Toluene	ND	1.0	µg/L	1	4/18/2016 2:19:40 PM	A33608
Ethylbenzene	ND	1.0	µg/L	1	4/18/2016 2:19:40 PM	A33608
Methyl tert-butyl ether (MTBE)	1.5	1.0	µg/L	1	4/18/2016 2:19:40 PM	A33608
Xylenes, Total	ND	1.5	µg/L	1	4/18/2016 2:19:40 PM	A33608
Surr: 1,2-Dichloroethane-d4	105	70-130	%Rec	1	4/18/2016 2:19:40 PM	A33608
Surr: 4-Bromofluorobenzene	102	70-130	%Rec	1	4/18/2016 2:19:40 PM	A33608
Surr: Dibromofluoromethane	102	70-130	%Rec	1	4/18/2016 2:19:40 PM	A33608
Surr: Toluene-d8	99.6	70-130	%Rec	1	4/18/2016 2:19:40 PM	A33608

Matrix: AQUEOUS

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 ass

- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 5/4/2016

CLIENT: Western Refining Southwest, Inc.

Project: GAC-Lead 4-7-16 Lab ID:

Surr: Toluene-d8

Collection Date: 4/7/2016 2:25:00 PM Received Date: 4/12/2016 8:45:00 AM

Client Sample ID: GAC-Inlet

1604448-002 Matrix: AQUEOUS Analyses Result **POL Oual Units DF** Date Analyzed Batch **EPA METHOD 8015D: DIESEL RANGE** Analyst: JME **Diesel Range Organics (DRO)** 1.9 0.20 mg/L 1 4/14/2016 2:35:05 PM 24771 Motor Oil Range Organics (MRO) ND 2.5 mg/L 1 4/14/2016 2:35:05 PM 24771 Surr: DNOP 109 63.2-161 %Rec 4/14/2016 2:35:05 PM 24771 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) 4/12/2016 5:27:44 PM 1.2 0.050 mg/L 1 A33471 A33471 Surr: BFB 290 66.4-120 S %Rec 1 4/12/2016 5:27:44 PM **EPA METHOD 8260: VOLATILES SHORT LIST** Analyst: DJF 4/18/2016 2:47:49 PM Benzene ND A33608 1.0 µg/L 1 Toluene ND 1.0 µg/L 1 4/18/2016 2:47:49 PM A33608 A33608 Ethylbenzene 12 1.0 µg/L 1 4/18/2016 2:47:49 PM Methyl tert-butyl ether (MTBE) ND 1.0 µg/L 1 4/18/2016 2:47:49 PM A33608 Xylenes, Total 15 1.5 µg/L 4/18/2016 2:47:49 PM A33608 1 %Rec Surr: 1,2-Dichloroethane-d4 102 70-130 1 4/18/2016 2:47:49 PM A33608 Surr: 4-Bromofluorobenzene 106 70-130 %Rec 4/18/2016 2:47:49 PM A33608 1 Surr: Dibromofluoromethane 99.9 %Rec A33608 70-130 1 4/18/2016 2:47:49 PM

70-130

%Rec

1

4/18/2016 2:47:49 PM

A33608

98.2

1.1. 4.6 a 1.0 on.

Refer to the QC Summary report and sample login checklist for flagged QC data and preservatio

Oualifiers:	*	Value exceeds Maximum Contaminant Level.	
Z	D	Sample Diluted Due to Matrix	
	Н	Holding times for preparation or analysis exceeded	
	ND	Not Detected at the Reporting Limit	
	R	RPD outside accepted recovery limits	F
	S	% Recovery outside of range due to dilution or matrix	

- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 7
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

	Refining Southwest, Inc. ead 4-7-16						
Sample ID MB-24771	SampType: MBLK	Те	stCode: EPA Method	8015D: Diesel R	lange		
Client ID: PBW	Batch ID: 24771		RunNo: 33517				
Prep Date: 4/13/2016	Analysis Date: 4/14/2010	6	SeqNo: 1031260	Units: mg/L			
Analyte	Result PQL SPK v	alue SPK Ref Val	%REC LowLimit	HighLimit %	6RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND 0.20						
Motor Oil Range Organics (MRO) Surr: DNOP	ND 2.5 0.74 0.5	5000	148 63.2	161			
	0.74 0.3	000	140 03.2	101			
Sample ID LCS-24771	SampType: LCS	Те	stCode: EPA Method	8015D: Diesel R	lange		
Client ID: LCSW	Batch ID: 24771		RunNo: 33517				
Prep Date: 4/13/2016	Analysis Date: 4/14/2010	5	SeqNo: 1031261	Units: mg/L			
Analyte	Result PQL SPK v	alue SPK Ref Val	%REC LowLimit	HighLimit %	6RPD	RPDLimit	Qual
Diesel Range Organics (DRO)		.500 0	140 65.4	162			
Surr: DNOP	0.37 0.2	2500	149 63.2	161			
Sample ID 24771-LCS2	SampType: LCS	Те	stCode: EPA Method	8015D: Diesel R	lange		
Client ID: LCSW	Batch ID: 24771		RunNo: 33517				
Prep Date: 4/13/2016	Analysis Date: 4/14/2010	5	SeqNo: 1031490	Units: mg/L			
Analyte	Result PQL SPK v	alue SPK Ref Val	%REC LowLimit	HighLimit %	6RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.1 0.20 2	.500 0	124 65.4	162			
Surr: DNOP	0.31 0.2	2500	126 63.2	161			
Sample ID 24771-LCS3	SampType: LCS	Те	stCode: EPA Method	8015D: Diesel R	ange		
Client ID: LCSW	Batch ID: 24771		RunNo: 33517				
Prep Date: 4/13/2016	Analysis Date: 4/14/2010	5	SeqNo: 1031491	Units: mg/L			
Analyte	Result PQL SPK v	alue SPK Ref Val	%REC LowLimit	HighLimit %	6RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.3 0.20 2	.500 0	134 65.4	162			
Surr: DNOP	0.33 0.2	2500	133 63.2	161			
Sample ID 24771-LCS4	SampType: LCS	Те	stCode: EPA Method	8015D: Diesel R	lange		
Client ID: LCSW	Batch ID: 24771		RunNo: 33517				
Prep Date: 4/13/2016	Analysis Date: 4/14/2010	;	SeqNo: 1031492	Units: mg/L			
Analyte	Result PQL SPK v	alue SPK Ref Val	%REC LowLimit	HighLimit %	6RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.2 0.20 2	.500 0	128 65.4	162			
Surr: DNOP	0.32 0.2	2500	129 63.2	161			

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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 3 of 7

	Refining S ad 4-7-16	outhwe	st, Inc.							
Sample ID 1604448-001BMS	SampT	уре: М	6	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: GAC-Lead	Batch	n ID: 24	771	F	RunNo:	33517				
Prep Date: 4/13/2016	Analysis D	Date: 4/	14/2016	S	SeqNo:	1032110	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.1	0.20	2.500	0	123	73.3	174			
Surr: DNOP	0.23		0.2500		93.5	63.2	161			
Sample ID 1604448-001BMS	D SampT	уре: М	SD	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: GAC-Lead	Batch	h ID: 24	771	F	RunNo:	33517				
Prep Date: 4/13/2016	Analysis D	Date: 4/	14/2016	S	SeqNo:	1032111	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.3	0.20	2.500	0	131	73.3	174	6.26	20	
Surr: DNOP	0.24		0.2500		97.0	63.2	161	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 4 of 7

ND

0.51

20

0.050

0.5000

20.00

0.02540

0.050

	Refining S ad 4-7-16	outhwe	st, Inc.								
B	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e		
	Batch	n ID: A3	3471	F	RunNo: 3	3471					
	Analysis D	ate: 4/	12/2016	S	SeqNo: 1	029510	Units: mg/L				
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
rs (CPO)		0.050									

Surr: BFB	• • •	18		20.00		88.5	66.4	120			
Sample ID	2.5UG GRO LCS	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	LCSW	Batch	n ID: A3	3471	F	RunNo: 3	3471				
Prep Date:		Analysis D	ate: 4/	12/2016	S	SeqNo: 1	029511	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	0.47	0.050	0.5000	0	94.5	80	120			
Surr: BFB		20		20.00		100	66.4	120			
Sample ID	1604448-001AMS	SampT	ype: MS	3	Tes	tCode: E	PA Method	8015D: Gaso	line Rang	e	
Client ID:	GAC-Lead	Batch	n ID: A3	3471	F	RunNo: 3	3471				
Prep Date:		Analysis D	ate: 4/	12/2016	S	SeqNo: 1	029520	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val		Loud imit	HighLimit	%RPD	RPDLimit	Qual
		Result	FQL			%REC	LowLimit	Tighting			Quui
Gasoline Range	e Organics (GRO)	0.51	0.050	0.5000	0.02540	97.4	20wLinit 70	130			Quai
Gasoline Range Surr: BFB	e Organics (GRO)										Quai
Surr: BFB	e Organics (GRO) 1604448-001AMSE	0.51 20		0.5000 20.00	0.02540	97.4 101	70 66.4	130			
Surr: BFB		0.51 20 D SampT	0.050	0.5000 20.00	0.02540 Tes	97.4 101	70 66.4 PA Method	130 120			
Surr: BFB	1604448-001AMSE	0.51 20 D SampT	0.050 ype: MS	0.5000 20.00 SD 3471	0.02540 Tes F	97.4 101 tCode: E	70 66.4 PA Method 3471	130 120			

Qualifiers:

Client:

Project:

Client ID:

Prep Date:

Analyte

Sample ID 5ML RB

PBW

Gasoline Range Organics (GRO)

Gasoline Range Organics (GRO)

Surr: BFB

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range

96.0

102

70

66.4

130

120

1.42

0

20

0

Page 5 of 7

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

WO#:	1604448
	04-May-16

	n Refining S Lead 4-7-16	Southwe	st, Inc.							
Sample ID rb	Samp	Гуре: МЕ	BLK	Tes	tCode: E	PA Method	8260: Volatil	es Short I	_ist	
Client ID: PBW	Batc	h ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis [Date: 4/	18/2016	S	SeqNo: 1	034233	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0					Ū			
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	9.9		10.00		98.6	70	130			
Sample ID 100ng Ics	Samp	Гуре: LC	S	Tes	tCode: E	PA Method	8260: Volatil	es Short I	_ist	
Client ID: LCSW	Batc	h ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis [Date: 4/	18/2016	5	SeqNo: 1	034234	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	116	70	130			
Toluene	22	1.0	20.00	0	110	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		99.8	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			
Sample ID 1604448-001a n	ns Samp ⁻	Гуре: М	3	Tes	tCode: E	PA Method	8260: Volatil	es Short I	₋ist	
Client ID: GAC-Lead	Batc	h ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis [Date: 4/	18/2016	5	SeqNo: 1	034236	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	0	119	70	130			
Toluene	23	1.0	20.00	0	115	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			
Sample ID 1604448-001a n	nsd Samp	Гуре: М	SD	Tes	tCode: E	PA Method	8260: Volatil	es Short I	ist	
Client ID: GAC-Lead	Batc	h ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis [Date: 4/	18/2016	5	SeqNo: 1	034237	Units: µg/L			
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Analyte	23	1.0	20.00		115	70	130	2.91	20	

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 7

WO#: 1604448 04-May-16

Client: Western Refining Southwest, Inc. **Project:**

GAC-Lead 4-7-16

Sample ID 1604448-001a ms	d SampT	ype: MS	SD	Tes	tCode: El	PA Method	8260: Volatil	es Short L	ist	
Client ID: GAC-Lead	Batch	n ID: A3	3608	F	RunNo: 3	3608				
Prep Date:	Analysis D	ate: 4/	18/2016	S	SeqNo: 1	034237	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	22	1.0	20.00	0	108	70	130	6.34	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		103	70	130	0	0	
Surr: Toluene-d8	9.8		10.00		97.9	70	130	0	0	

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 7

ENVIRONMENTAL		^{s NE} 7109 Sam j 4107	ole Log-In Chec	k List
Client Name: Western/Refining Southw Work Order Number	1604448		RoptNo: 1	
Received by/date: A 04/12/10	0			
	6	AF		
		4		
Completed By: Ashley Gallegos 4/12/2016 10:20:56 Al	M	Af		
Reviewed By: 04/12/16				
Chain of Custody	10 9515			
 Custody seals intact on sample bottles? 	Yes 🗌	No 🗌	Not Present	
2. Is Chain of Custody complete?	Yes 🗹	No 🗌	Not Present	
3. How was the sample delivered?	FedEx			
Log In				
 Was an attempt made to cool the samples? 	Yes 🔽	No 🗌		
was an altempt made to cost the samples:	100 121			
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes 🖌	No 🗌		
	-			
6. Sample(s) in proper container(s)?	Yes 🗹	No 🗌		
7. Sufficient sample volume for indicated test(s)?	Yes 🔽	No 🗌		
8. Are samples (except VOA and ONG) properly preserved?	Yes 🔽	No 🗌		
9. Was preservative added to bottles?	Yes 🗆	No 🗹	NA 🗆	
10. VOA vials have zero headspace?	Yes 🗹	No 🗌	No VOA Vials	
11. Were any sample containers received broken?	Yes 🗀	No 🗹	# of preserved	
12. Does paperwork match bottle labels?	Yes 🗸	No 🗔	bottles checked for pH:	
(Note discrepancies on chain of custody)	100 (2.)	2005 2000		unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes 🔽	No 🗌	Adjusted?	
14. Is it clear what analyses were requested?	Yes 🔽	No 🗌		
15. Were all holding times able to be met?	Yes 🔽	No 🗌	Checked by:	
(If no, notify customer for authorization.)				
Special Handling (if applicable)	-		200 FB	
16. Was client notified of all discrepancies with this order?	Yes	No	NA 🗹	
Person Notified: Date	Γ			
By Whom: Via:	🗌 eMail 📋	Phone 🗌 Fax	In Person	
Regarding:				
Client Instructions:				
17. Additional remarks:				
18. Cooler Information				
18. Cooler Information Cooler No Temp °C Condition Seal Intact Seal No	Seal Date	Signed By	l I	
1 1.6 Good Yes	oour pate	orginoe by	1	

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	Client: Western Ketining	Buit	X Standard	C Rush		1	Π	A	AN	Z	SI	P	õ	ANALYSIS LABORATORY	RY
1			Project Name:	: GAC - Lead	ead	a.		5	h.ww	allenv	www.hallenvironmental.com	ental.c	E		
Mailing Address:		#50 CR 4990	Date:	4.7.	16		4901 Hawkins NE - Albuquerque, NM 87109	lawkir	s NE	- Alb	nquer	due, h	IM 87	109	
i õ	mfield	Bloomfield, NM 87413	Project #:				Tel. 5	Tel. 505-345-3975	5-397	-	Fax 505-345-4107	5-34	5-410	2	
T	505-632-4135	35	PO#12615519	519						Analy	Analysis Request	sanba			
(I			Project Manager:	ger:		_			-	_	_			_	
QA/QC Package:		X Level 4 (Full Validation)							ISM	low	01010001000000			p	
			Sampler:										_	əpu	
X EDD (Type)			On Ice:	ZYes	ON []	_			-		0.00			191X	
8 1			Sample Temperature:	perature: 1	9				-	2.1.1.2				E C	
Time	Matrix	Sample Request ID	Container Type and #	Preservativ e Type	HEAL NO.	BTEX + MT	IM + XƏT8	ntem) H9T	EDB (Weth PAH (8310	RCRA 8 M), F) anoinA	8081 Pesti 8081 Pesti	m92) 0728	901 83108	Air Bubble:
1435	H ₂ O	GAC - Lead	5 VOA	HCI	100-		×		_			×			
62H1	H ₂ O	GAC - Lead	1-500-ml Amher	Cool										×	
574	H ₂ O	GAC -Inlet	5 VOA	HCI	-003		×	6				×			
1425	H ₂ O	GAC -Inlet	1-500-ml Amber	Cool			_							×	
											+++				+++
Time: IL IK	Relinquished by	pot by	Received by:	A	8	Remarks	rks:				1	-		-	-
	Relinquished by:	ed by:	Received by:		Date Time										



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

May 24, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

RE: GAC Lead 5-4-2016

OrderNo.: 1605208

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 5/5/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1605208 Date Reported: 5/24/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. GAC Lead 5-4-2016

1605208-001

Project:

Lab ID:

Client Sample ID: GAC-Lead Collection Date: 5/4/2016 11:00:00 AM Received Date: 5/5/2016 7:15:00 AM

Eub ID . 1000200 001	TT THE TAX	ngelees	neeenveu	Duccion	2010 /110.00 1101	
Analyses	Result	PQL Q	ıal Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RAN	GE				Analyst	: KJH
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	5/12/2016 1:17:48 PM	25259
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	5/12/2016 1:17:48 PM	25259
Surr: DNOP	111	63.2-161	%Rec	1	5/12/2016 1:17:48 PM	25259
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	5/9/2016 11:02:40 AM	A34079
Surr: BFB	91.4	66.4-120	%Rec	1	5/9/2016 11:02:40 AM	A34079
EPA METHOD 8260: VOLATILES SH	HORT LIST				Analyst	RAA
Benzene	ND	1.0	μg/L	1	5/10/2016 7:14:00 PM	B34127
Toluene	ND	1.0	μg/L	1	5/10/2016 7:14:00 PM	B34127
Ethylbenzene	ND	1.0	μg/L	1	5/10/2016 7:14:00 PM	B34127
Methyl tert-butyl ether (MTBE)	1.1	1.0	μg/L	1	5/10/2016 7:14:00 PM	B34127
Xylenes, Total	ND	1.5	μg/L	1	5/10/2016 7:14:00 PM	B34127
Surr: 1,2-Dichloroethane-d4	90.6	70-130	%Rec	1	5/10/2016 7:14:00 PM	B34127
Surr: 4-Bromofluorobenzene	98.9	70-130	%Rec	1	5/10/2016 7:14:00 PM	B34127
Surr: Dibromofluoromethane	86.2	70-130	%Rec	1	5/10/2016 7:14:00 PM	B34127
Surr: Toluene-d8	97.0	70-130	%Rec	1	5/10/2016 7:14:00 PM	B34127

Matrix: AQUEOUS

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associa

- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- ciated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 5 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 5/24/2016

CLIENT: Western Refining Southwest, Inc. GAC Lead 5-4-2016

1605208-002

Project:

Lab ID:

Client Sample ID: GAC-Inlet Collection Date: 5/4/2016 10:50:00 AM

Received Date: 5/5/2016 7:15:00 AM

Analyses	Result	PQL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RAN	GE				Analyst	: KJH
Diesel Range Organics (DRO)	1.3	0.20	mg/L	1	5/12/2016 2:23:14 PM	25259
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	5/12/2016 2:23:14 PM	25259
Surr: DNOP	118	63.2-161	%Rec	1	5/12/2016 2:23:14 PM	25259
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst	: NSB
Gasoline Range Organics (GRO)	1.3	0.050	mg/L	1	5/9/2016 11:27:15 AM	A34079
Surr: BFB	295	66.4-120	S %Rec	1	5/9/2016 11:27:15 AM	A34079
EPA METHOD 8260: VOLATILES SH	IORT LIST				Analyst	RAA
Benzene	ND	1.0	µg/L	1	5/10/2016 7:38:00 PM	B34127
Toluene	ND	1.0	µg/L	1	5/10/2016 7:38:00 PM	B34127
Ethylbenzene	10	1.0	µg/L	1	5/10/2016 7:38:00 PM	B34127
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	5/10/2016 7:38:00 PM	B34127
Xylenes, Total	31	1.5	µg/L	1	5/10/2016 7:38:00 PM	B34127
Surr: 1,2-Dichloroethane-d4	92.2	70-130	%Rec	1	5/10/2016 7:38:00 PM	B34127
Surr: 4-Bromofluorobenzene	96.0	70-130	%Rec	1	5/10/2016 7:38:00 PM	B34127
Surr: Dibromofluoromethane	88.3	70-130	%Rec	1	5/10/2016 7:38:00 PM	B34127
Surr: Toluene-d8	98.1	70-130	%Rec	1	5/10/2016 7:38:00 PM	B34127

