

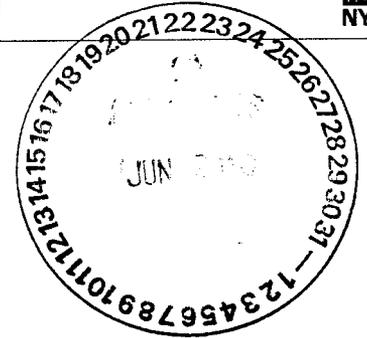
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NYSE



June 18, 2010

Certified Mail 7008 2810 0000 4726 2090

Mr. James P. Bearzi  
Chief, Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, NM 87505-6303

**Subject: Response to Notice of Approval with Modifications  
Process Design Report for Wastewater Treatment Plant Work Plan  
(Alternative Design)  
Western Refining Company Southwest, Inc. (Gallup Refinery)  
EPA ID# NMD000333211  
HWB-GRCC-09-006**

Dear Mr. Bearzi:

This letter is in response to the Notice of Approval with Modifications for Western Refining's Process Design Report for Wastewater Treatment Plant Work Plan (Alternate Design) dated April 30, 2010 (Work Plan). The comments from the NOA with modifications and Western Refining's responses addressing those comments are included below.

**Comment 1**

In Section 2.2 (Refinery Wastewaters), page 4, the Permittee states "[i]n addition, two non-oil refinery wastewaters are discharged directly to Evaporation Pond No. 2 (EP-2). These sources are the water softener system and the reverse osmosis (RO) system."

**NMED Response**

The water softener and reverse osmosis effluent entering into EP-2 must be routed through the wastewater treatment system upstream of the API separator. Any alternatives that would discharge these waste streams to a location other than the wastewater treatment system must be approved by the New Mexico Energy, Minerals and Natural Resource Department Oil Conservation Division (OCD).

**Western Refining Response**

The two non-oil refinery wastewaters composed of the reverse osmosis (RO) system and the water softener system will be routed to the influent of the waste water treatment plant. This change is made on the flow diagram and is attached at the conclusion of this letter (ATTACHMENT A).

## **Comment 2**

In Section 1.4 (Treatment Objectives), page 3, the Permittee states “[t]he treatment objectives for the WWTP upgrade are to provide water quality that is suitable for discharge to the unlined EP-1. Specifically, the objectives are for there to be no visible free oil, <0.5 mg/L benzene, and a wastewater quality that meets the definition of EPA RCRA non-hazardous.”

### **NMED Response**

Effluent entering into Evaporation Pond 1 (EP-1) must be compliant with both the surface and groundwater quality regulations in accordance the NMAC 20.6.2 and 20.6.4. The effluent must meet the total petroleum hydrocarbon (TPH) levels found in Table 2a (TPH Screening Guidelines for Potable Groundwater (GW-1)) of NMED’s TPH Screening Guidelines (October 2006 and as updated). The Permittee must also comply with any other applicable state and federal regulations.

### **Western Refining Response**

Western Refining’s understanding is that the subject of the WWTS effluent quality has been resolved and agreed upon in prior submittals and regulatory responses. A summary of these historical exchanges is provided below.

Document: April 15, 2009 Notice of Disapproval regarding the February 26, 2009 Work Plan for the upgraded WWTS.

Author: NMED.

Content: Comment 9 of that letter included the statement: “The effluent must comply with the Water Quality Control Commission standards found in 20.6.2.3103.”, referring to the WWTS effluent discharging into EP-1.

Document: May 26, 2009 letter to NMED (submitting the revised Work Plan)

Author: Western Refining

Statement: Responding to Comment 9: “Meeting the 20.6.2.3103 standards is not a stated treatment objective of the upgraded WWTS. The treatment objectives (as stated in Section 1.4 of the Report) are for there to be no visible free oil and <0.5 mg/L benzene. The concentrations of other parameters are expected to be consistent with the historical data reported for the EP-1 inlet under the GW-32 monitoring requirements.”

Document: September 1, 2009 Approval with Modification (regarding the revised Work Plan)

Author: NMED

Statement: Further responding to Comment 9: “As identified in the objectives, the effluent entering into EP-1 must not contain free oil, and benzene concentrations must be below <0.5 mg/L. However, these should not be the sole objectives of the WWTS upgrade. The WWTS and the effluent entering into EP-1 must comply with all applicable requirements found in the Oil Conservation Divisions (OCD) Discharge Plan GW-32, as well as comply with all other applicable regulations. Discharges to the unlined Evaporator Ponds must not create the potential for impacts to groundwater.”

Document: September 25, 2009 letter to NMED (submitting the Alternative Design Work Plan)

Author: Western Refining

Statement: In the last introductory paragraph of the letter: “We have no further response to Comments 1, 2, 4, 9, B, C, E, and G. They are either accepted or do not apply to the alternative design.”

Document: October 27, 2009 Notice of Disapproval (regarding the September 2009 Alternative Design Work Plan)

Author: NMED

Statement: Comment 5: “The effluent entering into the unlined Evaporation Pond (EP-1) must have benzene concentrations less than 0.5 mg/L. In addition, the treatment objective of the upgraded (WWTS) is for all effluent entering into EP-1 to comply with all applicable regulations. Discharges to the unlined Evaporation Ponds must not create the potential for impacts to groundwater. The Permittee must revise the Work Plan to state that benzene concentrations will be below 0.5 mg/L for benzene.”

Document: April 30, 2010 letter to NMED (submitting the revised Alternative Design Work Plan)

Author: Western Refining

Statement: Responding to Comment 5: “Work Plan Section 1.4 was revised to state that the effluent entering EP-1 must be <0.5 mg/L benzene, rather than ≤0.5 mg/L benzene. Also, the revised Section 1.4 states that the effluent entering EP-1 shall meet the definition of EPA RCRA non-hazardous as required by Condition 23 of our OCD Discharge Permit GW-032.”

Based on these past communications, Western Refining has designed the upgraded WWTS on the basis that the wastewater entering EP-1 shall:

- Contain <0.5 mg/L benzene
- Not contain visible free oil
- Shall meet the definition of RCRA non-hazardous
- Comply with GW-32 requirements
- Comply with all other applicable regulations
- Not create the potential for impacts to groundwater

Western Refining believes these commitments satisfy NMED’s objectives. Further, Western Refining assumes that our compliance requirements under NMAC 20.6.2 and 20.6.4 are already covered by our GW-32 permit or fall under “comply with all other applicable regulations.” However, as a clarification, our interpretation is that there are no numerical standards under NMAC 20.6.2 and 20.6.4 that apply to the effluent discharge into EP-1. For example, the standards under 20.6.2.3103 are for the concentration in groundwater, not for the wastewater discharge to a surface impoundment that may infiltrate into groundwater. Similarly, we are not in agreement with the requirement that the effluent discharge entering EP-1 shall comply with the TPH levels found in Table 2a. These requirements are for the TPH concentrations in groundwater, not for the

wastewater discharge to a surface impoundment that may infiltrate into groundwater. They are not applicable.

**Comment 3**

In Section 4.2.1 (Combined Process Sewer and Process Area Storm Sewer), page 8, the Permittee states “[c]leanouts will be installed on the gravity sewer to T27 and T28. Cleaning events will be scheduled on a regular, recurring basis with collected material managed along with similar material collected from the API Separator.”

**NMED Response**

The Permittee did not provide the frequency of regular cleaning (e.g., weekly, monthly, quarterly). The Permittee must notify NMED and OCD in writing of the cleanout details and schedule once they have been determined. The Permittee is responsible for documenting the cleanout operations and demonstrating they comply with the regulations. The documentation must be kept in the Facility operating record and be available for NMED and OCD review upon request.

**Western Refining Response**

When the system is fully operational, the frequency of cleaning will be quarterly. During the first year of operation the cleaning will be monitored and Western Refining will determine if cleaning should be performed on a more or less frequent basis. Minimal if any material is anticipated to be collected during the cleaning; however, if any is collected, it will be handled in an environmentally appropriate manner and may be recycled back into the refining process as oil bearing secondary hazardous material. The cleanout operation will be documented with the records being kept in the Facility operating record; the records will be available for NMED and OCD review upon request.

**Comment 4**

The Permittee addresses the Equalization Tank (EQ) in Section 4.2.3 and on page 11, states “[s]olids entering the EQ tank will accumulate as a sludge layer, which will require removal periodically, currently expected to be every three to five years.”

**NMED Response**

All sludges removed from the Equalization Tank must be managed as hazardous waste.

**Western Refining Response**

All sludges removed from the Equalization tank will be managed as hazardous waste or may be recycled back into the refining process as oil-bearing secondary hazardous material.

**Comment 5**

In Section 4.2.5 (DGR System), page 12, the Permittee states “[t]he [Dissolved Gas Flotation] DGF float material will be skimmed from the top of the DGF using a variable speed scraping mechanism. The skimmed float will be sent to the DGF float management system, which will consist of “Float Tanks.” The purpose of the tanks will be to provide storage capacity and reduce the volume of oily solids through gravity

separation. Oily solids collected in the Float Tanks will be recycled to the refining process (on-site or off-site).”

**NMED Response**

The DGF float is K048 listed waste. Therefore, any float from the DGF management system that is not recycled through the refining process must be managed as a hazardous waste.

**Western Refining Response**

All float material removed from the DGF management system that is not recycled through the refining process will be managed as a hazardous waste.

**Comment 6**

In Section 4.2.7 (Pilot Travel Center Pretreatment), page 13, the Permittee discusses biologically treating the sanitary wastewater in an aeration lagoon system that will discharge by gravity to Evaporation Pond 2.

**NMED Response**

As part of this Approval with Modifications, the Permittee must provide documentation that demonstrates the Permittee has obtained approval from the NMED Liquid Waste Program to operate the aeration basins and discharge the treated sanitary wastewater to the Evaporation Ponds. This documentation must be provided in the Response Letter. In addition, the Permittee must comply with their Biohazard Plan and update the plan as necessary to reflect any changes resulting from the new wastewater treatment system.

**Western Refining Response**

The NMED Liquid Waste Program’s John Roderick of NMED’s Gallup office was contacted by Beck Larsen of Western Refining on June 8, 2010. Mr. Roderick stated that his program does not have jurisdiction over sanitary waste water discharges greater than 2,000 gallons per day. He referred us to the NMED Groundwater Bureau. On June 10, 2010 Western Refining left a message for Mr. Bill Olson of Groundwater Quality and as of this letter he has not returned the call. If the Groundwater Bureau does not have jurisdiction, then Western will work with the OCD which Mr. Olson indicated had jurisdiction on past sanitary waste water projects.

**Comment 7**

In Section 4.2.8 (Evaporation Pond1), page 13, the Permittee states “[t]he [Macro Porous Polymer Extraction] MPPE clean wastewater effluent will be free of floating oil and will have a benzene concentration of 0.5 mg/L and will be RCRA non-hazardous.”

**NMED Response**

The benzene concentration of the MPPE effluent must be less than 0.5 mg/L and meet the water quality standards discussed in Comment 2.

**Western Refining Response**

The benzene concentration of the MPPE effluent will be less than 0.5mg/L and meet the

water quality standards as discussed in Western Refining's response to Comment 2.

### **Comment 8**

In Section 4.4 (Management of Off-Spec Wastewater), page 14, the Permittee states "[t]he MPPE process monitoring will consist primarily of two daily measurements (at approximately 7:00 am and 7:00 pm) of benzene in samples of wastewater. These samples will be analyzed at Gallup Refinery's on-site testing laboratory using Gas Chromatograph/Mass Spectrometer (GC/MS). The results will be available almost immediately – that is, within a few hours of sample collection. To account for the fact that our on-site method is not identical to the EPA-approved method, and to divert proactively, we will use 0.4 Mg/L of benzene as a trigger for diversion."

### **NMED Response**

In addition to the sample collection described above, the Permittee must also collect one duplicate sample a week, selected at random for analysis by an off-site certified laboratory for diesel range organics (DRO extended), benzene, toluene, ethylbenzene, total xylenes (BTEX), general chemistry parameters as defined by OCD, and pH (pH can be analyzed either by the laboratory or in the field). The Permittee must submit laboratory results received by the last Friday of each month to NMED and OCD (submittal by e-mail is acceptable). If any effluent sample results detect hazardous waste, the Permittee must notify NMED within one business day of this discovery. If the sample results exceed the cleanup standard referenced in Comment 1, NMED and OCD must be notified within five business days of discovery. See also Comment 17 for sampling and monitoring startup requirements.

### **Western Refining Response**

NMED's reference to Comment 1 is assumed to be a reference to Comment 2. Western Refining has no additional response to this comment and agrees to the testing schedule requested.

### **Comment 9**

In Section 5 (Project Schedule), the Permittee provides a schedule to complete the construction of the Wastewater Treatment Plant upgrade. The schedule indicates the system will take 24 months to install.

### **NMED Response**

NMED does not approve the proposed schedule. The Wastewater Treatment System must be installed and operational on or before September 4, 2010 as required by NMED's September 1, 2009 *Approval with Modification Process Design Report for Wastewater Treatment Plant Upgrade (REV. A)*. As a reminder, the Permittee submitted a work plan *Process Design Report For Wastewater Treatment Plant Upgrade* dated February 26, 2009, which was revised (*Process Design Report For Wastewater Treatment Plant Upgrade (REV. A)*, dated May 26, 2009) and approved by NMED and OCD on September 1, 2009 and September 3, 2009, respectively. It was the Permittee's choice to propose an alternate design to the wastewater treatment system rather than the system

already approved by NMED; therefore, this is not good cause to propose a two-year extension. Further, the Permittee could have taken immediate action upon the September 1 and 3, 2009 approvals, but instead submitted an alternative design on September 25, 2009. NMED provided the Permittee with a Notice of Disapproval on October 27, 2009; again, the Permittee could have taken immediate action subsequent to receiving the comments, but submitted a response to this NOD over six months later (received by NMED on May 3, 2010). The Permittee's delay in providing NMED and OCD the appropriate documents for the wastewater treatment system does not constitute reason to extend the deadline.

#### **Western Refining Response**

As requested in the email sent on June 14, 2010 from Ann Allen to James Bearzi, Western Refining would like to meet with NMED. During the meeting, Western Refining will make a presentation highlighting all of the improvements that have been implemented to control benzene and present a detailed timeline for the installation of the new waste water treatment system.

#### **Comment 10**

In Attachment D (Process Design Report, Western Refining Southwest Inc., January 21, 2010), Section 1 (Introduction), page 3, the Permittee discusses how effluent from the MPPE system contained benzene concentrations less than 0.5 mg/l.

#### **NMED Response**

The Permittee must clarify in the Response Letter if samples were analyzed by the on-site laboratory or a certified off-site laboratory, identify the analytical method and provide the final laboratory report.

#### **Western Refining Response**

All samples for the MPPE pilot operation were analyzed at an off site laboratory. The certification for that laboratory is attached at the end of this letter. The laboratory analysis from the pilot demonstration is also attached in the attachments of this letter (ATTACHMENT B).

#### **Comment 11**

In Attachment D (Process Design Report, Western Refining Southwest Inc., January 21, 2010), page 5, the Permittee states "[t]his historical data is visually displayed in appendices 7-10."

#### **NMED Response**

Attachment D does not contain Appendices 8-10. The Permittee must submit the missing Appendices 8-10 to complete the record.

#### **Western Refining Response**

The appendices 7-10 have been added to the report. The complete report with an updated table of contents is located in the attachments of this letter (ATTACHMENT C).

### **Comment 12**

In Attachment D (Process Design Report, Western Refining Southwest Inc., January 21, 2010), page 7, Section 2.1 (MPPE process description), the Permittee states “[d]uring the pilot plant trial, the unit was periodically sampled by Western Refining. Each morning and evening the unit was switched from fire water to process waste water and vice versa.”

### **NMED Response**

It is not clear why the Permittee used fire water in this pilot study instead of a continuous use of process wastewater. In the response letter, the Permittee must provide an explanation for the use of fire water instead of process wastewater.

### **Western Refining Response**

The demonstration of the MPPE process was very labor intensive and required constant supervision during the operation. The demonstration was only performed during the day light hours in order to maintain safety for the personnel operating the unit and to take advantage of the warmer day time temperatures. At night the unit was put in a standby mode and fire water was introduced to create a continuous movement of fluid. This kept the unit from freezing and destroying the components. The MPPE unit, as will be constructed, will be completely winterized to allow for continuous operation. The samples for the test run were never taken during the time when fire water was introduced. Once the system was back on line during day light hours, process water was introduced for a minimum of one hour before samples were retrieved.

### **Comment 13**

In Attachment D (Process Design Report, Western Refining Southwest Inc., January 21, 2010), page 21, the Permittee provides the conclusions of the MPPE pilot study. The Permittee concluded the “MPPE technology proved to be very capable of lowering the benzene concentrations well below the EPA required level of 0.5 mg/l” and “can also remove other dissolved hydrocarbons like Toluene, Ethylbenzene, Xylenes, VPH and EPH (both aliphatics and aromatics) to any level required.” NMED has the following concerns regarding Appendix D:

- a. Page 8 states, “[i]s it important to note that many of the results were below the detection range of the test method and lab equipment. This is important as the values with the (>) symbol are depicting a worse case scenario.” This statement cannot be verified because the detection range of the test method and laboratory instrument was not provided, nor was the laboratory results.
- b. Page 8 states “[i]t is unknown as to exactly how far the effluent result is below the detection limit. Therefore, the range could vary from say 9% to as great as 99% removal efficiency. However, the removal efficiencies are calculated for informational purposes.” Again, the detection limit was not provided. The range of 9% to 99 % removal of hydrocarbons is broad and implies the system capabilities are variable in the extent of removal of hydrocarbons. The calculations used to determine the removal efficiencies were not included and it is not clear how the percentages were determined.

- c. The summary tables are not presented in a clear manner. For example, Table 3.2 provides volatiles in concentrations in mg/l with alternating inlet and outlet results. The alternating inlet and outlet data is not clear, and the rows should be labeled accordingly. In addition, Table 3.4 provides alternating VPH-1 inlet and outlet data; the outlet concentrations are higher than the inlet concentration (e.g., the inlet sample QA24L collected on 11-30-09 states <500 µg/L MTBE and the outlet samples QA24E collected on 11-30-09 states 5.7 µg/L; this data would imply the system was not operating correctly).

It is the Permittee's responsibility to install a system that is capable of meeting the effluent discharge requirements and all other applicable regulations. The Permittee must demonstrate that the MPPE system treats the process wastewater in compliance with established standards and is protective of human health and the environment. No revision is necessary; however, the Permittee must take the above comments into consideration when designing and installing the system.

#### **Western Refining Response**

The above comments are appreciated and will be utilized.

#### **Comment 14**

Page 6 of the Permittee's *Response to Notice of Disapproval Process Design Report for the Wastewater Treatment Plant Work Plan (Alternative Design)*, dated April 30, 2010, the Permittee's response to Comment 8, item d states "[w]e do not understand NMED's basis for limiting the accumulation of solids in the bottom of T27/T28 to less than 2 feet. The res-suspension mixing described under Item b and in the revised Work Plan will ensure that the 90-day accumulation period is not exceeded. Therefore, the amount of sludge that accumulates in the interim is not relevant to complying with this requirement. We request relief from the requirement that solids accumulation be limited to less than 2 feet."

#### **NMED Response**

The Permittee is relieved of the two foot accumulation. If Tanks T27 and T28 are cleaned out by any method other than the mixing method described in the Work Plan, all removed solids accumulated in the bottom of the Tanks must be managed as hazardous waste.

#### **Western Refining Response**

Western Refining will appropriately handle the recovered solids from T27 and T28 as hazardous waste or may recycle them as oil-bearing hazardous secondary materials in a refining process.

#### **Comment 15**

Page 11 of the Permittee's *Response to Notice of Disapproval Process Design Report for the Wastewater Treatment Plant Work Plan (Alternative Design)*, dated April 30, 2010, Comment 18 states "[i]n Section 4.5 9Tank Design, Secondary Containment, and Leak

Detection, page 11, the Permittee states "In the event that there are new tank(s) or ancillary equipment not covered by the CAFO, such as those upstream of the API separator, those systems will be designed to the standards in accordance with GW-032 and related OCD requirements."

**NMED Response**

The secondary containment must be able to contain a volume equal to 1 1/3 of the tank capacity and/or volume of all interconnected tanks. The Permittee must comply with all OCD requirements.

**Western Refining Response**

The secondary containment will provide a volume of retention equal to 1 1/3 the largest tank, the Equalization Tank. Pumping and valving that will be physically connected to, and located between, the tanks will prevent free flow from occurring from multiple tanks in the unlikely event one tank should fail.

**Comment 16**

Page 10 of NMED's *Notice of Disapproval Process Design Report for the Wastewater Treatment Plant Work Plan (Alternative Design)*, dated October 27, 2009, NMED states "[i]n addition, an electronic version of the revised Work Plan must be submitted with all changes shown in red-line strikeout."

**NMED Response**

An electronic version with red-line strikeout was not submitted. The Permittee is required to submit an electronic version in red-line strikeout and this was not provided; an explanation for not providing the documentation must be included in the Response Letter.

**Western Refining Response**

The omission of the red line submission was an oversight of Western Refining. It is included with this letter (ATTACHMENT D).

**Comment 17**

**System Startup Requirements:** The Permittee must implement the following sampling requirements upon initial startup to the wastewater treatment system:

- a. The Permittee must collect daily duplicate effluent samples from the MPPE for the first fifteen days from startup. One sample must be sent to a certified offsite laboratory for the analyses of DRO extended, BTEX, general chemistry parameters as defined by OCD, and pH (pH can either be analyzed by the laboratory or in the field). The other effluent sample must be analyzed for the same constituents at the refinery on-site laboratory for comparison purposes.
  
- b. The Permittee must collect duplicate effluent samples from the MPPE two times a week for 90 days after the initial 15 day period of continuous operation. One sample must be sent to a certified offsite laboratory for

analyses of DRO extended, BTEX, general chemistry parameters as defined by OCD, and pH (pH can either be analyzed by the laboratory or in the field). The other effluent sample must be analyzed at the refineries on-site laboratory for comparison purposes. In addition, the Permittee must also analyze an effluent sample once a month during this 90-day period for priority pollutant metals and semi-volatile organics (SVOCs) by a certified off-site laboratory.

- c. After the 90-day sampling period, the Permittee may collect duplicate samples weekly for chemical analyses specified in Comment 7. NMED will evaluate the need for additional analysis after the 90-day startup period, see item h of this Comment.
- d. The Permittee must collect flow rate measurements from the flow meters at the influent location to the API separator and effluent from downstream of the MPPE daily for the first 15 days of startup, two times a week during the following 90 days and weekly thereafter.
- e. The Permittee must collect air samples two times a month for the initial two months, once a month for the third month, and quarterly thereafter. The samples must be collected from the sample location labeled "ATM" from the "carbon" box located in Figure 1 (Wastewater Treatment Plan Work Plan Flow Diagram). The samples must be analyzed for VOCs using EPA Method TO15.
- f. The Permittee must submit all received laboratory results and flow meter data by the last Friday of each month beginning with the initial system startup to NMED and OCD (submittal by e-mail is sufficient). NMED and OCD must be notified within one business day of discovery if the effluent samples are determined to be hazardous. NMED and OCD must be notified within five business days if the effluent samples exceed the cleanup standards as referenced in Comment 1.
- g. The Permittee must monitor and record all occasions when the Surge Tanks (Tanks T27 and T28) are used and describe the event that caused these Tanks to be used. This information must also be submitted on the last Friday of each month.
- h. Following the initial 90 days of startup, NMED and OCD will establish long-term monitoring and sampling requirements and a schedule for submittal of monitoring reports for the wastewater treatment system.

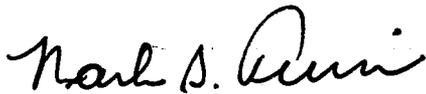
#### **Western Refining Response**

It is assumed that Comment 17 letter f. is referring to Comment 2 not Comment 1. Otherwise, with respect to a. through g., Western Refining agrees.

In reference to Comment 17 h., at the conclusion of the 90 days of successful operation, the sampling schedule outlined in Comment 8 will be utilized.

Please contact Ed Riege at (505) 722-0217 if you have any questions regarding the contents of this letter.

Sincerely,

A handwritten signature in black ink that reads "Mark B. Turri". The signature is written in a cursive style with a large, looping initial "M".

Mark B. Turri  
General Manager

cc: Ed Riege  
Ann Allen  
Don Riley  
Shane White  
OCD  
EPA Region 6

## **LIST OF ATTACHMENTS**

**ATTACHMENT A: PROCESS FLOW DIAGRAM**

**ATTACHMENT B: LABORATORY CERTIFICATION AND RAW DATA**

**ATTACHMENT C: WHITTIER FILTRATION MPPE RESULT REPORT**

**ATTACHMENT D: RED LINE VERSION OF WORK PLAN**

## ATTACHMENT A: PROCESS FLOW DIAGRAM



**ATTACHMENT B: LABORATORY CERTIFICATION AND RAW DATA**



# OREGON ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM



NELAP Recognized

## Analytical Resources Inc.

WA100006  
4611 S. 134th Place  
Tukwila, WA 98168

IS GRANTED APPROVAL BY ORELAP UNDER THE 2003 NELAC STANDARDS, TO PERFORM ANALYSES ON ENVIRONMENTAL SAMPLES IN MATRICES AS LISTED BELOW:

| <i>Air</i> | <i>Drinking Water</i> | <i>Non Potable Water</i> | <i>Solids and Chem. Waste</i> | <i>Tissue</i> |
|------------|-----------------------|--------------------------|-------------------------------|---------------|
|            | Chemistry             | Chemistry                | Chemistry                     | Chemistry     |

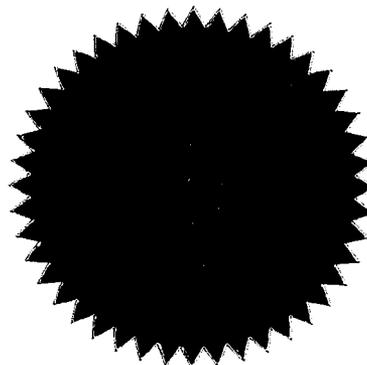
AND AS RECORDED IN THE LIST OF APPROVED ANALYTES, METHODS, ANALYTIC TECHNIQUES, AND FIELDS OF TESTING ISSUED CONCURRENTLY WITH THIS CERTIFICATE AND REVISED AS NECESSARY.

ACCREDITED STATUS DEPENDS ON SUCCESSFUL ONGOING PARTICIPATION IN THE PROGRAM AND CONTINUED COMPLIANCE WITH THE STANDARDS.

CUSTOMERS ARE URGED TO VERIFY THE LABORATORY'S CURRENT ACCREDITATION STATUS IN OREGON.

*Irene E. Ronning*

Irene E. Ronning, Ph.D.  
ORELAP Administrator  
3150 NW 229th Ave, Suite 100  
Hillsboro, OR 97124



ISSUE DATE: 5/12/2009  
EXPIRATION DATE: 5/11/2010  
Certificate No: WA100006-004

## Scope of Accreditation

### Analytical Resources, Incorporated

Tukwila, WA

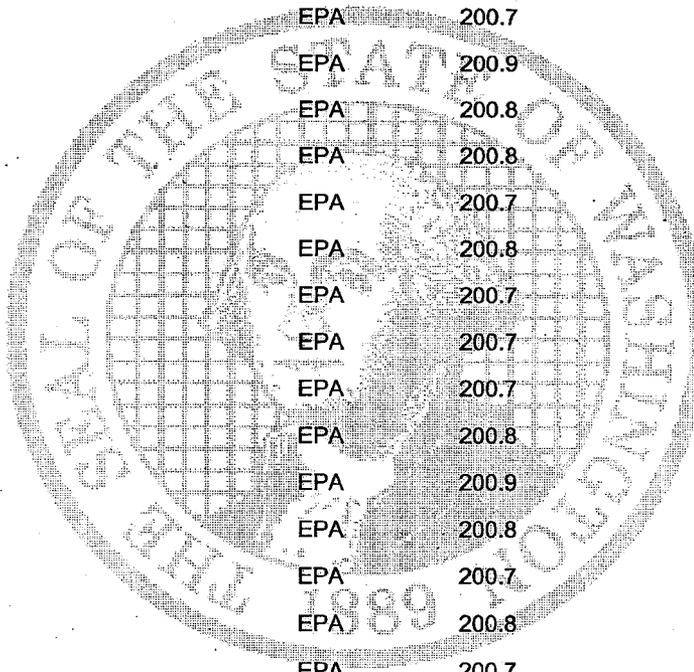
is accredited by the State of Washington Department of Ecology to perform analyses for the parameters listed below using the analytical methods indicated. This Scope of Accreditation may apply to any of the following matrix types: non-potable water, drinking water, solid and chemical materials, and air and emissions. Accreditation for all parameters is final unless indicated otherwise in a note. Accreditation is for the latest version of a method unless otherwise specified in a note. EPA refers to the U.S. Environmental Protection Agency. SM refers to American Public Health Association's publication, Standard Methods for the Examination of Water and Wastewater, 18th, 19th or 20th Edition, unless otherwise noted. ASTM stands for the American Society for Testing and Materials. PSEP stands for Puget Sound Estuary Program. Other references are detailed in the notes section.

| Matrix Type/Parameter Name | Reference | Method Number | Notes |
|----------------------------|-----------|---------------|-------|
| <b>Drinking Water</b>      |           |               |       |
| Aluminum                   | EPA       | 200.8         | 1     |
| Antimony                   | EPA       | 200.9         | 1     |
| Antimony                   | EPA       | 200.8         | 1     |
| Arsenic                    | EPA       | 200.8         | 1     |
| Arsenic                    | EPA       | 200.9         | 1     |
| Barium                     | EPA       | 200.8         | 1     |
| Beryllium                  | EPA       | 200.8         | 1     |
| Cadmium                    | EPA       | 200.8         | 1     |
| Cadmium                    | EPA       | 200.9         | 1     |
| Chromium                   | EPA       | 200.8         | 1     |
| Copper                     | EPA       | 200.8         | 1     |
| Iron                       | EPA       | 200.8         | 1     |
| Lead                       | EPA       | 200.8         | 1     |
| Lead                       | EPA       | 200.9         | 1     |
| Magnesium                  | EPA       | 200.8         | 1     |
| Manganese                  | EPA       | 200.8         | 1     |
| Nickel                     | EPA       | 200.8         | 1     |
| Selenium                   | EPA       | 200.8         | 1     |
| Selenium                   | EPA       | 200.9         | 1     |

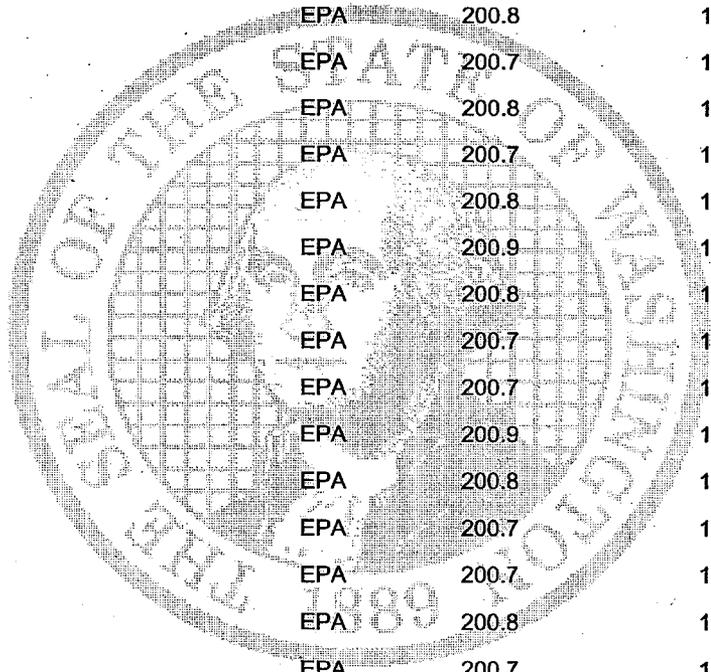
| Matrix Type/Parameter Name          | Reference | Method Number | Notes |
|-------------------------------------|-----------|---------------|-------|
| Silver                              | EPA       | 200.8         | 1     |
| Silver                              | EPA       | 200.9         | 1     |
| Thallium                            | EPA       | 200.8         | 1     |
| Thallium                            | EPA       | 200.9         | 1     |
| Zinc                                | EPA       | 200.8         | 1     |
| Purgeable Organic Compounds         | EPA       | 524.2         | 1     |
| Regulated VOCs                      | EPA       | 524.2         | 1     |
| Trihalomethanes                     | EPA       | 524.2         | 1     |
| Unregulated VOCs                    | EPA       | 524.2         | 1     |
| Vinyl Chloride                      | EPA       | 524.2         | 1     |
| <b>Non-potable Water</b>            |           |               |       |
| Acidity                             | SM        | 2310 B        | 1     |
| Alkalinity, Total                   | SM        | 2320 B        | 1     |
| Ammonia                             | SM 19/20  | 4500-NH3 G    | 1     |
| Ammonia                             | SM 19/20  | 4500-NH3 D    | 1     |
| Ammonia                             | EPA       | 350.1         | 1     |
| Biochemical Oxygen Demand, BOD/CBOD | SM        | 5210 B        | 1     |
| Bromide                             | EPA       | 300.0         | 1     |
| Bromide                             | SM        | 4110 B        | 1     |
| Chemical Oxygen Demand (COD)        | SM        | 5220 D        | 1     |
| Chemical Oxygen Demand (COD)        | EPA       | 410.4(7-3)    | 1     |
| Chloride                            | SM        | 4500-Cl- E    | 1     |
| Chloride                            | SM        | 4110 B        | 1     |
| Chloride                            | EPA       | 300.0         | 1     |
| Color                               | SM        | 2120 B        | 1     |
| Cyanide, Total                      | SM        | 4500-CN E     | 1     |
| Cyanide, Weak Acid Dissociable      | SM        | 4500-CN I     | 1     |
| Cyanides, Amenable to Chlorination  | SM        | 4500-CN G     | 1     |
| Fluoride                            | SM        | 4500-F C      | 1     |
| Fluoride                            | SM        | 4110 B        | 1     |

| Matrix Type/Parameter Name   | Reference | Method Number | Notes |
|------------------------------|-----------|---------------|-------|
| Fluoride                     | EPA       | 300.0         | 1     |
| Hardness, Total (as CaCO3)   | SM        | 2340 B        | 1     |
| Hexane Extractable Material  | EPA       | 1664          | 1     |
| Nitrate                      | SM        | 4110 B        | 1     |
| Nitrate                      | SM        | 4500-NO3 F    | 1     |
| Nitrate                      | EPA       | 353.2         | 1     |
| Nitrate                      | EPA       | 300.0         | 1     |
| Nitrate + Nitrite            | SM        | 4500-NO3 F    | 1     |
| Nitrate + Nitrite            | EPA       | 353.2         | 1     |
| Nitrite                      | EPA       | 300.0         | 1     |
| Nitrite                      | EPA       | 353.2         | 1     |
| Nitrite                      | SM        | 4110 B        | 1     |
| Orthophosphate               | EPA       | 300.0         | 1     |
| Orthophosphate               | SM        | 4500-P E      | 1     |
| Orthophosphate               | SM        | 4110 B        | 1     |
| Phenolics, Total Recoverable | EPA       | 420.1         | 1     |
| Phosphorus, Total            | SM        | 4500-P E      | 1     |
| Salinity                     | SM        | 2520 B        | 1     |
| Solids, Settleable           | SM        | 2540 F        | 1     |
| Solids, Total                | SM        | 2540 B        | 1     |
| Solids, Total Dissolved      | SM        | 2540 C        | 1     |
| Solids, Total Suspended      | SM        | 2540 D        | 1     |
| Solids, Total Volatile       | EPA       | 160.4         | 1     |
| Specific Conductance         | SM        | 2510 B        | 1     |
| Specific Conductance         | EPA       | 120.1         | 1     |
| Sulfate                      | SM        | 4110 B        | 1     |
| Sulfate                      | EPA       | 375.2         | 1     |
| Sulfate                      | EPA       | 300.0         | 1     |
| Sulfide                      | SM        | 4500-S2 D     | 1     |
| Sulfide                      | SM        | 4500-S2 F     | 1     |

| Matrix Type/Parameter Name | Reference | Method Number | Notes |
|----------------------------|-----------|---------------|-------|
| Sulfite                    | SM        | 4500-SO3 B    | 1     |
| Total Organic Carbon       | SM        | 5310 B        | 1     |
| Turbidity                  | EPA       | 180.1         | 1     |
| Turbidity                  | SM        | 2130 B        | 1     |
| Aluminum                   | EPA       | 200.7         | 1     |
| Aluminum                   | EPA       | 200.8         | 1     |
| Antimony                   | EPA       | 200.7         | 1     |
| Antimony                   | EPA       | 200.8         | 1     |
| Antimony                   | EPA       | 200.9         | 1     |
| Arsenic                    | EPA       | 200.7         | 1     |
| Arsenic                    | EPA       | 200.9         | 1     |
| Arsenic                    | EPA       | 200.8         | 1     |
| Barium                     | EPA       | 200.8         | 1     |
| Barium                     | EPA       | 200.7         | 1     |
| Beryllium                  | EPA       | 200.8         | 1     |
| Beryllium                  | EPA       | 200.7         | 1     |
| Boron                      | EPA       | 200.7         | 1     |
| Cadmium                    | EPA       | 200.7         | 1     |
| Cadmium                    | EPA       | 200.8         | 1     |
| Cadmium                    | EPA       | 200.9         | 1     |
| Calcium                    | EPA       | 200.8         | 1     |
| Calcium                    | EPA       | 200.7         | 1     |
| Chromium                   | EPA       | 200.8         | 1     |
| Chromium                   | EPA       | 200.7         | 1     |
| Cobalt                     | EPA       | 200.8         | 1     |
| Cobalt                     | EPA       | 200.7         | 1,8   |
| Copper                     | EPA       | 200.7         | 1     |
| Copper                     | EPA       | 200.8         | 1     |
| Iron                       | EPA       | 200.8         | 1     |
| Iron                       | EPA       | 200.7         | 1     |



| Matrix Type/Parameter Name | Reference | Method Number | Notes |
|----------------------------|-----------|---------------|-------|
| Lead                       | EPA       | 200.9         | 1     |
| Lead                       | EPA       | 200.8         | 1     |
| Lead                       | EPA       | 200.7         | 1     |
| Magnesium                  | EPA       | 200.7         | 1     |
| Magnesium                  | EPA       | 200.8         | 1     |
| Manganese                  | EPA       | 200.7         | 1     |
| Manganese                  | EPA       | 200.8         | 1     |
| Mercury                    | EPA       | 245.1         | 1     |
| Molybdenum                 | EPA       | 200.7         | 1     |
| Molybdenum                 | EPA       | 200.8         | 1     |
| Nickel                     | EPA       | 200.7         | 1     |
| Nickel                     | EPA       | 200.8         | 1     |
| Potassium                  | EPA       | 200.7         | 1     |
| Potassium                  | EPA       | 200.8         | 1     |
| Selenium                   | EPA       | 200.9         | 1     |
| Selenium                   | EPA       | 200.8         | 1     |
| Selenium                   | EPA       | 200.7         | 1     |
| Silica                     | EPA       | 200.7         | 1     |
| Silver                     | EPA       | 200.9         | 1     |
| Silver                     | EPA       | 200.8         | 1     |
| Silver                     | EPA       | 200.7         | 1     |
| Sodium                     | EPA       | 200.7         | 1     |
| Sodium                     | EPA       | 200.8         | 1     |
| Strontium                  | EPA       | 200.7         | 1     |
| Thallium                   | EPA       | 200.8         | 1     |
| Thallium                   | EPA       | 200.9         | 1     |
| Thallium                   | EPA       | 200.7         | 1     |
| Tin                        | EPA       | 200.7         | 1     |
| Titanium                   | EPA       | 200.7         | 1     |
| Vanadium                   | EPA       | 200.8         | 1     |



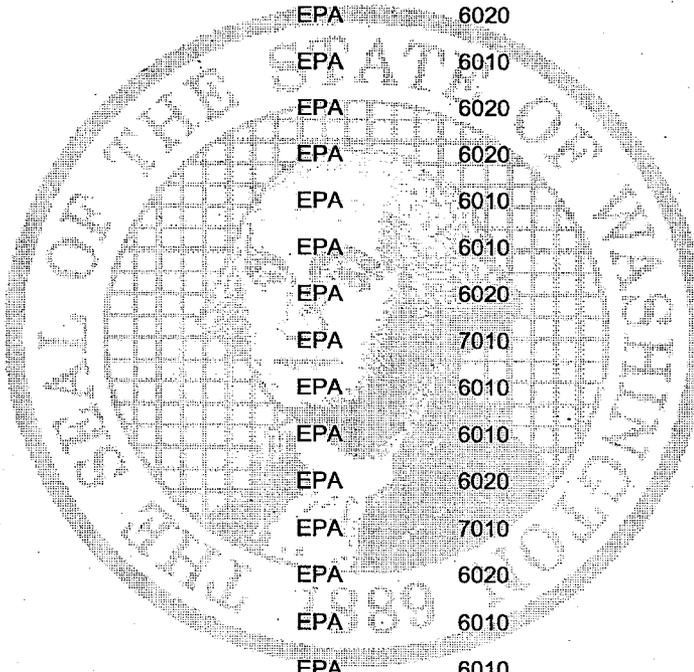
| Matrix Type/Parameter Name | Reference | Method Number      | Notes |
|----------------------------|-----------|--------------------|-------|
| Vanadium                   | EPA       | 200.7              | 1     |
| Zinc                       | EPA       | 200.7              | 1     |
| Zinc                       | EPA       | 200.8              | 1     |
| Methane, Ethane & Ethene   | EPA       | RSK-175            | 1,9   |
| VOA & Semi-VOA Compounds   | ARI SOP   | 427S               | 4     |
| Butyl-tin Species          | EPA       | 8270 MOD           |       |
| Vinyl Chloride/1,1-DCE     | EPA       | 8260 SIM           |       |
| Fecal Coliform - count     | SM        | 9222 D             |       |
| Total Coli - count MF      | SM        | 9222 B             |       |
| Microtox                   | ASTM      | D 5660-96          |       |
| Microtox, WDOE Sediment    | WDOE      | 03-09-043 SubApp B | 10    |

### Solid and Chemical Materials

|                                    |     |        |   |
|------------------------------------|-----|--------|---|
| Bromide                            | EPA | 9056   | 1 |
| Chloride                           | EPA | 9251   | 1 |
| Chloride                           | EPA | 9056   | 1 |
| Chromium, Hexavalent               | EPA | 7196   | 1 |
| Cyanide, Free                      | EPA | 9014   | 1 |
| Cyanide, Total                     | EPA | 9014   | 1 |
| Cyanide, Total                     | EPA | 9010   | 1 |
| Cyanides, Amenable to Chlorination | EPA | 9010   | 1 |
| Fluoride                           | EPA | 9214   | 1 |
| Fluoride                           | EPA | 9056   | 1 |
| Hexane Extractable Material        | EPA | 9071 B | 1 |
| Nitrate                            | EPA | 9056   | 1 |
| Nitrite                            | EPA | 9056   | 1 |
| Orthophosphate                     | EPA | 9056   | 1 |
| pH (non-aqueous)                   | EPA | 9045   | 1 |
| Phenolics, Total Recoverable       | EPA | 9065   | 1 |
| Sulfate                            | EPA | 9056   | 1 |
| Sulfide                            | EPA | 9030   | 1 |

| Matrix Type/Parameter Name | Reference | Method Number | Notes |
|----------------------------|-----------|---------------|-------|
| Total Organic Carbon       | EPA       | 9060          | 1     |
| Total Organic Carbon (Sed) | PSEP      | 1986          |       |
| Aluminum                   | EPA       | 6020          | 1     |
| Aluminum                   | EPA       | 6010          | 1     |
| Antimony                   | EPA       | 7010          | 1     |
| Antimony                   | EPA       | 6010          | 1     |
| Antimony                   | EPA       | 6020          | 1     |
| Arsenic                    | EPA       | 6020          | 1     |
| Arsenic                    | EPA       | 6010          | 1     |
| Arsenic                    | EPA       | 7010          | 1     |
| Barium                     | EPA       | 6020          | 1     |
| Barium                     | EPA       | 6010          | 1     |
| Beryllium                  | EPA       | 6010          | 1     |
| Beryllium                  | EPA       | 6020          | 1     |
| Boron                      | EPA       | 6010          | 1     |
| Cadmium                    | EPA       | 6020          | 1     |
| Cadmium                    | EPA       | 7010          | 1     |
| Cadmium                    | EPA       | 6010          | 1     |
| Calcium                    | EPA       | 6020          | 1     |
| Calcium                    | EPA       | 6010          | 1     |
| Chromium                   | EPA       | 6020          | 1     |
| Chromium                   | EPA       | 6010          | 1     |
| Cobalt                     | EPA       | 6020          | 1     |
| Cobalt                     | EPA       | 6010          | 1     |
| Copper                     | EPA       | 6010          | 1     |
| Copper                     | EPA       | 6020          | 1     |
| Iron                       | EPA       | 6010          | 1     |
| Iron                       | EPA       | 6020          | 1     |
| Lead                       | EPA       | 7010          | 1     |
| Lead                       | EPA       | 6010          | 1     |

| Matrix Type/Parameter Name | Reference | Method Number | Notes |
|----------------------------|-----------|---------------|-------|
| Lead                       | EPA       | 6020          | 1     |
| Magnesium                  | EPA       | 6010          | 1     |
| Magnesium                  | EPA       | 6020          | 1     |
| Manganese                  | EPA       | 6020          | 1     |
| Manganese                  | EPA       | 6010          | 1     |
| Mercury in Sediments       | EPA       | 245.5         | 1     |
| Mercury, Liquid Waste      | EPA       | 7470          | 1     |
| Mercury, Solid Waste       | EPA       | 7471          | 1     |
| Molybdenum                 | EPA       | 6010          | 1     |
| Molybdenum                 | EPA       | 6020          | 1     |
| Nickel                     | EPA       | 6010          | 1     |
| Nickel                     | EPA       | 6020          | 1     |
| Potassium                  | EPA       | 6020          | 1     |
| Potassium                  | EPA       | 6010          | 1     |
| Selenium                   | EPA       | 6010          | 1     |
| Selenium                   | EPA       | 6020          | 1     |
| Selenium                   | EPA       | 7010          | 1     |
| Silica                     | EPA       | 6010          | 1     |
| Silver                     | EPA       | 6010          | 1     |
| Silver                     | EPA       | 6020          | 1     |
| Silver                     | EPA       | 7010          | 1     |
| Sodium                     | EPA       | 6020          | 1     |
| Sodium                     | EPA       | 6010          | 1     |
| Strontium                  | EPA       | 6010          | 1     |
| Thallium                   | EPA       | 6020          | 1     |
| Thallium                   | EPA       | 7010          | 1     |
| Thallium                   | EPA       | 6010          | 1     |
| Tin                        | EPA       | 6010          | 1     |
| Titanium                   | EPA       | 6010          | 1     |
| Vanadium                   | EPA       | 6020          | 1     |

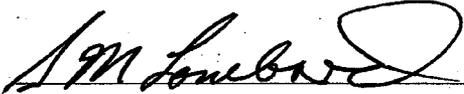


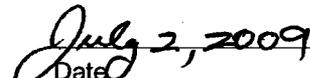
| Matrix Type/Parameter Name          | Reference | Method Number | Notes |
|-------------------------------------|-----------|---------------|-------|
| Vanadium                            | EPA       | 6010          | 1     |
| Zinc                                | EPA       | 6010          | 1     |
| Zinc                                | EPA       | 6020          | 1     |
| Chlorinated Herbicides              | EPA       | 8151          | 1     |
| Low Level Pesticides                | ARI       | SOP 423S      | 7     |
| Organochlorine Pesticides           | EPA       | 8081          | 1     |
| Petroleum Hydrocarbons, Extractable | WDOE      | EPH           | 1     |
| Petroleum Hydrocarbons, Volatile    | WDOE      | VPH           | 1     |
| Phenols                             | EPA       | 8041          |       |
| Polychlorinated Biphenyls           | EPA       | 8082          | 1,7   |
| Total Pet Hydrocarbons - Diesel     | WDOE      | NWTPH-Dx      | 1,3   |
| Total Pet Hydrocarbons - Gasoline   | WDOE      | NWTPH-Gx      | 1,3   |
| VOA & Semi-VOA Compounds            | ARI SOP   | 427S          | 4     |
| Volatile Aromatics                  | EPA       | 8021          | 1     |
| BNA Extr (Semivolatile) Organics    | EPA       | 8270          | 1     |
| Butyl-tin Species                   | EPA       | 8270 MOD      |       |
| Organophosphorus Pesticides         | EPA       | 8270          | 1,2   |
| Polycyclic Aromatic HC (PAHs)       | EPA       | 8270 SIM      | 1,2   |
| Vinyl Chloride/1,1-DCE              | EPA       | 8260 SIM      | 2     |
| Volatile Organic Compounds          | EPA       | 8260          | 1     |
| Particle Size Distribution          | ASTM      | D 422         |       |
| Particle Size Distribution (Sed)    | PSEP      | 1986          |       |

**Matrix Type/Parameter Name**                      **Reference**    **Method Number**        **Notes**

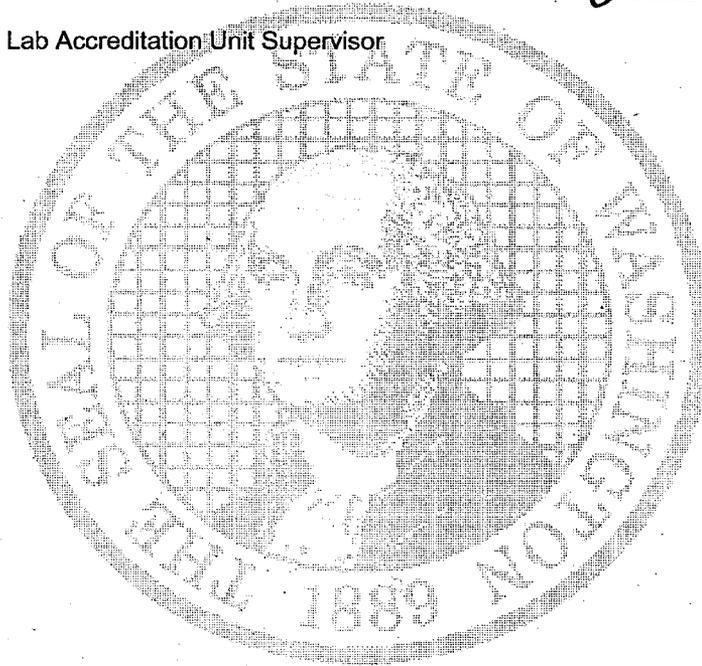
**Accredited Parameter Note Detail**

(1) Recognition of Oregon NELAP accreditation. (2) GC-MS Selective Ion Monitoring (SIM). (3) Washington Department of Ecology Analytical Methods for Petroleum Hydrocarbons, Publication Number ECY 97-602, June 1997. (4) ARI SOP for "Water Soluble Non-halogenated Volatile and Semivolatile Organic Compounds," including glycols. (5) Not used. (6) Not used. (7) Includes capability for low levels in aqueous samples using a modified hexane extraction. (8) Provisional pending an acceptable proficiency testing (PT) result (WAC 173-50-110). (9) ARI SOP 710S. (10) WDOE. Modification of PSEP Microtox Method. WDOE 02-09-043, Subappendix B & C. 2003.

  
\_\_\_\_\_  
Authentication Signature

  
\_\_\_\_\_  
Date

Stewart M. Lombard, Lab Accreditation Unit Supervisor



## Parameters Denied Accreditation

### Analytical Resources, Incorporated

Tukwila, WA

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| Parameter Name | Reference | Method Number | Notes | Matrix |
|----------------|-----------|---------------|-------|--------|
| Uranium        | EPA       | 200.8         | 1     | D      |
| Uranium        | EPA       | 200.8         | 1     | N      |
| Uranium        | EPA       | 6020 Mod      | 1     | S      |

#### Denied Parameter Accreditation Footnotes

(1) Withheld pending submission of acceptable PT sample analysis results.

Matrix Definitions - D = Drinking Water; N = Non-potable Water; S = Solid and Chemical Material; A = Air and Emissions.





**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

December 15, 2009

Michael Monacell  
Whittier Filtration  
315 N. Puente Street, Unit A  
Brea, CA 92821

**Client Project: Western Refining**  
**ARI ID: PZ44**

Dear Mr. Monacell:

Please find enclosed Chain-of-Custody (COC) records, sample receipt documentation, and the final data for the project referenced above. Analytical Resources, Inc. (ARI) accepted fourteen water samples, as part of a larger shipment on November 24, 2009. Note that several sample vials contained 'head-space'. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for BTEX and EPH, as requested.

All sample containers for EPH were preserved with HCl on November 25, 2009 to protect holding times.

All BTEX sample vials had a pH of two, except for sample **IN 1230am** which had a pH of five.

It was noted that only one 40mL vial was provided per sample. ARI was instructed to perform the BTEX analysis on the 40mL vials. The samples were originally analyzed on December 1, 2009 for BTEX. Due to matrix effects, samples were re-analyzed at dilutions on December 2, 2009. Sample results may be affected by re-analyzing from the original vials. Only data from the second analysis have been included in this report.

The BTEX continuing calibration of Ethylbenzene was outside the 20% control limit high. All detected results for this compound have been flagged with a "Q" qualifier. No further corrective action was required.

All samples for EPH were analyzed twice and for both analyses the continuing calibrations were outside control limits high due to matrix effects. Only the re-analysis data have been reported for EPH. No further corrective action was required.



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Respectfully,  
ANALYTICAL RESOURCES, INC.

