



OXY USA WTP LP
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OXY USA WTP LP

DRILL CUTTINGS MATERIALS MANAGEMENT PLAN

FOUR CUTTINGS DISPOSAL LOCATIONS:

**604-12-13 ANNEX, 697-04D, 697-05C,
AND 697-08-53 DRILL CUTTINGS
STAGING AND DISPOSAL AREAS**

FEBRUARY 2012

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Introduction

OXY USA WTP LP (Oxy) is submitting this Materials Management Plan (MMP) to the Colorado Oil and Gas Conservation Commission (COGCC), under a Form 4 Sundry, requesting review and approval of Oxy's 2012-2013 MMP for disposal of drill cuttings. The MMP will be used to manage drill cuttings generated from several multi-well drilling pads located on Oxy owned lands situated in the Grand Valley field, Garfield County Colorado. The MMP covers four proposed staging and disposal sites also located on Oxy property.

Currently Oxy is utilizing two COGCC approved cuttings disposal sites that are located on Oxy property to manage disposal of drill cuttings. The four proposed sites identified in this plan (pending COGCC approval), will be prepared for use when the approved facilities (MCDA and 697-15-01) are close to capacity and ready for closure.

Materials Management Plan (MMP)

Oxy developed this MMP to address management and disposal of drill cuttings at four locations:

- Cascade Creek 604-12-13 Annex pad,
- Cascade Creek 697-04D pad,
- Cascade Creek 697-05C pad, and
- Cascade Creek 697-08-53 pad.

Oxy owns both the surface and minerals at these locations (see Figure 1, Location Map). Oxy's 2012 and 2013 oil and gas development activities in the Piceance Basin consist of drilling at the following multi-well pads:

604-12-13 Annex	697-06A	697-15B
697-04D	697-06D	697-17A
697-05C	697-08A	697-17B

Each well pad identified above is located on Oxy surface. Oxy's 2012 and 2013 drilling plans require drilling and completions operations to occur simultaneously at these locations, commonly referred to as SimOps. During SimOps, pad space normally used to store cuttings for disposal would now be used for completion activities. In order to accommodate SimOps without increasing the pad size, Oxy is proposing to permanently dispose drill cuttings generated from the above-mentioned pads at the proposed cuttings disposal areas to ensure that SimOps activities are completed safely. Cuttings will be disposed of at the 604-12-13 Annex, 697-04D, 697-05C, and 697-08-53 reserve pits and associated pad cut slopes after SimOps has been completed at these locations.

The proposed cuttings disposal areas are located within Oxy's Cascade Creek operational area, specifically:

- 604-12-13 Annex (Location ID # 424970): Lot 16, Sec 4, Township 6 South, Range 97 West, 6th PM, Garfield County, Colorado.
- 697-04D (Location ID # 423240): NWSW, Sec 4, Township 6 South, Range 97 West, 6th PM, Garfield County, Colorado.

- 697-05C (Location ID # 421340): Lot 14, Sec 5, Township 6 South, Range 97 West, 6th PM, Garfield County, Colorado.
- 697-08-53 (Location ID # 335815): NWSE, Sec 8, Township 6 South, Range 97 West, 6th PM, Garfield County, Colorado.

Oxy acquired the services of Walsh Environmental Scientists and Engineers, LLC to conduct a Hydrogeologic Report for the proposed disposal locations. The report discusses local geology and potential surface and ground water features.

Drill Cuttings Generation

Oxy's 2012 and 2013 proposed drilling and SimOps schedule is outlined below:

Well Pad	Drilling Schedule	SimOps Schedule	Number of Wells
604-12-13 Annex	April 2012	June 2012	15
697-04D	Currently drilling	March 2012	21
697-05C	Currently drilling	Currently SimOps	22
697-06A	January 2013	March 2013	21
697-06D	September 2012	November 2012	18
697-08A	February 2012	April 2012	23
697-15B	February 2013	April 2013	16
697-17A	November 2012	January 2013	17
697-17B	July 2012	September 2012	19

After processing, the cuttings will be blended with and absorbent material such as sawdust to absorb *de minimis* amounts of liquid. On average, the drill cuttings will expand to approximately 330 cubic yards per well, using a conservative 50 percent swelling factor.

Oxy employs a skidable rig capable of drilling up to 24 wells from a single pad. Oxy's drilling rig utilizes a semi-closed loop system for mud cycling and reuse. The rig air drills the surface hole and then air is injected with mud for the production hole. As drill cuttings are returned to the surface they are deposited into a de-gasser. The de-gassing process allows the cuttings and mud to better separate in the next phase. The cuttings and mud are then sent to four rig shakers, which drain out fluids and mud from the cuttings. The cuttings separated in this phase consist of a larger aggregate size and constitute the bulk of the cuttings to be stored off site. In addition to the rig shakers, the cuttings are also sent to four additional drying shakers, which removes another 20 percent of fluids from the cuttings. The separated fluids and mud collected are reused in the drilling process. Finer aggregate cuttings are then separated by sending the cuttings/mud mixture to a settling tank (mud trap), from which the cuttings are then sent to two centrifuges to remove low gravity solids (cuttings). These low gravity solids will also be hauled off site for storage and disposal. Any low gravity solids containing cement will be diverted to the above-mentioned pad reserve pit.

Reserve Pit Closure Activities

Prior to disposal of drill cuttings at the above-mentioned storage and disposal locations, Oxy will reclaim the reserve pit. Oxy will reclaim the reserve pit by removing the pit liner for off-site disposal, and mixing and stabilization of the reserve pit contents for sampling and onsite disposal. Oxy will collect below liner grab samples from the pit bottom to be analyzed for COGCC Table 910-1 to ensure environmental impacts were not encountered during the reserve pit activity. Once confirmation samples have verified no issues, Oxy will collect composite samples of the stabilized reserve pit contents to be analyzed for COGCC Table 910-1. After the composite pit contents sample results confirm compliance with applicable COGCC Table 910-1 regulated levels, Oxy will backfill the pit with the stabilized material and begin additional disposal of drill cuttings within the reserve pit and cut slope of the pad location. Oxy will follow applicable

COGCC guidance regarding constituents that don't commonly meet Table 910-1 concentration levels, such as Arsenic, pH, SAR, EC, and TPH and file the necessary sundries to document Oxy's disposal methods. Reserve pit closure activities will be documented as part of the cuttings disposal area closure activities.

Drill Cuttings Sampling Procedures

In accordance with COGCC regulations for storage and permanent disposal, samples shall be collected throughout the drilling process to document that the cuttings meet the standards which have been established by COGCC. To accomplish this, Oxy will:

- **Background Samples:** Initially, background samples will be collected from undisturbed locations around the 604-12-13 Annex, 697-04D, 697-05C, and 697-08-53 pad locations. All background samples will be analyzed for COGCC Table 910-1 constituents excluding Hot Water Soluble Boron, and Barium will be analyzed via method SW-846.
- **Cuttings Samples:** In an effort to define the concentrations of Table 910-1 constituents which may be encountered on each pad, samples will be collected to determine the geologic source. On each of the drilling pads, beginning with the first well drilled, Oxy will collect multiple composite samples from both the surface and production strings by collecting samples of each major formation. The cuttings samples generated from the first well will be analyzed for the above mentioned analysis. Following the initial well, Oxy will collect cuttings samples from every 4th well (the 4th, 8th, 12th, 16th, and 20th) wells (based on a 22 well pad), targeting composites of surface and production string formations. Oxy will continue to use this numbered well sampling strategy for well pads which have fewer than 22 wells. In general, the samples will be collected in the following manner:
 - Initial well (well 1): Collect three to four composite samples from the surface string; targeting the Uinta, Green River, and Wasatch formations. Then collect six to seven samples from the production string; targeting the Fort Union, Williams Fork (four to five zones), and the Illes formations.
 - Additional wells (wells 4, 8, 12, 16, and 20 for a multi-well pad): Collect one composite sample from the surface string and three composite samples from the production string.
 - These composite samples will be collected from the cuttings storage bin which will consist of cuttings that have been processed and mixed with sawdust, used to absorb *de minimus* amounts of water present in the cuttings, and are ready for storage and disposal.
 - Oxy employs a drilling technique commonly referred to as "batch drilling", where the surface string is drilled for the first 6, 8 or 10 wells, prior to returning to the initial well to drill the production string, where the production string of the 6, 8 or 10 wells will be drilled out. Batch drilling increases Oxy's efficiency by not having to switch out surface and production section tools between each well. Oxy typically batch drills every six wells. Batch drilling will stagger when surface and production string cuttings samples are collected for each well. Oxy will take this staggering into consideration when reviewing and tabulating the analytical data.
 - Cuttings will be sampled and analyzed at the disposal location for COGCC table 910-1 to ensure proper mixing prior to disposal.
- **Analysis of Samples:** The samples collected from the initial well of each pad will be tabulated to characterize cuttings generated from the specific formations and/or combined formations within Oxy's Cascade Creek operating area. Oxy will be looking for any variations or leading indicators in the cuttings to allow Oxy to make recommendations on the sampling frequency of future wells or pads. The samples collected from the additional wells, will also be tabulated to characterize cuttings

generated from combined formations within Oxy's Cascade Creek operating area to determine if statistical trends can be identified from the cuttings samples. All samples analyzed will be used to determine if more or less sampling should be required for future wells or pads.

Cuttings samples shall be collected directly from the blended cuttings storage bin. At a minimum, three composite samples will be collected from cuttings generated by the drilling of each well. This composite sample will represent concentrations found in the processed cuttings for each well.

The composite sample will consist of cuttings samples taken from at least five random locations on the blended cuttings bin pile and placed in the stainless steel bowl for blending. The blended composite cuttings sample found in the stainless steel bowl will then be packaged in laboratory provided glass jars for sample shipment and analysis. After filling of the appropriate number of jars, sample labels will be prepared and placed over the lid to provide a permanent seal to take the sample through chain-of-custody to the specified laboratory.

The individual collecting the sample should wear a new pair of disposable nitrile gloves for each sample collected to prevent cross-contamination of the samples. The samples should be collected using a stainless steel spoon, trowel or other appropriate equipment. The sampling equipment used will need to be thoroughly cleaned and rinsed with distilled water between each discrete sample. Appropriate sampling containers should be used for each sample. Each discrete sample should be placed into the specified container, and a log generated to identify the date, time, and identification of the person collecting the samples. The containers must be stored in a temperature controlled area which will maintain at or near 40 degrees F. (i.e. a refrigerator).

Each composite sample will be sent to a laboratory for analysis, samples should be given a distinct identification number (for example: 01 cuttings), labeled with the date and time of the sample collection, and the initials of the sampler, placed in a cooler with ice or back into the refrigerator under chain of custody protocol. The samples must be kept on ice and cool, during transportation from the field to the laboratory.

After the lab has analyzed the samples, the lab will provide Oxy with the results in a written report per the specified turn-around time. Oxy will tabulate the results for statistical analysis and trending.

Cuttings Storage and Disposal Plan

Dry drill cuttings generated from the above-mentioned drilling locations will be managed as follows:

1. Drill cuttings will be stabilized with an absorbent material such as sawdust for transport to the disposal areas.
2. Each cuttings delivery will be offloaded into the 50' by 50' receiving/mixing area located immediately adjacent to the permanent disposal area for each cuttings disposal location.
3. The permanent disposal area for each location will be:
 - The 604-12-13 Annex will be approximately 46,781 square feet.
 - The 697-04D will be approximately 47,826 square feet.
 - The 697-05C will be approximately 56,200 square feet.
 - The 697-08-53 will be approximately 50,701 square feet.
 - All above-mentioned cuttings disposal areas will be surrounded by an earthen berm when not in use.
4. After cuttings have been mixed with native material for additional stabilization (as needed), they will be carried over to the permanent disposal area on each pad and will be stacked until approximately:
 - 31,447 cubic yards of cuttings are disposed on the 604-12-13 Annex.

- 32,150 cubic yards of cuttings are disposed on the 697-04D.
- 41,213 cubic yards are disposed on the 697-05C pad.
- 9,295 cubic yards are disposed on the 697-08-53 pad.
- The cuttings will be set back so that they do not over-run the earthen berm serving as containment for the each permanent disposal area.

A final three foot cap consisting of native material will be placed on top of each cuttings disposal area. The cap will be contoured to manage stormwater run on and run off then prepared for reclamation (seeding).

Transportation of Cuttings to Disposal Areas

Dry cuttings will be placed onto transport trucks (16 cubic yard dump trucks) and hauled to the disposal location. The trucks will deliver the cuttings at the designated off-loading area where mixing and final disposal will occur. The transport trucks will travel on Oxy owned and maintained roads, a short distance from each pad. All approximate distances reported below are based on driving distances:

604-12-13 Annex cuttings disposal location:

- The 697-06A pad is approximately 2.9 miles away and the route will run alongside an unnamed intermittent stream for approximately 0.45 miles.
- The 697-06D pad is approximately 2.85 miles away and will not cross any creeks or rivers.
- The 697-15B pad is approximately 4.81 miles away and will not cross any creeks or rivers.
- The 697-17A pad is approximately 2.75 miles away and will not cross any creeks or rivers.
- The 697-17B pad is approximately 2.75 miles away and will not cross any creeks or rivers.

697-04D cuttings disposal location:

- The 697-06A pad is approximately 3.21 miles away and will not cross any creeks or rivers.
- The 697-06D pad is approximately 3.10 miles away and will not cross any creeks or rivers.
- The 697-15B pad is approximately 4.61 miles away and will cross Cascade Canyon.
- The 697-17A pad is approximately 2.14 miles away and will not cross any creeks or rivers.
- The 697-17B pad is approximately 2.05 miles away and will not cross any creeks or rivers.

697-05C cuttings disposal location:

- The 604-12-13 Annex pad is approximately 1.98 miles away and will not cross any creeks or rivers.
- The 697-04D pad is approximately 2.23 miles away and will not cross any creeks or rivers.
- The 697-06D pad is approximately 1.50 miles away and will not cross any creeks or rivers.
- The 697-08A pad is approximately 1.10 miles away and will not cross any creeks or rivers.
- The 697-15B pad is approximately 6.41 miles away and will not cross any creeks or rivers.
- The 697-17A pad is approximately 4.40 miles away and will not cross any creeks or rivers.
- The 697-17B pad is approximately 4.35 miles away and will not cross any creeks or rivers.