Matrix: AQUEOUS

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associat

- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- iated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 5 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Client: Project:		Refining Sc nd 5-4-2016		st, Inc.							
Sample ID	1605208-001CMS	SampTy	pe: MS	3	Tes	Code: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC-Lead	Batch	ID: 25	259	F	unNo: 34	4172				
Prep Date:	5/11/2016	Analysis Da	ate: 5 /	12/2016	S	eqNo: 1	053992	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	Organics (DRO)	2.7	0.20	2.500	0	108	73.3	174			
Surr: DNOP		0.28		0.2500		113	63.2	161			
Sample ID	1605208-001CMS	ICMSD SampType: MSD TestCode: EPA Method 8015D: Diesel Range									
Client ID:	GAC-Lead	Batch ID: 25259 RunNo: 34172									
Prep Date:	5/11/2016	Analysis Da	ate: 5 /	12/2016	S	eqNo: 1	053993	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	Organics (DRO)	2.8	0.20	2.500	0	112	73.3	174	3.73	20	
Surr: DNOP		0.30		0.2500		118	63.2	161	0	0	
Sample ID	LCS-25259	SampTy	ype: LC	S	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	LCSW	Batch	ID: 25	259	F	unNo: 34	4172				
Prep Date:	5/11/2016	Analysis Da	ate: 5 /	12/2016	S	eqNo: 1	053995	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	Organics (DRO)	2.8	0.20	2.500	0	111	65.4	162			
Surr: DNOP		0.27		0.2500		109	63.2	161			
Sample ID	MB-25259	SamnTv	ne. ME	RI K	Tes	Code: FI	PA Method	8015D: Diese	Range		

Sample ID MB-25259	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID: PBW	Batch	n ID: 25	259	F	RunNo: 3	4172				
Prep Date: 5/11/2016	Analysis D	ate: 5/	12/2016	S	SeqNo: 1	053996	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP			0.5000			63.2	161			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 3 of 5

	ern Refining S Lead 5-4-201		st, Inc.							
Sample ID 5ML RB	Samp	Гуре: МЕ	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBW	Batc	h ID: A3	4079	F	RunNo: 3	4079				
Prep Date:	Analysis E	Date: 5/	9/2016	S	SeqNo: 1	050450	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		91.8	66.4	120			
Sample ID 2.5UG GRO L	CS Samp	Гуре: LC	S	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSW	Batc	h ID: A3	4079	F	RunNo: 3	4079				
Prep Date:	Analysis [Date: 5/	9/2016	S	eqNo: 1	050451	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.45	0.050	0.5000	0	89.4	80	120			
Surr: BFB	21		20.00		106	66.4	120			

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 4 of 5

Qual

Client: Project:		m Refining S Lead 5-4-201		st, Inc.						
Sample ID 1	00ng LCS	SampT	ype: LC	S	Tes	tCode: El	PA Method	8260: Volatile	es Short L	ist
Client ID: L	.CSW	Batch	n ID: B3	4127	RunNo: 34127					
Prep Date:		Analysis D	ate: 5/	10/2016	S	eqNo: 1	052228	Units: µg/L		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RP
Benzene		19	1.0	20.00	0	95.2	70	130		
Toluene		21	1.0	20.00	0	105	70	130		
Surr: 1,2-Dichle	oroethane-d4	9.5		10.00		94.9	70	130		

Toluene	21	1.0	20.00	0	105	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		94.9	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.6	70	130			
Surr: Dibromofluoromethane	9.3		10.00		93.5	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260: Volatile	es Short L	ist	
Client ID: PBW	Batch	n ID: B3	4127	F	RunNo: 3	4127				
Prep Date:	Analysis D	ate: 5/	10/2016	5	SeqNo: 1	052229	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.2		10.00		91.8	70	130			
Surr: Toluene-d8	9.9		10.00		98.7	70	130			

RPDLimit

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 5 of 5

ANA	IRO	NMENTAI IS TORY	L	TEL:	invironmental Albi 505-345-3975 bsite: www.ha	4901 iquerqui FAX: 5	Hawkin: 9, NM 87 95-345-4	NE 7109 Sa	amj	ole Log-In Check	List
Client Name	. W	/estern Ref	ning Southw	Work Q	rder Number	16052	08			RcptNo: 1	
Received by/	date:	4	6	050	25/16						
Logged By:		.indsay Ma	ngin	5/5/2016	7:15:00 AM			Augh	lipo		
Completed B	y: 1	_indsay Ma	ngin	5/5/2016	9:23:34 AM			Andyth	-		
Reviewed By		A	05105	116				0	Č		
Chain of C	usto										
1 Custody	seals	intact on sar	mple bottles?			Yes		No		Not Present 🗹	
2. Is Chain	of Cus	tody comple	ete?			Yes	~	No		Not Present	
3. How was	the sa	ample delive	ered?			Cour	ier				
I and the											
Log In			1.0			Yes		No			
4. Was and	attemp	ot made to c	cool the sampl	esr		res		NO			
5. Were all	samp	es received	at a temperat	ture of >0°C t	o 6.0°C	Yes	V	No		NA	
6. Sample(s) in p	roper contai	iner(s)?			Yes		No			
7. Sufficient	samp	ole volume f	or indicated te	st(s)?		Yes	~	No			
8. Are same	oles (e	xcept VOA	and ONG) pro	perly preserve	d?	Yes	~	No			
9. Was pres	ervat	ve added to	bottles?			Yes		No	~	NA 🗆	
10.VOA vial	s have	e zero heads	space?			Yes	V	No		No VOA Vials	
			ers received b	roken?		Yes		No			
										# of preserved bottles checked	
12. Does pag				19		Yes	\checkmark	No		for pH: (<2 or >12 unl	ess noted)
			ain of custody			Yes		No		Adjusted?	ess noted)
			itified on Chair			Yes		No	n	1.00520.0000	
15. Were all			ere requested	1		Yes		No		Checked by:	
	tify cu	stomer for a	authorization)								
			CONVERSION NO.	vith this order?		Yes		No		NA 🗹	
0.20	_	lotified:			Date				-		
8.5	Whor	CONTRACTOR OF			Via:	eM	ail 🗍	Phone	Fax	In Person	
1.1.2	gardir				100 A 10				1800		
		structions:							-		
17. Addition	al ren	, narks:									
18. Cooler	Inform	nation									
Cook		Temp °C	Condition	Seal Intact	Seal No	Seal D	ate	Signed E	Зy		
1		1.5	Good	Yes							

Client Western Refining X Standard Rank Standard And LYSIS LaBORATION Client Western Refining Propert Name: GAC - Lead And LYSIS LaBORATION Propert Name: GAC - Lead And LYSIS LaBORATION All Infin Address: #50 CR 4590 Propert Name: GAC - Lead And LYSIS LaBORATION Propert Name: GAC - Lead And LYSIS LaBORATION All Infin Address: #50 CR 4590 Propert Name: GAC - Lead Anona Reference Anona Reference Anona Reference Anona Reference Anona Reference All Infin Address: #50 CR 4590 Propert Reference Propert Reference Anona Reference Anon	Chain		unain-or-custoay record						I	110	Ш	VTR	CO	INT	INTAI	
Project Name: EAC - Lead Address: #50 CR 4390 Date: 5 H - 2.01b 4601 Ha. Bioomfield, NM 8743 Project Name: GA - Lead 4601 Ha. Bioomfield, NM 8743 Project Name: Andress: #50 CR 4390 Address: #50 CR 4300 Address: #60 CR 430	Weste	ern Refir	ing	X Standard	C Rush		П	ľ	4	A	XS	S	AB	08	ATOR	~
Address: #50 CR 4990 Date: 5 - H - 20lb 4401 Hawkins NE Bloomfield, NM 87413 Project #: - 20lb - 4401 Hawkins NE - 4401 Hawkins NE Exar: Exar: Project #: - 20lb - 20lb - 20lb Faxe: Project #: Project #: - 20lb - 4401 Hawkins NE - 4401 Hawkins NE Faxe: Project Manager: Project Manager: Project Manager: - 4401 Validation) Faxe: Project Manager: Project Manager: Project Manager: - 4401 Validation) Faxe: Time Matrix Sample: Project Manager: - 4401 Validation) Time Matrix Sample: Project Manager: - 4401 Validation) - 4401 Validation) Time Matrix Sample: Project Manager: - 4700 V - 4700 V Time Matrix Sample: - 400 V - 400 V - 400 V 100 H20 GAC - Lead 5 VOA HCI - 400 V - 400 V 100 H20 GAC - Inlet				Project Name		ead			3	ww.ha	lenvir	nmen	tal.con	E		
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II/00 H2O GAC - Lead 5 VOA HCI -CO/ x<			Sample Request ID	Container Type and #	Preservativ e Type	HEAL No.	Several Class Constantial									səlddu8 1iA
1100 H2O GAC - Lead 1-500-ml Cool -CO/ x <th< td=""><td>6 1100</td><td>H₂O</td><td>GAC - Lead</td><td>5 VOA</td><td>HCI</td><td>100-</td><td></td><td>×</td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td></th<>	6 1100	H ₂ O	GAC - Lead	5 VOA	HCI	100-		×					-			
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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

July 05, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

RE: GAC 6-1-16

OrderNo.: 1606077

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 6/2/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andis

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 7/5/2016

CLIENT: Western Refining Southwest, In	ıc.	(Client Samp	le ID: Lag	
Project: GAC 6-1-16			Collection	Date: 6/1/2016	10:20:00 AM
Lab ID: 1606077-001	Matrix:	AQUEOUS	Received	Date: 6/2/2016	7:30:00 AM
Analyses	Result	PQL Qual	Units	DF I	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE					Analyst: JME
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	6/7/2016 12:45:33 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	6/7/2016 12:45:33 PM
Surr: DNOP	114	63.2-161	%Rec	1	6/7/2016 12:45:33 PM
EPA METHOD 8015D: GASOLINE RANG	Ε				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	6/3/2016 1:21:04 PM
Surr: BFB	84.2	66.4-120	%Rec	1	6/3/2016 1:21:04 PM
EPA METHOD 8260: VOLATILES SHOR	T LIST				Analyst: BCN
Benzene	ND	1.0	µg/L	1	6/10/2016 7:43:00 PM
Toluene	ND	1.0	µg/L	1	6/10/2016 7:43:00 PM
Ethylbenzene	ND	1.0	µg/L	1	6/10/2016 7:43:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	6/10/2016 7:43:00 PM
Xylenes, Total	ND	1.5	µg/L	1	6/10/2016 7:43:00 PM
Surr: 1,2-Dichloroethane-d4	92.9	70-130	%Rec	1	6/10/2016 7:43:00 PM
Surr: 4-Bromofluorobenzene	100	70-130	%Rec	1	6/10/2016 7:43:00 PM
Surr: Dibromofluoromethane	96.5	70-130	%Rec	1	6/10/2016 7:43:00 PM
Surr: Toluene-d8	99.5	70-130	%Rec	1	6/10/2016 7:43:00 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank		
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range		
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 6		
ND		Not Detected at the Reporting Limit	Р	Sample pH Not In Range		
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit		
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified		

Hall Environmental Analysis Laboratory, Inc.

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Date Reported: 7/5/2016

CLIENT: Western Refining Southwest, In	c.	(lient Samp	le ID: Lead	
Project: GAC 6-1-16			Collection	Date: 6/1/2016	5 10:30:00 AM
Lab ID: 1606077-002	Matrix:	AQUEOUS	Received	Date: 6/2/2016	5 7:30:00 AM
Analyses	Result	PQL Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE					Analyst: JME
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	6/7/2016 1:50:58 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	6/7/2016 1:50:58 PM
Surr: DNOP	126	63.2-161	%Rec	1	6/7/2016 1:50:58 PM
EPA METHOD 8015D: GASOLINE RANG	E				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	6/3/2016 1:45:34 PM
Surr: BFB	87.3	66.4-120	%Rec	1	6/3/2016 1:45:34 PM
EPA METHOD 8260: VOLATILES SHORT	LIST				Analyst: BCN
Benzene	ND	1.0	µg/L	1	6/10/2016 8:06:00 PM
Toluene	ND	1.0	µg/L	1	6/10/2016 8:06:00 PM
Ethylbenzene	ND	1.0	µg/L	1	6/10/2016 8:06:00 PM
Methyl tert-butyl ether (MTBE)	1.2	1.0	µg/L	1	6/10/2016 8:06:00 PM
Xylenes, Total	ND	1.5	µg/L	1	6/10/2016 8:06:00 PM
Surr: 1,2-Dichloroethane-d4	91.8	70-130	%Rec	1	6/10/2016 8:06:00 PM
Surr: 4-Bromofluorobenzene	102	70-130	%Rec	1	6/10/2016 8:06:00 PM
Surr: Dibromofluoromethane	96.9	70-130	%Rec	1	6/10/2016 8:06:00 PM
Surr: Toluene-d8	99.2	70-130	%Rec	1	6/10/2016 8:06:00 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 6
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

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Date Reported: 7/5/2016

CLIENT: Western Refining Southwest, In	c.	C	lient Samp	le ID: Inlet	
Project: GAC 6-1-16			Collection	Date: 6/1/2016	10:40:00 AM
Lab ID: 1606077-003	Matrix:	AQUEOUS	Received	Date: 6/2/2016	7:30:00 AM
Analyses	Result	PQL Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE					Analyst: JME
Diesel Range Organics (DRO)	0.23	0.20	mg/L	1	6/7/2016 2:12:47 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	6/7/2016 2:12:47 PM
Surr: DNOP	115	63.2-161	%Rec	1	6/7/2016 2:12:47 PM
EPA METHOD 8015D: GASOLINE RANG	E				Analyst: NSB
Gasoline Range Organics (GRO)	0.15	0.050	mg/L	1	6/3/2016 2:10:02 PM
Surr: BFB	116	66.4-120	%Rec	1	6/3/2016 2:10:02 PM
EPA METHOD 8260: VOLATILES SHORT	LIST				Analyst: BCN
Benzene	1.1	1.0	µg/L	1	6/10/2016 8:29:00 PM
Toluene	ND	1.0	µg/L	1	6/10/2016 8:29:00 PM
Ethylbenzene	1.2	1.0	µg/L	1	6/10/2016 8:29:00 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	6/10/2016 8:29:00 PM
Xylenes, Total	ND	1.5	µg/L	1	6/10/2016 8:29:00 PM
Surr: 1,2-Dichloroethane-d4	91.8	70-130	%Rec	1	6/10/2016 8:29:00 PM
Surr: 4-Bromofluorobenzene	103	70-130	%Rec	1	6/10/2016 8:29:00 PM
Surr: Dibromofluoromethane	94.8	70-130	%Rec	1	6/10/2016 8:29:00 PM
Surr: Toluene-d8	98.2	70-130	%Rec	1	6/10/2016 8:29:00 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 6
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Client: Project:	Western GAC 6-1	Refining S 1-16	outhwe	st, Inc.							
Sample ID	MB-25701	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015D: Diese	I Range		
Client ID:	PBW	Batch	n ID: 25	701	F	RunNo: 3	4721				
Prep Date:	6/7/2016	Analysis D	ate: 6/	7/2016	S	SeqNo: 1	071758	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Drganics (DRO)	ND	0.20								
Motor Oil Rang	e Organics (MRO)	ND	2.5								
Surr: DNOP		0.56		0.5000		113	63.2	161			
Sample ID	LCS-25701	SampT	ype: LC	S	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID:	LCSW	Batch	n ID: 25	701	F	RunNo: 3	4721				
Prep Date:	6/7/2016	Analysis D	ate: 6/	7/2016	S	SeqNo: 1	071759	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Organics (DRO)	3.0	0.20	2.500	0	120	65.4	162			
Surr: DNOP		0.27		0.2500		107	63.2	161			
Sample ID	1606077-001CMS	SampT	ype: M	6	Tes	tCode: E	PA Method	8015D: Diese	I Range		
Client ID:	Lag	Batch	n ID: 25	701	F	RunNo: 3	4721				
Prep Date:	6/7/2016	Analysis D	ate: 6/	7/2016	S	SeqNo: 1	071765	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Organics (DRO)	2.9	0.20	2.500	0	115	73.3	174			
Surr: DNOP		0.26		0.2500		105	63.2	161			
Sample ID	1606077-001CMS	SD SampT	ype: M	SD	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID:	Lag	Batch	n ID: 25	701	F	RunNo: 3	4721				
Prep Date:	6/7/2016	Analysis D	ate: 6/	7/2016	S	SeqNo: 1	071766	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Drganics (DRO)	3.1	0.20	2.500	0	123	73.3	174	6.87	20	
Surr: DNOP		0.28		0.2500		113	63.2	161	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 4 of 6

Page 5 of 6

Client:WesternProject:GAC 6-7	Refining So I-16	outhwe	st, Inc.							
Sample ID 5ML RB SampType: MBLK TestCode: EPA Method 8015D: Gasoline Range										
Client ID: PBW	Batch	ID: B3	4677	F	unNo: 3	34677				
Prep Date:	Analysis Da	ate: 6/	3/2016	S	eqNo: 1	070400	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		89.4	66.4	120			
Sample ID 2.5UG GRO LCS	SampTy	pe: LC	S	Tes	tCode: E	PA Method	8015D: Gasol	ine Rang	e	
Client ID: LCSW	Batch	ID: B3	4677	F	unNo: 3	84677				
Prep Date:	Analysis Da	ate: 6/	3/2016	S	eqNo: 1	070401	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	98.5	80	120			
Surr: BFB	20		20.00		102	66.4	120			

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#:	1606077
	05-Jul-16

Client:	Western Refining Southwest, Inc.
Project:	GAC 6-1-16

Sample ID 100ng Ics	SampType: LCS TestCode: EPA Method 8260: Volatiles Short List									
Client ID: LCSW	Batch	n ID: A3	4856	F	RunNo: 3	4856				
Prep Date:	Analysis D	ate: 6/	10/2016	S	SeqNo: 1	076410	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.5	70	130			
Toluene	19	1.0	20.00	0	96.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.2		10.00		92.4	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.9	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.0	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			
Sample ID rb	SampT	уре: МЕ	BLK	Tes	tCode: E	PA Method	8260: Volatile	es Short L	.ist	
Client ID: PBW	Batch	n ID: A3	4856	F	RunNo: 3	4856				
Prep Date:	Analysis D	ate: 6/	10/2016	S	eqNo: 1	076411	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Methyl tert-butyl ether (MTBE) Xylenes, Total	ND ND	1.0 1.5								
, , , ,			10.00		98.2	70	130			
Xylenes, Total	ND		10.00 10.00		98.2 99.5	70 70	130 130			
Xylenes, Total Surr: 1,2-Dichloroethane-d4	ND 9.8									

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 6

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:	Western Refi	ning Southw	Work Or	der Numbei	r: 16060	77			RcptN	lo: 1
Received by/date	e:	K	06/02	110						
Logged By:	Lindsay Ma	ngin	6/2/2016 7	:30:00 AM			Finaley	Hogo		
Completed By:	Lindsay Ma	ngin	6/2/2016 9	:23:21 AM			- timebuf	Horezo		-
Reviewed By:		7	06/02	116			U	-		
Chain of Cus	tody	9	00/00/	<i>,,</i> 0						I
1. Custody sea		mple bottles?			Yes		No		Not Present	
2. Is Chain of C					Yes		No		Not Present	
3. How was the	e sample delive	ered?			<u>Cour</u>	ier				
<u>Log In</u>										
4. Was an atte	empt made to c	ool the sample	es?		Yes		No		NA	
5. Were all sar	mples received	at a temperat	ure of >0°C t	o 6.0°C	Yes		No		NA	
6. Sample(s) i	n proper contai	ner(s)?			Yes		No			
7, Sufficient sa	ample volume f	or indicated te	st(s)?		Yes		No			
8. Are samples	s (except VOA	and ONG) pro	perly preserve	d?	Yes		No			
9. Was presen	vative added to	bottles?			Yes		No		NA [
10.VOA vials h	ave zero heads	space?			Yes		No		No VOA Vials	
11. Were any s	ample containe	ers received bi	oken?		Yes		No		# of preserved	
									bottles checked	
12.Does papen (Note discre	work match bo epancies on cha		I		Yes		No		for pH:	<2 or >12 unless noted)
13. Are matrices					Yes		No		Adjusted?	?
14. Is it clear wh	hat analyses w	ere requested	?		Yes		No			
15.Were all hol (If no, notify	Iding times able customer for a				Yes		No		Checked t	by:
Special Hand	dlina (if app	licable)								
16. Was client r			ith this order?		Yes		No		NA	*
Perso	n Notified:			Date:	1					
By WI	hom:			Via:	eMa	ail [] Phone	Fax	In Person	
Regar	1							annon a shin bir ak		
Client	Instructions:									
17. Additional r	remarks:									
18. <u>Cooler Inf</u>	ormation									
Cooler N	··· •	Condition Good	Seal Intact Yes	Seal No	Seal D	ate	Signed	Ву		
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	N S		www.hallenvironmental.com	4901 Hawkins NE - Albuquerque, NM 87109	505-345-4107	Analysis Request						itea9 1808	×		x		×				-					r notate
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				l				Dahusan	hukor			HEAL No. O(OC)77	- 00	1921-	200 -	-002	-002	-00-						Date T	Pate ⊤i U	his serves as
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Chain of Clietody Borord	ny Neu			D	7413			X evel 4 (Eull Validation)				Sample Request ID			q	p	t								Maria M	amples submitted to Hall Environmental may be subcontracted to other accredit
(† 4)	ing [499	M 8	2			í (S	Lag	Lag	Lead	Lead	Inlet	Inlet						ed by	iished by:	mitted
ייט י יט	Client: Western Refining			Mailing Address: 50 CK 4990	Bloomfield, NM 87413	505-632-4135						Matrix	H ₂ O	H ₂ O	H ₂ O	H ₂ 0	H ₂ O	H ₂ O						Relinquished by	Relinquished by:	-15
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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