Cheronne Oreiro  
Project Manager  
(206) 695-6214  
[cheronneo@arilabs.com](mailto:cheronneo@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

Enclosures

eFile: PZ44

# Chain of Custody Record & Laboratory Analysis Request



**Analytical Resources, Incorporated**  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

|                               |      |                        |        |                                 |       |                             |    |                                 |  |
|-------------------------------|------|------------------------|--------|---------------------------------|-------|-----------------------------|----|---------------------------------|--|
| ARI Assigned Number:          |      | Turn-around Requested: |        |                                 | Date: |                             |    |                                 |  |
| ARI Client Company:           |      | Phone:                 |        |                                 | Page: |                             | of |                                 |  |
| Client Contact:               |      |                        |        | No. of Coolers:                 |       | Cooler Temps:               |    |                                 |  |
| Client Project Name:          |      |                        |        | Analysis Requested              |       |                             |    | Notes/Comments                  |  |
| Client Project #:             |      | Samplers:              |        |                                 |       |                             |    |                                 |  |
| Sample ID                     | Date | Time                   | Matrix | No. Containers                  |       |                             |    |                                 |  |
| NOV 20 1                      |      |                        |        | 4                               |       |                             |    |                                 |  |
| NOV 20 2                      |      |                        |        | 4                               |       |                             |    |                                 |  |
| NOV 20 3                      |      |                        |        | 4                               |       |                             |    |                                 |  |
| NOV 20 4                      |      |                        |        | 4                               |       |                             |    |                                 |  |
| NOV 21 1                      |      |                        |        | 7                               |       |                             |    |                                 |  |
| NOV 21 2                      |      |                        |        | 7                               |       |                             |    |                                 |  |
| NOV 21 3                      |      |                        |        | 7                               |       |                             |    |                                 |  |
| NOV 21 4                      |      |                        |        | 7                               |       |                             |    |                                 |  |
| Comments/Special Instructions |      |                        |        | Relinquished by:<br>(Signature) |       | Received by:<br>(Signature) |    | Relinquished by:<br>(Signature) |  |
|                               |      |                        |        | Printed Name:                   |       | Printed Name:               |    | Printed Name:                   |  |
|                               |      |                        |        | Company:                        |       | Company:                    |    | Company:                        |  |
|                               |      |                        |        | Date & Time:                    |       | Date & Time:                |    | Date & Time:                    |  |

PZHH-00005

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

# Chain of Custody Record & Laboratory Analysis Request



**Analytical Resources, Incorporated**  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

|                               |      |                        |        |                |                              |  |               |                          |    |  |                              |  |                |                          |  |  |
|-------------------------------|------|------------------------|--------|----------------|------------------------------|--|---------------|--------------------------|----|--|------------------------------|--|----------------|--------------------------|--|--|
| ARI Assigned Number:          |      | Turn-around Requested: |        |                | Date:                        |  |               |                          |    |  |                              |  |                |                          |  |  |
| ARI Client Company:           |      | Phone:                 |        |                | Page:                        |  |               |                          | of |  |                              |  |                |                          |  |  |
| Client Contact:               |      |                        |        |                | No. of Coolers:              |  | Cooler Temps: |                          |    |  |                              |  |                |                          |  |  |
| Client Project Name:          |      |                        |        |                | Analysis Requested           |  |               |                          |    |  |                              |  | Notes/Comments |                          |  |  |
| Client Project #:             |      | Samplers:              |        |                |                              |  |               |                          |    |  |                              |  |                |                          |  |  |
| Sample ID                     | Date | Time                   | Matrix | No. Containers |                              |  |               |                          |    |  |                              |  |                |                          |  |  |
| NOV 22 1                      |      |                        |        | 7              |                              |  |               |                          |    |  |                              |  |                |                          |  |  |
| NOV 22 2                      |      |                        |        | 7              |                              |  |               |                          |    |  |                              |  |                |                          |  |  |
| NOV 22 3                      |      |                        |        | 7              |                              |  |               |                          |    |  |                              |  |                |                          |  |  |
| NOV 22 4                      |      |                        |        | 7              |                              |  |               |                          |    |  |                              |  |                |                          |  |  |
| Comments/Special Instructions |      |                        |        |                | Relinquished by: (Signature) |  |               | Received by: (Signature) |    |  | Relinquished by: (Signature) |  |                | Received by: (Signature) |  |  |
|                               |      |                        |        |                | Printed Name:                |  |               | Printed Name:            |    |  | Printed Name:                |  |                | Printed Name:            |  |  |
|                               |      |                        |        |                | Company:                     |  |               | Company:                 |    |  | Company:                     |  |                | Company:                 |  |  |
|                               |      |                        |        |                | Date & Time:                 |  |               | Date & Time:             |    |  | Date & Time:                 |  |                | Date & Time:             |  |  |

PZHH-00001

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants

# Cooler Receipt Form

ARI Client: Whittier Filtration  
Western Refining  
COC No(s): \_\_\_\_\_ (NA)  
Assigned ARI Job No: PZ45

Project Name: Western Refining  
Delivered by: Fed-Ex (UPS) Courier Hand Delivered Other: \_\_\_\_\_  
Tracking No: 128750190145673532 NA  
128750190145500129

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO

Were custody papers included with the cooler?  YES  NO

Were custody papers properly filled out (ink, signed, etc.)  YES  NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 7.9 Leib

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941619

Cooler Accepted by: AV Date: 11/24/09 Time: 950  
**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES  NO

What kind of packing material was used? ...  Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA YES  NO

Were all bottles sealed in individual plastic bags? YES  NO

Did all bottles arrive in good condition (unbroken)? YES  NO

Were all bottle labels complete and legible? YES  NO

Did the number of containers listed on COC match with the number of containers received? YES  NO

Did all bottle labels and tags agree with custody papers? YES  NO

Were all bottles used correct for the requested analyses?  YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...  NA YES  NO

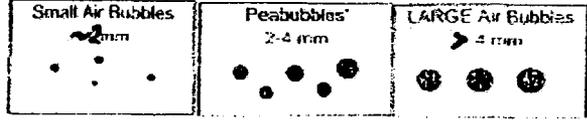
Were all VOC vials free of air bubbles? NA YES  NO

Was sufficient amount of sample sent in each bottle?  YES  NO

Samples Logged by: JW Date: 11/24/09 Time: 1245  
**\*\* Notify Project Manager of discrepancies or concerns \*\***

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
|                     |                  |                     |                  |
|                     |                  |                     |                  |
|                     |                  |                     |                  |
|                     |                  |                     |                  |

**Additional Notes, Discrepancies, & Resolutions:**  
 11-21-09 out no time  
 11-22-09 out @ 230pm Broken  
 11-22-09 out @ 430pm Broken  
 EPH samples preserved 11/26/09 by metals prep.  
 Client was contacted to figure out  
 OUT 100pm "hs" 1 of 1  
 OUT 1230am "hs" 4 of 5 "lg" 1 of 5  
 IN 1030am "hs" 3 of 3  
 OUT 1030am "hs" 2 of 4 "lg" 2 of 4  
 OUT 230pm "hs" 3 of 5 "lg" 1 of 5,  
 "pb" 1 of 5  
 OUT 500pm "pb" 4 of 4  
 OUT 930am "hs" 2 of 5, "lg" 3 of 5  
 OUT 1200pm "hs" 2 of 5, "lg" 2 of 5, "pb" 1 of 5  
 OUT 230pm "lg" 4 of 4 Revision 012  
 OUT 430pm "pb" 4 of 4  
 Unknown "pb" 1 of 1



Small -> "sm" samples and analysis  
 Peabubbles -> "pb"  
 Large -> "lg"  
 Headspace -> "hs"

PZ44: 00005



# Cooler Temperature Compliance Form

Cooler#: 1 Temperature(°C): 6.6

| Sample ID                              | Bottle Count | Bottle Type             |
|--|--------------|-------------------------|
| 11/21/09 out                           | 1            | 1 40ml voa              |
| 11-21-09 out @ 300pm                   | 1            | "                       |
| 11-21-09 out @ 1230am                  | 1            | 1 500 ml Ag             |
| 11-21-09 IN @ 500pm                    | 2            | 1 500 ml Ag, 1 40ml voa |
| 11-21-09 out @ 500pm                   | 5            | 2 500 ml Ag, 3 40ml voa |
| 11-22-09 IN @ 1200pm                   | 2            | 1 500 ml Ag, 1 40ml voa |
| 11-22-09 out @ 1200pm                  | 7            | 2 500 ml Ag, 5 40ml voa |
| 11-22-09 IN @ 1430 <sup>am</sup> 230pm | 2            | 1 40ml voa, 1 500 ml Ag |

Cooler#: 1 cont. Temperature(°C):

| Sample ID            | Bottle Count | Bottle Type             |
|----------------------|--------------|-------------------------|
| 11-22-09 out @ 230pm | 6            | 4 40ml voa, 2 500 ml Ag |
| 11-22-09 IN @ 930 am | 2            | 1 40ml voa, 1 500 ml Ag |
| 11-22-09 out @ 930am | 7            | 5 40ml voa, 2 500 ml Ag |
| 11-22-09 IN @ 430pm  | 2            | 1 40ml voa, 1 500 ml Ag |
| 11-22-09 out @ 430pm | 6            | 4 40ml voa, 2 500 ml Ag |

Cooler#: 2 Temperature(°C): 2.9

| Sample ID             | Bottle Count | Bottle Type             |
|-----------------------|--------------|-------------------------|
| NO label              | 1            | 1 500 ml Ag             |
| 11-20-09 IN @ 1000am  | 2            | 1 500 ml Ag, 1 40ml voa |
| 11-20-09 out @ 1000am | 2            | " "                     |
| 11-20-09 IN @ 100pm   | 2            | " "                     |
| 11-20-09 IN @ 230pm   | 2            | " "                     |
| 11-20-09 out @ 230pm  | 2            | " "                     |
| 11-20-09 IN @ 430pm   | 2            | " "                     |
| 11-20-09 out @ 430pm  | 2            | " "                     |

Cooler#: 2 cont Temperature(°C):

| Sample ID                          | Bottle Count | Bottle Type             |
|------------------------------------|--------------|-------------------------|
| 11-21-09 IN @ 1030 am              | 5            | 2 500 ml Ag, 3 40ml voa |
| 11-21-09 out @ 10 <sup>30</sup> am | 6            | 2 500 ml Ag, 4 40ml voa |
| 11-21-09 IN @ 230pm                | 2            | 1 40ml voa, 1 500 ml Ag |
| 11-21-09 out @ 230pm               | 7            | 5 40ml voa, 2 500 ml Ag |

Completed by: AV Date: 11/24/09 Time: 1136



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: IN 1000am

Page 1 of 1

SAMPLE

Lab Sample ID: PZ44A

QC Report No: PZ44-Whittier Filtration

LIMS ID: 09-29450

Project: Western Refining

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 11/20/09

Reported: 12/04/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Sample Amount: 0.0200 mL

Date Analyzed: 12/02/09 12:33

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 6,200  |   |
| 108-88-3    | Toluene      | 100 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 860    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 4,000  |   |
| 95-47-6     | o-Xylene     | 100 | 1,700  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 100% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 103% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 1000am  
SAMPLE

Lab Sample ID: PZ44B

QC Report No: PZ44-Whittier Filtration

LIMS ID: 09-29451

Project: Western Refining

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 11/20/09

Reported: 12/04/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Sample Amount: 1.00 mL

Date Analyzed: 12/02/09 12:59

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 2.0 | < 2.0  | U |
| 108-88-3    | Toluene      | 2.0 | 2.5    |   |
| 100-41-4    | Ethylbenzene | 2.0 | < 2.0  | U |
| 179601-23-1 | m,p-Xylene   | 4.0 | < 4.0  | U |
| 95-47-6     | o-Xylene     | 2.0 | < 2.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 102%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 101%  |
| d4-1,2-Dichlorobenzene | 99.2% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 100pm  
SAMPLE

Lab Sample ID: PZ44C

LIMS ID: 09-29452

Matrix: Water

Data Release Authorized: 

Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration

Project: Western Refining

Date Sampled: 11/20/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Date Analyzed: 12/02/09 13:24

Sample Amount: 0.0200 mL

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 9,200  |   |
| 108-88-3    | Toluene      | 100 | 16,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 1,000  | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 4,700  |   |
| 95-47-6     | o-Xylene     | 100 | 2,000  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 103% |
| d8-Toluene             | 101% |
| Bromofluorobenzene     | 102% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 230pm  
SAMPLE

Lab Sample ID: PZ44D

LIMS ID: 09-29453

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/20/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 13:50

Sample Amount: 0.0200 mL

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 8,600  |   |
| 108-88-3    | Toluene      | 100 | 15,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 1,000  | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 4,600  |   |
| 95-47-6     | o-Xylene     | 100 | 1,900  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 102% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 103% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 230pm  
SAMPLE

Lab Sample ID: PZ44E  
LIMS ID: 09-29454  
Matrix: Water  
Data Release Authorized:   
Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/20/09  
Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 14:16

Sample Amount: 1.00 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 2.0 | < 2.0  | U |
| 108-88-3    | Toluene      | 2.0 | 2.5    |   |
| 100-41-4    | Ethylbenzene | 2.0 | < 2.0  | U |
| 179601-23-1 | m,p-Xylene   | 4.0 | < 4.0  | U |
| 95-47-6     | o-Xylene     | 2.0 | < 2.0  | U |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 101%  |
| d8-Toluene             | 101%  |
| Bromofluorobenzene     | 99.8% |
| d4-1,2-Dichlorobenzene | 100%  |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 430pm  
SAMPLE

Lab Sample ID: PZ44F

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

LIMS ID: 09-29455

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 11/20/09

Reported: 12/04/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 14:41

Sample Amount: 0.0200 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 7,000  |   |
| 108-88-3    | Toluene      | 100 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 840    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 4,000  |   |
| 95-47-6     | o-Xylene     | 100 | 1,800  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 102%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 101%  |
| d4-1,2-Dichlorobenzene | 99.8% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 430pm  
SAMPLE

Lab Sample ID: PZ44G

LIMS ID: 09-29456

Matrix: Water

Data Release Authorized: 

Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/20/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 15:07

Sample Amount: 1.00 mL

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 2.0 | 3.9    |   |
| 108-88-3    | Toluene      | 2.0 | 2.1    |   |
| 100-41-4    | Ethylbenzene | 2.0 | < 2.0  | U |
| 179601-23-1 | m,p-Xylene   | 4.0 | < 4.0  | U |
| 95-47-6     | o-Xylene     | 2.0 | < 2.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 101% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 101% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 1230am  
SAMPLE

Lab Sample ID: PZ44H

LIMS ID: 09-29457

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 15:33

Sample Amount: 0.0200 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 3,700  |   |
| 108-88-3    | Toluene      | 100 | 8,900  |   |
| 100-41-4    | Ethylbenzene | 100 | 700    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 3,500  |   |
| 95-47-6     | o-Xylene     | 100 | 1,400  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 102% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 103% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 230pm  
SAMPLE

Lab Sample ID: PZ44I  
LIMS ID: 09-29458  
Matrix: Water  
Data Release Authorized: *AB*  
Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/21/09  
Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 15:58

Sample Amount: 0.0200 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 4,500  |   |
| 108-88-3    | Toluene      | 100 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 940    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 4,700  |   |
| 95-47-6     | o-Xylene     | 100 | 1,800  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 101%  |
| d8-Toluene             | 99.7% |
| Bromofluorobenzene     | 101%  |
| d4-1,2-Dichlorobenzene | 102%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 500pm  
SAMPLE

Lab Sample ID: PZ44J

LIMS ID: 09-29459

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 16:24

Sample Amount: 0.0200 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 4,800  |   |
| 108-88-3    | Toluene      | 100 | 13,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 1,300  | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 6,700  |   |
| 95-47-6     | o-Xylene     | 100 | 2,400  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 103%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 102%  |
| d4-1,2-Dichlorobenzene | 99.4% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: IN 930am

Page 1 of 1

SAMPLE

Lab Sample ID: PZ44K

QC Report No: PZ44-Whittier Filtration

LIMS ID: 09-29460

Project: Western Refining

Matrix: Water

Data Release Authorized: *AB*

Date Sampled: 11/22/09

Reported: 12/04/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Sample Amount: 0.0200 mL

Date Analyzed: 12/02/09 16:50

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 7,100  |   |
| 108-88-3    | Toluene      | 100 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 680    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 3,400  |   |
| 95-47-6     | o-Xylene     | 100 | 1,300  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 102% |
| d8-Toluene             | 100% |
| Bromofluorobenzene     | 101% |
| d4-1,2-Dichlorobenzene | 100% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 1200pm  
SAMPLE

Lab Sample ID: PZ44L

LIMS ID: 09-29461

Matrix: Water

Data Release Authorized: 

Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 17:15

Sample Amount: 0.0200 mL

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 11,000 |   |
| 108-88-3    | Toluene      | 100 | 17,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 840    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 3,900  |   |
| 95-47-6     | o-Xylene     | 100 | 1,500  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 103% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 102% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 230pm  
SAMPLE

Lab Sample ID: PZ44M  
LIMS ID: 09-29462  
Matrix: Water  
Data Release Authorized: *B*  
Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09  
Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 17:41

Sample Amount: 0.0200 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 10,000 |   |
| 108-88-3    | Toluene      | 100 | 14,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 720    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 3,400  |   |
| 95-47-6     | o-Xylene     | 100 | 1,300  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 103%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 102%  |
| d4-1,2-Dichlorobenzene | 99.8% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 430pm  
SAMPLE

Lab Sample ID: PZ44N

LIMS ID: 09-29463

Matrix: Water

Data Release Authorized: 

Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration

Project: Western Refining

Date Sampled: 11/22/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Date Analyzed: 12/02/09 18:07

Sample Amount: 0.0200 mL

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 9,400  |   |
| 108-88-3    | Toluene      | 100 | 15,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 930    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 4,500  |   |
| 95-47-6     | o-Xylene     | 100 | 1,600  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 102%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 102%  |
| d4-1,2-Dichlorobenzene | 99.1% |

**VOA SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

| ARI ID      | Client ID       | PV | DCE  | TOL   | BFB   | DCB   | TOT OUT |
|-------------|-----------------|----|------|-------|-------|-------|---------|
| MB-120209   | Method Blank    | 10 | 103% | 102%  | 102%  | 101%  | 0       |
| LCS-120209  | Lab Control     | 10 | 102% | 102%  | 102%  | 101%  | 0       |
| LCSD-120209 | Lab Control Dup | 10 | 104% | 101%  | 101%  | 98.1% | 0       |
| PZ44A       | IN 1000am       | 10 | 100% | 102%  | 103%  | 101%  | 0       |
| PZ44B       | OUT 1000am      | 10 | 102% | 102%  | 101%  | 99.2% | 0       |
| PZ44C       | IN 100pm        | 10 | 103% | 101%  | 102%  | 101%  | 0       |
| PZ44D       | IN 230pm        | 10 | 102% | 102%  | 103%  | 101%  | 0       |
| PZ44E       | OUT 230pm       | 10 | 101% | 101%  | 99.8% | 100%  | 0       |
| PZ44F       | IN 430pm        | 10 | 102% | 102%  | 101%  | 99.8% | 0       |
| PZ44G       | OUT 430pm       | 10 | 101% | 102%  | 101%  | 101%  | 0       |
| PZ44H       | IN 1230am       | 10 | 102% | 102%  | 103%  | 101%  | 0       |
| PZ44I       | IN 230pm        | 10 | 101% | 99.7% | 101%  | 102%  | 0       |
| PZ44J       | IN 500pm        | 10 | 103% | 102%  | 102%  | 99.4% | 0       |
| PZ44K       | IN 930am        | 10 | 102% | 100%  | 101%  | 100%  | 0       |
| PZ44L       | IN 1200pm       | 10 | 103% | 102%  | 102%  | 101%  | 0       |
| PZ44M       | IN 230pm        | 10 | 103% | 102%  | 102%  | 99.8% | 0       |
| PZ44N       | IN 430pm        | 10 | 102% | 102%  | 102%  | 99.1% | 0       |

**LCS/MB LIMITS**

**QC LIMITS**

**SW8260C**

(DCE) = d4-1,2-Dichloroethane  
(TOL) = d8-Toluene  
(BFB) = Bromofluorobenzene  
(DCB) = d4-1,2-Dichlorobenzene

70-132  
80-120  
80-120  
80-120

80-143  
80-120  
80-120  
80-120

Prep Method: SW5030B  
Log Number Range: 09-29450 to 09-29463



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-120209

Page 1 of 1

LAB CONTROL SAMPLE

Lab Sample ID: LCS-120209

QC Report No: PZ44-Whittier Filtration

LIMS ID: 09-29450

Project: Western Refining

Matrix: Water

Data Release Authorized: 

Date Sampled: NA

Reported: 12/04/09

Date Received: NA

Instrument/Analyst LCS: NT5/PKC

Sample Amount LCS: 10.0 mL

LCSID: NT5/PKC

LCSID: 10.0 mL

Date Analyzed LCS: 12/02/09 11:04

Purge Volume LCS: 10.0 mL

LCSID: 12/02/09 11:29

LCSID: 10.0 mL

| Analyte      | LCS    | Spike Added-LCS | LCS Recovery | LCSID  | Spike Added-LCSID | LCSID Recovery | RPD  |
|--------------|--------|-----------------|--------------|--------|-------------------|----------------|------|
| Benzene      | 11.0   | 10.0            | 110%         | 10.8   | 10.0              | 108%           | 1.8% |
| Toluene      | 10.9   | 10.0            | 109%         | 10.9   | 10.0              | 109%           | 0.0% |
| Ethylbenzene | 11.5 Q | 10.0            | 115%         | 11.0 Q | 10.0              | 110%           | 4.4% |
| m,p-Xylene   | 21.7   | 20.0            | 108%         | 21.9   | 20.0              | 110%           | 0.9% |
| o-Xylene     | 10.7   | 10.0            | 107%         | 10.9   | 10.0              | 109%           | 1.9% |

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

|                        | LCS  | LCSID |
|------------------------|------|-------|
| d4-1,2-Dichloroethane  | 102% | 104%  |
| d8-Toluene             | 102% | 101%  |
| Bromofluorobenzene     | 102% | 101%  |
| d4-1,2-Dichlorobenzene | 101% | 98.1% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: MB-120209  
METHOD BLANK

Lab Sample ID: MB-120209  
LIMS ID: 09-29450  
Matrix: Water  
Data Release Authorized:   
Reported: 12/04/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: NA  
Date Received: NA

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 11:54

Sample Amount: 10.0 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 0.2 | < 0.2  | U |
| 108-88-3    | Toluene      | 0.2 | < 0.2  | U |
| 100-41-4    | Ethylbenzene | 0.2 | < 0.2  | U |
| 179601-23-1 | m,p-Xylene   | 0.4 | < 0.4  | U |
| 95-47-6     | o-Xylene     | 0.2 | < 0.2  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 103% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 102% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: IN 1000am  
SAMPLE

Lab Sample ID: PZ44A

LIMS ID: 09-29450

Matrix: Water

Data Release Authorized: *B*

Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/20/09

Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 12/04/09 21:34

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic

Date Analyzed: 12/05/09 06:13

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 590    |
| C10-C12 Aliphatics | 40 | 450    |
| C12-C16 Aliphatics | 40 | 820    |
| C16-C21 Aliphatics | 40 | 880    |
| C21-C34 Aliphatics | 40 | 200    |
| C8-C10 Aromatics   | 40 | 9,200  |
| C10-C12 Aromatics  | 40 | 2,200  |
| C12-C16 Aromatics  | 40 | 2,000  |
| C16-C21 Aromatics  | 40 | 1,100  |
| C21-C34 Aromatics  | 40 | 290    |

Reported in  $\mu\text{g/L}$  (ppb)

EPH Surrogate Recovery

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 65.8% |
| Aromatic  | o-Terphenyl        | 85.6% |



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: OUT 1000am  
SAMPLE

Lab Sample ID: PZ44B

LIMS ID: 09-29451

Matrix: Water

Data Release Authorized: *RB*

Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/20/09

Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/04/09 21:59

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 06:38

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | 100    |
| C12-C16 Aliphatics | 40 | 440    |
| C16-C21 Aliphatics | 40 | 610    |
| C21-C34 Aliphatics | 40 | 340    |
| C8-C10 Aromatics   | 40 | 120    |
| C10-C12 Aromatics  | 40 | 64     |
| C12-C16 Aromatics  | 40 | 140    |
| C16-C21 Aromatics  | 40 | 390    |
| C21-C34 Aromatics  | 40 | 150    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 63.7% |
| Aromatic  | o-Terphenyl        | 99.4% |



ORGANICS ANALYSIS DATA SHEET  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: IN 100pm  
SAMPLE

Lab Sample ID: PZ44C  
LIMS ID: 09-29452  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining  
Date Sampled: 11/20/09  
Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/04/09 22:24  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 07:03  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 2,400  |
| C10-C12 Aliphatics | 40 | 460    |
| C12-C16 Aliphatics | 40 | 480    |
| C16-C21 Aliphatics | 40 | 500    |
| C21-C34 Aliphatics | 40 | 210    |
| C8-C10 Aromatics   | 40 | 5,900  |
| C10-C12 Aromatics  | 40 | 1,900  |
| C12-C16 Aromatics  | 40 | 1,800  |
| C16-C21 Aromatics  | 40 | 960    |
| C21-C34 Aromatics  | 40 | 290    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 63.1% |
| Aromatic  | o-Terphenyl        | 87.2% |



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: IN 230pm  
SAMPLE

Lab Sample ID: PZ44D

LIMS ID: 09-29453

Matrix: Water

Data Release Authorized: 

Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration

Project: Western Refining

Date Sampled: 11/20/09

Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/04/09 22:48

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 07:27

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 840    |
| C10-C12 Aliphatics | 40 | 280    |
| C12-C16 Aliphatics | 40 | 590    |
| C16-C21 Aliphatics | 40 | 720    |
| C21-C34 Aliphatics | 40 | 270    |
| C8-C10 Aromatics   | 40 | 6,800  |
| C10-C12 Aromatics  | 40 | 1,600  |
| C12-C16 Aromatics  | 40 | 1,700  |
| C16-C21 Aromatics  | 40 | 1,100  |
| C21-C34 Aromatics  | 40 | 300    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 63.5% |
| Aromatic  | o-Terphenyl        | 77.4% |



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: OUT 230pm  
SAMPLE

Lab Sample ID: PZ44E

LIMS ID: 09-29454

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration

Project: Western Refining

Date Sampled: 11/20/09

Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/04/09 23:13

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 07:52

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 96     |
| C10-C12 Aromatics  | 40 | 70     |
| C12-C16 Aromatics  | 40 | 120    |
| C16-C21 Aromatics  | 40 | 240    |
| C21-C34 Aromatics  | 40 | 74     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 69.4% |
| Aromatic  | o-Terphenyl        | 101%  |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: IN 430pm  
 SAMPLE

Lab Sample ID: PZ44F  
 LIMS ID: 09-29455  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
 Project: Western Refining  
 Date Sampled: 11/20/09  
 Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/04/09 23:38  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 08:16  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 950    |
| C10-C12 Aliphatics | 40 | 190    |
| C12-C16 Aliphatics | 40 | 320    |
| C16-C21 Aliphatics | 40 | 390    |
| C21-C34 Aliphatics | 40 | 110    |
| C8-C10 Aromatics   | 40 | 6,300  |
| C10-C12 Aromatics  | 40 | 1,900  |
| C12-C16 Aromatics  | 40 | 1,900  |
| C16-C21 Aromatics  | 40 | 1,000  |
| C21-C34 Aromatics  | 40 | 210    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 60.5% |
| Aromatic  | o-Terphenyl        | 80.9% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: OUT 430pm  
 SAMPLE

Lab Sample ID: PZ44G  
 LIMS ID: 09-29456  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
 Project: Western Refining  
 Date Sampled: 11/20/09  
 Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/05/09 01:41  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 10:20  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result     |
|--------------------------|-----------|------------|
| C8-C10 Aliphatics        | 40        | < 40 U     |
| C10-C12 Aliphatics       | 40        | < 40 U     |
| C12-C16 Aliphatics       | 40        | < 40 U     |
| C16-C21 Aliphatics       | 40        | < 40 U     |
| C21-C34 Aliphatics       | 40        | < 40 U     |
| <b>C8-C10 Aromatics</b>  | <b>40</b> | <b>64</b>  |
| <b>C10-C12 Aromatics</b> | <b>40</b> | <b>90</b>  |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>160</b> |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>330</b> |
| <b>C21-C34 Aromatics</b> | <b>40</b> | <b>150</b> |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 62.4% |
| Aromatic  | o-Terphenyl        | 87.6% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: IN 1230am

SAMPLE

Lab Sample ID: PZ44H

LIMS ID: 09-29457

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration

Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/05/09 02:06

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 10:44

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 930    |
| C10-C12 Aliphatics | 40 | 520    |
| C12-C16 Aliphatics | 40 | 940    |
| C16-C21 Aliphatics | 40 | 750    |
| C21-C34 Aliphatics | 40 | 160    |
| C8-C10 Aromatics   | 40 | 4,900  |
| C10-C12 Aromatics  | 40 | 1,800  |
| C12-C16 Aromatics  | 40 | 2,100  |
| C16-C21 Aromatics  | 40 | 1,200  |
| C21-C34 Aromatics  | 40 | 350    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 67.9% |
| Aromatic  | o-Terphenyl        | 94.7% |

**ORGANICS ANALYSIS DATA SHEET**  
**Aliphatic/Aromatic GC-EPH**  
 Page 1 of 1

Sample ID: IN 230pm  
**SAMPLE**

Lab Sample ID: PZ44I  
 LIMS ID: 09-29458  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/21/09  
 Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/05/09 02:30  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 11:09  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 1,100  |
| C10-C12 Aliphatics | 40 | 1,000  |
| C12-C16 Aliphatics | 40 | 1,600  |
| C16-C21 Aliphatics | 40 | 940    |
| C21-C34 Aliphatics | 40 | 310    |
| C8-C10 Aromatics   | 40 | 9,200  |
| C10-C12 Aromatics  | 40 | 2,400  |
| C12-C16 Aromatics  | 40 | 2,700  |
| C16-C21 Aromatics  | 40 | 1,600  |
| C21-C34 Aromatics  | 40 | 330    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 74.7% |
| Aromatic  | o-Terphenyl        | 101%  |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: IN 500pm  
 SAMPLE

Lab Sample ID: PZ44J  
 LIMS ID: 09-29459  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
 Project: Western Refining  
 Date Sampled: 11/21/09  
 Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/04/09 20:45  
 Instrument/Analyst: FID8/MS

Dilution Factor: 50.0

**Aromatic**

Date Analyzed: 12/05/09 05:24  
 Instrument/Analyst: FID8/MS

Dilution Factor: 50.0

| Range              | RL    | Result |
|--------------------|-------|--------|
| C8-C10 Aliphatics  | 2,000 | 12,000 |
| C10-C12 Aliphatics | 2,000 | 20,000 |
| C12-C16 Aliphatics | 2,000 | 36,000 |
| C16-C21 Aliphatics | 2,000 | 34,000 |
| C21-C34 Aliphatics | 2,000 | 11,000 |
| C8-C10 Aromatics   | 2,000 | 9,300  |
| C10-C12 Aromatics  | 2,000 | 8,600  |
| C12-C16 Aromatics  | 2,000 | 18,000 |
| C16-C21 Aromatics  | 2,000 | 23,000 |
| C21-C34 Aromatics  | 2,000 | 16,000 |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 61.8% |
| Aromatic  | o-Terphenyl        | 60.4% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: IN 930am  
SAMPLE

Lab Sample ID: PZ44K

LIMS ID: 09-29460

Matrix: Water

Data Release Authorized: 

Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09  
Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/05/09 02:55  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 11:34  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 980    |
| C10-C12 Aliphatics | 40 | 360    |
| C12-C16 Aliphatics | 40 | 610    |
| C16-C21 Aliphatics | 40 | 450    |
| C21-C34 Aliphatics | 40 | 540    |
| C8-C10 Aromatics   | 40 | 6,300  |
| C10-C12 Aromatics  | 40 | 1,200  |
| C12-C16 Aromatics  | 40 | 1,300  |
| C16-C21 Aromatics  | 40 | 740    |
| C21-C34 Aromatics  | 40 | 280    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 55.4% |
| Aromatic  | o-Terphenyl        | 78.5% |



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: IN 1200pm  
SAMPLE

Lab Sample ID: PZ44L

LIMS ID: 09-29461

Matrix: Water

Data Release Authorized:

Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09  
Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 12/05/09 03:20  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic

Date Analyzed: 12/05/09 11:58  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 620    |
| C10-C12 Aliphatics | 40 | 110    |
| C12-C16 Aliphatics | 40 | 170    |
| C16-C21 Aliphatics | 40 | 190    |
| C21-C34 Aliphatics | 40 | 320    |
| C8-C10 Aromatics   | 40 | 9,000  |
| C10-C12 Aromatics  | 40 | 1,100  |
| C12-C16 Aromatics  | 40 | 1,000  |
| C16-C21 Aromatics  | 40 | 550    |
| C21-C34 Aromatics  | 40 | 220    |

Reported in µg/L (ppb)

EPH Surrogate Recovery

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 71.6% |
| Aromatic  | o-Terphenyl        | 90.6% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: IN 230pm  
 SAMPLE

Lab Sample ID: PZ44M  
 LIMS ID: 09-29462  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
 Project: Western Refining  
 Date Sampled: 11/22/09  
 Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/05/09 03:45  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 12:23  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 920    |
| C10-C12 Aliphatics | 40 | 200    |
| C12-C16 Aliphatics | 40 | 250    |
| C16-C21 Aliphatics | 40 | 210    |
| C21-C34 Aliphatics | 40 | 310    |
| C8-C10 Aromatics   | 40 | 7,200  |
| C10-C12 Aromatics  | 40 | 1,100  |
| C12-C16 Aromatics  | 40 | 1,200  |
| C16-C21 Aromatics  | 40 | 500    |
| C21-C34 Aromatics  | 40 | 110    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 65.1% |
| Aromatic  | o-Terphenyl        | 95.9% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: IN 430pm  
SAMPLE

Lab Sample ID: PZ44N

LIMS ID: 09-29463

Matrix: Water

Data Release Authorized: *B*

Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09  
Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/04/09 21:10  
Instrument/Analyst: FID8/MS

Dilution Factor: 50.0

**Aromatic**

Date Analyzed: 12/05/09 05:49  
Instrument/Analyst: FID8/MS

Dilution Factor: 50.0

| Range              | RL    | Result |
|--------------------|-------|--------|
| C8-C10 Aliphatics  | 2,000 | 36,000 |
| C10-C12 Aliphatics | 2,000 | 40,000 |
| C12-C16 Aliphatics | 2,000 | 59,000 |
| C16-C21 Aliphatics | 2,000 | 38,000 |
| C21-C34 Aliphatics | 2,000 | 36,000 |
| C8-C10 Aromatics   | 2,000 | 10,000 |
| C10-C12 Aromatics  | 2,000 | 10,000 |
| C12-C16 Aromatics  | 2,000 | 24,000 |
| C16-C21 Aromatics  | 2,000 | 25,000 |
| C21-C34 Aromatics  | 2,000 | 20,000 |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 55.4% |
| Aromatic  | o-Terphenyl        | 56.6% |

ALIPHATIC EPH WATER SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: PZ44-Whittier Filtration  
 Project: Western Refining

| ARI ID      | Client ID       | COD   | TOT OUT |
|-------------|-----------------|-------|---------|
| MB-120109   | Method Blank    | 69.9% | 0       |
| LCS-120109  | Lab Control     | 74.3% | 0       |
| LCSD-120109 | Lab Control Dup | 78.9% | 0       |
| PZ44A       | IN 1000am       | 65.8% | 0       |
| PZ44B       | OUT 1000am      | 63.7% | 0       |
| PZ44C       | IN 100pm        | 63.1% | 0       |
| PZ44D       | IN 230pm        | 63.5% | 0       |
| PZ44E       | OUT 230pm       | 69.4% | 0       |
| PZ44F       | IN 430pm        | 60.5% | 0       |
| PZ44G       | OUT 430pm       | 62.4% | 0       |
| PZ44H       | IN 1230am       | 67.9% | 0       |
| PZ44I       | IN 230pm        | 74.7% | 0       |
| PZ44J       | IN 500pm        | 61.8% | 0       |
| PZ44K       | IN 930am        | 55.4% | 0       |
| PZ44L       | IN 1200pm       | 71.6% | 0       |
| PZ44M       | IN 230pm        | 65.1% | 0       |
| PZ44N       | IN 430pm        | 55.4% | 0       |

LCS/MB LIMITS      QC LIMITS

(COD) = 1-Chlorooctadecane

(38-121)

(42-120)

Prep Method: SW3510C  
 Log Number Range: 09-29450 to 09-29463

AROMATIC EPH WATER SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

| ARI ID      | Client ID       | OTER  | TOT OUT |
|-------------|-----------------|-------|---------|
| MB-120109   | Method Blank    | 105%  | 0       |
| LCS-120109  | Lab Control     | 103%  | 0       |
| LCSD-120109 | Lab Control Dup | 97.4% | 0       |
| PZ44A       | IN 1000am       | 85.6% | 0       |
| PZ44B       | OUT 1000am      | 99.4% | 0       |
| PZ44C       | IN 100pm        | 87.2% | 0       |
| PZ44D       | IN 230pm        | 77.4% | 0       |
| PZ44E       | OUT 230pm       | 101%  | 0       |
| PZ44F       | IN 430pm        | 80.9% | 0       |
| PZ44G       | OUT 430pm       | 87.6% | 0       |
| PZ44H       | IN 1230am       | 94.7% | 0       |
| PZ44I       | IN 230pm        | 101%  | 0       |
| PZ44J       | IN 500pm        | 60.4% | 0       |
| PZ44K       | IN 930am        | 78.5% | 0       |
| PZ44L       | IN 1200pm       | 90.6% | 0       |
| PZ44M       | IN 230pm        | 95.9% | 0       |
| PZ44N       | IN 430pm        | 56.6% | 0       |

LCS/MB LIMITS      QC LIMITS

(OTER) = o-Terphenyl

(44-133)

(39-141)

Prep Method: SW3510C  
Log Number Range: 09-29450 to 09-29463

FORM-II AREPH

**ORGANICS ANALYSIS DATA SHEET**  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: LCS-120109  
LCS/LCSD

Lab Sample ID: LCS-120109  
LIMS ID: 09-29450  
Matrix: Water  
Data Release Authorized:   
Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
Project: Western Refining

Date Sampled: NA  
Date Received: NA

Date Extracted LCS/LCSD: 12/01/09

Sample Amount LCS: 500 mL  
LCSD: 500 mL  
Final Extract Volume LCS: 1.0 mL  
LCSD: 1.0 mL

**Aliphatic**

Date Analyzed LCS: 12/04/09 00:02  
LCSD: 12/04/09 00:27  
Instrument/Analyst LCS: FID8/MS  
LCSD: FID8/MS

Dilution Factor LCS: 1.00  
LCSD: 1.00

**Aromatic**

Date Analyzed LCS: 12/05/09 08:41  
LCSD: 12/05/09 09:06  
Instrument/Analyst LCS: FID8/MS  
LCSD: FID8/MS

Dilution Factor LCS: 1.00  
LCSD: 1.00

| Range              | LCS | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|--------------------|-----|-----------------|--------------|------|------------------|---------------|-------|
| C8-C10 Aliphatics  | 170 | 300             | 56.7%        | 176  | 300              | 58.7%         | 3.5%  |
| C10-C12 Aliphatics | 210 | 300             | 70.0%        | 212  | 300              | 70.7%         | 0.9%  |
| C12-C16 Aliphatics | 320 | 300             | 107%         | 324  | 300              | 108%          | 1.2%  |
| C16-C21 Aliphatics | 310 | 300             | 103%         | 326  | 300              | 109%          | 5.0%  |
| C10-C12 Aromatics  | 244 | 300             | 81.3%        | 214  | 300              | 71.3%         | 13.1% |
| C12-C16 Aromatics  | 306 | 300             | 102%         | 276  | 300              | 92.0%         | 10.3% |
| C16-C21 Aromatics  | 726 | 600             | 121%         | 702  | 600              | 117%          | 3.4%  |
| C21-C34 Aromatics  | 738 | 600             | 123%         | 730  | 600              | 122%          | 1.1%  |

**EPH Surrogate Recovery**

|           |                    | LCS   | LCSD  |
|-----------|--------------------|-------|-------|
| Aliphatic | 1-Chlorooctadecane | 74.3% | 78.9% |
| Aromatic  | o-Terphenyl        | 103%  | 97.4% |

Results reported in  $\mu\text{g/L}$   
RPD calculated using sample concentrations per SW846.



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: MB-120109  
 METHOD BLANK

Lab Sample ID: MB-120109  
 LIMS ID: 09-29450  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 12/14/09

QC Report No: PZ44-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/20/09  
 Date Received: 11/24/09

Date Extracted: 12/01/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/04/09 00:52  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/05/09 09:30  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 69.9% |
| <b>Aromatic</b>  | o-Terphenyl        | 105%  |



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

December 16, 2009

Michael Monacell  
Whittier Filtration  
315 N. Puente Street, Unit A  
Brea, CA 92821

**Client Project: Western Refining**  
**ARI ID: PZ45**

Dear Mr. Monacell:

Please find enclosed Chain-of-Custody (COC) records, sample receipt documentation, and the final data for the project referenced above. Analytical Resources, Inc. (ARI) accepted fourteen water samples, as part of a larger shipment on November 24, 2009. Several sample vials contained 'head-space'. One sample container was received without a label. This sample was archived upon receipt, pending further instructions. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for BTEX, VPH, and EPH, as requested.

All sample containers for EPH were preserved with HCl on November 25, 2009 to protect holding times.

All BTEX sample vials had a pH of two, except for sample **IN 1230am** which had a pH of five.

It was noted that only one 40mL vial was provided for sample **OUT 100pm**. This sample was originally analyzed for BTEX on December 1, 2009. Due to matrix effects, the sample was re-analyzed at a dilution on December 2, 2009. The results for this sample may be affected due to re-analyzing from the original vial. Only data from the second analysis have been included in this report.

The BTEX continuing calibration of Ethylbenzene was outside the 20% control limit high for the December 2, 2009 analysis. All detected results for this compound on the date of analysis have been flagged with a "Q" qualifier. No further corrective action was required.

The VPH second continuing calibration fell outside the control limits low for Methyl tert-Butyl Ether and the third continuing calibration fell outside the control limits low for Methyl tert-Butyl Ether and n-Decane for the December 2, 2009 VPH analysis. The associated samples were re-analyzed on December 4, 2009 and the third continuing calibration fell outside the control limits low for Methyl tert-Butyl Ether and n-Decane, due to matrix effects. Both sets of data have been included in this report. Note that due to software limitations, the re-analyzed samples were labeled as 'Dilutions' on the Form I's.

The EPH surrogate percent recovery of 1-Chlorooctadecane fell outside the control limits low for sample **OUT 230PM** due to matrix effects. All other surrogate percent recoveries were within control limits. No corrective action was required.



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Respectfully,  
ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Cheronne Oreiro".

Cheronne Oreiro  
Project Manager  
(206) 695-6214  
[cheronneo@arilabs.com](mailto:cheronneo@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

Enclosures

eFile: PZ45

# Chain of Custody Record & Laboratory Analysis Request



**Analytical Resources, Incorporated**  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

|                               |  |                                 |      |                                |                    |                                 |  |                             |
|-------------------------------|--|---------------------------------|------|--------------------------------|--------------------|---------------------------------|--|-----------------------------|
| ARI Assigned Number: P2411    |  | Turn-around Requested:          |      |                                | Date:              |                                 |  |                             |
| ARI Client Company:           |  | Phone:                          |      |                                | Page: of           |                                 |  |                             |
| Client Contact:               |  |                                 |      |                                | No. of Coolers:    |                                 |  |                             |
|                               |  |                                 |      |                                | Cooler Temps:      |                                 |  |                             |
| Client Project Name:          |  |                                 |      |                                | Analysis Requested |                                 |  | Notes/Comments              |
| Client Project #:             |  | Samplers:                       |      |                                |                    |                                 |  |                             |
| Sample ID                     |  | Date                            | Time | Matrix                         | No. Containers     |                                 |  |                             |
| Nov 20 1                      |  |                                 |      |                                | 4                  |                                 |  |                             |
| Nov 20 2                      |  |                                 |      |                                | 4                  |                                 |  |                             |
| Nov 20 3                      |  |                                 |      |                                | 4                  |                                 |  |                             |
| Nov 20 4                      |  |                                 |      |                                | 4                  |                                 |  |                             |
| Nov 21 1                      |  |                                 |      |                                | 7                  |                                 |  |                             |
| Nov 21 2                      |  |                                 |      |                                | 7                  |                                 |  |                             |
| Nov 21 3                      |  |                                 |      |                                | 7                  |                                 |  |                             |
| Nov 21 4                      |  |                                 |      |                                | 7                  |                                 |  |                             |
| Comments/Special Instructions |  | Relinquished by:<br>(Signature) |      | Received by:<br>(Signature)    |                    | Relinquished by:<br>(Signature) |  | Received by:<br>(Signature) |
|                               |  | Printed Name:                   |      | Printed Name:<br>A. Volgardsen |                    | Printed Name:                   |  | Printed Name:               |
|                               |  | Company:                        |      | Company:<br>ARI                |                    | Company:                        |  | Company:                    |
|                               |  | Date & Time:                    |      | Date & Time:<br>11/24/09 950   |                    | Date & Time:                    |  | Date & Time:                |

2-11-09  
 FAX 206-695-6200

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

# Chain of Custody Record & Laboratory Analysis Request



**Analytical Resources, Incorporated**  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
|----------------------------------|------|------------------------------|--------|------------------------------------|--------------------|------------------------------|---------------|--------------------------|----------------|
| ARI Assigned Number: <u>P244</u> |      | Turn-around Requested:       |        |                                    | Date:              |                              |               |                          |                |
| ARI Client Company:              |      | Phone:                       |        |                                    | Page:              |                              | of            |                          |                |
| Client Contact:                  |      |                              |        |                                    | No. of Coolers:    |                              | Cooler Temps: |                          |                |
| Client Project Name:             |      |                              |        |                                    | Analysis Requested |                              |               |                          | Notes/Comments |
| Client Project #:                |      | Samplers:                    |        |                                    |                    |                              |               |                          |                |
| Sample ID                        | Date | Time                         | Matrix | No. Containers                     |                    |                              |               |                          |                |
| NOV 22 1                         |      |                              |        | 7                                  |                    |                              |               |                          |                |
| NOV 22 2                         |      |                              |        | 7                                  |                    |                              |               |                          |                |
| NOV 22 3                         |      |                              |        | 7                                  |                    |                              |               |                          |                |
| NOV 22 4                         |      |                              |        | 7                                  |                    |                              |               |                          |                |
|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
|                                  |      |                              |        |                                    |                    |                              |               |                          |                |
| Comments/Special Instructions    |      | Relinquished by: (Signature) |        | Received by: (Signature)           |                    | Relinquished by: (Signature) |               | Received by: (Signature) |                |
|                                  |      | Printed Name:                |        | Printed Name: <u>A. Volgardsen</u> |                    | Printed Name:                |               | Printed Name:            |                |
|                                  |      | Company:                     |        | Company: <u>ARI</u>                |                    | Company:                     |               | Company:                 |                |
|                                  |      | Date & Time:                 |        | Date & Time: <u>11/24/09 0950</u>  |                    | Date & Time:                 |               | Date & Time:             |                |

P244-00001  
 NOV 22 11:24 AM '09

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants  
*Whittier Filtration*

# Cooler Receipt Form

ARI Client: Western Refining  
COC No(s): \_\_\_\_\_ (NA)  
Assigned ARI Job No: P244

Project Name: Western Refining  
Delivered by: Fed-Ex (UPS) Courier Hand Delivered Other: \_\_\_\_\_  
Tracking No: 128750190145673532 NA  
128750190145500129

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO   
Were custody papers included with the cooler? ..... YES  NO   
Were custody papers properly filled out (ink, signed, etc.) ..... YES  NO   
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 7.9 6.6  
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 909411619

Cooler Accepted by: AV Date: 11/24/09 Time: 950

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? ..... YES  NO   
What kind of packing material was used? ...  Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_  
Was sufficient ice used (if appropriate)? ..... NA YES  NO   
Were all bottles sealed in individual plastic bags? ..... YES  NO   
Did all bottles arrive in good condition (unbroken)? ..... YES  NO   
Were all bottle labels complete and legible? ..... YES  NO   
Did the number of containers listed on COC match with the number of containers received? ..... YES  NO   
Did all bottle labels and tags agree with custody papers? ..... YES  NO   
Were all bottles used correct for the requested analyses? ..... YES  NO   
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...  NA YES  NO   
Were all VOC vials free of air bubbles? ..... NA YES  NO   
Was sufficient amount of sample sent in each bottle? ..... YES  NO

Samples Logged by: JW Date: 11/30/09 Time: 1245

**\*\* Notify Project Manager of discrepancies or concerns \*\***

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
|                     |                  |                     |                  |
|                     |                  |                     |                  |
|                     |                  |                     |                  |

**Additional Notes, Discrepancies, & Resolutions:**  
 11-21-09 out no time  
 11-22-09 out @ 230pm Broken  
 11-22-09 out @ 430pm Broken  
 EPH samples preserved 11/25/09 by metals prep  
 IN 1000am "hs" 1of1  
 OUT 1000am "hs" 1of1  
 IN 1000pm "hs" 1of1  
 IN 230pm "hs" 1of1  
 OUT 230pm "hs" 1of1  
 IN 430pm "hs" 1of1  
 OUT 430pm "hs" 1of1  
 IN 1230am "hs" 1of1  
 IN 280pm "hs" 1of1  
 IN 500pm "hs" 1of1  
 IN 930am "hs" 1of1  
 IN 1200pm "hs" 1of1  
 IN 230pm "hs" 1of1  
 IN 430pm "hs" 1of1



Small → "sm" out samples and analysis.  
 Peabubbles → "pb"  
 Large → "lg"  
 Headspace → "hs"

JW 11/30/09

IN 230pm "hs" 1of1  
 IN 430pm "hs" 1of1  
 PY45 00005



# Cooler Temperature Compliance Form

| Cooler#: 1                            |              | Temperature(°C): 6.6    |  |
|---------------------------------------|--------------|-------------------------|--|
| Sample ID                             | Bottle Count | Bottle Type             |  |
| 11/21/09 out                          | 1            | 1 40ml voa              |  |
| 11-21-09 out @ 300pm                  | 1            | "                       |  |
| 11-21-09 out @ 1230am                 | 1            | 1 500 ml Ag             |  |
| 11-21-09 IN @ 500pm                   | 2            | 1 500 ml Ag, 1 40ml voa |  |
| 11-21-09 out @ 500pm                  | 5            | 2 500ml Ag, 3 40ml voa  |  |
| 11-22-09 IN @ 1200pm                  | 2            | 1 500 ml Ag, 1 40ml voa |  |
| 11-22-09 OUT @ 1200pm                 | 7            | 2 500ml Ag, 5 40ml voa  |  |
| 11-22-09 IN @ 430 <sup>pm</sup> 230pm | 2            | 1 40ml voa, 1 500ml Ag  |  |

| Cooler#: 1 cont.     |              | Temperature(°C):        |  |
|----------------------|--------------|-------------------------|--|
| Sample ID            | Bottle Count | Bottle Type             |  |
| 11-22-09 out @ 230pm | 6            | 4 40ml voa, 2 500ml Ag  |  |
| 11-22-09 IN @ 930am  | 2            | 1 40ml voa, 1 500ml Ag  |  |
| 11-22-09 out @ 930am | 7            | 5 40ml voa, 2 500ml Ag  |  |
| 11-22-09 IN @ 430pm  | 2            | 1 40ml voa, 1 500ml Ag  |  |
| 11-22-09 out @ 430pm | 6            | 4 40ml voa, 2 500 ml Ag |  |

| Cooler#: 2            |              | Temperature(°C): 2.9   |  |
|-----------------------|--------------|------------------------|--|
| Sample ID             | Bottle Count | Bottle Type            |  |
| NO label              | 1            | 1 500ml Ag             |  |
| 11-20-09 IN @ 1000am  | 2            | 1 500ml Ag, 1 40ml voa |  |
| 11-20-09 out @ 1000am | 2            | " "                    |  |
| 11-20-09 IN @ 100pm   | 2            | " "                    |  |
| 11-20-09 IN @ 230pm   | 2            | " "                    |  |
| 11-20-09 out @ 230pm  | 2            | " "                    |  |
| 11-20-09 IN @ 430pm   | 2            | " "                    |  |
| 11-20-09 out @ 430pm  | 2            | " "                    |  |

| Cooler#: 2 cont                    |              | Temperature(°C):       |  |
|------------------------------------|--------------|------------------------|--|
| Sample ID                          | Bottle Count | Bottle Type            |  |
| 11-21-09 IN @ 1030 am              | 5            | 2 500ml Ag, 3 40ml voa |  |
| 11-21-09 out @ 10 <sup>30</sup> am | 6            | 2 500ml Ag, 4 40ml voa |  |
| 11-21-09 IN @ 230pm                | 2            | 1 40ml voa, 1 500ml Ag |  |
| 11-21-09 out @ 230pm               | 7            | 5 40ml voa, 2 500ml Ag |  |

Completed by: AV Date: 11/24/09 Time: 1136



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 100pm  
SAMPLE

Lab Sample ID: PZ45A  
LIMS ID: 09-29464  
Matrix: Water  
Data Release Authorized: *AB*  
Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/20/09  
Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 18:32

Sample Amount: 1.00 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 2.0 | 2.4    |   |
| 108-88-3    | Toluene      | 2.0 | < 2.0  | U |
| 100-41-4    | Ethylbenzene | 2.0 | < 2.0  | U |
| 179601-23-1 | m,p-Xylene   | 4.0 | < 4.0  | U |
| 95-47-6     | o-Xylene     | 2.0 | < 2.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 103% |
| d8-Toluene             | 101% |
| Bromofluorobenzene     | 100% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: OUT 1230am

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SAMPLE

Lab Sample ID: PZ45B

QC Report No: PZ45-Whittier Filtration

LIMS ID: 09-29465

Project: Western Refining

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 11/21/09

Reported: 12/03/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Sample Amount: 1.00 mL

Date Analyzed: 12/02/09 18:58

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 2.0 | < 2.0  | U |
| 108-88-3    | Toluene      | 2.0 | < 2.0  | U |
| 100-41-4    | Ethylbenzene | 2.0 | < 2.0  | U |
| 179601-23-1 | m,p-Xylene   | 4.0 | < 4.0  | U |
| 95-47-6     | o-Xylene     | 2.0 | < 2.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 104% |
| d8-Toluene             | 104% |
| Bromofluorobenzene     | 101% |
| d4-1,2-Dichlorobenzene | 100% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 1030am  
SAMPLE

Lab Sample ID: PZ45C

QC Report No: PZ45-Whitcier Filtration

LIMS ID: 09-29466

Project: Western Refining

Matrix: Water

Data Release Authorized: 

Date Sampled: 11/21/09

Reported: 12/03/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Sample Amount: 0.0200 mL

Date Analyzed: 12/02/09 19:23

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 4,200  |   |
| 108-88-3    | Toluene      | 100 | 9,800  |   |
| 100-41-4    | Ethylbenzene | 100 | 720    | Q |
| 179601-23-1 | m,p-Xylene   | 200 | 3,600  |   |
| 95-47-6     | o-Xylene     | 100 | 1,500  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 102%  |
| d8-Toluene             | 101%  |
| Bromofluorobenzene     | 100%  |
| d4-1,2-Dichlorobenzene | 99.1% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 1030am  
SAMPLE

Lab Sample ID: PZ45D

LIMS ID: 09-29467

Matrix: Water

Data Release Authorized: 

Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Date Analyzed: 12/02/09 19:49

Sample Amount: 1.00 mL

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 2.0 | < 2.0  | U |
| 108-88-3    | Toluene      | 2.0 | < 2.0  | U |
| 100-41-4    | Ethylbenzene | 2.0 | < 2.0  | U |
| 179601-23-1 | m,p-Xylene   | 4.0 | < 4.0  | U |
| 95-47-6     | o-Xylene     | 2.0 | < 2.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 100%  |
| d8-Toluene             | 101%  |
| Bromofluorobenzene     | 100%  |
| d4-1,2-Dichlorobenzene | 97.5% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 230pm  
SAMPLE

Lab Sample ID: PZ45E

QC Report No: PZ45-Whittier Filtration

LIMS ID: 09-29468

Project: Western Refining

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 11/21/09

Reported: 12/03/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Sample Amount: 1.00 mL

Date Analyzed: 12/02/09 20:15

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 2.0 | < 2.0  | U |
| 108-88-3    | Toluene      | 2.0 | < 2.0  | U |
| 100-41-4    | Ethylbenzene | 2.0 | < 2.0  | U |
| 179601-23-1 | m,p-Xylene   | 4.0 | < 4.0  | U |
| 95-47-6     | o-Xylene     | 2.0 | < 2.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 101%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 99.3% |
| d4-1,2-Dichlorobenzene | 99.3% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 500pm  
SAMPLE

Lab Sample ID: PZ45F

QC Report No: PZ45-Whittier Filtration

LIMS ID: 09-29469

Project: Western Refining

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 11/21/09

Reported: 12/03/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Sample Amount: 10.0 mL

Date Analyzed: 12/02/09 20:40

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 0.2 | 0.2    |   |
| 108-88-3    | Toluene      | 0.2 | < 0.2  | U |
| 100-41-4    | Ethylbenzene | 0.2 | < 0.2  | U |
| 179601-23-1 | m,p-Xylene   | 0.4 | < 0.4  | U |
| 95-47-6     | o-Xylene     | 0.2 | < 0.2  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 102% |
| d8-Toluene             | 100% |
| Bromofluorobenzene     | 110% |
| d4-1,2-Dichlorobenzene | 103% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 930am  
SAMPLE

Lab Sample ID: PZ45G  
LIMS ID: 09-29470  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09  
Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/03/09 11:50

Sample Amount: 0.500 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 4.0 | < 4.0  | U |
| 108-88-3    | Toluene      | 4.0 | < 4.0  | U |
| 100-41-4    | Ethylbenzene | 4.0 | < 4.0  | U |
| 179601-23-1 | m,p-Xylene   | 8.0 | < 8.0  | U |
| 95-47-6     | o-Xylene     | 4.0 | < 4.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 103% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 102% |
| d4-1,2-Dichlorobenzene | 102% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 1200pm  
SAMPLE

Lab Sample ID: PZ45H  
LIMS ID: 09-29471  
Matrix: Water  
Data Release Authorized: *AB*  
Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09  
Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/03/09 12:15

Sample Amount: 0.500 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 4.0 | < 4.0  | U |
| 108-88-3    | Toluene      | 4.0 | < 4.0  | U |
| 100-41-4    | Ethylbenzene | 4.0 | < 4.0  | U |
| 179601-23-1 | m,p-Xylene   | 8.0 | < 8.0  | U |
| 95-47-6     | o-Xylene     | 4.0 | < 4.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 101%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 99.7% |
| d4-1,2-Dichlorobenzene | 100%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 230pm  
SAMPLE

Lab Sample ID: PZ45I

QC Report No: PZ45-Whittier Filtration

LIMS ID: 09-29472

Project: Western Refining

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 11/22/09

Reported: 12/03/09

Date Received: 11/24/09

Instrument/Analyst: NT5/PKC

Sample Amount: 0.500 mL

Date Analyzed: 12/03/09 12:41

Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 4.0 | < 4.0  | U |
| 108-88-3    | Toluene      | 4.0 | < 4.0  | U |
| 100-41-4    | Ethylbenzene | 4.0 | < 4.0  | U |
| 179601-23-1 | m,p-Xylene   | 8.0 | < 8.0  | U |
| 95-47-6     | o-Xylene     | 4.0 | < 4.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 104%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 101%  |
| d4-1,2-Dichlorobenzene | 99.4% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 430pm  
SAMPLE

Lab Sample ID: PZ45J  
LIMS ID: 09-29473  
Matrix: Water  
Data Release Authorized:   
Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09  
Date Received: 11/24/09

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/03/09 13:07

Sample Amount: 0.500 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 4.0 | < 4.0  | U |
| 108-88-3    | Toluene      | 4.0 | < 4.0  | U |
| 100-41-4    | Ethylbenzene | 4.0 | < 4.0  | U |
| 179601-23-1 | m,p-Xylene   | 8.0 | < 8.0  | U |
| 95-47-6     | o-Xylene     | 4.0 | < 4.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 102%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 98.7% |
| d4-1,2-Dichlorobenzene | 99.7% |

**VOA SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

| ARI ID      | Client ID       | PV | DCE   | TOL  | BFB   | DCB   | TOT OUT |
|-------------|-----------------|----|-------|------|-------|-------|---------|
| MB-120209   | Method Blank    | 10 | 103%  | 102% | 102%  | 101%  | 0       |
| LCS-120209  | Lab Control     | 10 | 102%  | 102% | 102%  | 101%  | 0       |
| LCSD-120209 | Lab Control Dup | 10 | 104%  | 101% | 101%  | 98.1% | 0       |
| PZ45A       | OUT 100pm       | 10 | 103%  | 101% | 100%  | 101%  | 0       |
| PZ45B       | OUT 1230am      | 10 | 104%  | 104% | 101%  | 100%  | 0       |
| PZ45C       | IN 1030am       | 10 | 102%  | 101% | 100%  | 99.1% | 0       |
| PZ45D       | OUT 1030am      | 10 | 100%  | 101% | 100%  | 97.5% | 0       |
| PZ45E       | OUT 230pm       | 10 | 101%  | 102% | 99.3% | 99.3% | 0       |
| PZ45F       | OUT 500pm       | 10 | 102%  | 100% | 110%  | 103%  | 0       |
| MB-120309   | Method Blank    | 10 | 101%  | 102% | 101%  | 101%  | 0       |
| LCS-120309  | Lab Control     | 10 | 98.5% | 100% | 104%  | 100%  | 0       |
| LCSD-120309 | Lab Control Dup | 10 | 100%  | 102% | 103%  | 100%  | 0       |
| PZ45G       | OUT 930am       | 10 | 103%  | 102% | 102%  | 102%  | 0       |
| PZ45H       | OUT 1200pm      | 10 | 101%  | 102% | 99.7% | 100%  | 0       |
| PZ45I       | OUT 230pm       | 10 | 104%  | 102% | 101%  | 99.4% | 0       |
| PZ45J       | OUT 430pm       | 10 | 102%  | 102% | 98.7% | 99.7% | 0       |

**LCS/MB LIMITS**

**QC LIMITS**

**SW8260C**

(DCE) = d4-1,2-Dichloroethane  
(TOL) = d8-Toluene  
(BFB) = Bromofluorobenzene  
(DCB) = d4-1,2-Dichlorobenzene

70-132  
80-120  
80-120  
80-120

80-143  
80-120  
80-120  
80-120

Prep Method: SW5030B  
Log Number Range: 09-29464 to 09-29473



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: LCS-120209  
LAB CONTROL SAMPLE

Lab Sample ID: LCS-120209  
LIMS ID: 09-29464  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: NA  
Date Received: NA

Instrument/Analyst LCS: NT5/PKC  
LCS: NT5/PKC  
Date Analyzed LCS: 12/02/09 11:04  
LCS: 12/02/09 11:29

Sample Amount LCS: 10.0 mL  
LCS: 10.0 mL  
Purge Volume LCS: 10.0 mL  
LCS: 10.0 mL

| Analyte      | LCS    | Spike Added-LCS | LCS Recovery | LCSD   | Spike Added-LCSD | LCSD Recovery | RPD  |
|--------------|--------|-----------------|--------------|--------|------------------|---------------|------|
| Benzene      | 11.0   | 10.0            | 110%         | 10.8   | 10.0             | 108%          | 1.8% |
| Toluene      | 10.9   | 10.0            | 109%         | 10.9   | 10.0             | 109%          | 0.0% |
| Ethylbenzene | 11.5 Q | 10.0            | 115%         | 11.0 Q | 10.0             | 110%          | 4.4% |
| m,p-Xylene   | 21.7   | 20.0            | 108%         | 21.9   | 20.0             | 110%          | 0.9% |
| o-Xylene     | 10.7   | 10.0            | 107%         | 10.9   | 10.0             | 109%          | 1.9% |

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

|                        | LCS  | LCSD  |
|------------------------|------|-------|
| d4-1,2-Dichloroethane  | 102% | 104%  |
| d8-Toluene             | 102% | 101%  |
| Bromofluorobenzene     | 102% | 101%  |
| d4-1,2-Dichlorobenzene | 101% | 98.1% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: LCS-120309  
LAB CONTROL SAMPLE

Lab Sample ID: LCS-120309  
LIMS ID: 09-29470  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: NA  
Date Received: NA

Instrument/Analyst LCS: NT5/PKC  
LCS: NT5/PKC  
Date Analyzed LCS: 12/03/09 10:25  
LCS: 12/03/09 10:50

Sample Amount LCS: 10.0 mL  
LCS: 10.0 mL  
Purge Volume LCS: 10.0 mL  
LCS: 10.0 mL

| Analyte      | LCS  | Spike Added-LCS | LCS Recovery | LCS  | LCS  | Spike Added-LCSD | LCSD Recovery | RPD |
|--------------|------|-----------------|--------------|------|------|------------------|---------------|-----|
|              |      |                 |              |      |      |                  |               |     |
| Benzene      | 10.2 | 10.0            | 102%         | 9.9  | 10.0 | 99.0%            | 3.0%          |     |
| Toluene      | 10.1 | 10.0            | 101%         | 10.0 | 10.0 | 100%             | 1.0%          |     |
| Ethylbenzene | 10.7 | 10.0            | 107%         | 10.6 | 10.0 | 106%             | 0.9%          |     |
| m,p-Xylene   | 20.2 | 20.0            | 101%         | 19.8 | 20.0 | 99.0%            | 2.0%          |     |
| o-Xylene     | 10.0 | 10.0            | 100%         | 9.8  | 10.0 | 98.0%            | 2.0%          |     |

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

|                        | LCS   | LCSD |
|------------------------|-------|------|
| d4-1,2-Dichloroethane  | 98.5% | 100% |
| d8-Toluene             | 100%  | 102% |
| Bromofluorobenzene     | 104%  | 103% |
| d4-1,2-Dichlorobenzene | 100%  | 100% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: MB-120209  
METHOD BLANK

Lab Sample ID: MB-120209  
LIMS ID: 09-29464  
Matrix: Water  
Data Release Authorized:  
Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: NA  
Date Received: NA

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/02/09 11:54

Sample Amount: 10.0 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 0.2 | < 0.2  | U |
| 108-88-3    | Toluene      | 0.2 | < 0.2  | U |
| 100-41-4    | Ethylbenzene | 0.2 | < 0.2  | U |
| 179601-23-1 | m,p-Xylene   | 0.4 | < 0.4  | U |
| 95-47-6     | o-Xylene     | 0.2 | < 0.2  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 103% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 102% |
| d4-1,2-Dichlorobenzene | 101% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: MB-120309  
METHOD BLANK

Lab Sample ID: MB-120309  
LIMS ID: 09-29470  
Matrix: Water  
Data Release Authorized:   
Reported: 12/03/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: NA  
Date Received: NA

Instrument/Analyst: NT5/PKC  
Date Analyzed: 12/03/09 11:16

Sample Amount: 10.0 mL  
Purge Volume: 10.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 0.2 | < 0.2  | U |
| 108-88-3    | Toluene      | 0.2 | < 0.2  | U |
| 100-41-4    | Ethylbenzene | 0.2 | < 0.2  | U |
| 179601-23-1 | m,p-Xylene   | 0.4 | < 0.4  | U |
| 95-47-6     | o-Xylene     | 0.2 | < 0.2  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 101% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 101% |
| d4-1,2-Dichlorobenzene | 101% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: OUT 1230am

SAMPLE

Lab Sample ID: PZ45B

LIMS ID: 09-29465

Matrix: Water

Data Release Authorized:

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Date Analyzed: 12/02/09 15:44

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | 10      |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 190    |
| C6-C8 Aliphatics   | 50 | 97     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 102% |
| FID: 2,5-Dibromotoluene | 102% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: OUT 1230am  
 DILUTION

Lab Sample ID: PZ45B  
 LIMS ID: 09-29465  
 Matrix: Water  
 Data Release Authorized: *10*  
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/21/09  
 Date Received: 11/24/09

Date Analyzed: 12/04/09 15:56  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | 9.6     |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 160    |
| C6-C8 Aliphatics   | 50 | 93     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 105% |
| FID: 2,5-Dibromotoluene | 107% |

*2*  
 PZ45: 00023  
*2*



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: IN 1030am  
 SAMPLE

Lab Sample ID: PZ45C  
 LIMS ID: 09-29466  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/21/09  
 Date Received: 11/24/09