697-08-53 cuttings disposal location:

- The 697-04D pad is approximately 1.5 miles away and will not cross any creeks or rivers.
- The 697-05C pad is approximately 3.75 miles away and will not cross any creeks or rivers.
- The 697-08A pad is approximately 4.25 miles away and will not cross any creeks or rivers.

The transport trucks will offload the dry cuttings initially at the staging areas for the above-mentioned cuttings disposal locations. Oxy will track the volume of dry cuttings hauled for disposal and storage at the cuttings disposal locations.

In the event that a transport truck over turns along the transport routes identified, Oxy will implement spill response and cleanup procedures outlined further below.

Cuttings Disposal Areas

The cuttings disposal areas will be managed in accordance with COGCC regulations and comply with applicable COGCC Table 910-1 standards. Oxy will follow applicable COGCC guidance regarding constituents that don't commonly meet Table 910-1 concentration levels, such as Arsenic, pH, SAR, EC, and TPH and file the necessary sundries to document Oxy's disposal methods. Oxy cuttings samples from the shaker tables on active drilling locations generally characterizes the cuttings which can be expected from the cuttings generated from this plan. Drill cuttings samples identified elevated concentrations of sodium adsorption ratio (SAR), pH, arsenic, some PAH's, and TPH (see attached analytical results).

Due to sample collection from the shaker table on the drilling rig, Oxy believes the exceedances in some PAH's and TPH is due to no mixing and stabilization, as well as insufficient time to allow for aeration. To address the elevated concentrations of some PAH's and TPH, Oxy will sufficiently mix the cuttings with an absorbent material such as sawdust to absorb *de minimis* amounts of liquids in the cuttings. To allow for sufficient aeration, these cuttings will then be transported to the disposal location and off-loaded. Where the cuttings will be sufficiently mixed with native material to ensure stabilized cuttings will be disposed of at the disposal location.

To address the elevated concentrations of SAR and pH, the cuttings will be buried and capped below at least three feet of native soil. Oxy believes the elevated arsenic concentrations found in the cuttings samples are due to documented naturally occurring arsenic known to be in the native sub-surface formations. Oxy will ensure that As levels will be below COGCC Table 910-1 or naturally occurring background concentrations. Although natural variability is known to occur within the region, Oxy will default to naturally occurring background sample concentrations known to exist within the area. Prior to being capped, a final sample will be collected to ensure compliance with applicable COGCC Table 910-1 standards. Oxy will follow applicable COGCC guidance regarding constituents that don't commonly meet Table 910-1 concentration levels, such as Arsenic, pH, SAR, EC, and TPH and file the necessary sundries to document Oxy's disposal methods. The final disposal locations shall be documented to include the final volume of cuttings disposed.

After the disposal areas have been capped with 3 feet of native fill material; the areas will be prepared for seeding. The disposal areas will be contoured to manage stormwater runoff and to provide for a surface that will encourage reseeding. Reseeding will generally occur in the early spring or fall which ever comes first to ensure seed germination. Oxy will monitor the reclaimed disposal location to ensure compliance Oxy's stormwater management plan. The disposal location will monitored revegetation effort at the next growing season and make necessary adjustments to ensure reclamation is complete.

Spill Response and Cleanup Procedures

In the event that a transport truck overturns and discharges cuttings materials, the site will be secured and Oxy will employ the response and reporting procedures identified in Oxy's Emergency Response Plan (ERP), see attached.

The ERP provides Oxy's emergency response and reporting procedures that will be followed in the event of an incident. Oxy emergency response personnel will ensure that the area is safe and that no fuel or hydraulic fluid has been released. If fuel, hydraulic fluid or other refined chemical has released, then the release will be contained, cleaned up, and if applicable reported to the necessary agencies. Please refer to the Oxy's ERP to identify individual roles and responsibilities.

Any cuttings that have discharged from the truck will be contained, collected, and taken to the disposal area. The cuttings shall be transported in a dry state and therefore will not run-off or generate an impact beyond the release area. Following control and removal of the release, Oxy

will ensure that any and all required governmental and non-governmental agencies will be contacted. Please refer to Table 1 of the ERP for Agency emergency contact information.

Surface Water Monitoring

Water quality sampling will be conducted for each of the cuttings disposal locations prior to the operation of these facilities. Surface water sampling will occur for each of the following cuttings disposal locations (see Figures 6 – 9):

- **604-12-13 Annex:** at the unnamed pond located approximately 950 feet south of the proposed cuttings disposal location.
- **697-04D:** at the unnamed pond located approximately 1,230 feet west of the proposed cuttings disposal location.
- **697-05C:** at the unnamed intermittent drainage approximately 1,100 feet south of the proposed cuttings disposal location.
- **697-08-53:** at the unnamed intermittent drainage approximately 1,300 feet west of the proposed cuttings disposal location.

Oxy will collect one sample from each of the above-mentioned sampling points for the appropriate cuttings disposal area prior to commencing disposal operations to serve as a background assessment of water quality parameters in the area. Quarterly water samples will be collected during disposal operations, peak flow when achievable, and will continue for an additional four quarters following capping and completion of the disposal operations. Quarterly sampling will continue except when difficulty of reaching the site due to inclement weather. All water samples will be collected and analyzed for COGCC Table 910-1 water standards to include; benzene, toluene, ethylbenzene, and total xylenes (BTEX), total dissolved solids, chlorides, sulfates, and dissolved metals. Water sample analytical results and tabulated data will be provided to the COGCC as part of the Form 27 closure documentation.

The individual collecting the sample will wear a new pair of disposable nitrile gloves for each sample collected to prevent cross-contamination of the samples. The individual collecting the surface water sample will fill, cap, and seal all laboratory provided containers using laboratory provided labels. The individual collecting the samples will follow all storage, shipment, and chain-of-custody procedures implemented by Oxy in this MMP and outlined in Appendix A.

Proposed Facility Modifications

Oxy will notify the COGCC in writing (sundry) if proposed modifications to the facility design, operating plan, permit data, or permit conditions change following applicable COGCC rules.

Facility Closure

Oxy will comply with established COGCC rules by submitting a detailed Site Investigation and Remediation Workplan, Form 27, prior to facility closure to the Director for approval. Outlined below are operations and activities which Oxy assumes could be associated with the preliminary and final closure of the locations:

- Stacking of the processed cuttings;
- Capping the cuttings with at least 3 feet of native fill material;
- COGCC Table 910-1 compliance composite sample collection of disposal area to ensure adequate capping of the cuttings;
- Final contour and seed bed preparation, followed by seeding during the appropriate season;
- Monitor seeding efforts and stormwater best management practices on the cuttings disposal area.

Appendix A

Sample chain-of-custody procedures

Appendix A – Chain-of-custody Procedures

Written procedures for sample handling should be available and followed whenever samples are collected, transferred, stored, analyzed or destroyed. For the purposes of litigation (and quality control), it is necessary to have an accurate written record to trace the possession and handling of samples from collection through reporting. The procedures defined here represent a means to satisfy this requirement.

A. Sample is in someone's "custody" if:

1. It is in one's actual physical possession;
2. It is in one's view, after being in one's physical possession;
3. It is one's physical possession and then locked up so that no one can tamper with it;
4. It is kept in a secured area, restricted to authorized personnel only.

B. Sample Collection, Handling and Identification

1. It is important that a minimum number of persons be involved in sample collection and handling. Field records should be completed at the time the sample is collected and should be signed or initialed, including the date and time, by the sample collector(s). Field records should contain the following information:
 - a. Unique sample or log number;
 - b. Date and time;
 - c. Source of sample (including name, location and sample type);
 - d. Name of collector(s);
 - e. Comments.
2. Each sample is identified by affixing a pressure sensitive gummed label or standardized tag on the container(s). This label should contain the sample number, source of sample, preservative used, and the collector(s)' initials. The analysis required should be identified. Where a label is not available, the sample information should be written on the sample container with an indelible marking pen.
3. The closed sample container should then be placed in a transportation case or appropriate container along with the chain-of-custody record form, pertinent field records, and analysis request forms (these forms will be supplied with the appropriate sample containers). A transportation case if used should then be sealed and labeled. All records should be filled out legibly in waterproof pen. The use of locked or sealed chests will eliminate the need for close control of individual sample containers. However, there will undoubtedly be occasions when the use of a chest will be inconvenient. On these occasions, the sampler should place a seal around the cap of the individual sample container which would indicate tampering if removed.

C. Transfer of Custody and Shipment

1. When transferring the possession of the samples, the transferee must sign and record the date and time on the chain-of-custody record. Custody transfers, if made to a sample custodian in the field, should account for each individual sample, although samples may be transferred as a group. Every person who takes custody must fill in the appropriate section of the chain-of-custody record.
2. The field custodian (or field sampler if a custodian has not been assigned) is responsible for properly packaging and dispatching samples to the appropriate laboratory for analysis. This responsibility includes filling out, dating, and signing the appropriate portion of the chain-of-custody record.
3. All packages sent to the laboratory should be accompanied by the chain-of-custody record and other pertinent forms. A copy of these forms should be retained by the field custodian (either carbon or photocopy).

4. Mailed packages can be registered with return receipt requested. If packages are sent by common carrier, receipts should be retained as part of the permanent chain-of-custody documentation.
5. Samples to be transported must be packed to prevent breakage. If samples are shipped by mail or by other common carrier, the shipper must comply with any applicable Department of Transportation regulations. (Most water samples are exempt unless quantities of preservatives used are greater than certain levels.) The package must be sealed or locked to prevent tampering. Any evidence of tampering should be readily detected if adequate sealing devices are used.

If the field sampler delivers samples to the laboratory, custody may be relinquished to laboratory personnel. If appropriate personnel are not present to receive the samples, they should be locked in a designated area of the laboratory to prevent tampering. The person delivering the samples should make a log entry stating where and how the samples were delivered and secured. Laboratory personnel may then receive custody by noting in a logbook, the absence of evidence of tampering, unlocking the secured area, and signing the custody sheet.

Figure 1 - Location Map

Map Revised: January 23, 2012

Garfield County, Colorado

0 0.125 0.25 0.5 0.75 1 Miles

697-06A
Location ID Pending
SENE, Sec 6, T6S, R97W, 6th PM

697-06D
Location ID 423947
SESE, Sec 6, T6S, R97W, 6th PM

604-12-13 Annex
Location ID 424970
Lot 16, Sec 4, T6S, R97W, 6th PM

MESA Cuttings Disposal Area
Location ID 423444
NWSE, Sec 9, T6S, R97W, 6th PM

697-15-01 Cuttings Disposal Area
Location ID 335921
NWNW, Sec 15, T6S, R97W, 6th PM

697-17A
Location ID Pending
SENE Sec 17, T6S, R97W, 6th PM

697-17B
Location ID 383339
SWNE, Sec 17, T6S, R97W, 6th PM

697-15B
Location ID: To Be Determined
NESW, Sec 15, T6S, R97W, 6th PM

- Drill Cuttings Generated Location
- Drill Cuttings Disposal Location
- Additional Disposal Location

Figure 2 - Location Map

Map Revised: January 23, 2012 Garfield County, Colorado

0 0.15 0.3 0.6 0.9 1.2 Miles

697-06A
Location ID Pending
SENE, Sec 6, T6S, R97W, 6th PM

697-06D
Location ID 423947
SESE, Sec 6, T6S, R97W, 6th PM

697-04D
Location ID 423240
NWSW, Sec 4, T6S, R97W, 6th PM

MESA Cuttings Disposal Area
Location ID 423444
NWSE, Sec 9, T6S, R97W, 6th PM

697-15-01 Cuttings Disposal Area
Location ID 335921
NWNW, Sec 15, T6S, R97W, 6th PM

697-17A
Location ID Pending
SENE, Sec 17, T6S, R97W, 6th PM

697-17B
Location ID 383339
SWNE, Sec 17, T6S, R97W, 6th PM

697-15B
Location ID: Pending
NESW, Sec 15, T6S, R97W, 6th PM

Drill Cuttings Generation Location
Drill Cuttings Disposal Location
Additional Disposal Location

Figure 3 - Location Map

Map Revised: January 23, 2012 Garfield County, Colorado
0 0.125 0.25 0.5 0.75 1 Miles