August 03, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

OrderNo.: 1607715

RE: GAC Lead 7-14-2016

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 7/15/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Date Reported: 8/3/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. GAC Lead 7-14-2016

1607715-001

Project:

Lab ID:

Client Sample ID: GAC-Lead Collection Date: 7/14/2016 3:30:00 PM Received Date: 7/15/2016 7:50:00 AM

Analyses Result PQL Qual Units **DF** Date Analyzed Batch Analyst: TOM **EPA METHOD 8015D: DIESEL RANGE** mg/L 7/21/2016 4:15:28 AM **Diesel Range Organics (DRO)** ND 0.20 1 26463 Motor Oil Range Organics (MRO) ND 2.5 mg/L 1 7/21/2016 4:15:28 AM 26463 Surr: DNOP 130 %Rec 7/21/2016 4:15:28 AM 26463 67.9-149 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) 7/20/2016 6:31:58 PM B35832 ND 0.050 mg/L 1 Surr: BFB 92.4 66.4-120 %Rec 7/20/2016 6:31:58 PM B35832 1 **EPA METHOD 8260: VOLATILES SHORT LIST** Analyst: BCN 7/20/2016 6:13:00 PM Benzene C35848 ND 1.0 µg/L 1 Toluene ND 1.0 µg/L 7/20/2016 6:13:00 PM C35848 1 C35848 Ethylbenzene ND 1.0 µg/L 1 7/20/2016 6:13:00 PM Methyl tert-butyl ether (MTBE) ND 1.0 µg/L 1 7/20/2016 6:13:00 PM C35848 Xylenes, Total ND 1.5 µg/L 7/20/2016 6:13:00 PM C35848 1 %Rec Surr: 1,2-Dichloroethane-d4 107 70-130 1 7/20/2016 6:13:00 PM C35848 Surr: 4-Bromofluorobenzene 105 70-130 %Rec 7/20/2016 6:13:00 PM C35848 1 Surr: Dibromofluoromethane 99.0 %Rec C35848 70-130 1 7/20/2016 6:13:00 PM Surr: Toluene-d8 93.7 70-130 %Rec 1 7/20/2016 6:13:00 PM C35848

Matrix: AQUEOUS

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	
	D	Sample Diluted Due to Matrix	
	Н	Holding times for preparation or analysis exceeded	
	ND	Not Detected at the Reporting Limit	
	R	RPD outside accepted recovery limits	1
	S	% Recovery outside of range due to dilution or matrix	,

- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits J Page 1 of 6
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Date Reported: 8/3/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. GAC Lead 7-14-2016

Project:

Client Sample ID: GAC-Inlet Collection Date: 7/14/2016 3:45:00 PM Received Date: 7/15/2016 7:50:00 AM

Lab ID: 1607715-002	Matrix:	AQUEOUS	Received	Received Date: 7/15/2016 7:50:00 AM						
Analyses	Result	PQL	Qual Units	DF	Date Analyzed	Batch				
EPA METHOD 8015D: DIESEL RANGE					Analyst	том				
Diesel Range Organics (DRO)	0.81	0.20	mg/L	1	7/21/2016 5:21:03 AM	26463				
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	7/21/2016 5:21:03 AM	26463				
Surr: DNOP	126	67.9-149	%Rec	1	7/21/2016 5:21:03 AM	26463				
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst	: NSB				
Gasoline Range Organics (GRO)	5.4	0.50	mg/L	10	7/20/2016 6:56:28 PM	B35832				
Surr: BFB	118	66.4-120	%Rec	10	7/20/2016 6:56:28 PM	B35832				
EPA METHOD 8260: VOLATILES SHO	RT LIST				Analyst	DJF				
Benzene	ND	1.0	µg/L	1	7/22/2016 8:22:53 PM	C35935				
Toluene	ND	1.0	µg/L	1	7/22/2016 8:22:53 PM	C35935				
Ethylbenzene	290	10	µg/L	10	7/20/2016 6:37:00 PM	C35848				
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	7/22/2016 8:22:53 PM	C35935				
Xylenes, Total	1500	15	µg/L	10	7/20/2016 6:37:00 PM	C35848				
Surr: 1,2-Dichloroethane-d4	91.9	70-130	%Rec	1	7/22/2016 8:22:53 PM	C35935				
Surr: 4-Bromofluorobenzene	123	70-130	%Rec	1	7/22/2016 8:22:53 PM	C35935				
Surr: Dibromofluoromethane	95.0	70-130	%Rec	1	7/22/2016 8:22:53 PM	C35935				
Surr: Toluene-d8	97.6	70-130	%Rec	1	7/22/2016 8:22:53 PM	C35935				

Refer to the C	2C Summa	ary report	and sample	e login checi	kinst for hagg	ed QC data	and preserva	ation informa

Qualifiers: *		Value exceeds Maximum Contaminant Level.
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- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 6 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Client:	Western I	Refining S	outhwe	st, Inc.							
Project:	GAC Lea	d 7-14-20	16								
Sample ID	1607715-001CMS	SampT	ype: M \$	3	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC-Lead	Batch	n ID: 26	463	F	RunNo: 3	5794				
Prep Date:	7/20/2016	Analysis D)ate: 7/	21/2016	S	SeqNo: 1	110170	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	Organics (DRO)	3.2	0.20	2.500	0	128	73.3	174			
Surr: DNOP		0.33		0.2500		133	67.9	149			
Sample ID	1607715-001CMSI) SampT	уре: М	SD	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC-Lead	Batch	n ID: 26	463	F	RunNo: 3	5794				
Prep Date:	7/20/2016	Analysis D	0ate: 7/	21/2016	S	SeqNo: 1	110171	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	Organics (DRO)	3.1	0.20	2.500	0	122	73.3	174	4.36	20	
Surr: DNOP		0.33		0.2500		131	67.9	149	0	0	
Sample ID	LCS-26463	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	LCSW	Batch	n ID: 26	463	F	RunNo: 3	5794				
Prep Date:	7/20/2016	Analysis D)ate: 7/	21/2016	S	SeqNo: 1	110173	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	Organics (DRO)	3.5	0.20	2.500	0	138	65.4	162			
Surr: DNOP		0.36		0.2500		145	67.9	149			

Sample ID MB-26463	SampT	уре: МЕ	BLK	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: PBW	Batch	n ID: 264	463	F	RunNo: 3	5794				
Prep Date: 7/20/2016	Analysis D	ate: 7/	21/2016	5	SeqNo: 1	110174	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.58		0.5000		116	67.9	149			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 3 of 6

	Refining S nd 7-14-20		st, Inc.							
Sample ID 5ML RB	SampT	ype: M	BLK	Tes	Code: E	PA Method	8015D: Gaso	ine Rang	e	
Client ID: PBW	Batch	n ID: B3	5832	F	unNo: 3	5832				
Prep Date:	Analysis D	ate: 7/	/20/2016	S	eqNo: 1	109432	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	17		20.00		86.2	66.4	120			
Sample ID 2.5UG GRO LCS	SampT	ype: LC	s	Tes	Code: E	PA Method	8015D: Gaso	ine Rang	e	
Client ID: LCSW	Batch	n ID: B3	5832	F	unNo: 3	5832				
Prep Date:	Analysis D	ate: 7/	/20/2016	S	eqNo: 1	109433	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.54	0.050	0.5000	0	109	80	120			
Surr: BFB	18		20.00		89.6	66.4	120			

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 4 of 6

	n Refining S ead 7-14-20		st, Inc.							
Sample ID 100ng lcs	SampT	ype: LC	s	Tes	tCode: E	PA Method	8260: Volatil	es Short L	_ist	
Client ID: LCSW	Batch	n ID: C3	5848	I	RunNo: 3	35848				
Prep Date:	Analysis D	ate: 7/	20/2016	:	SeqNo: 1	109755	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	19	1.0	20.00	0	95.6	70	130			
Surr: 1,2-Dichloroethane-d4	12		10.00		116	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.4		10.00		93.5	70	130			
Sample ID rb	SampT	уре: М	BLK	Tes	stCode: E	PA Method	8260: Volatil	es Short L	_ist	
Client ID: PBW	Batch	n ID: C3	5848	I	RunNo: 🕄	35848				
Prep Date:	Analysis D	ate: 7/	20/2016	:	SeqNo: 1	110132	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		112	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		115	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.4		10.00		93.8	70	130			
Sample ID rb	SampT	ype: M	BLK	Tes	stCode: E	PA Method	8260: Volatil	es Short L	_ist	
Client ID: PBW	Batch	n ID: C3	5935	I	RunNo: 3	35935				
Prep Date:	Analysis D	ate: 7/	22/2016	:	SeqNo: 1	112466	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.8	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	10		10.00		99.5	70	130			
Sample ID 100ng Ics	SampT	ype: LC	s	Tes	stCode: E	PA Method	8260: Volatil	es Short L	.ist	
Client ID: LCSW	Batch	n ID: C3	5935	I	RunNo: 🕄	35935				
Prep Date:	Analysis D	ate: 7/	22/2016	:	SeqNo: 1	112469	Units: µg/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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 6

WO#: 1607715 03-Aug-16

Client:Western Refining Southwest, Inc.Project:GAC Lead 7-14-2016

Sample ID 100ng Ics SampType: LCS			s	TestCode: EPA Method 8260: Volatiles Short List								
Client ID: LCSW	Batch	n ID: C3	5935	RunNo: 35935								
Prep Date:	Analysis D	ate: 7/	22/2016	S	SeqNo: 1	112469	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Benzene	20	1.0	20.00	0	101	70	130					
Toluene	20	1.0	20.00	0	101	70	130					
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.4	70	130					
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130					
Surr: Dibromofluoromethane	10		10.00		105	70	130					
Surr: Toluene-d8	9.9		10.00		99.4	70	130					

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 6

HALL
 ENVIRONMENTAL
 ANALYSIS
LABORATORY

Ilail 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: Western Refining Southw Work Ord	der Number: 1607715		ReptNo: 1
Received by/date:	16		
Logged By: Lindsay Mangin 7/15/2016 7	7:50:00 AM	Julithan	
Completed By: Lindsay Mangin 7/15/2016	10:51:57 AM	Julythes	
Reviewed By: IC -1/15/1	· C	0.0	
Chain of Custody			
1, Custody seals intact on sample bottles?	Yes 🗌	No 🗆	Not Present 🗹
2. Is Chain of Custody complete?	Yes 🗹	No 🗌	Not Present
3. How was the sample delivered?	Courier		
Log In			
4. Was an attempt made to cool the samples?	Yes 🖌	No 🗌	
5. Were all samples received at a temperature of >0° C to	6.0°C Yes ☑		
6. Sample(s) in proper container(s)?	Yes 🔽	No 🗆	
7. Sufficient sample volume for indicated test(s)?	Yes 🔽	No 🗌	
8. Are samples (except VOA and ONG) properly preserved	i? Yes 🗹	No 🗆	
9. Was preservative added to bottles?	Yes	No 🔽	NA 🗌
10. VOA vials have zero headspace?	Yes 🔽	No 🗆	No VOA Vials
11. Were any sample containers received broken?	Yes	No 🗹	# of preserved
12. Does paperwork match bottle labels?	Yes 🖌	No 🗔	for pH: (<2 or >12 unless noted)
(Note discrepancies on chain of custody)	Yes 🗸	No 🗌	Adjusted?
13. Are matrices correctly identified on Chain of Custody? 14. Is it clear what analyses were requested?	Yes V	No 🗆	AT 2012 19 19 19 19 19 19 19 19 19 19 19 19 19
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹		Checked by:

Special Handling (if applicable)

Person I	Notified:			Date	[-
By Who	n: [Via:	eMail	Phone E Fa	x 🗌 In Person
Regardin	ig: Γ						
Client In	structions:						
Additional ren	narks:						
Cooler Infor	nation	2	22	r = -r		22	
	Temp ^c C	Condition	Seal Intact	Seal No	Seal Date	Signed By	

1.4

Good

Yes

1

TAI	ANALYSIS LABORATORY							(N	orl	۶ (۲	səlddu8 1iA					lead	
UALL ENVIDONMENT	RAT		109	2		-	I	оәрі	xter	ЭC	8015B DR(×	\vdash	×	tauk	
N	Ö	E	Albuquerque, NM 87109	505-345-4107			(AOV-ime2) 0728										
C		tal.co	Je, N	5-345	Request	(juc	D 38TN	8260B (VOA) BTEx, MTBE					×		North		
E	S	nemr	nerqı	505		-		8081 Pesticides / 808									
N	SI	Iviror	VIbuq	Fax	5 Fax Analysis		NCNA 6 Metals Anions (F,CI,NO ₃ ,NO ₂ ,PO4,SO ₂					-	_	Note!			
	12	aller			Tel. 505-345-3975 Ana	PAH (8310 of 8270SIMS) RCRA 8 Metals				-				2			
-	AN	www.hallenvironmental.com	IS NE	-397		-	EDB (Method 504.1)							mert			
3		1	awkin	5-34		-					TPH (Meth					Merner	
	Г		4901 Hawkins NE	al. 50		BRG	N/OA	a / e	оя	5) E	12108 H9T	×		×			
			49	Ŧ		_					BTEX + M					Remarks:	
				_		(Li	208) s'	LMB	+ 3	181	M + X3T8					Rei	Ę
		Lead	2016				c	Wicker	D No		HEAL NO.	100-	100-	1000-	200-	Date Time 7/14/11- 1636	Date Time
Time:	C Rush	GAC -	7-14-2016		519	iger.	Robinson		对 Yes	perature.	Preservativ e Type	HCI	Cool	HCI	Cool	Was F	the
Turn-Around Time:	X Standard	Project Name:	Date:	Project #:	PO#12615519	Project Manager:	Kellv		On Ice:	Sample Temperature.	Container Type and #	5 VOA	1-500-ml Amher	5 VOA	1-500-ml Amher	Received by:	Received by:
Chain-of-Custody Record	ing		:: #50 CR 4990	Bloomfield, NM 87413	5		QA/QC Package:	Other	X EDD (Type)		Sample Request ID	GAC - Lead	GAC - Lead	GAC -Inlet	GAC -Inlet	d Dr.	Alletty Watter
	Client Western Refining			omfield,	505-632-4135						Matrix	H ₂ O	H ₂ 0	H ₂ 0	H ₂ 0	Relinquished by	Reinquished by:
hain.	Weste		Mailing Address:	Blo	~	· Fax#:					Time	1530	>	1545	7	Time: /650	Time: 941
o	Client		Mailing.		Phone #:	email or Fax#:					Date	91-H-L	-		\rightarrow	Date: 7-14-16	Date: //4//6



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

August 26, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

RE: GAC-Lead

OrderNo.: 1608686

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/11/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

8/12/2016 5:56:00 PM

R36482

R36482

R36482

R36482

R36482

R36482

R36482

R36482

R36482

Hall Environmental Analysis Laboratory, Inc.

Benzene

Toluene

Ethylbenzene

Xylenes, Total

Methyl tert-butyl ether (MTBE)

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Date Reported: 8/26/2016

CLIENT: Western Refining Southwe	est, Inc.		Client Samp	le ID: GA	AC-Lead	
Project: GAC-Lead			Collection	Date: 8/2	10/2016 12:00:00 PM	
Lab ID: 1608686-001	Matrix:	AQUEOUS	Received	Date: 8/2	11/2016 6:45:00 AM	
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RAN	GE				Analys	st: TOM
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	8/15/2016 11:30:43 P	M 26971
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	8/15/2016 11:30:43 P	M 26971
Surr: DNOP	122	67.9-149	%Rec	1	8/15/2016 11:30:43 P	M 26971
EPA METHOD 8015D: GASOLINE R	ANGE				Analys	st: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	8/17/2016 12:34:52 P	M A36586
Surr: BFB	80.4	66.4-120	%Rec	1	8/17/2016 12:34:52 P	M A36586
EPA METHOD 8260: VOLATILES SH	HORT LIST				Analys	st: RAA

1.0

1.0

1.0

1.0

1.5

70-130

70-130

70-130

70-130

µg/L

µg/L

µg/L

µg/L

µg/L

%Rec

%Rec

%Rec

%Rec

1

1

1

1

1

1

1

1

1

ND

ND

ND

1.5

ND

101

99.0

95.9

99.5

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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Methyl tert-butyl ether (MTBE)

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Xylenes, Total

Date Reported: 8/26/2016

CLIENT: Western Refining Southwest, Project: GAC-Lead	Inc.	(Client Samp Collection		AC-Inlet 0/2016 11:50:00 AM	
Lab ID: 1608686-002	Matrix:	AQUEOUS	Received	Date: 8 /1	1/2016 6:45:00 AM	
Analyses	Result	PQL Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE					Analyst	том
Diesel Range Organics (DRO)	1.5	0.20	mg/L	1	8/16/2016 12:35:58 AM	26971
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	8/16/2016 12:35:58 AM	26971
Surr: DNOP	115	67.9-149	%Rec	1	8/16/2016 12:35:58 AM	26971
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	NSB
Gasoline Range Organics (GRO)	1.4	0.50	mg/L	10	8/17/2016 12:59:30 PM	A36586
Surr: BFB	104	66.4-120	%Rec	10	8/17/2016 12:59:30 PM	A36586
EPA METHOD 8260: VOLATILES SHO	RT LIST				Analyst	RAA
Benzene	1.1	1.0	µg/L	1	8/12/2016 6:19:00 PM	R36482
Toluene	ND	1.0	µg/L	1	8/12/2016 6:19:00 PM	R36482
Ethylbenzene	100	10	µg/L	10	8/12/2016 7:44:00 PM	R36482

1.0

15

70-130

70-130

70-130

70-130

µg/L

µg/L

%Rec

%Rec

%Rec

%Rec

1

1

1

1

1

8/12/2016 6:19:00 PM

10 8/12/2016 7:44:00 PM

R36482

R36482

R36482

R36482

R36482

R36482

ND

210

97.2

95.4

92.2

100

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

Oualifiers:	*	Value exceeds Maximum Contaminant Level.	
Qualifictis.			