Date Analyzed: 12/04/09 12:22  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 5,300   |
| 108-88-3    | Toluene                 | 500  | 12,000  |
| 100-41-4    | Ethylbenzene            | 500  | 990     |
| 179601-23-1 | m,p-Xylene              | 1000 | 4,600   |
| 95-47-6     | o-Xylene                | 500  | 1,800   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | < 500 U |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 13,000    |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | < 5,000 U |
| C8-C10 Aliphatics  | 5,000 | 15,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 100% |
| FID: 2,5-Dibromotoluene | 100% |

*2*  
 PZ45: 00024  
*18*

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

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Sample ID: OUT 1030am  
SAMPLE

Lab Sample ID: PZ45D

LIMS ID: 09-29467

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Date Analyzed: 12/02/09 16:14

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range                   | RL | Result     |
|-------------------------|----|------------|
| C8-C10 Aromatics        | 50 | < 50 U     |
| C10-C12 Aromatics       | 50 | < 50 U     |
| C12-C13 Aromatics       | 50 | < 50 U     |
| <b>C5-C6 Aliphatics</b> | 50 | <b>130</b> |
| <b>C6-C8 Aliphatics</b> | 50 | <b>57</b>  |
| C8-C10 Aliphatics       | 50 | < 50 U     |
| C10-C12 Aliphatics      | 50 | < 50 U     |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 102% |
| FID: 2,5-Dibromotoluene | 102% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

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Sample ID: OUT 1030am  
DILUTION

Lab Sample ID: PZ45D

LIMS ID: 09-29467

Matrix: Water

Data Release Authorized: *B*

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Date Analyzed: 12/04/09 16:26

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>110</b> |
| C6-C8 Aliphatics        | 50        | < 50 U     |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 112% |
| FID: 2,5-Dibromotoluene | 108% |

*2*  
PZ45: 00026  
*3*

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

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Sample ID: OUT 230pm

SAMPLE

Lab Sample ID: PZ45E

LIMS ID: 09-29468

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Date Analyzed: 12/02/09 16:45

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number      | Analyte                 | RL         | Result    |
|-----------------|-------------------------|------------|-----------|
| 71-43-2         | Benzene                 | 5.0        | < 5.0 U   |
| 108-88-3        | Toluene                 | 5.0        | < 5.0 U   |
| 100-41-4        | Ethylbenzene            | 5.0        | < 5.0 U   |
| 179601-23-1     | m,p-Xylene              | 10         | < 10 U    |
| 95-47-6         | o-Xylene                | 5.0        | < 5.0 U   |
| 1634-04-4       | Methyl tert-Butyl Ether | 5.0        | < 5.0 U   |
| 109-66-0        | n-Pentane               | 5.0        | < 5.0 U   |
| <b>110-54-3</b> | <b>n-Hexane</b>         | <b>5.0</b> | <b>28</b> |
| 111-65-9        | n-Octane                | 5.0        | < 5.0 U   |
| 124-18-5        | n-Decane                | 5.0        | < 5.0 U   |
| 112-40-3        | n-Dodecane              | 5.0        | < 5.0 U   |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>270</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>160</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 100%  |
| FID: 2,5-Dibromotoluene | 98.8% |

*Z*  
**PX45:00027**  
*g*



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: OUT 230pm  
 DILUTION

Lab Sample ID: PZ45E  
 LIMS ID: 09-29468  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/21/09  
 Date Received: 11/24/09

Date Analyzed: 12/04/09 16:57  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | 24      |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 230    |
| C6-C8 Aliphatics   | 50 | 150    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 115% |
| FID: 2,5-Dibromotoluene | 106% |

2  
 PZ45: 00028  
 2

ORGANICS ANALYSIS DATA SHEET  
VPH by Method WA VPH  
Page 1 of 1

Sample ID: OUT 500pm  
SAMPLE

Lab Sample ID: PZ45F  
LIMS ID: 09-29469  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/21/09  
Date Received: 11/24/09

Date Analyzed: 12/04/09 12:52  
Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
Dilution Factor: 10.0

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 50  | 52      |
| 108-88-3    | Toluene                 | 50  | < 50 U  |
| 100-41-4    | Ethylbenzene            | 50  | < 50 U  |
| 179601-23-1 | m,p-Xylene              | 100 | < 100 U |
| 95-47-6     | o-Xylene                | 50  | < 50 U  |
| 1634-04-4   | Methyl tert-Butyl Ether | 50  | < 50 U  |
| 109-66-0    | n-Pentane               | 50  | < 50 U  |
| 110-54-3    | n-Hexane                | 50  | < 50 U  |
| 111-65-9    | n-Octane                | 50  | 66      |
| 124-18-5    | n-Decane                | 50  | 210     |
| 112-40-3    | n-Dodecane              | 50  | 310     |

| Range              | RL  | Result  |
|--------------------|-----|---------|
| C8-C10 Aromatics   | 500 | 530     |
| C10-C12 Aromatics  | 500 | 1,300   |
| C12-C13 Aromatics  | 500 | 790     |
| C5-C6 Aliphatics   | 500 | < 500 U |
| C6-C8 Aliphatics   | 500 | 760     |
| C8-C10 Aliphatics  | 500 | < 500 U |
| C10-C12 Aliphatics | 500 | 670     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 121% |
| FID: 2,5-Dibromotoluene | 137% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: OUT 930am  
SAMPLE

Lab Sample ID: PZ45G

LIMS ID: 09-29470

Matrix: Water

Data Release Authorized: *B*

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: 11/22/09

Date Received: 11/24/09

Date Analyzed: 12/02/09 13:45

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number      | Analyte                 | RL         | Result    |
|-----------------|-------------------------|------------|-----------|
| 71-43-2         | Benzene                 | 5.0        | < 5.0 U   |
| 108-88-3        | Toluene                 | 5.0        | < 5.0 U   |
| 100-41-4        | Ethylbenzene            | 5.0        | < 5.0 U   |
| 179601-23-1     | m,p-Xylene              | 10         | < 10 U    |
| 95-47-6         | o-Xylene                | 5.0        | < 5.0 U   |
| 1634-04-4       | Methyl tert-Butyl Ether | 5.0        | < 5.0 U   |
| 109-66-0        | n-Pentane               | 5.0        | < 5.0 U   |
| <b>110-54-3</b> | <b>n-Hexane</b>         | <b>5.0</b> | <b>19</b> |
| 111-65-9        | n-Octane                | 5.0        | < 5.0 U   |
| 124-18-5        | n-Decane                | 5.0        | < 5.0 U   |
| 112-40-3        | n-Dodecane              | 5.0        | < 5.0 U   |

| Range                    | RL        | Result     |
|--------------------------|-----------|------------|
| C8-C10 Aromatics         | 50        | < 50 U     |
| <b>C10-C12 Aromatics</b> | <b>50</b> | <b>54</b>  |
| C12-C13 Aromatics        | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b>  | <b>50</b> | <b>420</b> |
| <b>C6-C8 Aliphatics</b>  | <b>50</b> | <b>230</b> |
| C8-C10 Aliphatics        | 50        | < 50 U     |
| C10-C12 Aliphatics       | 50        | < 50 U     |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 119% |
| FID: 2,5-Dibromotoluene | 112% |

*Z*  
PX45: 00030  
*3*

**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
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Sample ID: OUT 1200pm  
**SAMPLE**

Lab Sample ID: PZ45H  
 LIMS ID: 09-29471  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/22/09  
 Date Received: 11/24/09

Date Analyzed: 12/02/09 17:15  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number      | Analyte                 | RL         | Result    |
|-----------------|-------------------------|------------|-----------|
| 71-43-2         | Benzene                 | 5.0        | < 5.0 U   |
| 108-88-3        | Toluene                 | 5.0        | < 5.0 U   |
| 100-41-4        | Ethylbenzene            | 5.0        | < 5.0 U   |
| 179601-23-1     | m,p-Xylene              | 10         | < 10 U    |
| 95-47-6         | o-Xylene                | 5.0        | < 5.0 U   |
| 1634-04-4       | Methyl tert-Butyl Ether | 5.0        | < 5.0 U   |
| 109-66-0        | n-Pentane               | 5.0        | < 5.0 U   |
| <b>110-54-3</b> | <b>n-Hexane</b>         | <b>5.0</b> | <b>24</b> |
| 111-65-9        | n-Octane                | 5.0        | < 5.0 U   |
| 124-18-5        | n-Decane                | 5.0        | < 5.0 U   |
| 112-40-3        | n-Dodecane              | 5.0        | < 5.0 U   |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>320</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>230</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 91.8% |
| FID: 2,5-Dibromotoluene | 88.2% |

**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
 Page 1 of 1

Sample ID: OUT 1200pm  
 DILUTION

Lab Sample ID: PZ45H  
 LIMS ID: 09-29471  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/22/09  
 Date Received: 11/24/09

Date Analyzed: 12/04/09 17:28  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number      | Analyte                 | RL         | Result    |
|-----------------|-------------------------|------------|-----------|
| 71-43-2         | Benzene                 | 5.0        | < 5.0 U   |
| 108-88-3        | Toluene                 | 5.0        | < 5.0 U   |
| 100-41-4        | Ethylbenzene            | 5.0        | < 5.0 U   |
| 179601-23-1     | m,p-Xylene              | 10         | < 10 U    |
| 95-47-6         | o-Xylene                | 5.0        | < 5.0 U   |
| 1634-04-4       | Methyl tert-Butyl Ether | 5.0        | < 5.0 U   |
| 109-66-0        | n-Pentane               | 5.0        | < 5.0 U   |
| <b>110-54-3</b> | <b>n-Hexane</b>         | <b>5.0</b> | <b>20</b> |
| 111-65-9        | n-Octane                | 5.0        | < 5.0 U   |
| 124-18-5        | n-Decane                | 5.0        | < 5.0 U   |
| 112-40-3        | n-Dodecane              | 5.0        | < 5.0 U   |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>290</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>230</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 96.2% |
| FID: 2,5-Dibromotoluene | 90.4% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: OUT 230pm  
SAMPLE

Lab Sample ID: PZ45I

LIMS ID: 09-29472

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: 11/22/09

Date Received: 11/24/09

Date Analyzed: 12/02/09 17:45

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number      | Analyte                 | RL         | Result    |
|-----------------|-------------------------|------------|-----------|
| 71-43-2         | Benzene                 | 5.0        | < 5.0 U   |
| 108-88-3        | Toluene                 | 5.0        | < 5.0 U   |
| 100-41-4        | Ethylbenzene            | 5.0        | < 5.0 U   |
| 179601-23-1     | m,p-Xylene              | 10         | < 10 U    |
| 95-47-6         | o-Xylene                | 5.0        | < 5.0 U   |
| 1634-04-4       | Methyl tert-Butyl Ether | 5.0        | < 5.0 U   |
| 109-66-0        | n-Pentane               | 5.0        | < 5.0 U   |
| <b>110-54-3</b> | <b>n-Hexane</b>         | <b>5.0</b> | <b>24</b> |
| 111-65-9        | n-Octane                | 5.0        | < 5.0 U   |
| 124-18-5        | n-Decane                | 5.0        | < 5.0 U   |
| 112-40-3        | n-Dodecane              | 5.0        | < 5.0 U   |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>360</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>250</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 92.4% |
| FID: 2,5-Dibromotoluene | 92.2% |

*Z*  
*PY*  
45:00033



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: OUT 230pm  
 DILUTION

Lab Sample ID: PZ45I  
 LIMS ID: 09-29472  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/22/09  
 Date Received: 11/24/09

Date Analyzed: 12/04/09 17:58  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number      | Analyte                 | RL         | Result    |
|-----------------|-------------------------|------------|-----------|
| 71-43-2         | Benzene                 | 5.0        | < 5.0 U   |
| 108-88-3        | Toluene                 | 5.0        | < 5.0 U   |
| 100-41-4        | Ethylbenzene            | 5.0        | < 5.0 U   |
| 179601-23-1     | m,p-Xylene              | 10         | < 10 U    |
| 95-47-6         | o-Xylene                | 5.0        | < 5.0 U   |
| 1634-04-4       | Methyl tert-Butyl Ether | 5.0        | < 5.0 U   |
| 109-66-0        | n-Pentane               | 5.0        | < 5.0 U   |
| <b>110-54-3</b> | <b>n-Hexane</b>         | <b>5.0</b> | <b>22</b> |
| 111-65-9        | n-Octane                | 5.0        | < 5.0 U   |
| 124-18-5        | n-Decane                | 5.0        | < 5.0 U   |
| 112-40-3        | n-Dodecane              | 5.0        | < 5.0 U   |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| <b>C8-C10 Aromatics</b> | <b>50</b> | <b>50</b>  |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>350</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>250</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 94.8% |
| FID: 2,5-Dibromotoluene | 91.4% |

*2*  
 PX45: 00034  
*2*



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: OUT 430pm  
SAMPLE

Lab Sample ID: PZ45J

LIMS ID: 09-29473

Matrix: Water

Data Release Authorized: *AS*

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: 11/22/09

Date Received: 11/24/09

Date Analyzed: 12/02/09 18:16

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | 18      |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 500    |
| C6-C8 Aliphatics   | 50 | 150    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 103% |
| FID: 2,5-Dibromotoluene | 101% |

PZ45: 00035



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: OUT 430pm  
 DILUTION

Lab Sample ID: PZ45J  
 LIMS ID: 09-29473  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/22/09  
 Date Received: 11/24/09

Date Analyzed: 12/04/09 18:29  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | 5.5     |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 210    |
| C6-C8 Aliphatics   | 50 | 140    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 105%  |
| FID: 2,5-Dibromotoluene | 98.6% |

*PZ*  
 PZ45: 00036

**VPH SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

| ARI ID      | Client ID       | PDBT  | FDBT  | TOT | OUT |
|-------------|-----------------|-------|-------|-----|-----|
| MB-120209   | Method Blank    | 90.8% | 91.0% | 0   |     |
| LCS-120209  | Lab Control     | 108%  | 106%  | 0   |     |
| LCSD-120209 | Lab Control Dup | 101%  | 100%  | 0   |     |
| PZ45B       | OUT 1230am      | 102%  | 102%  | 0   |     |
| PZ45BDL     | OUT 1230am      | 105%  | 107%  | 0   |     |
| MB-120409   | Method Blank    | 98.2% | 101%  | 0   |     |
| LCS-120409  | Lab Control     | 107%  | 106%  | 0   |     |
| LCSD-120409 | Lab Control Dup | 103%  | 104%  | 0   |     |
| PZ45C       | IN 1030am       | 100%  | 100%  | 0   |     |
| PZ45D       | OUT 1030am      | 102%  | 102%  | 0   |     |
| PZ45DDL     | OUT 1030am      | 112%  | 108%  | 0   |     |
| PZ45E       | OUT 230pm       | 100%  | 98.8% | 0   |     |
| PZ45EDL     | OUT 230pm       | 115%  | 106%  | 0   |     |
| PZ45F       | OUT 500pm       | 121%  | 137%  | 0   |     |
| PZ45G       | OUT 930am       | 119%  | 112%  | 0   |     |
| PZ45H       | OUT 1200pm      | 91.8% | 88.2% | 0   |     |
| PZ45HDL     | OUT 1200pm      | 96.2% | 90.4% | 0   |     |
| PZ45I       | OUT 230pm       | 92.4% | 92.2% | 0   |     |
| PZ45IDL     | OUT 230pm       | 94.8% | 91.4% | 0   |     |
| PZ45J       | OUT 430pm       | 103%  | 101%  | 0   |     |
| PZ45JDL     | OUT 430pm       | 105%  | 98.6% | 0   |     |

**LCS/MB LIMITS      QC LIMITS**

(PDBT) = 2,5-Dibromotoluene  
(FDBT) = 2,5-Dibromotoluene

(60-140)  
(60-140)

(60-140)  
(60-140)

Prep Method: METHOD  
Log Number Range: 09-29465 to 09-29473



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: LCS-120209  
 LCS/LCSD

Lab Sample ID: LCS-120209  
 LIMS ID: 09-29465  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: NA  
 Date Received: NA

Date Analyzed LCS: 12/02/09 09:19  
 Date Analyzed LCSD: 12/02/09 09:50  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| Analyte/Range           | LCS  | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|-------------------------|------|-----------------|--------------|------|------------------|---------------|-------|
| Benzene                 | 51.6 | 50.0            | 103%         | 49.0 | 50.0             | 98.0%         | 5.2%  |
| Toluene                 | 22.5 | 50.0            | 45.0%        | 49.6 | 50.0             | 99.2%         | 75.2% |
| Ethylbenzene            | 52.7 | 50.0            | 105%         | 50.6 | 50.0             | 101%          | 4.1%  |
| m,p-Xylene              | 107  | 100             | 107%         | 102  | 100              | 102%          | 4.8%  |
| o-Xylene                | 52.3 | 50.0            | 105%         | 50.2 | 50.0             | 100%          | 4.1%  |
| Methyl tert-Butyl Ether | 50.3 | 50.0            | 101%         | 46.1 | 50.0             | 92.2%         | 8.7%  |
| Naphthalene             | 54.6 | 50.0            | 109%         | 51.8 | 50.0             | 104%          | 5.3%  |
| 1,2,3-Trimethylbenzene  | 55.2 | 50.0            | 110%         | 52.9 | 50.0             | 106%          | 4.3%  |
| 1-Methylnaphthalene     | 57.2 | 50.0            | 114%         | 54.5 | 50.0             | 109%          | 4.8%  |
| n-Pentane               | 59.1 | 50.0            | 118%         | 52.6 | 50.0             | 105%          | 11.6% |
| n-Hexane                | 50.9 | 50.0            | 102%         | 49.0 | 50.0             | 98.0%         | 3.8%  |
| n-Octane                | 52.3 | 50.0            | 105%         | 50.3 | 50.0             | 101%          | 3.9%  |
| n-Decane                | 59.4 | 50.0            | 119%         | 54.4 | 50.0             | 109%          | 8.8%  |
| n-Dodecane              | 61.7 | 50.0            | 123%         | 58.6 | 50.0             | 117%          | 5.2%  |

Values reported in  $\mu\text{g/L}$  (ppb)  
 RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

|                         | LCS  | LCSD |
|-------------------------|------|------|
| PID: 2,5-Dibromotoluene | 108% | 101% |
| FID: 2,5-Dibromotoluene | 106% | 100% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: LCS-120409

LCS/LCSD

Lab Sample ID: LCS-120409

LIMS ID: 09-29466

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/04/09 10:32

Purge Volume: 10 mL

Date Analyzed LCSD: 12/04/09 11:02

Dilution Factor: 1.00

Instrument/Analyst: PID1/MH

| Analyte/Range           | LCS  | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD  |
|-------------------------|------|-----------------|--------------|------|------------------|---------------|------|
| Benzene                 | 50.4 | 50.0            | 101%         | 49.2 | 50.0             | 98.4%         | 2.4% |
| Toluene                 | 51.2 | 50.0            | 102%         | 50.8 | 50.0             | 102%          | 0.8% |
| Ethylbenzene            | 51.8 | 50.0            | 104%         | 51.3 | 50.0             | 103%          | 1.0% |
| m,p-Xylene              | 105  | 100             | 105%         | 104  | 100              | 104%          | 1.0% |
| o-Xylene                | 51.9 | 50.0            | 104%         | 51.6 | 50.0             | 103%          | 0.6% |
| Methyl tert-Butyl Ether | 39.0 | 50.0            | 78.0%        | 41.7 | 50.0             | 83.4%         | 6.7% |
| Naphthalene             | 53.2 | 50.0            | 106%         | 53.4 | 50.0             | 107%          | 0.4% |
| 1,2,3-Trimethylbenzene  | 54.7 | 50.0            | 109%         | 56.6 | 50.0             | 113%          | 3.4% |
| 1-Methylnaphthalene     | 57.1 | 50.0            | 114%         | 58.8 | 50.0             | 118%          | 2.9% |
| n-Pentane               | 48.8 | 50.0            | 97.6%        | 48.0 | 50.0             | 96.0%         | 1.7% |
| n-Hexane                | 48.9 | 50.0            | 97.8%        | 47.6 | 50.0             | 95.2%         | 2.7% |
| n-Octane                | 49.9 | 50.0            | 99.8%        | 49.2 | 50.0             | 98.4%         | 1.4% |
| n-Decane                | 52.8 | 50.0            | 106%         | 53.2 | 50.0             | 106%          | 0.8% |
| n-Dodecane              | 55.5 | 50.0            | 111%         | 56.7 | 50.0             | 113%          | 2.1% |

Values reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.

**VPH Surrogate Recovery**

|                         | LCS  | LCSD |
|-------------------------|------|------|
| PID: 2,5-Dibromotoluene | 107% | 103% |
| FID: 2,5-Dibromotoluene | 106% | 104% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: MB-120209  
 METHOD BLANK

Lab Sample ID: MB-120209  
 LIMS ID: 09-29465  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: NA  
 Date Received: NA

Date Analyzed: 12/02/09 10:51  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 90.8% |
| FID: 2,5-Dibromotoluene | 91.0% |

2  
 PY45: 00040  
 1



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: MB-120409

METHOD BLANK

Lab Sample ID: MB-120409

LIMS ID: 09-29466

Matrix: Water

Data Release Authorized: 

Reported: 12/07/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/04/09 11:33

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 98.2% |
| FID: 2,5-Dibromotoluene | 101%  |

2  
PY45: 00041  
2



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: OUT 1230am  
SAMPLE

Lab Sample ID: PZ45B

LIMS ID: 09-29465

Matrix: Water

Data Release Authorized:

Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration

Project: Western Refining

Date Sampled: 11/21/09

Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 12/09/09 03:36

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

Aromatic

Date Analyzed: 12/09/09 09:44

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result    |
|--------------------------|-----------|-----------|
| C8-C10 Aliphatics        | 40        | < 40 U    |
| C10-C12 Aliphatics       | 40        | < 40 U    |
| C12-C16 Aliphatics       | 40        | < 40 U    |
| C16-C21 Aliphatics       | 40        | < 40 U    |
| C21-C34 Aliphatics       | 40        | < 40 U    |
| C8-C10 Aromatics         | 40        | < 40 U    |
| C10-C12 Aromatics        | 40        | < 40 U    |
| C12-C16 Aromatics        | 40        | < 40 U    |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>56</b> |
| C21-C34 Aromatics        | 40        | < 40 U    |

Reported in  $\mu\text{g/L}$  (ppb)

EPH Surrogate Recovery

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 64.0% |
| Aromatic  | o-Terphenyl        | 89.4% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: IN 1030am  
 SAMPLE

Lab Sample ID: PZ45C  
 LIMS ID: 09-29466  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining  
 Date Sampled: 11/21/09  
 Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 04:01  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 10:09  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 1,500  |
| C10-C12 Aliphatics | 40 | 2,400  |
| C12-C16 Aliphatics | 40 | 4,400  |
| C16-C21 Aliphatics | 40 | 3,200  |
| C21-C34 Aliphatics | 40 | 870    |
| C8-C10 Aromatics   | 40 | 5,300  |
| C10-C12 Aromatics  | 40 | 2,400  |
| C12-C16 Aromatics  | 40 | 3,600  |
| C16-C21 Aromatics  | 40 | 3,400  |
| C21-C34 Aromatics  | 40 | 980    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 61.5% |
| Aromatic  | o-Terphenyl        | 64.6% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: OUT 1030am  
 SAMPLE

Lab Sample ID: PZ45D  
 LIMS ID: 09-29467  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/21/09  
 Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 04:25  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 10:34  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                     | RL        | Result    |
|---------------------------|-----------|-----------|
| C8-C10 Aliphatics         | 40        | < 40 U    |
| C10-C12 Aliphatics        | 40        | < 40 U    |
| <b>C12-C16 Aliphatics</b> | <b>40</b> | <b>48</b> |
| <b>C16-C21 Aliphatics</b> | <b>40</b> | <b>54</b> |
| C21-C34 Aliphatics        | 40        | < 40 U    |
| C8-C10 Aromatics          | 40        | < 40 U    |
| C10-C12 Aromatics         | 40        | < 40 U    |
| C12-C16 Aromatics         | 40        | < 40 U    |
| C16-C21 Aromatics         | 40        | < 40 U    |
| C21-C34 Aromatics         | 40        | < 40 U    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 64.2% |
| <b>Aromatic</b>  | o-Terphenyl        | 78.9% |



ORGANICS ANALYSIS DATA SHEET  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: OUT 230pm  
SAMPLE

Lab Sample ID: PZ45E  
LIMS ID: 09-29468  
Matrix: Water  
Data Release Authorized: *AA*  
Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining  
Date Sampled: 11/21/09  
Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 04:50  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 10:59  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result    |
|--------------------------|-----------|-----------|
| C8-C10 Aliphatics        | 40        | < 40 U    |
| C10-C12 Aliphatics       | 40        | < 40 U    |
| C12-C16 Aliphatics       | 40        | < 40 U    |
| C16-C21 Aliphatics       | 40        | < 40 U    |
| C21-C34 Aliphatics       | 40        | < 40 U    |
| C8-C10 Aromatics         | 40        | < 40 U    |
| C10-C12 Aromatics        | 40        | < 40 U    |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>48</b> |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>66</b> |
| C21-C34 Aromatics        | 40        | < 40 U    |

Reported in µg/L (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 40.0% |
| <b>Aromatic</b>  | o-Terphenyl        | 45.1% |



ORGANICS ANALYSIS DATA SHEET  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: OUT 500pm  
SAMPLE

Lab Sample ID: PZ45F  
LIMS ID: 09-29469  
Matrix: Water  
Data Release Authorized: *AS*  
Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining  
Date Sampled: 11/21/09  
Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 05:14  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 11:24  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 1,300  |
| C10-C12 Aliphatics | 40 | 5,700  |
| C12-C16 Aliphatics | 40 | 12,000 |
| C16-C21 Aliphatics | 40 | 10,000 |
| C21-C34 Aliphatics | 40 | 2,800  |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | 710    |
| C16-C21 Aromatics  | 40 | 4,800  |
| C21-C34 Aromatics  | 40 | 3,100  |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 90.5% |
| Aromatic  | o-Terphenyl        | 87.6% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: OUT 930am  
 SAMPLE

Lab Sample ID: PZ45G  
 LIMS ID: 09-29470  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining  
 Date Sampled: 11/22/09  
 Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 05:39  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 11:49  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | 64     |
| C16-C21 Aromatics  | 40 | 100    |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 63.2% |
| Aromatic  | o-Terphenyl        | 72.0% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: OUT 1200pm  
 SAMPLE

Lab Sample ID: PZ45H  
 LIMS ID: 09-29471  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

Date Sampled: 11/22/09  
 Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 06:03  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 12:14  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | 74     |
| C12-C16 Aromatics  | 40 | 110    |
| C16-C21 Aromatics  | 40 | 200    |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 58.1% |
| Aromatic  | o-Terphenyl        | 70.0% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: OUT 230pm  
 SAMPLE

Lab Sample ID: PZ45I  
 LIMS ID: 09-29472  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining  
 Date Sampled: 11/22/09  
 Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 06:27  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 12:39  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result     |
|--------------------------|-----------|------------|
| C8-C10 Aliphatics        | 40        | < 40 U     |
| C10-C12 Aliphatics       | 40        | < 40 U     |
| C12-C16 Aliphatics       | 40        | < 40 U     |
| C16-C21 Aliphatics       | 40        | < 40 U     |
| C21-C34 Aliphatics       | 40        | < 40 U     |
| C8-C10 Aromatics         | 40        | < 40 U     |
| C10-C12 Aromatics        | 40        | < 40 U     |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>56</b>  |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>100</b> |
| C21-C34 Aromatics        | 40        | < 40 U     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 58.8% |
| <b>Aromatic</b>  | o-Terphenyl        | 69.4% |

ORGANICS ANALYSIS DATA SHEET  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: OUT 430pm  
SAMPLE

Lab Sample ID: PZ45J  
LIMS ID: 09-29473  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining  
Date Sampled: 11/22/09  
Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 06:52  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 13:04  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 70.9% |
| <b>Aromatic</b>  | o-Terphenyl        | 84.5% |

ALIPHATIC EPH WATER SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining

| ARI ID      | Client ID       | COD    | TOT OUT |
|-------------|-----------------|--------|---------|
| MB-120209   | Method Blank    | 81.1%  | 0       |
| LCS-120209  | Lab Control     | 76.8%  | 0       |
| LCSD-120209 | Lab Control Dup | 55.3%  | 0       |
| PZ45B       | OUT 1230am      | 64.0%  | 0       |
| PZ45C       | IN 1030am       | 61.5%  | 0       |
| PZ45D       | OUT 1030am      | 64.2%  | 0       |
| PZ45E       | OUT 230pm       | 40.0%* | 1       |
| PZ45F       | OUT 500pm       | 90.5%  | 0       |
| PZ45G       | OUT 930am       | 63.2%  | 0       |
| PZ45H       | OUT 1200pm      | 58.1%  | 0       |
| PZ45I       | OUT 230pm       | 58.8%  | 0       |
| PZ45J       | OUT 430pm       | 70.9%  | 0       |

LCS/MB LIMITS      QC LIMITS

(COD) = 1-Chlorooctadecane

(38-121)

(42-120)

Prep Method: SW3510C  
 Log Number Range: 09-29465 to 09-29473

FORM-II ALEPH

PZ45: 00051

AROMATIC EPH WATER SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: PZ45-Whittier Filtration  
Project: Western Refining

| <u>ARI ID</u> | <u>Client ID</u> | <u>OTER</u> | <u>TOT OUT</u> |
|---------------|------------------|-------------|----------------|
| MB-120209     | Method Blank     | 84.7%       | 0              |
| LCS-120209    | Lab Control      | 76.8%       | 0              |
| LCSD-120209   | Lab Control Dup  | 81.2%       | 0              |
| PZ45B         | OUT 1230am       | 89.4%       | 0              |
| PZ45C         | IN 1030am        | 64.6%       | 0              |
| PZ45D         | OUT 1030am       | 78.9%       | 0              |
| PZ45E         | OUT 230pm        | 45.1%       | 0              |
| PZ45F         | OUT 500pm        | 87.6%       | 0              |
| PZ45G         | OUT 930am        | 72.0%       | 0              |
| PZ45H         | OUT 1200pm       | 70.0%       | 0              |
| PZ45I         | OUT 230pm        | 69.4%       | 0              |
| PZ45J         | OUT 430pm        | 84.5%       | 0              |

LCS/MB LIMITS      QC LIMITS

(OTER) = o-Terphenyl

(44-133)

(39-141)

Prep Method: SW3510C  
Log Number Range: 09-29465 to 09-29473

FORM-II AREPH

*Z*  
PZ45: 00052  
*x*



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: LCS-120209  
LCS/LCSD

Lab Sample ID: LCS-120209

LIMS ID: 09-29465

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/11/09

QC Report No: FZ45-Whittier Filtration  
Project: Western Refining

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 12/02/09

Sample Amount LCS: 500 mL

LCSD: 500 mL

Final Extract Volume LCS: 1.0 mL

LCSD: 1.0 mL

Aliphatic

Date Analyzed LCS: 12/09/09 02:47

LCSD: 12/09/09 03:12

Instrument/Analyst LCS: FID8/MS

LCSD: FID8/MS

Dilution Factor LCS: 1.00

LCSD: 1.00

Aromatic

Date Analyzed LCS: 12/09/09 08:55

LCSD: 12/09/09 09:19

Instrument/Analyst LCS: FID8/MS

LCSD: FID8/MS

Dilution Factor LCS: 1.00

LCSD: 1.00

| Range              | LCS | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|--------------------|-----|-----------------|--------------|------|------------------|---------------|-------|
| C8-C10 Aliphatics  | 140 | 300             | 46.7%        | 122  | 300              | 40.7%         | 13.7% |
| C10-C12 Aliphatics | 180 | 300             | 60.0%        | 152  | 300              | 50.7%         | 16.9% |
| C12-C16 Aliphatics | 270 | 300             | 90.0%        | 208  | 300              | 69.3%         | 25.9% |
| C16-C21 Aliphatics | 260 | 300             | 86.7%        | 182  | 300              | 60.7%         | 35.3% |
| C10-C12 Aromatics  | 208 | 300             | 69.3%        | 214  | 300              | 71.3%         | 2.8%  |
| C12-C16 Aromatics  | 252 | 300             | 84.0%        | 260  | 300              | 86.7%         | 3.1%  |
| C16-C21 Aromatics  | 596 | 600             | 99.3%        | 632  | 600              | 105%          | 5.9%  |
| C21-C34 Aromatics  | 776 | 600             | 129%         | 738  | 600              | 123%          | 5.0%  |

EPH Surrogate Recovery

|           |                    | LCS   | LCSD  |
|-----------|--------------------|-------|-------|
| Aliphatic | 1-Chlorooctadecane | 76.8% | 55.3% |
| Aromatic  | o-Terphenyl        | 76.8% | 81.2% |

Results reported in µg/L

RPD calculated using sample concentrations per SW846.



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: MB-120209  
 METHOD BLANK

Lab Sample ID: MB-120209  
 LIMS ID: 09-29465  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/11/09

QC Report No: PZ45-Whittier Filtration  
 Project: Western Refining  
 Date Sampled: 11/21/09  
 Date Received: 11/24/09

Date Extracted: 12/02/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/09/09 02:23  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/09/09 08:30  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 81.1% |
| Aromatic  | o-Terphenyl        | 84.7% |



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

December 17, 2009

Michael Monacell  
Whittier Filtration  
315 N. Puente Street, Unit A  
Brea, CA 92821

**Client Project: Western Refining**  
**ARI ID: QA24**

Dear Mr. Monacell:

Please find enclosed sample receipt documentation and the final data for the project referenced above. Analytical Resources, Inc. (ARI) accepted sixteen water samples on December 4, 2009. One sample container was received without a label. This sample was archived upon receipt, pending further instructions. Two of two 40mL vials for sample **IN 15:00** were received with 'head-space'. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for BTEX, VPH, and EPH, as requested.

All sample containers for EPH were preserved with HCl on December 4, 2009 to protect holding times.

The third VPH continuing calibration fell outside the control limits for several compounds for the December 9, 2009 analysis. The associated samples were re-analyzed on December 10, 2009 and the second continuing calibration fell outside the control limits low due to matrix effects. Both sets of data have been included in this report. Note that due to software limitations, the re-analyzed samples were labeled as 'Dilutions' on the Form I's.

The VPH LCS percent recovery of 1-Methylnaphthalene was outside the control limits high for **LCS-120909**. The LCSD percent recovery was within control limits. No corrective action was required.

The EPH surrogate percent recoveries of 1-Chlorooctadecane fell outside the control limits low for samples **EFFLUENT 15:00, INFLUENT 11:25, OUT 15:00, and IN 01:30** due to matrix effects. All other surrogate percent recoveries were within control limits. No corrective action was required.



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Respectfully,  
ANALYTICAL RESOURCES, INC.

Cheronne Oreiro  
Project Manager  
(206) 695-6214  
[cheronneo@arilabs.com](mailto:cheronneo@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

Enclosures

eFile: QA24



Analytical Resources, Incorporated  
Analytical Chemists and Consultants

# Cooler Receipt Form

ARI Client: Whittier Filtration  
COC No(s): \_\_\_\_\_ (NA)  
Assigned ARI Job No: QA24

Project Name: Western Refining  
Delivered by: Fed-Ex  Courier: Hand Delivered Other: \_\_\_\_\_  
Tracking No: 128750790145956325 NA

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO  
Were custody papers included with the cooler? ..... YES  NO  
Were custody papers properly filled out (ink, signed, etc.) ..... YES  NO  
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 5.9  
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 0094169

Cooler Accepted by: JL Date: 12/4/09 Time: 0930

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? ..... YES  NO  
What kind of packing material was used? ...  Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_  
Was sufficient ice used (if appropriate)? ..... NA  YES  NO  
Were all bottles sealed in individual plastic bags? ..... YES  NO  
Did all bottles arrive in good condition (unbroken)? ..... YES  NO  
Were all bottle labels complete and legible? ..... YES  NO  
Did the number of containers listed on COC match with the number of containers received? ..... YES  NO  
Did all bottle labels and tags agree with custody papers? ..... YES  NO  
Were all bottles used correct for the requested analyses? ..... YES  NO  
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES  NO  
Were all VOC vials free of air bubbles? ..... NA YES  NO  
Was sufficient amount of sample sent in each bottle? ..... YES  NO  
Date VOC Trip Blank was made at ARI.....  NA

Samples Logged by: JP/AV Date: 12/4/09 / 12/5/09 Time: 1640 / 934

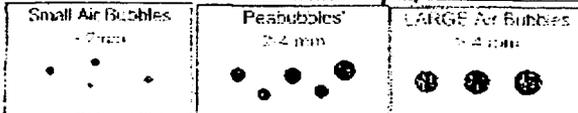
**\*\* Notify Project Manager of discrepancies or concerns \*\***

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
|                     |                  |                     |                  |
|                     |                  |                     |                  |
|                     |                  |                     |                  |

**Additional Notes, Discrepancies, & Resolutions:**

Broken vva vials = 11-30-09 OUT 3:00<sup>PM</sup>, 12-2-09 OUT 1:00. A 300ml bottle arrived with out a label. Large bubbles in 11-30-09 IN 1:30, in 2 of 2 vials.

By: JP Date: 12/4/09



Small → "sm"  
Peabubbles → "pb"  
Large → "lg"  
Headspace → "hs"

for bubbles in vva vials please see back of this page.

## Large bubbles

2 of 2 11-30-09 IN 1:30  
3 of 3 11-30-09 OUT 3:00  
2 of 2 11-30-09 IN 4:00  
2 of 2 12-2-09 Influent 11:25  
2 of 2 12-2-09 Influent 1500

## Head Space

2 of 2 11-30-09 IN 3:00

## Small

2 of 5 12-2-09 Effluent 11:30

## Pea bubbles

3 of 4 11-30-09 OUT 1:30  
4 of 4 11-30-09 OUT 4:00  
1 of 1 12-2-09 IN 1:00  
4 of 4 12-2-09 OUT 1:00  
2 of 5 12-2-09 Effluent 1500  
2 of 2 12-2-09 Influent 1700  
5 of 5 12-2-09 Effluent 1700  
4 of 4 Black Feed



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: EFFLUENT 15:00  
SAMPLE

Lab Sample ID: QA24A  
LIMS ID: 09-29960  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09  
Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/09/09 17:36

Sample Amount: 5.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | 5.3    |   |
| 108-88-3    | Toluene      | 1.0 | 3.0    |   |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 107%  |
| d8-Toluene             | 97.5% |
| Bromofluorobenzene     | 95.1% |
| d4-1,2-Dichlorobenzene | 96.1% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: EFFLUENT 17:00  
SAMPLE

Lab Sample ID: QA24B

QC Report No: QA24-Whittier Filtration  
Project:

LIMS ID: 09-29961

Matrix: Water

Data Release Authorized: *B*

Date Sampled: 12/02/09

Reported: 12/11/09

Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB

Sample Amount: 5.00 mL

Date Analyzed: 12/09/09 18:02

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | 2.5    |   |
| 108-88-3    | Toluene      | 1.0 | 1.3    |   |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 107%  |
| d8-Toluene             | 95.6% |
| Bromofluorobenzene     | 94.2% |
| d4-1,2-Dichlorobenzene | 97.1% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: INFLUENT 15:00  
SAMPLE

Lab Sample ID: QA24C

LIMS ID: 09-29962

Matrix: Water

Data Release Authorized: 

Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09

Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB

Date Analyzed: 12/09/09 18:28

Sample Amount: 0.0500 mL

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 5,500  |   |
| 108-88-3    | Toluene      | 100 | 9,600  |   |
| 100-41-4    | Ethylbenzene | 100 | 740    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,200  |   |
| 95-47-6     | o-Xylene     | 100 | 1,300  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 114%  |
| d8-Toluene             | 99.7% |
| Bromofluorobenzene     | 96.6% |
| d4-1,2-Dichlorobenzene | 97.0% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: INFLUENT 11:25  
SAMPLE

Lab Sample ID: QA24D

QC Report No: QA24-Whittier Filtration  
Project:

LIMS ID: 09-29963

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 12/02/09

Reported: 12/11/09

Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB

Sample Amount: 0.0500 mL

Date Analyzed: 12/09/09 18:55

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 5,500  |   |
| 108-88-3    | Toluene      | 100 | 9,600  |   |
| 100-41-4    | Ethylbenzene | 100 | 710    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,000  |   |
| 95-47-6     | o-Xylene     | 100 | 1,200  |   |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 110%  |
| d8-Toluene             | 98.7% |
| Bromofluorobenzene     | 96.2% |
| d4-1,2-Dichlorobenzene | 96.7% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 01:30  
SAMPLE

Lab Sample ID: QA24E

LIMS ID: 09-29964

Matrix: Water

Data Release Authorized: *AS*

Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB

Date Analyzed: 12/09/09 19:21

Sample Amount: 5.00 mL

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | 1.8    |   |
| 108-88-3    | Toluene      | 1.0 | 1.9    |   |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 108%  |
| d8-Toluene             | 97.5% |
| Bromofluorobenzene     | 95.7% |
| d4-1,2-Dichlorobenzene | 97.4% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 15:00  
SAMPLE

Lab Sample ID: QA24F  
LIMS ID: 09-29965  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09  
Date Received: 12/04/09

Instrument/Analyst: FINNS/PAB  
Date Analyzed: 12/09/09 19:48

Sample Amount: 5.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | 2.0    |   |
| 108-88-3    | Toluene      | 1.0 | < 1.0  | U |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 113%  |
| d8-Toluene             | 98.3% |
| Bromofluorobenzene     | 94.3% |
| d4-1,2-Dichlorobenzene | 96.6% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 16:00  
SAMPLE

Lab Sample ID: QA24G

LIMS ID: 09-29966

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB

Date Analyzed: 12/09/09 20:14

Sample Amount: 0.0250 mL

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 200 | 14,000 |   |
| 108-88-3    | Toluene      | 200 | 21,000 |   |
| 100-41-4    | Ethylbenzene | 200 | 1,300  |   |
| 179601-23-1 | m,p-Xylene   | 400 | 5,100  |   |
| 95-47-6     | o-Xylene     | 200 | 2,000  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 114%  |
| d8-Toluene             | 100%  |
| Bromofluorobenzene     | 94.4% |
| d4-1,2-Dichlorobenzene | 96.4% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 16:00  
SAMPLE

Lab Sample ID: QA24H  
LIMS ID: 09-29967  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09  
Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/10/09 13:08

Sample Amount: 5.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | 6.3    |   |
| 108-88-3    | Toluene      | 1.0 | 1.2    |   |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 105%  |
| d8-Toluene             | 97.9% |
| Bromofluorobenzene     | 94.0% |
| d4-1,2-Dichlorobenzene | 96.2% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: IN 15:00  
SAMPLE

Lab Sample ID: QA24I

LIMS ID: 09-29968

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB

Date Analyzed: 12/10/09 13:41

Sample Amount: 0.0500 mL

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 8,100  |   |
| 108-88-3    | Toluene      | 100 | 13,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 870    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,600  |   |
| 95-47-6     | o-Xylene     | 100 | 1,500  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 112%  |
| d8-Toluene             | 101%  |
| Bromofluorobenzene     | 95.9% |
| d4-1,2-Dichlorobenzene | 96.4% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: OUT 13:00  
SAMPLE

Lab Sample ID: QA24J

QC Report No: QA24-Whittier Filtration  
Project:

LIMS ID: 09-29969

Matrix: Water

Data Release Authorized: *AB*

Date Sampled: 12/02/09

Reported: 12/11/09

Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB

Sample Amount: 5.00 mL

Date Analyzed: 12/10/09 14:07

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | 2.7    |   |
| 108-88-3    | Toluene      | 1.0 | 1.4    |   |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 104%  |
| d8-Toluene             | 96.2% |
| Bromofluorobenzene     | 94.0% |
| d4-1,2-Dichlorobenzene | 96.3% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 13:00  
SAMPLE

Lab Sample ID: QA24K  
LIMS ID: 09-29970  
Matrix: Water  
Data Release Authorized: *AB*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09  
Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/10/09 14:34

Sample Amount: 0.0500 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 4,800  |   |
| 108-88-3    | Toluene      | 100 | 9,200  |   |
| 100-41-4    | Ethylbenzene | 100 | 760    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,200  |   |
| 95-47-6     | o-Xylene     | 100 | 1,300  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 112%  |
| d8-Toluene             | 106%  |
| Bromofluorobenzene     | 97.6% |
| d4-1,2-Dichlorobenzene | 96.6% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: IN 01:30  
SAMPLE

Lab Sample ID: QA24L  
LIMS ID: 09-29971  
Matrix: Water  
Data Release Authorized:   
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09  
Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/10/09 15:06

Sample Amount: 0.0250 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 200 | 7,200  |   |
| 108-88-3    | Toluene      | 200 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 200 | 890    |   |
| 179601-23-1 | m,p-Xylene   | 400 | 3,800  |   |
| 95-47-6     | o-Xylene     | 200 | 1,400  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 100%  |
| d8-Toluene             | 101%  |
| Bromofluorobenzene     | 96.5% |
| d4-1,2-Dichlorobenzene | 95.7% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: INFLUENT 17:00  
SAMPLE

Lab Sample ID: QA24M

QC Report No: QA24-Whittier Filtration  
Project:

LIMS ID: 09-29972

Matrix: Water

Data Release Authorized: *AS*

Date Sampled: 12/02/09

Reported: 12/11/09

Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB

Sample Amount: 0.0250 mL

Date Analyzed: 12/10/09 15:35

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 200 | 7,200  |   |
| 108-88-3    | Toluene      | 200 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 200 | 1,000  |   |
| 179601-23-1 | m,p-Xylene   | 400 | 4,200  |   |
| 95-47-6     | o-Xylene     | 200 | 1,700  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 116%  |
| d8-Toluene             | 101%  |
| Bromofluorobenzene     | 97.1% |
| d4-1,2-Dichlorobenzene | 97.5% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: BLACK FEED  
SAMPLE

Lab Sample ID: QA24N

LIMS ID: 09-29973

Matrix: Water

Data Release Authorized: 

Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Instrument/Analyst: FINNS/PAB

Date Analyzed: 12/10/09 18:40

Sample Amount: 5.00 mL

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | < 1.0  | U |
| 108-88-3    | Toluene      | 1.0 | < 1.0  | U |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 107%  |
| d8-Toluene             | 96.3% |
| Bromofluorobenzene     | 95.6% |
| d4-1,2-Dichlorobenzene | 98.0% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: EFFLUENT 11:30  
SAMPLE

Lab Sample ID: QA240  
LIMS ID: 09-29974  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09  
Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/10/09 19:06

Sample Amount: 5.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | < 1.0  | U |
| 108-88-3    | Toluene      | 1.0 | < 1.0  | U |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 108%  |
| d8-Toluene             | 100%  |
| Bromofluorobenzene     | 95.2% |
| d4-1,2-Dichlorobenzene | 96.1% |

**VOA SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: QA24-Whittier Filtration  
Project:

| ARI ID      | Client ID       | PV | DCE   | TOL   | BFB   | DCB   | TOT OUT |
|-------------|-----------------|----|-------|-------|-------|-------|---------|
| QA24A       | EFFLUENT 15:00  | 5  | 107%  | 97.5% | 95.1% | 96.1% | 0       |
| QA24B       | EFFLUENT 17:00  | 5  | 107%  | 95.6% | 94.2% | 97.1% | 0       |
| MB-120909   | Method Blank    | 5  | 109%  | 99.9% | 96.1% | 95.1% | 0       |
| LCS-120909  | Lab Control     | 5  | 99.6% | 98.0% | 99.0% | 98.3% | 0       |
| LCSD-120909 | Lab Control Dup | 5  | 101%  | 98.7% | 98.5% | 97.8% | 0       |
| QA24C       | INFLUENT 15:00  | 5  | 114%  | 99.7% | 96.6% | 97.0% | 0       |
| QA24CMS     | INFLUENT 15:00  | 5  | 104%  | 102%  | 99.5% | 98.1% | 0       |
| QA24CMSD    | INFLUENT 15:00  | 5  | 107%  | 99.0% | 100%  | 98.3% | 0       |
| QA24D       | INFLUENT 11:25  | 5  | 110%  | 98.7% | 96.2% | 96.7% | 0       |
| QA24E       | OUT 01:30       | 5  | 108%  | 97.5% | 95.7% | 97.4% | 0       |
| QA24F       | OUT 15:00       | 5  | 113%  | 98.3% | 94.3% | 96.6% | 0       |
| QA24G       | IN 16:00        | 5  | 114%  | 100%  | 94.4% | 96.4% | 0       |
| MB-121009   | Method Blank    | 5  | 116%  | 99.7% | 95.6% | 97.2% | 0       |
| LCS-121009  | Lab Control     | 5  | 105%  | 103%  | 99.6% | 98.0% | 0       |
| LCSD-121009 | Lab Control Dup | 5  | 104%  | 98.9% | 99.4% | 99.1% | 0       |
| QA24H       | OUT 16:00       | 5  | 105%  | 97.9% | 94.0% | 96.2% | 0       |
| QA24I       | IN 15:00        | 5  | 112%  | 101%  | 95.9% | 96.4% | 0       |
| QA24J       | OUT 13:00       | 5  | 104%  | 96.2% | 94.0% | 96.3% | 0       |
| QA24K       | IN 13:00        | 5  | 112%  | 106%  | 97.6% | 96.6% | 0       |
| QA24L       | IN 01:30        | 5  | 100%  | 101%  | 96.5% | 95.7% | 0       |
| QA24M       | INFLUENT 17:00  | 5  | 116%  | 101%  | 97.1% | 97.5% | 0       |
| QA24N       | BLACK FEED      | 5  | 107%  | 96.3% | 95.6% | 98.0% | 0       |
| QA24O       | EFFLUENT 11:30  | 5  | 108%  | 100%  | 95.2% | 96.1% | 0       |

**LCS/MB LIMITS**

**QC LIMITS**

**SW8260C**

(DCE) = d4-1,2-Dichloroethane  
(TOL) = d8-Toluene  
(BFB) = Bromofluorobenzene  
(DCB) = d4-1,2-Dichlorobenzene

83-122  
80-120  
80-120  
80-120

80-125  
80-120  
80-120  
80-120

Prep Method: SW5030B  
Log Number Range: 09-29960 to 09-29974

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: INFLUENT 15:00  
MATRIX SPIKE

Lab Sample ID: QA24C  
LIMS ID: 09-29962  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09  
Date Received: 12/04/09

Instrument/Analyst MS: FINN5/PAB  
MSD: FINN5/PAB  
Date Analyzed MS: 12/09/09 20:40  
MSD: 12/09/09 21:07

Sample Amount MS: 0.050 mL  
MSD: 0.050 mL  
Purge Volume MS: 5.0 mL  
MSD: 5.0 mL

| Analyte      | Sample | MS    | Spike Added-MS | MS Recovery | MSD   | Spike Added-MSD | MSD Recovery | RPD  |
|--------------|--------|-------|----------------|-------------|-------|-----------------|--------------|------|
| Benzene      | 5490   | 10500 | 5000           | 100%        | 10400 | 5000            | 98.2%        | 1.0% |
| Toluene      | 9550   | 14800 | 5000           | 105%        | 14200 | 5000            | 93.0%        | 4.1% |
| Ethylbenzene | 745    | 6210  | 5000           | 109%        | 6340  | 5000            | 112%         | 2.1% |
| m,p-Xylene   | 3180   | 13700 | 10000          | 105%        | 13900 | 10000           | 107%         | 1.4% |
| o-Xylene     | 1300   | 6500  | 5000           | 104%        | 6640  | 5000            | 107%         | 2.1% |

Reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: INFLUENT 15:00  
MATRIX SPIKE

Lab Sample ID: QA24C  
LIMS ID: 09-29962  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09  
Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/09/09 20:40

Sample Amount: 0.0500 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | ---    |   |
| 108-88-3    | Toluene      | 100 | ---    |   |
| 100-41-4    | Ethylbenzene | 100 | ---    |   |
| 179601-23-1 | m,p-Xylene   | 200 | ---    |   |
| 95-47-6     | o-Xylene     | 100 | ---    |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 104%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 99.5% |
| d4-1,2-Dichlorobenzene | 98.1% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: INFLUENT 15:00  
MATRIX SPIKE DUP

Lab Sample ID: QA24C  
LIMS ID: 09-29962  
Matrix: Water  
Data Release Authorized: *B*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09  
Date Received: 12/04/09

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/09/09 21:07

Sample Amount: 0.0500 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | ---    |   |
| 108-88-3    | Toluene      | 100 | ---    |   |
| 100-41-4    | Ethylbenzene | 100 | ---    |   |
| 179601-23-1 | m,p-Xylene   | 200 | ---    |   |
| 95-47-6     | o-Xylene     | 100 | ---    |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 107%  |
| d8-Toluene             | 99.0% |
| Bromofluorobenzene     | 100%  |
| d4-1,2-Dichlorobenzene | 98.3% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: LCS-120909  
LAB CONTROL SAMPLE

Lab Sample ID: LCS-120909  
LIMS ID: 09-29962  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:  
Date Sampled: NA  
Date Received: NA

Instrument/Analyst LCS: FINN5/PAB  
LCS: FINN5/PAB  
Date Analyzed LCS: 12/09/09 11:51  
LCS: 12/09/09 12:26

Sample Amount LCS: 5.00 mL  
LCS: 5.00 mL  
Purge Volume LCS: 5.0 mL  
LCS: 5.0 mL

| Analyte      | LCS  | Spike Added-LCS | LCS Recovery | LCS  | Spike Added-LCSD | LCSD Recovery | RPD  |
|--------------|------|-----------------|--------------|------|------------------|---------------|------|
| Benzene      | 52.1 | 50.0            | 104%         | 55.6 | 50.0             | 111%          | 6.5% |
| Toluene      | 51.3 | 50.0            | 103%         | 54.4 | 50.0             | 109%          | 5.9% |
| Ethylbenzene | 54.7 | 50.0            | 109%         | 57.2 | 50.0             | 114%          | 4.5% |
| m,p-Xylene   | 108  | 100             | 108%         | 113  | 100              | 113%          | 4.5% |
| o-Xylene     | 52.5 | 50.0            | 105%         | 54.7 | 50.0             | 109%          | 4.1% |

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

|                        | LCS   | LCSD  |
|------------------------|-------|-------|
| d4-1,2-Dichloroethane  | 99.6% | 101%  |
| d8-Toluene             | 98.0% | 98.7% |
| Bromofluorobenzene     | 99.0% | 98.5% |
| d4-1,2-Dichlorobenzene | 98.3% | 97.8% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-121009

Page 1 of 1

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121009

QC Report No: QA24-Whittier Filtration

LIMS ID: 09-29967

Project:

Matrix: Water

Data Release Authorized:

Date Sampled: NA

Reported: 12/11/09

Date Received: NA

Instrument/Analyst LCS: FINN5/PAB

Sample Amount LCS: 5.00 mL

LCS: FINN5/PAB

LCS: 5.00 mL

Date Analyzed LCS: 12/10/09 10:04

Purge Volume LCS: 5.0 mL

LCS: 12/10/09 10:35

LCS: 5.0 mL

| Analyte      | LCS  | Spike Added-LCS | LCS Recovery | LCS  | LCS  | Spike Added-LCS | LCS Recovery | RPD |
|--------------|------|-----------------|--------------|------|------|-----------------|--------------|-----|
| Benzene      | 50.0 | 50.0            | 100%         | 54.5 | 50.0 | 109%            | 8.6%         |     |
| Toluene      | 49.2 | 50.0            | 98.4%        | 54.2 | 50.0 | 108%            | 9.7%         |     |
| Ethylbenzene | 50.3 | 50.0            | 101%         | 55.6 | 50.0 | 111%            | 10.0%        |     |
| m,p-Xylene   | 99.8 | 100             | 99.8%        | 110  | 100  | 110%            | 9.7%         |     |
| o-Xylene     | 48.1 | 50.0            | 96.2%        | 53.0 | 50.0 | 106%            | 9.7%         |     |

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

|                        | LCS   | LCS   |
|------------------------|-------|-------|
| d4-1,2-Dichloroethane  | 105%  | 104%  |
| d8-Toluene             | 103%  | 98.9% |
| Bromofluorobenzene     | 99.6% | 99.4% |
| d4-1,2-Dichlorobenzene | 98.0% | 99.1% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: MB-120909  
METHOD BLANK

Lab Sample ID: MB-120909  
LIMS ID: 09-29962  
Matrix: Water  
Data Release Authorized:   
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: NA  
Date Received: NA

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/09/09 13:32

Sample Amount: 5.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | < 1.0  | U |
| 108-88-3    | Toluene      | 1.0 | < 1.0  | U |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 109%  |
| d8-Toluene             | 99.9% |
| Bromofluorobenzene     | 96.1% |
| d4-1,2-Dichlorobenzene | 95.1% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: MB-121009  
METHOD BLANK

Lab Sample ID: MB-121009  
LIMS ID: 09-29967  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/11/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: NA  
Date Received: NA

Instrument/Analyst: FINN5/PAB  
Date Analyzed: 12/10/09 11:45

Sample Amount: 5.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | < 1.0  | U |
| 108-88-3    | Toluene      | 1.0 | < 1.0  | U |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 116%  |
| d8-Toluene             | 99.7% |
| Bromofluorobenzene     | 95.6% |
| d4-1,2-Dichlorobenzene | 97.2% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: EFFLUENT 15:00  
 SAMPLE

Lab Sample ID: QA24A  
 LIMS ID: 09-29960  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Analyzed: 12/09/09 16:38  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number       | Analyte                        | RL         | Result     |
|------------------|--------------------------------|------------|------------|
| 71-43-2          | Benzene                        | 5.0        | < 5.0 U    |
| 108-88-3         | Toluene                        | 5.0        | < 5.0 U    |
| 100-41-4         | Ethylbenzene                   | 5.0        | < 5.0 U    |
| 179601-23-1      | m,p-Xylene                     | 10         | < 10 U     |
| 95-47-6          | o-Xylene                       | 5.0        | < 5.0 U    |
| <b>1634-04-4</b> | <b>Methyl tert-Butyl Ether</b> | <b>5.0</b> | <b>21</b>  |
| 109-66-0         | n-Pentane                      | 5.0        | < 5.0 U    |
| 110-54-3         | n-Hexane                       | 5.0        | < 5.0 U    |
| <b>111-65-9</b>  | <b>n-Octane</b>                | <b>5.0</b> | <b>7.5</b> |
| 124-18-5         | n-Decane                       | 5.0        | < 5.0 U    |
| 112-40-3         | n-Dodecane                     | 5.0        | < 5.0 U    |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>130</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>130</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 105% |
| FID: 2,5-Dibromotoluene | 104% |



**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
 Page 1 of 1

Sample ID: EFFLUENT 15:00  
 DILUTION

Lab Sample ID: QA24A  
 LIMS ID: 09-29960  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Analyzed: 12/10/09 12:20  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 18      |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 120    |
| C6-C8 Aliphatics   | 50 | 120    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 98.2% |
| FID: 2,5-Dibromotoluene | 95.2% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: **EFFLUENT 17:00  
SAMPLE**

Lab Sample ID: QA24B

LIMS ID: 09-29961

Matrix: Water

Data Release Authorized: 

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09

Date Received: 12/04/09

Date Analyzed: 12/09/09 17:09

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number       | Analyte                        | RL         | Result    |
|------------------|--------------------------------|------------|-----------|
| 71-43-2          | Benzene                        | 5.0        | < 5.0 U   |
| 108-88-3         | Toluene                        | 5.0        | < 5.0 U   |
| 100-41-4         | Ethylbenzene                   | 5.0        | < 5.0 U   |
| 179601-23-1      | m,p-Xylene                     | 10         | < 10 U    |
| 95-47-6          | o-Xylene                       | 5.0        | < 5.0 U   |
| <b>1634-04-4</b> | <b>Methyl tert-Butyl Ether</b> | <b>5.0</b> | <b>19</b> |
| 109-66-0         | n-Pentane                      | 5.0        | < 5.0 U   |
| 110-54-3         | n-Hexane                       | 5.0        | < 5.0 U   |
| 111-65-9         | n-Octane                       | 5.0        | < 5.0 U   |
| 124-18-5         | n-Decane                       | 5.0        | < 5.0 U   |
| 112-40-3         | n-Dodecane                     | 5.0        | < 5.0 U   |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>86</b>  |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>100</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 98.6% |
| FID: 2,5-Dibromotoluene | 96.6% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: EFFLUENT 17:00  
DILUTION

Lab Sample ID: QA24B

LIMS ID: 09-29961

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09

Date Received: 12/04/09

Date Analyzed: 12/10/09 13:17

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number       | Analyte                        | RL         | Result    |
|------------------|--------------------------------|------------|-----------|
| 71-43-2          | Benzene                        | 5.0        | < 5.0 U   |
| 108-88-3         | Toluene                        | 5.0        | < 5.0 U   |
| 100-41-4         | Ethylbenzene                   | 5.0        | < 5.0 U   |
| 179601-23-1      | m,p-Xylene                     | 10         | < 10 U    |
| 95-47-6          | o-Xylene                       | 5.0        | < 5.0 U   |
| <b>1634-04-4</b> | <b>Methyl tert-Butyl Ether</b> | <b>5.0</b> | <b>16</b> |
| 109-66-0         | n-Pentane                      | 5.0        | < 5.0 U   |
| 110-54-3         | n-Hexane                       | 5.0        | < 5.0 U   |
| 111-65-9         | n-Octane                       | 5.0        | < 5.0 U   |
| 124-18-5         | n-Decane                       | 5.0        | < 5.0 U   |
| 112-40-3         | n-Dodecane                     | 5.0        | < 5.0 U   |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>80</b>  |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>100</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 87.4% |
| FID: 2,5-Dibromotoluene | 89.8% |