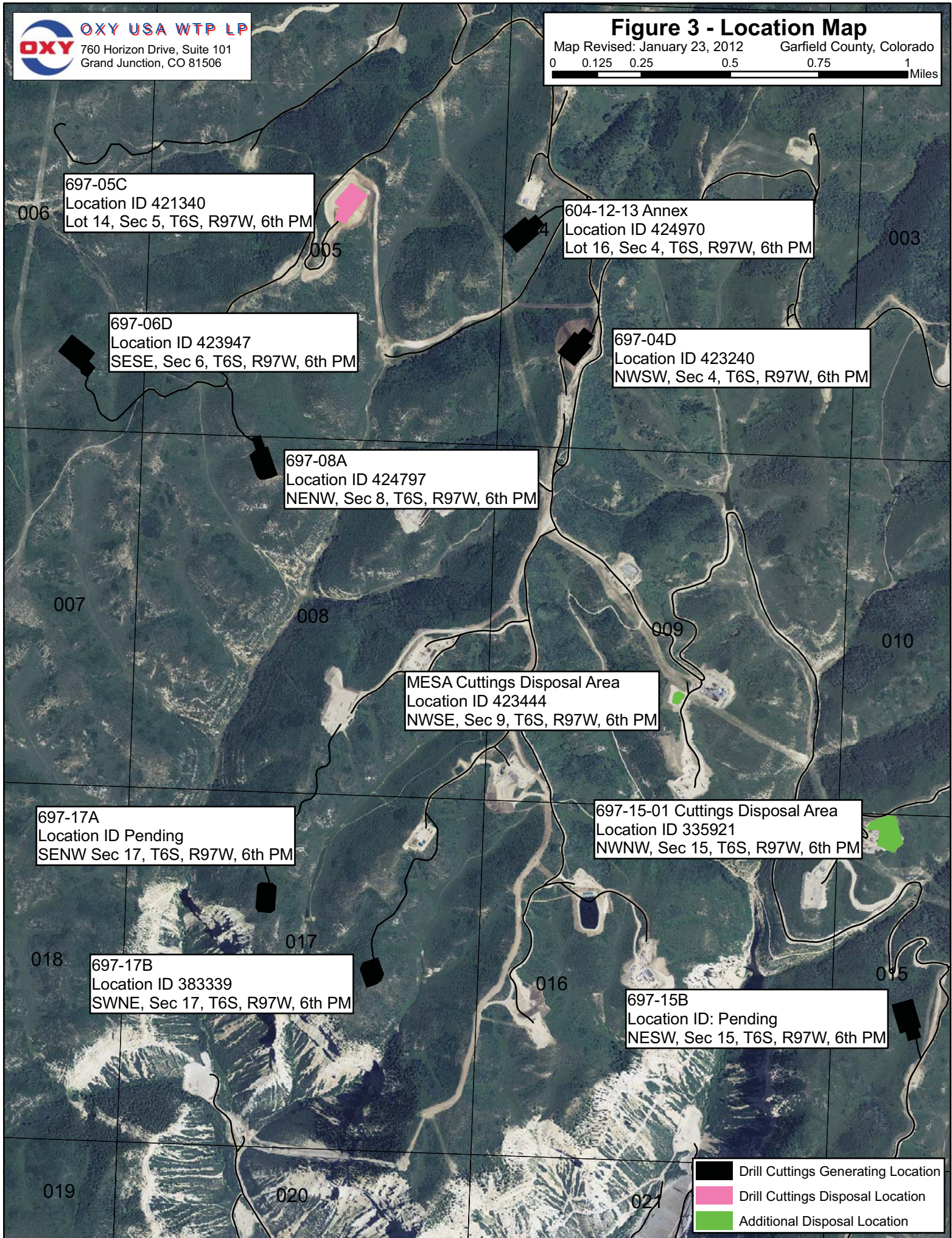


Figure 4 - Location Map

Map Revised: January 23, 2012

Garfield County, Colorado

0 0.1 0.2 0.4 0.6 0.8
Miles

697-05C
Location ID 421340
Lot 14, Sec 5, T6S, R97W, 6th PM

697-04D
Location ID 423240
NWSW, Sec 4, T6S, R97W, 6th PM

697-08A
Location ID 424797
NENW, Sec 8, T6S, R97W, 6th PM

MESA Cuttings Disposal Area
Location ID 423444
NWSE, Sec 9, T6S, R97W, 6th PM

697-08-53
Location ID 335815
NWSE, Sec 8, T6S, R97W, 6th PM

697-15-01
Location ID 335921
NWNW, Sec 15, T6S, R97W, 6th PM

Drill Cuttings Generated Location
Drill Cuttings Disposal Location
Additional Disposal Location





OXY USA WTP LP

760 Horizon Drive, Suite 101
Grand Junction, CO 81506

604-12-13 Annex Cuttings Disposal Area

Map Revised: January 20, 2012

Garfield County, Colorado

0 0.02 0.04 0.06 0.08 0.1 Miles

005

004

Approximate Surface Water
Monitoring Location



604-12-13 Annex Cuttings Disposal Area



604-12-13 Annex






Oxy responsible road

697-04D Cuttings Disposal Area

Map Revised: January 20, 2012 Garfield County, Colorado
0 0.02 0.04 0.06 0.08 0.1
Miles

● Approximate Surface Water
Monitoring Location

004

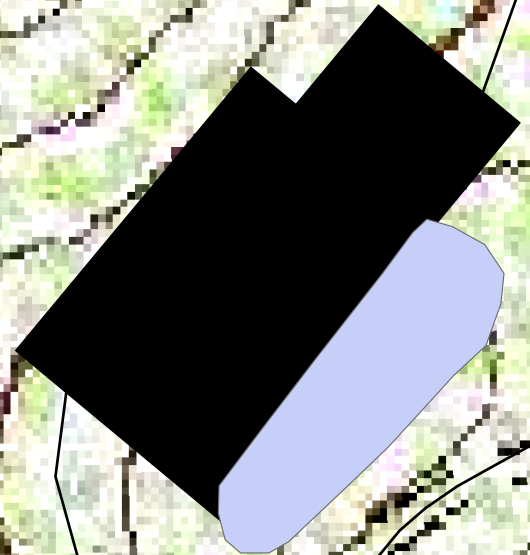
-  697-04D Cuttings Disposal Area
-  697-04D
-  Oxy responsible road

697-04D Cuttings Disposal Area


Map Revised: January 20, 2012 Garfield County, Colorado

0 0.02 0.04 0.06 0.08 0.1
Miles

Approximate Surface Water
Monitoring Location



 697-04D Cuttings Disposal Area

 697-04D

 Oxy responsible road

697-05C Cuttings Disposal Area

Map Revised: January 20, 2012 Garfield County, Colorado
0 0.02 0.04 0.06 0.08 0.1 Miles

- 697-05C Cuttings Disposal Area
- Well Pads
- Oxy responsible road



005

Approximate surface water
monitoring location






OXY USA WTP LP

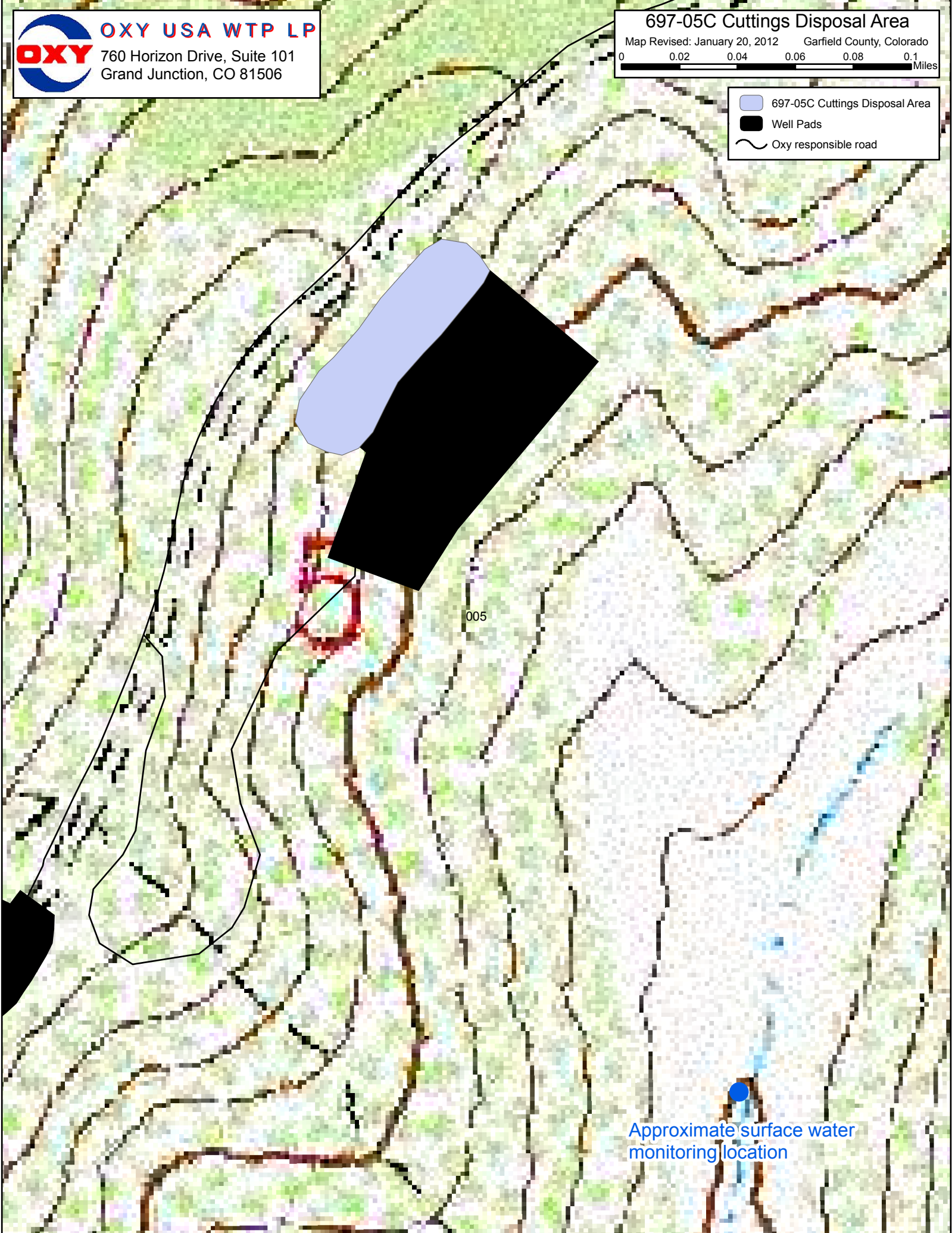
760 Horizon Drive, Suite 101
Grand Junction, CO 81506

697-05C Cuttings Disposal Area

Map Revised: January 20, 2012 Garfield County, Colorado

0 0.02 0.04 0.06 0.08 0.1 Miles




-  697-05C Cuttings Disposal Area
-  Well Pads
-  Oxy responsible road



● Approximate Surface Water
Monitoring Location

008

017

-  697-08-53 Cuttings Disposal Area
-  Well Pads
-  Oxy responsible road



OXY USA WTP LP

760 Horizon Drive, Suite 101
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697-08-53 Cuttings Disposal Area

Map Revised: January 20, 2012 Garfield County, Colorado

0 0.025 0.05 0.075 0.1 0.125 Miles

Approximate Surface Water
Monitoring Location

008

007

697-08-53 Cuttings Disposal Area

Well Pads

Oxy responsible road

697-05C Cuttings

Rig: H&P 353

Samples obtained from the shaker table

Organics in Soil				MCL (mg/kg)																	Averages	
TPH (GRO and DRO)	Benze	Toluene	Ethylbenzene	Xylenes	Acenaphthene	Anthracene	Benz(a) anthracene	Benz(b) fluoranthene	Benz(k) fluoranthene	Benz(a)pyrene	Chrysene	Dibenzo(a,h) anthracene	Fluorene	Indeno(1,2,3-c,d) pyrene	Naphthalene	Pyrene	EC	SAR	pH			
500	0.17	85	100	175	1000	1000	0.22	0.22	2.2	0.022	22	0.022	1000	0.22	23	1000	<4 mmhos/cm or 2X background	<12	6-9			
86.42	0.025	0.018	0.0052	0.017	U	U	U	U	U	U	U	U	U	U	0.024	U	2.2	90	11			
440	0.1	0.03	0.0024	0.016	0.0009	U	U	U	U	U	U	U	0.0016	0.034	0.00066	U	2.4	66	11			
220.48	0.014	0.02	0.0071	0.033	U	U	U	U	U	U	U	U	0.0066	0.032	U	U	2.6	48	9.8			
803.3	0.036	0.056	0.011	0.06	U	U	0.0029	0.002	U	0.013	U	U	0.02	0.076	U	U	1.9	71	11			
602.1	0.047	0.12	0.012	0.16	U	U	U	U	U	0.0077	0.0029	U	0.013	0.058	0.0028	U	2.7	82	10			
503.7	0.13	0.081	0.03	0.1	U	U	U	U	U	U	U	U	0.014	0.15	0.013	U	1.8	65	11			
601.8	0.17	0.048	0.0063	0.027	U	U	U	U	U	U	U	U	0.01	0.15	U	U	1.8	82	11			
3306.4	0.15	0.23	0.01	0.18	0.043	0.03	0.033	0.029	U	0.012	0.077	0.017	0.17	1	U	U	2.6	98	9.7			
882.2	0.12	0.13	0.012	0.1	0.031	0.032	0.036	0.036	0.038	0.017	0.081	0.031	0.13	0.7	0.059	0.048	1.9	89	10			
552.1	0.046	0.073	0.0026	0.032	0.052	0.044	U	0.038	U	0.018	0.13	U	0.064	0.97	0.0083	U	2.2	72	9.5			
202.5	0.064	0.086	0.0047	0.054	U	U	0.011	U	U	U	0.2	U	U	0.11	0.0083	U	2	60	10			
1803.7	0.067	0.02	0.0032	0.08	0.091	0.0014	0.069	0.053	0.063	0.035	0.035	0.028	0.055	0.49	2	0.1	1.9	68	10			
54.74	0.024	0.02	0.0025	0.016	0.0011	0.0014	0.0014	0.0022	0.0018	U	0.0026	U	0.0034	0.0087	0.087	0.0025	1.6	49	11			
32.1	0.028	0.015	0.0034	0.014	0.0023	0.0021	U	0.0018	U	U	0.0026	U	0.0034	0.0079	0.087	0.0034	1.8	51	10			
496.75																		75.37		10.16		

Metals in Soils																
Arsenic	Barium	Cadmium	Chromium III	Chromium VI	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc					
0.39	15,000	70	120,000	23	3100	400	23	1600	390	390	23,000					
2.8	310	0.19	14	U	14	12	0.013	14	4	1.7	54					
4.3	140	U	11	U	23	12	0.017	9.2	4.2	1.7	46					
0.96	230	0.28	6	U	13	9.8	0.0078	5.4	2	1.2	40					
2.6	200	0.05	10	U	34	0.15	0.015	10	3.5	0.97	48					
2.6	120	0.08	6	U	10	7.6	0.017	6.6	2.8	0.97	32					
5.5	190	0.28	11	U	48	9.9	0.019	13	U	0.3	53					
3.1	160	U	10	U	25	10	0.011	12	U	0.27	44					
1.2	130	U	3	0.8	16	9.5	0.012	12	1.9	U	40					
2.1	120	U	5.4	U	12	10	0.0086	12	12	U	57					
5.4	180	0.36	6.3	U	14	8.8	0.017	9.9	16	0.5	43					
3.1	160	0.57	11.0	U	26	13	0.014	16	15	U	60					
6.5	180	0.69	4.4	1	31	9.7	0.016	15	0.54	0.43	85					
3.5	120	0.12	7.5	U	89	12	0.014	9.7	0.26	0.26	34					
1.3	170	U	8.3	U	5.7	11	0.014	11	U	0.16	45					
4.43																