- D Sample Diluted Due to Matrix
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- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
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- J Analyte detected below quantitation limits Page 2 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#:	1608686

Page 3 of 5

26-Aug-16

Client:		Refining S	outhwe	st, Inc.							
Project:	GAC-Lea	ıd									
Sample ID	1608686-001CMS	SampT	уре: М	8	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC-Lead	Batch	n ID: 26	971	F	RunNo: 3	6497				
Prep Date:	8/15/2016	Analysis D	Date: 8/	/15/2016	S	SeqNo: 1	130687	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	rganics (DRO)	2.7	0.20	2.500	0	107	73.3	174			
Surr: DNOP		0.27		0.2500		108	67.9	149			
Sample ID	1608686-001CMSI	D SampT	ype: MS	SD	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC-Lead	Batcl	h ID: 26	971	F	RunNo: 3	6497				
Prep Date:	8/15/2016	Analysis D	Date: 8/	/16/2016	5	SeqNo: 1	130688	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	rganics (DRO)	3.5	0.20	2.500	0	139	73.3	174	25.8	20	R
Surr: DNOP		0.35		0.2500		142	67.9	149	0	0	
Sample ID	LCS-26971	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	LCSW	Batch	h ID: 26	971	F	RunNo: 3	6497				
Prep Date:	8/15/2016	Analysis D	Date: 8/	/15/2016	5	SeqNo: 1	130695	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	rganics (DRO)	2.6	0.20	2.500	0	106	65.4	162			
Surr: DNOP		0.27		0.2500		108	67.9	149			
Sample ID	MB-26971	SampT	уре: М	BLK	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	PBW	Batcl	h ID: 26	971	F	RunNo: 3	6497				
Prep Date:	8/15/2016	Analysis D	Date: 8/	/15/2016	5	SeqNo: 1	130696	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	•	ND	0.20								
-	Organics (MRO)	ND	2.5								
Surr: DNOP		0.57		0.5000		115	67.9	149			

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- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

WO#: 160	8686
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Page 4 of 5

Client:	Western F	Refining So	outhwe	st, Inc.							
Project:	GAC-Lea	d									
Sample ID	5ML RB	SampTy	/pe: M	BLK	Tes	tCode: E	PA Method	8015D: Gasol	line Rang	e	
Client ID:	PBW	Batch	ID: A3	6586	F	RunNo: 3	6586				
Prep Date:		Analysis Da	ate: 8 /	17/2016	S	SeqNo: 1	132878	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
-	je Organics (GRO)	ND	0.050								
Surr: BFB		16		20.00		80.3	66.4	120			
Sample ID	2.5UG GRO LCS	SampTy	/pe: LC	s	Tes	tCode: E	PA Method	8015D: Gasol	line Rang	e	
Client ID:	LCSW	Batch	ID: A3	6586	F	RunNo: 3	6586				
Prep Date:		Analysis Da	ate: 8 /	17/2016	S	eqNo: 1	132880	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rand	e Organics (GRO)	0.44	0.050	0.5000	0	88.6	80	120			
	, , ,										
Surr: BFB		18		20.00	-	90.1	66.4	120			
Surr: BFB	1608686-002BMS	18 SampTy	/pe: M \$		Tes			120 8015D: Gaso	line Rang	e	
Surr: BFB	• · ·	SampTy	/pe: M \$ ID: A3	6			PA Method		line Rang	e	
Surr: BFB	1608686-002BMS	SampTy	ID: A3	6586	F	tCode: E	PA Method 6586		line Rang	e	
Surr: BFB Sample ID Client ID:	1608686-002BMS	SampTy Batch	ID: A3	6586 17/2016	F	tCode: E RunNo: 3	PA Method 6586	8015D: Gasol	line Rang %RPD	e RPDLimit	Qual
Surr: BFB Sample ID Client ID: Prep Date: Analyte	1608686-002BMS	SampTy Batch Analysis Da	ID: A3 ate: 8 /	6586 17/2016	ਜ S	tCode: E RunNo: 3 SeqNo: 1	PA Method 6586 132890	8015D: Gasol Units: mg/L	Ū		Qual
Surr: BFB Sample ID Client ID: Prep Date: Analyte	1608686-002BMS GAC-Inlet	SampTy Batch Analysis Da Result	D: A3 ate: 8 / PQL	5 6586 17/2016 SPK value	F S SPK Ref Val	tCode: E RunNo: 3 GeqNo: 1 %REC	PA Method 6586 132890 LowLimit	8015D: Gasol Units: mg/L HighLimit	Ū		Qual
Surr: BFB Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB	1608686-002BMS GAC-Inlet	SampTy Batch Analysis Da Result 6.2 220	ID: A3 ate: 8 / PQL 0.50	6586 17/2016 SPK value 5.000 200.0	F S SPK Ref Val 1.396	tCode: E RunNo: 3 SeqNo: 1 %REC 95.2 111	PA Method 6586 132890 LowLimit 70 66.4	8015D: Gasol Units: mg/L HighLimit 130	%RPD	RPDLimit	Qual
Surr: BFB Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB Sample ID	1608686-002BMS GAC-Inlet ge Organics (GRO) 1608686-002BMSE	SampTy Batch Analysis Da Result 6.2 220 SampTy	ID: A3 ate: 8 / PQL 0.50	6586 17/2016 SPK value 5.000 200.0	F S SPK Ref Val 1.396 Tes	tCode: E RunNo: 3 SeqNo: 1 %REC 95.2 111	PA Method 6586 132890 LowLimit 70 66.4 PA Method	8015D: Gasol Units: mg/L HighLimit 130 120	%RPD	RPDLimit	Qual
Surr: BFB Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB Sample ID	1608686-002BMS GAC-Inlet ge Organics (GRO) 1608686-002BMSE	SampTy Batch Analysis Da Result 6.2 220 SampTy	ID: A3 ate: 8/ PQL 0.50 /pe: MS ID: A3	6586 17/2016 SPK value 5.000 200.0 SD 6586	F S SPK Ref Val 1.396 Tes F	tCode: E RunNo: 3 SeqNo: 1 %REC 95.2 111 tCode: E	PA Method 6586 132890 LowLimit 70 66.4 PA Method 6586	8015D: Gasol Units: mg/L HighLimit 130 120	%RPD	RPDLimit	Qual
Surr: BFB Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB Sample ID Client ID:	1608686-002BMS GAC-Inlet ge Organics (GRO) 1608686-002BMSE	SampTy Batch Analysis Da Result 6.2 220 SampTy Batch	ID: A3 ate: 8/ PQL 0.50 /pe: MS ID: A3	6586 17/2016 SPK value 5.000 200.0 SD 6586 17/2016	F S SPK Ref Val 1.396 Tes F	tCode: E RunNo: 3 SeqNo: 1 %REC 95.2 111 tCode: E RunNo: 3 SeqNo: 1	PA Method 6586 132890 LowLimit 70 66.4 PA Method 6586	8015D: Gasol Units: mg/L HighLimit 130 120 8015D: Gasol	%RPD	RPDLimit	Qual
Surr: BFB Sample ID Client ID: Prep Date: Analyte Gasoline Rang Surr: BFB Sample ID Client ID: Prep Date: Analyte	1608686-002BMS GAC-Inlet ge Organics (GRO) 1608686-002BMSE	SampTy Batch Analysis Da Result 6.2 220 SampTy Batch Analysis Da	ID: A3 ate: 8/ PQL 0.50 Vpe: MS ID: A3 ate: 8/	6586 17/2016 SPK value 5.000 200.0 SD 6586 17/2016	F S SPK Ref Val 1.396 Tes F S	tCode: E RunNo: 3 SeqNo: 1 %REC 95.2 111 tCode: E RunNo: 3 SeqNo: 1	PA Method 6586 132890 LowLimit 70 66.4 PA Method 6586 132891	8015D: Gasol Units: mg/L HighLimit 130 120 8015D: Gasol Units: mg/L	%RPD	RPDLimit e	

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- W Sample container temperature is out of limit as specified

Client: Western Refining Southwest, Inc. Project: GAC-Lead

Sample ID 100ng Ics	SampT	ype: LC	S	Tes	tCode: E	PA Method	8260: Volatile	es Short L	_ist	
Client ID: LCSW	Batch	n ID: R3	6482	F	RunNo: 3	6482				
Prep Date:	Analysis D	ate: 8/	12/2016	5	SeqNo: 1129786 U					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	88.3	70	130			
Toluene	18	1.0	20.00	0	91.4	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.3	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.1	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			
Sample ID rb	SampT	уре: МЕ	BLK	Tes	tCode: E	PA Method	8260: Volatile	es Short L	ist	
Client ID: PBW	Batch	n ID: R3	6482	F	RunNo: 3	6482				
Prep Date:		ata: 0/	12/2016 SeqNo: 1129787							
	Analysis L	ale. 8/	12/2016	L L		129787	Units: µg/L			
Analyte	Result	PQL		SPK Ref Val	%REC	129787 LowLimit	Units: µg/L HighLimit	%RPD	RPDLimit	Qual
	-				•			%RPD	RPDLimit	Qual
Analyte	Result	PQL			•			%RPD	RPDLimit	Qual
Analyte Benzene	Result ND	PQL 1.0			•			%RPD	RPDLimit	Qual
Analyte Benzene Toluene	Result ND ND	PQL 1.0 1.0			•			%RPD	RPDLimit	Qual
Analyte Benzene Toluene Ethylbenzene	Result ND ND ND	PQL 1.0 1.0 1.0			•			%RPD	RPDLimit	Qual
Analyte Benzene Toluene Ethylbenzene Methyl tert-butyl ether (MTBE)	Result ND ND ND ND	PQL 1.0 1.0 1.0 1.0			•			%RPD	RPDLimit	Qual
Analyte Benzene Toluene Ethylbenzene Methyl tert-butyl ether (MTBE) Xylenes, Total	Result ND ND ND ND ND	PQL 1.0 1.0 1.0 1.0	SPK value		* %REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Analyte Benzene Toluene Ethylbenzene Methyl tert-butyl ether (MTBE) Xylenes, Total Surr: 1,2-Dichloroethane-d4	Result ND ND ND ND ND 10	PQL 1.0 1.0 1.0 1.0	SPK value 10.00		%REC 100	LowLimit 70	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
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- W Sample container temperature is out of limit as specified

Page 5 of 5

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental Albi TEL: 505-345-3975 Website: www.ha	4901 1 uquerque 5 FAX: 50	Hawkins NE 2, NM 87109 35-345-4107	Sam	ple Log-In	Check List
Client Name: Western Refining Southw	Work Order Number:	16086	86		RcptN	lo: 1
Received by/date: Logged By: Lindsay Mangin	02-11/LL 8/11/2016 6:45:00 AM		Ő	truby Hopp		!
Completed By: Lindsay Mangin	8/11/2016 2:12:21 PM		0	timehay Alexing D		
Reviewed By:	08/12/16		Ũ	V U		
Chain of Custody						1
1. Custody seals intact on sample bottles?		Yes		No 🗌	Not Present	
2. Is Chain of Custody complete?		Yes		No 🗌	Not Present	
3. How was the sample delivered?		<u>Courie</u>	<u>ər</u>			
<u>Log In</u>						
4. Was an attempt made to cool the sample	s?	Yes		No 🗌	NA	
5. Were all samples received at a temperatu	re of >0° C to 6.0°C	Yes		No 🗌	NA 🗌]
6. Sample(s) in proper container(s)?		Yes		No 🗌		
7. Sufficient sample volume for indicated tes	t(s)?	Yes	*	No 🗌		
8. Are samples (except VOA and ONG) prop	erly preserved?	Yes		No 🗌		
9. Was preservative added to bottles?		Yes [No 🛃	NA 🗌]
10.VOA vials have zero headspace?		Yes		No 🗌	No VOA Vials]
11. Were any sample containers received bro	ken?	Yes [No 🛷	# of preserved	
12.Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes		No 🗆	bottles checked for pH:	
13. Are matrices correctly identified on Chain	of Custody?	Yes	*	No 🗌	Adjusted?	2 or >12 unless noted)
14. Is it clear what analyses were requested?	· · · · · · · · · · · · · · · · · · ·			No 🗌		
15.Were all holding times able to be met? (If no, notify customer for authorization.)		Yes		No 🗌	Checked by	<i>y</i> :
<u>Special Handling (if applicable)</u>						
16. 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:						
17. Additional remarks:						1
18. Cooler Information						
Cooler No Temp °C Condition	Seal Intact Seal No S	Seal Date	e Sign	ed By		
1 2.1 Good Ye	95					

HALL ENVIRONMENTAL	ANALYSIS LABORATORY	www.hallenvironmental.com	- Albuquerque, NM 87109	Fax 505-345-4107	Analysis Radijest		s,g	итве 35 РС4	308 (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	EXte BT BT VOA BT Ste	//ets (CI,I licid (OA) 7O I	A S A S A A S A A S A A s A s A s o s o s o s o s o s o s o	×	×	×	×	*	*							This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.
		www.h:	4901 Hawkins NE	Tel 505-345-3975		٨	lno s	/ 03	ты) 11) 11) Нац	202 314 2月2	bor bor	BTEX + M BTEX + M TPH 8015 TPH (Met EDB (Met EDB (Met	×	· · · · · · · · · · · · · · · · · · ·	×		1 mm						Remarks:		this possibility. Any sub-contracted
	🗆 Rush	- Lead	- 2016					Rahusau	A Wicker	D No	12	ative HEAL No.	100 -		-002		in a	H- [%			16 12 A	held	LA S/ 4/16 1555	OS 11 1 1 1 1 1 1 1	T'
Turn-Around Time:	X Standard	GAC	Date: 8 - 11			PO#12615519	Project Manager:	Kelly Ruh	18		Sample Temperature:	Container Preservative Type and # Type	5 VOA HCI	1-500-ml Amber		14		1 E					Repeived by: CMMAT LOU	Received by:	contracted to other accredited I
Chain-of-Custody Record	DL.							V I aval 4 (Euril Validation)				Sample Request ID	GAC - Lead	GAC - Lead	GAC -Inlet	GAC -Inlet	<u>GAG-1-84</u>	OAG-Lag						ied by I have (If necessary samples submitted to Hall Environmental may be subcontracted to other accredited laboratories.
n-of-Cus	Western Refining		ss: #50 CR 4990		Bloomfield, NM 87413	505-632-4135	-			(0)		he Matrix	A Ho		C H	Τ			/				Relinquished by		ssary samples sub
Chai	lient: West		lailing Address.	0	a	hone #: 50	mail or Fax#:	A/QC Package:] Standard			Date Time	-in_K 1700				≯ }/	X					Date: Time: B-//D-// Iccr		If nect



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

September 27, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

RE: GAC 9-8-2016

OrderNo.: 1609433

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 9/9/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Date Reported: 9/27/2016

CLIENT: Western Refining Southwest, In Project: GAC 9-8-2016	nc. Client Sample ID: Lag Collection Date: 9/8/2016 11:00:00 AM										
Lab ID: 1609433-001	Matrix:	AQUEOUS	Received I	16 7:30:00 AM							
Analyses	Result	PQL Qua	d Units	DF	Date Analyzed						
EPA METHOD 8015D: DIESEL RANGE					Analyst: TOM						
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	9/12/2016 3:12:01 PM						
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	9/12/2016 3:12:01 PM						
Surr: DNOP	144	67.9-149	%Rec	1	9/12/2016 3:12:01 PM						
EPA METHOD 8260: VOLATILES SHOR	T LIST				Analyst: AG						
Benzene	ND	1.0	µg/L	1	9/12/2016 12:10:12 PM						
Toluene	ND	1.0	µg/L	1	9/12/2016 12:10:12 PM						
Ethylbenzene	ND	1.0	µg/L	1	9/12/2016 12:10:12 PM						
Xylenes, Total	ND	1.5	µg/L	1	9/12/2016 12:10:12 PM						
Surr: 1,2-Dichloroethane-d4	103	70-130	%Rec	1	9/12/2016 12:10:12 PM						
Surr: 4-Bromofluorobenzene	98.3	70-130	%Rec	1	9/12/2016 12:10:12 PM						
Surr: Dibromofluoromethane	96.4	70-130	%Rec	1	9/12/2016 12:10:12 PM						
Surr: Toluene-d8	96.5	70-130	%Rec	1	9/12/2016 12:10:12 PM						
EPA METHOD 8015D: GASOLINE RANG	θE				Analyst: AG						
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	9/12/2016 12:10:12 PM						
Surr: BFB	99.0	70-130	%Rec	1	9/12/2016 12:10:12 PM						

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 8
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 9/27/2016

CLIENT: Western Refining Southwest, In	nc.		C	lient Sample	e ID: Lead				
Project: GAC 9-8-2016	Collection Date: 9/5/2016 11:10:00 A								
Lab ID: 1609433-002	Matrix: AQUEOUS			Received I	Date: 9/9/20	16 7:30:00 AM			
Analyses	Result	PQL	Qual	Units	DF	Date Analyzed			
EPA METHOD 8015D: DIESEL RANGE						Analyst: TOM			
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	9/12/2016 4:17:14 PM			
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/12/2016 4:17:14 PM			
Surr: DNOP	150	67.9-149	S	%Rec	1	9/12/2016 4:17:14 PM			
EPA METHOD 8260: VOLATILES SHOR	T LIST					Analyst: AG			
Benzene	ND	1.0		µg/L	1	9/12/2016 1:36:45 PM			
Toluene	ND	1.0		µg/L	1	9/12/2016 1:36:45 PM			
Ethylbenzene	ND	1.0		µg/L	1	9/12/2016 1:36:45 PM			
Xylenes, Total	ND	1.5		µg/L	1	9/12/2016 1:36:45 PM			
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	9/12/2016 1:36:45 PM			
Surr: 4-Bromofluorobenzene	99.2	70-130		%Rec	1	9/12/2016 1:36:45 PM			
Surr: Dibromofluoromethane	102	70-130		%Rec	1	9/12/2016 1:36:45 PM			
Surr: Toluene-d8	101	70-130		%Rec	1	9/12/2016 1:36:45 PM			
EPA METHOD 8015D: GASOLINE RANG	θE					Analyst: AG			
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/12/2016 1:36:45 PM			
Surr: BFB	102	70-130		%Rec	1	9/12/2016 1:36:45 PM			

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 8
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 9/27/2016

CLIENT: Western Refining Southwest, In	nc.		Client Sample					
Project: GAC 9-8-2016			Collection I	Date: 9/8/20	016 11:20:00 AM			
Lab ID: 1609433-003	Matrix:	AQUEOUS	Received Date: 9/9/2016 7:30:00 AM					
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed			
EPA METHOD 8015D: DIESEL RANGE					Analyst: TOM			
Diesel Range Organics (DRO)	0.60	0.20	mg/L	1	9/13/2016 2:41:13 PM			
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	9/13/2016 2:41:13 PM			
Surr: DNOP	122	67.9-149	%Rec	1	9/13/2016 2:41:13 PM			
EPA METHOD 8260: VOLATILES SHOR	T LIST				Analyst: AG			
Benzene	ND	1.0	µg/L	1	9/12/2016 3:31:53 PM			
Toluene	ND	1.0	µg/L	1	9/12/2016 3:31:53 PM			
Ethylbenzene	21	1.0	µg/L	1	9/12/2016 3:31:53 PM			
Xylenes, Total	8.1	1.5	µg/L	1	9/12/2016 3:31:53 PM			
Surr: 1,2-Dichloroethane-d4	87.3	70-130	%Rec	1	9/12/2016 3:31:53 PM			
Surr: 4-Bromofluorobenzene	60.1	70-130 S	%Rec	1	9/12/2016 3:31:53 PM			
Surr: Dibromofluoromethane	84.6	70-130	%Rec	1	9/12/2016 3:31:53 PM			
Surr: Toluene-d8	100	70-130	%Rec	1	9/12/2016 3:31:53 PM			
EPA METHOD 8015D: GASOLINE RANG	ε				Analyst: AG			
Gasoline Range Organics (GRO)	1.4	0.050	mg/L	1	9/12/2016 3:31:53 PM			
	404	70 400	0/ D		0/40/0040 0-04-50 DM			

70-130

101

%Rec

1

9/12/2016 3:31:53 PM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank				
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range				
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 8				
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range				
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit				
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified				

Hall Environmental Analysis Laboratory, Inc.