**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
 Page 1 of 1

**Sample ID: INFLUENT 15:00**  
**SAMPLE**

Lab Sample ID: QA24C  
 LIMS ID: 09-29962  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Analyzed: 12/09/09 11:37  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 5,200   |
| 108-88-3    | Toluene                 | 500  | 9,700   |
| 100-41-4    | Ethylbenzene            | 500  | 740     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,400   |
| 95-47-6     | o-Xylene                | 500  | 1,500   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | < 500 U |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range                    | RL           | Result        |
|--------------------------|--------------|---------------|
| <b>C8-C10 Aromatics</b>  | <b>5,000</b> | <b>8,500</b>  |
| C10-C12 Aromatics        | 5,000        | < 5,000 U     |
| C12-C13 Aromatics        | 5,000        | < 5,000 U     |
| C5-C6 Aliphatics         | 5,000        | < 5,000 U     |
| <b>C6-C8 Aliphatics</b>  | <b>5,000</b> | <b>5,200</b>  |
| <b>C8-C10 Aliphatics</b> | <b>5,000</b> | <b>13,000</b> |
| C10-C12 Aliphatics       | 5,000        | < 5,000 U     |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 99.4% |
| FID: 2,5-Dibromotoluene | 97.2% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
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Sample ID: INFLUENT 11:25  
 SAMPLE

Lab Sample ID: QA24D  
 LIMS ID: 09-29963  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Analyzed: 12/09/09 12:07  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 5,400   |
| 108-88-3    | Toluene                 | 500  | 10,000  |
| 100-41-4    | Ethylbenzene            | 500  | 720     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,500   |
| 95-47-6     | o-Xylene                | 500  | 1,400   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | < 500 U |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 8,700     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | 5,500     |
| C8-C10 Aliphatics  | 5,000 | 14,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 92.0% |
| FID: 2,5-Dibromotoluene | 88.8% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
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Sample ID: OUT 01:30  
 SAMPLE

Lab Sample ID: QA24E  
 LIMS ID: 09-29964  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 11/30/09  
 Date Received: 12/04/09

Date Analyzed: 12/09/09 17:39  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number       | Analyte                        | RL         | Result     |
|------------------|--------------------------------|------------|------------|
| 71-43-2          | Benzene                        | 5.0        | < 5.0 U    |
| 108-88-3         | Toluene                        | 5.0        | < 5.0 U    |
| 100-41-4         | Ethylbenzene                   | 5.0        | < 5.0 U    |
| 179601-23-1      | m,p-Xylene                     | 10         | < 10 U     |
| 95-47-6          | o-Xylene                       | 5.0        | < 5.0 U    |
| <b>1634-04-4</b> | <b>Methyl tert-Butyl Ether</b> | <b>5.0</b> | <b>5.7</b> |
| 109-66-0         | n-Pentane                      | 5.0        | < 5.0 U    |
| 110-54-3         | n-Hexane                       | 5.0        | < 5.0 U    |
| 111-65-9         | n-Octane                       | 5.0        | < 5.0 U    |
| 124-18-5         | n-Decane                       | 5.0        | < 5.0 U    |
| 112-40-3         | n-Dodecane                     | 5.0        | < 5.0 U    |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>120</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>80</b>  |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 109% |
| FID: 2,5-Dibromotoluene | 108% |

QA24: 00034

**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
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Sample ID: OUT 01:30  
 DILUTION

Lab Sample ID: QA24E  
 LIMS ID: 09-29964  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 11/30/09  
 Date Received: 12/04/09

Date Analyzed: 12/10/09 13:48  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 120    |
| C6-C8 Aliphatics   | 50 | 74     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 95.4% |
| FID: 2,5-Dibromotoluene | 94.4% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

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Sample ID: OUT 15:00

SAMPLE

Lab Sample ID: QA24F

LIMS ID: 09-29965

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Date Analyzed: 12/09/09 15:06

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 7.0     |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 110    |
| C6-C8 Aliphatics   | 50 | 78     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 116% |
| FID: 2,5-Dibromotoluene | 115% |

QA24:00036

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

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Sample ID: IN 16:00

SAMPLE

Lab Sample ID: QA24G

LIMS ID: 09-29966

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Date Analyzed: 12/09/09 14:36

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 150

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 750  | 13,000  |
| 108-88-3    | Toluene                 | 750  | 21,000  |
| 100-41-4    | Ethylbenzene            | 750  | 1,200   |
| 179601-23-1 | m,p-Xylene              | 1500 | 5,500   |
| 95-47-6     | o-Xylene                | 750  | 2,200   |
| 1634-04-4   | Methyl tert-Butyl Ether | 750  | < 750 U |
| 109-66-0    | n-Pentane               | 750  | < 750 U |
| 110-54-3    | n-Hexane                | 750  | < 750 U |
| 111-65-9    | n-Octane                | 750  | < 750 U |
| 124-18-5    | n-Decane                | 750  | < 750 U |
| 112-40-3    | n-Dodecane              | 750  | < 750 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 7,500 | 13,000    |
| C10-C12 Aromatics  | 7,500 | < 7,500 U |
| C12-C13 Aromatics  | 7,500 | < 7,500 U |
| C5-C6 Aliphatics   | 7,500 | < 7,500 U |
| C6-C8 Aliphatics   | 7,500 | 12,000    |
| C8-C10 Aliphatics  | 7,500 | 30,000    |
| C10-C12 Aliphatics | 7,500 | < 7,500 U |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 98.8% |
| FID: 2,5-Dibromotoluene | 99.0% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

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Sample ID: OUT 16:00

SAMPLE

Lab Sample ID: QA24H

LIMS ID: 09-29967

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Date Analyzed: 12/09/09 18:10

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 6.1     |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 5.4     |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 140    |
| C6-C8 Aliphatics   | 50 | 84     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 120% |
| FID: 2,5-Dibromotoluene | 116% |

QA24:00038



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

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Sample ID: OUT 16:00

DILUTION

Lab Sample ID: QA24H

LIMS ID: 09-29967

Matrix: Water

Data Release Authorized: *AS*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Date Analyzed: 12/10/09 14:18

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 5.6     |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 140    |
| C6-C8 Aliphatics   | 50 | 82     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 98.8% |
| FID: 2,5-Dibromotoluene | 102%  |

QA24 : 00039

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

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Sample ID: IN 15:00

SAMPLE

Lab Sample ID: QA24I

LIMS ID: 09-29968

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Date Analyzed: 12/09/09 13:08

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 7,400   |
| 108-88-3    | Toluene                 | 500  | 12,000  |
| 100-41-4    | Ethylbenzene            | 500  | 800     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,600   |
| 95-47-6     | o-Xylene                | 500  | 1,500   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | < 500 U |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 8,500     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | 6,500     |
| C8-C10 Aliphatics  | 5,000 | 17,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 104% |
| FID: 2,5-Dibromotoluene | 103% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

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Sample ID: OUT 13:00

SAMPLE

Lab Sample ID: QA24J

LIMS ID: 09-29969

Matrix: Water

Data Release Authorized: 

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 12/02/09

Date Received: 12/04/09

Date Analyzed: 12/09/09 18:41

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number       | Analyte                        | RL         | Result     |
|------------------|--------------------------------|------------|------------|
| 71-43-2          | Benzene                        | 5.0        | < 5.0 U    |
| 108-88-3         | Toluene                        | 5.0        | < 5.0 U    |
| 100-41-4         | Ethylbenzene                   | 5.0        | < 5.0 U    |
| 179601-23-1      | m,p-Xylene                     | 10         | < 10 U     |
| 95-47-6          | o-Xylene                       | 5.0        | < 5.0 U    |
| <b>1634-04-4</b> | <b>Methyl tert-Butyl Ether</b> | <b>5.0</b> | <b>9.0</b> |
| 109-66-0         | n-Pentane                      | 5.0        | < 5.0 U    |
| 110-54-3         | n-Hexane                       | 5.0        | < 5.0 U    |
| 111-65-9         | n-Octane                       | 5.0        | < 5.0 U    |
| 124-18-5         | n-Decane                       | 5.0        | < 5.0 U    |
| 112-40-3         | n-Dodecane                     | 5.0        | < 5.0 U    |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>230</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>180</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 88.4% |
| FID: 2,5-Dibromotoluene | 85.8% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: OUT 13:00  
 DILUTION

Lab Sample ID: QA24J  
 LIMS ID: 09-29969  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Analyzed: 12/10/09 14:49  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 7.1     |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 220    |
| C6-C8 Aliphatics   | 50 | 180    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 74.6% |
| FID: 2,5-Dibromotoluene | 76.8% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: IN 01:30  
 SAMPLE

Lab Sample ID: QA24L  
 LIMS ID: 09-29971  
 Matrix: Water  
 Data Release Authorized: *B*  
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 11/30/09  
 Date Received: 12/04/09

Date Analyzed: 12/09/09 13:36  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 5,800   |
| 108-88-3    | Toluene                 | 500  | 10,000  |
| 100-41-4    | Ethylbenzene            | 500  | 770     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,600   |
| 95-47-6     | o-Xylene                | 500  | 1,400   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | < 500 U |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 8,700     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | 6,400     |
| C8-C10 Aliphatics  | 5,000 | 15,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 93.4% |
| FID: 2,5-Dibromotoluene | 92.0% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: INFLUENT 17:00  
SAMPLE

Lab Sample ID: QA24M

LIMS ID: 09-29972

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 12/02/09

Date Received: 12/04/09

Date Analyzed: 12/09/09 14:05

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 6,200   |
| 108-88-3    | Toluene                 | 500  | 12,000  |
| 100-41-4    | Ethylbenzene            | 500  | 910     |
| 179601-23-1 | m,p-Xylene              | 1000 | 4,300   |
| 95-47-6     | o-Xylene                | 500  | 1,800   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | < 500 U |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 10,000    |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | 7,600     |
| C8-C10 Aliphatics  | 5,000 | 17,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 95.8% |
| FID: 2,5-Dibromotoluene | 95.0% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: BLACK FEED  
SAMPLE

Lab Sample ID: QA24N

LIMS ID: 09-29973

Matrix: Water

Data Release Authorized: *S*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Date Analyzed: 12/09/09 19:11

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 8.1     |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 7.8     |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | 63     |
| C5-C6 Aliphatics   | 50 | 260    |
| C6-C8 Aliphatics   | 50 | 160    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 105% |
| FID: 2,5-Dibromotoluene | 116% |

QA24:00045

**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
 Page 1 of 1

**Sample ID: BLACK FEED  
 DILUTION**

Lab Sample ID: QA24N  
 LIMS ID: 09-29973  
 Matrix: Water  
 Data Release Authorized: *MS*  
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 11/30/09  
 Date Received: 12/04/09

Date Analyzed: 12/10/09 15:20  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number       | Analyte                        | RL         | Result     |
|------------------|--------------------------------|------------|------------|
| 71-43-2          | Benzene                        | 5.0        | < 5.0 U    |
| 108-88-3         | Toluene                        | 5.0        | < 5.0 U    |
| 100-41-4         | Ethylbenzene                   | 5.0        | < 5.0 U    |
| 179601-23-1      | m,p-Xylene                     | 10         | < 10 U     |
| 95-47-6          | o-Xylene                       | 5.0        | < 5.0 U    |
| <b>1634-04-4</b> | <b>Methyl tert-Butyl Ether</b> | <b>5.0</b> | <b>8.4</b> |
| 109-66-0         | n-Pentane                      | 5.0        | < 5.0 U    |
| 110-54-3         | n-Hexane                       | 5.0        | < 5.0 U    |
| 111-65-9         | n-Octane                       | 5.0        | < 5.0 U    |
| 124-18-5         | n-Decane                       | 5.0        | < 5.0 U    |
| 112-40-3         | n-Dodecane                     | 5.0        | < 5.0 U    |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>230</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>160</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 76.0% |
| FID: 2,5-Dibromotoluene | 81.6% |

**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
 Page 1 of 1

Sample ID: **EFFLUENT 11:30**  
**SAMPLE**

Lab Sample ID: QA240  
 LIMS ID: 09-29974  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/14/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Analyzed: 12/09/09 19:42  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number       | Analyte                        | RL         | Result     |
|------------------|--------------------------------|------------|------------|
| 71-43-2          | Benzene                        | 5.0        | < 5.0 U    |
| 108-88-3         | Toluene                        | 5.0        | < 5.0 U    |
| 100-41-4         | Ethylbenzene                   | 5.0        | < 5.0 U    |
| 179601-23-1      | m,p-Xylene                     | 10         | < 10 U     |
| 95-47-6          | o-Xylene                       | 5.0        | < 5.0 U    |
| <b>1634-04-4</b> | <b>Methyl tert-Butyl Ether</b> | <b>5.0</b> | <b>5.0</b> |
| 109-66-0         | n-Pentane                      | 5.0        | < 5.0 U    |
| 110-54-3         | n-Hexane                       | 5.0        | < 5.0 U    |
| 111-65-9         | n-Octane                       | 5.0        | < 5.0 U    |
| 124-18-5         | n-Decane                       | 5.0        | < 5.0 U    |
| 112-40-3         | n-Dodecane                     | 5.0        | < 5.0 U    |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>240</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>130</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 85.6% |
| FID: 2,5-Dibromotoluene | 85.8% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: EFFLUENT 11:30

DILUTION

Lab Sample ID: QA240

LIMS ID: 09-29974

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 12/02/09

Date Received: 12/04/09

Date Analyzed: 12/10/09 15:50

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 6.1     |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 190    |
| C6-C8 Aliphatics   | 50 | 120    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 79.4% |
| FID: 2,5-Dibromotoluene | 81.0% |



VPH SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QA24-Whittier Filtration  
Project:

| ARI ID     | Client ID       | PDBT  | FDBT  | TOT | OUT |
|------------|-----------------|-------|-------|-----|-----|
| MB-120909  | Method Blank    | 101%  | 102%  | 0   |     |
| LCS-120909 | Lab Control     | 107%  | 108%  | 0   |     |
| LCS-120909 | Lab Control Dup | 106%  | 107%  | 0   |     |
| QA24A      | EFFLUENT 15:00  | 105%  | 104%  | 0   |     |
| QA24ADL    | EFFLUENT 15:00  | 98.2% | 95.2% | 0   |     |
| MB-121009  | Method Blank    | 82.6% | 84.4% | 0   |     |
| LCS-121009 | Lab Control     | 86.2% | 89.0% | 0   |     |
| LCS-121009 | Lab Control Dup | 86.6% | 91.0% | 0   |     |
| QA24B      | EFFLUENT 17:00  | 98.6% | 96.6% | 0   |     |
| QA24BDL    | EFFLUENT 17:00  | 87.4% | 89.8% | 0   |     |
| QA24C      | INFLUENT 15:00  | 99.4% | 97.2% | 0   |     |
| QA24D      | INFLUENT 11:25  | 92.0% | 88.8% | 0   |     |
| QA24E      | OUT 01:30       | 109%  | 108%  | 0   |     |
| QA24EDL    | OUT 01:30       | 95.4% | 94.4% | 0   |     |
| QA24F      | OUT 15:00       | 116%  | 115%  | 0   |     |
| QA24G      | IN 16:00        | 98.8% | 99.0% | 0   |     |
| QA24H      | OUT 16:00       | 120%  | 116%  | 0   |     |
| QA24HDL    | OUT 16:00       | 98.8% | 102%  | 0   |     |
| QA24I      | IN 15:00        | 104%  | 103%  | 0   |     |
| QA24J      | OUT 13:00       | 88.4% | 85.8% | 0   |     |
| QA24JDL    | OUT 13:00       | 74.6% | 76.8% | 0   |     |
| QA24L      | IN 01:30        | 93.4% | 92.0% | 0   |     |
| QA24M      | INFLUENT 17:00  | 95.8% | 95.0% | 0   |     |
| QA24N      | BLACK FEED      | 105%  | 116%  | 0   |     |
| QA24NDL    | BLACK FEED      | 76.0% | 81.6% | 0   |     |
| QA24O      | EFFLUENT 11:30  | 85.6% | 85.8% | 0   |     |
| QA24ODL    | EFFLUENT 11:30  | 79.4% | 81.0% | 0   |     |

LCS/MB LIMITS      QC LIMITS

(PDBT) = 2,5-Dibromotoluene      (60-140)      (60-140)  
(FDBT) = 2,5-Dibromotoluene      (60-140)      (60-140)

Prep Method: METHOD  
Log Number Range: 09-29960 to 09-29974

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: LCS-120909

LCS/LCSD

Lab Sample ID: LCS-120909

LIMS ID: 09-29960

Matrix: Water

Data Release Authorized: 

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/09/09 09:13

Date Analyzed LCSD: 12/09/09 09:43

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| Analyte/Range           | Spike |           | LCS      |      | Spike      |          | LCSD |  |
|-------------------------|-------|-----------|----------|------|------------|----------|------|--|
|                         | LCS   | Added-LCS | Recovery | LCSD | Added-LCSD | Recovery | RPD  |  |
| Benzene                 | 51.0  | 50.0      | 102%     | 49.8 | 50.0       | 99.6%    | 2.4% |  |
| Toluene                 | 53.2  | 50.0      | 106%     | 51.6 | 50.0       | 103%     | 3.1% |  |
| Ethylbenzene            | 53.1  | 50.0      | 106%     | 52.0 | 50.0       | 104%     | 2.1% |  |
| m,p-Xylene              | 114   | 100       | 114%     | 109  | 100        | 109%     | 4.5% |  |
| o-Xylene                | 55.0  | 50.0      | 110%     | 53.2 | 50.0       | 106%     | 3.3% |  |
| Methyl tert-Butyl Ether | 45.8  | 50.0      | 91.6%    | 44.6 | 50.0       | 89.2%    | 2.7% |  |
| Naphthalene             | 54.8  | 50.0      | 110%     | 52.1 | 50.0       | 104%     | 5.1% |  |
| 1,2,3-Trimethylbenzene  | 52.2  | 50.0      | 104%     | 48.7 | 50.0       | 97.4%    | 6.9% |  |
| 1-Methylnaphthalene     | 65.9  | 50.0      | 132%     | 61.5 | 50.0       | 123%     | 6.9% |  |
| n-Pentane               | 59.9  | 50.0      | 120%     | 58.2 | 50.0       | 116%     | 2.9% |  |
| n-Hexane                | 52.9  | 50.0      | 106%     | 51.3 | 50.0       | 103%     | 3.1% |  |
| n-Octane                | 51.9  | 50.0      | 104%     | 50.6 | 50.0       | 101%     | 2.5% |  |
| n-Decane                | 59.0  | 50.0      | 118%     | 56.1 | 50.0       | 112%     | 5.0% |  |
| n-Dodecane              | 57.1  | 50.0      | 114%     | 55.9 | 50.0       | 112%     | 2.1% |  |

Values reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.

**VPH Surrogate Recovery**

|                         | LCS  | LCSD |
|-------------------------|------|------|
| PID: 2,5-Dibromotoluene | 107% | 106% |
| FID: 2,5-Dibromotoluene | 108% | 107% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: LCS-121009

LCS/LCSD

Lab Sample ID: LCS-121009

LIMS ID: 09-29961

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/10/09 09:06

Date Analyzed LCSD: 12/10/09 09:36

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| Analyte/Range           | LCS  | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|-------------------------|------|-----------------|--------------|------|------------------|---------------|-------|
| Benzene                 | 48.7 | 50.0            | 97.4%        | 47.1 | 50.0             | 94.2%         | 3.3%  |
| Toluene                 | 50.4 | 50.0            | 101%         | 47.5 | 50.0             | 95.0%         | 5.9%  |
| Ethylbenzene            | 51.0 | 50.0            | 102%         | 48.2 | 50.0             | 96.4%         | 5.6%  |
| m,p-Xylene              | 108  | 100             | 108%         | 97.2 | 100              | 97.2%         | 10.5% |
| o-Xylene                | 52.4 | 50.0            | 105%         | 48.0 | 50.0             | 96.0%         | 8.8%  |
| Methyl tert-Butyl Ether | 52.2 | 50.0            | 104%         | 51.8 | 50.0             | 104%          | 0.8%  |
| Naphthalene             | 46.6 | 50.0            | 93.2%        | 44.6 | 50.0             | 89.2%         | 4.4%  |
| 1,2,3-Trimethylbenzene  | 49.9 | 50.0            | 99.8%        | 41.0 | 50.0             | 82.0%         | 19.6% |
| 1-Methylnaphthalene     | 49.1 | 50.0            | 98.2%        | 52.5 | 50.0             | 105%          | 6.7%  |
| n-Pentane               | 58.8 | 50.0            | 118%         | 56.3 | 50.0             | 113%          | 4.3%  |
| n-Hexane                | 52.5 | 50.0            | 105%         | 49.8 | 50.0             | 99.6%         | 5.3%  |
| n-Octane                | 48.9 | 50.0            | 97.8%        | 48.6 | 50.0             | 97.2%         | 0.6%  |
| n-Decane                | 53.3 | 50.0            | 107%         | 55.0 | 50.0             | 110%          | 3.1%  |
| n-Dodecane              | 56.1 | 50.0            | 112%         | 54.0 | 50.0             | 108%          | 3.8%  |

Values reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

|                         | LCS   | LCSD  |
|-------------------------|-------|-------|
| PID: 2,5-Dibromotoluene | 86.2% | 86.6% |
| FID: 2,5-Dibromotoluene | 89.0% | 91.0% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: MB-120909

METHOD BLANK

Lab Sample ID: MB-120909

LIMS ID: 09-29960

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/09/09 10:53

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 101% |
| FID: 2,5-Dibromotoluene | 102% |

QA24: 00052



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

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Sample ID: MB-121009

METHOD BLANK

Lab Sample ID: MB-121009

LIMS ID: 09-29961

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/14/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/10/09 10:49

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 82.6% |
| FID: 2,5-Dibromotoluene | 84.4% |

QA24:00053

**ORGANICS ANALYSIS DATA SHEET**  
**Aliphatic/Aromatic GC-EPH**  
 Page 1 of 1

**Sample ID: EFFLUENT 15:00**  
**SAMPLE**

Lab Sample ID: QA24A  
 LIMS ID: 09-29960  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 16:42  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 00:09  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range                     | RL        | Result    |
|---------------------------|-----------|-----------|
| C8-C10 Aliphatics         | 40        | < 40 U    |
| C10-C12 Aliphatics        | 40        | < 40 U    |
| <b>C12-C16 Aliphatics</b> | <b>40</b> | <b>90</b> |
| <b>C16-C21 Aliphatics</b> | <b>40</b> | <b>46</b> |
| C21-C34 Aliphatics        | 40        | < 40 U    |
| C8-C10 Aromatics          | 40        | < 40 U    |
| C10-C12 Aromatics         | 40        | < 40 U    |
| C12-C16 Aromatics         | 40        | < 40 U    |
| C16-C21 Aromatics         | 40        | < 40 U    |
| C21-C34 Aromatics         | 40        | < 40 U    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 32.8% |
| <b>Aromatic</b>  | o-Terphenyl        | 44.6% |

**ORGANICS ANALYSIS DATA SHEET**  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: EFFLUENT 17:00  
SAMPLE

Lab Sample ID: QA24B  
LIMS ID: 09-29961  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
Project:  
Date Sampled: 12/02/09  
Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 17:06  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 00:34  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range                    | RL        | Result    |
|--------------------------|-----------|-----------|
| C8-C10 Aliphatics        | 40        | < 40 U    |
| C10-C12 Aliphatics       | 40        | < 40 U    |
| C12-C16 Aliphatics       | 40        | < 40 U    |
| C16-C21 Aliphatics       | 40        | < 40 U    |
| C21-C34 Aliphatics       | 40        | < 40 U    |
| C8-C10 Aromatics         | 40        | < 40 U    |
| C10-C12 Aromatics        | 40        | < 40 U    |
| C12-C16 Aromatics        | 40        | < 40 U    |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>58</b> |
| C21-C34 Aromatics        | 40        | < 40 U    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 51.4% |
| <b>Aromatic</b>  | o-Terphenyl        | 81.6% |

**ORGANICS ANALYSIS DATA SHEET**  
**Aliphatic/Aromatic GC-EPH**  
 Page 1 of 1

Sample ID: INFLUENT 15:00  
 SAMPLE

Lab Sample ID: QA24C  
 LIMS ID: 09-29962  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
 Project:  
 Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 17:31  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 00:58  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 160    |
| C10-C12 Aliphatics | 40 | 250    |
| C12-C16 Aliphatics | 40 | 670    |
| C16-C21 Aliphatics | 40 | 510    |
| C21-C34 Aliphatics | 40 | 60     |
| C8-C10 Aromatics   | 40 | 4,800  |
| C10-C12 Aromatics  | 40 | 1,300  |
| C12-C16 Aromatics  | 40 | 1,500  |
| C16-C21 Aromatics  | 40 | 570    |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 57.9% |
| Aromatic  | o-Terphenyl        | 70.2% |

**ORGANICS ANALYSIS DATA SHEET**  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: INFLUENT 11:25  
SAMPLE

Lab Sample ID: QA24D  
LIMS ID: 09-29963  
Matrix: Water  
Data Release Authorized:   
Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
Project:  
Date Sampled: 12/02/09  
Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 17:56  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 01:23  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range                     | RL | Result |
|---------------------------|----|--------|
| <b>C8-C10 Aliphatics</b>  | 40 | 42     |
| C10-C12 Aliphatics        | 40 | < 40 U |
| <b>C12-C16 Aliphatics</b> | 40 | 66     |
| <b>C16-C21 Aliphatics</b> | 40 | 58     |
| C21-C34 Aliphatics        | 40 | < 40 U |
| <b>C8-C10 Aromatics</b>   | 40 | 4,300  |
| <b>C10-C12 Aromatics</b>  | 40 | 1,500  |
| <b>C12-C16 Aromatics</b>  | 40 | 1,400  |
| <b>C16-C21 Aromatics</b>  | 40 | 260    |
| C21-C34 Aromatics         | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 34.3% |
| <b>Aromatic</b>  | o-Terphenyl        | 48.4% |



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

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Sample ID: OUT 01:30  
SAMPLE

Lab Sample ID: QA24E  
LIMS ID: 09-29964  
Matrix: Water  
Data Release Authorized:  
Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09  
Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 12/15/09 18:21  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

Aromatic

Date Analyzed: 12/16/09 01:48  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | 52     |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in µg/L (ppb)

EPH Surrogate Recovery

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 47.4% |
| Aromatic  | o-Terphenyl        | 78.4% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
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Sample ID: OUT 15:00  
 SAMPLE

Lab Sample ID: QA24F  
 LIMS ID: 09-29965  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
 Project:  
 Date Sampled: 11/30/09  
 Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 18:46  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 02:13  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 31.2% |
| Aromatic  | o-Terphenyl        | 43.1% |

**ORGANICS ANALYSIS DATA SHEET**  
**Aliphatic/Aromatic GC-EPH**  
 Page 1 of 1

Sample ID: IN 16:00  
**SAMPLE**

Lab Sample ID: QA24G  
 LIMS ID: 09-29966  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
 Project:  
 Date Sampled: 11/30/09  
 Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 19:11  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 02:38  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 250    |
| C10-C12 Aliphatics | 40 | 260    |
| C12-C16 Aliphatics | 40 | 530    |
| C16-C21 Aliphatics | 40 | 350    |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 12,000 |
| C10-C12 Aromatics  | 40 | 1,300  |
| C12-C16 Aromatics  | 40 | 1,300  |
| C16-C21 Aromatics  | 40 | 420    |
| C21-C34 Aromatics  | 40 | 48     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 58.5% |
| Aromatic  | o-Terphenyl        | 77.6% |



**ORGANICS ANALYSIS DATA SHEET**  
**Aliphatic/Aromatic GC-EPH**  
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Sample ID: OUT 16:00  
 SAMPLE

Lab Sample ID: QA24H  
 LIMS ID: 09-29967  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
 Project:  
 Date Sampled: 11/30/09  
 Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 19:36  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 03:03  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range                    | RL        | Result    |
|--------------------------|-----------|-----------|
| C8-C10 Aliphatics        | 40        | < 40 U    |
| C10-C12 Aliphatics       | 40        | < 40 U    |
| C12-C16 Aliphatics       | 40        | < 40 U    |
| C16-C21 Aliphatics       | 40        | < 40 U    |
| C21-C34 Aliphatics       | 40        | < 40 U    |
| <b>C8-C10 Aromatics</b>  | <b>40</b> | <b>50</b> |
| C10-C12 Aromatics        | 40        | < 40 U    |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>62</b> |
| C16-C21 Aromatics        | 40        | < 40 U    |
| C21-C34 Aromatics        | 40        | < 40 U    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 49.5% |
| <b>Aromatic</b>  | o-Terphenyl        | 94.1% |



ORGANICS ANALYSIS DATA SHEET  
Aliphatic/Aromatic GC-EPH  
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Sample ID: IN 15:00  
SAMPLE

Lab Sample ID: QA24I  
LIMS ID: 09-29968  
Matrix: Water  
Data Release Authorized: *AB*  
Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 11/30/09  
Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 20:01  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 03:27  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 76     |
| C10-C12 Aliphatics | 40 | 110    |
| C12-C16 Aliphatics | 40 | 220    |
| C16-C21 Aliphatics | 40 | 150    |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 5,600  |
| C10-C12 Aromatics  | 40 | 1,100  |
| C12-C16 Aromatics  | 40 | 1,200  |
| C16-C21 Aromatics  | 40 | 310    |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 52.3% |
| Aromatic  | o-Terphenyl        | 71.8% |



ORGANICS ANALYSIS DATA SHEET  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: OUT 13:00  
SAMPLE

Lab Sample ID: QA24J  
LIMS ID: 09-29969  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
Project:

Date Sampled: 12/02/09  
Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 20:26  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 03:52  
Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range                    | RL        | Result    |
|--------------------------|-----------|-----------|
| C8-C10 Aliphatics        | 40        | < 40 U    |
| C10-C12 Aliphatics       | 40        | < 40 U    |
| C12-C16 Aliphatics       | 40        | < 40 U    |
| C16-C21 Aliphatics       | 40        | < 40 U    |
| C21-C34 Aliphatics       | 40        | < 40 U    |
| <b>C8-C10 Aromatics</b>  | <b>40</b> | <b>52</b> |
| C10-C12 Aromatics        | 40        | < 40 U    |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>40</b> |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>66</b> |
| C21-C34 Aromatics        | 40        | < 40 U    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 47.4% |
| <b>Aromatic</b>  | o-Terphenyl        | 64.0% |

**ORGANICS ANALYSIS DATA SHEET**  
**Aliphatic/Aromatic GC-EPH**  
 Page 1 of 1

Sample ID: IN 13:00  
 SAMPLE

Lab Sample ID: QA24K  
 LIMS ID: 09-29970  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
 Project:  
 Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 20:51  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 04:17  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 120    |
| C10-C12 Aliphatics | 40 | 210    |
| C12-C16 Aliphatics | 40 | 420    |
| C16-C21 Aliphatics | 40 | 290    |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 4,800  |
| C10-C12 Aromatics  | 40 | 1,700  |
| C12-C16 Aromatics  | 40 | 1,900  |
| C16-C21 Aromatics  | 40 | 410    |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 50.7% |
| Aromatic  | o-Terphenyl        | 62.4% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

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Sample ID: IN 01:30

SAMPLE

Lab Sample ID: QA24L

LIMS ID: 09-29971

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/17/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: 11/30/09

Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 21:15

Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 04:42

Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 100    |
| C10-C12 Aliphatics | 40 | 230    |
| C12-C16 Aliphatics | 40 | 420    |
| C16-C21 Aliphatics | 40 | 240    |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 4,300  |
| C10-C12 Aromatics  | 40 | 1,100  |
| C12-C16 Aromatics  | 40 | 1,400  |
| C16-C21 Aromatics  | 40 | 440    |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in µg/L (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 39.7% |
| Aromatic  | o-Terphenyl        | 66.4% |

**ORGANICS ANALYSIS DATA SHEET**  
**Aliphatic/Aromatic GC-EPH**  
 Page 1 of 1

Sample ID: INFLUENT 17:00  
 SAMPLE

Lab Sample ID: QA24M  
 LIMS ID: 09-29972  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
 Project:  
 Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 21:40  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 05:07  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 50     |
| C10-C12 Aliphatics | 40 | 44     |
| C12-C16 Aliphatics | 40 | 100    |
| C16-C21 Aliphatics | 40 | 80     |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 6,500  |
| C10-C12 Aromatics  | 40 | 970    |
| C12-C16 Aromatics  | 40 | 910    |
| C16-C21 Aromatics  | 40 | 240    |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 53.8% |
| Aromatic  | o-Terphenyl        | 58.0% |



ALIPHATIC EPH WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QA24-Whittier Filtration  
Project:

| <u>ARI ID</u> | <u>Client ID</u> | <u>COD</u> | <u>TOT OUT</u> |
|---------------|------------------|------------|----------------|
| MB-121009     | Method Blank     | 55.1%      | 0              |
| LCS-121009    | Lab Control      | 56.6%      | 0              |
| LCSD-121009   | Lab Control Dup  | 63.1%      | 0              |
| QA24A         | EFFLUENT 15:00   | 32.8%*     | 1              |
| QA24B         | EFFLUENT 17:00   | 51.4%      | 0              |
| QA24C         | INFLUENT 15:00   | 57.9%      | 0              |
| QA24D         | INFLUENT 11:25   | 34.3%*     | 1              |
| QA24E         | OUT 01:30        | 47.4%      | 0              |
| QA24F         | OUT 15:00        | 31.2%*     | 1              |
| QA24G         | IN 16:00         | 58.5%      | 0              |
| QA24H         | OUT 16:00        | 49.5%      | 0              |
| QA24I         | IN 15:00         | 52.3%      | 0              |
| QA24J         | OUT 13:00        | 47.4%      | 0              |
| QA24K         | IN 13:00         | 50.7%      | 0              |
| QA24L         | IN 01:30         | 39.7%*     | 1              |
| QA24M         | INFLUENT 17:00   | 53.8%      | 0              |

LCS/MB LIMITS      QC LIMITS

(COD) = 1-Chlorooctadecane

(38-121)

(42-120)

Prep Method: SW3510C  
Log Number Range: 09-29960 to 09-29972



AROMATIC EPH WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QA24-Whittier Filtration  
Project:

| <u>ARI ID</u> | <u>Client ID</u> | <u>OTER</u> | <u>TOT OUT</u> |
|---------------|------------------|-------------|----------------|
| MB-121009     | Method Blank     | 73.6%       | 0              |
| LCS-121009    | Lab Control      | 78.0%       | 0              |
| LCSD-121009   | Lab Control Dup  | 74.7%       | 0              |
| QA24A         | EFFLUENT 15:00   | 44.6%       | 0              |
| QA24B         | EFFLUENT 17:00   | 81.6%       | 0              |
| QA24C         | INFLUENT 15:00   | 70.2%       | 0              |
| QA24D         | INFLUENT 11:25   | 48.4%       | 0              |
| QA24E         | OUT 01:30        | 78.4%       | 0              |
| QA24F         | OUT 15:00        | 43.1%       | 0              |
| QA24G         | IN 16:00         | 77.6%       | 0              |
| QA24H         | OUT 16:00        | 94.1%       | 0              |
| QA24I         | IN 15:00         | 71.8%       | 0              |
| QA24J         | OUT 13:00        | 64.0%       | 0              |
| QA24K         | IN 13:00         | 62.4%       | 0              |
| QA24L         | IN 01:30         | 66.4%       | 0              |
| QA24M         | INFLUENT 17:00   | 58.0%       | 0              |

LCS/MB LIMITS      QC LIMITS

(OTER) = o-Terphenyl

(44-133)

(39-141)

Prep Method: SW3510C  
Log Number Range: 09-2996C to 09-29972

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: LCS-121009

LCS/LCSD

Lab Sample ID: LCS-121009

LIMS ID: 09-29960

Matrix: Water

Data Release Authorized: 

Reported: 12/17/09

QC Report No: QA24-Whittier Filtration

Project:

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 12/10/09

Sample Amount LCS: 500 mL

LCSD: 500 mL

Final Extract Volume LCS: 1.0 mL

LCSD: 1.0 mL

**Aliphatic**

Date Analyzed LCS: 12/15/09 22:05

LCSD: 12/15/09 22:30

Instrument/Analyst LCS: FID8/AAR

LCSD: FID8/AAR

Dilution Factor LCS: 1.00

LCSD: 1.00

**Aromatic**

Date Analyzed LCS: 12/16/09 05:31

LCSD: 12/16/09 05:56

Instrument/Analyst LCS: FID8/AAR

LCSD: FID8/AAR

Dilution Factor LCS: 1.00

LCSD: 1.00

| Range              | LCS | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|--------------------|-----|-----------------|--------------|------|------------------|---------------|-------|
| C8-C10 Aliphatics  | 100 | 300             | 33.3%        | 136  | 300              | 45.3%         | 30.5% |
| C10-C12 Aliphatics | 150 | 300             | 50.0%        | 194  | 300              | 64.7%         | 25.6% |
| C12-C16 Aliphatics | 260 | 300             | 86.7%        | 312  | 300              | 104%          | 18.2% |
| C16-C21 Aliphatics | 280 | 300             | 93.3%        | 326  | 300              | 109%          | 15.2% |
| C10-C12 Aromatics  | 154 | 300             | 51.3%        | 210  | 300              | 70.0%         | 30.8% |
| C12-C16 Aromatics  | 240 | 300             | 80.0%        | 260  | 300              | 86.7%         | 8.0%  |
| C16-C21 Aromatics  | 622 | 600             | 104%         | 626  | 600              | 104%          | 0.6%  |
| C21-C34 Aromatics  | 640 | 600             | 107%         | 764  | 600              | 127%          | 17.7% |

**EPH Surrogate Recovery**

|           |                    | LCS   | LCSD  |
|-----------|--------------------|-------|-------|
| Aliphatic | 1-Chlorooctadecane | 56.6% | 63.1% |
| Aromatic  | o-Terphenyl        | 78.0% | 74.7% |

Results reported in µg/L

RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**  
**Aliphatic/Aromatic GC-EPH**  
 Page 1 of 1

Sample ID: MB-121009  
 METHOD BLANK

Lab Sample ID: MB-121009  
 LIMS ID: 09-29960  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/17/09

QC Report No: QA24-Whittier Filtration  
 Project:

Date Sampled: 12/02/09  
 Date Received: 12/04/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/15/09 22:55  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/16/09 06:21  
 Instrument/Analyst: FID8/AAR

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 55.1% |
| Aromatic  | o-Terphenyl        | 73.6% |



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants  
December 16, 2009

Michael Monacell  
Whittier Filtration  
315 N. Puente Street, Unit A  
Brea, CA 92821

**Client Project: Western Refining**  
**ARI ID: QA69**

Dear Mr. Monacell:

Please find enclosed Chain-of-Custody (COC) records, sample receipt documentation, and the final data for the project referenced above. Analytical Resources, Inc. (ARI) accepted two water samples, as part of a larger shipment on December 9, 2009. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Forms.

The samples were analyzed for BTEX, VPH, and EPH, as requested.

Note that sample **12/03/09 16:30 Influent** had a pH of three and all other vials had a pH of two for BTEX.

The closing calibration for the December 10, 2009 VPH analysis fell outside the control limits low for both aliphatic and aromatic compounds. The samples were re-analyzed on December 17, 2009 and only the closing continuing calibration of Methyl tert-Butyl Ether was outside the control limits high due to matrix effects. No further corrective action was required.

It was noted that only one 40mL vial was provided for sample **12/03/09 16:30 Influent** for the VPH analysis. Results for the dilution of this sample analyzed on December 17, 2009 may be affected due to re-analyzing from the original vial.

The VPH surrogate percent recovery of 2,5-Dibromotoluene fell outside the control limits low for sample **12/03/09 16:30 Effluent**. The sample was re-analyzed and the surrogate percent recoveries were within control limits. No further corrective action was required.

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Respectfully,  
ANALYTICAL RESOURCES, INC.

Cheronne Oreiro  
Project Manager  
(206) 695-6214  
[cheronneo@arilabs.com](mailto:cheronneo@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

Enclosures

eFile: QA69

# Chain of Custody Record & Laboratory Analysis Request

|   |   |   |        |                               |                          |                |
|---|---|---|--------|-------------------------------|--------------------------|----------------|
| ARI Assigned Number: <b>QAL04</b>           |   | Turn-around Requested:                      |        | Date: <b>DECEMBER 7, 2009</b> |                          |                |
| ARI Client Company: <b>WESTERN REFINING</b> |   | Phone: <b>505-722-0243</b>                  |        | Page: of                      |                          |                |
| Client Contact: <b>SHANE WHITE</b>          |   | No. of Coolers: <b>2</b>                    |        | Cooler Temps: <b>06.19</b>    |                          |                |
| Client Project Name: <b>MPPE PROJECT</b>    |   | Analysis Requested                          |        |                               |                          | Notes/Comments |
| Client Project #:                           | Samplers:                                       |   | BTEX   | VAP                           | EPI                      |                |
| Sample ID                                   | Date  | Time  | Matrix | No. Containers                |                          |                |
| 12-03-09 12:05                              | 12-03-09  | 12:05                                       |        | 10                            |                          |                |
| 12-03-09 15:00                              | 12-03-09  | 15:00                                       |        | 10                            |                          |                |
| 12-03-09 13:30                              | 12-03-09  | 13:30                                       |        | 10                            |                          |                |
| 12-04-09 16:00                              | 12-4-09   | 16:00                                       |        | 10                            |                          |                |
| 12-04-09 12:00                              | 12-04-09  | 12:00                                       |        | 8                             |                          |                |
| 12-4-09 14:10                               | 12-4-09   | 14:10                                       |        | 10                            |                          |                |
| 12-4-09 3:00                                | 12-4-09   | 3:00  |        | 10                            |                          |                |
| 12-4-09 16:30                               | 12-4-09   | 16:30                                       |        | 10                            |                          |                |
| 12-5-09 13:35                               | 12-5-09   | 13:35                                       |        | 10                            |                          |                |
| 12-5-09 16:30                               | 12-5-09   | 16:30                                       |        | 10                            |                          |                |
| Comments/Special Instructions               | Relinquished by (Signature): <i>Shane White</i> | Received by (Signature): <i>J. Peterson</i> |        | Relinquished by (Signature):  | Received by (Signature): |                |
|   | Printed Name: <b>SHANE S. WHITE</b>             | Printed Name: <b>J. Peterson</b>            |        | Printed Name:                 | Printed Name:            |                |
|   | Company: <b>WESTERN REFINING</b>                | Company: <b>ARI</b>                         |        | Company:                      | Company:                 |                |
|   | Date & Time: <b>DECEMBER 7 2009 8:27AM</b>      | Date & Time: <b>12/9/09 9:45</b>            |        | Date & Time:                  | Date & Time:             |                |



Analytical Resources, Incorporated  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

2009-09-09 09:09

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

# Chain of Custody Record & Laboratory Analysis Request

|                                   |                                 |  |        |                                 |  |                             |
|-----------------------------------|---------------------------------|--|--------|---------------------------------|--|-----------------------------|
| ARI Assigned Number: <b>WAL04</b> |                                 | Turn-around Requested:                         |        | Date:                           |  |                             |
| ARI Client Company:               |                                 | Phone:   |        | Page: of                        |  |                             |
| Client Contact:                   |                                 | No. of Coolers: <b>2</b>                       |        | Cooler Temps: <b>0.6, 1.9</b>   |  |                             |
| Client Project Name:              |                                 | Analysis Requested                             |        |                                 |  | Notes/Comments              |
| Client Project #:                 |                                 |  |        |                                 |  |                             |
| Samplers:                         |                                 |  |        |                                 |  |                             |
| Sample ID                         | Date                            | Time   | Matrix | No. Containers                  |  |                             |
| <b>12-5-09 15:15</b>              | <b>12-5-09</b>                  | <b>15:15</b>                                   |        | <b>10</b>                       |  |                             |
| <b>12-3-09 16:30</b>              | <b>12-3-09</b>                  | <b>16:30</b>                                   |        | <b>10</b>                       |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
|                                   |                                 |  |        |                                 |  |                             |
| Comments/Special Instructions     | Relinquished by:<br>(Signature) | Received by:<br>(Signature) <i>S. Peterson</i> |        | Relinquished by:<br>(Signature) |  | Received by:<br>(Signature) |
|                                   | Printed Name:                   | Printed Name:<br><i>S. Peterson</i>            |        | Printed Name:                   |  | Printed Name:               |
|                                   | Company:                        | Company:<br><i>ARI</i>                         |        | Company:                        |  | Company:                    |
|                                   | Date & Time:                    | Date & Time:<br><i>12/9/09 9:45</i>            |        | Date & Time:                    |  | Date & Time:                |



**Analytical Resources, Incorporated**  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

2009-09-09

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**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



Analytical Resources, Incorporated  
Analytical Chemists and Consultants

Whittier Filtration  
Western Refinery

ARI Client: Western Refinery (NA)  
COC No(s): \_\_\_\_\_  
Assigned ARI Job No: 01A164

# Cooler Receipt Form

Project Name: MPPE Project  
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_  
Tracking No: 1Z 875 019 01 4529 8786 NA  
1Z 875 019 01 4670 3391

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO   
Were custody papers included with the cooler? YES  NO   
Were custody papers properly filled out (ink, signed, etc.) YES  NO   
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 0.6 1.9  
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: JP Date: 12/9/09 Time: 9:45

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES  NO   
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_  
Was sufficient ice used (if appropriate)? NA  YES  NO   
Were all bottles sealed in individual plastic bags? YES  NO   
Did all bottles arrive in good condition (unbroken)? YES  NO   
Were all bottle labels complete and legible? YES  NO   
Did the number of containers listed on COC match with the number of containers received? YES  NO   
Did all bottle labels and tags agree with custody papers? YES  NO   
Were all bottles used correct for the requested analyses? YES  NO   
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA  YES  NO   
Were all VOC vials free of air bubbles? NA  YES  NO   
Was sufficient amount of sample sent in each bottle? YES  NO   
Date VOC Trip Blank was made at ARI: NA

Samples Logged by: JP Date: 12/9/09 Time: 10:28

**\*\* Notify Project Manager of discrepancies or concerns \*\***

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
|                     |                  |                     |                  |
|                     |                  |                     |                  |
|                     |                  |                     |                  |

**Additional Notes, Discrepancies, & Resolutions:**

ID's need to be differentiated between Influent and Effluent samples. Analyses was not written on the Chain of Custody.

By: JP Date: 12/9/09



Small → "sm"  
Peabubbles → "pb"  
Large → "lg"  
Headspace → "hs"

All additional notes are on the back of this page.

# Broken Samples

VOA - 12/5/09 16:30

500ml Amber - 12/4/09 16:30

12/3/09 12:05 Influent = "Pb" + "lg" bubble = "lg" 2 of 2

12/3/09 12:05 Effluent = "Pb" + "lg" bubbles = "lg" 5 of 5

12/3/09 15:00 Influent = "Lg" + "Hs" bubbles = "Hs" 2 of 2  
Effluent = "Pb" = 5 of 5

12/3/09 13:30 Influent = "lg" = 2 of 2

Effluent = "lg" = 5 of 5

12/4/09 12:00 Influent = "Pb" = 2 of 2 - no Amber glass

Effluent = "lg" = 5 of 5

12/4/09 14:10 Influent = "lg" = 2 of 2

Effluent = "Pb" = 5 of 5

12/4/09 3:00 Influent = "Hs" = 2 of 2

Effluent = "Pb" = 5 of 5

12/4/09 16:30 Influent = "lg" = 2 of 2 - no Amber glass

Effluent = "lg" to "Hs" 5 of 5 = "lg"

12/5/09 13:35 Influent = "Pb" 1 of 1

Effluent = no bubbles!!

12/5/09 15:15 Influent = "lg" 2 of 2

Effluent = "Pb" = 5 of 5

12/5/09 16:30 Influent = "Hs" = 2 of 2

Effluent = "Hs" + "Pb" 5 of 5 = "Pb"

12/3/09 16:30 Influent = "lg" 2 of 2

Effluent = "Pb" 4 of 4

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: 12/03/09 16:30 Influent**

Page 1 of 1

**SAMPLE**

Lab Sample ID: QA69A

QC Report No: QA69-Whittier Filtration

LIMS ID: 09-30325

Project: MPPE Project

Matrix: Water

Data Release Authorized: **VTS**

Date Sampled: 12/03/09

Reported: 12/15/09

Date Received: 12/09/09

Instrument/Analyst: NT3/AAR

Sample Amount: 0.0500 mL

Date Analyzed: 12/11/09 20:12

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 4,300  |   |
| 108-88-3    | Toluene      | 100 | 9,400  |   |
| 100-41-4    | Ethylbenzene | 100 | 840    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,900  |   |
| 95-47-6     | o-Xylene     | 100 | 1,500  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 99.0% |
| d8-Toluene             | 99.5% |
| Bromofluorobenzene     | 100%  |
| d4-1,2-Dichlorobenzene | 100%  |



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**  
Page 1 of 1

**Sample ID: 12/03/09 16:30 Effluent**  
**SAMPLE**

Lab Sample ID: QA69B  
LIMS ID: 09-30326  
Matrix: Water  
Data Release Authorized: *VTS*  
Reported: 12/15/09

QC Report No: QA69-Whittier Filtration  
Project: MPPE Project

Date Sampled: 12/03/09  
Date Received: 12/09/09

Instrument/Analyst: NT3/AAR  
Date Analyzed: 12/11/09 20:37

Sample Amount: 1.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 5.0 | < 5.0  | U |
| 108-88-3    | Toluene      | 5.0 | < 5.0  | U |
| 100-41-4    | Ethylbenzene | 5.0 | < 5.0  | U |
| 179601-23-1 | m,p-Xylene   | 10  | < 10   | U |
| 95-47-6     | o-Xylene     | 5.0 | < 5.0  | U |

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 96.6% |
| d8-Toluene             | 97.0% |
| Bromofluorobenzene     | 100%  |
| d4-1,2-Dichlorobenzene | 101%  |

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: QA69-Whittier Filtration  
Project: MPPE Project

| ARI ID      | Client ID               | PV | DCE   | TOL   | BFB   | DCB  | TOT OUT |
|-------------|-------------------------|----|-------|-------|-------|------|---------|
| MB-121109   | Method Blank            | 5  | 108%  | 98.1% | 99.4% | 102% | 0       |
| LCS-121109  | Lab Control             | 5  | 99.8% | 101%  | 98.6% | 101% | 0       |
| LCSD-121109 | Lab Control Dup         | 5  | 99.5% | 102%  | 99.8% | 102% | 0       |
| QA69A       | 12/03/09 16:30 Influent | 5  | 99.0% | 99.5% | 100%  | 100% | 0       |
| QA69B       | 12/03/09 16:30 Effluent | 5  | 96.6% | 97.0% | 100%  | 101% | 0       |

LCS/MB LIMITS

QC LIMITS

|                                |        |        |
|--------------------------------|--------|--------|
| <b>SW8260C</b>                 |        |        |
| (DCE) = d4-1,2-Dichloroethane  | 83-122 | 80-125 |
| (TOL) = d8-Toluene             | 80-120 | 80-120 |
| (BFB) = Bromofluorobenzene     | 80-120 | 80-120 |
| (DCB) = d4-1,2-Dichlorobenzene | 80-120 | 80-120 |

Prep Method: SW5030B  
Log Number Range: 09-30325 to 09-30326

QA69: 00008

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-121109**

Page 1 of 1

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-121109

QC Report No: QA69-Whittier Filtration

LIMS ID: 09-30325

Project: MPPE Project

Matrix: Water

Data Release Authorized: *VTS*

Date Sampled: NA

Reported: 12/15/09

Date Received: NA

Instrument/Analyst LCS: NT3/AAR

Sample Amount LCS: 5.00 mL

LCS: NT3/AAR

LCS: 5.00 mL

Date Analyzed LCS: 12/11/09 12:06

Purge Volume LCS: 5.0 mL

LCS: 12/11/09 12:31

LCS: 5.0 mL

| Analyte      | LCS  | Spike     | LCS      | LCS  | Spike     | LCS      | RPD  |
|--------------|------|-----------|----------|------|-----------|----------|------|
|              |      | Added-LCS | Recovery |      | Added-LCS | Recovery |      |
| Benzene      | 46.6 | 50.0      | 93.2%    | 46.9 | 50.0      | 93.8%    | 0.6% |
| Toluene      | 50.3 | 50.0      | 101%     | 49.6 | 50.0      | 99.2%    | 1.4% |
| Ethylbenzene | 50.9 | 50.0      | 102%     | 50.9 | 50.0      | 102%     | 0.0% |
| m,p-Xylene   | 103  | 100       | 103%     | 101  | 100       | 101%     | 2.0% |
| o-Xylene     | 50.4 | 50.0      | 101%     | 51.0 | 50.0      | 102%     | 1.2% |

Reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.