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Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

Report Summary

Friday January 06, 2012

Report Number: L553659

Samples Received: 12/29/11

Client Project: 900546.0013.010

Description: CC-697-05-47B Cuttings

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley , ESC Representative

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings
Sample ID : CC-697-05-47B 3700FT
Collected By : CJB
Collection Date : 12/26/11 17:05

ESC Sample # : L553659-01

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/05/12	1
Chromium, Trivalent	14.	0.17	2.0	mg/kg		Calc.	01/01/12	1
ORP	24.			mV	T8	2580	01/04/12	1
pH	11.			su	T8	9045D	12/30/11	1
Sodium Adsorption Ratio	90.					Calc.	01/03/12	1
Specific Conductance	2200			umhos/cm		9050AMo	01/05/12	1
Mercury	0.013	0.00080	0.020	mg/kg	J	7471	01/02/12	1
Arsenic	2.8	0.32	1.0	mg/kg		6010B	01/01/12	1
Barium	310	0.050	0.25	mg/kg		6010B	01/01/12	1
Cadmium	0.19	0.040	0.25	mg/kg	J	6010B	01/01/12	1
Chromium	14.	0.085	0.50	mg/kg		6010B	01/01/12	1
Copper	14.	0.21	1.0	mg/kg		6010B	01/01/12	1
Lead	12.	0.090	0.25	mg/kg		6010B	01/01/12	1
Nickel	14.	0.26	1.0	mg/kg		6010B	01/01/12	1
Selenium	4.0	0.32	1.0	mg/kg		6010B	01/01/12	1
Silver	1.7	0.16	0.50	mg/kg		6010B	01/01/12	1
Zinc	54.	0.34	1.5	mg/kg		6010B	01/01/12	1
TPH (GC/FID) Low Fraction	0.42	0.25	0.50	mg/kg	J	8015D/G	12/30/11	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	96.7			% Rec.		602/801	12/30/11	5
Benzene	0.025	0.0017	0.0050	mg/kg		8260B	12/29/11	5
Toluene	0.018	0.0016	0.025	mg/kg	J	8260B	12/29/11	5
Ethylbenzene	0.0052	0.0019	0.0050	mg/kg		8260B	12/29/11	5
Total Xylenes	0.017	0.0023	0.015	mg/kg		8260B	12/29/11	5
Surrogate Recovery								
Toluene-d8	100.			% Rec.		8260B	12/29/11	5
Dibromofluoromethane	101.			% Rec.		8260B	12/29/11	5
a,a,a-Trifluorotoluene	98.9			% Rec.		8260B	12/29/11	5
4-Bromofluorobenzene	98.0			% Rec.		8260B	12/29/11	5
TPH (GC/FID) High Fraction	88.	15.	80.	mg/kg		3546/DR	12/30/11	20
Surrogate recovery(%) o-Terphenyl	0.00			% Rec.	J7	3546/DR	12/30/11	20

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD

RDL = Reported Detection Limit = LOQ = PQL = EQL

Note:

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings

ESC Sample # : L553659-01

Sample ID : CC-697-05-47B 3700FT

Site ID :

Collected By : CJB
Collection Date : 12/26/11 17:05

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.0038	0.030	mg/kg		8270C-S	01/02/12	5
Acenaphthene	U	0.0035	0.030	mg/kg		8270C-S	01/02/12	5
Acenaphthylene	U	0.0029	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(a)anthracene	U	0.0046	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(a)pyrene	U	0.0031	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(b)fluoranthene	U	0.0041	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(g,h,i)perylene	U	0.0062	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(k)fluoranthene	U	0.0067	0.030	mg/kg		8270C-S	01/02/12	5
Chrysene	U	0.0055	0.030	mg/kg		8270C-S	01/02/12	5
Dibenz(a,h)anthracene	U	0.0056	0.030	mg/kg		8270C-S	01/02/12	5
Fluoranthene	U	0.0052	0.030	mg/kg		8270C-S	01/02/12	5
Fluorene	U	0.0028	0.030	mg/kg		8270C-S	01/02/12	5
Indeno(1,2,3-cd)pyrene	U	0.0058	0.030	mg/kg		8270C-S	01/02/12	5
Naphthalene	0.024	0.0032	0.030	mg/kg	J	8270C-S	01/02/12	5
Phenanthrene	0.0064	0.0037	0.030	mg/kg	J	8270C-S	01/02/12	5
Pyrene	U	0.0030	0.030	mg/kg		8270C-S	01/02/12	5
1-Methylnaphthalene	0.011	0.0039	0.030	mg/kg	J	8270C-S	01/02/12	5
2-Methylnaphthalene	0.017	0.0029	0.030	mg/kg	J	8270C-S	01/02/12	5
2-Chloronaphthalene	U	0.0030	0.030	mg/kg		8270C-S	01/02/12	5
Surrogate Recovery								
Nitrobenzene-d5	73.1			% Rec.		8270C-S	01/02/12	5
2-Fluorobiphenyl	73.6			% Rec.		8270C-S	01/02/12	5
p-Terphenyl-d14	72.5			% Rec.		8270C-S	01/02/12	5

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings

ESC Sample # : L553659-02

Sample ID : CC-697-05-47B 4700FT

Site ID :

Collected By : CJB
Collection Date : 12/27/11 00:30

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/05/12	1
Chromium, Trivalent	11.	0.17	2.0	mg/kg		Calc.	01/01/12	1
ORP	24.			mV	T8	2580	01/04/12	1
pH	11.			su	T8	9045D	12/30/11	1
Sodium Adsorption Ratio	66.					Calc.	01/03/12	1
Specific Conductance	2400			umhos/cm		9050AMo	01/05/12	1
Mercury	0.017	0.00080	0.020	mg/kg	J	7471	01/02/12	1
Arsenic	4.3	0.32	1.0	mg/kg		6010B	01/01/12	1
Barium	140	0.050	0.25	mg/kg		6010B	01/01/12	1
Cadmium	U	0.040	0.25	mg/kg		6010B	01/01/12	1
Chromium	11.	0.085	0.50	mg/kg		6010B	01/01/12	1
Copper	23.	0.21	1.0	mg/kg		6010B	01/01/12	1
Lead	12.	0.090	0.25	mg/kg		6010B	01/01/12	1
Nickel	9.2	0.26	1.0	mg/kg		6010B	01/01/12	1
Selenium	4.2	0.32	1.0	mg/kg		6010B	01/01/12	1
Silver	1.7	0.16	0.50	mg/kg		6010B	01/01/12	1
Zinc	46.	0.34	1.5	mg/kg		6010B	01/01/12	1
TPH (GC/FID) Low Fraction	U	0.25	0.50	mg/kg		8015D/G	12/30/11	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	95.0			% Rec.		602/801	12/30/11	5
Benzene	0.10	0.0017	0.0050	mg/kg		8260B	12/29/11	5
Toluene	0.030	0.0016	0.025	mg/kg		8260B	12/29/11	5
Ethylbenzene	0.0024	0.0019	0.0050	mg/kg	J	8260B	12/29/11	5
Total Xylenes	0.016	0.0023	0.015	mg/kg		8260B	12/29/11	5
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	12/29/11	5
Dibromofluoromethane	99.5			% Rec.		8260B	12/29/11	5
a,a,a-Trifluorotoluene	99.5			% Rec.		8260B	12/29/11	5
4-Bromofluorobenzene	96.7			% Rec.		8260B	12/29/11	5
TPH (GC/FID) High Fraction	440	15.	80.	mg/kg		3546/DR	01/04/12	20
Surrogate recovery(%) o-Terphenyl	0.00			% Rec.	J7	3546/DR	01/04/12	20

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings

ESC Sample # : L553659-02

Sample ID : CC-697-05-47B 4700FT

Site ID :

Collected By : CJB
Collection Date : 12/27/11 00:30

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.00076	0.0060	mg/kg		8270C-S	01/02/12	1
Acenaphthene	0.00090	0.00071	0.0060	mg/kg	J	8270C-S	01/02/12	1
Acenaphthylene	U	0.00057	0.0060	mg/kg		8270C-S	01/02/12	1
Benzo(a)anthracene	U	0.00092	0.0060	mg/kg		8270C-S	01/02/12	1
Benzo(a)pyrene	U	0.00062	0.0060	mg/kg		8270C-S	01/02/12	1
Benzo(b)fluoranthene	U	0.00082	0.0060	mg/kg		8270C-S	01/02/12	1
Benzo(g,h,i)perylene	U	0.0012	0.0060	mg/kg		8270C-S	01/02/12	1
Benzo(k)fluoranthene	U	0.0013	0.0060	mg/kg		8270C-S	01/02/12	1
Chrysene	U	0.0011	0.0060	mg/kg		8270C-S	01/02/12	1
Dibenz(a,h)anthracene	U	0.0011	0.0060	mg/kg		8270C-S	01/02/12	1
Fluoranthene	U	0.0010	0.0060	mg/kg		8270C-S	01/02/12	1
Fluorene	0.0016	0.00055	0.0060	mg/kg	J	8270C-S	01/02/12	1
Indeno(1,2,3-cd)pyrene	U	0.0012	0.0060	mg/kg		8270C-S	01/02/12	1
Naphthalene	0.034	0.00065	0.0060	mg/kg		8270C-S	01/02/12	1
Phenanthrene	0.0040	0.00074	0.0060	mg/kg	J	8270C-S	01/02/12	1
Pyrene	0.00066	0.00059	0.0060	mg/kg	J	8270C-S	01/02/12	1
1-Methylnaphthalene	0.0088	0.00079	0.0060	mg/kg		8270C-S	01/02/12	1
2-Methylnaphthalene	0.017	0.00059	0.0060	mg/kg		8270C-S	01/02/12	1
2-Chloronaphthalene	U	0.00060	0.0060	mg/kg		8270C-S	01/02/12	1
Surrogate Recovery								
Nitrobenzene-d5	84.4			% Rec.		8270C-S	01/02/12	1
2-Fluorobiphenyl	72.4			% Rec.		8270C-S	01/02/12	1
p-Terphenyl-d14	70.3			% Rec.		8270C-S	01/02/12	1

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Est. 1970

REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings

ESC Sample # : L553659-03

Sample ID : CC-697-05-47B 6000FT

Site ID :

Collected By : CJB
Collection Date : 12/27/11 10:21

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	7.1	20.	mg/kg	O	3060A/7	01/05/12	10
Chromium, Trivalent	5.7	0.17	20.	mg/kg	J	Calc.	01/01/12	1
ORP	40.			mV	T8	2580	01/04/12	1
pH	9.8			su	T8	9045D	12/30/11	1
Sodium Adsorption Ratio	48.					Calc.	01/03/12	1
Specific Conductance	2600			umhos/cm		9050AMo	01/05/12	1
Mercury	0.0078	0.00080	0.020	mg/kg	J	7471	01/02/12	1
Arsenic	0.96	0.32	1.0	mg/kg	J	6010B	01/01/12	1
Barium	230	0.050	0.25	mg/kg		6010B	01/01/12	1
Cadmium	U	0.040	0.25	mg/kg		6010B	01/01/12	1
Chromium	5.7	0.085	0.50	mg/kg		6010B	01/01/12	1
Copper	13.	0.21	1.0	mg/kg		6010B	01/01/12	1
Lead	9.8	0.090	0.25	mg/kg		6010B	01/01/12	1
Nickel	5.4	0.26	1.0	mg/kg		6010B	01/01/12	1
Selenium	2.0	0.32	1.0	mg/kg		6010B	01/01/12	1
Silver	1.2	0.16	0.50	mg/kg		6010B	01/01/12	1
Zinc	40.	0.34	1.5	mg/kg		6010B	01/01/12	1
TPH (GC/FID) Low Fraction	0.48	0.25	0.50	mg/kg	J	8015D/G	12/30/11	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	93.1			% Rec.		602/801	12/30/11	5
Benzene	0.014	0.0017	0.0050	mg/kg		8260B	12/29/11	5
Toluene	0.020	0.0016	0.025	mg/kg	J	8260B	12/29/11	5
Ethylbenzene	0.0071	0.0019	0.0050	mg/kg		8260B	12/29/11	5
Total Xylenes	0.033	0.0023	0.015	mg/kg		8260B	12/29/11	5
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	12/29/11	5
Dibromofluoromethane	98.9			% Rec.		8260B	12/29/11	5
a,a,a-Trifluorotoluene	100.			% Rec.		8260B	12/29/11	5
4-Bromofluorobenzene	96.5			% Rec.		8260B	12/29/11	5
TPH (GC/FID) High Fraction	220	15.	80.	mg/kg		3546/DR	12/30/11	20
Surrogate recovery (%) o-Terphenyl	0.00			% Rec.	J7	3546/DR	12/30/11	20

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Reported: 01/06/12 15:59 Printed: 01/06/12 16:29

L553659-03 (CR6) - Diluted due to sample color interference.