Surr: BFB

Client:WesternProject:GAC 9-8	Refining Southwest, -2016	Inc.							
Sample ID 1609433-001BMS	SampType: MS		Test	Code: EPA	Method	8015D: Diesel	Range		
Client ID: Lag	Batch ID: 27429	Ð	R	unNo: 3711	15				
Prep Date: 9/12/2016	Analysis Date: 9/12/	/2016	S	eqNo: 1151	160	Units: mg/L			
Analyte	Result PQL S	PK value	SPK Ref Val	%REC Lo	owLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.4 0.20	2.500	0	135	73.3	174			
Surr: DNOP	0.37	0.2500		147	67.9	149			
Sample ID 1609433-001BMS	D SampType: MSD		Test	Code: EPA	Method	8015D: Diesel	Range		
Client ID: Lag	Batch ID: 27429	Э	R	unNo: 3711	15				
Prep Date: 9/12/2016	Analysis Date: 9/12/	/2016	S	eqNo: 1151	161	Units: mg/L			
Analyte	Result PQL S	PK value	SPK Ref Val	%REC Lo	owLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.4 0.20	2.500	0	136	73.3	174	0.518	20	
Surr: DNOP	0.36	0.2500		143	67.9	149	0	0	
Sample ID LCS-27429	SampType: LCS		Test	Code: EPA	Method	8015D: Diesel	Range		
Client ID: LCSW	Batch ID: 27429	Ð	RunNo: 37115						
Prep Date: 9/12/2016	Analysis Date: 9/12/	/2016	SeqNo: 1151162 Units: mg/L						
Analyte	Result PQL S	PK value	SPK Ref Val	%REC Lo	owLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.3 0.20	2.500	0	131	65.4	162			
Surr: DNOP	0.35	0.2500		140	67.9	149			
Sample ID MB-27429	SampType: MBL	ĸ	Test	Code: EPA	Method	8015D: Diesel	Range		
Client ID: PBW	Batch ID: 27429	Ð	R	unNo: 3711	5				
Prep Date: 9/12/2016	Analysis Date: 9/12/	/2016	S	eqNo: 1151	163	Units: mg/L			
Analyte	Result PQL S	PK value	SPK Ref Val	%REC Lo	owLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND 0.20								
Motor Oil Range Organics (MRO)	ND 2.5								
Surr: DNOP	0.72	0.5000		145	67.9	149			
Sample ID 1609433-003BMS	SampType: MS		Test	Code: EPA	Method	8015D: Diesel	Range		
Client ID: Inlet	Batch ID: 27464	4	R	unNo: 3713	89				
Prep Date: 9/13/2016	Analysis Date: 9/13/	/2016	S	eqNo: 1152	2316	Units: mg/L			
Analyte	Result PQL S	PK value	SPK Ref Val	%REC Lo	owLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.8 0.20	2.500	0.6008	126	73.3	174			
Surr: DNOP	0.34	0.2500		137	67.9	149			

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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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	rn Refining S 9-8-2016	outhwe	st, Inc.							
Sample ID 1609433-003B	MSD SampT	ype: MS	SD	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: Inlet	Batch	h ID: 27464 RunNo: 37139								
Prep Date: 9/13/2016	Analysis D	ate: 9 /	13/2016	S	SeqNo: 1	152317	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.5	0.20	2.500	0.6008	118	73.3	174	5.98	20	
Surr: DNOP	0.33		0.2500		132	67.9	149	0	0	
Sample ID LCS-27464	S-27464 SampType: LCS TestCode: EPA Method 8015D: Diesel Range									
Client ID: LCSW	Batch	ו ID: 27	464	RunNo: 37139						
Prep Date: 9/13/2016	Analysis D	ate: 9 /	13/2016	S	SeqNo: 1	152318	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.9	0.20	2.500	0	118	65.4	162			
Surr: DNOP	0.33		0.2500		131	67.9	149			
Sample ID MB-27464	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: PBW	Batch	1 ID: 27	464	F	RunNo: 3	7139				
Prep Date: 9/13/2016	Analysis D	ate: 9 /	13/2016	S	SeqNo: 1	152319	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.62		0.5000		125	67.9	149			

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 5 of 8

27-Sep-16

Client: Western	Refining S	outhwe	st, Inc.							
Project: GAC 9-8	-2016									
Sample ID 100ng Ics	SampT	ype: LC	S	Tes	stCode: F	PA Method	8260: Volatile	es Short I	ist	
Client ID: LCSW		n ID: W:			RunNo: 3					
Prep Date:	Analysis D				SeqNo: 1		Units: µg/L			
Analyte	Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.7	70	130			
Toluene	18	1.0	20.00	0	91.9	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.4	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.2	70	130			
Surr: Toluene-d8	9.7		10.00		96.9	70	130			
Sample ID rb	SampT	уре: МЕ	SI K	Tes	stCode. F	PA Method	8260: Volatile	es Short I	ist	
Client ID: PBW		h ID: W:			RunNo: 3					
Prep Date:	Analysis D				SeqNo: 1		Units: µg/L			
-					•					a 1
Analyte	Result ND	PQL 1.0	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene										
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5	10.00		101	70	100			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.1	70	130			
Surr: Dibromofluoromethane	10		10.00		99.9	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			
Sample ID 1609433-002ams	SampT	уре: М	6	Tes	stCode: E	PA Method	8260: Volatile	es Short L	.ist	
Client ID: Lead	Batch	h ID: W3	37129	F	RunNo: 3	37129				
Prep Date:	Analysis D	0ate: 9 /	12/2016	9	SeqNo: 1	151449	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.0	70	130			
Toluene	18	1.0	20.00	0	91.3	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.3	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.6		10.00		96.3	70	130			
Sample ID 1609433-002amsd	SampT	уре: М	SD	Tes	stCode: E	PA Method	8260: Volatile	es Short L	.ist	
Client ID: Lead	Batch	h ID: W3	37129	F	RunNo: 3	37129				
Prep Date:	Analysis D	0ate: 9 /	12/2016	9	SeqNo: 1	151450	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	Result									
	18	1.0	20.00	0	90.8	70	130	8.67	20	
Toluene		1.0 1.0	20.00 20.00	0 0	90.8 89.8	70 70	130 130	8.67 1.66	20 20	

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 6 of 8

WO#:	1609433
	27-Sep-16

Client:	Western Refining Southwest, Inc.
Project:	GAC 9-8-2016

Sample ID 1609433-002amso	d SampT	ype: M \$	SD	Tes	tCode: E	de: EPA Method 8260: Volatiles Short List						
Client ID: Lead	Batch	1D: W	37129	F	RunNo: 3	7129						
Prep Date:	Analysis D	ate: 9/	12/2016	5	SeqNo: 1	151450	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130	0	0			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.8	70	130	0	0			
Surr: Dibromofluoromethane	9.7		10.00		97.4	70	130	0	0			
Surr: Toluene-d8	9.6		10.00		95.6	70	130	0	0			

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 8

Client: Project:	Western I GAC 9-8-	Refining S -2016	outhwe	st, Inc.								
Sample ID 2.	5ug gro lcs	SampT	ype: LC	s	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LC	csw	Batch	1D: G3	37129	F	RunNo: 37129						
Prep Date:		Analysis D	ate: 9/	/12/2016	S	SeqNo: 1	151489	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range O)rganics (GRO)	0.52	0.050	0.5000	0	105	75.4	118				
Surr: BFB		10		10.00		103	70	130				
Sample ID rb		SampT	SampType: MBLK TestCode: EPA Method 8015D: Gasoline Range									
Client ID: PE	BW	Batch	n ID: G3	37129	F	RunNo: 3	7129					
Prep Date:		Analysis D	ate: 9/	/12/2016	S	SeqNo: 1	151490	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range O	Organics (GRO)	ND	0.10									
Surr: BFB		9.5		10.00		94.9	70	130				
Sample ID 16	609433-001ams	SampT	ype: MS	8	Tes	tCode: El	PA Method	8015D: Gasol	line Rang	е		
Client ID: La	ag	Batch	n ID: G3	37129	F	RunNo: 3	7129					
Prep Date:		Analysis D	ate: 9/	/12/2016	S	SeqNo: 1	151502	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range O	rganics (GRO)	0.53	0.050	0.5000	0.03960	98.2	53.8	128				
Surr: BFB		9.9		10.00		98.9	70	130				
Sample ID 16	609433-001amsd	SampT	ype: MS	SD	Tes	tCode: El	PA Method	8015D: Gasol	line Rang	e		
Client ID: La	ag	Batch	1D: G 3	37129	F	RunNo: 3	7129					
Prep Date:		Analysis D	ate: 9/	/12/2016	S	SeqNo: 1	151503	Units: mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range O	Organics (GRO)	0.50	0.050	0.5000	0.03960	93.0	53.8	128	4.95	20		
Surr: BFB		10		10.00		99.8	70	130	0	0		

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 8 of 8

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

1

e

Client Name: Western Refi	ning Southw	Work Order Numb	ar 1600433		RcptNo	· 1
A				• •	Коричо	
Received by/date:	T	09/09/	16			
Logged By: Ashley Galle	egos ()	9/9/2016 7:30:00 AM	4 x	F		:
Completed By: Ashley Gaile		9/9/2016 8:36:29 AM	1	AR		
Reviewed By:	14	Calvalil	n	24-0		
Chain of Custody			μ	·		
1. Custody seals intact on sar	mple hottles?		Yes	No	Not Present	
 Is Chain of Custody complete 			Yes 🛃		Not Present	
 How was the sample delive 		:	Courier			
5, then nee the sample ability			<u>isounor</u>			
<u>Log In</u>				• . •		
4. Was an attempt made to c	ool the samples?	? .	Yes 🛃	No 🗔	NA	
	· · · ·	۲.	: .		· .	
5. Were all samples received	at a temperature	e of >0° C to 6.0°C	Yes 🚺	No 🗍	NA 🛄	
6. Sample(s) in proper contai	ner(s)?		Yes 🕷	No		
	()					
7. Sufficient sample volume for	or indicated test(s)?	Yes 🛃	No 🛄		
8. Are samples (except VOA a	and ONG) proper	rly preserved?	Yes 🙍	No		
9. Was preservative added to	bottles?		Yes	No 🛃	NA 📋	
10.VOA vials have zero heads	pace?		Yes 🕷	No 🗔	No VOA Vials	
11. Were any sample containe		en?	Yes	No 🗷	g	
					# of preserved bottles checked	
12. Does paperwork match bot			Yes 🕢	No 🗌	for pH:	
(Note discrepancies on cha 13 Are matrices correctly ident		Custodu?	Yes 🛃	No 🛄	Adjusted?	or >12 unless noted)
14. Is it clear what analyses we	· · · · · · · · · · · · · · · · · · ·	Cusiody?	Yes 🛃			
15. Were all holding times able	-		Yes 🛃	No 🗔	Checked by:	
(If no, notify customer for a		· · · ·			- -	
		· .	· · · · ·	·		
Special Handling (if appl	licable)					
16. Was client notified of all dis	crepancies with	this order?	Yes	No 🗌	NA 🖈	
Person Notified:	an a	Date		1 (2 1 m. 16) - 2015 (2 m. 2017) - 2017 - 2017 - 2017)		
By Whom:	nin tähtenin mensi män on sen sen san san sen sen san sen sen sen sen sen sen sen sen sen se	Via:	eMail	Phone E Fax	In Person	:
Regarding:			an (nan seri didektirka velikinada sekripti birgar velikinada sekripti birgar velikinada sekripti birgar sekripti s		
Client Instructions:		And				
17. Additional remarks:			19 E.			
18. Cooler Information						
Cooler No Temp °C	Condition Se	eal Intact Seal No	Seal Date	Signed By		
1 2.9	Good Yes	3	······································			
• • • • • •	te. Le tractioner					
Page 1 of 1						

· بنج ا	- Nor	ody Record	Turn-Around Time:	ime:				Ì	Ę	N M		Ĩ0	Σ	HALL ENVIRONMENTAL	IAI	
Xient: Western Refining	ng		X Standard	🗆 Rush				AP	M	ANALYSIS		AB	Õ	LABORATORY	N N N	≻
			Project Name: G	GAC				M	w.hal	lenvir	www.hallenvironmental.com	tal.co	ε			
50 CR 4990	4990			9-8-2	616	4	901 Hs	4901 Hawkins NE	- UE		Albuquerque, NM 87109	Je, NV	A 871	60		
Bloomfield, NM 87413	M 87413		Project #:	-		1	el. 50	Tel. 505-345-3975	3975	Fax	x 505	505-345-4107	4107			
^{*hone #: 505-632-4135}	2		PO#12615519	519						vnalys	Analysis Request	quest				
			Project Manager:	jer:						-						
X Level 2	X Level 4	X Level 4 (Full Validation)							(SM					ŗ		-
			Sampler: Mir	Michael A VI	Whiter							_		oətu		(N
			1.1.1	es	D No		_			s			(AO	∋txΞ		, or
			Sample Temperature:	erature:	3.9					etə			V-ir	1 02		<u>()</u> s
Matrix Samp	Samp	Sample Request ID	Container Type and #	Preservative Type	НЕАL NO: 1009433	BTEX + M BTEX + M	12108 H9T	TPH (Meth	1 1 9M) 8D3 0128) HA9	М 8 АЯЭЯ	i,∃) anoinA ite∋¶ 1808	8260B (VC	nə2) 0728	9015 B DF		Air Bubble
H ₂ 0 Lag	Lag		5 - VOA	HCI	-001		×					×				
H ₂ O Lag	Lag		1 - Amber	Cool										×		
H ₂ O Lead	Lead		5 - VOA	HCI	E00-		×					x		-		
H ₂ O Lead	Lead		1 - Amber	Cool										×		
H ₂ O Inlet	Inlet		5 - VOA	HCI	-003		×					×				
H ₂ O Inlet	Inlet		1 - Amber	Cool										×		
														-		
											-					
Relinquished by	Add Dea		Received by:	Jack	Date Time の/8/14 14イン	Remarks	ks:									
Rejinquished by:	ed by:	cele C	Received by:	04	00 00 05/10072/0											
samples submitted to Hall	omitted to Hall	If necessary, samples submitted to Hall Environmental may be subcentracted to other activedited laboratories.	centracted in other a	credited laborator	ries. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.	is possibili	y. Any s	ub-contr	acted da	ta will be	clearly n	lotated o	on the ar	nalytical r	eport.	



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

October 03, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

RE: GAC 9-8-2016

OrderNo.: 1609433

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 9/9/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued September 27, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> 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.

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Date Reported: 10/3/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

GAC 9-8-2016

1609433-001

Project: Lab ID: **Client Sample ID:** Lag Collection Date: 9/8/2016 11:00:00 AM

Received Date: 9/9/2016 7:30:00 AM

		-				
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RAN	GE				Analys	st: TOM
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	9/12/2016 3:12:01 PM	27429
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	9/12/2016 3:12:01 PM	27429
Surr: DNOP	144	67.9-149	%Rec	1	9/12/2016 3:12:01 PM	27429
EPA METHOD 8015D: GASOLINE R	ANGE				Analys	st: AG
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	9/12/2016 12:10:12 PM	M G37129
Surr: BFB	99.0	70-130	%Rec	1	9/12/2016 12:10:12 PI	M G37129
EPA METHOD 8260: VOLATILES SI	HORT LIST				Analys	st: AG
Benzene	ND	1.0	µg/L	1	9/12/2016 12:10:12 PI	M W37129
Toluene	ND	1.0	µg/L	1	9/12/2016 12:10:12 PI	M W37129
Ethylbenzene	ND	1.0	µg/L	1	9/12/2016 12:10:12 PM	M W37129
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	9/12/2016 12:10:12 PM	M W37129
Xylenes, Total	ND	1.5	µg/L	1	9/12/2016 12:10:12 PM	M W37129
Surr: 1,2-Dichloroethane-d4	103	70-130	%Rec	1	9/12/2016 12:10:12 PM	M W37129
Surr: 4-Bromofluorobenzene	98.3	70-130	%Rec	1	9/12/2016 12:10:12 PI	M W37129
Surr: Dibromofluoromethane	96.4	70-130	%Rec	1	9/12/2016 12:10:12 PI	M W37129
Surr: Toluene-d8	96.5	70-130	%Rec	1	9/12/2016 12:10:12 PM	M W37129

Matrix: AQUEOUS

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В
	D	Sample Diluted Due to Matrix	E
	Н	Holding times for preparation or analysis exceeded	J
	ND	Not Detected at the Reporting Limit	Р
	R	RPD outside accepted recovery limits	RL
	S	% Recovery outside of range due to dilution or matrix	W

- Analyte detected in the associated Method Blank
- Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 8
- Sample pH Not In Range
- Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 10/3/2016

CLIENT: Western Refining Southwe	est, Inc.		C	lient Samp	le ID: Le	ad	
Project: GAC 9-8-2016				Collection	Date: 9/5	5/2016 11:10:00 AM	
Lab ID: 1609433-002	Matrix:	AQUEOU	S	Received	Date: 9/9	0/2016 7:30:00 AM	
Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RAN	GE					Analyst	ТОМ
Diesel Range Organics (DRO)	ND	0.20		mg/L	1	9/12/2016 4:17:14 PM	27429
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	9/12/2016 4:17:14 PM	27429
Surr: DNOP	150	67.9-149	S	%Rec	1	9/12/2016 4:17:14 PM	27429
EPA METHOD 8015D: GASOLINE R	ANGE					Analyst	: AG
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/12/2016 1:36:45 PM	G37129
Surr: BFB	102	70-130		%Rec	1	9/12/2016 1:36:45 PM	G37129
EPA METHOD 8260: VOLATILES SH	HORT LIST					Analyst	: AG
Benzene	ND	1.0		µg/L	1	9/12/2016 1:36:45 PM	W37129
Toluene	ND	1.0		µg/L	1	9/12/2016 1:36:45 PM	W37129
Ethylbenzene	ND	1.0		µg/L	1	9/12/2016 1:36:45 PM	W37129
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/12/2016 1:36:45 PM	W37129
Xylenes, Total	ND	1.5		µg/L	1	9/12/2016 1:36:45 PM	W37129

70-130

70-130

70-130

70-130

105

99.2

102

101

%Rec

%Rec

%Rec

%Rec

1

1

1

1

9/12/2016 1:36:45 PM

9/12/2016 1:36:45 PM

9/12/2016 1:36:45 PM

9/12/2016 1:36:45 PM

W37129

W37129

W37129

W37129

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

Oualifiers:	*	Value exceeds Maximum Contaminant Level.
Quanners.		value execcus iviaximum contaminant Level.

D Sample Diluted Due to Matrix

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 8
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

EPA METHOD 8015D: GASOLINE RANGE

EPA METHOD 8260: VOLATILES SHORT LIST

Gasoline Range Organics (GRO)

Methyl tert-butyl ether (MTBE)

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

Surr: BFB

Benzene

Toluene

Oualifiers:

Ethylbenzene

Xylenes, Total

Lab Order 1609433 Date Reported: 10/3/2016

9/12/2016 3:31:53 PM

1

1

1

1

1

1

1

1

1

1

1

Analyst: AG

Analyst: AG

G37129

G37129

W37129

W37129

W37129

W37129

W37129

W37129

W37129

W37129

W37129

CLIENT: Western Refining Southwest, Ir	nc.	С	lient Sam	ple ID: Inlet
Project: GAC 9-8-2016			Collectior	Date: 9/8/2016 11:20:00 AM
Lab ID: 1609433-003	Matrix:	AQUEOUS	Received	Date: 9/9/2016 7:30:00 AM
Analyses	Result	PQL Qual	Units	DF Date Analyzed Batch
EPA METHOD 8015D: DIESEL RANGE				Analyst: TOM
Diesel Range Organics (DRO)	0.60	0.20	mg/L	1 9/13/2016 2:41:13 PM 27464
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1 9/13/2016 2:41:13 PM 27464
Surr: DNOP	122	67.9-149	%Rec	1 9/13/2016 2:41:13 PM 27464

0.050

70-130

1.0

1.0

1.0

1.0

1.5

S

70-130

70-130

70-130

70-130

mg/L

%Rec

µg/L

µg/L

µg/L

µg/L

µg/L

%Rec

%Rec

%Rec

%Rec

1.4

101

ND

ND

21

ND

8.1

87.3

60.1

84.6

100

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

iterer to the	QC Dunnin	ily lopolit un	a sumple logi	i ilugged Q		
						_

- * 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
 - R RPD outside accepted recovery limits
 - S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 8
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Client: Project:	Western F GAC 9-8-	Refining So 2016	outhwe	st, Inc.							
Sample ID 1	1609433-001BMS	SampT	ype: MS	8	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: I	_ag	Batch	ID: 27	429	F	RunNo: 3	7115				
Prep Date:	9/12/2016	Analysis D	ate: 9 /	12/2016	S	SeqNo: 1	151160	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Or	ganics (DRO)	3.4	0.20	2.500	0	135	73.3	174			
Surr: DNOP		0.37		0.2500		147	67.9	149			
Sample ID	1609433-001BMSE) SampT	ype: MS	SD	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: I	_ag	Batch	ID: 27	429	F	RunNo: 3	7115				
Prep Date:	9/12/2016	Analysis D	ate: 9 /	12/2016	5	SeqNo: 1	151161	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Or	ganics (DRO)	3.4	0.20	2.500	0	136	73.3	174	0.518	20	
Surr: DNOP		0.36		0.2500		143	67.9	149	0	0	
Sample ID	_CS-27429	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID:	_csw	Batch	ID: 27	429	F	RunNo: 3	7115				
Prep Date:	9/12/2016	Analysis D	ate: 9 /	12/2016	S	SeqNo: 1	151162	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Or	ganics (DRO)	3.3	0.20	2.500	0	131	65.4	162			
Surr: DNOP		0.35		0.2500		140	67.9	149			
Sample ID	MB-27429	SampT	ype: ME	3LK	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID:	PBW	Batch	ID: 27	429	F	RunNo: 3	7115				
Prep Date:	9/12/2016	Analysis D	ate: 9 /	12/2016	S	SeqNo: 1	151163	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Or	ganics (DRO)	ND	0.20								
Motor Oil Range	Organics (MRO)	ND	2.5								
Surr: DNOP		0.72		0.5000		145	67.9	149			
Sample ID 1	1609433-003BMS	SampT	ype: MS	3	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: I	nlet	Batch	ID: 27	464	F	RunNo: 3	7139				
Prep Date:	9/13/2016	Analysis D	ate: 9 /	13/2016	S	SeqNo: 1	152316	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Or	ganics (DRO)	3.8	0.20	2.500	0.6008	126	73.3	174			
Surr: DNOP		0.34		0.2500		137	67.9	149			