**Volatile Surrogate Recovery**

|                        | LCS   | LCS   |
|------------------------|-------|-------|
| d4-1,2-Dichloroethane  | 99.8% | 99.5% |
| d8-Toluene             | 101%  | 102%  |
| Bromofluorobenzene     | 98.6% | 99.8% |
| d4-1,2-Dichlorobenzene | 101%  | 102%  |

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MB-121109**

Page 1 of 1

**METHOD BLANK**

Lab Sample ID: MB-121109

QC Report No: QA69-Whittier Filtration

LIMS ID: 09-30325

Project: MPPE Project

Matrix: Water

Data Release Authorized: *VTS*

Date Sampled: NA

Reported: 12/15/09

Date Received: NA

Instrument/Analyst: NT3/AAR

Sample Amount: 5.00 mL

Date Analyzed: 12/11/09 12:56

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | < 1.0  | U |
| 108-88-3    | Toluene      | 1.0 | < 1.0  | U |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 108%  |
| d8-Toluene             | 98.1% |
| Bromofluorobenzene     | 99.4% |
| d4-1,2-Dichlorobenzene | 102%  |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12/03/09 16:30 Influent  
SAMPLE

Lab Sample ID: QA69A

LIMS ID: 09-30325

Matrix: Water

Data Release Authorized: *B*

Reported: 12/21/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Analyzed: 12/10/09 11:19

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 150

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 750  | 4,900   |
| 108-88-3    | Toluene                 | 750  | 11,000  |
| 100-41-4    | Ethylbenzene            | 750  | 940     |
| 179601-23-1 | m,p-Xylene              | 1500 | 4,400   |
| 95-47-6     | o-Xylene                | 750  | 1,700   |
| 1634-04-4   | Methyl tert-Butyl Ether | 750  | < 750 U |
| 109-66-0    | n-Pentane               | 750  | < 750 U |
| 110-54-3    | n-Hexane                | 750  | < 750 U |
| 111-65-9    | n-Octane                | 750  | < 750 U |
| 124-18-5    | n-Decane                | 750  | < 750 U |
| 112-40-3    | n-Dodecane              | 750  | < 750 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 7,500 | 12,000    |
| C10-C12 Aromatics  | 7,500 | < 7,500 U |
| C12-C13 Aromatics  | 7,500 | < 7,500 U |
| C5-C6 Aliphatics   | 7,500 | < 7,500 U |
| C6-C8 Aliphatics   | 7,500 | 17,000    |
| C8-C10 Aliphatics  | 7,500 | 18,000    |
| C10-C12 Aliphatics | 7,500 | < 7,500 U |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 89.2% |
| FID: 2,5-Dibromotoluene | 93.2% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12/03/09 16:30 Influent  
DILUTION

Lab Sample ID: QA69A

LIMS ID: 09-30325

Matrix: Water

Data Release Authorized: 

Reported: 12/21/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 02:06

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 150

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 750  | 4,600   |
| 108-88-3    | Toluene                 | 750  | 9,500   |
| 100-41-4    | Ethylbenzene            | 750  | 820     |
| 179601-23-1 | m,p-Xylene              | 1500 | 3,600   |
| 95-47-6     | o-Xylene                | 750  | 1,400   |
| 1634-04-4   | Methyl tert-Butyl Ether | 750  | < 750 U |
| 109-66-0    | n-Pentane               | 750  | < 750 U |
| 110-54-3    | n-Hexane                | 750  | < 750 U |
| 111-65-9    | n-Octane                | 750  | < 750 U |
| 124-18-5    | n-Decane                | 750  | < 750 U |
| 112-40-3    | n-Dodecane              | 750  | < 750 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 7,500 | 12,000    |
| C10-C12 Aromatics  | 7,500 | < 7,500 U |
| C12-C13 Aromatics  | 7,500 | < 7,500 U |
| C5-C6 Aliphatics   | 7,500 | 30,000    |
| C6-C8 Aliphatics   | 7,500 | 12,000    |
| C8-C10 Aliphatics  | 7,500 | 17,000    |
| C10-C12 Aliphatics | 7,500 | < 7,500 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 95.8% |
| FID: 2,5-Dibromotoluene | 94.0% |

**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
 Page 1 of 1

**Sample ID: 12/03/09 16:30 Effluent**  
**SAMPLE**

Lab Sample ID: QA69B  
 LIMS ID: 09-30326  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/21/09

QC Report No: QA69-Whittier Filtration  
 Project: MPPE Project

Date Sampled: 12/03/09  
 Date Received: 12/09/09

Date Analyzed: 12/10/09 12:48  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number      | Analyte                 | RL         | Result    |
|-----------------|-------------------------|------------|-----------|
| 71-43-2         | Benzene                 | 5.0        | < 5.0 U   |
| 108-88-3        | Toluene                 | 5.0        | < 5.0 U   |
| 100-41-4        | Ethylbenzene            | 5.0        | < 5.0 U   |
| 179601-23-1     | m,p-Xylene              | 10         | < 10 U    |
| 95-47-6         | o-Xylene                | 5.0        | < 5.0 U   |
| 1634-04-4       | Methyl tert-Butyl Ether | 5.0        | < 5.0 U   |
| 109-66-0        | n-Pentane               | 5.0        | < 5.0 U   |
| <b>110-54-3</b> | <b>n-Hexane</b>         | <b>5.0</b> | <b>14</b> |
| 111-65-9        | n-Octane                | 5.0        | < 5.0 U   |
| 124-18-5        | n-Decane                | 5.0        | < 5.0 U   |
| 112-40-3        | n-Dodecane              | 5.0        | < 5.0 U   |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>200</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>130</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 57.6% |
| FID: 2,5-Dibromotoluene | 60.0% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12/03/09 16:30 Effluent  
DILUTION

Lab Sample ID: QA69B

LIMS ID: 09-30326

Matrix: Water

Data Release Authorized: *AS*

Reported: 12/21/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 01:33

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | 710     |
| 110-54-3    | n-Hexane                | 5.0 | 24      |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 1,300  |
| C6-C8 Aliphatics   | 50 | 260    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 105%  |
| FID: 2,5-Dibromotoluene | 96.4% |

QA69: 00014

VPH SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: QA69-Whittier Filtration  
Project: MPPE Project

| ARI ID      | Client ID               | PDBT   | FDBT  | TOT | OUT |
|-------------|-------------------------|--------|-------|-----|-----|
| MB-121009   | Method Blank            | 82.6%  | 84.4% | 0   |     |
| LCS-121009  | Lab Control             | 86.2%  | 89.0% | 0   |     |
| LCSD-121009 | Lab Control Dup         | 86.6%  | 91.0% | 0   |     |
| QA69A       | 12/03/09 16:30 Influent | 89.2%  | 93.2% | 0   |     |
| QA69ADL     | 12/03/09 16:30 Influent | 95.8%  | 94.0% | 0   |     |
| MB-121609   | Method Blank            | 91.4%  | 90.0% | 0   |     |
| LCS-121609  | Lab Control             | 97.0%  | 96.0% | 0   |     |
| LCSD-121609 | Lab Control Dup         | 101%   | 101%  | 0   |     |
| QA69B       | 12/03/09 16:30 Effluent | 57.6%* | 60.0% | 1   |     |
| QA69BDL     | 12/03/09 16:30 Effluent | 105%   | 96.4% | 0   |     |

LCS/MB LIMITS      QC LIMITS

(PDBT) = 2,5-Dibromotoluene      (60-140)      (60-140)  
(FDBT) = 2,5-Dibromotoluene      (60-140)      (60-140)

Prep Method: METHOD  
Log Number Range: 09-30325 to 09-30326



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: LCS-121009  
 LCS/LCSD

Lab Sample ID: LCS-121009  
 LIMS ID: 09-30325  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/21/09

QC Report No: QA69-Whittier Filtration  
 Project: MPPE Project

Date Sampled: NA  
 Date Received: NA

Date Analyzed LCS: 12/10/09 09:06  
 Date Analyzed LCSD: 12/10/09 09:36  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| Analyte/Range           | LCS  | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|-------------------------|------|-----------------|--------------|------|------------------|---------------|-------|
| Benzene                 | 48.7 | 50.0            | 97.4%        | 47.1 | 50.0             | 94.2%         | 3.3%  |
| Toluene                 | 50.4 | 50.0            | 101%         | 47.5 | 50.0             | 95.0%         | 5.9%  |
| Ethylbenzene            | 51.0 | 50.0            | 102%         | 48.2 | 50.0             | 96.4%         | 5.6%  |
| m,p-Xylene              | 108  | 100             | 108%         | 97.2 | 100              | 97.2%         | 10.5% |
| o-Xylene                | 52.4 | 50.0            | 105%         | 48.0 | 50.0             | 96.0%         | 8.8%  |
| Methyl tert-Butyl Ether | 52.2 | 50.0            | 104%         | 51.8 | 50.0             | 104%          | 0.8%  |
| Naphthalene             | 46.6 | 50.0            | 93.2%        | 44.6 | 50.0             | 89.2%         | 4.4%  |
| 1,2,3-Trimethylbenzene  | 49.9 | 50.0            | 99.8%        | 41.0 | 50.0             | 82.0%         | 19.6% |
| 1-Methylnaphthalene     | 49.1 | 50.0            | 98.2%        | 52.5 | 50.0             | 105%          | 6.7%  |
| n-Pentane               | 58.8 | 50.0            | 118%         | 56.3 | 50.0             | 113%          | 4.3%  |
| n-Hexane                | 52.5 | 50.0            | 105%         | 49.8 | 50.0             | 99.6%         | 5.3%  |
| n-Octane                | 48.9 | 50.0            | 97.8%        | 48.6 | 50.0             | 97.2%         | 0.6%  |
| n-Decane                | 53.3 | 50.0            | 107%         | 55.0 | 50.0             | 110%          | 3.1%  |
| n-Dodecane              | 56.1 | 50.0            | 112%         | 54.0 | 50.0             | 108%          | 3.8%  |

Values reported in  $\mu\text{g/L}$  (ppb)  
 RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

|                         | LCS   | LCSD  |
|-------------------------|-------|-------|
| PID: 2,5-Dibromotoluene | 86.2% | 86.6% |
| FID: 2,5-Dibromotoluene | 89.0% | 91.0% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: LCS-121609

LCS/LCSD

Lab Sample ID: LCS-121609

LIMS ID: 09-30326

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/21/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/16/09 19:58

Purge Volume: 10 mL

Date Analyzed LCSD: 12/16/09 21:39

Dilution Factor: 1.00

Instrument/Analyst: PID1/MH

| Analyte/Range           | LCS  | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD  |
|-------------------------|------|-----------------|--------------|------|------------------|---------------|------|
| Benzene                 | 50.5 | 50.0            | 101%         | 50.9 | 50.0             | 102%          | 0.8% |
| Toluene                 | 50.6 | 50.0            | 101%         | 50.9 | 50.0             | 102%          | 0.6% |
| Ethylbenzene            | 51.0 | 50.0            | 102%         | 51.3 | 50.0             | 103%          | 0.6% |
| m,p-Xylene              | 102  | 100             | 102%         | 104  | 100              | 104%          | 1.9% |
| o-Xylene                | 50.9 | 50.0            | 102%         | 51.1 | 50.0             | 102%          | 0.4% |
| Methyl tert-Butyl Ether | 48.4 | 50.0            | 96.8%        | 47.3 | 50.0             | 94.6%         | 2.3% |
| Naphthalene             | 51.6 | 50.0            | 103%         | 51.1 | 50.0             | 102%          | 1.0% |
| 1,2,3-Trimethylbenzene  | 53.4 | 50.0            | 107%         | 55.3 | 50.0             | 111%          | 3.5% |
| 1-Methylnaphthalene     | 56.1 | 50.0            | 112%         | 53.3 | 50.0             | 107%          | 5.1% |
| n-Pentane               | 59.6 | 50.0            | 119%         | 61.8 | 50.0             | 124%          | 3.6% |
| n-Hexane                | 51.4 | 50.0            | 103%         | 53.5 | 50.0             | 107%          | 4.0% |
| n-Octane                | 51.4 | 50.0            | 103%         | 54.0 | 50.0             | 108%          | 4.9% |
| n-Decane                | 58.7 | 50.0            | 117%         | 62.0 | 50.0             | 124%          | 5.5% |
| n-Dodecane              | 52.6 | 50.0            | 105%         | 55.6 | 50.0             | 111%          | 5.5% |

Values reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

|                         | LCS   | LCSD |
|-------------------------|-------|------|
| PID: 2,5-Dibromotoluene | 97.0% | 101% |
| FID: 2,5-Dibromotoluene | 96.0% | 101% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: MB-121009

METHOD BLANK

Lab Sample ID: MB-121009

LIMS ID: 09-30325

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/21/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/10/09 10:49

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 82.6% |
| FID: 2,5-Dibromotoluene | 84.4% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: MB-121609

METHOD BLANK

Lab Sample ID: MB-121609

LIMS ID: 09-30326

Matrix: Water

Data Release Authorized: 

Reported: 12/21/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/16/09 20:32

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 91.4% |
| FID: 2,5-Dibromotoluene | 90.0% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: 12/03/09 16:30 Influent  
SAMPLE

Lab Sample ID: QA69A

LIMS ID: 09-30325

Matrix: Water

Data Release Authorized: 

Reported: 12/22/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 13:14

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 23:47

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 4,400  |
| C10-C12 Aliphatics | 40 | 5,800  |
| C12-C16 Aliphatics | 40 | 9,900  |
| C16-C21 Aliphatics | 40 | 7,500  |
| C21-C34 Aliphatics | 40 | 3,100  |
| C8-C10 Aromatics   | 40 | 6,700  |
| C10-C12 Aromatics  | 40 | 4,300  |
| C12-C16 Aromatics  | 40 | 7,000  |
| C16-C21 Aromatics  | 40 | 5,800  |
| C21-C34 Aromatics  | 40 | 1,400  |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 55.9% |
| Aromatic  | o-Terphenyl        | 53.2% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: 12/03/09 16:30 Effluent  
SAMPLE

Lab Sample ID: QA69B

LIMS ID: 09-30326

Matrix: Water

Data Release Authorized: 

Reported: 12/22/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 13:39

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/20/09 00:11

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                     | RL        | Result     |
|---------------------------|-----------|------------|
| C8-C10 Aliphatics         | 40        | < 40 U     |
| C10-C12 Aliphatics        | 40        | < 40 U     |
| <b>C12-C16 Aliphatics</b> | <b>40</b> | <b>58</b>  |
| C16-C21 Aliphatics        | 40        | < 40 U     |
| C21-C34 Aliphatics        | 40        | < 40 U     |
| <b>C8-C10 Aromatics</b>   | <b>40</b> | <b>56</b>  |
| <b>C10-C12 Aromatics</b>  | <b>40</b> | <b>66</b>  |
| <b>C12-C16 Aromatics</b>  | <b>40</b> | <b>130</b> |
| <b>C16-C21 Aromatics</b>  | <b>40</b> | <b>88</b>  |
| C21-C34 Aromatics         | 40        | < 40 U     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 56.7% |
| <b>Aromatic</b>  | o-Terphenyl        | 61.3% |

**ALIPHATIC EPH WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: QA69-Whittier Filtration  
Project: MPPE Project

| <u>ARI ID</u> | <u>Client ID</u>        | <u>COD</u> | <u>TOT OUT</u> |
|---------------|-------------------------|------------|----------------|
| MB-121009     | Method Blank            | 55.5%      | 0              |
| LCS-121009    | Lab Control             | 67.9%      | 0              |
| LCSD-121009   | Lab Control Dup         | 60.5%      | 0              |
| QA69A         | 12/03/09 16:30 Influent | 55.9%      | 0              |
| QA69B         | 12/03/09 16:30 Effluent | 56.7%      | 0              |

**LCS/MB LIMITS      QC LIMITS**

(COD) = 1-Chlorooctadecane

(38-121)

(42-120)

Prep Method: SW3510C

Log Number Range: 09-30325 to 09-30326



AROMATIC EPH WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QA69-Whittier Filtration  
Project: MPPE Project

| ARI ID      | Client ID               | OTER  | TOT OUT |
|-------------|-------------------------|-------|---------|
| MB-121009   | Method Blank            | 67.3% | 0       |
| LCS-121009  | Lab Control             | 79.1% | 0       |
| LCSD-121009 | Lab Control Dup         | 71.2% | 0       |
| QA69A       | 12/03/09 16:30 Influent | 53.2% | 0       |
| QA69B       | 12/03/09 16:30 Effluent | 61.3% | 0       |

LCS/MB LIMITS      QC LIMITS

(OTER) = o-Terphenyl

(44-133)

(39-141)

Prep Method: SW3510C  
Log Number Range: 09-30325 to 09-30326



ORGANICS ANALYSIS DATA SHEET

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: LCS-121009

LCS/LCSD

Lab Sample ID: LCS-121009

LIMS ID: 09-30325

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 12/10/09

Sample Amount LCS: 500 mL

LCSD: 500 mL

Final Extract Volume LCS: 1.0 mL

LCSD: 1.0 mL

Aliphatic

Date Analyzed LCS: 12/19/09 04:43

LCSD: 12/19/09 05:07

Instrument/Analyst LCS: FID8/MS

LCSD: FID8/MS

Dilution Factor LCS: 1.00

LCSD: 1.00

Aromatic

Date Analyzed LCS: 12/19/09 15:16

LCSD: 12/19/09 15:41

Instrument/Analyst LCS: FID8/MS

LCSD: FID8/MS

Dilution Factor LCS: 1.00

LCSD: 1.00

| Range              | LCS | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|--------------------|-----|-----------------|--------------|------|------------------|---------------|-------|
| C8-C10 Aliphatics  | 190 | 300             | 63.3%        | 132  | 300              | 44.0%         | 36.0% |
| C10-C12 Aliphatics | 220 | 300             | 73.3%        | 162  | 300              | 54.0%         | 30.4% |
| C12-C16 Aliphatics | 300 | 300             | 100%         | 274  | 300              | 91.3%         | 9.1%  |
| C16-C21 Aliphatics | 310 | 300             | 103%         | 284  | 300              | 94.7%         | 8.8%  |
| C10-C12 Aromatics  | 234 | 300             | 78.0%        | 182  | 300              | 60.7%         | 25.0% |
| C12-C16 Aromatics  | 264 | 300             | 88.0%        | 240  | 300              | 80.0%         | 9.5%  |
| C16-C21 Aromatics  | 634 | 600             | 106%         | 574  | 600              | 95.7%         | 9.9%  |
| C21-C34 Aromatics  | 690 | 600             | 115%         | 612  | 600              | 102%          | 12.0% |

EPH Surrogate Recovery

|           |                    | LCS   | LCSD  |
|-----------|--------------------|-------|-------|
| Aliphatic | 1-Chlorooctadecane | 67.9% | 60.5% |
| Aromatic  | o-Terphenyl        | 79.1% | 71.2% |

Results reported in µg/L

RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: MB-121009

METHOD BLANK

Lab Sample ID: MB-121009

LIMS ID: 09-30325

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/22/09

QC Report No: QA69-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 04:18

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 14:52

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 55.5% |
| Aromatic  | o-Terphenyl        | 67.3% |



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

December 16, 2009

Michael Monacell  
Whittier Filtration  
315 N. Puente Street, Unit A  
Brea, CA 92821

**Client Project: Western Refining**  
**ARI ID: QA64**

Dear Mr. Monacell:

Please find enclosed Chain-of-Custody (COC) records, sample receipt documentation, and the final data for the project referenced above. Analytical Resources, Inc. (ARI) accepted twenty water samples, as part of a larger shipment on December 9, 2009. Several sample vials contained 'head-space'. For further details regarding sample receipt please refer to the enclosed Cooler Receipt Forms.

The samples were analyzed for BTEX, VPH, and EPH, as requested.

Note that sample **12-03-09 12:05 Influent** had a pH of six, samples **12-03-09 12:05 Effluent**, **12-03-09 15:00 Influent**, and **12-03-09 15:00 Effluent** had a pH of three, and all other vials had a pH of two for BTEX.

The BTEX LCS percent recovery of Toluene was outside the control limits high for **LCS-121409**. The LCS percent recovery was within control limits. No corrective action was required.

The VPH LCS percent recovery of n-Decane was outside the control limits high for **LCS-121709**. The LCS percent recovery was within control limits. No corrective action was required.

The closing continuing calibration for Methyl tert-Butyl Ether was outside the control limits high for the December 16, 2009 VPH analysis due to matrix effects. No corrective action was required.

The closing continuing calibration for Methyl tert-Butyl Ether was outside the control limits low for the December 17, 2009 VPH analysis due to matrix effects. No corrective action was required.

The aromatic closing continuing calibration was outside the control limits high for the December 18, 2009 VPH analysis due to matrix effects. No corrective action was required.

The VPH LCS and LCS percent recoveries of n-Pentane were outside the control limits high for **LCS-121809** due to matrix effects on the instrument. No corrective action was required.



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

The EPH aliphatic surrogate percent recoveries of 1-Chlorooctadecane fell outside the control limits low for samples **12-03-09 12:05 Influent**, **12-03-09 12:05 Effluent**, **12-04-09 14:10 Effluent**, and **12/05/09 15:15 Influent** due to matrix effects. No corrective action was required.

The EPH aromatic surrogate percent recovery of o-Terphenyl fell outside the control limits low for sample **12-03-09 12:05 Influent** due to matrix effects. No corrective action was required.

An electronic copy of this report and all supporting raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Respectfully,  
ANALYTICAL RESOURCES, INC.

Cheronne Oreiro  
Project Manager  
(206) 695-6214  
[cheronneo@arilabs.com](mailto:cheronneo@arilabs.com)  
[www.arilabs.com](http://www.arilabs.com)

Enclosures

eFile: QA64

# Chain of Custody Record & Laboratory Analysis Request

| ARI Assigned Number: <b>QALC4</b>           |   | Turn-around Requested:                      |        | Date: <b>DECEMBER 7, 2009</b> |     |                          |
|---|---|---|--------|-------------------------------|-----|--------------------------|
| ARI Client Company: <b>WESTERN REFINING</b> |   | Phone: <b>505-722-0243</b>                  |        | Page: of                      |     |                          |
| Client Contact: <b>SHANE WHITE</b>          |   | No. of Coolers: <b>2</b>                    |        | Cooler Temps: <b>06.19</b>    |     |                          |
| Client Project Name: <b>MPPE PROJECT</b>    |   | Analysis Requested                          |        |                               |     | Notes/Comments           |
| Client Project #:                           | Samplers:                                       |   | BTEX   | VPI                           | EPH |                          |
| Sample ID                                   | Date  | Time  | Matrix | No. Containers                |     |                          |
| 12-03-09 12:05                              | 12-03-09  | 12:05                                       |        | 10                            |     |                          |
| 12-03-09 15:00                              | 12-03-09  | 15:00                                       |        | 10                            |     |                          |
| 12-03-09 13:30                              | 12-03-09  | 13:30                                       |        | 10                            |     |                          |
| 12-04-09 16:00                              | 12-04-09  | 16:00                                       |        | 10                            |     |                          |
| 12-04-09 12:00                              | 12-04-09  | 12:00                                       |        | 8                             |     |                          |
| 12-4-09 14:10                               | 12-4-09   | 14:10                                       |        | 10                            |     |                          |
| 12-4-09 3:00                                | 12-4-09   | 3:00  |        | 10                            |     |                          |
| 12-4-09 16:30                               | 12-4-09   | 16:30                                       |        | 10                            |     |                          |
| 12-5-09 13:35                               | 12-5-09   | 13:35                                       |        | 10                            |     |                          |
| 12-5-09 16:30                               | 12-5-09   | 16:30                                       |        | 10                            |     |                          |
| Comments/Special Instructions               | Relinquished by (Signature): <i>[Signature]</i> | Received by (Signature): <i>[Signature]</i> |        | Relinquished by (Signature):  |     | Received by (Signature): |
|   | Printed Name: <b>SHANE S. WHITE</b>             | Printed Name: <b>J. Peterson</b>            |        | Printed Name:                 |     | Printed Name:            |
|   | Company: <b>WESTERN REFINING</b>                | Company: <b>ARI</b>                         |        | Company:                      |     | Company:                 |
|   | Date & Time: <b>DECEMBER 7 2009 8:21AM</b>      | Date & Time: <b>12/9/09 9:45</b>            |        | Date & Time:                  |     | Date & Time:             |



**Analytical Resources, Incorporated**  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

# Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, Incorporated  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

|                                   |                |                                 |        |                             |  |                                 |  |                             |  |
|-----------------------------------|----------------|---------------------------------|--------|-----------------------------|--|---------------------------------|--|-----------------------------|--|
| ARI Assigned Number: <b>QAL04</b> |                | Turn-around Requested:          |        |                             |  | Date:                           |  |                             |  |
| ARI Client Company:               |                | Phone:                          |        |                             |  | Page:                           |  | of                          |  |
| Client Contact:                   |                | No. of Coolers: <b>2</b>        |        |                             |  | Cooler Temps: <b>06.19</b>      |  |                             |  |
| Client Project Name:              |                | Analysis Requested              |        |                             |  |                                 |  | Notes/Comments              |  |
| Client Project #:                 |                | Samplers:                       |        |                             |  |                                 |  |                             |  |
| Sample ID                         | Date           | Time                            | Matrix | No. Containers              |  |                                 |  |                             |  |
| <b>12-5-09 15:15</b>              | <b>12-5-09</b> | <b>15:15</b>                    |        | <b>10</b>                   |  |                                 |  |                             |  |
| <b>12:5009 10:20</b>              | <b>12-3-09</b> | <b>10:30</b>                    |        | <b>10</b>                   |  |                                 |  |                             |  |
| Comments/Special Instructions     |                | Relinquished by:<br>(Signature) |        | Received by:<br>(Signature) |  | Relinquished by:<br>(Signature) |  | Received by:<br>(Signature) |  |
|                                   |                | Printed Name:                   |        | Printed Name:               |  | Printed Name:                   |  | Printed Name:               |  |
|                                   |                | Company:                        |        | Company:                    |  | Company:                        |  | Company:                    |  |
|                                   |                | Date & Time:                    |        | Date & Time:                |  | Date & Time:                    |  | Date & Time:                |  |
|                                   |                |                                 |        | <b>12/9/09 9:45</b>         |  |                                 |  |                             |  |

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for paid services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



# Cooler Receipt Form

ARI Client: Western Refinery  
 COC No(s): \_\_\_\_\_ (NA)  
 Assigned ARI Job No: QA64

Project Name: MYPE Project  
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other \_\_\_\_\_  
 Tracking No: 1Z875019 01 4529 8788 NA  
1Z875019 01 4670 3391

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of cooler? YES  NO   
 Were custody papers included with the cooler? ..... YES  NO   
 Were custody papers properly filled out (ink, signed, etc.) ..... YES  NO   
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 0.6 1.9  
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: JP Date: 12/9/09 Time: 9:45

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? ..... YES  NO   
 What kind of packing material was used? ...  Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper Other: \_\_\_\_\_  
 Was sufficient ice used (if appropriate)? ..... NA  YES  NO   
 Were all bottles sealed in individual plastic bags? ..... YES  NO   
 Did all bottles arrive in good condition (unbroken)? ..... YES  NO   
 Were all bottle labels complete and legible? ..... YES  NO   
 Did the number of containers listed on COC match with the number of containers received? ..... YES  NO   
 Did all bottle labels and tags agree with custody papers? ..... YES  NO   
 Were all bottles used correct for the requested analyses? ..... YES  NO   
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES  NO   
 Were all VOC vials free of air bubbles? ..... NA  YES  NO   
 Was sufficient amount of sample sent in each bottle? ..... YES  NO   
 Date VOC Trip Blank was made at ARI..... NA

Samples Logged by: JP Date: 12/9/09 Time: 10:20

**\*\* Notify Project Manager of discrepancies or concerns \*\***

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
|                     |                  |                     |                  |
|                     |                  |                     |                  |
|                     |                  |                     |                  |

**Additional Notes, Discrepancies, & Resolutions:**

The analyses was not written on the chain of custody, 1 vial arrived broken, sample ID is 12/5/09 10:30. A 500ml Amber glass was broken upon arrival, sample ID is 12-4-09 10:30. All other additional notes are on the back of this page.

By: JP Date: 12/9/09

|  |   |  |   |
|--|---|--|---|
| <b>Small Air Bubbles</b><br><small>0.2mm</small><br> | <b>Peabubbles</b><br><small>2-4mm</small><br> | <b>LARGE Air Bubbles</b><br><small>1-4mm</small><br> | Small → "sm"<br>Peabubbles → "pb"<br>Large → "lg"<br>Headspace → "hs" |
|--|---|--|---|



Analytical Resources, Incorporated  
Analytical Chemists and Consultants

# Cooler Receipt Form

ARI Client: Whittier Filtration Western Refinery  
COC No(s): \_\_\_\_\_ (NA)  
Assigned ARI Job No: QA64

Project Name: MPPE Project  
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_  
Tracking No: 1Z 875 019 01 4529 8788 NA  
1Z 875 019 01 4670 3391

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO   
Were custody papers included with the cooler? YES  NO   
Were custody papers properly filled out (ink, signed, etc.) YES  NO   
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 0.6 1.9  
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: JP Date: 12/9/09 Time: 9:45

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES  NO   
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_  
Was sufficient ice used (if appropriate)? NA  YES  NO   
Were all bottles sealed in individual plastic bags? YES  NO   
Did all bottles arrive in good condition (unbroken)? YES  NO   
Were all bottle labels complete and legible? YES  NO   
Did the number of containers listed on COC match with the number of containers received? YES  NO   
Did all bottle labels and tags agree with custody papers? YES  NO   
Were all bottles used correct for the requested analyses? YES  NO   
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA  YES  NO   
Were all VOC vials free of air bubbles? NA  YES  NO   
Was sufficient amount of sample sent in each bottle? YES  NO   
Date VOC Trip Blank was made at ARI..... NA

Samples Logged by: JP Date: 12/9/09 Time: 10:20

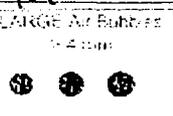
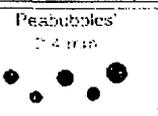
**\*\* Notify Project Manager of discrepancies or concerns \*\***

| Sample ID on Bottle | Sample ID on COC | Sample ID on Bottle | Sample ID on COC |
|---------------------|------------------|---------------------|------------------|
|                     |                  |                     |                  |
|                     |                  |                     |                  |
|                     |                  |                     |                  |

**Additional Notes, Discrepancies, & Resolutions:**

ID's need to be differentiated between Influent and Effluent samples. Analyses was not written on the Chain of Custody.

By: JP Date: 12/9/09



Small → "sm"  
Peabubbles → "pb"  
Large → "lg"  
Headspace → "hs"

All additional notes are on the back of this page.

2nd Cooler Receipt

**QA64: 00006**

# Broken Samples

VOA - 12/5/09 16:30

500ml Amber - 12/4/09 16:30

12/3/09 12:05 Influent = "Pb" + "lg" bubble = "lg" 2 of 2

12/3/09 12:05 Effluent = "Pb" + "lg" bubbles = "lg" 5 of 5

12/3/09 15:00 Influent = "Lg" + "Hs" bubbles = "Hs" 2 of 2

Effluent = "Pb" = 5 of 5

12/3/09 13:30 Influent = "lg" = 2 of 2

Effluent = "lg" = 5 of 5

12/4/09 12:00 Influent = "Pb" = 2 of 2 - no Amber glass

Effluent = "lg" = 5 of 5

12/4/09 14:10 Influent = "lg" = 2 of 2

Effluent = "Pb" = 5 of 5

12/4/09 3:00 Influent = "Hs" = 2 of 2

Effluent = "Pb" = 5 of 5

12/4/09 16:30 Influent = "lg" = 2 of 2 - no Amber glass

Effluent = "lg" to "Hs" 5 of 5 = "lg"

12/5/09 13:35 Influent = "Pb" 1 of 1

Effluent = no bubbles!!

12/5/09 15:15 Influent = "lg" 2 of 2

Effluent = "Pb" = 5 of 5

12/5/09 16:30 Influent = "Hs" = 2 of 2

Effluent = "Hs" + "Pb" 5 of 5 = "Pb"

12/3/09 16:30 Influent = "lg" 2 of 2

Effluent = "Pb" 4 of 4

Sample 12-03-09 12:05 has 9 containers and ~~7~~ out of ~~7~~ voa vials have "Pb".

12-03-09 15:00 has "Sm" bubbles to "Hs" w/ mostly "lg" bubbles in 7 of 7 vials

12-03-09 13:30 has "lg" to "Pb" in 7 of 7 vials w/ mostly "lg" bubbles.

12-04-09-12:00 has "lg" bubbles in 7 of 7 vials

12-4-09 1410 has "lg" bubbles in 7 of 7 vials

12-4-09 3:00 has "lg" bubbles in 7 of 7 vials

12-4-09 16:30 has "lg" bubbles in 7 of 7 vials, but has only 9 samples.

13:35 12-5-09 has a "Pb" in 1 of 7 vials

12-5-09 16:30 has "Pb" in 6 of 6 vials - only 9 container for this sample

12-5-09 1515 has "Pb" in 7 of 7 vials

12-3-09 16:30 has 10 containers and "Sm" to "~~Pb~~" "Hs" sized bubbles in ~~3 of 3~~ vials. in 7 of 7 vials, so I'll call them "lg" bubbles

I am completely missing 12-04-09 16:00.

All voa vials that have Influent in the ID name also have Effluent vials mixed in and also the opposite, all Effluent Sample IDs have influent voa vials mixed in.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: 12-03-09 12:05 Influent  
SAMPLE

Lab Sample ID: QA64A

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30296

Project: MPPE Project

Matrix: Water

Data Release Authorized: 

Date Sampled: 12/03/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 0.0500 mL

Date Analyzed: 12/14/09 15:51

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 5,200  |   |
| 108-88-3    | Toluene      | 100 | 10,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 670    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 2,800  |   |
| 95-47-6     | o-Xylene     | 100 | 1,200  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 99.1% |
| d8-Toluene             | 97.5% |
| Bromofluorobenzene     | 101%  |
| d4-1,2-Dichlorobenzene | 103%  |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12-03-09 12:05 Effluent  
SAMPLE

Lab Sample ID: QA64B

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30297

Project: MPPE Project

Matrix: Water

Data Release Authorized:   
Reported: 12/16/09

Date Sampled: 12/03/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC  
Date Analyzed: 12/15/09 16:06

Sample Amount: 0.500 mL

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL | Result | Q |
|-------------|--------------|----|--------|---|
| 71-43-2     | Benzene      | 10 | < 10   | U |
| 108-88-3    | Toluene      | 10 | < 10   | U |
| 100-41-4    | Ethylbenzene | 10 | < 10   | U |
| 179601-23-1 | m,p-Xylene   | 20 | < 20   | U |
| 95-47-6     | o-Xylene     | 10 | < 10   | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 96.7% |
| d8-Toluene             | 100%  |
| Bromofluorobenzene     | 103%  |
| d4-1,2-Dichlorobenzene | 103%  |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: 12-03-09 15:00 Influent  
SAMPLE

Lab Sample ID: QA64C

LIMS ID: 09-30298

Matrix: Water

Data Release Authorized: *B*

Reported: 12/16/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/14/09 16:40

Sample Amount: 0.0500 mL

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 6,700  |   |
| 108-88-3    | Toluene      | 100 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 690    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,000  |   |
| 95-47-6     | o-Xylene     | 100 | 1,200  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 101%  |
| d8-Toluene             | 99.8% |
| Bromofluorobenzene     | 98.7% |
| d4-1,2-Dichlorobenzene | 103%  |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: 12-03-09 15:00 Effluent

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**SAMPLE**

Lab Sample ID: QA64D

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30299

Project: MPPE Project

Matrix: Water

Data Release Authorized: 

Date Sampled: 12/03/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 0.333 mL

Date Analyzed: 12/15/09 16:31

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL | Result | Q |
|-------------|--------------|----|--------|---|
| 71-43-2     | Benzene      | 15 | < 15   | U |
| 108-88-3    | Toluene      | 15 | < 15   | U |
| 100-41-4    | Ethylbenzene | 15 | < 15   | U |
| 179601-23-1 | m,p-Xylene   | 30 | < 30   | U |
| 95-47-6     | o-Xylene     | 15 | < 15   | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 97.6% |
| d8-Toluene             | 99.4% |
| Bromofluorobenzene     | 104%  |
| d4-1,2-Dichlorobenzene | 101%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12-03-09 13:30 Influent  
SAMPLE

Lab Sample ID: QA64E

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30300

Project: MPPE Project

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 12/03/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 0.0500 mL

Date Analyzed: 12/14/09 17:28

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 6,500  |   |
| 108-88-3    | Toluene      | 100 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 680    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,000  |   |
| 95-47-6     | o-Xylene     | 100 | 1,200  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 102% |
| d8-Toluene             | 100% |
| Bromofluorobenzene     | 101% |
| d4-1,2-Dichlorobenzene | 104% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12-03-09 13:30 Effluent  
SAMPLE

Lab Sample ID: QA64F  
LIMS ID: 09-30301  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/16/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project  
Date Sampled: 12/03/09  
Date Received: 12/09/09

Instrument/Analyst: NT3/PKC  
Date Analyzed: 12/15/09 16:56

Sample Amount: 0.333 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL | Result | Q |
|-------------|--------------|----|--------|---|
| 71-43-2     | Benzene      | 15 | < 15   | U |
| 108-88-3    | Toluene      | 15 | < 15   | U |
| 100-41-4    | Ethylbenzene | 15 | < 15   | U |
| 179601-23-1 | m,p-Xylene   | 30 | < 30   | U |
| 95-47-6     | o-Xylene     | 15 | < 15   | U |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 97.2% |
| d8-Toluene             | 98.5% |
| Bromofluorobenzene     | 103%  |
| d4-1,2-Dichlorobenzene | 101%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: 12-04-09 12:00 Influent  
SAMPLE

Lab Sample ID: QA64G  
LIMS ID: 09-30302  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/16/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

Date Sampled: 12/04/09  
Date Received: 12/09/09

Instrument/Analyst: NT3/PKC  
Date Analyzed: 12/14/09 18:17

Sample Amount: 0.0500 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 6,600  |   |
| 108-88-3    | Toluene      | 100 | 14,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 780    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,600  |   |
| 95-47-6     | o-Xylene     | 100 | 1,400  |   |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 104% |
| d8-Toluene             | 102% |
| Bromofluorobenzene     | 101% |
| d4-1,2-Dichlorobenzene | 102% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: 12-04-09 12:00 Effluent  
SAMPLE

Lab Sample ID: QA64H

LIMS ID: 09-30303

Matrix: Water

Data Release Authorized: 

Reported: 12/16/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Date Analyzed: 12/15/09 17:20

Sample Amount: 1.67 mL

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 3.0 | < 3.0  | U |
| 108-88-3    | Toluene      | 3.0 | < 3.0  | U |
| 100-41-4    | Ethylbenzene | 3.0 | < 3.0  | U |
| 179601-23-1 | m,p-Xylene   | 6.0 | < 6.0  | U |
| 95-47-6     | o-Xylene     | 3.0 | < 3.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 99.1% |
| d8-Toluene             | 99.3% |
| Bromofluorobenzene     | 104%  |
| d4-1,2-Dichlorobenzene | 103%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12-04-09 14:10 Influent  
SAMPLE

Lab Sample ID: QA64I

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30304

Project: MPPE Project

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 12/04/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 0.0500 mL

Date Analyzed: 12/14/09 19:05

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 6,800  |   |
| 108-88-3    | Toluene      | 100 | 15,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 840    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,700  |   |
| 95-47-6     | o-Xylene     | 100 | 1,400  |   |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 104% |
| d8-Toluene             | 100% |
| Bromofluorobenzene     | 101% |
| d4-1,2-Dichlorobenzene | 102% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12-04-09 14:10 Effluent  
SAMPLE

Lab Sample ID: QA64J

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30305

Project: MPPE Project

Matrix: Water

Data Release Authorized: 

Date Sampled: 12/04/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 1.67 mL

Date Analyzed: 12/15/09 17:45

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 3.0 | 6.9    |   |
| 108-88-3    | Toluene      | 3.0 | < 3.0  | U |
| 100-41-4    | Ethylbenzene | 3.0 | < 3.0  | U |
| 179601-23-1 | m,p-Xylene   | 6.0 | < 6.0  | U |
| 95-47-6     | o-Xylene     | 3.0 | < 3.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 99.3% |
| d8-Toluene             | 100%  |
| Bromofluorobenzene     | 103%  |
| d4-1,2-Dichlorobenzene | 102%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12-04-09 3:00 In  
SAMPLE

Lab Sample ID: QA64K  
LIMS ID: 09-30306  
Matrix: Water  
Data Release Authorized:   
Reported: 12/16/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

Date Sampled: 12/04/09  
Date Received: 12/09/09

Instrument/Analyst: NT3/PKC  
Date Analyzed: 12/14/09 19:54

Sample Amount: 0.0500 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 8,400  |   |
| 108-88-3    | Toluene      | 100 | 18,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 1,000  |   |
| 179601-23-1 | m,p-Xylene   | 200 | 4,600  |   |
| 95-47-6     | o-Xylene     | 100 | 1,600  |   |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 106%  |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 98.8% |
| d4-1,2-Dichlorobenzene | 103%  |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: 12/04/09 3:00 Out

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**SAMPLE**

Lab Sample ID: QA64L

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30316

Project: MPPE Project

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: 12/04/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 1.67 mL

Date Analyzed: 12/15/09 18:09

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 3.0 | < 3.0  | U |
| 108-88-3    | Toluene      | 3.0 | < 3.0  | U |
| 100-41-4    | Ethylbenzene | 3.0 | < 3.0  | U |
| 179601-23-1 | m,p-Xylene   | 6.0 | < 6.0  | U |
| 95-47-6     | o-Xylene     | 3.0 | < 3.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 97.5% |
| d8-Toluene             | 99.1% |
| Bromofluorobenzene     | 103%  |
| d4-1,2-Dichlorobenzene | 102%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12/04/09 16:30 In  
SAMPLE

Lab Sample ID: QA64M  
LIMS ID: 09-30317  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/16/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

Date Sampled: 12/04/09  
Date Received: 12/09/09

Instrument/Analyst: NT3/PKC  
Date Analyzed: 12/14/09 20:43

Sample Amount: 0.0500 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 8,100  |   |
| 108-88-3    | Toluene      | 100 | 17,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 960    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 4,600  |   |
| 95-47-6     | o-Xylene     | 100 | 1,600  |   |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |      |
|------------------------|------|
| d4-1,2-Dichloroethane  | 107% |
| d8-Toluene             | 101% |
| Bromofluorobenzene     | 100% |
| d4-1,2-Dichlorobenzene | 104% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12/04/09 16:30 Out  
SAMPLE

Lab Sample ID: QA64N

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30318

Project: MPPE Project

Matrix: Water

Data Release Authorized: 

Date Sampled: 12/04/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 1.67 mL

Date Analyzed: 12/15/09 18:33

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 3.0 | 18     |   |
| 108-88-3    | Toluene      | 3.0 | < 3.0  | U |
| 100-41-4    | Ethylbenzene | 3.0 | < 3.0  | U |
| 179601-23-1 | m,p-Xylene   | 6.0 | < 6.0  | U |
| 95-47-6     | o-Xylene     | 3.0 | < 3.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 96.4% |
| d8-Toluene             | 98.1% |
| Bromofluorobenzene     | 103%  |
| d4-1,2-Dichlorobenzene | 101%  |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12/05/09 13:35 Influent  
SAMPLE

Lab Sample ID: QA640

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30319

Project: MPPE Project

Matrix: Water

Data Release Authorized: 

Date Sampled: 12/05/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 0.0500 mL

Date Analyzed: 12/15/09 13:39

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 4,600  |   |
| 108-88-3    | Toluene      | 100 | 10,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 770    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,200  |   |
| 95-47-6     | o-Xylene     | 100 | 1,300  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 96.6% |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 105%  |
| d4-1,2-Dichlorobenzene | 102%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
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Sample ID: 12/05/09 13:35 Effluent  
SAMPLE

Lab Sample ID: QA64P  
LIMS ID: 09-30320  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 12/16/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

Date Sampled: 12/05/09  
Date Received: 12/09/09

Instrument/Analyst: NT3/PKC  
Date Analyzed: 12/15/09 18:58

Sample Amount: 1.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 5.0 | < 5.0  | U |
| 108-88-3    | Toluene      | 5.0 | < 5.0  | U |
| 100-41-4    | Ethylbenzene | 5.0 | < 5.0  | U |
| 179601-23-1 | m,p-Xylene   | 10  | < 10   | U |
| 95-47-6     | o-Xylene     | 5.0 | < 5.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 96.9% |
| d8-Toluene             | 98.3% |
| Bromofluorobenzene     | 102%  |
| d4-1,2-Dichlorobenzene | 99.8% |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: 12/05/09 15:15 Influent  
SAMPLE

Lab Sample ID: QA64Q

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30321

Project: MPPE Project

Matrix: Water

Data Release Authorized: 

Date Sampled: 12/05/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 0.0500 mL

Date Analyzed: 12/15/09 14:27

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 6,000  |   |
| 108-88-3    | Toluene      | 100 | 12,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 870    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 4,000  |   |
| 95-47-6     | o-Xylene     | 100 | 1,600  |   |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 95.8% |
| d8-Toluene             | 101%  |
| Bromofluorobenzene     | 104%  |
| d4-1,2-Dichlorobenzene | 103%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: 12/05/09 15:15 Effluent  
SAMPLE

Lab Sample ID: QA64R

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30322

Project: MPPE Project

Matrix: Water

Data Release Authorized: *AB*

Date Sampled: 12/05/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 0.500 mL

Date Analyzed: 12/15/09 19:22

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL | Result | Q |
|-------------|--------------|----|--------|---|
| 71-43-2     | Benzene      | 10 | < 10   | U |
| 108-88-3    | Toluene      | 10 | < 10   | U |
| 100-41-4    | Ethylbenzene | 10 | < 10   | U |
| 179601-23-1 | m,p-Xylene   | 20 | < 20   | U |
| 95-47-6     | o-Xylene     | 10 | < 10   | U |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 97.4% |
| d8-Toluene             | 100%  |
| Bromofluorobenzene     | 102%  |
| d4-1,2-Dichlorobenzene | 99.9% |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: 12/05/09 16:30 Influent  
SAMPLE

Lab Sample ID: QA64S  
LIMS ID: 09-30323  
Matrix: Water  
Data Release Authorized: *B*  
Reported: 12/16/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

Date Sampled: 12/05/09  
Date Received: 12/09/09

Instrument/Analyst: NT3/PKC  
Date Analyzed: 12/15/09 15:17

Sample Amount: 0.0500 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 100 | 6,000  |   |
| 108-88-3    | Toluene      | 100 | 11,000 |   |
| 100-41-4    | Ethylbenzene | 100 | 700    |   |
| 179601-23-1 | m,p-Xylene   | 200 | 3,000  |   |
| 95-47-6     | o-Xylene     | 100 | 1,300  |   |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 97.5% |
| d8-Toluene             | 99.9% |
| Bromofluorobenzene     | 104%  |
| d4-1,2-Dichlorobenzene | 103%  |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: 12/05/09 16:30 Effluent  
SAMPLE

Lab Sample ID: QA64T

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30324

Project: MPPE Project

Matrix: Water

Data Release Authorized: *AB*

Date Sampled: 12/05/09

Reported: 12/16/09

Date Received: 12/09/09

Instrument/Analyst: NT3/PKC

Sample Amount: 0.500 mL

Date Analyzed: 12/15/09 19:46

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL | Result | Q |
|-------------|--------------|----|--------|---|
| 71-43-2     | Benzene      | 10 | < 10   | U |
| 108-88-3    | Toluene      | 10 | < 10   | U |
| 100-41-4    | Ethylbenzene | 10 | < 10   | U |
| 179601-23-1 | m,p-Xylene   | 20 | < 20   | U |
| 95-47-6     | o-Xylene     | 10 | < 10   | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 96.6% |
| d8-Toluene             | 99.7% |
| Bromofluorobenzene     | 102%  |
| d4-1,2-Dichlorobenzene | 102%  |

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

| ARI ID      | Client ID               | PV | DCE   | TOL   | BFB   | DCB   | TOT OUT |
|-------------|-------------------------|----|-------|-------|-------|-------|---------|
| MB-121409   | Method Blank            | 5  | 99.3% | 100%  | 99.0% | 102%  | 0       |
| LCS-121409  | Lab Control             | 5  | 96.5% | 104%  | 99.7% | 100%  | 0       |
| LCSD-121409 | Lab Control Dup         | 5  | 98.6% | 103%  | 98.9% | 102%  | 0       |
| QA64A       | 12-03-09 12:05 Influent | 5  | 99.1% | 97.5% | 101%  | 103%  | 0       |
| MB-121509   | Method Blank            | 5  | 96.6% | 102%  | 106%  | 102%  | 0       |
| LCS-121509  | Lab Control             | 5  | 96.8% | 103%  | 102%  | 101%  | 0       |
| LCSD-121509 | Lab Control Dup         | 5  | 97.7% | 106%  | 104%  | 102%  | 0       |
| QA64B       | 12-03-09 12:05 Effluent | 5  | 96.7% | 100%  | 103%  | 103%  | 0       |
| QA64C       | 12-03-09 15:00 Influent | 5  | 101%  | 99.8% | 98.7% | 103%  | 0       |
| QA64D       | 12-03-09 15:00 Effluent | 5  | 97.6% | 99.4% | 104%  | 101%  | 0       |
| QA64E       | 12-03-09 13:30 Influent | 5  | 102%  | 100%  | 101%  | 104%  | 0       |
| QA64F       | 12-03-09 13:30 Effluent | 5  | 97.2% | 98.5% | 103%  | 101%  | 0       |
| QA64G       | 12-04-09 12:00 Influent | 5  | 104%  | 102%  | 101%  | 102%  | 0       |
| QA64H       | 12-04-09 12:00 Effluent | 5  | 99.1% | 99.3% | 104%  | 103%  | 0       |
| QA64I       | 12-04-09 14:10 Influent | 5  | 104%  | 100%  | 101%  | 102%  | 0       |
| QA64J       | 12-04-09 14:10 Effluent | 5  | 99.3% | 100%  | 103%  | 102%  | 0       |
| QA64K       | 12-04-09 3:00 In        | 5  | 106%  | 102%  | 98.8% | 103%  | 0       |
| QA64L       | 12/04/09 3:00 Out       | 5  | 97.5% | 99.1% | 103%  | 102%  | 0       |
| QA64M       | 12/04/09 16:30 In       | 5  | 107%  | 101%  | 100%  | 104%  | 0       |
| QA64N       | 12/04/09 16:30 Out      | 5  | 96.4% | 98.1% | 103%  | 101%  | 0       |
| QA64O       | 12/05/09 13:35 Influent | 5  | 96.6% | 102%  | 105%  | 102%  | 0       |
| QA64P       | 12/05/09 13:35 Effluent | 5  | 96.9% | 98.3% | 102%  | 99.8% | 0       |
| QA64Q       | 12/05/09 15:15 Influent | 5  | 95.8% | 101%  | 104%  | 103%  | 0       |
| QA64R       | 12/05/09 15:15 Effluent | 5  | 97.4% | 100%  | 102%  | 99.9% | 0       |
| QA64S       | 12/05/09 16:30 Influent | 5  | 97.5% | 99.9% | 104%  | 103%  | 0       |
| QA64T       | 12/05/09 16:30 Effluent | 5  | 96.6% | 99.7% | 102%  | 102%  | 0       |

LCS/MB LIMITS

QC LIMITS

SW8260C

(DCE) = d4-1,2-Dichloroethane  
(TOL) = d8-Toluene  
(BFB) = Bromofluorobenzene  
(DCB) = d4-1,2-Dichlorobenzene

83-122  
80-120  
80-120  
80-120

80-125  
80-120  
80-120  
80-120

Prep Method: SW5030B  
Log Number Range: 09-30296 to 09-30324

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-121409

Page 1 of 1

LAB CONTROL SAMPLE

Lab Sample ID: LCS-121409

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30296

Project: MPPE Project

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: NA

Reported: 12/16/09

Date Received: NA

Instrument/Analyst LCS: NT3/PKC

Sample Amount LCS: 5.00 mL

LCSID: NT3/PKC

LCSID: 5.00 mL

Date Analyzed LCS: 12/14/09 14:31

Purge Volume LCS: 5.0 mL

LCSID: 12/14/09 14:55

LCSID: 5.0 mL

| Analyte      | LCS  | Spike<br>Added-LCS | LCS<br>Recovery | LCSID | Spike<br>Added-LCSID | LCSID<br>Recovery | RPD  |
|--------------|------|--------------------|-----------------|-------|----------------------|-------------------|------|
|              |      |                    |                 |       |                      |                   |      |
| Benzene      | 53.4 | 50.0               | 107%            | 56.2  | 50.0                 | 112%              | 5.1% |
| Toluene      | 57.6 | 50.0               | 115%            | 60.6  | 50.0                 | 121%              | 5.1% |
| Ethylbenzene | 55.6 | 50.0               | 111%            | 58.2  | 50.0                 | 116%              | 4.6% |
| m,p-Xylene   | 114  | 100                | 114%            | 117   | 100                  | 117%              | 2.6% |
| o-Xylene     | 56.8 | 50.0               | 114%            | 58.2  | 50.0                 | 116%              | 2.4% |

Reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.

**Volatile Surrogate Recovery**

|                        | LCS   | LCSID |
|------------------------|-------|-------|
| d4-1,2-Dichloroethane  | 96.5% | 98.6% |
| d8-Toluene             | 104%  | 103%  |
| Bromofluorobenzene     | 99.7% | 98.9% |
| d4-1,2-Dichlorobenzene | 100%  | 102%  |

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-121509**

Page 1 of 1

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-121509

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30297

Project: MPPE Project

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: NA

Reported: 12/16/09

Date Received: NA

Instrument/Analyst LCS: NT3/PKC

Sample Amount LCS: 5.00 mL

LCS: NT3/PKC

LCS: 5.00 mL

Date Analyzed LCS: 12/15/09 11:27

Purge Volume LCS: 5.0 mL

LCS: 12/15/09 11:52

LCS: 5.0 mL

| Analyte      | LCS  | Spike     | LCS      | LCS  | Spike     | LCS      | RPD  |
|--------------|------|-----------|----------|------|-----------|----------|------|
|              |      | Added-LCS | Recovery |      | Added-LCS | Recovery |      |
| Benzene      | 52.0 | 50.0      | 104%     | 52.9 | 50.0      | 106%     | 1.7% |
| Toluene      | 51.4 | 50.0      | 103%     | 54.7 | 50.0      | 109%     | 6.2% |
| Ethylbenzene | 53.6 | 50.0      | 107%     | 54.1 | 50.0      | 108%     | 0.9% |
| m,p-Xylene   | 107  | 100       | 107%     | 111  | 100       | 111%     | 3.7% |
| o-Xylene     | 52.7 | 50.0      | 105%     | 54.4 | 50.0      | 109%     | 3.2% |

Reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.

**Volatile Surrogate Recovery**

|                        | LCS   | LCS   |
|------------------------|-------|-------|
| d4-1,2-Dichloroethane  | 96.8% | 97.7% |
| d8-Toluene             | 103%  | 106%  |
| Bromofluorobenzene     | 102%  | 104%  |
| d4-1,2-Dichlorobenzene | 101%  | 102%  |

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: MB-121409  
METHOD BLANK

Lab Sample ID: MB-121409

QC Report No: QA64-Whittier Filtration

LIMS ID: 09-30296

Project: MPPE Project

Matrix: Water

Data Release Authorized: *[Signature]*

Date Sampled: NA

Reported: 12/16/09

Date Received: NA

Instrument/Analyst: NT3/PKC

Sample Amount: 5.00 mL

Date Analyzed: 12/14/09 15:20

Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | < 1.0  | U |
| 108-88-3    | Toluene      | 1.0 | < 1.0  | U |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in  $\mu\text{g/L}$  (ppb)

**Volatile Surrogate Recovery**

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 99.3% |
| d8-Toluene             | 100%  |
| Bromofluorobenzene     | 99.0% |
| d4-1,2-Dichlorobenzene | 102%  |



ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C  
Page 1 of 1

Sample ID: MB-121509  
METHOD BLANK

Lab Sample ID: MB-121509  
LIMS ID: 09-30297  
Matrix: Water  
Data Release Authorized:   
Reported: 12/16/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

Date Sampled: NA  
Date Received: NA

Instrument/Analyst: NT3/PKC  
Date Analyzed: 12/15/09 12:16

Sample Amount: 5.00 mL  
Purge Volume: 5.0 mL

| CAS Number  | Analyte      | RL  | Result | Q |
|-------------|--------------|-----|--------|---|
| 71-43-2     | Benzene      | 1.0 | < 1.0  | U |
| 108-88-3    | Toluene      | 1.0 | < 1.0  | U |
| 100-41-4    | Ethylbenzene | 1.0 | < 1.0  | U |
| 179601-23-1 | m,p-Xylene   | 2.0 | < 2.0  | U |
| 95-47-6     | o-Xylene     | 1.0 | < 1.0  | U |

Reported in µg/L (ppb)

Volatile Surrogate Recovery

|                        |       |
|------------------------|-------|
| d4-1,2-Dichloroethane  | 96.6% |
| d8-Toluene             | 102%  |
| Bromofluorobenzene     | 106%  |
| d4-1,2-Dichlorobenzene | 102%  |

**ORGANICS ANALYSIS DATA SHEET**  
**VPH by Method WA VPH**  
 Page 1 of 1

**Sample ID: 12-03-09 12:05 Influent**  
**SAMPLE**

Lab Sample ID: QA64A  
 LIMS ID: 09-30296  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project

Date Sampled: 12/03/09  
 Date Received: 12/09/09

Date Analyzed: 12/16/09 22:12  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 5,700   |
| 108-88-3    | Toluene                 | 500  | 10,000  |
| 100-41-4    | Ethylbenzene            | 500  | 670     |
| 179601-23-1 | m,p-Xylene              | 1000 | 2,800   |
| 95-47-6     | o-Xylene                | 500  | 1,200   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 930     |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 7,900     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | 5,300     |
| C6-C8 Aliphatics   | 5,000 | 6,200     |
| C8-C10 Aliphatics  | 5,000 | 20,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 90.0% |
| FID: 2,5-Dibromotoluene | 88.2% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-03-09 12:05 Effluent

SAMPLE

Lab Sample ID: QA64B

LIMS ID: 09-30297

Matrix: Water

Data Release Authorized:

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Analyzed: 12/16/09 22:46

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | 1,100   |
| 110-54-3    | n-Hexane                | 5.0 | 16      |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 1,700  |
| C6-C8 Aliphatics   | 50 | 310    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 98.2% |
| FID: 2,5-Dibromotoluene | 96.0% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-03-09 15:00 Influent

**SAMPLE**

Lab Sample ID: QA64C

LIMS ID: 09-30298

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Analyzed: 12/16/09 23:19

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 6,600   |
| 108-88-3    | Toluene                 | 500  | 12,000  |
| 100-41-4    | Ethylbenzene            | 500  | 700     |
| 179601-23-1 | m,p-Xylene              | 1000 | 2,900   |
| 95-47-6     | o-Xylene                | 500  | 1,200   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 36,000  |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 8,000     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | 46,000    |
| C6-C8 Aliphatics   | 5,000 | 9,000     |
| C8-C10 Aliphatics  | 5,000 | 20,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 90.0% |
| FID: 2,5-Dibromotoluene | 87.0% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-03-09 15:00 Effluent

**SAMPLE**

Lab Sample ID: QA64D

LIMS ID: 09-30299

Matrix: Water

Data Release Authorized:

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Analyzed: 12/16/09 23:53

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number      | Analyte                 | RL         | Result    |
|-----------------|-------------------------|------------|-----------|
| 71-43-2         | Benzene                 | 5.0        | < 5.0 U   |
| 108-88-3        | Toluene                 | 5.0        | < 5.0 U   |
| 100-41-4        | Ethylbenzene            | 5.0        | < 5.0 U   |
| 179601-23-1     | m,p-Xylene              | 10         | < 10 U    |
| 95-47-6         | o-Xylene                | 5.0        | < 5.0 U   |
| 1634-04-4       | Methyl tert-Butyl Ether | 5.0        | < 5.0 U   |
| 109-66-0        | n-Pentane               | 5.0        | < 5.0 U   |
| <b>110-54-3</b> | <b>n-Hexane</b>         | <b>5.0</b> | <b>25</b> |
| 111-65-9        | n-Octane                | 5.0        | < 5.0 U   |
| 124-18-5        | n-Decane                | 5.0        | < 5.0 U   |
| 112-40-3        | n-Dodecane              | 5.0        | < 5.0 U   |

| Range                   | RL        | Result       |
|-------------------------|-----------|--------------|
| C8-C10 Aromatics        | 50        | < 50 U       |
| C10-C12 Aromatics       | 50        | < 50 U       |
| C12-C13 Aromatics       | 50        | < 50 U       |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>1,800</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>360</b>   |
| C8-C10 Aliphatics       | 50        | < 50 U       |
| C10-C12 Aliphatics      | 50        | < 50 U       |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 96.2% |
| FID: 2,5-Dibromotoluene | 96.0% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-03-09 13:30 Influent

**SAMPLE**

Lab Sample ID: QA64E

LIMS ID: 09-30300

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 00:26

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 6,800   |
| 108-88-3    | Toluene                 | 500  | 12,000  |
| 100-41-4    | Ethylbenzene            | 500  | 690     |
| 179601-23-1 | m,p-Xylene              | 1000 | 2,900   |
| 95-47-6     | o-Xylene                | 500  | 1,200   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 35,000  |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 8,200     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | 45,000    |
| C6-C8 Aliphatics   | 5,000 | 9,100     |
| C8-C10 Aliphatics  | 5,000 | 21,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 85.6% |
| FID: 2,5-Dibromotoluene | 84.8% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-03-09 13:30 Effluent

SAMPLE

Lab Sample ID: QA64F

LIMS ID: 09-30301

Matrix: Water

Data Release Authorized: 

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 00:59

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 6.1     |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | 2,000   |
| 110-54-3    | n-Hexane                | 5.0 | 29      |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 2,700  |
| C6-C8 Aliphatics   | 50 | 410    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 95.6% |
| FID: 2,5-Dibromotoluene | 92.8% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-04-09 12:00 Influent  
SAMPLE

Lab Sample ID: QA64G

LIMS ID: 09-30302

Matrix: Water

Data Release Authorized: *AS*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 14:26

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 6,900   |
| 108-88-3    | Toluene                 | 500  | 14,000  |
| 100-41-4    | Ethylbenzene            | 500  | 810     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,500   |
| 95-47-6     | o-Xylene                | 500  | 1,300   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 2,800   |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 9,000     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | 5,700     |
| C6-C8 Aliphatics   | 5,000 | 7,800     |
| C8-C10 Aliphatics  | 5,000 | 26,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 93.8% |
| FID: 2,5-Dibromotoluene | 91.0% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-04-09 12:00 Effluent  
SAMPLE

Lab Sample ID: QA64H

LIMS ID: 09-30303

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Date Analyzed: 12/18/09 20:24

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 5.1     |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 6.8     |
| 109-66-0    | n-Pentane               | 5.0 | 97      |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | 8.0     |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 390    |
| C6-C8 Aliphatics   | 50 | 59     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 136% |
| FID: 2,5-Dibromotoluene | 115% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-04-09 14:10 Influent

**SAMPLE**

Lab Sample ID: QA64I

LIMS ID: 09-30304

Matrix: Water

Data Release Authorized: *SB*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 14:59

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 6,800   |
| 108-88-3    | Toluene                 | 500  | 14,000  |
| 100-41-4    | Ethylbenzene            | 500  | 820     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,500   |
| 95-47-6     | o-Xylene                | 500  | 1,300   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 1,500   |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 9,000     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | 7,700     |
| C8-C10 Aliphatics  | 5,000 | 26,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 87.2% |
| FID: 2,5-Dibromotoluene | 84.6% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-04-09 14:10 Effluent  
SAMPLE

Lab Sample ID: QA64J

LIMS ID: 09-30305

Matrix: Water

Data Release Authorized: *B*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Date Analyzed: 12/18/09 20:55

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 12      |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 5.0     |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 450    |
| C6-C8 Aliphatics   | 50 | 83     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 134% |
| FID: 2,5-Dibromotoluene | 108% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12-04-09 3:00 In

**SAMPLE**

Lab Sample ID: QA64K

LIMS ID: 09-30306

Matrix: Water

Data Release Authorized: 

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 15:33

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 8,200   |
| 108-88-3    | Toluene                 | 500  | 17,000  |
| 100-41-4    | Ethylbenzene            | 500  | 950     |
| 179601-23-1 | m,p-Xylene              | 1000 | 4,200   |
| 95-47-6     | o-Xylene                | 500  | 1,500   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 1,400   |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 11,000    |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | 12,000    |
| C8-C10 Aliphatics  | 5,000 | 30,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 85.8% |
| FID: 2,5-Dibromotoluene | 84.4% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12/04/09 3:00 Out

SAMPLE

Lab Sample ID: QA64L

LIMS ID: 09-30316

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Date Analyzed: 12/18/09 21:27

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 5.0     |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | 7.9     |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 570    |
| C6-C8 Aliphatics   | 50 | 58     |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 131% |
| FID: 2,5-Dibromotoluene | 116% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: 12/04/09 16:30 In  
 SAMPLE

Lab Sample ID: QA64M  
 LIMS ID: 09-30317  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/04/09  
 Date Received: 12/09/09

Date Analyzed: 12/17/09 16:06  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 8,400   |
| 108-88-3    | Toluene                 | 500  | 17,000  |
| 100-41-4    | Ethylbenzene            | 500  | 1,000   |
| 179601-23-1 | m,p-Xylene              | 1000 | 4,600   |
| 95-47-6     | o-Xylene                | 500  | 1,700   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 1,100   |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 12,000    |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | 13,000    |
| C8-C10 Aliphatics  | 5,000 | 30,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 90.6% |
| FID: 2,5-Dibromotoluene | 87.4% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12/04/09 16:30 Out

**SAMPLE**

Lab Sample ID: QA64N

LIMS ID: 09-30318

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Date Analyzed: 12/18/09 21:58

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 28      |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 6.3     |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | 5.5     |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | 9.1     |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | 52     |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 420    |
| C6-C8 Aliphatics   | 50 | 110    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |      |
|-------------------------|------|
| PID: 2,5-Dibromotoluene | 137% |
| FID: 2,5-Dibromotoluene | 113% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12/05/09 13:35 Influent  
SAMPLE

Lab Sample ID: QA640

LIMS ID: 09-30319

Matrix: Water

Data Release Authorized: 

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/05/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 16:40

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 4,500   |
| 108-88-3    | Toluene                 | 500  | 9,900   |
| 100-41-4    | Ethylbenzene            | 500  | 760     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,100   |
| 95-47-6     | o-Xylene                | 500  | 1,300   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 1,400   |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 8,700     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | 6,300     |
| C6-C8 Aliphatics   | 5,000 | 5,700     |
| C8-C10 Aliphatics  | 5,000 | 18,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 86.0% |
| FID: 2,5-Dibromotoluene | 81.6% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12/05/09 13:35 Effluent

SAMPLE

Lab Sample ID: QA64P

LIMS ID: 09-30320

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/05/09

Date Received: 12/09/09

Date Analyzed: 12/18/09 22:30

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number       | Analyte                        | RL         | Result     |
|------------------|--------------------------------|------------|------------|
| 71-43-2          | Benzene                        | 5.0        | < 5.0 U    |
| 108-88-3         | Toluene                        | 5.0        | < 5.0 U    |
| 100-41-4         | Ethylbenzene                   | 5.0        | < 5.0 U    |
| 179601-23-1      | m,p-Xylene                     | 10         | < 10 U     |
| 95-47-6          | o-Xylene                       | 5.0        | < 5.0 U    |
| <b>1634-04-4</b> | <b>Methyl tert-Butyl Ether</b> | <b>5.0</b> | <b>6.5</b> |
| 109-66-0         | n-Pentane                      | 5.0        | < 5.0 U    |
| <b>110-54-3</b>  | <b>n-Hexane</b>                | <b>5.0</b> | <b>18</b>  |
| 111-65-9         | n-Octane                       | 5.0        | < 5.0 U    |
| 124-18-5         | n-Decane                       | 5.0        | < 5.0 U    |
| 112-40-3         | n-Dodecane                     | 5.0        | < 5.0 U    |

| Range                   | RL        | Result     |
|-------------------------|-----------|------------|
| C8-C10 Aromatics        | 50        | < 50 U     |
| C10-C12 Aromatics       | 50        | < 50 U     |
| C12-C13 Aromatics       | 50        | < 50 U     |
| <b>C5-C6 Aliphatics</b> | <b>50</b> | <b>580</b> |
| <b>C6-C8 Aliphatics</b> | <b>50</b> | <b>150</b> |
| C8-C10 Aliphatics       | 50        | < 50 U     |
| C10-C12 Aliphatics      | 50        | < 50 U     |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 111%  |
| FID: 2,5-Dibromotoluene | 82.8% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: 12/05/09 15:15 Influent

SAMPLE

Lab Sample ID: QA64Q

LIMS ID: 09-30321

Matrix: Water

Data Release Authorized: *AB*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/05/09