L553659-03 (PH) - 9.80@19.4c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings

Sample ID : CC-697-05-47B 6000FT

Collected By : CJB
Collection Date : 12/27/11 10:21

ESC Sample # : L553659-03

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.0038	0.030	mg/kg	J3	8270C-S	01/02/12	5
Acenaphthene	U	0.0035	0.030	mg/kg		8270C-S	01/02/12	5
Acenaphthylene	U	0.0029	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(a)anthracene	U	0.0046	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(a)pyrene	U	0.0031	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(b)fluoranthene	U	0.0041	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(g,h,i)perylene	U	0.0062	0.030	mg/kg		8270C-S	01/02/12	5
Benzo(k)fluoranthene	U	0.0067	0.030	mg/kg	J3	8270C-S	01/02/12	5
Chrysene	U	0.0055	0.030	mg/kg		8270C-S	01/02/12	5
Dibenz(a,h)anthracene	U	0.0056	0.030	mg/kg		8270C-S	01/02/12	5
Fluoranthene	U	0.0052	0.030	mg/kg		8270C-S	01/02/12	5
Fluorene	0.0066	0.0028	0.030	mg/kg	J	8270C-S	01/02/12	5
Indeno(1,2,3-cd)pyrene	U	0.0058	0.030	mg/kg		8270C-S	01/02/12	5
Naphthalene	0.032	0.0032	0.030	mg/kg	J5J3	8270C-S	01/02/12	5
Phenanthrene	0.013	0.0037	0.030	mg/kg	JJ3	8270C-S	01/02/12	5
Pyrene	U	0.0030	0.030	mg/kg		8270C-S	01/02/12	5
1-Methylnaphthalene	0.035	0.0039	0.030	mg/kg	J5J3	8270C-S	01/02/12	5
2-Methylnaphthalene	0.056	0.0029	0.030	mg/kg	VJ3	8270C-S	01/02/12	5
2-Chloronaphthalene	U	0.0030	0.030	mg/kg		8270C-S	01/02/12	5
Surrogate Recovery								
Nitrobenzene-d5	56.8			% Rec.		8270C-S	01/02/12	5
2-Fluorobiphenyl	57.8			% Rec.		8270C-S	01/02/12	5
p-Terphenyl-d14	58.2			% Rec.		8270C-S	01/02/12	5

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L553659-03 (CR6) - Diluted due to sample color interference.

L553659-03 (PH) - 9.80@19.4c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings

ESC Sample # : L553659-04

Sample ID : CC-697-05-47B 7000FT

Site ID :

Collected By : CJB
Collection Date : 12/27/11 19:40

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/05/12	1
Chromium, Trivalent	9.8	0.17	2.0	mg/kg		Calc.	01/01/12	1
ORP	19.			mV	T8	2580	01/04/12	1
pH	11.			su	T8	9045D	12/30/11	1
Sodium Adsorption Ratio	71.					Calc.	01/03/12	1
Specific Conductance	1900			umhos/cm		9050AMo	01/05/12	1
Mercury	0.015	0.00080	0.020	mg/kg	J	7471	01/02/12	1
Arsenic	2.6	0.32	1.0	mg/kg		6010B	01/01/12	1
Barium	200	0.050	0.25	mg/kg		6010B	01/01/12	1
Cadmium	0.050	0.040	0.25	mg/kg	J	6010B	01/01/12	1
Chromium	9.8	0.085	0.50	mg/kg		6010B	01/01/12	1
Copper	34.	0.21	1.0	mg/kg		6010B	01/01/12	1
Lead	12.	0.090	0.25	mg/kg		6010B	01/01/12	1
Nickel	10.	0.26	1.0	mg/kg		6010B	01/01/12	1
Selenium	3.5	0.32	1.0	mg/kg		6010B	01/01/12	1
Silver	1.0	0.16	0.50	mg/kg		6010B	01/01/12	1
Zinc	48.	0.34	1.5	mg/kg		6010B	01/01/12	1
TPH (GC/FID) Low Fraction	3.3	0.25	0.50	mg/kg		8015D/G	12/30/11	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	94.0			% Rec.		602/801	12/30/11	5
Benzene	0.036	0.0017	0.0050	mg/kg		8260B	12/29/11	5
Toluene	0.056	0.0016	0.025	mg/kg		8260B	12/29/11	5
Ethylbenzene	0.011	0.0019	0.0050	mg/kg		8260B	12/29/11	5
Total Xylenes	0.060	0.0023	0.015	mg/kg		8260B	12/29/11	5
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	12/29/11	5
Dibromofluoromethane	99.5			% Rec.		8260B	12/29/11	5
a,a,a-Trifluorotoluene	100.			% Rec.		8260B	12/29/11	5
4-Bromofluorobenzene	98.9			% Rec.		8260B	12/29/11	5
TPH (GC/FID) High Fraction	800	15.	80.	mg/kg		3546/DR	12/30/11	20
Surrogate recovery(%) o-Terphenyl	0.00			% Rec.	J7	3546/DR	12/30/11	20

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L553659-04 (PH) - 10.68@19.1c



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760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings

Sample ID : CC-697-05-47B 7000FT

Collected By : CJB
Collection Date : 12/27/11 19:40

ESC Sample # : L553659-04

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.015	0.12	mg/kg		8270C-S	01/02/12	20
Acenaphthene	U	0.014	0.12	mg/kg		8270C-S	01/02/12	20
Acenaphthylene	U	0.011	0.12	mg/kg		8270C-S	01/02/12	20
Benzo(a)anthracene	U	0.018	0.12	mg/kg		8270C-S	01/02/12	20
Benzo(a)pyrene	0.013	0.012	0.12	mg/kg	J	8270C-S	01/02/12	20
Benzo(b)fluoranthene	U	0.016	0.12	mg/kg		8270C-S	01/02/12	20
Benzo(g,h,i)perylene	U	0.025	0.12	mg/kg		8270C-S	01/02/12	20
Benzo(k)fluoranthene	U	0.027	0.12	mg/kg		8270C-S	01/02/12	20
Chrysene	U	0.022	0.12	mg/kg		8270C-S	01/02/12	20
Dibenz(a,h)anthracene	U	0.022	0.12	mg/kg		8270C-S	01/02/12	20
Fluoranthene	U	0.021	0.12	mg/kg		8270C-S	01/02/12	20
Fluorene	0.020	0.011	0.12	mg/kg	J	8270C-S	01/02/12	20
Indeno(1,2,3-cd)pyrene	U	0.023	0.12	mg/kg		8270C-S	01/02/12	20
Naphthalene	0.076	0.013	0.12	mg/kg	J	8270C-S	01/02/12	20
Phenanthrene	0.044	0.015	0.12	mg/kg	J	8270C-S	01/02/12	20
Pyrene	U	0.012	0.12	mg/kg		8270C-S	01/02/12	20
1-Methylnaphthalene	0.085	0.016	0.12	mg/kg	J	8270C-S	01/02/12	20
2-Methylnaphthalene	0.15	0.012	0.12	mg/kg		8270C-S	01/02/12	20
2-Chloronaphthalene	U	0.012	0.12	mg/kg		8270C-S	01/02/12	20
Surrogate Recovery								
Nitrobenzene-d5	0.00			% Rec.	J7	8270C-S	01/02/12	20
2-Fluorobiphenyl	0.00			% Rec.	J7	8270C-S	01/02/12	20
p-Terphenyl-d14	0.00			% Rec.	J7	8270C-S	01/02/12	20

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January 06, 2012

Date Received : December 29, 2011
Description : CC-697-05-47B Cuttings

ESC Sample # : L553659-05

Sample ID : CC-697-05-47B 8000FT

Site ID :

Collected By : CJB
Collection Date : 12/28/11 08:30

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/05/12	1
Chromium, Trivalent	6.1	0.17	2.0	mg/kg		Calc.	01/01/12	1
ORP	39.			mV	T8	2580	01/04/12	1
pH	10.			su	T8	9045D	12/30/11	1
Sodium Adsorption Ratio	82.					Calc.	01/03/12	1
Specific Conductance	2700			umhos/cm		9050AMo	01/05/12	1
Mercury	0.012	0.00080	0.020	mg/kg	J	7471	01/02/12	1
Arsenic	2.6	0.32	1.0	mg/kg		6010B	01/01/12	1
Barium	120	0.050	0.25	mg/kg		6010B	01/01/12	1
Cadmium	0.080	0.040	0.25	mg/kg	J	6010B	01/01/12	1
Chromium	6.1	0.085	0.50	mg/kg		6010B	01/01/12	1
Copper	10.	0.21	1.0	mg/kg		6010B	01/01/12	1
Lead	7.6	0.090	0.25	mg/kg		6010B	01/01/12	1
Nickel	6.6	0.26	1.0	mg/kg		6010B	01/01/12	1
Selenium	2.8	0.32	1.0	mg/kg		6010B	01/01/12	1
Silver	0.97	0.16	0.50	mg/kg		6010B	01/01/12	1
Zinc	32.	0.34	1.5	mg/kg		6010B	01/01/12	1
TPH (GC/FID) Low Fraction	2.1	0.25	0.50	mg/kg		8015D/G	12/30/11	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	90.7			% Rec.		602/801	12/30/11	5
Benzene	0.047	0.0017	0.0050	mg/kg		8260B	12/29/11	5
Toluene	0.12	0.0016	0.025	mg/kg		8260B	12/29/11	5
Ethylbenzene	0.012	0.0019	0.0050	mg/kg		8260B	12/29/11	5
Total Xylenes	0.16	0.0023	0.015	mg/kg		8260B	12/29/11	5
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	12/29/11	5
Dibromofluoromethane	97.4			% Rec.		8260B	12/29/11	5
a,a,a-Trifluorotoluene	99.7			% Rec.		8260B	12/29/11	5
4-Bromofluorobenzene	98.6			% Rec.		8260B	12/29/11	5
TPH (GC/FID) High Fraction	600	15.	80.	mg/kg		3546/DR	01/04/12	20
Surrogate recovery (%) o-Terphenyl	0.00			% Rec.	J7	3546/DR	01/04/12	20

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January 06, 2012

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ESC Sample # : L553659-05

Sample ID : CC-697-05-47B 8000FT

Site ID :

Collected By : CJB
Collection Date : 12/28/11 08:30

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	0.0029	0.00076	0.0060	mg/kg	J	8270C-S	01/02/12	1
Acenaphthene	U	0.00071	0.0060	mg/kg		8270C-S	01/02/12	1
Acenaphthylene	0.0037	0.00057	0.0060	mg/kg	J	8270C-S	01/02/12	1
Benzo(a)anthracene	0.0012	0.00092	0.0060	mg/kg	J	8270C-S	01/02/12	1
Benzo(a)pyrene	0.00077	0.00062	0.0060	mg/kg	J	8270C-S	01/02/12	1
Benzo(b)fluoranthene	0.0020	0.00082	0.0060	mg/kg	J	8270C-S	01/02/12	1
Benzo(g,h,i)perylene	U	0.0012	0.0060	mg/kg		8270C-S	01/02/12	1
Benzo(k)fluoranthene	U	0.0013	0.0060	mg/kg		8270C-S	01/02/12	1
Chrysene	0.0029	0.0011	0.0060	mg/kg	J	8270C-S	01/02/12	1
Dibenz(a,h)anthracene	U	0.0011	0.0060	mg/kg		8270C-S	01/02/12	1
Fluoranthene	U	0.0010	0.0060	mg/kg		8270C-S	01/02/12	1
Fluorene	0.013	0.00055	0.0060	mg/kg		8270C-S	01/02/12	1
Indeno(1,2,3-cd)pyrene	U	0.0012	0.0060	mg/kg		8270C-S	01/02/12	1
Naphthalene	0.058	0.00065	0.0060	mg/kg		8270C-S	01/02/12	1
Phenanthrene	0.025	0.00074	0.0060	mg/kg		8270C-S	01/02/12	1
Pyrene	0.0028	0.00059	0.0060	mg/kg	J	8270C-S	01/02/12	1
1-Methylnaphthalene	0.037	0.00079	0.0060	mg/kg		8270C-S	01/02/12	1
2-Methylnaphthalene	0.13	0.00059	0.0060	mg/kg		8270C-S	01/02/12	1
2-Chloronaphthalene	U	0.00060	0.0060	mg/kg		8270C-S	01/02/12	1
Surrogate Recovery								
Nitrobenzene-d5	92.3			% Rec.		8270C-S	01/02/12	1
2-Fluorobiphenyl	73.9			% Rec.		8270C-S	01/02/12	1
p-Terphenyl-d14	69.7			% Rec.		8270C-S	01/02/12	1

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L553659-05 (PH) - 10.05@19.4c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L553659-01	WG572176	SAMP	Cadmium	R1986034	J
	WG572222	SAMP	o-Terphenyl	R1986852	J7
	WG572312	SAMP	Mercury	R1986533	J
	WG572228	SAMP	TPH (GC/FID) Low Fraction	R1984592	J
	WG572226	SAMP	Toluene	R1984937	J
	WG572207	SAMP	pH	R1985272	T8
	WG572145	SAMP	Naphthalene	R1986812	J
	WG572145	SAMP	Phenanthrene	R1986812	J
	WG572145	SAMP	1-Methylnaphthalene	R1986812	J
	WG572145	SAMP	2-Methylnaphthalene	R1986812	J
	WG572588	SAMP	ORP	R1988712	T8
L553659-02	WG572556	SAMP	o-Terphenyl	R1989072	J7
	WG572312	SAMP	Mercury	R1986533	J
	WG572226	SAMP	Ethylbenzene	R1984937	J
	WG572207	SAMP	pH	R1985272	T8
	WG572145	SAMP	Acenaphthene	R1986812	J
	WG572145	SAMP	Fluorene	R1986812	J
	WG572145	SAMP	Phenanthrene	R1986812	J
	WG572145	SAMP	Pyrene	R1986812	J
	WG572588	SAMP	ORP	R1988712	T8
	WG572176	SAMP	Arsenic	R1986034	J
	WG572222	SAMP	o-Terphenyl	R1986852	J7
L553659-03	WG572401	SAMP	Chromium, Hexavalent	R1989652	O
	WG572312	SAMP	Mercury	R1986533	J
	WG572228	SAMP	TPH (GC/FID) Low Fraction	R1984592	J
	WG572226	SAMP	Toluene	R1984937	J
	WG572207	SAMP	pH	R1985272	T8
	WG572145	SAMP	Anthracene	R1986812	J3
	WG572145	SAMP	Benzo(k)fluoranthene	R1986812	J3
	WG572145	SAMP	Fluorene	R1986812	J
	WG572145	SAMP	Naphthalene	R1986812	J5J3
	WG572145	SAMP	Phenanthrene	R1986812	JJ3
	WG572145	SAMP	1-Methylnaphthalene	R1986812	J5J3
	WG572145	SAMP	2-Methylnaphthalene	R1986812	VJ3
	WG572588	SAMP	ORP	R1988712	T8
	WG572176	SAMP	Chromium, Trivalent	R1986034	J
	WG572176	SAMP	Cadmium	R1986034	J
L553659-04	WG572222	SAMP	o-Terphenyl	R1986852	J7
	WG572312	SAMP	Mercury	R1986533	J
	WG572207	SAMP	pH	R1985272	T8
	WG572145	SAMP	Benzo(a)pyrene	R1986812	J
	WG572145	SAMP	Fluorene	R1986812	J
	WG572145	SAMP	Naphthalene	R1986812	J
	WG572145	SAMP	Phenanthrene	R1986812	J
	WG572145	SAMP	1-Methylnaphthalene	R1986812	J
	WG572145	SAMP	Nitrobenzene-d5	R1986812	J7
	WG572145	SAMP	2-Fluorobiphenyl	R1986812	J7
	WG572145	SAMP	p-Terphenyl-d14	R1986812	J7
L553659-05	WG572588	SAMP	ORP	R1988712	T8
	WG572176	SAMP	Cadmium	R1986034	J
	WG572556	SAMP	o-Terphenyl	R1989072	J7
	WG572312	SAMP	Mercury	R1986533	J
	WG572207	SAMP	pH	R1985272	T8
	WG572145	SAMP	Anthracene	R1986812	J
	WG572145	SAMP	Acenaphthylene	R1986812	J
	WG572145	SAMP	Benzo(a)anthracene	R1986812	J
	WG572145	SAMP	Benzo(a)pyrene	R1986812	J
	WG572145	SAMP	Benzo(b)fluoranthene	R1986812	J
	WG572145	SAMP	Chrysene	R1986812	J
	WG572145	SAMP	Pyrene	R1986812	J
	WG572588	SAMP	ORP	R1988712	T8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy** - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision** - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate** - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC** - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Prepared by:

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SCIENCE CORP.