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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 4 of 8

Client: Project:	Western I GAC 9-8-	Refining S -2016	outhwe	st, Inc.							
Sample ID	1609433-003BMS) SampT	уре: МS	SD	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	Inlet	Batch	ID: 27	464	F	RunNo: 3	7139				
Prep Date:	9/13/2016	Analysis D	ate: 9 /	13/2016	S	SeqNo: 1	152317	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	rganics (DRO)	3.5	0.20	2.500	0.6008	118	73.3	174	5.98	20	
Surr: DNOP		0.33		0.2500		132	67.9	149	0	0	
Sample ID	LCS-27464	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	LCSW	Batch	ID: 27	464	F	RunNo: 3	7139				
Prep Date:	9/13/2016	Analysis D	ate: 9 /	13/2016	S	SeqNo: 1	152318	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	rganics (DRO)	2.9	0.20	2.500	0	118	65.4	162			
Surr: DNOP		0.33		0.2500		131	67.9	149			
Sample ID	MB-27464	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	PBW	Batch	ID: 27	464	F	RunNo: 3	7139				
Prep Date:	9/13/2016	Analysis D	ate: 9 /	13/2016	S	SeqNo: 1	152319	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	rganics (DRO)	ND	0.20								
Motor Oil Range	e Organics (MRO)	ND	2.5								
Surr: DNOP		0.62		0.5000		125	67.9	149			

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 5 of 8

WO#:	1609433
	02 Oct 16

Sample ID 100ng Ics	SamnT	ype: LC	°C	Tost		PA Mothod	8260: Volatile	e Short I	iet	
Client ID: LCSW		יאָנים אָרָע 1 ID: W :						S SHOILE	.151	
					unNo: 3					
Prep Date:	Analysis D	ate: 9/	12/2016	5	eqNo: 1	151445	Units: µg/L			
Analyte	Result	PQL		SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.7	70	130			
Toluene	18	1.0	20.00	0	91.9	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.4	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.2	70	130			
Surr: Toluene-d8	9.7		10.00		96.9	70	130			
Sample ID rb	SampT	ype: ME	BLK	Test	Code: El	PA Method	8260: Volatile	es Short L	.ist	
Client ID: PBW	Batch	n ID: W	37129	R	unNo: 3	7129				
Prep Date:	Analysis D	0ate: 9 /	12/2016	S	eqNo: 1	151446	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.1	70	130			
Surr: Dibromofluoromethane	10		10.00		99.9	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			
Sample ID 1609433-002ams	SampT	уре: М	6	Test	Code: El	PA Method	8260: Volatile	es Short L	.ist	
Client ID: Lead	Batcl	n ID: W	37129	R	unNo: 3	7129				
Prep Date:	Analysis D	0ate: 9 /	12/2016	S	eqNo: 1	151449	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.0	70	130			
Toluene	18	1.0	20.00	0	91.3	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.3	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.6		10.00		96.3	70	130			
Sample ID 1609433-002amso	SampT	уре: М	SD	Test	Code: El	PA Method	8260: Volatile	es Short L	ist	
Client ID: Lead	Batch	n ID: W:	37129	R	unNo: 3	7129				
Prep Date:	Analysis D)ate: 9 /	12/2016	S	eqNo: 1	151450	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.8	70	130	8.67	20	

D Sample Diluted Due to Matrix

Η Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

 \mathbf{S} % Recovery outside of range due to dilution or matrix E Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified W

Page 6 of 8

03-Oct-16

WO#:	1609433
	03-Oct-16

Client:	Western Refining Southwest, Inc.
Project:	GAC 9-8-2016

Sample ID 1609433-002ams	d SampT	уре: МS	SD	Tes	tCode: El	PA Method	8260: Volatil	es Short L	ist	
Client ID: Lead	Batch	1D: W3	37129	F	RunNo: 3	7129				
Prep Date:	Analysis D	ate: 9 /	12/2016	S	SeqNo: 1	151450	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	18	1.0	20.00	0	89.8	70	130	1.66	20	
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.9		10.00		98.8	70	130	0	0	
Surr: Dibromofluoromethane	9.7		10.00		97.4	70	130	0	0	
Surr: Toluene-d8	9.6		10.00		95.6	70	130	0	0	

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 7 of 8

Client: Project:	Western I GAC 9-8	Refining So -2016	outhwe	st, Inc.							
Sample ID	2.5ug gro lcs	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	LCSW	Batch	ID: G3	37129	F	RunNo: 3	37129				
Prep Date:		Analysis D	ate: 9/	12/2016	5	SeqNo: 1	151489	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	0.52	0.050	0.5000	0	105	75.4	118			
Surr: BFB		10		10.00		103	70	130			
Sample ID	rb	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	PBW	Batch	ID: G3	87129	F	RunNo: 3	37129				
Prep Date:		Analysis D	ate: 9/	12/2016	S	SeqNo: 1	151490	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
0	e Organics (GRO)	ND	0.10								
Surr: BFB		9.5		10.00		94.9	70	130			
Sample ID	1609433-001ams	SampT	ype: M \$	6	Tes	tCode: E	PA Method	8015D: Gasol	line Rang	e	
Client ID:	Lag	Batch	ID: G3	37129	F	RunNo: 3	37129				
Prep Date:		Analysis D	ate: 9/	12/2016	5	SeqNo: 1	151502	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	0.53	0.050	0.5000	0.03960	98.2	53.8	128			
Surr: BFB		9.9		10.00		98.9	70	130			
Sample ID	1609433-001amsd	I SampT	ype: MS	SD	Tes	tCode: E	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	Lag	Batch	ID: G3	37129	F	RunNo: 3	37129				
Prep Date:		Analysis D	ate: 9/	12/2016	S	SeqNo: 1	151503	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
	e Organics (GRO)	0.50	0.050	0.5000	0.03960	93.0	53.8	128	4.95	20	
Surr: BFB		10		10.00		99.8	70	130	0	0	

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 8 of 8

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

1

e

Client Name: Western Refi	ning Southw	Work Order Numb	ar 1600433		RcptNo	· 1
A				• •	Коричо	
Received by/date:	T	09/09/	16			
Logged By: Ashley Galle	egos ()	9/9/2016 7:30:00 AM	4 x	F		:
Completed By: Ashley Gaile		9/9/2016 8:36:29 AM	1	AT		
Reviewed By:	14	Calvalil	n	24-0		
Chain of Custody			ν	·		
1. Custody seals intact on sar	mple hottles?		Yes	No	Not Present	
 Is Chain of Custody complete 			Yes 🛃		Not Present	
 How was the sample delive 		:	Courier			
5, then nee the sample ability			<u>isounor</u>			
<u>Log In</u>				• .		
4. Was an attempt made to c	ool the samples?	? .	Yes 🛃	No 🗔	NA	
	· · · ·	۲.	: .		· .	
5. Were all samples received	at a temperature	e of >0° C to 6.0°C	Yes 🚺	No 🗍	NA 🛄	
6. Sample(s) in proper contai	ner(s)?		Yes 🕷	No		
	()					
7. Sufficient sample volume for	or indicated test(s)?	Yes 🛃	No 🛄		
8. Are samples (except VOA a	and ONG) proper	rly preserved?	Yes 🙍	No		
9. Was preservative added to	bottles?		Yes	No 🛃	NA 📋	
10.VOA vials have zero heads	pace?		Yes 🕷	No 🗔	No VOA Vials	
11. Were any sample containe		en?	Yes	No 🗷	g	
					# of preserved bottles checked	
12. Does paperwork match bot			Yes 🕢	No 🗌	for pH:	
(Note discrepancies on cha 13 Are matrices correctly ident		Custodu?	Yes 🛃	No 🛄	Adjusted?	or >12 unless noted)
14. Is it clear what analyses we	· · · · · · · · · · · · · · · · · · ·	Cusiody?	Yes 🛃			
15. Were all holding times able	-		Yes 🛃	No 🗔	Checked by:	
(If no, notify customer for a		· · · ·			- -	
		· .	· · · · ·	·		
Special Handling (if appl	licable)					
16. Was client notified of all dis	crepancies with	this order?	Yes []	No 🗌	NA 🖈	
Person Notified:	an a	Date		1 (2 1 m. 16) - 2015 (2 m. 2017) - 2017 - 2017 - 2017)		
By Whom:	nin tähtenin mensi män on sen sen san san sen sen san sen sen sen sen sen sen sen sen sen se	Via:	eMail	Phone E Fax	In Person	:
Regarding:			an (nan seri didektirka velikinada sekripti birgar velikinada sekripti birgar velikinada sekripti birgar sekripti s		
Client Instructions:		And				
17. Additional remarks:			19 E.			
18. Cooler Information						
Cooler No Temp °C	Condition Se	eal Intact Seal No	Seal Date	Signed By		
1 2.9	Good Yes	3	······································			
• • • • • •	te. Le tractioner					
Page 1 of 1						

· بنج ا	- Nor Nor	ody Record	Turn-Around Time:	ime:				Ì	Ę	N M		Ĩ0	Σ	HALL ENVIRONMENTAL	IAI	
Xient: Western Refining	ng		X Standard	🗆 Rush				AP	M	ANALYSIS		AB	Õ	LABORATORY	N N N	≻
			Project Name: G	GAC				M	w.hal	lenvir	www.hallenvironmental.com	tal.co	ε			
50 CR 4990	4990			9-8-2	616	4	901 Hs	4901 Hawkins NE	- UE		Albuquerque, NM 87109	Je, NV	A 871	60		
Bloomfield, NM 87413	M 87413		Project #:	-		1	el. 50	Tel. 505-345-3975	3975	Fax	x 505	505-345-4107	4107			
^{*hone #: 505-632-4135}	2		PO#12615519	519						vnalys	Analysis Request	quest				
			Project Manager:	jer:						-						
X Level 2	X Level 4	X Level 4 (Full Validation)							(SM					ŗ		-
			Sampler: Mir	Michael A VI	Whiter							_		oətu		(N
			1.1.1	es	D No		_			S			(AO	∋txΞ		, or
			Sample Temperature:	erature:	3.9					etə			V-ir	1 02		<u>()</u> s
Matrix Samp	Samp	Sample Request ID	Container Type and #	Preservative Type	НЕАL NO: 1009433	BTEX + M BTEX + M	12108 H9T	TPH (Meth	1 1 9M) 8D3 0128) HA9	М 8 АЯЭЯ	i,∃) anoinA ite∋¶ 1808	8260B (VC	nə2) 0728	9015 B DF		Air Bubble
H ₂ 0 Lag	Lag		5 - VOA	HCI	-001		×					×				
H ₂ O Lag	Lag		1 - Amber	Cool										×		
H ₂ O Lead	Lead		5 - VOA	HCI	-00J		×					x		-		
H ₂ O Lead	Lead		1 - Amber	Cool										×		
H ₂ O Inlet	Inlet		5 - VOA	HCI	-003		×					×				
H ₂ O Inlet	Inlet		1 - Amber	Cool										×		
														-		
											-					
Relinquished by	Add Dea		Received by:	Jack	Date Time の/8/14 14イン	Remarks	ks:									
Rejinquished by:	ed by:	cele C	Received by:	04	00 00 05/10072/0											
samples submitted to Hall	omitted to Hall	If necessary, samples submitted to Hall Environmental may be subcentracted to other activedited laboratories.	centracted in other a	credited laborator	ries. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.	is possibili	y. Any s	ub-contr	acted da	ta will be	clearly n	lotated o	on the ar	nalytical r	eport.	



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

October 25, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

OrderNo.: 1610514

RE: GAC Lead 10-11-2016

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/12/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1610514 Date Reported: 10/25/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: GAC Lead 10-11-2016

Client Sample ID: GAC Lead Collection Date: 10/11/2016 2:05:00 PM Received Date: 10/12/2016 7:20:00 AM

Lab ID: 1610514-001	Matrix:	AQUEOUS	Received I	Date: 10/12/2	2016 7:20:00 AM
Analyses	Result	PQL Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANG	E				Analyst: JME
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	10/18/2016 1:23:12 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	10/18/2016 1:23:12 PM
Surr: DNOP	134	67.9-149	%Rec	1	10/18/2016 1:23:12 PM
EPA METHOD 8015D: GASOLINE RA	NGE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	10/13/2016 11:37:53 AM
Surr: BFB	84.7	66.4-120	%Rec	1	10/13/2016 11:37:53 AM
EPA METHOD 8260: VOLATILES SHO	ORT LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	10/12/2016 7:15:47 PM
Toluene	ND	1.0	µg/L	1	10/12/2016 7:15:47 PM
Ethylbenzene	ND	1.0	µg/L	1	10/12/2016 7:15:47 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	10/12/2016 7:15:47 PM
Xylenes, Total	ND	1.5	µg/L	1	10/12/2016 7:15:47 PM
Surr: 1,2-Dichloroethane-d4	95.9	70-130	%Rec	1	10/12/2016 7:15:47 PM
Surr: 4-Bromofluorobenzene	98.0	70-130	%Rec	1	10/12/2016 7:15:47 PM
Surr: Dibromofluoromethane	96.2	70-130	%Rec	1	10/12/2016 7:15:47 PM
Surr: Toluene-d8	95.2	70-130	%Rec	1	10/12/2016 7:15:47 PM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 5
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1610514 Date Reported: 10/25/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: GAC Lead 10-11-2016

Client Sample ID: GAC Inlet Collection Date: 10/11/2016 10:50:00 AM Received Date: 10/12/2016 7:20:00 AM

Lab ID: 1610514-002	Matrix:	AQUEOUS	Received I	Date: 10/12/	2016 7:20:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE					Analyst: JME
Diesel Range Organics (DRO)	0.52	0.20	mg/L	1	10/18/2016 2:28:40 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	10/18/2016 2:28:40 PM
Surr: DNOP	129	67.9-149	%Rec	1	10/18/2016 2:28:40 PM
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst: NSB
Gasoline Range Organics (GRO)	0.47	0.050	mg/L	1	10/13/2016 1:15:16 PM
Surr: BFB	181	66.4-120 \$	8 %Rec	1	10/13/2016 1:15:16 PM
EPA METHOD 8260: VOLATILES SHOP	RT LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	10/12/2016 8:12:55 PM
Toluene	ND	1.0	µg/L	1	10/12/2016 8:12:55 PM
Ethylbenzene	16	1.0	µg/L	1	10/12/2016 8:12:55 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	10/12/2016 8:12:55 PM
Xylenes, Total	6.9	1.5	µg/L	1	10/12/2016 8:12:55 PM
Surr: 1,2-Dichloroethane-d4	95.1	70-130	%Rec	1	10/12/2016 8:12:55 PM
Surr: 4-Bromofluorobenzene	102	70-130	%Rec	1	10/12/2016 8:12:55 PM
Surr: Dibromofluoromethane	90.0	70-130	%Rec	1	10/12/2016 8:12:55 PM
Surr: Toluene-d8	95.4	70-130	%Rec	1	10/12/2016 8:12:55 PM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 5
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

0.20

2.500

0.2500

3.1

0.26

Client:	Western I	Refining S	Southwe	st, Inc.							
Project:	GAC Lea	d 10-11-2	016								
Sample ID	MB-28104	SampT	Гуре: МІ	BLK	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	PBW	Batch	h ID: 28	104	F	RunNo: 3	8002				
Prep Date:	10/17/2016	Analysis D	Date: 1	0/18/2016	S	SeqNo: 1	185675	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	Organics (DRO)	ND	0.20								
Motor Oil Rang	e Organics (MRO)	ND	2.5								
Surr: DNOP		0.62		0.5000		124	67.9	149			
Sample ID	LCS-28104	SampT	Type: LC	s	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	LCSW	Batcl	h ID: 28	104	F	RunNo: 3	8002				
Prep Date:	10/17/2016	Analysis D	Date: 1	0/18/2016	S	SeqNo: 1	185676	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range (Drganics (DRO)	3.3	0.20	2.500	0	130	65.4	162			
Surr: DNOP		0.29		0.2500		115	67.9	149			
Sample ID	1610514-001BMS	SampT	Гуре: М	6	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC Lead	Batch	h ID: 28	104	F	RunNo: 3	8002				
Prep Date:	10/17/2016	Analysis D	Date: 1	0/18/2016	5	SeqNo: 1	185679	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range O	Organics (DRO)	3.1	0.20	2.500	0	123	73.3	174			
Surr: DNOP		0.26		0.2500		104	67.9	149			
Sample ID	1610514-001BMSI) SampT	Гуре: М	SD	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID:	GAC Lead	Batch	h ID: 28	104	F	RunNo: 3	8002				
Prep Date:	10/17/2016	Analysis D	Date: 1	0/18/2016	5	SeqNo: 1	185680	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

0

123

104

73.3

67.9

174

149

0.371

0

20

0

Page 3 of 5

Qualifiers:

Diesel Range Organics (DRO)

Surr: DNOP

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

18

20.00

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Client:		Refining So		st, Inc.							
Project:	GAC Lea	d 10-11-20	016								
Sample ID	RB	SampT	ype: ME	BLK	Tes	tCode: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	PBW	Batch	ID: W3	37914	F	RunNo: 37	7914				
Prep Date:		Analysis D	ate: 10	0/13/2016	S	eqNo: 1	182118	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	ND	0.050								
Surr: BFB		17		20.00		86.9	66.4	120			
Sample ID	2.5UG GRO LCS	SampT	ype: LC	s	Tes	tCode: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	LCSW	Batch	1D: W3	37914	F	RunNo: 37	7914				
Prep Date:		Analysis D	ate: 10	0/13/2016	S	eqNo: 1	182119	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	0.52	0.050	0.5000	0	104	80	120			
Surr: BFB		17		20.00		85.9	66.4	120			
Sample ID	1610514-001AMS	SampT	уре: М	3	Tes	tCode: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	GAC Lead	Batch	ID: W3	37914	F	RunNo: 37	7914				
Prep Date:		Analysis D	ate: 10	0/13/2016	S	eqNo: 1	182121	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	0.53	0.050	0.5000	0	105	70	130			
Surr: BFB		18		20.00		90.9	66.4	120			
Sample ID	1610514-001AMSE	SampT	уре: МS	SD	Tes	tCode: EF	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	GAC Lead	Batch	1D: W3	37914	F	RunNo: 37	7914				
Prep Date:		Analysis D	ate: 10	0/13/2016	S	eqNo: 1	182122	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	0.51	0.050	0.5000	0	102	70	130	3.33	20	

Qualifiers:

Surr: BFB

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range

88.0

66.4

120

0

0

Page 4 of 5

- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

9.8

10.00

	Vestern Refining S GAC Lead 10-11-2		est, Inc.							
Sample ID rb SampT		ampType: MBLK		TestCode: EPA Method 8260: Volatiles Short List						
Client ID: PBW	Batc	Batch ID: SL37899		RunNo: 37899						
Prep Date:	Analysis [Analysis Date: 10/12/2016		SeqNo: 1180619			Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane	-d4 9.7		10.00		97.0	70	130			
Surr: 4-Bromofluorobenz	ene 9.7		10.00		97.5	70	130			
Surr: Dibromofluorometh	ane 9.5		10.00		94.8	70	130			
Surr: Toluene-d8	9.7		10.00		96.5	70	130			
Sample ID 100ng Ic	0 100ng lcs SampType: LCS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: LCSW	Batc	Batch ID: SL37899		RunNo: 37899						
Prep Date:	Analysis [Analysis Date: 10/12/2016		SeqNo: 1180620			Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane	-d4 9.8		10.00		97.8	70	130			
Surr: 4-Bromofluorobenz	ene 9.9		10.00		98.5	70	130			
Surr: Dibromofluorometh	ane 9.7		10.00		97.2	70	130			

97.7

70

130

Qualifiers:

Surr: Toluene-d8

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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HALL
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