Date Received: 12/09/09

Date Analyzed: 12/17/09 17:13

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 6,000   |
| 108-88-3    | Toluene                 | 500  | 12,000  |
| 100-41-4    | Ethylbenzene            | 500  | 870     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,900   |
| 95-47-6     | o-Xylene                | 500  | 1,600   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 1,100   |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 11,000    |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | 5,400     |
| C6-C8 Aliphatics   | 5,000 | 7,800     |
| C8-C10 Aliphatics  | 5,000 | 21,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 91.4% |
| FID: 2,5-Dibromotoluene | 87.8% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: 12/05/09 15:15 Effluent  
 SAMPLE

Lab Sample ID: QA64R  
 LIMS ID: 09-30322  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/05/09  
 Date Received: 12/09/09

Date Analyzed: 12/18/09 23:01  
 Instrument/Analyst: PID1/MH  
 Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 7.9     |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | 14      |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | 62     |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 750    |
| C6-C8 Aliphatics   | 50 | 220    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 114%  |
| FID: 2,5-Dibromotoluene | 80.8% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: 12/05/09 16:30 Influent  
 SAMPLE

Lab Sample ID: QA64S  
 LIMS ID: 09-30323  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/05/09  
 Date Received: 12/09/09

Date Analyzed: 12/17/09 17:46  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 100

| CAS Number  | Analyte                 | RL   | Result  |
|-------------|-------------------------|------|---------|
| 71-43-2     | Benzene                 | 500  | 6,200   |
| 108-88-3    | Toluene                 | 500  | 11,000  |
| 100-41-4    | Ethylbenzene            | 500  | 710     |
| 179601-23-1 | m,p-Xylene              | 1000 | 3,000   |
| 95-47-6     | o-Xylene                | 500  | 1,200   |
| 1634-04-4   | Methyl tert-Butyl Ether | 500  | < 500 U |
| 109-66-0    | n-Pentane               | 500  | 520     |
| 110-54-3    | n-Hexane                | 500  | < 500 U |
| 111-65-9    | n-Octane                | 500  | < 500 U |
| 124-18-5    | n-Decane                | 500  | < 500 U |
| 112-40-3    | n-Dodecane              | 500  | < 500 U |

| Range              | RL    | Result    |
|--------------------|-------|-----------|
| C8-C10 Aromatics   | 5,000 | 8,400     |
| C10-C12 Aromatics  | 5,000 | < 5,000 U |
| C12-C13 Aromatics  | 5,000 | < 5,000 U |
| C5-C6 Aliphatics   | 5,000 | < 5,000 U |
| C6-C8 Aliphatics   | 5,000 | 7,000     |
| C8-C10 Aliphatics  | 5,000 | 20,000    |
| C10-C12 Aliphatics | 5,000 | < 5,000 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 87.6% |
| FID: 2,5-Dibromotoluene | 84.6% |



ORGANICS ANALYSIS DATA SHEET  
 VPH by Method WA VPH  
 Page 1 of 1

Sample ID: 12/05/09 16:30 Effluent  
 SAMPLE

Lab Sample ID: QA64T  
 LIMS ID: 09-30324  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/05/09  
 Date Received: 12/09/09

Date Analyzed: 12/18/09 23:33  
 Instrument/Analyst: PID1/MH

Purge Volume: 10 mL  
 Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | 13      |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | 23      |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | 19      |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | 76     |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | 1,000  |
| C6-C8 Aliphatics   | 50 | 400    |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 123%  |
| FID: 2,5-Dibromotoluene | 84.8% |

**VPH SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

| <u>ARI ID</u> | <u>Client ID</u>        | <u>PDBT</u> | <u>FDBT TOT</u> | <u>OUT</u> |
|---------------|-------------------------|-------------|-----------------|------------|
| MB-121609     | Method Blank            | 91.2%       | 90.0%           | 0          |
| LCS-121609    | Lab Control             | 97.0%       | 96.0%           | 0          |
| LCSD-121609   | Lab Control Dup         | 101%        | 101%            | 0          |
| QA64A         | 12-03-09 12:05 Influent | 90.0%       | 88.2%           | 0          |
| QA64B         | 12-03-09 12:05 Effluent | 98.2%       | 96.0%           | 0          |
| QA64C         | 12-03-09 15:00 Influent | 90.0%       | 87.0%           | 0          |
| QA64D         | 12-03-09 15:00 Effluent | 96.2%       | 96.0%           | 0          |
| QA64E         | 12-03-09 13:30 Influent | 85.6%       | 84.8%           | 0          |
| QA64F         | 12-03-09 13:30 Effluent | 95.6%       | 92.8%           | 0          |
| MB-121709     | Method Blank            | 95.2%       | 91.8%           | 0          |
| LCS-121709    | Lab Control             | 103%        | 99.2%           | 0          |
| LCSD-121709   | Lab Control Dup         | 112%        | 108%            | 0          |
| QA64G         | 12-04-09 12:00 Influent | 93.8%       | 91.0%           | 0          |
| MB-121809     | Method Blank            | 112%        | 90.0%           | 0          |
| LCS-121809    | Lab Control             | 113%        | 95.2%           | 0          |
| LCSD-121809   | Lab Control Dup         | 115%        | 97.0%           | 0          |
| QA64H         | 12-04-09 12:00 Effluent | 136%        | 115%            | 0          |
| QA64I         | 12-04-09 14:10 Influent | 87.2%       | 84.6%           | 0          |
| QA64J         | 12-04-09 14:10 Effluent | 134%        | 108%            | 0          |
| QA64K         | 12-04-09 3:00 In        | 85.8%       | 84.4%           | 0          |
| QA64L         | 12/04/09 3:00 Out       | 131%        | 116%            | 0          |
| QA64M         | 12/04/09 16:30 In       | 90.6%       | 87.4%           | 0          |
| QA64N         | 12/04/09 16:30 Out      | 137%        | 113%            | 0          |
| QA64O         | 12/05/09 13:35 Influent | 86.0%       | 81.6%           | 0          |
| QA64P         | 12/05/09 13:35 Effluent | 111%        | 82.8%           | 0          |
| QA64Q         | 12/05/09 15:15 Influent | 91.4%       | 87.8%           | 0          |
| QA64R         | 12/05/09 15:15 Effluent | 114%        | 80.8%           | 0          |
| QA64S         | 12/05/09 16:30 Influent | 87.6%       | 84.6%           | 0          |
| QA64T         | 12/05/09 16:30 Effluent | 123%        | 84.8%           | 0          |

**LCS/MB LIMITS      QC LIMITS**

(PDBT) = 2,5-Dibromotoluene      (60-140)      (60-140)  
(FDBT) = 2,5-Dibromotoluene      (60-140)      (60-140)

Prep Method: METHOD  
Log Number Range: 09-30296 to 09-30324



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: LCS-121609

LCS/LCSD

Lab Sample ID: LCS-121609

LIMS ID: 09-30296

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/16/09 19:58

Date Analyzed LCSD: 12/16/09 21:39

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| Analyte/Range           | LCS  |                 |              | LCSD |                  |               | RPD  |
|-------------------------|------|-----------------|--------------|------|------------------|---------------|------|
|                         | LCS  | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery |      |
| Benzene                 | 50.5 | 50.0            | 101%         | 50.9 | 50.0             | 102%          | 0.8% |
| Toluene                 | 50.6 | 50.0            | 101%         | 50.9 | 50.0             | 102%          | 0.6% |
| Ethylbenzene            | 51.0 | 50.0            | 102%         | 51.3 | 50.0             | 103%          | 0.6% |
| m,p-Xylene              | 102  | 100             | 102%         | 104  | 100              | 104%          | 1.9% |
| o-Xylene                | 50.9 | 50.0            | 102%         | 51.1 | 50.0             | 102%          | 0.4% |
| Methyl tert-Butyl Ether | 48.4 | 50.0            | 96.8%        | 47.3 | 50.0             | 94.6%         | 2.3% |
| Naphthalene             | 51.6 | 50.0            | 103%         | 51.1 | 50.0             | 102%          | 1.0% |
| 1,2,3-Trimethylbenzene  | 53.4 | 50.0            | 107%         | 55.3 | 50.0             | 111%          | 3.5% |
| 1-Methylnaphthalene     | 56.1 | 50.0            | 112%         | 53.3 | 50.0             | 107%          | 5.1% |
| n-Pentane               | 59.6 | 50.0            | 119%         | 61.8 | 50.0             | 124%          | 3.6% |
| n-Hexane                | 51.4 | 50.0            | 103%         | 53.5 | 50.0             | 107%          | 4.0% |
| n-Octane                | 51.4 | 50.0            | 103%         | 54.0 | 50.0             | 108%          | 4.9% |
| n-Decane                | 58.7 | 50.0            | 117%         | 62.0 | 50.0             | 124%          | 5.5% |
| n-Dodecane              | 52.6 | 50.0            | 105%         | 55.6 | 50.0             | 111%          | 5.5% |

Values reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

|                         | LCS   | LCSD |
|-------------------------|-------|------|
| PID: 2,5-Dibromotoluene | 97.0% | 101% |
| FID: 2,5-Dibromotoluene | 96.0% | 101% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: LCS-121709

LCS/LCSD

Lab Sample ID: LCS-121709

LIMS ID: 09-30302

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/17/09 12:14

Purge Volume: 10 mL

Date Analyzed LCSD: 12/17/09 13:52

Dilution Factor: 1.00

Instrument/Analyst: PID1/MH

| Analyte/Range           | LCS  | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|-------------------------|------|-----------------|--------------|------|------------------|---------------|-------|
| Benzene                 | 52.0 | 50.0            | 104%         | 51.1 | 50.0             | 102%          | 1.7%  |
| Toluene                 | 52.5 | 50.0            | 105%         | 51.1 | 50.0             | 102%          | 2.7%  |
| Ethylbenzene            | 53.5 | 50.0            | 107%         | 52.2 | 50.0             | 104%          | 2.5%  |
| m,p-Xylene              | 108  | 100             | 108%         | 103  | 100              | 103%          | 4.7%  |
| o-Xylene                | 52.6 | 50.0            | 105%         | 50.7 | 50.0             | 101%          | 3.7%  |
| Methyl tert-Butyl Ether | 62.4 | 50.0            | 125%         | 58.7 | 50.0             | 117%          | 6.1%  |
| Naphthalene             | 54.6 | 50.0            | 109%         | 47.1 | 50.0             | 94.2%         | 14.7% |
| 1,2,3-Trimethylbenzene  | 56.5 | 50.0            | 113%         | 52.4 | 50.0             | 105%          | 7.5%  |
| 1-Methylnaphthalene     | 56.7 | 50.0            | 113%         | 51.1 | 50.0             | 102%          | 10.4% |
| n-Pentane               | 64.1 | 50.0            | 128%         | 62.9 | 50.0             | 126%          | 1.9%  |
| n-Hexane                | 56.0 | 50.0            | 112%         | 55.6 | 50.0             | 111%          | 0.7%  |
| n-Octane                | 56.3 | 50.0            | 113%         | 55.2 | 50.0             | 110%          | 2.0%  |
| n-Decane                | 65.9 | 50.0            | 132%         | 61.9 | 50.0             | 124%          | 6.3%  |
| n-Dodecane              | 59.9 | 50.0            | 120%         | 58.1 | 50.0             | 116%          | 3.1%  |

Values reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

|                         | LCS   | LCSD |
|-------------------------|-------|------|
| PID: 2,5-Dibromotoluene | 103%  | 112% |
| FID: 2,5-Dibromotoluene | 99.2% | 108% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: LCS-121809

LCS/LCSD

Lab Sample ID: LCS-121809

LIMS ID: 09-30303

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 12/18/09 18:18

Purge Volume: 10 mL

Date Analyzed LCSD: 12/18/09 18:49

Dilution Factor: 1.00

Instrument/Analyst: PID1/MH

| Analyte/Range           | LCS  |                 |              | LCSD |                  |               | RPD  |
|-------------------------|------|-----------------|--------------|------|------------------|---------------|------|
|                         | LCS  | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery |      |
| Benzene                 | 64.7 | 50.0            | 129%         | 63.9 | 50.0             | 128%          | 1.2% |
| Toluene                 | 62.5 | 50.0            | 125%         | 61.3 | 50.0             | 123%          | 1.9% |
| Ethylbenzene            | 62.0 | 50.0            | 124%         | 60.1 | 50.0             | 120%          | 3.1% |
| m,p-Xylene              | 125  | 100             | 125%         | 121  | 100              | 121%          | 3.3% |
| o-Xylene                | 60.9 | 50.0            | 122%         | 59.2 | 50.0             | 118%          | 2.8% |
| Methyl tert-Butyl Ether | 44.6 | 50.0            | 89.2%        | 42.6 | 50.0             | 85.2%         | 4.6% |
| Naphthalene             | 56.2 | 50.0            | 112%         | 54.7 | 50.0             | 109%          | 2.7% |
| 1,2,3-Trimethylbenzene  | 62.3 | 50.0            | 125%         | 60.9 | 50.0             | 122%          | 2.3% |
| 1-Methylnaphthalene     | 61.2 | 50.0            | 122%         | 63.3 | 50.0             | 127%          | 3.4% |
| n-Pentane               | 96.7 | 50.0            | 193%         | 89.5 | 50.0             | 179%          | 7.7% |
| n-Hexane                | 65.0 | 50.0            | 130%         | 60.2 | 50.0             | 120%          | 7.7% |
| n-Octane                | 53.1 | 50.0            | 106%         | 49.3 | 50.0             | 98.6%         | 7.4% |
| n-Decane                | 52.4 | 50.0            | 105%         | 50.7 | 50.0             | 101%          | 3.3% |
| n-Dodecane              | 52.3 | 50.0            | 105%         | 51.2 | 50.0             | 102%          | 2.1% |

Values reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

|                         | LCS   | LCSD  |
|-------------------------|-------|-------|
| PID: 2,5-Dibromotoluene | 113%  | 115%  |
| FID: 2,5-Dibromotoluene | 95.2% | 97.0% |

**ORGANICS ANALYSIS DATA SHEET**

VPH by Method WA VPH

Page 1 of 1

Sample ID: MB-121609

METHOD BLANK

Lab Sample ID: MB-121609

LIMS ID: 09-30296

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/16/09 20:32

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

**VPH Surrogate Recovery**

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 91.2% |
| FID: 2,5-Dibromotoluene | 90.0% |



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: MB-121709

METHOD BLANK

Lab Sample ID: MB-121709

LIMS ID: 09-30302

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/17/09 13:16

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in  $\mu\text{g/L}$  (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 95.2% |
| FID: 2,5-Dibromotoluene | 91.8% |

QA64:00059



ORGANICS ANALYSIS DATA SHEET

VPH by Method WA VPH

Page 1 of 1

Sample ID: MB-121809

METHOD BLANK

Lab Sample ID: MB-121809

LIMS ID: 09-30303

Matrix: Water

Data Release Authorized:

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Analyzed: 12/18/09 19:52

Instrument/Analyst: PID1/MH

Purge Volume: 10 mL

Dilution Factor: 1.00

| CAS Number  | Analyte                 | RL  | Result  |
|-------------|-------------------------|-----|---------|
| 71-43-2     | Benzene                 | 5.0 | < 5.0 U |
| 108-88-3    | Toluene                 | 5.0 | < 5.0 U |
| 100-41-4    | Ethylbenzene            | 5.0 | < 5.0 U |
| 179601-23-1 | m,p-Xylene              | 10  | < 10 U  |
| 95-47-6     | o-Xylene                | 5.0 | < 5.0 U |
| 1634-04-4   | Methyl tert-Butyl Ether | 5.0 | < 5.0 U |
| 109-66-0    | n-Pentane               | 5.0 | < 5.0 U |
| 110-54-3    | n-Hexane                | 5.0 | < 5.0 U |
| 111-65-9    | n-Octane                | 5.0 | < 5.0 U |
| 124-18-5    | n-Decane                | 5.0 | < 5.0 U |
| 112-40-3    | n-Dodecane              | 5.0 | < 5.0 U |

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aromatics   | 50 | < 50 U |
| C10-C12 Aromatics  | 50 | < 50 U |
| C12-C13 Aromatics  | 50 | < 50 U |
| C5-C6 Aliphatics   | 50 | < 50 U |
| C6-C8 Aliphatics   | 50 | < 50 U |
| C8-C10 Aliphatics  | 50 | < 50 U |
| C10-C12 Aliphatics | 50 | < 50 U |

Values reported in µg/L (ppb)

VPH Surrogate Recovery

|                         |       |
|-------------------------|-------|
| PID: 2,5-Dibromotoluene | 112%  |
| FID: 2,5-Dibromotoluene | 90.0% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: 12-03-09 12:05 Influent  
SAMPLE

Lab Sample ID: QA64A

LIMS ID: 09-30296

Matrix: Water

Data Release Authorized: 

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 05:31

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 16:05

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 1,400  |
| C10-C12 Aliphatics | 40 | 230    |
| C12-C16 Aliphatics | 40 | 230    |
| C16-C21 Aliphatics | 40 | 150    |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 3,900  |
| C10-C12 Aromatics  | 40 | 1,500  |
| C12-C16 Aromatics  | 40 | 1,600  |
| C16-C21 Aromatics  | 40 | 660    |
| C21-C34 Aromatics  | 40 | 90     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 31.5% |
| Aromatic  | o-Terphenyl        | 36.2% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12-03-09 12:05 Effluent  
 SAMPLE

Lab Sample ID: QA64B  
 LIMS ID: 09-30297  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/03/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 05:56  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 16:29  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result     |
|--------------------------|-----------|------------|
| C8-C10 Aliphatics        | 40        | < 40 U     |
| C10-C12 Aliphatics       | 40        | < 40 U     |
| C12-C16 Aliphatics       | 40        | < 40 U     |
| C16-C21 Aliphatics       | 40        | < 40 U     |
| C21-C34 Aliphatics       | 40        | < 40 U     |
| <b>C8-C10 Aromatics</b>  | <b>40</b> | <b>60</b>  |
| <b>C10-C12 Aromatics</b> | <b>40</b> | <b>74</b>  |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>110</b> |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>68</b>  |
| C21-C34 Aromatics        | 40        | < 40 U     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 33.9% |
| <b>Aromatic</b>  | o-Terphenyl        | 44.1% |

**ORGANICS ANALYSIS DATA SHEET**  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: 12-03-09 15:00 Influent  
SAMPLE

Lab Sample ID: QA64C  
LIMS ID: 09-30298  
Matrix: Water  
Data Release Authorized:   
Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project  
Date Sampled: 12/03/09  
Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 06:20  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 16:54  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 1,400  |
| C10-C12 Aliphatics | 40 | 430    |
| C12-C16 Aliphatics | 40 | 700    |
| C16-C21 Aliphatics | 40 | 560    |
| C21-C34 Aliphatics | 40 | 180    |
| C8-C10 Aromatics   | 40 | 3,800  |
| C10-C12 Aromatics  | 40 | 1,300  |
| C12-C16 Aromatics  | 40 | 1,500  |
| C16-C21 Aromatics  | 40 | 850    |
| C21-C34 Aromatics  | 40 | 110    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 62.7% |
| Aromatic  | o-Terphenyl        | 64.6% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12-03-09 15:00 Effluent  
 SAMPLE

Lab Sample ID: QA64D  
 LIMS ID: 09-30299  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/03/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 06:44  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 17:18  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result     |
|--------------------------|-----------|------------|
| C8-C10 Aliphatics        | 40        | < 40 U     |
| C10-C12 Aliphatics       | 40        | < 40 U     |
| C12-C16 Aliphatics       | 40        | < 40 U     |
| C16-C21 Aliphatics       | 40        | < 40 U     |
| C21-C34 Aliphatics       | 40        | < 40 U     |
| <b>C8-C10 Aromatics</b>  | <b>40</b> | <b>54</b>  |
| <b>C10-C12 Aromatics</b> | <b>40</b> | <b>62</b>  |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>110</b> |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>96</b>  |
| C21-C34 Aromatics        | 40        | < 40 U     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 58.0% |
| <b>Aromatic</b>  | o-Terphenyl        | 71.0% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12-03-09 13:30 Influent  
 SAMPLE

Lab Sample ID: QA64E  
 LIMS ID: 09-30300  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/03/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 07:09  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 17:42  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 440    |
| C10-C12 Aliphatics | 40 | 88     |
| C12-C16 Aliphatics | 40 | 150    |
| C16-C21 Aliphatics | 40 | 96     |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 5,500  |
| C10-C12 Aromatics  | 40 | 1,400  |
| C12-C16 Aromatics  | 40 | 1,500  |
| C16-C21 Aromatics  | 40 | 700    |
| C21-C34 Aromatics  | 40 | 82     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 66.5% |
| Aromatic  | o-Terphenyl        | 86.7% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: 12-03-09 13:30 Effluent

**SAMPLE**

Lab Sample ID: QA64F

LIMS ID: 09-30301

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/03/09

Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 07:33

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 18:06

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result    |
|--------------------------|-----------|-----------|
| C8-C10 Aliphatics        | 40        | < 40 U    |
| C10-C12 Aliphatics       | 40        | < 40 U    |
| C12-C16 Aliphatics       | 40        | < 40 U    |
| C16-C21 Aliphatics       | 40        | < 40 U    |
| C21-C34 Aliphatics       | 40        | < 40 U    |
| C8-C10 Aromatics         | 40        | < 40 U    |
| <b>C10-C12 Aromatics</b> | <b>40</b> | <b>48</b> |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>62</b> |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>44</b> |
| C21-C34 Aromatics        | 40        | < 40 U    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 47.1% |
| <b>Aromatic</b>  | o-Terphenyl        | 56.8% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12-04-09 12:00 Effluent  
 SAMPLE

Lab Sample ID: QA64H  
 LIMS ID: 09-30303  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/04/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 07:57  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 18:31  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | 160    |
| C16-C21 Aliphatics | 40 | 150    |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 49.1% |
| Aromatic  | o-Terphenyl        | 60.8% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

Page 1 of 1

Sample ID: 12-04-09 14:10 Influent  
SAMPLE

Lab Sample ID: QA64I

LIMS ID: 09-30304

Matrix: Water

Data Release Authorized:

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/04/09

Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 08:46

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 18:55

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 650    |
| C10-C12 Aliphatics | 40 | 390    |
| C12-C16 Aliphatics | 40 | 730    |
| C16-C21 Aliphatics | 40 | 540    |
| C21-C34 Aliphatics | 40 | 150    |
| C8-C10 Aromatics   | 40 | 5,300  |
| C10-C12 Aromatics  | 40 | 740    |
| C12-C16 Aromatics  | 40 | 810    |
| C16-C21 Aromatics  | 40 | 420    |
| C21-C34 Aromatics  | 40 | 94     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 53.0% |
| Aromatic  | o-Terphenyl        | 60.2% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12-04-09 14:10 Effluent  
 SAMPLE

Lab Sample ID: QA64J  
 LIMS ID: 09-30305  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/04/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 09:11  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 19:19  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                     | RL        | Result    |
|---------------------------|-----------|-----------|
| C8-C10 Aliphatics         | 40        | < 40 U    |
| C10-C12 Aliphatics        | 40        | < 40 U    |
| <b>C12-C16 Aliphatics</b> | <b>40</b> | <b>56</b> |
| <b>C16-C21 Aliphatics</b> | <b>40</b> | <b>52</b> |
| C21-C34 Aliphatics        | 40        | < 40 U    |
| <b>C8-C10 Aromatics</b>   | <b>40</b> | <b>88</b> |
| C10-C12 Aromatics         | 40        | < 40 U    |
| C12-C16 Aromatics         | 40        | < 40 U    |
| C16-C21 Aromatics         | 40        | < 40 U    |
| C21-C34 Aromatics         | 40        | < 40 U    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 36.7% |
| <b>Aromatic</b>  | o-Terphenyl        | 42.7% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12-04-09 3:00 In  
 SAMPLE

Lab Sample ID: QA64K  
 LIMS ID: 09-30306  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/04/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 09:35  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 19:44  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 1,800  |
| C10-C12 Aliphatics | 40 | 1,600  |
| C12-C16 Aliphatics | 40 | 3,100  |
| C16-C21 Aliphatics | 40 | 2,400  |
| C21-C34 Aliphatics | 40 | 810    |
| C8-C10 Aromatics   | 40 | 4,800  |
| C10-C12 Aromatics  | 40 | 1,200  |
| C12-C16 Aromatics  | 40 | 1,800  |
| C16-C21 Aromatics  | 40 | 1,400  |
| C21-C34 Aromatics  | 40 | 350    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 51.6% |
| Aromatic  | o-Terphenyl        | 62.5% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12/04/09 3:00 Out  
 SAMPLE

Lab Sample ID: QA64L  
 LIMS ID: 09-30316  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/04/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 09:59  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 20:32  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | 120    |
| C16-C21 Aliphatics | 40 | 76     |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | 66     |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 43.7% |
| Aromatic  | o-Terphenyl        | 52.7% |

**ORGANICS ANALYSIS DATA SHEET**  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: 12/04/09 16:30 In  
SAMPLE

Lab Sample ID: QA64M  
LIMS ID: 09-30317  
Matrix: Water  
Data Release Authorized: *B*  
Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project  
Date Sampled: 12/04/09  
Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 10:24  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 20:57  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                     | RL        | Result     |
|---------------------------|-----------|------------|
| C8-C10 Aliphatics         | 40        | < 40 U     |
| C10-C12 Aliphatics        | 40        | < 40 U     |
| <b>C12-C16 Aliphatics</b> | <b>40</b> | <b>110</b> |
| <b>C16-C21 Aliphatics</b> | <b>40</b> | <b>76</b>  |
| C21-C34 Aliphatics        | 40        | < 40 U     |
| <b>C8-C10 Aromatics</b>   | <b>40</b> | <b>44</b>  |
| C10-C12 Aromatics         | 40        | < 40 U     |
| C12-C16 Aromatics         | 40        | < 40 U     |
| C16-C21 Aromatics         | 40        | < 40 U     |
| C21-C34 Aromatics         | 40        | < 40 U     |

Reported in µg/L (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 47.6% |
| <b>Aromatic</b>  | o-Terphenyl        | 70.7% |

**ORGANICS ANALYSIS DATA SHEET**  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: 12/05/09 13:35 Influent  
SAMPLE

Lab Sample ID: QA640  
LIMS ID: 09-30319  
Matrix: Water  
Data Release Authorized *AB*  
Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project  
Date Sampled: 12/05/09  
Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 10:48  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 21:21  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 960    |
| C10-C12 Aliphatics | 40 | 540    |
| C12-C16 Aliphatics | 40 | 870    |
| C16-C21 Aliphatics | 40 | 720    |
| C21-C34 Aliphatics | 40 | 200    |
| C8-C10 Aromatics   | 40 | 4,400  |
| C10-C12 Aromatics  | 40 | 1,700  |
| C12-C16 Aromatics  | 40 | 2,000  |
| C16-C21 Aromatics  | 40 | 970    |
| C21-C34 Aromatics  | 40 | 250    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 53.7% |
| Aromatic  | o-Terphenyl        | 55.6% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
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Sample ID: 12/05/09 13:35 Effluent  
 SAMPLE

Lab Sample ID: QA64P  
 LIMS ID: 09-30320  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/05/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 11:13  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 21:45  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | 78     |
| C16-C21 Aromatics  | 40 | 56     |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 45.9% |
| Aromatic  | o-Terphenyl        | 59.2% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
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Sample ID: 12/05/09 15:15 Influent  
 SAMPLE

Lab Sample ID: QA64Q  
 LIMS ID: 09-30321  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/05/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 11:37  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 22:10  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 1,800  |
| C10-C12 Aliphatics | 40 | 1,400  |
| C12-C16 Aliphatics | 40 | 2,400  |
| C16-C21 Aliphatics | 40 | 1,700  |
| C21-C34 Aliphatics | 40 | 660    |
| C8-C10 Aromatics   | 40 | 5,500  |
| C10-C12 Aromatics  | 40 | 2,100  |
| C12-C16 Aromatics  | 40 | 2,600  |
| C16-C21 Aromatics  | 40 | 1,600  |
| C21-C34 Aromatics  | 40 | 450    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 39.2% |
| Aromatic  | o-Terphenyl        | 46.6% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12/05/09 15:15 Effluent  
 SAMPLE

Lab Sample ID: QA64R  
 LIMS ID: 09-30322  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/05/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 12:01  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 22:34  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result     |
|--------------------------|-----------|------------|
| C8-C10 Aliphatics        | 40        | < 40 U     |
| C10-C12 Aliphatics       | 40        | < 40 U     |
| C12-C16 Aliphatics       | 40        | < 40 U     |
| C16-C21 Aliphatics       | 40        | < 40 U     |
| C21-C34 Aliphatics       | 40        | < 40 U     |
| <b>C8-C10 Aromatics</b>  | <b>40</b> | <b>76</b>  |
| <b>C10-C12 Aromatics</b> | <b>40</b> | <b>80</b>  |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>140</b> |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>70</b>  |
| C21-C34 Aromatics        | 40        | < 40 U     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 49.1% |
| <b>Aromatic</b>  | o-Terphenyl        | 63.6% |



ORGANICS ANALYSIS DATA SHEET  
 Aliphatic/Aromatic GC-EPH  
 Page 1 of 1

Sample ID: 12/05/09 16:30 Influent  
 SAMPLE

Lab Sample ID: QA64S  
 LIMS ID: 09-30323  
 Matrix: Water  
 Data Release Authorized: *B*  
 Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
 Project: MPPE Project  
 Date Sampled: 12/05/09  
 Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
 Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 12:26  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 22:58  
 Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | 1,200  |
| C10-C12 Aliphatics | 40 | 640    |
| C12-C16 Aliphatics | 40 | 1,000  |
| C16-C21 Aliphatics | 40 | 700    |
| C21-C34 Aliphatics | 40 | 250    |
| C8-C10 Aromatics   | 40 | 6,800  |
| C10-C12 Aromatics  | 40 | 1,700  |
| C12-C16 Aromatics  | 40 | 1,800  |
| C16-C21 Aromatics  | 40 | 900    |
| C21-C34 Aromatics  | 40 | 140    |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 44.6% |
| Aromatic  | o-Terphenyl        | 58.9% |

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

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Sample ID: 12/05/09 16:30 Effluent

SAMPLE

Lab Sample ID: QA64T

LIMS ID: 09-30324

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: 12/05/09

Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL

Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 12:50

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 23:23

Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range                    | RL        | Result     |
|--------------------------|-----------|------------|
| C8-C10 Aliphatics        | 40        | < 40 U     |
| C10-C12 Aliphatics       | 40        | < 40 U     |
| C12-C16 Aliphatics       | 40        | < 40 U     |
| C16-C21 Aliphatics       | 40        | < 40 U     |
| C21-C34 Aliphatics       | 40        | < 40 U     |
| <b>C8-C10 Aromatics</b>  | <b>40</b> | <b>74</b>  |
| <b>C10-C12 Aromatics</b> | <b>40</b> | <b>76</b>  |
| <b>C12-C16 Aromatics</b> | <b>40</b> | <b>110</b> |
| <b>C16-C21 Aromatics</b> | <b>40</b> | <b>62</b>  |
| C21-C34 Aromatics        | 40        | < 40 U     |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|                  |                    |       |
|------------------|--------------------|-------|
| <b>Aliphatic</b> | 1-Chlorooctadecane | 53.6% |
| <b>Aromatic</b>  | o-Terphenyl        | 62.3% |

**ALIPHATIC EPH WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

| ARI ID      | Client ID               | COD    | TOT OUT |
|-------------|-------------------------|--------|---------|
| MB-121009   | Method Blank            | 55.5%  | 0       |
| LCS-121009  | Lab Control             | 67.9%  | 0       |
| LCSD-121009 | Lab Control Dup         | 60.5%  | 0       |
| QA64A       | 12-03-09 12:05 Influent | 31.5%* | 1       |
| QA64B       | 12-03-09 12:05 Effluent | 33.9%* | 1       |
| QA64C       | 12-03-09 15:00 Influent | 62.7%  | 0       |
| QA64D       | 12-03-09 15:00 Effluent | 58.0%  | 0       |
| QA64E       | 12-03-09 13:30 Influent | 66.5%  | 0       |
| QA64F       | 12-03-09 13:30 Effluent | 47.1%  | 0       |
| QA64H       | 12-04-09 12:00 Effluent | 49.1%  | 0       |
| QA64I       | 12-04-09 14:10 Influent | 53.0%  | 0       |
| QA64J       | 12-04-09 14:10 Effluent | 36.7%* | 1       |
| QA64K       | 12-04-09 3:00 In        | 51.6%  | 0       |
| QA64L       | 12/04/09 3:00 Out       | 43.7%  | 0       |
| QA64M       | 12/04/09 16:30 In       | 47.6%  | 0       |
| QA64O       | 12/05/09 13:35 Influent | 53.7%  | 0       |
| QA64P       | 12/05/09 13:35 Effluent | 45.9%  | 0       |
| QA64Q       | 12/05/09 15:15 Influent | 39.2%* | 1       |
| QA64R       | 12/05/09 15:15 Effluent | 49.1%  | 0       |
| QA64S       | 12/05/09 16:30 Influent | 44.6%  | 0       |
| QA64T       | 12/05/09 16:30 Effluent | 53.6%  | 0       |

**LCS/MB LIMITS      QC LIMITS**

(COD) = 1-Chlorooctadecane

(38-121)

(42-120)

Prep Method: SW3510C

Log Number Range: 09-30296 to 09-30324

**AROMATIC EPH WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

| <u>ARI ID</u> | <u>Client ID</u>        | <u>OTER</u> | <u>TOT OUT</u> |
|---------------|-------------------------|-------------|----------------|
| MB-121009     | Method Blank            | 67.3%       | 0              |
| LCS-121009    | Lab Control             | 79.1%       | 0              |
| LCS-121009    | Lab Control Dup         | 71.2%       | 0              |
| QA64A         | 12-03-09 12:05 Influent | 36.2%*      | 1              |
| QA64B         | 12-03-09 12:05 Effluent | 44.1%       | 0              |
| QA64C         | 12-03-09 15:00 Influent | 64.6%       | 0              |
| QA64D         | 12-03-09 15:00 Effluent | 71.0%       | 0              |
| QA64E         | 12-03-09 13:30 Influent | 86.7%       | 0              |
| QA64F         | 12-03-09 13:30 Effluent | 56.8%       | 0              |
| QA64H         | 12-04-09 12:00 Effluent | 60.8%       | 0              |
| QA64I         | 12-04-09 14:10 Influent | 60.2%       | 0              |
| QA64J         | 12-04-09 14:10 Effluent | 42.7%       | 0              |
| QA64K         | 12-04-09 3:00 In        | 62.5%       | 0              |
| QA64L         | 12/04/09 3:00 Out       | 52.7%       | 0              |
| QA64M         | 12/04/09 16:30 In       | 70.7%       | 0              |
| QA64O         | 12/05/09 13:35 Influent | 55.6%       | 0              |
| QA64P         | 12/05/09 13:35 Effluent | 59.2%       | 0              |
| QA64Q         | 12/05/09 15:15 Influent | 46.6%       | 0              |
| QA64R         | 12/05/09 15:15 Effluent | 62.6%       | 0              |
| QA64S         | 12/05/09 16:30 Influent | 58.9%       | 0              |
| QA64T         | 12/05/09 16:30 Effluent | 62.3%       | 0              |

**LCS/MB LIMITS      QC LIMITS**

(OTER) = o-Terphenyl

(44-133)

(39-141)

Prep Method: SW3510C  
Log Number Range: 09-30296 to 09-30324

**ORGANICS ANALYSIS DATA SHEET**

Aliphatic/Aromatic GC-EPH

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Sample ID: LCS-121009

LCS/LCSD

Lab Sample ID: LCS-121009

LIMS ID: 09-30296

Matrix: Water

Data Release Authorized:

Reported: 12/22/09

QC Report No: QA64-Whittier Filtration

Project: MPPE Project

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 12/10/09

Sample Amount LCS: 500 mL

LCSD: 500 mL

Final Extract Volume LCS: 1.0 mL

LCSD: 1.0 mL

**Aliphatic**

Date Analyzed LCS: 12/19/09 04:43

LCSD: 12/19/09 05:07

Instrument/Analyst LCS: FID8/MS

LCSD: FID8/MS

Dilution Factor LCS: 1.00

LCSD: 1.00

**Aromatic**

Date Analyzed LCS: 12/19/09 15:16

LCSD: 12/19/09 15:41

Instrument/Analyst LCS: FID8/MS

LCSD: FID8/MS

Dilution Factor LCS: 1.00

LCSD: 1.00

| Range              | LCS | Spike Added-LCS | LCS Recovery | LCSD | Spike Added-LCSD | LCSD Recovery | RPD   |
|--------------------|-----|-----------------|--------------|------|------------------|---------------|-------|
| C8-C10 Aliphatics  | 190 | 300             | 63.3%        | 132  | 300              | 44.0%         | 36.0% |
| C10-C12 Aliphatics | 220 | 300             | 73.3%        | 162  | 300              | 54.0%         | 30.4% |
| C12-C16 Aliphatics | 300 | 300             | 100%         | 274  | 300              | 91.3%         | 9.1%  |
| C16-C21 Aliphatics | 310 | 300             | 103%         | 284  | 300              | 94.7%         | 8.8%  |
| C10-C12 Aromatics  | 234 | 300             | 78.0%        | 182  | 300              | 60.7%         | 25.0% |
| C12-C16 Aromatics  | 264 | 300             | 88.0%        | 240  | 300              | 80.0%         | 9.5%  |
| C16-C21 Aromatics  | 634 | 600             | 106%         | 574  | 600              | 95.7%         | 9.9%  |
| C21-C34 Aromatics  | 690 | 600             | 115%         | 612  | 600              | 102%          | 12.0% |

**EPH Surrogate Recovery**

|           |                    | LCS   | LCSD  |
|-----------|--------------------|-------|-------|
| Aliphatic | 1-Chlorooctadecane | 67.9% | 60.5% |
| Aromatic  | o-Terphenyl        | 79.1% | 71.2% |

Results reported in  $\mu\text{g/L}$

RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**  
Aliphatic/Aromatic GC-EPH  
Page 1 of 1

Sample ID: MB-121009  
METHOD BLANK

Lab Sample ID: MB-121009  
LIMS ID: 09-30296  
Matrix: Water  
Data Release Authorized: *AS*  
Reported: 12/22/09

QC Report No: QA64-Whittier Filtration  
Project: MPPE Project

Date Sampled: 12/03/09  
Date Received: 12/09/09

Date Extracted: 12/10/09

Sample Amount: 500 mL  
Final Extract Volume: 1.0 mL

**Aliphatic**

Date Analyzed: 12/19/09 04:18  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

**Aromatic**

Date Analyzed: 12/19/09 14:52  
Instrument/Analyst: FID8/MS

Dilution Factor: 1.00

| Range              | RL | Result |
|--------------------|----|--------|
| C8-C10 Aliphatics  | 40 | < 40 U |
| C10-C12 Aliphatics | 40 | < 40 U |
| C12-C16 Aliphatics | 40 | < 40 U |
| C16-C21 Aliphatics | 40 | < 40 U |
| C21-C34 Aliphatics | 40 | < 40 U |
| C8-C10 Aromatics   | 40 | < 40 U |
| C10-C12 Aromatics  | 40 | < 40 U |
| C12-C16 Aromatics  | 40 | < 40 U |
| C16-C21 Aromatics  | 40 | < 40 U |
| C21-C34 Aromatics  | 40 | < 40 U |

Reported in  $\mu\text{g/L}$  (ppb)

**EPH Surrogate Recovery**

|           |                    |       |
|-----------|--------------------|-------|
| Aliphatic | 1-Chlorooctadecane | 55.5% |
| Aromatic  | o-Terphenyl        | 67.3% |

**ATTACHMENT C: WHITTIER FILTRATION MPPE RESULT REPORT**

# WHITTIER FILTRATION

## Macro Porous Polymer Extraction Pilot Study Analytical & Operational Report



Presented to: Western Refining, Inc.

Date: January 15, 2010



Solutions & Technologies

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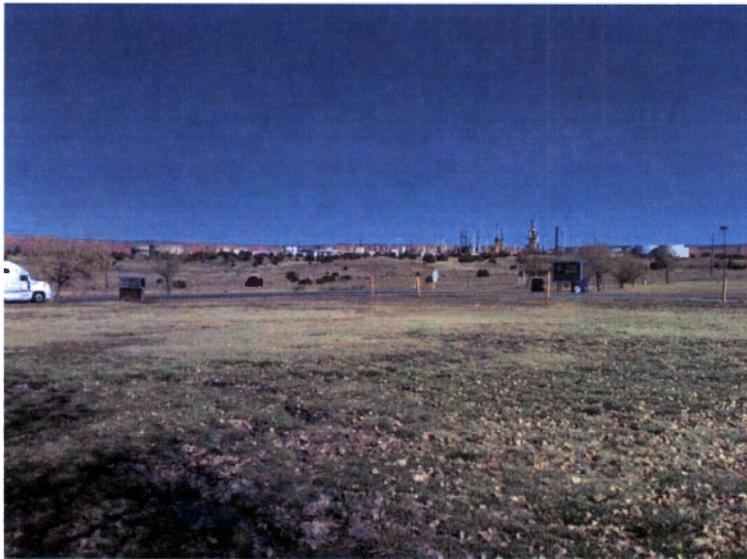
1. Introduction
2. Equipment
  - 2.1 MPPE process description
  - 2.2 Pilot set-up
3. Results
4. Conclusion

### Appendices

1. P&ID
2. System screen
3. Settings and PID screen
4. Historical trending data - Flow
5. Historical trending data - Flow
6. Historical trending data - Temperature
7. Historical trending data - Temperature
8. Historical trending data - Level
9. Historical trending data - Level
10. Historical trending data - Pressure

## 1 Introduction

On request of Western Refining a MPPE (Macro Porous Polymer Extraction) pilot unit was operated at the refinery in Gallup, New Mexico.



The operational period of the pilot was around 3 weeks, including scheduled downtime over the holidays, starting on November 17, 2009 and ending on December 5th, 2009.

The process waste water (both with and without corrosion inhibitor) was taken directly from the plant and treated in three (3) steps. First an API separator, then a pilot DAF unit (for oil & solids removal), followed by the MPPE pilot unit.

Aim of the study was:

1. To demonstrate the capability of MPPE to reduce the benzene concentration from the industrial process waste water, to a desired level of <math><0.5\text{ mg/l}</math>.
2. To determine to what extent the MPPE technology is also able to lower the concentrations of other (groups of) components like VPH (Volatile Petroleum Hydrocarbons), EPH (Extractable Petroleum Hydrocarbons) etc.,
3. To test the combination of a DAF filter followed by a MPPE system, in addition to the existing API separator, for the complete water treatment.

Table 1: Average influent characteristics as given by Western Refining

| Components | Unit   | Inlet Concentration | Outlet Requirement acc. EPA |
|------------|--------|---------------------|-----------------------------|
| Benzene    | [mg/l] | 7 - 24              | 0.25 - 0.50                 |

## 2 Equipment

### 2.1 MPPE process description

The standard MPPE unit consists of two columns, both containing a packed bed of MPPE material. The influent water is fed into the bottom of column C-01 where the extraction process takes place in order to remove the contaminants. At the same time the other column (C-02) is being regenerated with low-pressure steam. After a pre-calculated time (usually 1 hour), the feed is switched to the other column, C-02. Column C-01 is then regenerated by low-pressure steam. The steam evaporates the components from the MPPE material, resulting in a vapor flow of organics and steam. The vapor is routed through a condenser where condensation of both steam and organics takes place. The condensed steam and organics are led into a separator in which the organics are separated from the condensed steam. The practically 100% pure organics can be reused or disposed according to regulations. The water phase from the separator is recycled back into the MPPE system. The unit feed continuously cycles (usually approximately one hour) from column C-02 to C-01. The overall sound power level of the unit is very low and less than 80 dB(A) at switch-over once an hour.

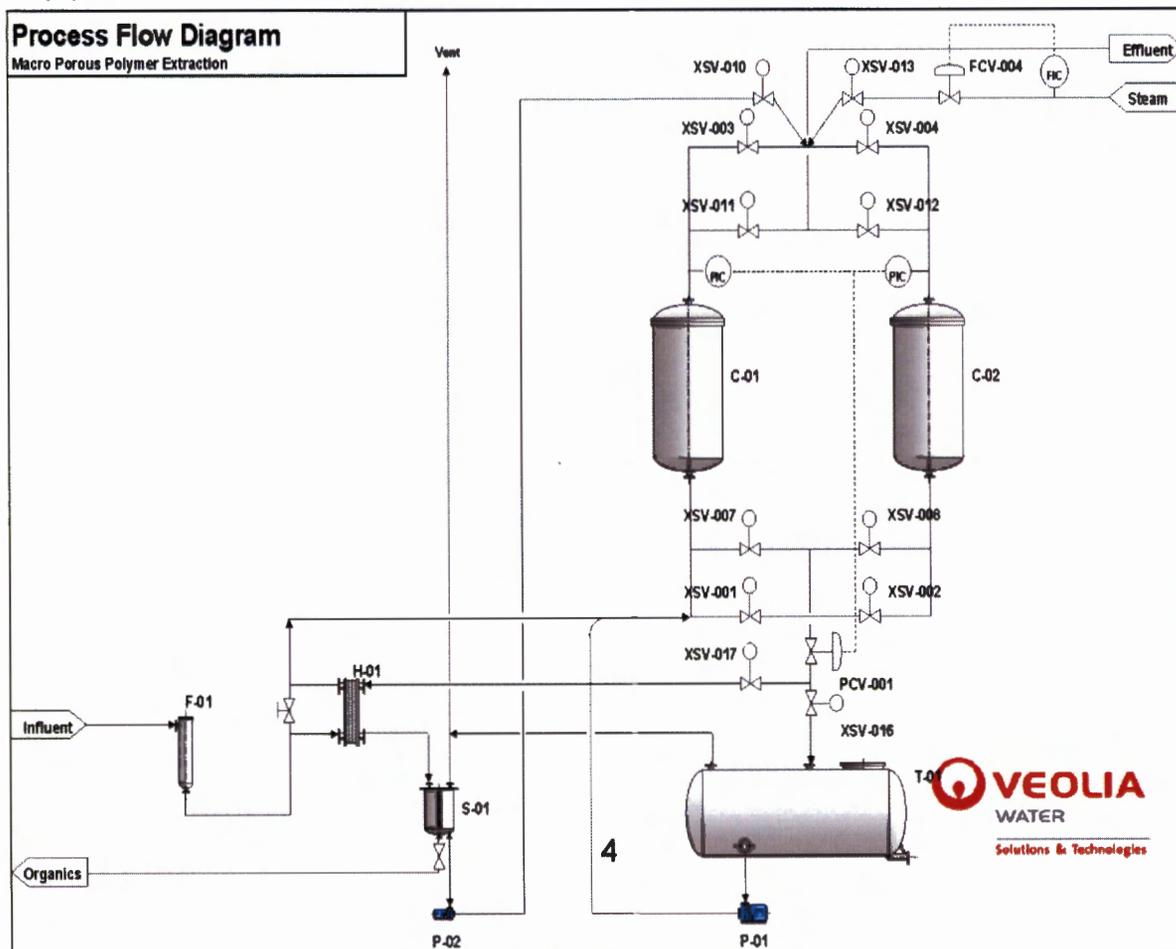
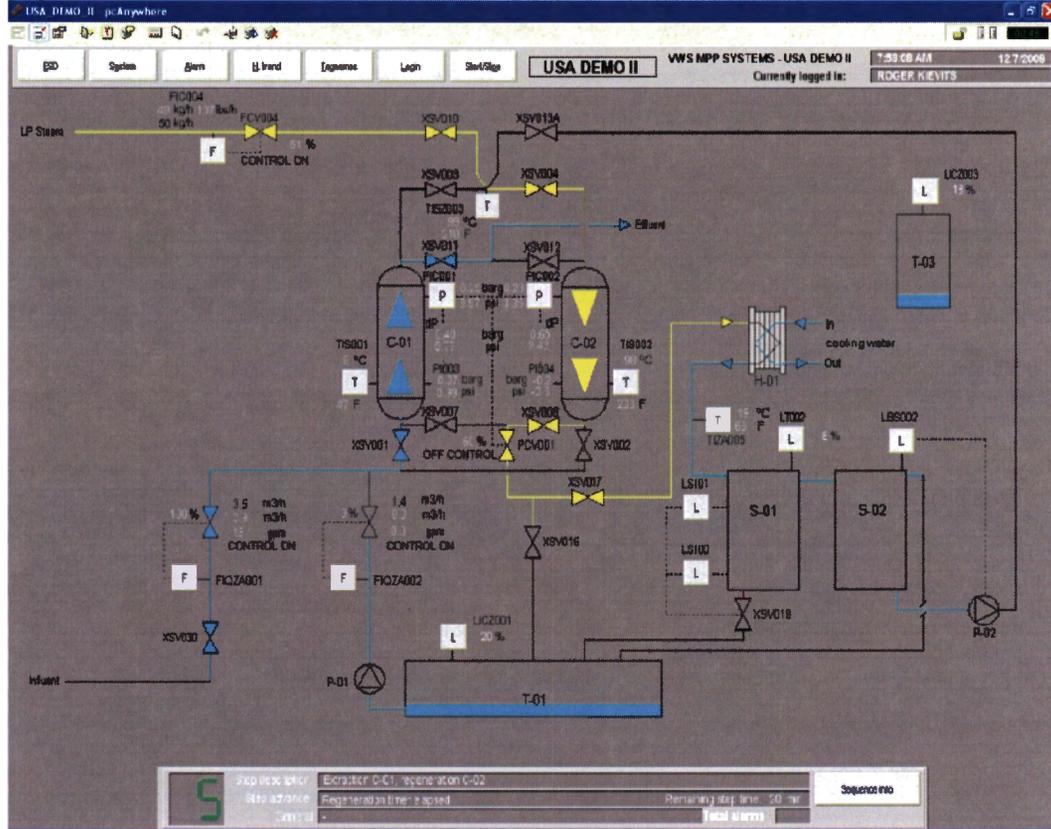


Figure 1: Schematic MPPE process step (computer screen shot of MPPE demo unit II).



The P&ID of the demonstration unit is presented in appendix 1 followed by the system screen and the set points. The PID screen in appendices 2 and 3 are showing all settings used for the demo unit.

During the operation, all measured data of the different installed instruments are saved on the hard disk of the PC. This historical data is visually displayed in appendices 4 - 10

## 2.2 Pilot set-up

The influent waste water was taken directly from the refinery process waste stream. First step was to feed the water through the existing API separator. Next, the water was fed to the DAF pilot unit. After being treated by the DAF unit the water was then fed to the pilot MPPE unit using a membrane (diaphragm type) pump. The treated waste water leaving the MPPE unit was discharged to an external buffer tank.



The photo above shows the treatment train set up. The MPPE unit is in the middle of the photo (just left of the yellow generator) and the DAF is located to the left of the MPPE unit.

The green Baker storage tank is located just behind the yellow generator in the lower right side of the photo.

Due to fluctuations in the refinery waste water characteristics, the MPPE pilot study was conducted over a three (3) week period to check the overall performance of the MPPE unit and verify its ability to treat fluctuations in influent water characteristics.

During the pilot plant trial, the unit was periodically sampled by Western Refining. Each morning and evening the unit was switched from fire water to process waste water and vice versa. Samples of both the influent (after pre-filter) and the effluent were taken.

The samples were sent to an independent certified laboratory, Analytical Resources, Inc., for the analysis of BTEX, VPH (volatile petroleum hydrocarbons) and EPH (extractable petroleum hydrocarbons).

The following characteristics hold for the MPPE Pilot Unit installed at the Western Refining, Gallup, New Mexico refinery.

### Trailer Mounted Unit

|                    |  |
|--------------------|--|
| Trailer Footprint  | 8' X 28' X 11' (off the ground)                                  |
| Construction       | Stainless Steel  |
| Interface          | Graphical Man-Machine via Notebook Computer                      |
| Panel Construction | Weather Proof  |
| Pre-Filters        | Bag Type, Inline Solids Filtration                               |
| Max. influent flow | 50 gpm (15 gpm for pilot study)                                  |
| Min. influent flow | 03 gpm (09 gpm for pilot study)                                  |
| Column Dimensions  | Diameter 32 inches<br>Height 80 inches (packed bed height = 64") |
| Total unit weight  | 7 tons   |

Table: Shows operational parameters of the MPPE pilot unit

| Connection  | Pilot Unit                |
|---|---------------------------|
| Influent water flow (intermittent)  | 03-50 gpm                 |
| Effluent discharge (manual) and disposal,<br>Organics discharge and disposal (manual) | 03-50 gpm                 |
| Cooling water supply  | 10-20 gpm                 |
| Cooling water return  | 10-20 gpm                 |
| Plant steam (P < 15 psig, T < 230°F)<br>Or water for steam generator (> 25 psig)      | max. 400 lb/hr<br>1-2 gpm |
| Condensate/drain from boiler (atmospheric)  | 1-2 gpm                   |
| Power (voltage transformer, diesel gen., etc.)  | 3 phase, 60 Amp 480V      |
| Compressed DRY air (intermittent), min. 70 psig                                       | 2 scfm (80 psig)          |

The MPPE process is controlled by a Siemens S7-300 PLC. Using the iFIX Intellution software it is possible to visualize the status of the process and to intervene in the process. In combination with the software package PC-Anywhere and a wireless internet connection from Verizon, the unit can be fully operated remotely.

### 3 Results

The obtained analytical results for the influent and effluent samples taken from the unit are listed in the following tables. Samples taken by either Western Refining or Whittier Filtration. All results are analyzed by the certified lab, Analytical Resources, Inc.

Is it important to note that many of the results were below the detection range of the test method and lab equipment. This is important as the values indicated with the (>) symbol are depicting a worse case scenario. It is unknown as to exactly how far the effluent result is below the detection limit. Therefore, the range could vary from say 9% to as great as 99.99% removal efficiency. However, the removal efficiencies are calculated for informational purposes.

It is important to note that there were several upsets that occurred during the study. The DAF unit had difficulty delivering treated water to the MPPE unit due to problems with the chemical dosing. These problems were solved, to some degree, by the DAF technician however, the MPPE unit did receive poorly treated water on several occasions. The water from the DAF was still fed to the MPPE unit and the unit performed excellent. The results for benzene still continuously fell well below the required limit of <0.5 ppm. This was a good test of the MPPE unit should an upset occur in actual operation.

#### 3.1 Summary of analytical results of samples, November 20, 2009. **Benzene** concentrations.

| ID    |        | Time     | Inlet<br>[ug/l] | Outlet<br>[ug/l] | Removal<br>Efficiency [%] |
|-------|--------|----------|-----------------|------------------|---------------------------|
| Inlet | Outlet |          |                 |                  |                           |
| PZ44K | PZ45B  | 9.30 AM  | 7100            | <4.0             | > 99.9                    |
| PZ44A | PZ44B  | 10.00 AM | 6200            | <2.0             | > 99.9                    |
| PZ45C | PZ45D  | 10.30 AM | 4200            | <2.0             | > 99.9                    |
| PZ44L | PZ45H  | 12.00 AM | 3700            | <4.0             | > 99.9                    |
| PZ44C | PZ45A  | 1.00 PM  | 9200            | 2.4              | > 99.9                    |
| PZ44D | PZ44E  | 2.30 PM  | 8600            | <2.0             | > 99.9                    |
| PZ44I | PZ44E  | 2.30 PM  | 4500            | <2.0             | > 99.9                    |
| PZ44M | PZ45I  | 2.30 PM  | 10000           | <4.0             | > 99.9                    |
| PZ44N | PZ45J  | 4.30 PM  | 9400            | <4.0             | > 99.9                    |
| PZ44F | PZ44G  | 4.30 PM  | 7500            | <4.0             | > 99.9                    |
| PZ44J | PZ45F  | 5.00 PM  | 4800            | 0.2              | > 99.9                    |
| PZ44H | PZ45B  | 12.30 AM | 3700            | <2.0             | > 99.9                    |

### 3.2 Volatiles, concentrations in mg/l. Inlet and outlet alternating

| Date       | ID    | Time     | Component |         |              |            |          |
|------------|-------|----------|-----------|---------|--------------|------------|----------|
|            |       |          | benzene   | toluene | ethylbenzene | m.p-xylene | o-xylene |
| 11-30-2009 | QA24L | 1:30 AM  | 7.2       | 12.0    | .89          | 3.8        | 1.4      |
| 11-30-2009 | QA24E | 1:30 AM  | .0018     | .0019   | <0.001       | <0.002     | <0.001   |
| 12-02-2009 | QA24D | 11:30 AM | 5.5       | 9.6     | .71          | 3.0        | 1.2      |
| 12-02-2009 | QA24O | 11:30 AM | <0.001    | <0.001  | <0.001       | <0.002     | <0.001   |
| 12-02-2009 | QA24K | 1:00 PM  | 4.8       | 9.2     | .76          | 3.2        | 1.3      |
| 12-02-2009 | QA24J | 1:00 PM  | 0.0027    | 0.0014  | <0.001       | <0.002     | <0.001   |
| 11-30-2009 | QA24I | 3:00 PM  | 8.1       | 13.0    | .87          | 3.6        | 1.5      |
| 11-30-2009 | QA24F | 3:00 PM  | .002      | <0.001  | <0.001       | <0.002     | <0.001   |
| 12-02-2009 | QA24C | 3:00 PM  | 5.5       | 9.6     | .74          | 3.2        | 1.3      |
| 12-02-2009 | QA24A | 3:00 PM  | .0053     | .003    | <0.001       | <0.002     | <0.001   |
| 11-30-2009 | QA24G | 4:00 PM  | 14        | 21      | 1.3          | 5.1        | 2.0      |
| 11-30-2009 | QA24H | 4:00 PM  | .0063     | .0012   | <0.001       | <0.002     | <0.001   |
| 12-02-2009 | QA24M | 5:00 PM  | 7.2       | 12      | 1.0          | 4.2        | 1.7      |
| 12-02-2009 | QA24B | 5:00 PM  | .0025     | .0013   | <0.001       | <0.002     | <0.001   |

### 3.3 Volatiles, Removal efficiency in % for table above.

| Date       | ID    | Time     | Component |         |              |            |          |
|------------|-------|----------|-----------|---------|--------------|------------|----------|
|            |       |          | benzene   | toluene | ethylbenzene | m.p-xylene | o-xylene |
| 11-30-2009 | QA24E | 1:30 AM  | 99.98%    | 99.98%  | >99.89%      | >99.95%    | >99.93%  |
| 12-02-2009 | QA24O | 11:30 AM | >99.97%   | >99.98% | >99.86%      | >99.93%    | >99.92%  |
| 12-02-2009 | QA24J | 1:00 PM  | 99.98%    | 99.99%  | >99.86%      | >99.93%    | >99.92%  |
| 11-30-2009 | QA24F | 3:00 PM  | 99.98%    | >99.99% | >99.87%      | >99.94%    | >99.92%  |
| 12-02-2009 | QA24A | 3:00 PM  | 99.90%    | 99.97%  | >99.86%      | >99.94%    | >99.92%  |
| 11-30-2009 | QA24H | 4:00 PM  | 99.97%    | 99.99%  | >99.89%      | >99.94%    | >99.93%  |
| 12-02-2009 | QA24B | 5:00 PM  | 99.98%    | 99.99%  | >99.89%      | >99.94%    | >99.93%  |

### 3.4 VPH-1, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time     | Component |         |        |        |        |          |
|------------|-------|----------|-----------|---------|--------|--------|--------|----------|
|            |       |          | MTBE      | pentane | hexane | octane | decane | dodecane |
| 11-30-2009 | QA24L | 1:30 AM  | <500      | <500    | <500   | <500   | <500   | <500     |
| 11-30-2009 | QA24E | 1:30 AM  | 5.7       | <5      | <5     | <5     | <5     | <5       |
| 12-02-2009 | QA24D | 11:30 AM | <500      | <500    | <500   | <500   | <500   | <500     |
| 12-02-2009 | QA24O | 11:30 AM | 6.1       | <5      | <5     | <5     | <5     | <5       |
| 12-02-2009 | QA24K | 1:00 PM  | NA        | NA      | NA     | NA     | NA     | NA       |
| 12-02-2009 | QA24J | 1:00 PM  | 9.0       | <5      | <5     | <5     | <5     | <5       |
| 11-30-2009 | QA24I | 3:00 PM  | <500      | <500    | <500   | <500   | <500   | <500     |
| 11-30-2009 | QA24F | 3:00 PM  | <5        | <5      | <5     | <5     | <5     | <5       |
| 12-02-2009 | QA24C | 3:00 PM  | <500      | <500    | <500   | <500   | <500   | <500     |
| 12-02-2009 | QA24A | 3:00 PM  | 21        | <5      | <5     | 7.5    | <5     | <5       |
| 11-30-2009 | QA24G | 4:00 PM  | <750      | <750    | <750   | <750   | <750   | <750     |
| 11-30-2009 | QA24H | 4:00 PM  | 5.4       | <5      | <5     | <5     | <5     | <5       |
| 12-02-2009 | QA24M | 5:00 PM  | <500      | <500    | <500   | <500   | <500   | <500     |
| 12-02-2009 | QA24B | 5:00 PM  | 19        | <5      | <5     | <5     | <5     | <5       |

NA – Results not available from lab. Concentrations out of range of instrumentation.

NOTE: Not able to calculate removal efficiency of the table above due to the inlet concentrations falling under the detection limits.