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OXY USA WTP LP. -
Grand Junction, CO
760 Horizon Dr., Ste 101
Grand Junction, CO 81506

 Alternate billing information:
CO Table 910

Report to:

 Email to: Blair-Pestins
Daniel Padilla @oxy.com

 Project Description: CC-697-05-47B Cuttings

 City/State Collected: Parachute

Phone: (970) 263-3601

Client Project #:

ESC Key:

Collected by: CSB

Site/Facility ID#:

P.O. #:

Collected by (signature):

☒ Rush? (Lab MUST Be Notified)

 Same Day.....200%
Next Day.....100%
Two Day.....50%

 Date Results Needed:
Email? No Yes
FAX? X No Yes

No.

of

Cntrs

Packed on Ice N

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260BTEX, GRO	DRO, SV8270PAHSIM	SAR, SPCON, pH	MRCRA8 + Cu, Ni, Zn	CR3, CR6SS	Remarks/Contaminant	Sample # (lab only)
CC-697-05-47B	Grab	SS	3700'	12/12/11	17:05	3	X	X	X	X	X		1553659-01
CC-697-05-47B	Grab	SS	4700'	12/12/11	0030	3	X	X	X	X	X		-02
CC-697-05-47B	Grab	SS	6000'	12/12/11	1021	3	X	X	X	X	X		-03
CC-697-05-47B	Grab	SS	7000'	12/12/11	7:40pm	3	X	X	X	X	X		-04
CC-697-05-47B	Grab	SS	8000'	12/12/11	8:30	3	X	X	X	X	X		-05

*Matrix SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

pH

Temp

Remarks:

49634532 4974 low

Other

Relinquished by: (Signature)	Date: 12/23/11	Time: 5:20	Received by: (Signature)	Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier	Condition: (lab use only) <u>OK</u>
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Bottles Received: <u>16</u>	pH Checked: NCF:
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 12/29/11 Time: 0900	



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Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

Report Summary

Wednesday January 11, 2012

Report Number: L554205

Samples Received: 01/04/12

Client Project: 900546.0013.010

Description: 697-05-63B Cuttings

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979

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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 11, 2012

Date Received : January 04, 2012
Description : 697-05-63B Cuttings

Sample ID : 697-05-63B 4000 FT

Collected By : CJB
Collection Date : 01/03/12 02:00

ESC Sample # : L554205-01

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/11/12	1
Chromium, Trivalent	11.	0.17	0.50	mg/kg		Calc.	01/05/12	1
ORP	45.			mV		2580	01/05/12	1
pH	11.			su		9045D	01/05/12	1
Sodium Adsorption Ratio	65.					Calc.	01/05/12	1
Specific Conductance	1800			umhos/cm		9050AMo	01/05/12	1
Mercury	0.019	0.00080	0.020	mg/kg	J	7471	01/05/12	1
Arsenic	5.5	0.32	1.0	mg/kg		6010B	01/05/12	1
Barium	190	0.050	0.25	mg/kg		6010B	01/05/12	1
Cadmium	0.28	0.040	0.25	mg/kg		6010B	01/05/12	1
Chromium	11.	0.085	0.50	mg/kg		6010B	01/05/12	1
Copper	48.	0.21	1.0	mg/kg		6010B	01/05/12	1
Lead	9.9	0.090	0.25	mg/kg		6010B	01/05/12	1
Nickel	13.	0.26	1.0	mg/kg		6010B	01/05/12	1
Selenium	U	1.6	5.0	mg/kg	O	6010B	01/05/12	5
Silver	0.30	0.16	0.50	mg/kg	J	6010B	01/05/12	1
Zinc	53.	0.34	1.5	mg/kg		6010B	01/05/12	1
TPH (GC/FID) Low Fraction	3.7	0.25	0.50	mg/kg		8015D/G	01/05/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	97.7			% Rec.		602/801	01/05/12	5
Benzene	0.13	0.0017	0.0050	mg/kg		8260B	01/05/12	5
Toluene	0.081	0.0016	0.025	mg/kg		8260B	01/05/12	5
Ethylbenzene	0.030	0.0019	0.0050	mg/kg		8260B	01/05/12	5
Total Xylenes	0.10	0.0023	0.015	mg/kg		8260B	01/05/12	5
Surrogate Recovery								
Toluene-d8	99.4			% Rec.		8260B	01/05/12	5
Dibromofluoromethane	94.9			% Rec.		8260B	01/05/12	5
a,a,a-Trifluorotoluene	92.9			% Rec.		8260B	01/05/12	5
4-Bromofluorobenzene	88.9			% Rec.		8260B	01/05/12	5
TPH (GC/FID) High Fraction	500	38.	200	mg/kg		3546/DR	01/05/12	50
Surrogate recovery (%) o-Terphenyl	0.00			% Rec.	J7	3546/DR	01/05/12	50

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD

RDL = Reported Detection Limit = LOQ = PQL = EQL

Note:

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Reported: 01/11/12 16:26 Printed: 01/11/12 16:26
L554205-01 (SV8270PAHSIM) - Dilution due to matrix
L554205-01 (PH) - 10.79@18.1c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 11, 2012

Date Received : January 04, 2012
Description : 697-05-63B Cuttings

Sample ID : 697-05-63B 4000 FT

Collected By : CJB
Collection Date : 01/03/12 02:00

ESC Sample # : L554205-01

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.015	0.12	mg/kg		8270C-S	01/09/12	20
Acenaphthene	U	0.014	0.12	mg/kg		8270C-S	01/09/12	20
Acenaphthylene	U	0.011	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(a)anthracene	U	0.018	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(a)pyrene	U	0.012	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(b)fluoranthene	U	0.016	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(g,h,i)perylene	U	0.025	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(k)fluoranthene	U	0.027	0.12	mg/kg		8270C-S	01/09/12	20
Chrysene	U	0.022	0.12	mg/kg		8270C-S	01/09/12	20
Dibenz(a,h)anthracene	U	0.022	0.12	mg/kg		8270C-S	01/09/12	20
Fluoranthene	U	0.021	0.12	mg/kg		8270C-S	01/09/12	20
Fluorene	0.011	0.011	0.12	mg/kg	J	8270C-S	01/09/12	20
Indeno(1,2,3-cd)pyrene	U	0.023	0.12	mg/kg		8270C-S	01/09/12	20
Naphthalene	0.15	0.013	0.12	mg/kg		8270C-S	01/09/12	20
Phenanthrene	0.039	0.015	0.12	mg/kg	J	8270C-S	01/09/12	20
Pyrene	0.013	0.012	0.12	mg/kg	J	8270C-S	01/09/12	20
1-Methylnaphthalene	0.072	0.016	0.12	mg/kg	J	8270C-S	01/09/12	20
2-Methylnaphthalene	0.10	0.012	0.12	mg/kg	J	8270C-S	01/09/12	20
2-Chloronaphthalene	U	0.012	0.12	mg/kg		8270C-S	01/09/12	20
Surrogate Recovery								
Nitrobenzene-d5	0.00			% Rec.	J7	8270C-S	01/09/12	20
2-Fluorobiphenyl	0.00			% Rec.	J7	8270C-S	01/09/12	20
p-Terphenyl-d14	0.00			% Rec.	J7	8270C-S	01/09/12	20

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Note:

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Reported: 01/11/12 16:26 Printed: 01/11/12 16:26
L554205-01 (SV8270PAHSIM) - Dilution due to matrix
L554205-01 (PH) - 10.79@18.1c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 11, 2012

Date Received : January 04, 2012
Description : 697-05-63B Cuttings

ESC Sample # : L554205-02

Sample ID : 697-05-63B 5000 FT

Site ID :

Collected By : CJB
Collection Date : 01/03/12 06:00

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/11/12	1
Chromium, Trivalent	9.9	0.17	0.50	mg/kg		Calc.	01/05/12	1
ORP	25.			mV		2580	01/05/12	1
pH	11.			su		9045D	01/05/12	1
Sodium Adsorption Ratio	82.					Calc.	01/05/12	1
Specific Conductance	1800			umhos/cm		9050AMo	01/05/12	1
Mercury	0.011	0.00080	0.020	mg/kg	J	7471	01/05/12	1
Arsenic	3.1	0.32	1.0	mg/kg		6010B	01/05/12	1
Barium	160	0.050	0.25	mg/kg		6010B	01/05/12	1
Cadmium	U	0.040	0.25	mg/kg		6010B	01/05/12	1
Chromium	9.9	0.085	0.50	mg/kg		6010B	01/05/12	1
Copper	25.	0.21	1.0	mg/kg		6010B	01/05/12	1
Lead	10.	0.090	0.25	mg/kg		6010B	01/05/12	1
Nickel	12.	0.26	1.0	mg/kg		6010B	01/05/12	1
Selenium	U	1.6	5.0	mg/kg	O	6010B	01/05/12	5
Silver	0.27	0.16	0.50	mg/kg	J	6010B	01/05/12	1
Zinc	44.	0.34	1.5	mg/kg		6010B	01/05/12	1
TPH (GC/FID) Low Fraction	1.8	0.25	0.50	mg/kg		8015D/G	01/05/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	106.			% Rec.		602/801	01/05/12	5
Benzene	0.17	0.0017	0.0050	mg/kg		8260B	01/05/12	5
Toluene	0.048	0.0016	0.025	mg/kg		8260B	01/05/12	5
Ethylbenzene	0.0063	0.0019	0.0050	mg/kg		8260B	01/05/12	5
Total Xylenes	0.027	0.0023	0.015	mg/kg		8260B	01/05/12	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	01/05/12	5
Dibromofluoromethane	92.2			% Rec.		8260B	01/05/12	5
a,a,a-Trifluorotoluene	101.			% Rec.		8260B	01/05/12	5
4-Bromofluorobenzene	105.			% Rec.		8260B	01/05/12	5
TPH (GC/FID) High Fraction	600	3.8	20.	mg/kg		3546/DR	01/06/12	5
Surrogate recovery (%) o-Terphenyl	6600			% Rec.	J1	3546/DR	01/06/12	5

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Reported: 01/11/12 16:26 Printed: 01/11/12 16:26

L554205-02 (DRO) - Previous run also had high IS/SURR recovery. Matrix effect.

L554205-02 (PH) - 10.74@18.2c

L554205-02 (SV8270PAHSIM) - Dilution due to matrix



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 11, 2012

Date Received : January 04, 2012
Description : 697-05-63B Cuttings

Sample ID : 697-05-63B 5000 FT

Collected By : CJB
Collection Date : 01/03/12 06:00

ESC Sample # : L554205-02

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.0076	0.060	mg/kg		8270C-S	01/09/12	10
Acenaphthene	U	0.0071	0.060	mg/kg		8270C-S	01/09/12	10
Acenaphthylene	U	0.0057	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(a)anthracene	U	0.0092	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(a)pyrene	U	0.0062	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(b)fluoranthene	U	0.0082	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(g,h,i)perylene	U	0.012	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(k)fluoranthene	U	0.013	0.060	mg/kg		8270C-S	01/09/12	10
Chrysene	U	0.011	0.060	mg/kg		8270C-S	01/09/12	10
Dibenz(a,h)anthracene	U	0.011	0.060	mg/kg		8270C-S	01/09/12	10
Fluoranthene	U	0.010	0.060	mg/kg		8270C-S	01/09/12	10
Fluorene	0.010	0.0055	0.060	mg/kg	J	8270C-S	01/09/12	10
Indeno(1,2,3-cd)pyrene	U	0.012	0.060	mg/kg		8270C-S	01/09/12	10
Naphthalene	0.15	0.0065	0.060	mg/kg		8270C-S	01/09/12	10
Phenanthrene	0.026	0.0074	0.060	mg/kg	J	8270C-S	01/09/12	10
Pyrene	U	0.0059	0.060	mg/kg		8270C-S	01/09/12	10
1-Methylnaphthalene	0.044	0.0079	0.060	mg/kg	J	8270C-S	01/09/12	10
2-Methylnaphthalene	0.061	0.0059	0.060	mg/kg		8270C-S	01/09/12	10
2-Chloronaphthalene	U	0.0060	0.060	mg/kg		8270C-S	01/09/12	10
Surrogate Recovery								
Nitrobenzene-d5	36.4			% Rec.		8270C-S	01/09/12	10
2-Fluorobiphenyl	82.9			% Rec.		8270C-S	01/09/12	10
p-Terphenyl-d14	71.8			% Rec.		8270C-S	01/09/12	10

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD

RDL = Reported Detection Limit = LOQ = PQL = EQL

Note:

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Reported: 01/11/12 16:26 Printed: 01/11/12 16:26

L554205-02 (DRO) - Previous run also had high IS/SURR recovery. Matrix effect.