Received by/date: 10/12/16 Logged By: Lindsay Mangin 10/12/2016 7:20:00 Completed By: Lindsay Mangin 10/12/2016 9:29:15 Reviewed By: aff 10/12/2016 9:29:15 Chain of Custody 10/12/2016 9:29:15 1. Custody seals intact on sample bottles? 2. Is Chain of Custody complete?		Jonahy Hilbolgs Jonahy Hilbolgs	
Completed By: Lindsay Mangin 10/12/2016 9:29:15 Reviewed By: Image: Completed By: Image: Completed By: Chain of Custody Image: Completed By: Image: Completed By: 1. Custody seals intact on sample bottles?		Jouly/Hlygo Jouly/Hlygo	
Reviewed By: and 10/12/16 <u>Chain of Custody</u> 1. Custody seals intact on sample bottles?	AM	Junky Hodopo	
<u>Chain of Custody</u> 1. Custody seals intact on sample bottles?			
1. Custody seals intact on sample bottles?			
2. Is Chain of Custody complete?	Yes 🗌	No 🗌	Not Present 🕢
	Yes 🐱	No 🗌	Not Present
3. How was the sample delivered?	Courier		
Log In			
4. Was an attempt made to cool the samples?	Yes 🖈	No 🗌	
5. Were all samples received at a temperature of $>0^{\circ}$ C to 6.0°C	Yes 🛃	No 🗌	
6. Sample(s) in proper container(s)?	Yes 🖌	No 🗌	
7. Sufficient sample volume for indicated test(s)?	Yes 🛃	No 🗌	
8. Are samples (except VOA and ONG) properly preserved?	Yes 🖈	No 🗌	
9. Was preservative added to bottles?	Yes 🗌	No 🛃	NA 🗌
10.VOA vials have zero headspace?	Yes 🖈	No 🗌	No VOA Viais
11. Were any sample containers received broken?	Yes 🗌	No 🛃 🏾	# of preserved
12.Does paperwork match bottle labels?	Yes 🛃	No 🗔	bottles checked for pH:
(Note discrepancies on chain of custody)			(<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes 🖈	No 🗌	Adjusted?
14. Is it clear what analyses were requested?	Yes 🖈	No 📙	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🖈	No 🗌	Checked by:
Special Handling (if applicable)		_	
16. 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:			
17. Additional remarks:			

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.2	Good	Yes			an a

	HALL ENVIRONMENTAL ANALYSTS LAPOPATODY		Albiditeration NM 87109	107					viet	с Э	3270 (Semi- 3015B DRO Air Bubbles	3			×							-	
i (505-345-4107	Request	κjι			(JTE	1 (v	AOV) 80928	3 ×		×								-	
ĺ	5 v										S081 Pestic]	
			Albuc	rkazan -	Analysis		S 'Od	°O			9M 8 AЯጋЯ O,∃) anoinA	+				 -						-	
				١C	An		(SV	VIS			0168) HA9			+					·	i		-	
	AALL		ins N	45-39				()	· Þ09	p	EDB (Metho						 					4	
	 .	4	4901 Hawkins NF	505-345-3975							TPH (Metho											1	
			1901	Tel							TM + X3T8 88108 H9T	×	-	×				 				ks:	
											TEX + MT					 					 	Remarks	
									19. N.	an i	\sim	_		\uparrow		<u> </u>						63	<u>_</u>
-	ų	ead	2016				A ^c No	A 111.1/01		Ľ.	HEAL NO		18	6	-002							Date Time <u> 10/11/10 14</u>	0/12/16 077
1 Time:	d 🗆 Rush	le: GAC - Lead	- (1-0[5519	ader:	IN RADINSON		Ja Yes	(perature: 🧷	Preservativ e Type	HCI	Cool	HCI	Cool							<u>ullallu</u>) A
Turn-Around Time:	X Standard	Project Name:	Date:	Project #:	PO#12615519	Project Manager:	Kelly	Sampler:	On Ice	Sample Temperature:	Container Type and #	5 VOA	1-500-ml Amber	5 VOA	1-500-ml Amber		-					Received by:	
Chain-of-Custody Record	ling		#50 CR 4990	Bloomfield, NM 87413	15		X Level 4 (Full Validation)				Sample Request ID	GAC - Lead	GAC - Lead	GAC -Inlet	GAC -Inlet							d by: 1by:	
-of-Cu	Client: Western Refining			omfield,	Phone #: 505-632-4135						Matrix	H ₂ O	H ₂ O	H ₂ O	H ₂ 0							Relinquished by	2017 Whit Water U A 101
nain	Neste		Adres	Blo	505	Fax#:	ackage. ard		Type)		Time	1405	\rightarrow	20	\rightarrow			E				Time: [너도 b Time:	2017
ប	Client: \		Mailing Address:		Phone #	email or Fax#:	QA/QC Package:	□ Other	X EDD (Type)		Date	10-11-16			\rightarrow							Date: Ti <i>10-1/-/6</i> [Date: Ti	olidie 2



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

November 11, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

OrderNo.: 1611230

RE: GAC-Lead 11-2-2016

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/3/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1611230 Date Reported: 11/11/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. GAC-Lead 11-2-2016

Project:

Client Sample ID: GAC-Lead Collection Date: 11/2/2016 11:10:00 AM Received Date: 11/3/2016 8:20:00 AM

Lab ID: 1611230-001	Matrix:	AQUEOUS	Received	Received Date: 11/3/2016 8:20:00 AM								
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed	Batch						
EPA METHOD 8015D: DIESEL RANGE					Analyst	том						
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	11/9/2016 3:17:36 PM	28545						
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	11/9/2016 3:17:36 PM	28545						
Surr: DNOP	121	67.9-149	%Rec	1	11/9/2016 3:17:36 PM	28545						
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst	NSB						
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	11/8/2016 11:27:42 AM	G38528						
Surr: BFB	88.4	66.4-120	%Rec	1	11/8/2016 11:27:42 AM	G38528						
EPA METHOD 8260: VOLATILES SHOR	T LIST				Analyst	AG						
Benzene	ND	1.0	µg/L	1	11/8/2016 9:32:38 PM	C38539						
Toluene	ND	1.0	µg/L	1	11/8/2016 9:32:38 PM	C38539						
Ethylbenzene	ND	1.0	µg/L	1	11/8/2016 9:32:38 PM	C38539						
Xylenes, Total	ND	1.5	µg/L	1	11/8/2016 9:32:38 PM	C38539						
Surr: 1,2-Dichloroethane-d4	99.9	70-130	%Rec	1	11/8/2016 9:32:38 PM	C38539						
Surr: 4-Bromofluorobenzene	95.8	70-130	%Rec	1	11/8/2016 9:32:38 PM	C38539						
Surr: Dibromofluoromethane	100	70-130	%Rec	1	11/8/2016 9:32:38 PM	C38539						
Surr: Toluene-d8	102	70-130	%Rec	1	11/8/2016 9:32:38 PM	C38539						

		~	J 1	1 0	00		I	
Qualifiers:	*	Value ex	ceeds Maximum Co	ntaminant Level.	В	Analyte d	etected in the associated	l Method

- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 5 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Analytical Report Lab Order 1611230 Date Reported: 11/11/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. GAC-Lead 11-2-2016

Project:

Client Sample ID: GAC-Inlet Collection Date: 11/2/2016 11:20:00 AM Received Date: 11/3/2016 8:20:00 AM

Lab ID: 1611230-002	Matrix:	AQUEOUS	Received	Received Date: 11/3/2016 8:20:00 AM							
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch					
EPA METHOD 8015D: DIESEL RANGE					Analyst	TOM					
Diesel Range Organics (DRO)	0.49	0.20	mg/L	1	11/9/2016 4:22:23 PM	28545					
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	11/9/2016 4:22:23 PM	28545					
Surr: DNOP	122	67.9-149	%Rec	1	11/9/2016 4:22:23 PM	28545					
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst	NSB					
Gasoline Range Organics (GRO)	0.39	0.050	mg/L	1	11/8/2016 11:52:15 AM	G38528					
Surr: BFB	200	66.4-120	S %Rec	1	11/8/2016 11:52:15 AM	G38528					
EPA METHOD 8260: VOLATILES SHOR	RT LIST				Analyst	AG					
Benzene	1.5	1.0	µg/L	1	11/8/2016 10:01:16 PM	C38539					
Toluene	ND	1.0	µg/L	1	11/8/2016 10:01:16 PM	C38539					
Ethylbenzene	12	1.0	µg/L	1	11/8/2016 10:01:16 PM	C38539					
Xylenes, Total	4.1	1.5	µg/L	1	11/8/2016 10:01:16 PM	C38539					
Surr: 1,2-Dichloroethane-d4	87.7	70-130	%Rec	1	11/8/2016 10:01:16 PM	C38539					
Surr: 4-Bromofluorobenzene	90.7	70-130	%Rec	1	11/8/2016 10:01:16 PM	C38539					
Surr: Dibromofluoromethane	87.5	70-130	%Rec	1	11/8/2016 10:01:16 PM	C38539					
Surr: Toluene-d8	100	70-130	%Rec	1	11/8/2016 10:01:16 PM	C38539					

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Metl

- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- thod Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 5 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

ND

0.20

	Refining Sead 11-2-20		st, Inc.							
8545	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D: Diese	l Range		
,	Batch	n ID: 28	545	RunNo: 38562						
2016	Analysis D	ate: 1	1/9/2016	S	SeqNo: 1	204867	Units: mg/L			
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
(DRO)	2.5	0.20	2.500	0	101	72	170			
	0.28		0.2500		111	67.9	149			
545	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015D: Diese	l Range		
	Batch	n ID: 28	545	F	RunNo: 3	8562				
2016	Analysis D	ate: 1	1/9/2016	S	eqNo: 1	204868	Units: mg/L			
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Motor Oil Range Organics (MRO) Surr: DNOP	ND 0.61	2.5	0.5000		122	67.9	149			
Sample ID 1611230-001BMS	SampT	ype: MS	3	Tes	tCode: EF	PA Method	8015D: Diese	l Range		
Client ID: GAC-Lead	Batch	ID: 28	545 RunNo: 38562							
Prep Date: 11/8/2016	Analysis D	ate: 1 1	/9/2016	S	eqNo: 12	205312	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.6	0.20	2.500	0	104	75.4	162			
Surr: DNOP	0.28		0.2500		114	67.9	149			
Sample ID 1611230-001BMSI	ample ID 1611230-001BMSD SampType: MSD TestCode: EPA Method 8015D: Diesel Range									
Client ID: GAC-Lead	Batch	atch ID: 28545 RunNo: 38562								
Prep Date: 11/8/2016	Analysis D	ate: 1 1	/9/2016	S	eaNo: 1	205313	Units: ma/L			

Prep Date. 11/6/2016	Analysis D	ale. Th	1/9/2016	3	equino. T	205313	Units. mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.6	0.20	2.500	0	104	75.4	162	0.0154	20	
Surr: DNOP	0.29		0.2500		115	67.9	149	0	0	

Qualifiers:

Client:

Project:

Prep Date:

Surr: DNOP

Analyte

Analyte

Sample ID LCS-28545 Client ID: LCSW

Diesel Range Organics (DRO)

Sample ID MB-28545 Client ID: PBW Prep Date: 11/8/2016

Diesel Range Organics (DRO)

11/8/2016

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

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11-N	ov-16
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	Refining S ad 11-2-20		st, Inc.							
Sample ID RB	SampT	Гуре: МЕ	BLK	Tes	tCode: E	PA Method	8015D: Gasol	ine Rang	e	
Client ID: PBW	Batch	h ID: G3	8528	F	RunNo: 3	8528				
Prep Date:	Analysis D	Date: 1'	1/8/2016	S	eqNo: 1	203934	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		88.7	66.4	120			
Sample ID 2.5UG GRO LCS	SampT	Type: LC	s	TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSW	Batch	h ID: G3	8528	F	RunNo: 3	8528				
Prep Date:	Analysis D	Date: 1	1/8/2016	S	eqNo: 1	203935	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	91.9	80	120			
Surr: BFB	19		20.00		93.3	66.4	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

	rn Refining S Lead 11-2-20		st, Inc.							
Sample ID 100ng Ics2	SampT	ype: LC	s	Tes	tCode: El	PA Method	8260: Volatile	es Short L	.ist	
Client ID: LCSW	Batch	n ID: C3	8539	F	RunNo: 3	8539				
Prep Date:	Analysis D	ate: 1	1/8/2016	5	SeqNo: 1	204485	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		95.7	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.9	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.8	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			
Sample ID rb3	SampT	уре: М	BLK	Tes	tCode: El	PA Method	8260: Volatile	es Short L	.ist	
Client ID: PBW	Batch	n ID: C3	8539	F	RunNo: 3	8539				
Client ID: PBW Prep Date:	Batch Analysis D				RunNo: 3 SeqNo: 1		Units: µg/L			
Prep Date:			1/9/2016				Units: µg/L HighLimit	%RPD	RPDLimit	Qual
Prep Date: Analyte	Analysis D	ate: 1	1/9/2016	S	SeqNo: 1	204486		%RPD	RPDLimit	Qual
Prep Date: Analyte Benzene	Analysis D Result	Date: 1 PQL	1/9/2016	S	SeqNo: 1	204486		%RPD	RPDLimit	Qual
	Analysis D Result ND	Date: 1 PQL 1.0	1/9/2016	S	SeqNo: 1	204486		%RPD	RPDLimit	Qual
Prep Date: Analyte Benzene Toluene Ethylbenzene	Analysis D Result ND ND	Date: 1 PQL 1.0 1.0	1/9/2016	S	SeqNo: 1	204486		%RPD	RPDLimit	Qual
Prep Date: Analyte Benzene Toluene	Analysis D Result ND ND ND	Date: 1 PQL 1.0 1.0 1.0	1/9/2016	S	SeqNo: 1	204486		%RPD	RPDLimit	Qual
Prep Date: Analyte Benzene Toluene Ethylbenzene Kylenes, Total	Analysis D Result ND ND ND ND	Date: 1 PQL 1.0 1.0 1.0	1/9/2016 SPK value	S	SeqNo: 1	204486 LowLimit	HighLimit	%RPD	RPDLimit	Qual
Prep Date: Analyte Benzene Toluene Ethylbenzene Xylenes, Total Surr: 1,2-Dichloroethane-d4	Analysis D Result ND ND ND ND 9.9	Date: 1 PQL 1.0 1.0 1.0	1/9/2016 SPK value 10.00	S	SeqNo: 12 %REC 98.8	204486 LowLimit 70	HighLimit 130	%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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 5 of 5

: Laboratory Hawkins NE 2, NM 87109 95-345-4107 nmental.com	Samp	le Log-In Check List
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Client: Western Refining	X Standard	Rush		H	HALL ENVIRONMEN ANALYSTS LABORAT	STS	IR	DND DND	I ABORATORY	AL
	Project Name: GAC - Let	- Lead			www.hallenvironmental.com	Inviron	menta	Com	Ś	Ę
#50 CR 4990	Date: - 2	2-2016	490	4901 Hawkins NE		Albugu	erdne	Albuquerque, NM 87109	7109	
Bloomfield, NM 87413	Project #:		Tel.	505-345-3975		Fax	505-3	505-345-4107	10	
	PO#12615519				An	Analysis	Request	est		
	Project Manager:		lno	280		os		juo		
X Level 4 (Full Validation)			seÐ)	N- 09	(SW	^{5'} PO4'8		3810	p	
	Sampler: Michael	A Wicker	ГРН	(1)		ON			əpı	
	On Ice: R.Yes		. + 3	814	_				iətx <u>=</u>	
	Sample Temperature:	: 3.2	181	ро			-1.1.7		10	
Sample Request ID	Container Preservativ Type and # e Type	vativ HEAL No.	BTEX + M	TPH (Meth Meth (Meth	PAH (8310	R 6 АЯЭЯ Anions (F,	itea9 1808	8550 (Sem 9250 (AC	9015B DR	əlddu8 זיא
GAC - Lead	5 VOA HCI	100-	×			<u></u>	×			
GAC - Lead	1-500-ml Cool	-001							×	
GAC -Inlet	5 VOA HCI	C00-	×			_	×			
GAC -Inlet	1-500-ml Amber Cool	- 003							×	
1										
Relinquished by:	Received by: N/1/bet	Date Time	Remarks:				-			
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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

November 15, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

OrderNo.: 1611230

Dear Kelly Robinson:

RE: GAC-Lead 11-2-2016

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/3/2016 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued November 11, 2016.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> 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.

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1611230 Date Reported: 11/15/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. GAC-Lead 11-2-2016

1611230-001

Project:

Lab ID:

Client Sample ID: GAC-Lead Collection Date: 11/2/2016 11:10:00 AM Received Date: 11/3/2016 8:20:00 AM

Analyses Result PQL Qual Units **DF** Date Analyzed Batch **EPA METHOD 8015D: DIESEL RANGE** Analyst: TOM Diesel Range Organics (DRO) mg/L 11/9/2016 3:17:36 PM ND 0.20 1 28545 Motor Oil Range Organics (MRO) ND 2.5 mg/L 1 11/9/2016 3:17:36 PM 28545 Surr: DNOP 121 %Rec 11/9/2016 3:17:36 PM 28545 67.9-149 1 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) ND 0.050 mg/L 1 11/8/2016 11:27:42 AM G38528 Surr: BFB 88.4 66.4-120 %Rec 11/8/2016 11:27:42 AM G38528 1 **EPA METHOD 8260: VOLATILES SHORT LIST** Analyst: AG Benzene 11/8/2016 9:32:38 PM R38539 ND 1.0 µg/L 1 Toluene ND 1.0 µg/L 11/8/2016 9:32:38 PM R38539 1 Ethylbenzene ND 1.0 µg/L 1 11/8/2016 9:32:38 PM R38539 Methyl tert-butyl ether (MTBE) ND 1.0 µg/L 1 11/8/2016 9:32:38 PM R38539 Xylenes, Total ND 1.5 µg/L 11/8/2016 9:32:38 PM R38539 1 Surr: 1,2-Dichloroethane-d4 99.9 %Rec R38539 70-130 1 11/8/2016 9:32:38 PM Surr: 4-Bromofluorobenzene 95.8 70-130 %Rec R38539 1 11/8/2016 9:32:38 PM Surr: Dibromofluoromethane 100 70-130 %Rec 1 11/8/2016 9:32:38 PM R38539 Surr: Toluene-d8 102 70-130 %Rec 1 11/8/2016 9:32:38 PM R38539

Matrix: AQUEOUS

(Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte
		D	Sample Diluted Due to Matrix	Е	Value a
		Н	Holding times for preparation or analysis exceeded	J	Analyte
		ND	Not Detected at the Reporting Limit	Р	Sample

- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- te detected in the associated Method Blank
- above quantitation range
- te detected below quantitation limits Page 1 of 5
- e pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Analytical Report Lab Order 1611230 Date Reported: 11/15/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. GAC-Lead 11-2-2016

1611230-002

Project:

Lab ID:

Client Sample ID: GAC-Inlet Collection Date: 11/2/2016 11:20:00 AM Received Date: 11/3/2016 8:20:00 AM

			-		2 4000 1 1		
Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RAN	GE					Analyst	: том
Diesel Range Organics (DRO)	0.49	0.20		mg/L	1	11/9/2016 4:22:23 PM	28545
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	11/9/2016 4:22:23 PM	28545
Surr: DNOP	122	67.9-149		%Rec	1	11/9/2016 4:22:23 PM	28545
EPA METHOD 8015D: GASOLINE R	ANGE					Analyst	: NSB
Gasoline Range Organics (GRO)	0.39	0.050		mg/L	1	11/8/2016 11:52:15 AM	G38528
Surr: BFB	200	66.4-120	S	%Rec	1	11/8/2016 11:52:15 AM	G38528
EPA METHOD 8260: VOLATILES SI	HORT LIST					Analyst	: AG
Benzene	1.5	1.0		µg/L	1	11/8/2016 10:01:16 PM	R38539
Toluene	ND	1.0		µg/L	1	11/8/2016 10:01:16 PM	R38539
Ethylbenzene	12	1.0		µg/L	1	11/8/2016 10:01:16 PM	R38539
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/8/2016 10:01:16 PM	R38539
Xylenes, Total	4.1	1.5		µg/L	1	11/8/2016 10:01:16 PM	R38539
Surr: 1,2-Dichloroethane-d4	87.7	70-130		%Rec	1	11/8/2016 10:01:16 PM	R38539
Surr: 4-Bromofluorobenzene	90.7	70-130		%Rec	1	11/8/2016 10:01:16 PM	R38539
Surr: Dibromofluoromethane	87.5	70-130		%Rec	1	11/8/2016 10:01:16 PM	R38539
Surr: Toluene-d8	100	70-130		%Rec	1	11/8/2016 10:01:16 PM	R38539

Matrix: AQUEOUS

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Metho

- D Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- Analyte detected in the associated Method Blank В
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 5 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

	n Refining S .ead 11-2-20		st, Inc.							
8545	SampT	ype: LC	S	Test	Code: E	PA Method	8015D: Diese	l Range		
,	Batch	n ID: 28	545	R	unNo: 3	8562				
2016	Analysis D	ate: 11	1/9/2016	S	eqNo: 1	204867	Units: mg/L			
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
(DRO)	2.5	0.20	2.500	0	101	72	170			
	0.28		0.2500		111	67.9	149			