### 3.5 VPH-2-Aromatics, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time     | Component |         |         |
|------------|-------|----------|-----------|---------|---------|
|            |       |          | C8-C10    | C10-C12 | C12-C13 |
| 11-30-2009 | QA24L | 1:30 AM  | 8700      | <5000   | <5000   |
| 11-30-2009 | QA24E | 1:30 AM  | <50       | <50     | <50     |
| 12-02-2009 | QA24D | 11:30 AM | 8700      | <5000   | <5000   |
| 12-02-2009 | QA24O | 11:30 AM | <50       | <50     | <50     |
| 12-02-2009 | QA24K | 1:00 PM  | NA        | NA      | NA      |
| 12-02-2009 | QA24J | 1:00 PM  | <50       | <50     | <50     |
| 11-30-2009 | QA24I | 3:00 PM  | 8500      | <5000   | <5000   |
| 11-30-2009 | QA24F | 3:00 PM  | <50       | <50     | <50     |
| 12-02-2009 | QA24C | 3:00 PM  | 8500      | <5000   | <5000   |
| 12-02-2009 | QA24A | 3:00 PM  | <50       | <50     | <50     |
| 11-30-2009 | QA24G | 4:00 PM  | 13,000    | <7500   | <7500   |
| 11-30-2009 | QA24H | 4:00 PM  | <50       | <50     | <50     |
| 12-02-2009 | QA24M | 5:00 PM  | 10000     | <5000   | <5000   |
| 12-02-2009 | QA24B | 5:00 PM  | <50       | <50     | <50     |

NA – Results not available from lab. Concentrations out of range of instrumentation.

### 3.6 VPH-2-Aromatics, Removal efficiency in %

| Date       | ID    | Time     | Component |         |         |
|------------|-------|----------|-----------|---------|---------|
|            |       |          | C8-C10    | C10-C12 | C12-C13 |
| 11-30-2009 | QA24E | 1:30 AM  | >99.43%   | n.c.    | n.c.    |
| 12-02-2009 | QA24O | 11:30 AM | >99.43%   | n.c.    | n.c.    |
| 12-02-2009 | QA24J | 1:00 PM  | NA        | NA      | NA      |
| 11-30-2009 | QA24F | 3:00 PM  | >99.41%   | n.c.    | n.c.    |
| 12-02-2009 | QA24A | 3:00 PM  | >99.41%   | n.c.    | n.c.    |
| 11-30-2009 | QA24H | 4:00 PM  | >99.62%   | n.c.    | n.c.    |
| 12-02-2009 | QA24B | 5:00 PM  | >99.50%   | n.c.    | n.c.    |

n.c.; cannot be calculated due to the fact that both influent and effluent concentrations are below detection limit or just influent

NA – Results not available from lab. Concentrations out of range of instrumentation

### 3.7 VPH-3-Aliphatics, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time     | Component |       |        |         |
|------------|-------|----------|-----------|-------|--------|---------|
|            |       |          | C5-C6     | C6-C8 | C8-C10 | C10-C12 |
| 11-30-2009 | QA24L | 1:30 AM  | <5000     | 6400  | 15000  | <5000   |
| 11-30-2009 | QA24E | 1:30 AM  | 120       | 80    | <50    | <50     |
| 12-02-2009 | QA24D | 11:30 AM | <5000     | 5500  | 14000  | <5000   |
| 12-02-2009 | QA24O | 11:30 AM | 240       | 130   | <50    | <50     |
| 12-02-2009 | QA24K | 1:00 PM  | NA        | NA    | NA     | NA      |
| 12-02-2009 | QA24J | 1:00 PM  | 230       | 180   | <50    | <50     |
| 11-30-2009 | QA24I | 3:00 PM  | <5000     | 6500  | 17000  | <5000   |
| 11-30-2009 | QA24F | 3:00 PM  | 110       | 78    | <50    | <50     |
| 12-02-2009 | QA24C | 3:00 PM  | <5000     | 5200  | 13000  | <5000   |
| 12-02-2009 | QA24A | 3:00 PM  | 120       | 120   | <50    | <50     |
| 11-30-2009 | QA24G | 4:00 PM  | <7500     | 12000 | 30000  | <7500   |
| 11-30-2009 | QA24H | 4:00 PM  | 140       | 84    | <50    | <50     |
| 12-02-2009 | QA24M | 5:00 PM  | <5000     | 7600  | 17000  | <5000   |
| 12-02-2009 | QA24B | 5:00 PM  | 86        | 100   | <50    | <50     |

NA – Results not available from lab. Concentrations out of range of instrumentation.

### 3.8 VPH-3-Aliphatics, Removal efficiency in % for above table

| Date       | ID    | Time     | Component |        |         |         |
|------------|-------|----------|-----------|--------|---------|---------|
|            |       |          | C5-C6     | C6-C8  | C8-C10  | C10-C12 |
| 11-30-2009 | QA24E | 1:30 AM  | n.c.      | 98.75% | >99.67% | n.c.    |
| 12-02-2009 | QA24O | 11:30 AM | n.c.      | 97.64% | 99.64%  | n.c.    |
| 12-02-2009 | QA24J | 1:00 PM  | NA        | NA     | NA      | n.c.    |
| 11-30-2009 | QA24F | 3:00 PM  | n.c.      | 98.80% | >99.71% | n.c.    |
| 12-02-2009 | QA24A | 3:00 PM  | n.c.      | 97.69% | >99.62% | n.c.    |
| 11-30-2009 | QA24H | 4:00 PM  | n.c.      | 99.30% | >99.83% | n.c.    |
| 12-02-2009 | QA24B | 5:00 PM  | n.c.      | 98.68% | >99.71% | n.c.    |

n.c. - cannot be calculated due to the fact that both influent and effluent concentrations are below detection limit or just influent

NA – Results not available from lab. Concentrations out of range of instrumentation.

### 3.9 EPH-1-Aliphatics, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time     | Component |         |         |         |         |
|------------|-------|----------|-----------|---------|---------|---------|---------|
|            |       |          | C8-C10    | C10-C12 | C12-C16 | C16-C21 | C21-C34 |
| 11-30-2009 | QA24L | 1:30 AM  | 100       | 230     | 420     | 240     | <40     |
| 11-30-2009 | QA24E | 1:30 AM  | <40       | <40     | <40     | <40     | <40     |
| 12-02-2009 | QA24D | 11:30 AM | 42        | <40     | 66      | 58      | <40     |
| 12-02-2009 | QA24O | 11:30 AM | NA        | NA      | NA      | NA      | NA      |
| 12-02-2009 | QA24K | 1:00 PM  | 120       | 210     | 420     | 290     | <40     |
| 12-02-2009 | QA24J | 1:00 PM  | <40       | <40     | <40     | <40     | <40     |
| 11-30-2009 | QA24I | 3:00 PM  | 76        | 110     | 220     | 150     | <40     |
| 11-30-2009 | QA24F | 3:00 PM  | <40       | <40     | <40     | <40     | <40     |
| 12-02-2009 | QA24C | 3:00 PM  | 160       | 250     | 670     | 510     | 60      |
| 12-02-2009 | QA24A | 3:00 PM  | <40       | <40     | 90      | 46      | <40     |
| 11-30-2009 | QA24G | 4:00 PM  | 250       | 260     | 530     | 350     | <40     |
| 11-30-2009 | QA24H | 4:00 PM  | <40       | <40     | <40     | <40     | <40     |
| 12-02-2009 | QA24M | 5:00 PM  | 50        | 44      | 100     | 80      | <40     |
| 12-02-2009 | QA24B | 5:00 PM  | <40       | <40     | <40     | <40     | <40     |

NA – Results not available from lab. Concentrations out of range of instrumentation.

### 3.1.0 EPH-1-Aliphatics, Removal efficiency in %

| Date       | ID    | Time     | Component |         |         |         |         |
|------------|-------|----------|-----------|---------|---------|---------|---------|
|            |       |          | C8-C10    | C10-C12 | C12-C16 | C16-C21 | C21-C34 |
| 11-30-2009 | QA24E | 1:30 AM  | >60.00%   | >82.61% | >90.48% | >83.33% | n.c.    |
| 12-02-2009 | QA24O | 11:30 AM | NA        | NA      | NA      | NA      | NA      |
| 12-02-2009 | QA24J | 1:00 PM  | >66.67%   | >80.95% | >90.48% | >86.21% | n.c.    |
| 11-30-2009 | QA24F | 3:00 PM  | >47.37%   | >63.64% | >81.82% | >73.33% | n.c.    |
| 12-02-2009 | QA24A | 3:00 PM  | >75.00%   | >84.00% | 86.57%  | 90.98%  | >33.33% |
| 11-30-2009 | QA24H | 4:00 PM  | >84.00%   | >84.62% | >92.45% | >88.57% | n.c.    |
| 12-02-2009 | QA24B | 5:00 PM  | >20.00%   | >9.09%  | >60.00% | >50.00% | n.c.    |

n.c.: cannot be calculated due to the fact that both influent and effluent concentrations are below detection limit or just influent

NA: Results not available from lab. Concentrations out of range of instrumentation.

### 3.1.1 EPH-1-Aromatics, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time     | Component |         |         |         |         |
|------------|-------|----------|-----------|---------|---------|---------|---------|
|            |       |          | C8-C10    | C10-C12 | C12-C16 | C16-C21 | C21-C34 |
| 11-30-2009 | QA24L | 1:30 AM  | 4300      | 1100    | 1400    | 440     | <40     |
| 11-30-2009 | QA24E | 1:30 AM  | <40       | <40     | <40     | 52      | <40     |
| 12-02-2009 | QA24D | 11:30 AM | 4300      | 1500    | 1400    | 260     | <40     |
| 12-02-2009 | QA24O | 11:30 AM | NA        | NA      | NA      | NA      | NA      |
| 12-02-2009 | QA24K | 1:00 PM  | 4800      | 1700    | 1900    | 410     | <40     |
| 12-02-2009 | QA24J | 1:00 PM  | 52        | <40     | 40      | 66      | <40     |
| 11-30-2009 | QA24I | 3:00 PM  | 5600      | 1100    | 1200    | 310     | <40     |
| 11-30-2009 | QA24F | 3:00 PM  | <40       | <40     | <40     | <40     | <40     |
| 12-02-2009 | QA24C | 3:00 PM  | 4800      | 1300    | 1500    | 570     | 60      |
| 12-02-2009 | QA24A | 3:00 PM  | <40       | <40     | <40     | <40     | <40     |
| 11-30-2009 | QA24G | 4:00 PM  | 12000     | 1300    | 1300    | 420     | 48      |
| 11-30-2009 | QA24H | 4:00 PM  | 50        | <40     | 62      | <40     | <40     |
| 12-02-2009 | QA24M | 5:00 PM  | 6500      | 970     | 910     | 240     | <40     |
| 12-02-2009 | QA24B | 5:00 PM  | <40       | <40     | <40     | 58      | <40     |

NA – Results not available from lab. Concentrations out of range of instrumentation.

### 3.1.2 EPH-1-Aromatics, Removal efficiency in %

| Date       | ID    | Time     | Component |         |         |         |         |
|------------|-------|----------|-----------|---------|---------|---------|---------|
|            |       |          | C8-C10    | C10-C12 | C12-C16 | C16-C21 | C21-C34 |
| 11-30-2009 | QA24E | 1:30 AM  | >99.07%   | >96.36% | >97.14% | 88.18%  | n.c.    |
| 12-02-2009 | QA24O | 11:30 AM | NA        | NA      | NA      | NA      | NA      |
| 12-02-2009 | QA24J | 1:00 PM  | 98.92%    | >97.65% | 97.89%  | 83.90%  | n.c.    |
| 11-30-2009 | QA24F | 3:00 PM  | >99.29%   | >96.36% | >96.67% | >87.10% | n.c.    |
| 12-02-2009 | QA24A | 3:00 PM  | >99.17%   | >96.92% | >97.33% | >92.98% | >33.33% |
| 11-30-2009 | QA24H | 4:00 PM  | 99.58%    | >96.92% | 95.23%  | >90.48% | >16.67% |
| 12-02-2009 | QA24B | 5:00 PM  | >99.38%   | >95.88% | >95.60% | 75.83%  | n.c.    |

n.c.: cannot be calculated due to the fact that both influent and effluent concentrations are below detection limit or just influent

NA: Results not available from lab. Concentrations out of range of instrumentation.

### 3.1.3 Volatiles, Concentrations in mg/l, inlet and outlet alternating

| Date       | ID    | Time  | Component |         |              |            |          |
|------------|-------|-------|-----------|---------|--------------|------------|----------|
|            |       |       | benzene   | toluene | ethylbenzene | m.p-xylene | o-xylene |
| 03-12-2009 | QA69A | 16:30 | 4.3       | 9.4     | 0.84         | 3.9        | 1.5      |
| 03-12-2009 | QA69B | 16:30 | <0.005    | <0.005  | <0.005       | <0.01      | <0.005   |
| 03-12-2009 | QA64A | 12:05 | 5.2       | 10      | 0.67         | 2.8        | 1.2      |
| 03-12-2009 | QA64B | 12:05 | <0.01     | <0.01   | <0.01        | <0.02      | <0.01    |
| 03-12-2009 | QA64C | 15:00 | 6.7       | 12      | 0.69         | 3          | 1.2      |
| 03-12-2009 | QA64D | 15:00 | <0.015    | <0.015  | <0.015       | <0.030     | <0.015   |
| 03-12-2009 | QA64E | 13:30 | 6.5       | 12      | 0.68         | 3          | 1.2      |
| 03-12-2009 | QA64F | 13:30 | <0.015    | <0.015  | <0.015       | <0.03      | <0.015   |
| 04-12-2009 | QA64G | 12:00 | 6.6       | 14      | 0.78         | 3.6        | 1.4      |
| 04-12-2009 | QA64H | 12:00 | <0.003    | <0.003  | <0.003       | <0.006     | <0.003   |
| 04-12-2009 | QA64I | 14:10 | 6.8       | 15      | 0.84         | 3.7        | 1.4      |
| 04-12-2009 | QA64J | 14:10 | 0.0069    | <0.003  | <0.003       | <0.006     | <0.003   |
| 04-12-2009 | QA64K | 3:00  | 8.4       | 18      | 1            | 4.6        | 1.6      |
| 04-12-2009 | QA64L | 3:00  | <0.003    | <0.003  | <0.003       | <0.006     | <0.003   |
| 04-12-2009 | QA64M | 16:30 | 8.1       | 17      | 0.96         | 4.6        | 1.6      |
| 04-12-2009 | QA64N | 16:30 | 0.018     | <0.003  | <0.003       | <0.006     | <0.003   |
| 05-12-2009 | QA64O | 16:30 | 4.6       | 10      | 0.77         | 3.2        | 1.3      |
| 05-12-2009 | QA64P | 16:30 | <0.005    | <0.005  | <0.005       | <0.01      | <0.005   |
| 05-12-2009 | QA64Q | 15:15 | 6         | 12      | 0.87         | 4          | 1.6      |
| 05-12-2009 | QA64R | 15:15 | <0.01     | <0.01   | <0.01        | <0.02      | <0.01    |
| 05-12-2009 | QA64S | 16:30 | 6         | 11      | 0.7          | 3          | 1.3      |
| 05-12-2009 | QA64T | 16:30 | <0.01     | <0.01   | <0.01        | <0.02      | <0.01    |

### 3.1.4 Volatiles, Removal efficiency in % of above table 3.1.1

| Date       | ID    | Time  | Component |         |              |            |          |
|------------|-------|-------|-----------|---------|--------------|------------|----------|
|            |       |       | benzene   | toluene | ethylbenzene | m.p-xylene | o-xylene |
| 03-12-2009 | QA69B | 16:30 | >99.8     | >99.9   | >99.4        | >99.7      | >99.6    |
| 03-12-2009 | QA64B | 12:05 | >99.8     | >99.9   | >98.5        | >99.3      | >99.2    |
| 03-12-2009 | QA64D | 15:00 | >99.7     | >99.8   | >97.8        | >99        | >98.7    |
| 03-12-2009 | QA64F | 13:30 | >99.7     | >99.8   | >97.7        | >99        | >98.7    |
| 04-12-2009 | QA64H | 12:00 | >99.9     | >99.9   | >99.6        | >99.8      | >99.7    |
| 04-12-2009 | QA64J | 14:10 | >99.8     | >99.9   | >99.6        | >99.8      | >99.7    |
| 04-12-2009 | QA64L | 3:00  | >99.9     | >99.9   | >99.7        | >99.8      | >99.8    |
| 04-12-2009 | QA64N | 16:30 | >99.7     | >99.9   | >99.6        | >99.8      | >99.8    |
| 05-12-2009 | QA64P | 16:30 | >99.8     | >99.9   | >99.3        | >99.6      | >99.6    |
| 05-12-2009 | QA64R | 15:15 | >99.8     | >99.9   | >98.8        | >99.5      | >99.3    |
| 05-12-2009 | QA64T | 16:30 | >99.8     | >99.9   | >98.5        | >99.3      | >99.2    |

### 3.1.5 VPH-1, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time  | Component |         |        |        |        |          |
|------------|-------|-------|-----------|---------|--------|--------|--------|----------|
|            |       |       | MTBE      | pentane | hexane | octane | decane | dodecane |
| 03-12-2009 | QA69A | 16:30 | <750      | <750    | <750   | <750   | <750   | <750     |
| 03-12-2009 | QA69B | 16:30 | <5        | <5      | 14     | <5     | <5     | <5       |
| 03-12-2009 | QA64A | 12:05 | <500      | 930     | <500   | <500   | <500   | <500     |
| 03-12-2009 | QA64B | 12:05 | <5        | 1100    | 16     | <5     | <5     | <5       |
| 03-12-2009 | QA64C | 15:00 | <500      | 36000   | <500   | <500   | <500   | <500     |
| 03-12-2009 | QA64D | 15:00 | <5        | <5      | 25     | <5     | <5     | <5       |
| 03-12-2009 | QA64E | 13:30 | <500      | 35000   | <500   | <5000  | <500   | <500     |
| 03-12-2009 | QA64F | 13:30 | <5        | 2000    | 29     | <5     | <5     | <5       |
| 04-12-2009 | QA64G | 12:00 | <500      | 2800    | <500   | <500   | <500   | <500     |
| 04-12-2009 | QA64H | 12:00 | 6.8       | 97      | <5     | <5     | <5     | 8        |
| 04-12-2009 | QA64I | 14:10 | <500      | 1500    | <500   | <500   | <500   | <500     |
| 04-12-2009 | QA64J | 14:10 | 5         | <5      | <5     | <5     | <5     | <5       |
| 04-12-2009 | QA64K | 3:00  | <500      | 1400    | <500   | <500   | <500   | <500     |
| 04-12-2009 | QA64L | 3:00  | 5         | <5      | <5     | <5     | <5     | 7.9      |
| 04-12-2009 | QA64M | 16:30 | <500      | 1100    | <500   | <500   | <500   | <500     |
| 04-12-2009 | QA64N | 16:30 | 6.3       | <5      | 5.5    | <5     | <5     | 9.1      |
| 05-12-2009 | QA64O | 16:30 | <500      | 1400    | <500   | <500   | <500   | <500     |
| 05-12-2009 | QA64P | 16:30 | 6.5       | <5      | 18     | <5     | <5     | <5       |
| 05-12-2009 | QA64Q | 15:15 | <500      | 1100    | <500   | <500   | <500   | <500     |
| 05-12-2009 | QA64R | 15:15 | 7.9       | <5      | 14     | <5     | <5     | <5       |
| 05-12-2009 | QA64S | 16:30 | <500      | 520     | <500   | <500   | <500   | <500     |
| 05-12-2009 | QA64T | 16:30 | 23        | <5      | 19     | <5     | <5     | <5       |

### 3.16 VPH-1, Removal efficiency in %

| Date       | ID    | Time  | Component |         |        |        |        |          |
|------------|-------|-------|-----------|---------|--------|--------|--------|----------|
|            |       |       | MTBE      | pentane | hexane | octane | decane | dodecane |
| 03-12-2009 | QA69B | 16:30 | n.c.      | n.c.    | n.c.   | n.c.   | n.c.   | n.c.     |
| 03-12-2009 | QA64B | 12:05 | n.c.      | n.c.    | n.c.   | n.c.   | n.c.   | n.c.     |
| 03-12-2009 | QA64D | 15:00 | n.c.      | >99.9   | n.c.   | n.c.   | n.c.   | n.c.     |
| 03-12-2009 | QA64F | 13:30 | n.c.      | 94.3    | n.c.   | n.c.   | n.c.   | n.c.     |
| 04-12-2009 | QA64H | 12:00 | n.c.      | 96.5    | n.c.   | n.c.   | n.c.   | n.c.     |
| 04-12-2009 | QA64J | 14:10 | n.c.      | >99.7   | n.c.   | n.c.   | n.c.   | n.c.     |
| 04-12-2009 | QA64L | 3:00  | n.c.      | >99.6   | n.c.   | n.c.   | n.c.   | n.c.     |
| 04-12-2009 | QA64N | 16:30 | n.c.      | >99.5   | n.c.   | n.c.   | n.c.   | n.c.     |
| 05-12-2009 | QA64P | 16:30 | n.c.      | >99.6   | n.c.   | n.c.   | n.c.   | n.c.     |
| 05-12-2009 | QA64R | 15:15 | n.c.      | >99.5   | n.c.   | n.c.   | n.c.   | n.c.     |
| 05-12-2009 | QA64T | 16:30 | n.c.      | >99.0   | n.c.   | n.c.   | n.c.   | n.c.     |

n.c.; cannot be calculated due to the fact that both influent and effluent concentrations are below detection limit

### 3.1.7 VPH-2-Aromatics, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time  | Component |         |         |
|------------|-------|-------|-----------|---------|---------|
|            |       |       | C8-C10    | C10-C12 | C12-C13 |
| 03-12-2009 | QA69A | 16:30 | 12000     | <7500   | <7500   |
| 03-12-2009 | QA69B | 16:30 | <50       | <50     | <50     |
| 03-12-2009 | QA64A | 12:05 | 7900      | <5000   | <5000   |
| 03-12-2009 | QA64B | 12:05 | <50       | <50     | <50     |
| 03-12-2009 | QA64C | 15:00 | 8000      | <5000   | <5000   |
| 03-12-2009 | QA64D | 15:00 | <50       | <50     | <50     |
| 03-12-2009 | QA64E | 13:30 | 8200      | <5000   | <5000   |
| 03-12-2009 | QA64F | 13:30 | <50       | <50     | <50     |
| 04-12-2009 | QA64G | 12:00 | 9000      | <5000   | <5000   |
| 04-12-2009 | QA64H | 12:00 | <50       | <50     | <50     |
| 04-12-2009 | QA64I | 14:10 | 9000      | <5000   | <5000   |
| 04-12-2009 | QA64J | 14:10 | <50       | <50     | <50     |
| 04-12-2009 | QA64K | 3:00  | 11000     | <5000   | <5000   |
| 04-12-2009 | QA64L | 3:00  | <50       | <50     | <50     |
| 04-12-2009 | QA64M | 16:30 | 12000     | <5000   | <5000   |
| 04-12-2009 | QA64N | 16:30 | <50       | 52      | <50     |
| 05-12-2009 | QA64O | 16:30 | 8700      | <5000   | <5000   |
| 05-12-2009 | QA64P | 16:30 | <50       | <50     | <50     |
| 05-12-2009 | QA64Q | 15:15 | 11000     | <5000   | <5000   |
| 05-12-2009 | QA64R | 15:15 | 62        | <50     | <50     |
| 05-12-2009 | QA64S | 16:30 | 8400      | <5000   | <5000   |
| 05-12-2009 | QA64T | 16:30 | 76        | <50     | <50     |

### 3.1.8 VPH-2-Aromatics, Removal efficiency in %

| Date       | ID    | Time  | Component |       |        |
|------------|-------|-------|-----------|-------|--------|
|            |       |       | C5-C6     | C6-C8 | C8-C10 |
| 03-12-2009 | QA69B | 16:30 | >99.5     | n.c.  | n.c.   |
| 03-12-2009 | QA64B | 12:05 | >99.3     | n.c.  | n.c.   |
| 03-12-2009 | QA64D | 15:00 | >99.3     | n.c.  | n.c.   |
| 03-12-2009 | QA64F | 13:30 | >99.3     | n.c.  | n.c.   |
| 04-12-2009 | QA64H | 12:00 | >99.4     | n.c.  | n.c.   |
| 04-12-2009 | QA64J | 14:10 | >99.4     | n.c.  | n.c.   |
| 04-12-2009 | QA64L | 3:00  | >99.5     | n.c.  | n.c.   |
| 04-12-2009 | QA64N | 16:30 | >99.5     | n.c.  | n.c.   |
| 05-12-2009 | QA64P | 16:30 | >99.4     | n.c.  | n.c.   |
| 05-12-2009 | QA64R | 15:15 | 99.4      | n.c.  | n.c.   |
| 05-12-2009 | QA64T | 16:30 | 99        | n.c.  | n.c.   |

n.c.; cannot be calculated due to the fact that both influent and effluent concentrations are below detection limit

### 3.1.9 VPH-3-Aliphatics, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time  | Component |       |        |         |
|------------|-------|-------|-----------|-------|--------|---------|
|            |       |       | C5-C6     | C6-C8 | C8-C10 | C10-C12 |
| 03-12-2009 | QA69A | 16:30 | <7500     | 17000 | 18000  | <7500   |
| 03-12-2009 | QA69B | 16:30 | 200       | 130   | <50    | <50     |
| 03-12-2009 | QA64A | 12:05 | 5300      | 6200  | 20000  | <5000   |
| 03-12-2009 | QA64B | 12:05 | 1700      | 310   | <50    | <50     |
| 03-12-2009 | QA64C | 15:00 | 46000     | 9000  | 20000  | <5000   |
| 03-12-2009 | QA64D | 15:00 | 1800      | 360   | <50    | <50     |
| 03-12-2009 | QA64E | 13:30 | 45000     | 9100  | 21000  | <5000   |
| 03-12-2009 | QA64F | 13:30 | 2700      | 410   | <50    | <50     |
| 04-12-2009 | QA64G | 12:00 | 5700      | 7800  | 26000  | <5000   |
| 04-12-2009 | QA64H | 12:00 | 390       | 59    | <50    | <50     |
| 04-12-2009 | QA64I | 14:10 | <5000     | 7700  | 26000  | <5000   |
| 04-12-2009 | QA64J | 14:10 | 450       | 83    | <50    | <50     |
| 04-12-2009 | QA64K | 3:00  | <5000     | 12000 | 30000  | <5000   |
| 04-12-2009 | QA64L | 3:00  | 570       | 58    | <50    | <50     |
| 04-12-2009 | QA64M | 16:30 | <5000     | 13000 | 30000  | <5000   |
| 04-12-2009 | QA64N | 16:30 | 420       | 110   | <50    | <50     |
| 05-12-2009 | QA64O | 16:30 | 6300      | 5700  | 18000  | <5000   |
| 05-12-2009 | QA64P | 16:30 | 580       | 150   | <50    | <50     |
| 05-12-2009 | QA64Q | 15:15 | 5400      | 7800  | 21000  | <5000   |
| 05-12-2009 | QA64R | 15:15 | 750       | 220   | <50    | <50     |
| 05-12-2009 | QA64S | 16:30 | <5000     | 7000  | 20000  | <5000   |
| 05-12-2009 | QA64T | 16:30 | 1000      | 400   | <50    | <50     |

### 3.2.0 VPH-3-Aliphatics, Removal efficiency in %

| Date       | ID    | Time  | Component |       |        |         |
|------------|-------|-------|-----------|-------|--------|---------|
|            |       |       | C5-C6     | C6-C8 | C8-C10 | C10-C12 |
| 03-12-2009 | QA69B | 16:30 | n.c.      | 99.2  | >99.7  | n.c.    |
| 03-12-2009 | QA64B | 12:05 | 67.9      | 95    | >99.7  | n.c.    |
| 03-12-2009 | QA64D | 15:00 | 96.1      | 96    | >99.7  | n.c.    |
| 03-12-2009 | QA64F | 13:30 | 94        | 95.4  | >99.7  | n.c.    |
| 04-12-2009 | QA64H | 12:00 | 93.1      | 99.2  | >99.8  | n.c.    |
| 04-12-2009 | QA64J | 14:10 | n.c.      | 98.9  | >99.8  | n.c.    |
| 04-12-2009 | QA64L | 3:00  | n.c.      | 99.5  | >99.8  | n.c.    |
| 04-12-2009 | QA64N | 16:30 | n.c.      | 99.1  | >99.8  | n.c.    |
| 05-12-2009 | QA64P | 16:30 | 90.8      | 97.3  | >99.7  | n.c.    |
| 05-12-2009 | QA64R | 15:15 | 86.1      | 97.1  | >99.7  | n.c.    |
| 05-12-2009 | QA64T | 16:30 | n.c.      | 94.2  | >99.7  | n.c.    |

n.c.; cannot be calculated due to the fact that influent, effluent or both concentrations are below detection limit

### 3.2.1 EPH-1-Aliphatics, Concentrations in µg/l, inlet and outlet alternating

| Date       | ID    | Time  | Component |         |         |         |         |
|------------|-------|-------|-----------|---------|---------|---------|---------|
|            |       |       | C8-C10    | C10-C12 | C12-C16 | C16-C21 | C21-C34 |
| 03-12-2009 | QA69A | 16:30 | 4400      | 5800    | 9900    | 7500    | 3100    |
| 03-12-2009 | QA69B | 16:30 | <40       | <40     | 58      | <40     | <40     |
| 03-12-2009 | QA64A | 12:05 | 1400      | 230     | 230     | 150     | <40     |
| 03-12-2009 | QA64B | 12:05 | <40       | <40     | <40     | <40     | <40     |
| 03-12-2009 | QA64C | 15:00 | 1400      | 430     | 700     | 560     | 180     |
| 03-12-2009 | QA64D | 15:00 | <40       | <40     | <40     | <40     | <40     |
| 03-12-2009 | QA64E | 13:30 | 440       | 88      | 150     | 96      | <40     |
| 03-12-2009 | QA64F | 13:30 | <40       | <40     | <40     | <40     | <40     |
| 04-12-2009 | QA64G | 12:00 | n.a.      | n.a.    | n.a.    | n.a.    | n.a.    |
| 04-12-2009 | QA64H | 12:00 | <40       | <40     | 160     | 150     | <40     |
| 04-12-2009 | QA64I | 14:10 | 650       | 390     | 730     | 540     | 150     |
| 04-12-2009 | QA64J | 14:10 | <40       | <40     | 56      | 52      | <40     |
| 04-12-2009 | QA64K | 3:00  | 1800      | 1600    | 3100    | 2400    | 810     |
| 04-12-2009 | QA64L | 3:00  | <40       | <40     | 120     | 76      | <40     |
| 04-12-2009 | QA64M | 16:30 | n.a.      | n.a.    | n.a.    | n.a.    | n.a.    |
| 04-12-2009 | QA64N | 16:30 | <40       | <40     | 110     | 76      | <40     |
| 05-12-2009 | QA64O | 16:30 | 960       | 540     | 870     | 720     | 200     |
| 05-12-2009 | QA64P | 16:30 | <40       | <40     | <40     | <40     | <40     |
| 05-12-2009 | QA64Q | 15:15 | 1800      | 1400    | 2400    | 1700    | 660     |
| 05-12-2009 | QA64R | 15:15 | <40       | <40     | <40     | <40     | <40     |
| 05-12-2009 | QA64S | 16:30 | 1200      | 640     | 1000    | 700     | 250     |
| 05-12-2009 | QA64T | 16:30 | <40       | <40     | <40     | <40     | <40     |

n.a.; not analyzed

### 3.2.3 EPH-1-Aliphatics, Removal efficiency in %

| Date       | ID    | Time  | Component |         |         |         |         |
|------------|-------|-------|-----------|---------|---------|---------|---------|
|            |       |       | C8-C10    | C10-C12 | C12-C16 | C16-C21 | C21-C34 |
| 03-12-2009 | QA69B | 16:30 | >99.0     | >99.3   | 99.4    | >99.4   | >98.7   |
| 03-12-2009 | QA64B | 12:05 | >97.1     | >82.6   | >82.6   | >73.3   | n.c.    |
| 03-12-2009 | QA64D | 15:00 | >97.1     | >90.6   | >94.2   | >92.8   | >77.7   |
| 03-12-2009 | QA64F | 13:30 | >90.9     | >54.5   | >73.3   | >58.3   | n.c.    |
| 04-12-2009 | QA64H | 12:00 | n.c. 1    | n.c. 1  | n.c. 1  | n.c. 1  | n.c. 1  |
| 04-12-2009 | QA64J | 14:10 | >93.8     | >89.7   | 92.3    | 90.3    | >73.3   |
| 04-12-2009 | QA64L | 3:00  | >97.7     | >97.5   | 96.1    | 96.8    | >95.0   |
| 04-12-2009 | QA64N | 16:30 | n.c. 1    | n.c. 1  | n.c. 1  | n.c. 1  | n.c. 1  |
| 05-12-2009 | QA64P | 16:30 | 95.8      | >92.5   | >95.4   | >94.4   | >80     |
| 05-12-2009 | QA64R | 15:15 | >97.7     | >97.1   | >98.3   | >97.6   | >93.9   |
| 05-12-2009 | QA64T | 16:30 | >96.6     | >93.7   | >96     | >94.2   | >84     |

n.c.; cannot be calculated due to the fact that influent, effluent or both concentrations are below detection limit

n.c. 1; cannot be calculated due to absence of influent concentrations

### 3.2.4 EPH-2-Aromatics, inlet and outlet alternating

| Date       | ID    | Time  | Component |         |         |         |         |
|------------|-------|-------|-----------|---------|---------|---------|---------|
|            |       |       | C8-C10    | C10-C12 | C12-C16 | C16-C21 | C21-C34 |
| 03-12-2009 | QA69A | 16:30 | 6700      | 4300    | 7000    | 5800    | 1400    |
| 03-12-2009 | QA69B | 16:30 | 56        | 66      | 130     | 88      | <40     |
| 03-12-2009 | QA64A | 12:05 | 3900      | 1500    | 1600    | 660     | 90      |
| 03-12-2009 | QA64B | 12:05 | 60        | 74      | 110     | 68      | <40     |
| 03-12-2009 | QA64C | 15:00 | 3800      | 1300    | 1500    | 850     | 110     |
| 03-12-2009 | QA64D | 15:00 | 54        | 62      | 110     | 96      | <40     |
| 03-12-2009 | QA64E | 13:30 | 5500      | 1400    | 1500    | 700     | 82      |
| 03-12-2009 | QA64F | 13:30 | <40       | 48      | 62      | 44      | <40     |
| 04-12-2009 | QA64G | 12:00 | n.a.      | n.a.    | n.a.    | n.a.    | n.a.    |
| 04-12-2009 | QA64H | 12:00 | <40       | <40     | <40     | <40     | <40     |
| 04-12-2009 | QA64I | 14:10 | 5300      | 740     | 810     | 420     | 94      |
| 04-12-2009 | QA64J | 14:10 | 88        | <40     | <40     | <40     | <40     |
| 04-12-2009 | QA64K | 3:00  | 4800      | 1200    | 1800    | 1400    | 350     |
| 04-12-2009 | QA64L | 3:00  | 66        | <40     | <40     | <40     | <40     |
| 04-12-2009 | QA64M | 16:30 | n.a.      | n.a.    | n.a.    | n.a.    | n.a.    |
| 04-12-2009 | QA64N | 16:30 | 44        | <40     | <40     | <40     | <40     |
| 05-12-2009 | QA64O | 16:30 | 4400      | 1700    | 2000    | 970     | 250     |
| 05-12-2009 | QA64P | 16:30 | <40       | <40     | 78      | 56      | <40     |
| 05-12-2009 | QA64Q | 15:15 | 5500      | 2100    | 2600    | 1600    | 450     |
| 05-12-2009 | QA64R | 15:15 | 76        | 80      | 140     | 70      | <40     |
| 05-12-2009 | QA64S | 16:30 | 6800      | 1700    | 1800    | 900     | 140     |
| 05-12-2009 | QA64T | 16:30 | 74        | 76      | 110     | 62      | <40     |

n.a.; not analyzed

### 3.2.5 EPH-2-Aromatics, Removal efficiency in %

| Date       | ID    | Time  | Component |         |         |         |         |
|------------|-------|-------|-----------|---------|---------|---------|---------|
|            |       |       | C8-C10    | C10-C12 | C12-C16 | C16-C21 | C21-C34 |
| 03-12-2009 | QA69B | 16:30 | 99.1      | 98.4    | 98.1    | 98.4    | >97.1   |
| 03-12-2009 | QA64B | 12:05 | 98.4      | 95      | 93.1    | 89.6    | >55.5   |
| 03-12-2009 | QA64D | 15:00 | 98.5      | 95.2    | 92.6    | 88.7    | >63.6   |
| 03-12-2009 | QA64F | 13:30 | >99.2     | 96.5    | 95.8    | 93.7    | >51.2   |
| 04-12-2009 | QA64H | 12:00 | n.c. 1    | n.c. 1  | n.c. 1  | n.c. 1  | n.c. 1  |
| 04-12-2009 | QA64J | 14:10 | 98.3      | >94.5   | >95.0   | >90.4   | >57.4   |
| 04-12-2009 | QA64L | 3:00  | 98.6      | >96.6   | >97.7   | >99.7   | >88.5   |
| 04-12-2009 | QA64N | 16:30 | n.c. 1    | n.c. 1  | n.c. 1  | n.c. 1  | n.c. 1  |
| 05-12-2009 | QA64P | 16:30 | >99.0     | >97.6   | 96.1    | 94.2    | >84     |
| 05-12-2009 | QA64R | 15:15 | 98.6      | 96.1    | 94.6    | 95.6    | >91.1   |
| 05-12-2009 | QA64T | 16:30 | 98.9      | 95.5    | 93.8    | 93.1    | >71.4   |

n.c. 1; cannot be calculated due to absence of influent concentrations

## 4 Conclusion

From the MPPE pilot plant trial at Western Refining, the following can be concluded:

### *Separation performance*

- The MPPE technology is able to remove Benzene to any level required; >99.9% removal efficiency was measured to even below detection limits
- During the 3 week trial, the Benzene level of the treated water was continuously below 0.5 ppm, with varying Benzene inlet concentrations from 3.7 to 14.0 ppm, at an average flow rate of 15 gpm
- The MPPE technology is able to remove BTEX to any level required; >99.9% removal efficiency was measured
- The MPPE technology is able to remove the indicated VPH (Volatile Petroleum Hydrocarbons) aliphatics and aromatics to any level required
- The MPPE technology is able to remove the indicated EPH (Extractable Petroleum Hydrocarbons) aliphatics and aromatics to any level required
- The MPPE technology will remove the necessary aromatic and aliphatic hydrocarbons in order to meet the “no sheen” requirement at the evaporation pond

### *Operational performance*

- The unit was operated 24 hours a day, 7 days a week, fully automated
- During day time the unit was run on process waste water
- During this period the unit was sampled by Western Refining
- During the night time the unit was switched from process waste water to fire water
- During running hours minimal shut down of the unit occurred
- Some minor difficulties with the steam pressure reducer inside the MPPE unit and the instrument air from the external compressor were met without having any influence on the performance of the unit
- The inlet bag filters had to be changed several times due to high solids loading
- The unit was successfully observed remotely without the necessity of changing parameters
- At the start up, some freezing problems occurred and were met. These were solved rapidly by installing some extra insulation and electrical tracing inside the unit and some steam tracing on external pipelines going to the unit

### **Overall conclusion:**

- **The MPPE technology proves to be very capable of lowering the Benzene concentration well below the by EPA required level of 0.5 mg/l**
- **The MPPE technology can also remove other dissolved hydrocarbons like Toluene, Ethylbenzene, Xylenes, VPH and EPH (both aliphatics and aromatics) to any level required.**



## Appendix 2: System screen

The screenshot displays the 'ESD Settings' window with the following sections:

| Tag no      | Description               | Actual | ESD Alarm | Delay |
|-------------|---------------------------|--------|-----------|-------|
| KIS26       | Watchdog step 2 and 6     | 0      | 120 min   |       |
| KIS37       | Watchdog step 3 and 7     | 0      | 120 min   |       |
| KIS46       | Watchdog step 4 and 8     | 0      | 120 min   |       |
| KIS_AS      | Watchdog autostart        | 0      | 120 min   |       |
| LICZA001_HH | Level T-01 high ESD       | 20     | 90 vol%   | 5 sec |
| LICZA003_HH | Level Drum high ESD       | 13     | 75 vol%   | 5 sec |
| TISZA003_HH | Temp. steam High ESD      | 98     | 125 °C    |       |
| TZA005_HH   | Temperature H01 high ESD  | 21     | 45 °C     |       |
| TZA005_LA   | Temperature H01 low alarm | 21     | 5 °C      |       |
|             | Delta P filter alarm      | 0.01   | 1.00 barg | 5 sec |
|             | Delta P C-01 alarm        | 0.40   | 1.00 barg | 5 sec |
|             | Delta P C-02 alarm        | 0.64   | 1.00 barg | 5 sec |
|             | ESD override time         | 0      | 0 sec     |       |

| Stop advance setpoints       |        |
|------------------------------|--------|
| Pass over transition (3 / 7) |        |
| Stop advance TSD03           | 65 °C  |
| Time Y setpoint              | 60 sec |

| Autostart setpoints              |           |
|----------------------------------|-----------|
| Pressure PIC001 / PIC002         | 0.05 barg |
| Switch values XSV016             | 91 gr.C   |
| Switch value XSV016 close at     |           |
| Switch values XSV017             | 92 gr.C   |
| Switch value XSV017 opens at     |           |
| dP correction factor C-01 / C-02 | 0.22      |
| Correction factor                |           |

| Condensate Injection (2 / 6) |           |
|------------------------------|-----------|
| PIC001 / PIC002 setpoint     | 0.10 barg |
| Time X setpoint              | 30 sec    |
| Time Z setpoint              | 10 sec    |

| Regeneration (1 / 5)         |        |
|------------------------------|--------|
| Regeneration timer (C. down) | 30 min |

| Heating up transition (4 / 8) |       |
|-------------------------------|-------|
| Stop advance TSD01 / TSD02    | 92 °C |

| PCV001 manual valve position |      |
|------------------------------|------|
| Valve position step 1 & 5    | 60 % |

**Level setpoints T-01, for opening XSV030**

|                     |      |      |                         |
|---------------------|------|------|-------------------------|
| Level setpoint high | 65 % | 35   | Flow setpoint high      |
| Level setpoint low  | 35 % | 20   | Flow setpoint normal    |
| Control P-01        |      | 1.4  | Flow setpoint low       |
|                     |      | 25 % | Low value, pump back on |
|                     |      | 20 % | Low value, pump stop    |

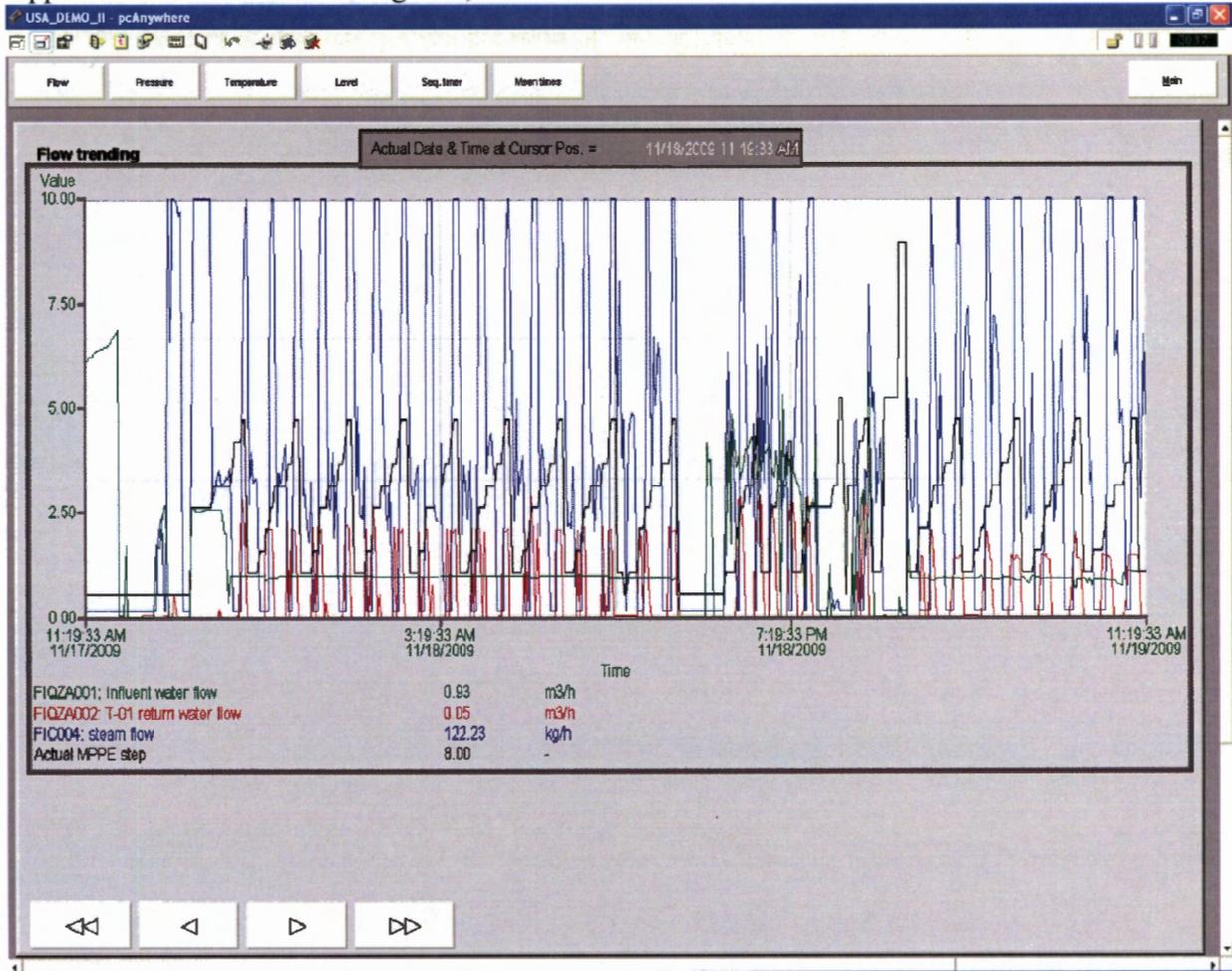
## Appendix 3: Set points and PID settings screen

The screenshot displays the 'Setpoint and PID settings' interface. The main window shows a list of process parameters with the following columns: Tag no, Description, Actual, ESD/Alarm, Delay, Step advance setpoints, and Autostart setpoints. A modal window titled 'Setpoint and PID settings' is open, showing a table of PID parameters.

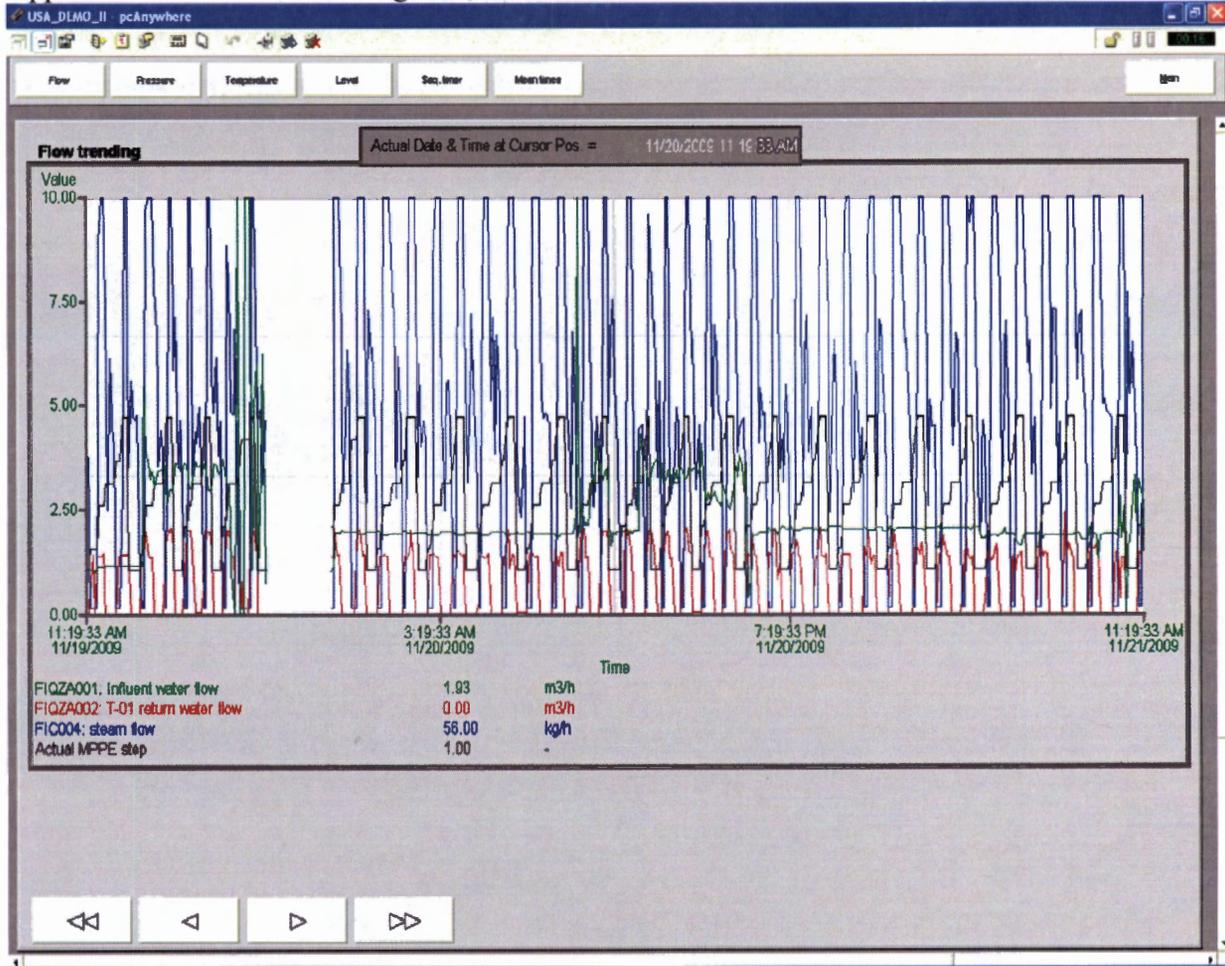
| Service description  | Setpoint  | Prop. band | Integration | Differentiation |
|--|-----------|------------|-------------|-----------------|
| FICQ001 Influent water   | 3.50 m3/h | 1.2        | 10.0 sec    | 0.0 sec         |
| FICQ002 -> EBZ001 Water return flow control                    | 1.40 m3/h | 1.1        | 2.0 sec     | 0.0 sec         |
| FICQ004 -> FCV004 Steam flow control (low, step 1 & 5)         | 50 kg/h   | 1.0        | 100. sec    | 0.0 sec         |
| FICQ004 -> FCV004 Steam flow control (High, step 4 & 8)        | 125 kg/h  |            |             |                 |
| PIC001/002 -> PCV001 Pressure relieve C-01/02 (step 4/8/0/AS)  | 0.05 barg | -1.1       | 5.0 sec     | 0.0 sec         |
| PIC001/002 -> PCV001 Pressure relieve C-01/02 (step 2/3/6/7/1) | 0.20 barg | -1.2       | 15.0 sec    | 0.0 sec         |

Below the table, there are controls for 'Level setpoint' and 'Control P-01'. The 'Level setpoint' section includes 'Level setpoint high' (65%), 'Level setpoint low' (35%), and 'Control P-01' (20 vol%). The 'Control P-01' section includes 'Flow setpoint normal' (2.0), 'Flow setpoint low' (1.4), 'Low value, pump back on' (25%), and 'Low value, pump stop' (20%).

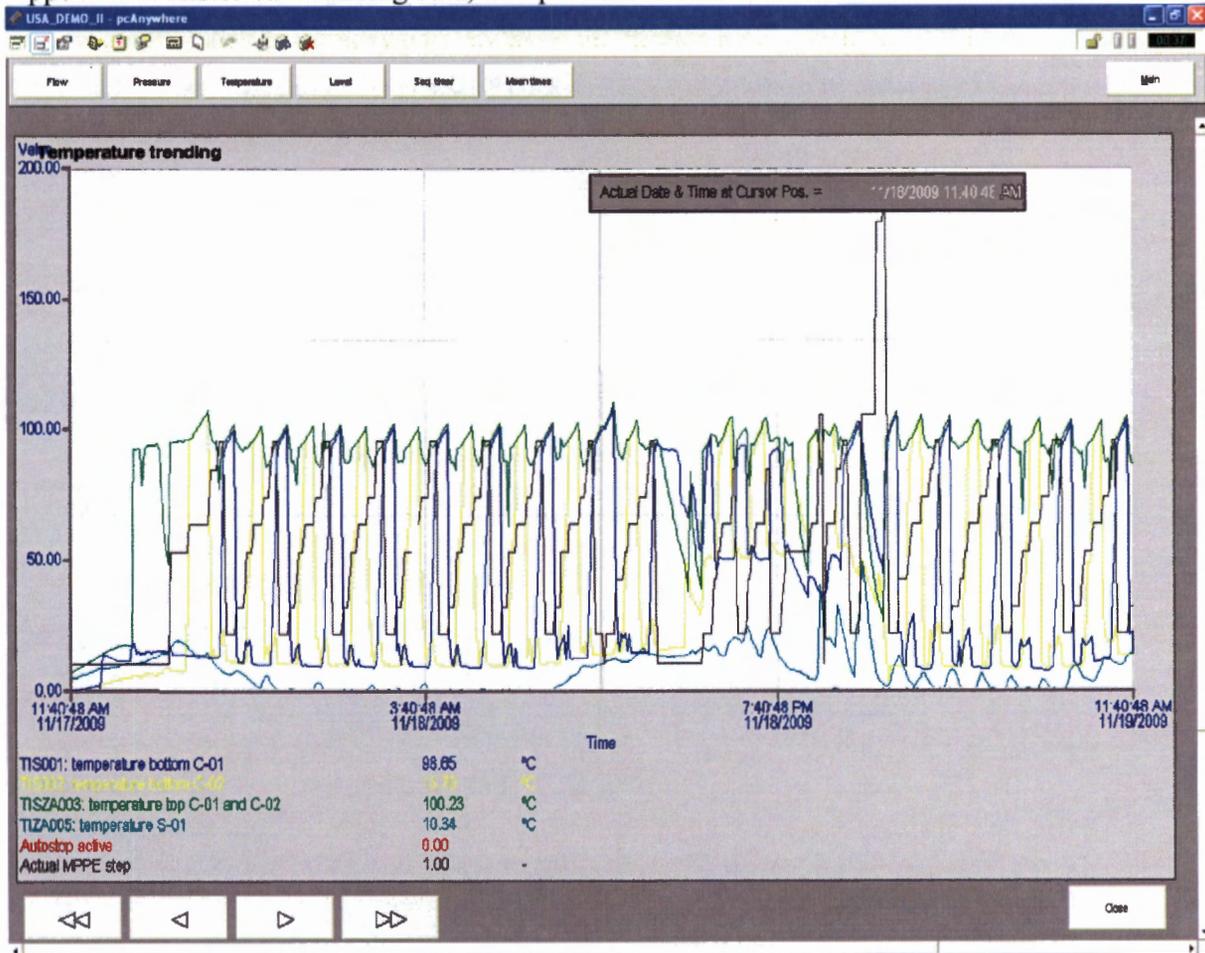
## Appendix 4: Historical Trending data; Flow



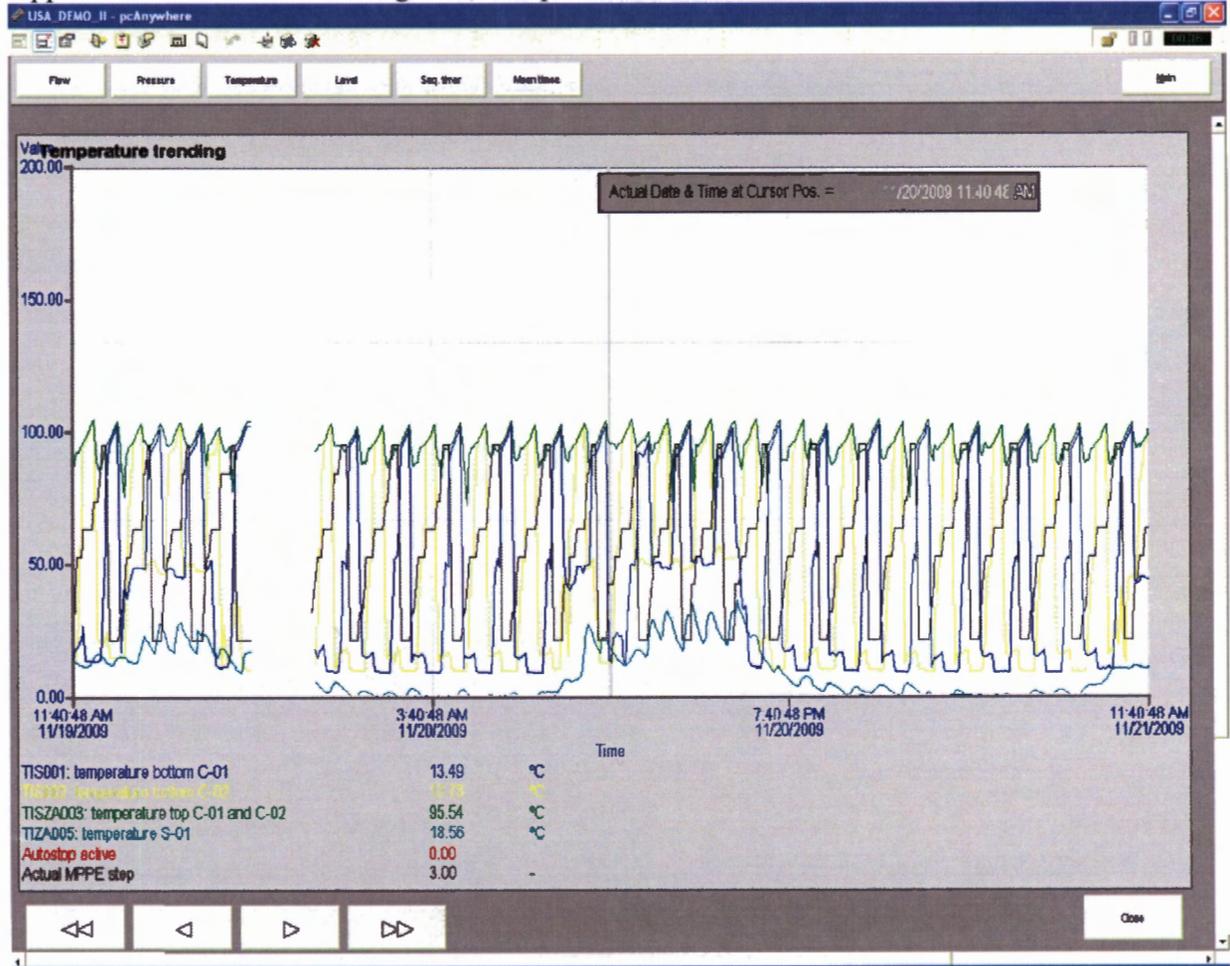
## Appendix 5: Historical Trending data; Flow



## Appendix 6: Historical Trending data; Temperature

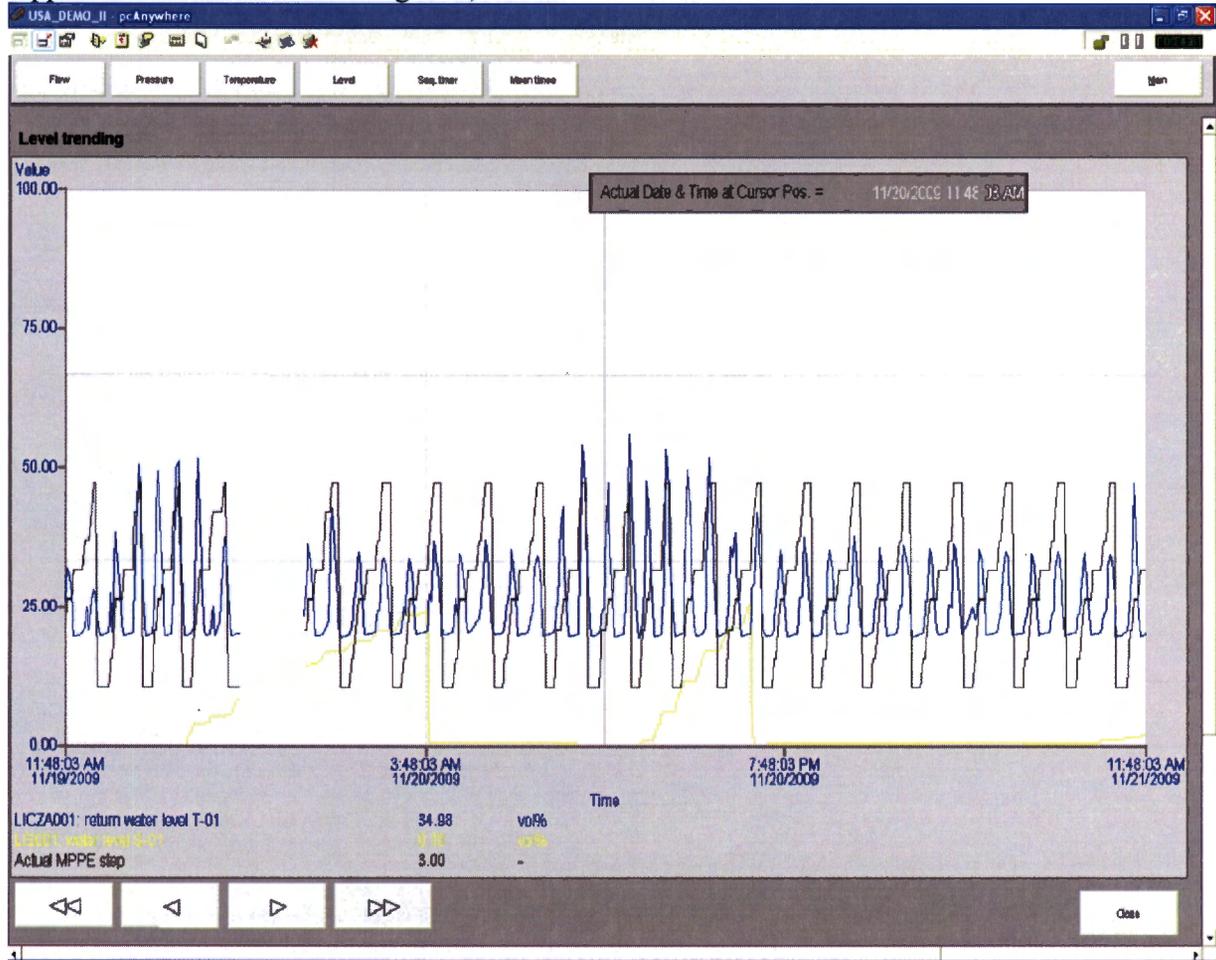


## Appendix 7: Historical Trending data; Temperature

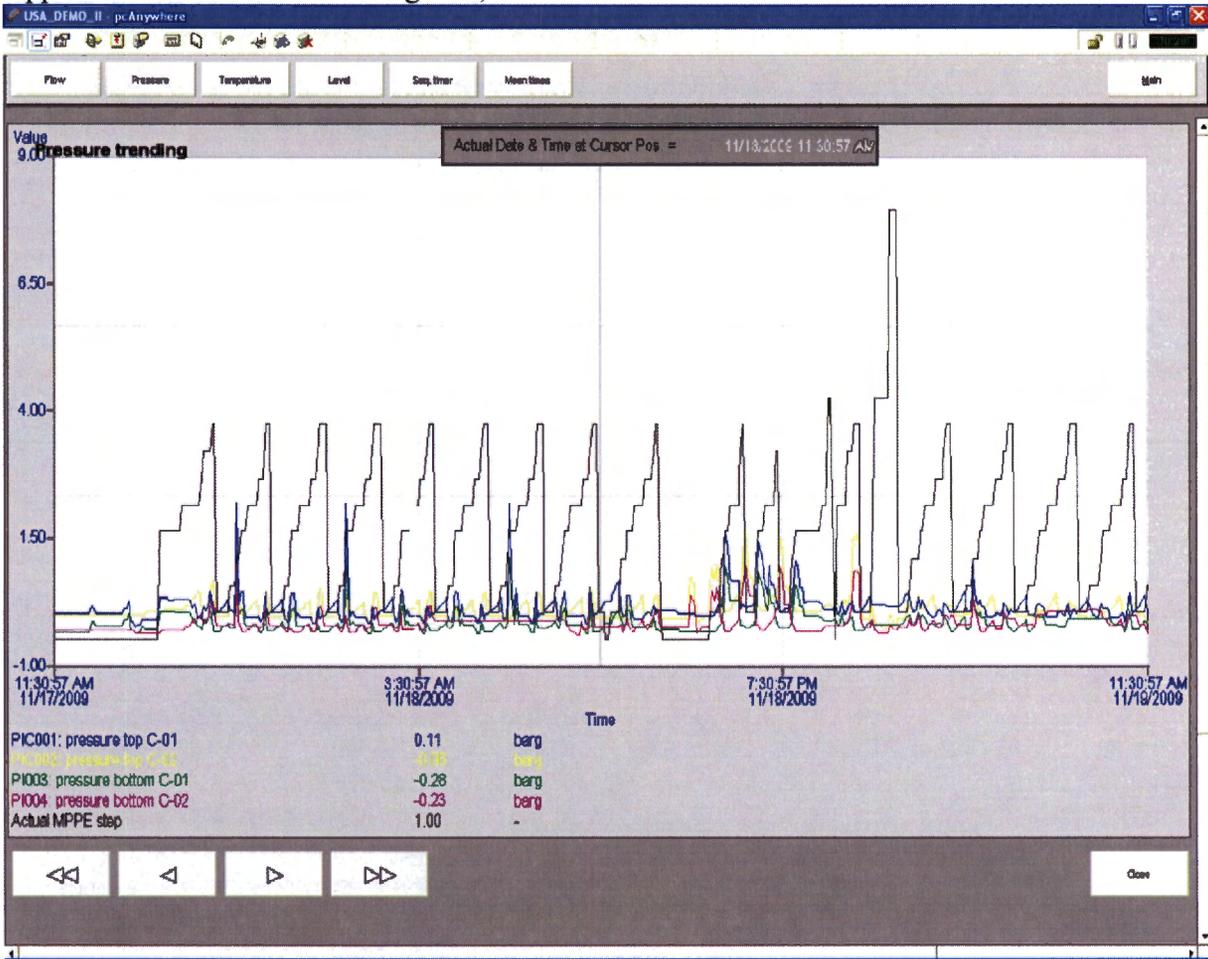




## Appendix 9: Historical Trending data; Level



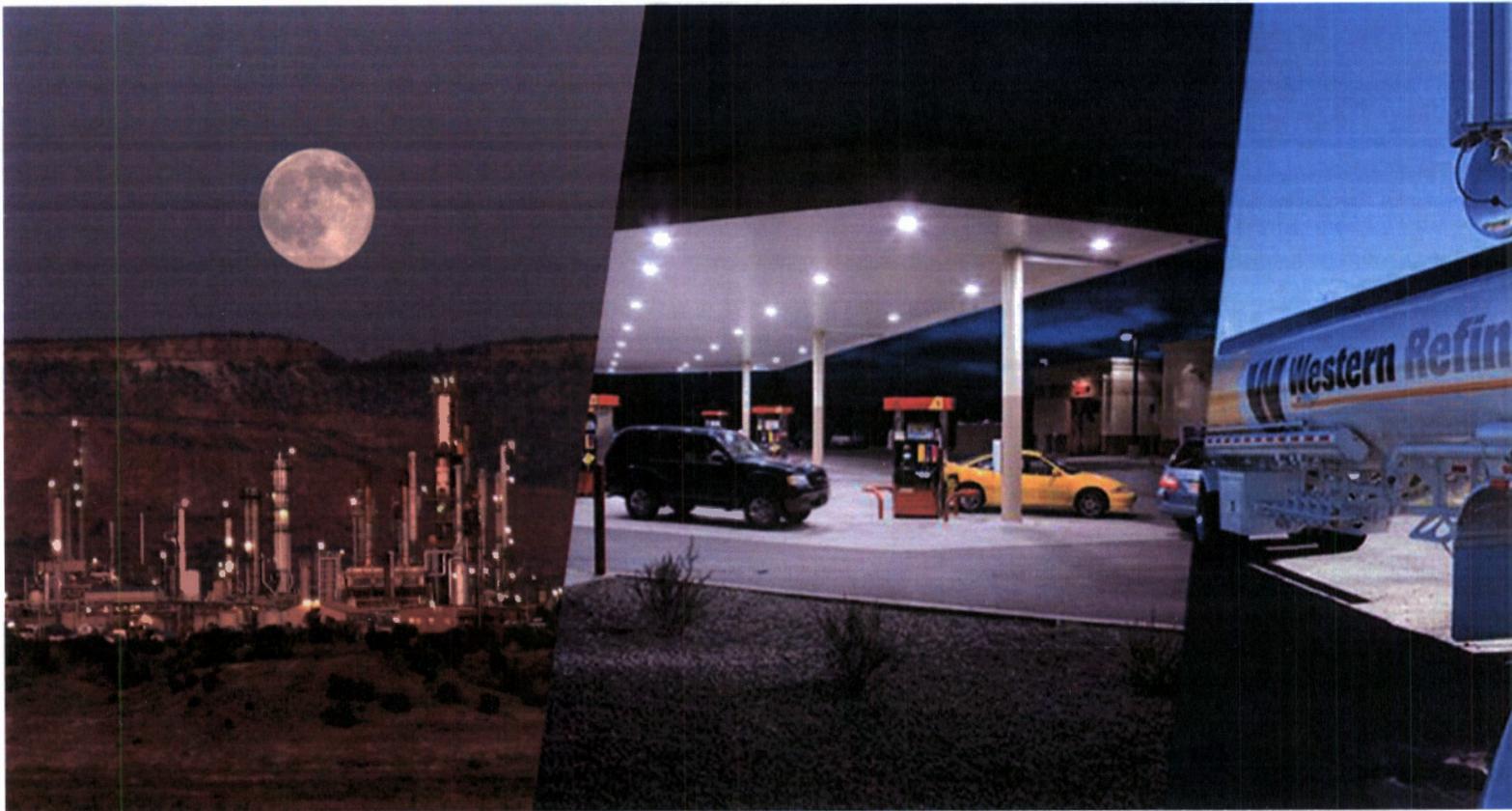
## Appendix 10: Historical Trending data; Pressure



**ATTACHMENT D: RED LINE VERSION OF WORK PLAN**

# Process Design Report for Wastewater Treatment Plant Work Plan (Alternative Design, Revision A)

**Western Refining  
Gallup, New Mexico**



**September 2009**  
April 2010

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**LIST OF ATTACHMENTS**

- ATTACHMENT A: SUPPLEMENTAL DGF SYSTEM INFORMATION
- ATTACHMENT B: SUPPLEMENTAL MPPE SYSTEM INFORMATION
- ATTACHMENT C: USEPA FEBRUARY 16, 2007 INTERPRETATION LETTER
- ATTACHMENT D: PROCESS DESIGN REPORT, JANUARY 21, 2010

## 1. ~~1.~~ INTRODUCTION

### 1.1 Introduction

The Western Refining Southwest's Gallup Refinery is a petroleum refinery located in Jamestown, New Mexico at Interstate 40 Exit 39. This Process Design Report for Wastewater Treatment Plant Work Plan (PDR Work Plan) presents the planned upgrades of the wastewater treatment plant (WWTP) at the refinery. This version of the PDR Work Plan ~~replaces the May 26, 2009 version and presents an alternative design concept.~~ is a revision to the previous version submitted in September 2009.

On August 27, 2007 Western Refining received a renewal of its discharge permit GW-032 from the New Mexico Oil Conservation Division (OCD). The permit required the refinery to complete certain actions related to wastewater management. This Work Plan addresses aspects of the following permit conditions:

1. Condition 16C - Treatment Study and Design
2. Condition 16D - Aeration Lagoons
3. Condition 16E – Evaporation Ponds

In August 2009, Western Refining, NMED and USEPA Region 6 agreed to the terms of a Complaint and Consent Agreement and Final Order (CAFO) that imposes additional regulatory requirements on the upgraded WWTP. Paragraph 100 of the CAFO sets forth certain WWTP-related compliance requirements under the Resource Conservation and Recovery Act (RCRA). These include:

1. Paragraph 100 B – *“Respondent shall cease the operation of, and dismantle, all existing Benzene/Air Strippers at its facility. . .”*
2. Paragraph 100 C – *“Respondent shall design, construct, properly permit, and commence operation of an upgraded wastewater treatment system . . . that is capable of treating all wastewater. . .”*
3. Paragraph 100 E – *“. . . The tanks and ancillary equipment in the upgraded wastewater treatment system that are in operation downstream of the API Separator shall be compliant with 40 C.F.R. § 262.34(a) . . .”*
4. Paragraph 100 G – *“Respondent shall limit volatile organic (“VO”) air emissions from the upgraded waste water treatment system . . . to the limits in 40 CFR 265 subpart CC.”*

This document is an updated version of the May 26, 2009 Work Plan referenced by the CAFO. and presents an alternative design. This alternative design was first presented in an earlier updated version of the May 26, 2009 Work Plan dated September 2009. This document revises and completely replaces the September 2009 version.

The design presented herein for the upgraded WWTP ~~is intended to will~~ meet the requirements of permit GW-032 and the CAFO. The new treatment system components will replace the Benzene Strippers ~~and Aeration Lagoons~~, which will be taken out of service and dismantled, and the Aeration Lagoons, which will be taken out of service and closed pursuant to the "Closure Plan Aeration Lagoons". The effluent quality from the new treatment system will ~~be suitable~~ meet the requirements for discharge to an unlined surface impoundment - Evaporation Pond No. 1 (EP-1).

## 1.2 Project Scope

The scope of the WWTP upgrade project consists of the following new systems:

- ~~Two existing tanks put in service for the storage of process area stormwater and diversion of off-spec wastewater~~
- A new equalization (EQ) tank upstream of the existing "new" American Petroleum Institute (API) separator that is connected to the process sewer. [Note: this API separator is referred to as the "API Separator" in this Work Plan. It is also known as the NAPIS]. The EQ Tank will receive process wastewater and process area storm water, working in parallel to T27 and T28. The EQ Tank will differ from the T27 and T28 in that it will be the primary tank for equalization and storage, it will have a larger capacity than T27 and T28, and it will not receive off-spec wastewater (in other words, it will not be a diversion tank).
- Two existing tanks put in service for the equalization storage of process wastewater and process area storm water and diversion of off-spec wastewater. These tanks have existing designations as Z84-T27 and Z84-T28, hereafter referred to as T27 and T28. [Note that "off-spec wastewater" means wastewater discharged from the MPPE system containing visible free oil or >0.5 mg/L benzene. API separator effluent and DGF effluent may also be qualitatively classified as off-spec if their characteristics (for example, oil, solids, pH) would upset the downstream processes.
- A dissolved gas flotation (DGF) system downstream of the API Separator
- A Macro Porous Polymer Extraction (MPPE) system downstream of the DGF system
- A ~~pretreatment~~ treatment system for the sanitary wastewater from the Pilot Travel Center and refinery

The new system will allow the following existing systems to be decommissioned:

- Benzene Stripper Nos. 1, 2 and 3
- Aeration Lagoons Nos. 1 and 2 (AL-1 and AL-2)
- The Old API Separator (OAPIS) that is connected to the storm sewer. [Note: this API separator is referred to as "OAPIS" in this Work Plan.]

The following existing equipment will continue to be operated in their current function within the upgraded system:

- API Separator
- EP-1 through EP-12

A flow diagram of the upgraded system is provided in Figure 1 at the end of this Work Plan.

### **1.3 Related Project - Pilot Travel Center Lift Station**

A lift station to collect, screen, and pump the sanitary/restaurant wastewater from the Pilot Travel Center to the WWTP has recently been installed and put into service. A force main conveys the wastewater from the new refinery lift station to the WWTP. In the new, upgraded configuration of the WWTP, the wastewater from the new refinery lift station will be pretreated before being discharged into EP-1.

### **1.4 Treatment Objectives**

The treatment objectives for the WWTP upgrade are to provide water quality that is suitable for discharge to the unlined EP-1. Specifically, the objectives are for there to be no visible free oil ~~and~~  $\leq$  0.5 mg/L benzene. ~~The project design was developed based on these objectives,~~ and a wastewater quality that meets the definition of EPA RCRA non-hazardous.

### **1.5 Regulatory Compliance**

The upgraded WWTP described herein will be designed and constructed in accordance with the requirements of OCD permit GW-032 and the CAFO.

### **1.6 Report Organization**

The PDR Work Plan is organized as follows:

- Section 1. Introduction
- Section 2. Wastewater Sources
- Section 3. Technology Selection
- Section 4. Process Description
- Section 5. Project Schedule

Attachments to the Process Design Report include the following documents:

- Attachment A. ~~Supplemental~~-DGF System Maintenance Information
- Attachment B. ~~Supplemental~~-MPPE System Maintenance Information
- Attachment C. USEPA Interpretation Letter (February 16, 2007)
- Attachment D. Process Design Report, January 21, 2010

## 2. ~~2.~~ WASTEWATER SOURCES

### 2.1 ~~2.1~~ Overview

This section of the report reviews the sources of wastewater generated at the refinery. The wastewater sources discharged to the refinery's WWTP fall under two broad categories: those wastewaters generated at the refinery and those generated at the adjacent Pilot Travel Center. The two sources are further described below.

### 2.2 ~~2.2~~ Refinery Wastewaters

The process wastewaters (including storm water that emanates in the process area) generated by the refinery are directed to the process sewer ~~that serves as~~ connected to the influent to inlet of the API Separator. In addition, two non-oily refinery wastewaters are discharged directly to Evaporation Pond No. 2 (EP-2). These sources are the water softener system and the reverse osmosis (RO) system. Both of these systems are part of the larger boiler feed water treatment system. These wastewaters are not oily and do not contain benzene and are RCRA non-hazardous wastewaters.

The sanitary wastewater generated at the refinery and the seven adjacent homes owned by the refinery currently discharges to the refinery's newly constructed lift station for the Pilot Travel Center (see Section 2.3 below).

### 2.3 ~~2.3~~ Pilot Travel Center Wastewaters

The refinery has a contract with the adjacent Pilot Travel Center to treat the sanitary and restaurant wastewaters generated by that facility. The wastewater from the restaurant at the Pilot Travel Center passes through a new grease trap system installed in 2008. The grease trap effluent and the sanitary/restaurant wastewaters from the rest of the Pilot Travel Center flow to a septic tank system. Septage is pumped out of the septic tank system on a scheduled quarterly basis for off-site disposal (as reported by Pilot Travel Center staff). The effluent from the septic tank system gravity flows to a lift station on the Pilot Travel Center property. This lift station, the grease trap, and the septic tank system are owned and operated by the Pilot Travel Center. The lift station's submersible pumps then transfer the wastewater through a pipeline to the refinery for further pumping and treatment. Western Refining is now operating a new lift station on its property to receive the wastewater from the Pilot Travel Center's lift station and the refinery's sanitary systems.

The Pilot Travel Center generates other wastewaters that are not discharged to the refinery. These other ~~wastestreams~~waste streams include truck washing and vehicle maintenance activities. They are managed with on-site oil-water separators, holding tanks, and retention ponds at the Pilot Travel Center.

~~The design basis assumes that the wastestream discharges from the refinery's new lift station are only sanitary/restaurant in origin and do not include any sources from vehicle service or vehicle washing operations. On this basis, the Pilot Travel Center wastewater was assumed to be free of benzene and hydrocarbon-based oil and grease (O/G).~~

## **2.4** ~~2.4~~ Design Flow

The design flow rates for the individual sources are summarized in Table 2-1.

**Table 2-1. Design Flow Rates**

|                        | Average, gpm              | Maximum, gpm              |
|------------------------|---------------------------|---------------------------|
| API Separator Effluent | 250                       | 500                       |
| Pilot Travel Center    | 50                        | 120                       |
| RO Reject              | <del>109</del> <u>100</u> | <del>149</del> <u>150</u> |
| Refinery Sanitary      | 4                         | --                        |

The design flows for the API Separator effluent were set at an average of 250 gallons per minute (gpm) and a maximum of 500 gpm. The average rate was based on historical data, and allowances for future flows. The maximum flow rate equals the maximum flow capacity of the API Separator with both bays in service.

The contract between Western Refining and the Pilot Travel Center limits the maximum flow to 50 gpm. However, the refinery's new lift station pumps are capable of pumping a combined flow of 120 gpm. Accordingly, the Pilot Travel Center design flows were set at 50 gpm average and 120 gpm maximum.

The average flow rate for the refinery's sanitary sources is based on the number of refinery employees. The maximum flow rate for the refinery's sanitary source is included in the Pilot Travel Center maximum flow rate, since it is also constrained by the combined pumping capacity of the new lift station pumps.

### 3. ~~3.~~ TECHNOLOGY SELECTION

#### 3.1 ~~3.1~~ Overview

This Section provides the basis of the two major technologies that were selected for the WWTP upgrade: dissolved gas flotation (DGF) and macro porous polymer extraction (MPPE). The DGF system replaces the Tank-based Separator concept from the prior version of the Work Plan. The MPPE system provides the benzene removal capacity of the prior bioreactor concept. ~~For further explanation please see attachment A & B.~~

#### 3.2 ~~3.2~~ Dissolved Gas Flotation

API separators (including the Gallup API Separator) provide first-stage (i.e., primary) oil-water separation. As such, they provide removal of free oil that readily separates from the wastewater by gravity. A second-stage oil-water separation step is required to provide additional O/G removal beyond what is consistently achievable by an API separator. Second-stage oil-water separation can remove the residual O/G and suspended solids that do not readily separate by gravity (i.e., emulsified O/G). This additional removal is required to provide the appropriate influent quality to the downstream unit process (MPPE).

A DGF system will provide the second-stage oil-water separation process for the upgraded WWTP. DGF systems are a common refinery technology downstream of API separators. The DGF process involves the pressurization of wastewater in the presence of air or nitrogen, creating a super-saturated solution that when passed into the flotation chamber at atmospheric pressure creates small gas bubbles in the liquid. These bubbles unite with the dispersed oil phase to form a collection of distinct gas-oil particles called coagules that are carried to the surface, called "float". The float is removed to disposal by a mechanical ~~float scrapers~~scraper system while the underflow is the clarified water effluent. The air or nitrogen is introduced to the wastewater by pressurizing a side stream of DGF effluent and recycling it back to the flotation chamber. Organic polymers are added to the DGF influent stream to facilitate the oil-water separation.

#### 3.3 ~~3.3~~ Macro Porous Polymer Extraction Technology

The MPPE technology removes dissolved and dispersed hydrocarbons from water. Developed in the early 1990s by Akzo Nobel, MPPE is a liquid-liquid extraction process where the extraction liquid is immobilized in a macro-porous polymer particle. MPPE particles have a diameter of 1,000 microns, with pore sizes of 0.1 to 10 microns.

The MPPE technology has been successfully applied to the treatment of process water, offshore produced water, industrial wastewater, and contaminated groundwater since 1994. Dissolved and dispersed compounds that can be removed from water and wastewater with the MPPE technology include aromatics (e.g., benzene, toluene, xylenes, and ethylbenzene); polyaromatic hydrocarbons (PAHs) (e.g., naphthalenes, phenanthrenes, dibenzothiophenes); and aliphatics including halogenated aliphatics. MPPE systems currently in operation are removing dissolved aromatics (principally benzene), PAHs, and aliphatics. The high hydrocarbon removal efficiencies achievable with MPPE technology

result from the number of mass transfer stages that are developed in the packed bed, mainly from the high specific surface area for mass transfer associated with the porous polymer beads. Benzene is the rate limiting constituent and determines the sizing of the MPPE system. The proposed DGF pretreatment system upstream of the MPPE technology will minimize fouling of the porous polymer beads by free oils and solids in the influent wastewater.

A schematic of the MPPE process is provided in Figure 2.3. Following primary and secondary oil-water separation, the refinery wastewater is passed through a column packed with MPPE particles. The particles are porous polymer beads that contain an **appropriate** extraction liquid suitable for the removal of aromatic hydrocarbons and PAHs. The immobilized extraction liquid removes only the dissolved hydrocarbons that have a high affinity for the extraction liquid (i.e., the constituents that are removed have partition coefficients that guarantee a high affinity for the extraction liquid). The treated wastewater is then free of the target constituents (e.g., **BTEXbenzene**), which now reside only in the extraction liquid.

The extraction liquid must be regenerated at fixed intervals to sustain effective target constituent removal. The extraction liquid (immobilized on polymer beads) is regenerated by stripping the hydrocarbons from the MPPE bed with low pressure steam. The stripped hydrocarbons are condensed and separated from the water phase by gravity. This 100 percent pure hydrocarbon phase is recycled to the refinery for reprocessing via the oil recovery system. The condensed water is recycled to the MPPE system. The design of the MPPE system employs two extraction columns allowing continuous operation in one column with simultaneous extraction and regeneration in the other column. A cycle time of one-hour extraction and one hour regeneration is typical.

The MPPE technology provides the following benefits:

- The dual-column system can be sized for the specific flow requirements and optimized for benzene removal.
- **Pure hydrocarbon**Hydrocarbon phase recovery **is feasible**.
- The wastewater flow turndown ratio can be adjusted to less than 20 percent of the installed flow capacity of the unit.
- The system is flexible in that it can be adjusted to changing flow and target constituent concentration levels while maintaining consistent effluent quality.

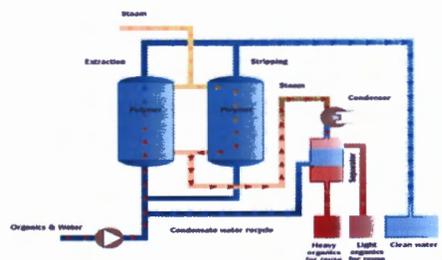


Figure 2.3. MPPE Process Schematic  
(courtesy of Veolia Water)

## 4. ~~4.~~ PROCESS DESCRIPTION

### 4.1 ~~4.1~~ Overview

This section provides a process description of the new systems that will comprise the refinery's WWTP following implementation of the upgrades. The first subsection discusses the new systems to be installed as part of the WWTP upgrades. The second subsection discusses the existing systems that will be decommissioned as part of the WWTP upgrades. This section concludes with a discussion of management of off-spec wastewater, and secondary containment and leak detection. A flow diagram ~~is~~ and a site layout drawing are included as Figure 1 and Figure 2, respectively, at the end of this Work Plan.

### 4.2 ~~4.2~~ New Systems

A description of the major equipment for the new WWTP is provided below.

#### ~~4.2.1~~ ~~Stormwater/Diversion Tanks~~

~~A new stormwater management system will be constructed for the stormwater collected in the process area. This stormwater is currently collected in a dedicated sewer that discharges to the OAPIS. In the new system, stormwater will flow by gravity to two Stormwater/Diversion Tanks. These tanks are existing with a designation of Z84 T27 and T28. The tanks have dimensions of 33 ft 5 inch diameter by 32 ft height, for a volume of 210,000 gallons each. The combined volume of 420,000 gallons will provide storage capacity for a 100-yr, 1 hour storm event (415,886 gallons). The tanks will have internal floating roofs for air emissions control. Stormwater that collects in the tanks will be pumped at a rate of 50 to 200 gpm in a dedicated line to the new API Separator. Two variable speed pumps will be provided (one operating, one standby). Because the stormwater will be diverted and treated in the new API Separator, the OAPIS will be taken out of service (see Section 4.3.3).~~

~~Oil that may accumulate on the liquid surfaces of T27 and T28 will be captured from a skimmer device contained within each tank's floating roof. The skimmed oil will be collected by a vacuum truck and transferred to the refinery's rerun oil system for recycling back to the refining process. Prior to pumping the T27/28 contents to the API Separator, solid material that may have settled on the tank bottom will be re-suspended through mixing.~~

#### 4.2.1 Combined Process Sewer and Process Area Storm Sewer

Currently, the existing process sewer connects directly to the API Separator and the existing process area storm sewer connects directly to the OAPIS. In the new configuration, the two existing sewers will be connected together by a new 24-inch process sewer. This new process sewer, constructed of carbon steel, buried, and approximately 1,200 linear feet in length, will flow by gravity to the EQ Tank, T27 and/or T28. The EQ tank will be the primary destination of the combined sewer. When operating conditions dictate that the wastewater not be sent to the EQ Tank, the process sewer will be re-routed

to T27 or T28 by manipulating manual valves. Examples of this situation are when the EQ tank is close to its liquid holding capacity or it is out of service for maintenance.

Collectively, the contents of this sewer are referred to as process wastewater in this Work Plan. The reader should note that the sewer will also convey process area storm water during precipitation events.

Cleanouts will be installed on the ~~conveyance pipelines to and from the Stormwater/Diversion Tanks~~ gravity sewer to T27 and T28. Cleaning events will be scheduled on a regular, recurring basis with collected material managed along with similar material collected from the API Separator. This material is normally recycled to an off-site refining process. If recycling to a refining process is not available, the cleanout material will be managed as a hazardous waste. ~~Underground piping~~The sewer will be buried below the frost line to prevent freezing. ~~Aboveground piping will be electric heat traced to prevent freezing. The piping design is referenced in section 4.5.~~

~~The Stormwater/Diversion Tanks will also be configured to accept diverted off-spec wastewater from various points within the WWTP including API Separator effluent/DGF influent, DGF effluent/MPPE influent, and MPPE effluent that is diverted away from EP-1.~~

#### **4.2.2 Surge/Diversion Tanks (T27 and T28)**

T27 and T28 are existing tanks in the WWTP area that will be upgraded for surge/diversion service. The two tanks will be utilized as back-up equalization for when the EQ tank is out of service, as additional surge capacity when the EQ tank is near full, and as diversion tanks for when the MPPE effluent is off-spec and cannot be discharged to EP-1. T27 and T28 will also provide diversion capacity when the API Separator effluent or DGF effluent is off-spec and would hamper downstream treatment.

T27 and T28 have dimensions of 33 ft-5 inch diameter by 32 ft height, for a volume of 210,000 gallons each. The combined volume of 420,000 gallons is equivalent to storage capacity for a 100-yr, 1-hour storm event (415,886 gallons). This combined capacity is also equivalent to 24 hours of wastewater storage at the design average wastewater flow of 250 gpm. The tanks will have internal floating roofs for air emissions control.

Wastewater that is managed in T27/28 will be pumped to the new API Separator by the API Separator Influent Pump Station as described in Section 4.2.4.

The water will be pumped a minimum of every 75 days so that the 90-day accumulation time will not be exceeded. We will follow the guidance of the USEPA February 16, 2007 interpretation letter (see Attachment C), which describes how tank liquid level and effluent flow rate can be used to confirm that tank turnover occurs at least every 90 days. Tank liquid level and effluent flow rate will be monitored by the refinery's electronic data logging system.

Oil that may accumulate on the liquid surfaces of T27 and T28 will be captured from a skimmer device attached to each tank's floating roof. The skimmed oil will be collected by vacuum truck and transferred to the refinery's oil recovery system for recycling back to the refining process. The oil level will be checked before every wastewater pumping event and skimmed as needed. Oil skimming will be conducted a minimum of once every 75 days, or more frequently if operating conditions dictate (for example, if oil accumulates to the extent that it might be entrained in the tank wastewater outlet to the API separator).

Prior to pumping the T27/28 contents to the API Separator, solid material that may have settled on the tank bottom will be re-suspended through mixing. Solids re-suspension will be done by pump recirculation, a commonly used method for mixing tank contents. The API Separator Influent Pump Station will be used for this purpose. When mixing of T27 or T28 is needed (intermittently), the tank will not be receiving influent or diversion flow. The operating pump will take suction from the tank to be mixed, and the pump discharge will be routed back to the same tank through the piping and tank connection used for diversion. (Forward flow to the API Separator will cease during the mixing event. The influent wastewater coming from the sewer will be allowed to accumulate in the EQ Tank.) The reduced head condition in recirculation mode will allow the mixing flow rate to increase to 680 gpm combined from three operating API Separator Influent Pumps (see Section 4.2.4). The mixing power of this fluid is equivalent to 8 hp based on an 80 percent pump mechanical efficiency. The recirculation mixing will be performed with the tank at a low level in order to enhance the mixing intensity as well as reduce the pump-out time following mixing. If the tank is mixed at a 5-ft liquid level, the equivalent liquid volume is 33,000 gallons. The mixing intensity will be 8 hp per 0.033 million gallons, or 242 hp per million gallons. (Power levels above 150 hp per million gallons are considered to provide complete mixing in wastewater applications. By contrast, the mixing requirement for aggressive biological treatment is only 6 hp per million gallons.)

The duration of the mixing event will be long enough to provide at least three turnovers of the liquid volume. At 680 gpm mixing of 33,000 gallons, the mixing time for three turnovers would be 150 minutes. Feed to the mixed tank and pumping from the mixed tank will continue until the equivalent of three original volumes have been pumped. At 33,000 gallons of original volume, 99,000 gallons would be pumped. This pumping event would last 400 minutes at the 250-gpm average influent flow rate to the API Separator. The operational mode would return to normal after pumping of the three tank volumes was completed. At the end of the mixing cycle, the pump discharge will be directed back to the API Separator. At the same time, influent flow from the sewer or diversion flow from the WWTP will be directed to the mixed tank to displace the original contents to maintain the vapor control of the floating roof.

In order to demonstrate successful mixing, near the end of the pump out cycle (400 minutes in the above example), samples will be pulled from the bottom of the tank. Four sample taps will be provided on the tank side wall, located 90 degrees apart, at an elevation just above the tank floor (as low as possible, 1 to 3 inches above the floor depending on welding/tank integrity constraints). The samples will be visually inspected for solids level and compared against a sample collected for the current tank influent. If the solids content of any of the four tank samples is visually higher than the influent, then

mixing will be continued for another turnover (133 minutes in the above example) and the sample comparison process repeated. This mixing procedure will be performed on each of T27 and T28 at least once every 75 days, ensuring that the 90-day accumulation period will not be exceeded.

#### **4.2.3**    **4.2.2** Equalization Tank

A new Equalization (EQ) Tank will be constructed to dampen variability in both flow and concentration prior to the API Separator and ~~the rest~~ downstream components of the WWTP. It will operate with a variable level/volume, providing a supplemental surge control function. Since the tank will only remain one half to one third full, the remaining volume of the tank may be utilized as surge control or surge capacity. The process sewer will gravity flow into the EQ Tank. ~~Pumps,~~ via the piping arrangement described in Section 4.2.1. The API Separator Influent Pump Station will transfer the wastewater from the EQ Tank to the API Separator. The tank will have a floating roof for air emissions control. ~~Oil will be recovered from the water surface using a skimming device contained in the floating roof.~~ There will be sample ports for both the EQ Tank influent and effluent.

During dry weather conditions, the EQ Tank will be operated at ~~a~~ less than full capacity, such that the EQ Tank can provide surge capacity during wet weather events. This available surge capacity will be used to ~~help prevent potential overflow of~~ control the forward flow to the API Separator during storm events. ~~so that the separator's 500 gpm-design capacity is not exceeded.~~ The EQ Tank will have a 1.0-million-gallon total volume with a 78-ft diameter and a 32-ft height. With a routine operating level of one-third to one-half full, the EQ tank will provide 22 to 33 hours of residence time for equalization (333,000 to 500,000 gallons), with 33 to 44 hours of surge capacity (500,000 to 667,000 gallons), based on a 250-gpm average flow rate. The combined surge capacity of the EQ Tank and T27 and T28 will be 920,000 to 1,087,000 gallons depending on the operating level of the EQ Tank. Combined, these three tanks could retain 2.5 to 3 days worth of flow without discharge in the event that forward flow to the API Separator needs to be prevented (for example, for maintenance of the downstream WWTP equipment).

The EQ Tank level will control the pumping rate of the API Separator Influent Pump Station, which is described in Section 4.2.4. Under normal conditions, the EQ Tank will operate to target a constant outflow (250 gpm for example). If the tank level reaches an upper tank capacity set point, then the outflow rate will be increased by increasing the pump speed to maintain the level within desired operating limits. Similarly, if the tank level reaches the lower tank capacity set point, the outflow rate will be decreased by lowering the pump speed.

In a similar fashion to T27 and T28, oil that may accumulate on the liquid surface of the EQ Tank will be captured from a skimmer device attached to the tank's floating roof. The skimmed oil will be collected by vacuum truck and transferred to the refinery's oil recovery system for recycling back to the refining process. The oil level will be checked on a routine basis and skimmed as needed. The frequency of oil layer monitoring and skimming will be dictated by operating conditions and performance. It would be undesirable to allow oil to accumulate to the extent that it might be entrained in the tank outlet and carry-over to the API separator. We anticipate that oil skimming will be required once or twice a month (removal of a 1-inch oil layer, for example, equates to 550 gallons, a volume readily managed by vacuum truck). The oil skimming conducted in the EQ Tank will reduce the oil removal demands on the API Separator.

Solids entering the EQ Tank will accumulate as a sludge layer, which will require removal periodically, currently expected to be every three to five years. Standard refinery tank cleanout and sludge management procedures will be followed. During cleanout times, expected to be 2 to 4 weeks in duration, T27 and/or T28 will function as the EQ Tank. The flexibility designed into the piping routing will enable sending wastewater to any of these three tanks as needed.

#### **4.2.4 API Separator Influent Pump Station**

The API Separator Influent Pump Station will be a set of four 10-hp pumps for transferring the liquid contents of the EQ Tank, T27, or T28 to the API Separator. The pump station will only pump from one tank at a time. One pump will be available as an installed standby. The pumps will be variable-speed controlled to allow variable output for matching the desired flow condition. Up to three pumps will operate at once, providing a combined flow to the API Separator of up to 500 gpm at 65 feet of head. At no time will the flow to the API Separator exceed its 500 gpm design capacity, as limited by automated controls based on the flow meter to be installed on the pump station discharge.

The outlet from the pump station will be a 6-inch diameter above ground force main, approximately 1,000 linear feet and constructed of carbon steel, that will connect to the inlet of the API Separator. The pipe will be insulated and electric heat traced to prevent freezing.

The number and locations of clean-outs on this force main will be determined during detailed engineering (following NMED's approval of this Work Plan). This pipe line will be flowing nearly continuously at a scour velocity (2.8 feet per second), so the need for clean outs will be minimal, if any. Additionally, as described in Section 4.5, the CAFO compliance approach for this pipe line will be welded connections with daily inspections. Since, cleanouts would require non-welded connections, we will seek to minimize these and there may in fact be none.

#### 4.2.5    ~~4.2.3~~ DGF System

The DGF system will be ~~in a single~~, covered, above-ground, stainless steel vessel. The DGF will be designed for an average flow of 250 gpm and a maximum flow of 500 gpm. The API Separator effluent will be pumped to the DGF system using the existing API Separator effluent pumps. Polymer will be injected into the DGF influent line to enhance flocculation. Dissolved gas for flotation will be either plant nitrogen or plant air from the refinery's existing utility system. The gas nitrogen will be injected into a pumped recycle stream of the DGF effluent. ~~The choice of gas (air or nitrogen) will be made following a process hazard evaluation.~~

The clarified effluent wastewater from the DGF system will be pumped to the MPPE system. Two variable speed pumps (one operating, one standby) will be installed, each rated for 250 gpm average, 500 gpm maximum, to accomplish this transfer from the DGF system to the MPPE system.

The DGF float material will be skimmed from the top of the DGF using a variable speed scraping mechanism. The skimmed float will be sent to the DGF float ~~storage and dewatering~~ management system. ~~The float system will consist of retention tanks with gravity dewatering. This material will normally,~~ which will consist of "Float Tanks." The purpose of the tanks will be to provide storage capacity and reduce the volume of oily solids through gravity separation. Oily solids collected in the Float Tanks will be recycled to a refining process (on-site or off-site). If recycling is not available, the float material will be managed as a hazardous waste. Should operating experience indicate that volume reduction would be beneficial, mechanical dewatering would be conducted by a contractor-supplied mobile system. Wastewater decanted from the Float Tanks will be discharged to the API Separator inlet

It was determined that a single DGF unit, with a redundant recirculation pump, will provide reliable operation and performance. This design configuration is acceptable because there is no routine reason for the unit to be taken out of service for an extended period (longer than the 2.5 to 3 days of combined storage capacity provided by the EQ Tank and T27/28). A standby DGF recirculation pump will be installed in parallel to the primary DGF recirculation pump to provide redundancy for the one critical rotating equipment item in the DGF system. Appendix A provides information from a preferred DGF vendor to support this design approach. The vendor also provides information regarding general maintenance requirements.

#### 4.2.6    ~~4.2.4~~ MPPE System

The MPPE system will consist of two columns operating in parallel. One column will be in service while the other is being regenerated. The columns will switch their mode of operation on a routine schedule (e.g., hourly). The operating column will receive pumped ~~DGF~~clarified effluent from the DGF. The wastewater will pass through the column ~~in an up-flow mode and discharge~~entering the bottom and exiting the top and will be discharged to EP-1 by gravity. Steam will be used to regenerate the non-operating column. The steam will be supplied by the existing plant utility system or an electric boiler as part of the MPPE skid. The steam will pass through the column ~~in down-flow mode~~entering at the top and exiting at the bottom and will extract the hydrocarbons that had previously been retained by the polymer beads. The hydrocarbon-laden steam will then be sent through a condenser to convert the stream to a cooled liquid phase. The cooled hydrocarbon-water liquid mixture will then go to a separator ~~phase. The separator, which~~ will produce a water stream that is recycled to the operating column and a ~~pure~~-hydrocarbon stream that will be sent to the refinery for reprocessing.

Appendix B provides information from the MPPE vendor regarding maintenance requirements. The vendor-supplied maintenance activities include replacing pump seals and valve seats, instrument recalibration, and media replacement, activities that can be accomplished in a matter of hours. As discussed in Section 4.2.3, the combined wastewater retention capacity of the EQ Tank and T27/T28 is 2.5 to 3 days, which will enable expected MPPE system maintenance to be completed while withholding discharge.

#### 4.2.7    ~~4.2.5~~ Pilot Travel Center Pretreatment

The sanitary wastewater from the Pilot Travel Center and the refinery will be ~~pretreated~~biologically treated in an aerated lagoon system prior to discharge to ~~EP-1, the evaporation pond system~~. The wastewater already receives treatment for solids removal by the upstream septic tank (owned and operated by Pilot) and the screening system in the new refinery lift station.

The new ~~pretreatment~~aerated lagoon system will provide removal of soluble organics. ~~The technology selection for the system has not been finalized, but candidate technologies include:~~ using the two existing basins located just east of the T27/28 containment area. The approximate dimensions of these basins are 120 ft x 90 ft x 7 ft deep and 260 ft x 100 ft x 7 ft deep. The combined treatment volume will be 1,600,000 gallons, which provides a 22-day residence time at the average design flow of 50 gpm. A liner system will be installed in the eastern basin (and smaller basin) as part of the new construction. Lining of the western basin (in series) is deemed not necessary based on the level of treatment which will be provided in the eastern basin. Influent flow from the existing refinery sanitary lift station will enter the eastern basin, which will be operated as a complete mix aerated lagoon with two 5-hp floating aerators. The second basin will function as a facultative lagoon for polishing and settling, aerated with one 5-hp floating aerator.

- ~~• A new lined aeration lagoon (treating only Pilot Travel Center and refinery sanitary wastewaters)~~
- ~~• Vertical flow wetlands~~
- ~~• A recirculating media filter~~

The effluent from the aeration lagoon system will flow by gravity to EP-2. It is discharged to EP-2 rather than EP-1 to allow for gravity flow.

#### **4.2.8    ~~4.2.6~~ Evaporation Pond No. 1**

The MPPE cleaned wastewater effluent will flow by gravity into EP-1. A flow meter will be installed on this EP-1 influent line to track discharge volumes. ~~EP-1 will not be lined or otherwise modified because the MPPE~~ The MPPE clean wastewater effluent will be free of floating oil and will have a benzene concentration  $\leq 0.5$  mg/L and will be RCRA non-hazardous. This EP-1 influent quality will be assured by the following WWTP upgrades:

- Less variability in flow rates and ~~wasteloads~~ waste loads provided by the EQ Tank
- Improved upstream oil-water separation provided by the DGF system
- Reliable removal of benzene and other hydrocarbons using the MPPE technology

#### **4.3    ~~4.3~~ Decommissioned Systems**

Placing the new WWTP systems into service will allow some of the existing systems to be decommissioned.

##### **4.3.1    ~~4.3.1~~ Benzene Strippers Nos. 1, 2 and 3**

The MPPE system will replace the benzene removal capacity of the two Benzene Strippers (Z84-V4 and Z84-V5) located at the WWTP and the one Benzene Stripper located in the process area of the Refinery (Z84-V7). These units will be decommissioned and dismantled. The associated Benzene Stripper Air Blowers (Z84-AB3, Z84-AB4 and Z84-AB5) will also be decommissioned and dismantled.

##### **4.3.2    ~~4.3.2~~ AL-1 and AL-2**

The two Aeration Lagoons (AL-1 and AL-2) will be decommissioned and closed pursuant to "Closure Plan Aeration Lagoons". The associated surface aerators will also be decommissioned. The Corrective Measures Implementation Work Plan for the Wastewater Aeration Lagoons (Solid Waste Management Unit No. 1) has been submitted separately to NMED (July 30, 2009) under which closure will be conducted following NMED approval.

##### **4.3.3    ~~4.3.3~~ OAPIS**

The Old API Separator (OAPIS) currently collects ~~stormwater~~ storm water from the process area. In the future, this sewer will be directed to the ~~Stormwater/Diversion Tanks in the new stormwater system. The Stormwater/Diversion Tank~~ new process sewer and from there to the EQ Tank (or T27 or T28). The tank contents will then be pumped to the API Separator. Therefore, the OAPIS will be decommissioned. A separate work plan to be submitted to NMED will address the closure of the OAPIS (Solid Waste Management Unit No. 14).

#### **4.4    ~~4.4~~ Management of Off-Spec Wastewater**

Off-spec events are not anticipated for the MPPE effluent. However, contingencies have been included in the design as safeguards. If at anytime the MPPE effluent is deemed unsuitable for discharge to EP-1,1 (i.e. “off-spec wastewater”), it will be diverted to ~~the new Stormwater/Diversion Tanks. T27 or T28.~~ Process monitoring, described below, will be used to identify when this diversion is needed. The diversion would be “all or nothing” rather than a partial diversion and partial flow to EP-1. For added flexibility, ~~diversion lines to the Stormwater/Diversion Tanks will also be provided for~~the capability to divert the API Separator effluent and the DGF effluent will also be provided. A common diversion line to T27 and T28 will connect the three potential diversion sources (i.e. the MPPE effluent, the API Separator effluent, and the DGF effluent.) to T27 and T28.

The MPPE process monitoring will consist primarily of two daily measurements (at approximately 7:00 am and 7:00 pm) of benzene in samples of wastewater. These samples will be analyzed at Gallup Refinery’s on-site testing laboratory using Gas Chromatograph/ Mass Spectrometer (GC/MS). The results will be available almost immediately – that is, within a few hours of sample collection. To account for the fact that our on-site method is not identical to the EPA-approved method, and to divert proactively, we will use 0.4 Mg/L of benzene as a trigger for diversion.

If the on-site value is found to be 0.4 mg/L or greater, we will divert wastewater away from EP-1 We will begin taking corrective actions to reduce hydrocarbon content in the API Separator effluent by opening the hatches and adjusting skimmer settings, increase the level of wastewater being held in the EQ Tank, and divert the wastewater to T27/28. During the diversion period, samples will be taken on more frequent intervals and analyzed in the on-site laboratory. When the sample results are less than 0.4 Mg/L, we will restore flows back into EP-1.

**4.5    ~~4.5~~ Tank Design, Secondary Containment, and Leak Detection**

Under the terms of the CAFO, the tanks and ancillary equipment downstream of the API Separator, including diversion tank systems, are subject to 40 CFR §262.34(a). By reference, these systems are therefore subject to 40 CFR 265 Subpart J for tank systems. Accordingly, the systems downstream of the new API separator will comply with the tank design requirements of 40 CFR 265 Subpart J, including secondary containment and leak detection. ~~Since the CAFO was signed just recently, Western Refining is still determining how the specific design requirements of the CAFO will be implemented. In general, the secondary containment requirements for tanks will be met through concrete or impermeable liner containment areas. Containment volumes will be 1.3 times the volume of the largest tank within that area to include an allowance for precipitation. Leak detection for tanks with bottoms that cannot be visually inspected will be provided by installing double bottoms with leak detection on those tanks. The secondary containment and leak detection requirements for piping systems covered by the CAFO will also be implemented where required.~~

~~In the event that there are new tank(s) or ancillary equipment not covered by the CAFO, such as those upstream of the API Separator, those systems will be designed to standards in accordance with GW-032 and related OCD requirements.~~

Table 4-2 below identifies the components of the WWTP upgrade project described in this Work Plan. For each component, the table lists whether it is subjected to the requirements of paragraphs 100 E and F of the CAFO and, if so, how secondary containment and leak detection will be accomplished to conform to the requirements of 40 CFR 262.34(a) and 40 CFR 265 Subpart J Tank Systems.

| <u>Table 4-2. CAFO Sub Part J Compliance</u> |  |   |  |                              |                       |
|--|--|---|--|------------------------------|-----------------------|
| <u>Item No.</u>                              | <u>Name</u>                                      | <u>Description</u>  | <u>Covered by CAFO?</u>                    | <u>Secondary Containment</u> | <u>Leak Detection</u> |
| <u>1</u>                                     | <u>Buried Gravity Sewer to EQ Tank, T27, T28</u> | <u>Connects process sewer and process area storm sewer in a single line to the tanks.</u> | <u>No; not downstream of API Separator</u> | <u>None</u>                  | <u>None</u>           |

Table 4-2. CAFO Sub Part J Compliance

| <u>Item No.</u> | <u>Name</u>  | <u>Description</u>  | <u>Covered by CAFO?</u>  | <u>Secondary Containment</u>  | <u>Leak Detection</u>   |
|-----------------|--|---|--|---|---|
| <u>2</u>        | <u>Above ground Gravity Sewer to EQ Tank, T27, T28</u>                     | <u>As the new sewer piping enters the secondary containment area, it will be routed above ground for connection to the tanks.</u> | <u>No; not downstream of API Separator</u>                         | <u>Yes; Within common tank containment area</u>   | <u>Yes; Visual</u>  |
| <u>3</u>        | <u>T27, T28</u>  | <u>Diversion tanks for off-spec wastewater; additional influent/storm water storage capacity.</u>                                 | <u>Yes; specifically referenced by the CAFO as Diversion Tanks</u> | <u>Yes; will share a common containment area with the EQ tank. Concrete liner. Volume is 1.3 times the largest tank.</u>        | <u>Yes; Double Bottom with Leak Detection at the Tank Perimeter</u>                       |
| <u>4</u>        | <u>EQ Tank</u>   | <u>For wastewater equalization and surge capacity of influent from the combined process sewer</u>                                 | <u>No; not downstream of API Separator</u>                         | <u>Yes; OCD requirements</u>  | <u>Yes; Double Bottom with Leak Detection at the Tank Perimeter, per OCD requirements</u> |
| <u>5</u>        | <u>Above ground force main from tanks to transfer pump station</u>         | <u>Common pump suction piping from the three tanks.</u>   | <u>Yes; part of Diversion Tank system</u>                          | <u>Yes; located within common tank containment area</u>   | <u>Yes; Visual (daily)</u>  |
| <u>6</u>        | <u>Transfer pump station</u>   | <u>The that transfer the wastewater from the tanks to the API Separator</u>   | <u>Yes; part of Diversion Tank system</u>                          | <u>Yes; within common tank containment area</u>   | <u>Yes; Visual (daily)</u>  |
| <u>7</u>        | <u>Above ground force main from transfer pump station to API Separator</u> | <u>Single line from the common pump suction piping from the three tanks.</u>  | <u>Yes; part of Diversion Tank system</u>                          | <u>Yes; all above ground; welded pipe flanges, joints and connections; inspected daily.</u>                                     | <u>Yes; Visual (daily)</u>  |
| <u>8</u>        | <u>API Separator including skimmed oil and bottom solids systems</u>       | <u>Existing; no change.</u>   | <u>No; not downstream of API Separator</u>                         | <u>Existing; no change.</u>   | <u>Existing; no change.</u>   |
| <u>9</u>        | <u>Wastewater Piping from API Separator to DGF</u>                         | <u>Above ground</u>   | <u>Yes; downstream of API Separator</u>                            | <u>Yes; above ground; welded pipe flanges, joints and connections; inspected daily; Partly within DGF tank containment area</u> | <u>Yes; Visual (daily for those portions not within containment area)</u>                 |
| <u>10</u>       | <u>DGF Unit</u>  | <u>Tank with elevated bottom</u>  | <u>Yes; downstream of API Separator</u>                            | <u>Yes; concrete containment area with a volume 1.3 times the largest tank.</u>   | <u>Yes; Visual</u>  |

Table 4-2. CAFO Sub Part J Compliance

| <u>Item No.</u> | <u>Name</u>  | <u>Description</u>   | <u>Covered by CAFO?</u>   | <u>Secondary Containment</u>  | <u>Leak Detection</u>   |
|-----------------|--|--|---|---|---|
| <u>11</u>       | <u>Wastewater Piping from DGF to MPPE</u>                              | <u>Above ground</u>  | <u>Yes; downstream of API Separator</u>   | <u>Yes; Partly within DGF/MPPE tank containment area; above ground; welded pipe flanges, joints and connections; inspected daily.</u>     | <u>Yes; Visual (daily for those portions not within containment area)</u> |
| <u>12</u>       | <u>MPPE Unit</u>   | <u>Two vessels with elevated bottom</u>  | <u>Yes; downstream of API Separator</u>   | <u>Yes; Concrete containment area with a volume 1.3 times the largest tank.</u>   | <u>Yes; Visual</u>  |
| <u>13</u>       | <u>Wastewater Piping from MPPE to Diversion Valve</u>                  | <u>Above ground. Diversion valve will direct flow away from EP-1 back to T27/28.</u> | <u>Yes; downstream of API Separator</u>   | <u>Yes; within DGF containment area</u>   | <u>Yes; Visual</u>  |
| <u>14</u>       | <u>Wastewater Piping from MPPE Diversion Valve to EP-1</u>             | <u>Buried.</u>   | <u>No; non-hazardous waste; &lt;0.5 mg/L benzene</u>  | <u>None</u>   | <u>None</u>   |
| <u>15</u>       | <u>Wastewater Diversion Piping from MPPE Diversion Valve to T27/28</u> | <u>Above ground</u>  | <u>Yes; downstream of API Separator and part of Diversion Tank System</u>                                   | <u>Yes; Partly within T27/28 containment area; Partly all above ground; welded pipe flanges, joints and connections; inspected daily.</u> | <u>Yes; Visual (daily for those portions not within containment area)</u> |
| <u>16</u>       | <u>DGF Float Tanks</u>   | <u>Will use a float management system.</u>   | <u>No; oil-bearing residuals exemption per 40 CFR 261.4(a)(12)</u>  | <u>Yes; Double wall tanks or containment area with a volume 1.3 times the largest tank; containment area may be common with DGF unit.</u> | <u>Yes; Visual</u>  |
| <u>17</u>       | <u>MPPE Recovered Hydrocarbon Stream Piping</u>                        | <u>Above ground</u>  | <u>No; by-product reclaimed and exempt per 40 CFR 261.2 (c)(3)</u>  | <u>None; Except those portions within MPPE tank containment area.</u>   | <u>Yes; Visual</u>  |
| <u>18</u>       | <u>Aerated Lagoon System</u>   | <u>Receives sanitary wastewater only. Piping generally buried.</u>                   | <u>No; Does not receive process wastewater or process area storm water; Not downstream of API Separator</u> | <u>An impermeable liner will be installed in the first cell of the lagoon.</u>  | <u>No</u>   |

For Item Nos. 7, 9, 11 and 15, there may be instances of exceptions to the “all welded” pipe connections for above ground pipe run outside of secondary containment areas (for example, at flow meter and valve locations). In those instances, a dedicated secondary containment device (e.g., fabricated or constructed box) will be installed under the non-welded connection(s).

## **4.6     ~~4.6~~ Air Emissions Control**

The upgraded WWTP will meet the air emission regulatory requirements, including Paragraph 100 G of the CAFO as applicable, through the following measures:

- The ~~Stormwater~~Storm Water/Diversion Tanks (T27/T28) will have floating roofs ~~that will generate negligible to control~~ air emissions from these tanks.
- The DGF system will be enclosed but will generate a continuous point source air or nitrogen emission. ~~If a control device is determined to be required for the DGF air emissions, the off-gas will be routed through an activated carbon bed system prior to discharge to the atmosphere.~~
- The MPPE units will be enclosed ~~and generate negligible air emissions.~~, but generate periodic air emissions from the condensate drum.

A common vapor-phase granular activated carbon (GAC) system will be used to control emissions from these latter two points. Vapor sampling points will be added the DGF emission point, MPPE emission point, GAC inlet, and GAC outlet as previously requested by NMED. Routine sampling from these locations is not anticipated, with the exception of the following: GAC performance will be based on results from exhaust vapor (GAC outlet) sampling, with carbon replacement based on breakthrough occurrence.

## 5. ~~5.~~ PROJECT SCHEDULE

The required project schedule for design and construction of the WWTP upgrade is ~~18~~24 months as presented in Table 5-1.

**Table 5-1. Project Schedule Through Construction (After Approval)**

| Description                                     | Period   |
|---|--|
| Detailed Engineering                            | <del>October 2009 – March 2010</del> <u>*4</u><br><u>Months</u>      |
| Air Permit Application Submittal                | December 2009  |
| Contractor Bidding                              | <del>March – April</del> <u>2</u> 2010 <u>Months</u>                 |
| Air Permit Issuance                             | <del>April</del> <u>June</u> 2010**                                  |
| Contract Award & Notice to Proceed              | <del>May</del> <u>2</u> 2010 <u>Months</u>                           |
| Equipment Procurement, Fabrication and Delivery | <del>May through November 2010</del> <u>12</u><br><u>Months</u>      |
| Construction                                    | <del>June 2010 through February 2011</del> <u>3</u><br><u>Months</u> |
| Testing, Start-up, and Clean-up                 | <del>February through March 2011</del> <u>1</u><br><u>Months</u>     |
| Operational                                     | <del>March 31, 2011</del> <u>24</u> <u>Months</u>                    |

~~\*Start date pending NMED and OCD approval. \*\* The project cannot proceed beyond the April 2010 milestones above until the required air permit(s) have been issued by the NMED Air Quality Bureau.~~

**Attachment A – ~~Supplemental~~ DGF System Maintenance Information**

The following information regarding DGF system maintenance was provided by:

**Traitements des eaux POSEÏDON Inc.**

Suite 310, 1290 Van Horne Avenue, Montréal QC Canada H2V 4S2

Tel. 514-270-9593, Fax. 514-270-9355, Gen. E-mail: info@poseidoninc.com,

Web: poseidoninc.com

The need for maintenance will mainly come from mechanical components. The skimming device and its motor reducer require little maintenance. The Poseipump<sup>1</sup> requires the same maintenance as a typical centrifugal pump; i.e., replacement of the mechanical seal approximately once per year. In addition, there is a rotary joint on the shaft of the Poseipump that brings the flotation gas to the pump. It requires replacement approximately once or twice per year.

The units are built in stainless steel and there are no mechanical components below water level. All of the mechanical components that need attention are accessible from outside the unit and will not need down time for maintenance. They are the skimming device (inside the unit but above the water level) and its motor reducer (outside the unit), the recirculation/gas dissolution Poseipump and its motor. Some shelf spares and an installed Poseipump will offset the need for down time.

We estimate that it would be good practice to inspect and clean the unit during planned turnarounds. A typical DGF outage is simple and provision should be made for: complete skimming of the float, opening the cover hatch, draining of the water, removal of the cover (with a crane), cleaning the inside of the unit (with water hoses), re-installation of the cover with new seal and filling the unit with clean water. This can be done within one day for the Saturn model.

Since our units are built in stainless steel, since there are no mechanical components below water level, and since we use only the most dependable components (such as motor-reducers instead of chains and sprockets, etc.), operation reliability is improved

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<sup>1</sup> The Poseipump provide dissolution of the flotation gas through pressurized recycle stream. It's the DGF recycle pump.

and maintenance is significantly reduced. Therefore, it is possible to treat the entire wastewater stream on a continuous basis with a single DGF unit and with reliability. We have DGF units that have been in operation since late 2003, that have been open only once during a planned turnaround in 2006 (for preventive inspection and cleaning) and that have been operating without any interruption since then.

## Attachment B – ~~Supplemental~~ MPPE System Maintenance Information

The following information regarding MPPE system maintenance was provided by Whittier Filtration:

Although the unit is designed to run automatically and unmanned, the unit should be inspected daily. Normal maintenance will include inspecting and/or replacing pump seals and valve seats. This should be done on an annual basis. The instruments should be checked and/or recalibrated semiannually. Pressure relief valves should be checked on a monthly basis to ensure safety. If found to be leaking or damaged, they should be replaced.

The performance is guaranteed for the operational lifetime of the unit. The media is designed to last between one and two years. When the media effectiveness decreases below a predetermined value, the media will need to be exchanged. This is determined by periodic effluent sampling. The exchange service is provided by Whittier Filtration as part of the performance guarantee. The exchange will take between four and eight hours. As part of the operating parameters, the media is steam stripped with low pressure steam every hour. This will remove the extracted hydrocarbons from the media as well as protecting the media from organic fouling.

**Attachment C – USEPA February 16, 2007 interpretation letter**

**Attachment D – Process Design Report, Western Refining Southwest Inc.,**  
**January 21, 2010**

Document comparison by Workshare Professional on Wednesday, June 16, 2010 3:45:32 PM

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| Document 2 ID | file://U:/PDR Work Plan Final - 2010.doc     |
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|                | Count |
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| Deletions      | 158   |
| Moved from     | 0     |
| Moved to       | 0     |
| Style change   | 0     |
| Format changed | 61    |
| Total changes  | 525   |