Sample ID MB-28545	SampT	уре: МЕ	3LK	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: PBW	Batch	ID: 28	545	F	RunNo: 3	8562				
Prep Date: 11/8/2016	Analysis D	ate: 11	1/9/2016	S	SeqNo: 1	204868	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.20					<u> </u>			
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.61		0.5000		122	67.9	149			
Sample ID 1611230-001BMS	SampT	уре: МS	3 3	Tes	tCode: E	PA Method	8015D: Diese	I Range		
Client ID: GAC-Lead	Batch	ID: 28	545	F	RunNo: 3	8562				
Prep Date: 11/8/2016	Analysis D	ate: 11	1/9/2016	S	SeqNo: 1	205312	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.6	0.20	2.500	0	104	75.4	162			
Surr: DNOP	0.28		0.2500		114	67.9	149			
Sample ID 1611230-001BMS	D SampT	ype: MS	3D	Tes	tCode: E	PA Method	8015D: Diese	l Range		
Client ID: GAC-Lead	•	D: 28			RunNo: 3			U		
Prep Date: 11/8/2016	Analysis D	ate: 11	1/9/2016	٤	SeqNo: 1	205313	Units: mg/L			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.6	0.20	2.500	0	104	75.4	162	0.0154	20	
Surr: DNOP	0.29		0.2500		115	67.9	149	0	0	

Qualifiers:

Client:

Project:

Analyte

Surr: DNOP

Sample ID LCS-28545

Prep Date: 11/8/2016

Diesel Range Organics (DRO)

Client ID: LCSW

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- Reporting Detection Limit RL
- W Sample container temperature is out of limit as specified

Page 3 of 5

WO#:	1611230
	15-Nov-16

	Refining Sc ad 11-2-201		st, Inc.							
Sample ID RB	SampTy	/pe: M	BLK	Tes	tCode: E	PA Method	8015D: Gasol	ine Rang	e	
Client ID: PBW	Batch	ID: G 3	8528	F	unNo: 3	38528				
Prep Date:	Analysis Da	ate: 1 ′	1/8/2016	S	eqNo: '	1203934	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		88.7	66.4	120			
Sample ID 2.5UG GRO LCS	SampTy	/pe: LC	s	Tes	tCode: E	PA Method	8015D: Gasol	ine Rang	e	
Client ID: LCSW	Batch	ID: G 3	8528	F	unNo:	38528				
Prep Date:	Analysis Da	ate: 1 ′	1/8/2016	S	eqNo:	1203935	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	91.9	80	120			
Surr: BFB	19		20.00		93.3	66.4	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified
- Page 4 of 5

WO#:	1611	230

Client: Project:		n Refining S ead 11-2-20		st, Inc.							
Sample ID 100ng	g lcs2	SampT	ype: LC	s	Tes	tCode: El	PA Method	8260: Volatile	s Short L	ist	
Client ID: LCSV	v	Batch	n ID: C 3	8539	F	RunNo: 3	8539				
Prep Date:	Prep Date: Analysis Date: 11/8/2016 SeqNo: 1204485					Units: %Rec					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroeth	ane-d4	9.6		10.00		95.7	70	130			
Surr: 4-Bromofluorol	benzene	9.1		10.00		90.9	70	130			
Surr: Dibromofluoror	nethane	9.8		10.00		97.8	70	130			
Surr: Toluene-d8		10		10.00		104	70	130			
Sample ID rb3		SampT	ype: M	BLK	Tes	tCode: El	PA Method	8260: Volatile	s Short L	ist	
Client ID: PBW		Batch	n ID: C 3	8539	F	RunNo: 3	8539				
Prep Date:		Analysis D	ate: 1	1/9/2016	S	SeqNo: 1	204486	Units: %Rec			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroeth	ane-d4	9.9		10.00		98.8	70	130			
Surr: 4-Bromofluorol	oenzene	9.9		10.00		99.2	70	130			
Surr: Dibromofluoror	nethane	11		10.00		108	70	130			
Surr: Toluene-d8		10		10.00		99.7	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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 5

: Laboratory Hawkins NE 2, NM 87109 95-345-4107 nmental.com	Samp	le Log-In Check List
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\checkmark	No	
✓	No	
4	No 🖍	NA
V	No	No VOA Vials
3	No 🗸	# of preserved bottles checked
. ✓	No	for pH: (<2 or >12 unless note
	No	Adjusted?
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; v	No	Checked by:
3	No	NA 🖌
	<u>raranan din din sana kana kana</u>	
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Date 5	Signed By	
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Client: Western Refining	X Standard	Rush		H	HALL ENVIRONMEN ANALYSTS LABORAT	STS	IR	DND DND	I ABORATORY	AL
	Project Name: GAC - Let	- Lead			www.hallenvironmental.com	Inviron	menta	Com	Ś	Ę
#50 CR 4990	Date: - 2	2-2016	490	4901 Hawkins NE		Albugu	erdne	Albuquerque, NM 87109	7109	
Bloomfield, NM 87413	Project #:		Tel.	505-345-3975		Fax	505-3	505-345-4107	10	
	PO#12615519				An	Analysis	Request	est		
	Project Manager:		lno	280		os		juo		
X Level 4 (Full Validation)			seÐ)	N- 09	(SW	^{5'} PO4'8		3810	p	
	Sampler: Michael	A Wicker	ГРН	(1)		ON			əpı	
	On Ice: R.Yes		. + 3	814	_				iətx <u>=</u>	
	Sample Temperature:	: 3.2	181	ро			-1.1.7		10	
Sample Request ID	Container Preservativ Type and # e Type	vativ HEAL No.	81EX + M	TPH (Meth Meth (Meth	PAH (8310 PAH (8310	R 6 АЯЭЯ Anions (F,	itea9 1808	8550 (Sem 9250 (AC	9015B DR	əlddu8 זיא
GAC - Lead	5 VOA HCI	100-	×			<u></u>	×			
GAC - Lead	1-500-ml Cool	-001							×	
GAC -Inlet	5 VOA HCI	C00-	×			_	×			
GAC -Inlet	1-500-ml Amber Cool	- 003							×	
1										
Relinquished by:	Received by: N/1/bet	Date Time	Remarks:				-			
Wheel	Received by:	ha 11/03/110 0820								



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

December 09, 2016

Kelly Robinson Western Refining Southwest, Inc. #50 CR 4990 Bloomfield, NM 87413 TEL: (505) 632-4135 FAX

OrderNo.: 1612065

RE: GAC-Lead 12-01-2016

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 12/2/2016 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 <u>www.hallenvironmental.com</u> 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 qualifers 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 #NM0190

Sincerely,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Analytical Report Lab Order 1612065 Date Reported: 12/9/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: GAC-Lead 12-01-2016

Client Sample ID: GAC-Lead Collection Date: 12/1/2016 12:20:00 PM Received Date: 12/2/2016 8:00:00 AM

Lab ID: 1612065-001	Matrix:	AQUEOUS	Received D	Date: 12/2/2	016 8:00:00 AM
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANG	GE				Analyst: TOM
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	12/8/2016 1:34:54 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	12/8/2016 1:34:54 PM
Surr: DNOP	126	67.9-149	%Rec	1	12/8/2016 1:34:54 PM
EPA METHOD 8015D: GASOLINE R	ANGE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	12/5/2016 2:22:18 PM
Surr: BFB	85.8	66.4-120	%Rec	1	12/5/2016 2:22:18 PM
EPA METHOD 8260: VOLATILES SH	IORT LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	12/5/2016 3:03:44 PM
Toluene	ND	1.0	µg/L	1	12/5/2016 3:03:44 PM
Ethylbenzene	ND	1.0	µg/L	1	12/5/2016 3:03:44 PM
Methyl tert-butyl ether (MTBE)	1.2	1.0	µg/L	1	12/5/2016 3:03:44 PM
Xylenes, Total	ND	1.5	µg/L	1	12/5/2016 3:03:44 PM
Surr: 1,2-Dichloroethane-d4	109	70-130	%Rec	1	12/5/2016 3:03:44 PM
Surr: 4-Bromofluorobenzene	89.8	70-130	%Rec	1	12/5/2016 3:03:44 PM
Surr: Dibromofluoromethane	108	70-130	%Rec	1	12/5/2016 3:03:44 PM
Surr: Toluene-d8	95.3	70-130	%Rec	1	12/5/2016 3:03:44 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 1 of 6
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1612065 Date Reported: 12/9/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: GAC-Lead 12-01-2016

Client Sample ID: GAC-Inlet Collection Date: 12/1/2016 12:10:00 PM **Received Date:** 12/2/2016 8:00:00 AM

Lab ID: 1612065-002	Matrix:	AQUEOUS	Received D	ate: 12/2/2	016 8:00:00 AM
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANG	Ε				Analyst: TOM
Diesel Range Organics (DRO)	0.75	0.20	mg/L	1	12/8/2016 2:56:48 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	12/8/2016 2:56:48 PM
Surr: DNOP	124	67.9-149	%Rec	1	12/8/2016 2:56:48 PM
EPA METHOD 8015D: GASOLINE RA	NGE				Analyst: NSB
Gasoline Range Organics (GRO)	1.1	0.25	mg/L	5	12/5/2016 2:47:09 PM
Surr: BFB	121	66.4-120 \$	8 %Rec	5	12/5/2016 2:47:09 PM
EPA METHOD 8260: VOLATILES SH	ORT LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	12/5/2016 4:30:21 PM
Toluene	ND	1.0	µg/L	1	12/5/2016 4:30:21 PM
Ethylbenzene	30	1.0	µg/L	1	12/5/2016 4:30:21 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	12/5/2016 4:30:21 PM
Xylenes, Total	46	1.5	µg/L	1	12/5/2016 4:30:21 PM
Surr: 1,2-Dichloroethane-d4	107	70-130	%Rec	1	12/5/2016 4:30:21 PM
Surr: 4-Bromofluorobenzene	96.1	70-130	%Rec	1	12/5/2016 4:30:21 PM
Surr: Dibromofluoromethane	106	70-130	%Rec	1	12/5/2016 4:30:21 PM
Surr: Toluene-d8	94.2	70-130	%Rec	1	12/5/2016 4:30:21 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 6
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report Lab Order 1612065 Date Reported: 12/9/2016

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Project: GAC-Lead 12-01-2016

Client Sample ID: GAC-Lag Collection Date: 12/1/2016 2:10:00 PM Received Date: 12/2/2016 8:00:00 AM

Lab ID: 1612065-003	Matrix:	AQUEOUS	Received D	ate: 12/2/2	016 8:00:00 AM
Analyses	Result	PQL Qua	l Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANG	θE				Analyst: TOM
Diesel Range Organics (DRO)	ND	0.20	mg/L	1	12/8/2016 3:23:52 PM
Motor Oil Range Organics (MRO)	ND	2.5	mg/L	1	12/8/2016 3:23:52 PM
Surr: DNOP	130	67.9-149	%Rec	1	12/8/2016 3:23:52 PM
EPA METHOD 8015D: GASOLINE RA	ANGE				Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050	mg/L	1	12/5/2016 4:26:41 PM
Surr: BFB	87.4	66.4-120	%Rec	1	12/5/2016 4:26:41 PM
EPA METHOD 8260: VOLATILES SH	ORT LIST				Analyst: DJF
Benzene	ND	1.0	µg/L	1	12/5/2016 3:32:39 PM
Toluene	ND	1.0	µg/L	1	12/5/2016 3:32:39 PM
Ethylbenzene	ND	1.0	µg/L	1	12/5/2016 3:32:39 PM
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	12/5/2016 3:32:39 PM
Xylenes, Total	ND	1.5	µg/L	1	12/5/2016 3:32:39 PM
Surr: 1,2-Dichloroethane-d4	109	70-130	%Rec	1	12/5/2016 3:32:39 PM
Surr: 4-Bromofluorobenzene	84.5	70-130	%Rec	1	12/5/2016 3:32:39 PM
Surr: Dibromofluoromethane	109	70-130	%Rec	1	12/5/2016 3:32:39 PM
Surr: Toluene-d8	92.6	70-130	%Rec	1	12/5/2016 3:32:39 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 6
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Qual
: Qual
: Qual
it D

0.5000

0.59

Qualifiers:

Surr: DNOP

- * 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
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range

119

67.9

149

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- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

140

100.0

Client: Project:		Refining So d 12-01-20		st, Inc.							
Sample ID	RB	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	PBW	Batch	ID: G 3	39141	F	RunNo: 3	9141				
Prep Date:		Analysis D	ate: 1	2/5/2016	5	SeqNo: 1	224983	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang Surr: BFB	e Organics (GRO)	ND 17	0.050	20.00		86.7	66.4	120			
Sample ID	2.5UG GRO LCSB	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	LCSW	Batch	ID: G3	39141	F	RunNo: 3	9141				
Prep Date:		Analysis D	ate: 12	2/5/2016	S	eqNo: 1	224984	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
	e Organics (GRO)	0.43	0.050	0.5000	0	85.8	79.1	123			
Surr: BFB		19		20.00		93.0	66.4	120			
Sample ID	1612065-002AMS	SampT	ype: MS	8	Tes	tCode: El	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	GAC-Inlet	Batch	ID: G3	39141	F	RunNo: 3	9141				
Prep Date:		Analysis D	ate: 1	2/5/2016	S	eqNo: 1	224996	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	3.2	0.25	2.500	1.059	84.2	64.8	129			
Surr: BFB		140		100.0		139	66.4	120			S
Sample ID	1612065-002AMSE	SampT	ype: MS	SD	Tes	tCode: El	PA Method	8015D: Gasol	ine Rang	e	
Client ID:	GAC-Inlet	Batch	ID: G	39141	F	RunNo: 3	9141				
Prep Date:		Analysis Da	ate: 1	2/5/2016	5	SeqNo: 1	224997	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rand	e Organics (GRO)	3.4	0.25	2.500	1.059	92.1	64.8	129	6.07	20	

Qualifiers:

Surr: BFB

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range

136

66.4

120

0

0

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S

- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

	n Refining Soutl ead 12-01-2016	-							
Sample ID rb	SampType	BLK	Test	Code: El	PA Method	8260: Volatile	s Short L	_ist	
Client ID: PBW	Batch ID:	SL39159	Ru	unNo: 3	9159				
Prep Date:	Analysis Date:	12/5/2016	Se	eqNo: 1	225147	Units: %Rec			
Analyte	Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10	10.00		100	70	130			
Surr: 4-Bromofluorobenzene	9.3	10.00		93.2	70	130			
Surr: Dibromofluoromethane	10	10.00		104	70	130			
Surr: Toluene-d8	9.8	10.00		97.6	70	130			
Sample ID 100ng Ics	SampType	LCS	Test	Code: El	PA Method	8260: Volatile	s Short L	_ist	
Client ID: LCSW	Batch ID:	SL39159	Ru	unNo: 3	9159				
Prep Date:	Analysis Date:	12/5/2016	Se	eqNo: 1 :	225148	Units: %Rec			
Analyte	Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1.2-Dichloroethane-d4	94	10.00		94 4	70	130			

Analyte	Result	PQL	SPK value SPK Ref Val	%REC	LowLimit	HighLimit	%RPD
Surr: 1,2-Dichloroethane-d4	9.4		10.00	94.4	70	130	
Surr: 4-Bromofluorobenzene	9.5		10.00	94.9	70	130	
Surr: Dibromofluoromethane	9.5		10.00	95.4	70	130	
Surr: Toluene-d8	9.8		10.00	97.8	70	130	

Qualifiers:

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- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- \mathbf{S} % Recovery outside of range due to dilution or matrix
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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:	Western Refining Southw	Work Order Number	: 1612	065		Rcpth	No: 1
Received by/date	· AQ	12/02/11	0				
Logged By:	Ashley Gallegos	/ 12/2/2016 8:00:00 AM	•		A		
Completed By:	Ashley Gallegos	12/2/2016 9:34:06 AM			A		
Reviewed By:	IO	12/02/16			, Q		
Chain of Cust							
	s intact on sample bottles?		Yes		No	Not Present	/
	ustody complete?		Yes	~	No	Not Present	
3. How was the	sample delivered?		<u>Cour</u>				
<u>Log In</u>							
	npt made to cool the samples	?	Yes	~	No	NA	
5. Were all sam	ples received at a temperatur	e of >0° C to 6.0°C	Yes	~	No	NA	
6. Sample(s) in	proper container(s)?		Yes	~	No		
7. Sufficient san	nple volume for indicated test	(s)?	Yes	V	No		
8. Are samples	(except VOA and ONG) prope	rly preserved?	Yes	✓.	No		
9. Was preserva	ative added to bottles?		Yes		No 🗸	NA	
10.VOA vials ha	ve zero headspace?		Yes	~	No	No VOA Vials	
11. Were any sa	mple containers received brok	en?	Yes	!	No 🗸		
10 -						# of preserved bottles checked	
	ork match bottle labels? ancies on chain of custody)		Yes	~	No	for pH: (<	2 or >12 unless noted)
	correctly identified on Chain o	f Custody?	Yes	~	No	Adjusted?	, <u> </u>
14. Is it clear what	at analyses were requested?		Yes	V :	No		
	ing times able to be met? customer for authorization.)		Yes	✓	No	Checked by	Г.
Special Handl	ing (if applicable)						
16, Was client no	tified of all discrepancies with	this order?	Yes		No	NA 🗸	•
Person	Notified:	Date	en en stat it it it in de stat i stat				
By Who	em:	Via:	eMa	il	Phone Fax	In Person	
Regardi	ing:			***********		nes das sedes sectors de Mandellino, de Lincips, Lincips, Lands, Cymportal, Cymroder, y ng P	
Client Ir	nstructions:	nin hale (1907–1917) haar in de de aander gegen ook val bekend. Skald keine en de oorgenen by bek	rá tákölénekőkér kölörekek cső.	*****	ine meetinin kihikkii kirinkinkii keringi	NARY MARKAR ANNARY SOCIAL CONTRACTOR OF THE AND SPECIAL STREET	
17. Additional rer	marks:						
18. <u>Cooler Infor</u> Cooler No 1			Seal Da	te	Signed By	{	

Clinet Monto	Dofi.	Wootown Dofinium					H			80	Z	HALL ENVIRONMENTAI	
Mest	western Kenning	Buiu	X Standard	C Rush	-		AN	AIV	STS	AP	ç	ANALYSTS LABORATORY	2
			Project Name:	e: GAC - Lead	ead			- Hollow				5	
Mailing Address:	1	#50 CR 4990	Date:	12-01-2016	2016	4901	4901 Hawkins NE - Albuquerque NM 87109	www.naiienvironmental.com	Ibuquer		M 87	00	
Blo	omfield	Bloomfield, NM 87413	Project #:			Tel	Tel. 505-345-3975	3975	Fax 5(505-345-4107	4107	2	
Phone #: 505.	505-632-4135		PO#12615519	519				Ana		guest			
email or Fax#:			Project Manager:	iger:		Kjuc			20	(ju			
QAVQC Package:		X Level 4 (Full Validation)	X	-	Robinson	o seð) H		10,000,000				D	
EDD (Type)			On Ice: VI)	NCHAR A	Dicker	ЧΤ -	(1.8				_	apue	(N -
			Sample Temperature:	perature:	2,400	+ 38	14 b	28 JC	ON'			anxa	10 Y)
Date Time	Matrix	Sample Request ID	Container Type and #	Preservativ e Type	HEAL NO.	TM + X3T8 TM + X3T8 70158	otheM) Hq1	90168) HA 90168) HA 90168 Me	IO, A) anoin/	1801 Pestici	-ime2) 07S	090 8210	ir Bubbles (
12/11/1220	H ₂ O	GAC - Lead	5 VOA	HCI	109-		-	1	1	1		0	4
7	H ₂ O	GAC - Lead	1-500-ml Amher	Cool							×		
1210	H ₂ O	GAC -Inlet	5 VOA	HCI	-002	×				×			
->	H ₂ O	GAC -Inlet	1-500-ml Amber	Cool							×		
1410	H20	GAC-Lag	5 VOA	HCI	600,	×				X	-		
2	H20	GAC-Lag	1-500ml	Coul							\square		
		10		-							++		
Date: Time: 12/1//6 11600	Relinquished by:		Received by:	iloub	Date Time	Remarks:				1			
14 18 C	Relinquished by:	N NO H	Received by:	m	12 (02 /16 0800								e.