L554205-02 (PH) - 10.74@18.2c

L554205-02 (SV8270PAHSIM) - Dilution due to matrix

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L554205-01	WG572755	SAMP	Selenium	R1990033	O
	WG572755	SAMP	Silver	R1990033	J
	WG572723	SAMP	o-Terphenyl	R1989492	J7
	WG572731	SAMP	Mercury	R1989973	J
	WG572719	SAMP	Fluorene	R1990253	J
	WG572719	SAMP	Phenanthrene	R1990253	J
	WG572719	SAMP	Pyrene	R1990253	J
	WG572719	SAMP	1-Methylnaphthalene	R1990253	J
	WG572719	SAMP	2-Methylnaphthalene	R1990253	J
	WG572719	SAMP	Nitrobenzene-d5	R1990253	J7
	WG572719	SAMP	2-Fluorobiphenyl	R1990253	J7
	WG572719	SAMP	p-Terphenyl-d14	R1990253	J7
L554205-02	WG572755	SAMP	Selenium	R1990033	O
	WG572755	SAMP	Silver	R1990033	J
	WG572886	SAMP	o-Terphenyl	R1991892	J1
	WG572731	SAMP	Mercury	R1989973	J
	WG572719	SAMP	Fluorene	R1990253	J
	WG572719	SAMP	Phenanthrene	R1990253	J
	WG572719	SAMP	1-Methylnaphthalene	R1990253	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
01/11/12 at 16:26:44

TSR Signing Reports: 134
R5 - Desired TAT

Sample: L554205-01 Account: OXYGJCO Received: 01/04/12 09:00 Due Date: 01/11/12 00:00 RPT Date: 01/11/12 16:26

Sample: L554205-02 Account: OXYGJCO Received: 01/04/12 09:00 Due Date: 01/11/12 00:00 RPT Date: 01/11/12 16:26



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Est. 1970

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

Report Summary

Friday January 13, 2012

Report Number: L554221

Samples Received: 01/04/12

Client Project: 900546.0013.010

Description: 697-05-47B Cuttings

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 13, 2012

Date Received : January 04, 2012
Description : 697-05-47B Cuttings

ESC Sample # : L554221-01

Sample ID : 697-05-47B

Site ID :

Collected By : CJB
Collection Date : 12/28/11 17:00

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium,Hexavalent	0.80	0.71	2.0	mg/kg	J	3060A/7	01/11/12	1
Chromium,Trivalent	3.2	0.17	0.50	mg/kg		Calc.	01/06/12	1
ORP	59.			mV		2580	01/05/12	1
pH	9.7			su	T8	9045D	01/09/12	1
Sodium Adsorption Ratio	98.					Calc.	01/05/12	1
Specific Conductance	2600			umhos/cm		9050AMo	01/05/12	1
Mercury	0.012	0.00080	0.020	mg/kg	J	7471	01/05/12	1
Arsenic	1.2	0.32	1.0	mg/kg		6010B	01/06/12	1
Barium	130	0.050	0.25	mg/kg		6010B	01/06/12	1
Cadmium	U	0.040	0.25	mg/kg		6010B	01/06/12	1
Chromium	4.0	0.085	0.50	mg/kg		6010B	01/06/12	1
Copper	16.	0.21	1.0	mg/kg		6010B	01/06/12	1
Lead	9.5	0.090	0.25	mg/kg		6010B	01/06/12	1
Nickel	12.	0.26	1.0	mg/kg		6010B	01/06/12	1
Selenium	1.9	0.32	1.0	mg/kg		6010B	01/06/12	1
Silver	U	0.16	0.50	mg/kg		6010B	01/06/12	1
Zinc	40.	0.34	1.5	mg/kg		6010B	01/06/12	1
TPH (GC/FID) Low Fraction	6.4	0.25	0.50	mg/kg		8015D/G	01/05/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	92.6			% Rec.		602/801	01/05/12	5
Benzene	0.15	0.0017	0.0050	mg/kg		8260B	01/05/12	5
Toluene	0.23	0.0016	0.025	mg/kg		8260B	01/05/12	5
Ethylbenzene	0.010	0.0019	0.0050	mg/kg		8260B	01/05/12	5
Total Xylenes	0.18	0.0023	0.015	mg/kg		8260B	01/05/12	5
Surrogate Recovery								
Toluene-d8	99.7			% Rec.		8260B	01/05/12	5
Dibromofluoromethane	96.3			% Rec.		8260B	01/05/12	5
a,a,a-Trifluorotoluene	97.1			% Rec.		8260B	01/05/12	5
4-Bromofluorobenzene	80.7			% Rec.		8260B	01/05/12	5
TPH (GC/FID) High Fraction	3300	38.	200	mg/kg		3546/DR	01/05/12	50
Surrogate recovery(%) o-Terphenyl	0.00			% Rec.	J7	3546/DR	01/05/12	50

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD

RDL = Reported Detection Limit = LOQ = PQL = EQL

Note:

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Reported: 01/13/12 08:42 Printed: 01/13/12 08:42
L554221-01 (PH) - 9.69@20.9c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 13, 2012

Date Received : January 04, 2012
Description : 697-05-47B Cuttings

Sample ID : 697-05-47B

Collected By : CJB
Collection Date : 12/28/11 17:00

ESC Sample # : L554221-01

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	0.030	0.0076	0.060	mg/kg	J	8270C-S	01/09/12	10
Acenaphthene	0.043	0.0071	0.060	mg/kg	J	8270C-S	01/09/12	10
Acenaphthylene	0.0082	0.0057	0.060	mg/kg	J	8270C-S	01/09/12	10
Benzo(a)anthracene	0.033	0.0092	0.060	mg/kg	J	8270C-S	01/09/12	10
Benzo(a)pyrene	0.012	0.0062	0.060	mg/kg	J	8270C-S	01/09/12	10
Benzo(b)fluoranthene	0.029	0.0082	0.060	mg/kg	J	8270C-S	01/09/12	10
Benzo(g,h,i)perylene	U	0.012	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(k)fluoranthene	U	0.013	0.060	mg/kg		8270C-S	01/09/12	10
Chrysene	0.077	0.011	0.060	mg/kg		8270C-S	01/09/12	10
Dibenz(a,h)anthracene	U	0.011	0.060	mg/kg		8270C-S	01/09/12	10
Fluoranthene	0.017	0.010	0.060	mg/kg	J	8270C-S	01/09/12	10
Fluorene	0.17	0.0055	0.060	mg/kg		8270C-S	01/09/12	10
Indeno(1,2,3-cd)pyrene	U	0.012	0.060	mg/kg		8270C-S	01/09/12	10
Naphthalene	1.0	0.13	1.2	mg/kg	J	8270C-S	01/06/12	200
Phenanthrene	0.43	0.0074	0.060	mg/kg		8270C-S	01/09/12	10
Pyrene	U	0.0059	0.060	mg/kg		8270C-S	01/09/12	10
1-Methylnaphthalene	0.59	0.16	1.2	mg/kg	J	8270C-S	01/06/12	200
2-Methylnaphthalene	2.0	0.12	1.2	mg/kg		8270C-S	01/06/12	200
2-Chloronaphthalene	U	0.12	1.2	mg/kg		8270C-S	01/06/12	200
Surrogate Recovery								
Nitrobenzene-d5	0.00			% Rec.	J7	8270C-S	01/06/12	200
2-Fluorobiphenyl	61.3			% Rec.		8270C-S	01/09/12	10
p-Terphenyl-d14	65.2			% Rec.		8270C-S	01/09/12	10

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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 13, 2012

Date Received : January 04, 2012
Description : 697-05-47B Cuttings

Sample ID : 697-05-47B

Collected By : CJB
Collection Date : 12/28/11 19:20

ESC Sample # : L554221-02

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/11/12	1
Chromium, Trivalent	5.4	0.17	0.50	mg/kg		Calc.	01/06/12	1
ORP	52.			mV		2580	01/05/12	1
pH	10.			su	T8	9045D	01/09/12	1
Sodium Adsorption Ratio	89.					Calc.	01/05/12	1
Specific Conductance	1900			umhos/cm		9050AMo	01/05/12	1
Mercury	0.0086	0.00080	0.020	mg/kg	J	7471	01/05/12	1
Arsenic	2.1	0.32	1.0	mg/kg		6010B	01/06/12	1
Barium	120	0.050	0.25	mg/kg		6010B	01/06/12	1
Cadmium	U	0.040	0.25	mg/kg		6010B	01/06/12	1
Chromium	5.4	0.085	0.50	mg/kg		6010B	01/06/12	1
Copper	12.	0.21	1.0	mg/kg		6010B	01/06/12	1
Lead	10.	0.090	0.25	mg/kg		6010B	01/06/12	1
Nickel	12.	0.26	1.0	mg/kg		6010B	01/06/12	1
Selenium	1.6	0.32	1.0	mg/kg		6010B	01/06/12	1
Silver	U	0.16	0.50	mg/kg		6010B	01/06/12	1
Zinc	57.	0.34	1.5	mg/kg		6010B	01/06/12	1
TPH (GC/FID) Low Fraction	2.2	0.25	0.50	mg/kg		8015D/G	01/06/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	94.1			% Rec.		602/801	01/06/12	5
Benzene	0.12	0.0017	0.0050	mg/kg		8260B	01/05/12	5
Toluene	0.13	0.0016	0.025	mg/kg		8260B	01/05/12	5
Ethylbenzene	0.012	0.0019	0.0050	mg/kg		8260B	01/05/12	5
Total Xylenes	0.10	0.0023	0.015	mg/kg		8260B	01/05/12	5
Surrogate Recovery								
Toluene-d8	97.9			% Rec.		8260B	01/05/12	5
Dibromofluoromethane	96.6			% Rec.		8260B	01/05/12	5
a,a,a-Trifluorotoluene	95.4			% Rec.		8260B	01/05/12	5
4-Bromofluorobenzene	76.7			% Rec.		8260B	01/05/12	5
TPH (GC/FID) High Fraction	880	38.	200	mg/kg		3546/DR	01/05/12	50
Surrogate recovery (%) o-Terphenyl	0.00			% Rec.	J7	3546/DR	01/05/12	50

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L554221-02 (PH) - 10.09@19.8c



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REPORT OF ANALYSIS

Blair Rollins
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 13, 2012

Date Received : January 04, 2012
Description : 697-05-47B Cuttings

Sample ID : 697-05-47B

Collected By : CJB
Collection Date : 12/28/11 19:20

ESC Sample # : L554221-02

Site ID :

Project # : 900546.0013.010

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	0.032	0.015	0.12	mg/kg	J	8270C-S	01/09/12	20
Acenaphthene	0.031	0.014	0.12	mg/kg	J	8270C-S	01/09/12	20
Acenaphthylene	U	0.011	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(a)anthracene	0.036	0.018	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(a)pyrene	0.017	0.012	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(b)fluoranthene	0.036	0.016	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(g,h,i)perylene	U	0.025	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(k)fluoranthene	U	0.027	0.12	mg/kg		8270C-S	01/09/12	20
Chrysene	0.081	0.022	0.12	mg/kg	J	8270C-S	01/09/12	20
Dibenz(a,h)anthracene	U	0.022	0.12	mg/kg		8270C-S	01/09/12	20
Fluoranthene	0.031	0.021	0.12	mg/kg	J	8270C-S	01/09/12	20
Fluorene	0.13	0.011	0.12	mg/kg		8270C-S	01/09/12	20
Indeno(1,2,3-cd)pyrene	U	0.023	0.12	mg/kg		8270C-S	01/09/12	20
Naphthalene	0.70	0.13	1.2	mg/kg	J	8270C-S	01/06/12	200
Phenanthrene	0.32	0.015	0.12	mg/kg		8270C-S	01/09/12	20
Pyrene	0.059	0.012	0.12	mg/kg	J	8270C-S	01/09/12	20
1-Methylnaphthalene	0.42	0.16	1.2	mg/kg	J	8270C-S	01/06/12	200
2-Methylnaphthalene	1.1	0.12	1.2	mg/kg	J	8270C-S	01/06/12	200
2-Chloronaphthalene	U	0.12	1.2	mg/kg		8270C-S	01/06/12	200
Surrogate Recovery								
Nitrobenzene-d5	0.00			% Rec.	J7	8270C-S	01/06/12	200
2-Fluorobiphenyl	0.00			% Rec.	J7	8270C-S	01/09/12	20
p-Terphenyl-d14	0.00			% Rec.	J7	8270C-S	01/09/12	20

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Note:

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Reported: 01/13/12 08:42 Printed: 01/13/12 08:42
L554221-02 (PH) - 10.09@19.8c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L554221-01	WG572723	SAMP	o-Terphenyl	R1989492	J7
	WG573347	SAMP	Chromium, Hexavalent	R1996232	J
	WG572731	SAMP	Mercury	R1989973	J
	WG573141	SAMP	pH	R1993572	T8
	WG572719	SAMP	Anthracene	R1990253	J
	WG572719	SAMP	Acenaphthene	R1990253	J
	WG572719	SAMP	Acenaphthylene	R1990253	J
	WG572719	SAMP	Benzo(a)anthracene	R1990253	J
	WG572719	SAMP	Benzo(a)pyrene	R1990253	J
	WG572719	SAMP	Benzo(b)fluoranthene	R1990253	J
	WG572719	SAMP	Fluoranthene	R1990253	J
	WG572719	SAMP	Naphthalene	R1990253	J
	WG572719	SAMP	1-Methylnaphthalene	R1990253	J
	WG572719	SAMP	Nitrobenzene-d5	R1990253	J7
	WG572723	SAMP	o-Terphenyl	R1989492	J7
	WG572731	SAMP	Mercury	R1989973	J
	WG573141	SAMP	pH	R1993572	T8
L554221-02	WG572719	SAMP	Anthracene	R1990253	J
	WG572719	SAMP	Acenaphthene	R1990253	J
	WG572719	SAMP	Benzo(a)anthracene	R1990253	J
	WG572719	SAMP	Benzo(a)pyrene	R1990253	J
	WG572719	SAMP	Benzo(b)fluoranthene	R1990253	J
	WG572719	SAMP	Chrysene	R1990253	J
	WG572719	SAMP	Fluoranthene	R1990253	J
	WG572719	SAMP	Naphthalene	R1990253	J
	WG572719	SAMP	Pyrene	R1990253	J
	WG572719	SAMP	1-Methylnaphthalene	R1990253	J
	WG572719	SAMP	2-Methylnaphthalene	R1990253	J
	WG572719	SAMP	Nitrobenzene-d5	R1990253	J7
	WG572719	SAMP	2-Fluorobiphenyl	R1990253	J7
	WG572719	SAMP	p-Terphenyl-d14	R1990253	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
01/13/12 at 08:42:42

TSR Signing Reports: 134
R5 - Desired TAT

Sample: L554221-01 Account: OXYGJCO Received: 01/04/12 09:00 Due Date: 01/11/12 00:00 RPT Date: 01/13/12 08:42

Sample: L554221-02 Account: OXYGJCO Received: 01/04/12 09:00 Due Date: 01/11/12 00:00 RPT Date: 01/13/12 08:42

OXY USA WTP LP. -
Grand Junction, CO
760 Horizon Dr., Ste 101
Grand Junction, CO 81506

Alternate billing information:

CO Table 910

Report to:

Blair-Rollins
Email to: Daniel.Padilla@oxy.com

Project

Description: 697-05-478 Cuttings

City/State Collected Parachute

Phone: (970) 263-3601

Client Project #:

ESC Key:

FAX:

800346.0013.010

Collected by: CJB

Site/Facility ID#:

P.O. #:

Collected by (signature):

(Lab MUST Be Notified)
Rush? Same Day 200%
Next Day 100%
Two Day 50%

Date Results Needed:

Email? No ☒ Yes
FAX? No ☐ Yes

No.

of

Cnts

Packed on Ice N

Sample ID

Comp/Grab

Matrix*

Depth

Date

Time

No.

of

Cnts

697-05-478

Glab

SS

9,000'

12/18/11

5:00pm

3

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

697-05-478

Glab

SS

9,235

12/18/11

7:20pm

3

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

Remarks/Contaminant

Sample # (lab only)

Shipped Via:

Template/Prelogin

CoCode OXYGJCO (lab use only)

F177

Prepared by:

ENVIRONMENTAL

SCIENCE CORP.

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Chain of Custody

Page 2 of 2

*Matrix: SS - Soil/Solid GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other

Remarks:

Relinquished by: (Signature)

Date: 1/3/12

Time: 5:00

Received by: (Signature)

Samples returned via: ☒ UPS ☐ FedEx ☐ Courier

Condition: OK

(lab use only)

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 3.6

Bottles Received: 6

pH Checked:

NCF:

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Date: 1/4/12

Time: 0900

pH Checked:

NCF:

5040

0623

Top

Flow

Other

pH Temp



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Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

Report Summary

Sunday January 15, 2012

Report Number: L554746

Samples Received: 01/06/12

Client Project: 900546.0013

Description: CC 697-05-63B

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979

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REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B

Sample ID : CC697-05-63B

Collected By : CJB
Collection Date : 01/04/12 08:45

ESC Sample # : L554746-01

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/11/12	1
Chromium, Trivalent	6.3	0.17	2.0	mg/kg		Calc.	01/13/12	1
ORP	-31.			mV	T8	2580	01/10/12	1
pH	9.5			su	T8	9045D	01/09/12	1
Sodium Adsorption Ratio	72.					Calc.	01/11/12	1
Specific Conductance	2200			umhos/cm		9050AMo	01/10/12	1
Mercury	0.017	0.00080	0.020	mg/kg	J	7471	01/10/12	1
Arsenic	5.4	0.32	1.0	mg/kg		6010B	01/13/12	1
Barium	180	0.050	0.25	mg/kg		6010B	01/13/12	1
Cadmium	0.36	0.040	0.25	mg/kg		6010B	01/13/12	1
Chromium	6.3	0.085	0.50	mg/kg		6010B	01/13/12	1
Copper	14.	0.21	1.0	mg/kg		6010B	01/13/12	1
Lead	8.8	0.090	0.25	mg/kg	B	6010B	01/13/12	1
Nickel	9.9	0.26	1.0	mg/kg		6010B	01/13/12	1
Selenium	U	0.32	1.0	mg/kg		6010B	01/13/12	1
Silver	0.50	0.16	0.50	mg/kg	J	6010B	01/13/12	1
Zinc	43.	0.34	1.5	mg/kg		6010B	01/13/12	1
TPH (GC/FID) Low Fraction	2.1	0.25	0.50	mg/kg		8015D/G	01/08/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	85.0			% Rec.		602/801	01/08/12	5
Benzene	0.046	0.0017	0.0050	mg/kg		8260B	01/08/12	5
Toluene	0.039	0.0016	0.025	mg/kg		8260B	01/08/12	5
Ethylbenzene	0.0026	0.0019	0.0050	mg/kg	J	8260B	01/08/12	5
Total Xylenes	0.032	0.0023	0.015	mg/kg		8260B	01/08/12	5
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	01/08/12	5
Dibromofluoromethane	88.5			% Rec.		8260B	01/08/12	5
a,a,a-Trifluorotoluene	100.			% Rec.		8260B	01/08/12	5
4-Bromofluorobenzene	103.			% Rec.		8260B	01/08/12	5
TPH (GC/FID) High Fraction	550	3.8	20.	mg/kg		3546/DR	01/11/12	5
Surrogate recovery (%) o-Terphenyl	7990			% Rec.	J1	3546/DR	01/11/12	5

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD

RDL = Reported Detection Limit = LOQ = PQL = EQL

Note:

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Reported: 01/15/12 15:47 Printed: 01/15/12 15:47

L554746-01 (PH) - 9.48@17.0c

L554746-01 (DRO) - Previous run also had high SURR recovery. Matrix effect.



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REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B

Sample ID : CC697-05-63B

Collected By : CJB
Collection Date : 01/04/12 08:45

ESC Sample # : L554746-01

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	0.044	0.015	0.12	mg/kg	J	8270C-S	01/09/12	20
Acenaphthene	0.052	0.014	0.12	mg/kg	J	8270C-S	01/09/12	20
Acenaphthylene	U	0.011	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(a)anthracene	U	0.018	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(a)pyrene	0.018	0.012	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(b)fluoranthene	0.038	0.016	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(g,h,i)perylene	U	0.025	0.12	mg/kg		8270C-S	01/09/12	20
Benzo(k)fluoranthene	U	0.027	0.12	mg/kg		8270C-S	01/09/12	20
Chrysene	0.13	0.022	0.12	mg/kg		8270C-S	01/09/12	20
Dibenz(a,h)anthracene	U	0.022	0.12	mg/kg		8270C-S	01/09/12	20
Fluoranthene	0.064	0.021	0.12	mg/kg	J	8270C-S	01/09/12	20
Fluorene	0.20	0.011	0.12	mg/kg		8270C-S	01/09/12	20
Indeno(1,2,3-cd)pyrene	U	0.023	0.12	mg/kg		8270C-S	01/09/12	20
Naphthalene	0.97	0.013	0.12	mg/kg		8270C-S	01/09/12	20
Phenanthrene	0.56	0.015	0.12	mg/kg		8270C-S	01/09/12	20
Pyrene	0.048	0.012	0.12	mg/kg	J	8270C-S	01/09/12	20
1-Methylnaphthalene	0.52	0.016	0.12	mg/kg		8270C-S	01/09/12	20
2-Methylnaphthalene	2.1	0.012	0.12	mg/kg		8270C-S	01/09/12	20
2-Chloronaphthalene	U	0.012	0.12	mg/kg		8270C-S	01/09/12	20
Surrogate Recovery								
Nitrobenzene-d5	0.00			% Rec.	J7	8270C-S	01/09/12	20
2-Fluorobiphenyl	0.00			% Rec.	J7	8270C-S	01/09/12	20
p-Terphenyl-d14	0.00			% Rec.	J7	8270C-S	01/09/12	20

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Reported: 01/15/12 15:47 Printed: 01/15/12 15:47

L554746-01 (PH) - 9.48@17.0c

L554746-01 (DRO) - Previous run also had high SURR recovery. Matrix effect.



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REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B
Sample ID : 697-05-63B 8000 FT
Collected By : CJB
Collection Date : 01/04/12 00:45

ESC Sample # : L554746-02

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/11/12	1
Chromium, Trivalent	11.	0.17	2.0	mg/kg		Calc.	01/13/12	1
ORP	-29.			mV	T8	2580	01/10/12	1
pH	10.			su	T8	9045D	01/09/12	1
Sodium Adsorption Ratio	60.					Calc.	01/11/12	1
Specific Conductance	2000			umhos/cm		9050AMo	01/10/12	1
Mercury	0.014	0.00080	0.020	mg/kg	J	7471	01/10/12	1
Arsenic	3.1	0.32	1.0	mg/kg		6010B	01/13/12	1
Barium	160	0.050	0.25	mg/kg		6010B	01/13/12	1
Cadmium	0.57	0.040	0.25	mg/kg		6010B	01/13/12	1
Chromium	11.	0.085	0.50	mg/kg		6010B	01/13/12	1
Copper	26.	0.21	1.0	mg/kg		6010B	01/13/12	1
Lead	13.	0.090	0.25	mg/kg	B	6010B	01/13/12	1
Nickel	16.	0.26	1.0	mg/kg		6010B	01/13/12	1
Selenium	U	0.32	1.0	mg/kg		6010B	01/13/12	1
Silver	U	0.16	0.50	mg/kg		6010B	01/13/12	1
Zinc	60.	0.34	1.5	mg/kg		6010B	01/13/12	1
TPH (GC/FID) Low Fraction	2.5	0.25	0.50	mg/kg		8015D/G	01/08/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	90.6			% Rec.		602/801	01/08/12	5
Benzene	0.064	0.0017	0.0050	mg/kg		8260B	01/08/12	5
Toluene	0.073	0.0016	0.025	mg/kg		8260B	01/08/12	5
Ethylbenzene	0.0047	0.0019	0.0050	mg/kg	J	8260B	01/08/12	5
Total Xylenes	0.054	0.0023	0.015	mg/kg		8260B	01/08/12	5
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	01/08/12	5
Dibromofluoromethane	87.3			% Rec.		8260B	01/08/12	5
a,a,a-Trifluorotoluene	97.7			% Rec.		8260B	01/08/12	5
4-Bromofluorobenzene	110.			% Rec.		8260B	01/08/12	5
TPH (GC/FID) High Fraction	200	0.77	4.0	mg/kg	J6	3546/DR	01/11/12	1
Surrogate recovery(%) o-Terphenyl	2170			% Rec.	J1	3546/DR	01/11/12	1

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RDL = Reported Detection Limit = LOQ = PQL = EQL

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L554746-02 (DRO) - Surrogate failure due to matrix interference; confirmed by MS/D

L554746-02 (PH) - 10.23@17.5c



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REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B
Sample ID : 697-05-63B 8000 FT
Collected By : CJB
Collection Date : 01/04/12 00:45

ESC Sample # : L554746-02

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.0076	0.060	mg/kg		8270C-S	01/09/12	10
Acenaphthene	U	0.0071	0.060	mg/kg		8270C-S	01/09/12	10
Acenaphthylene	U	0.0057	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(a)anthracene	0.011	0.0092	0.060	mg/kg	J	8270C-S	01/09/12	10
Benzo(a)pyrene	U	0.0062	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(b)fluoranthene	U	0.0082	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(g,h,i)perylene	U	0.012	0.060	mg/kg		8270C-S	01/09/12	10
Benzo(k)fluoranthene	U	0.013	0.060	mg/kg		8270C-S	01/09/12	10
Chrysene	U	0.011	0.060	mg/kg		8270C-S	01/09/12	10
Dibenz(a,h)anthracene	U	0.011	0.060	mg/kg		8270C-S	01/09/12	10
Fluoranthene	U	0.010	0.060	mg/kg		8270C-S	01/09/12	10
Fluorene	0.022	0.0055	0.060	mg/kg	J	8270C-S	01/09/12	10
Indeno(1,2,3-cd)pyrene	U	0.012	0.060	mg/kg		8270C-S	01/09/12	10
Naphthalene	0.11	0.0065	0.060	mg/kg		8270C-S	01/09/12	10
Phenanthrene	0.040	0.0074	0.060	mg/kg	J	8270C-S	01/09/12	10
Pyrene	0.0083	0.0059	0.060	mg/kg	J	8270C-S	01/09/12	10
1-Methylnaphthalene	0.090	0.0079	0.060	mg/kg		8270C-S	01/09/12	10
2-Methylnaphthalene	0.19	0.0059	0.060	mg/kg		8270C-S	01/09/12	10
2-Chloronaphthalene	U	0.0060	0.060	mg/kg		8270C-S	01/09/12	10
Surrogate Recovery								
Nitrobenzene-d5	114.			% Rec.		8270C-S	01/09/12	10
2-Fluorobiphenyl	96.1			% Rec.		8270C-S	01/09/12	10
p-Terphenyl-d14	93.7			% Rec.		8270C-S	01/09/12	10

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Reported: 01/15/12 15:47 Printed: 01/15/12 15:47

L554746-02 (DRO) - Surrogate failure due to matrix interference; confirmed by MS/D

L554746-02 (PH) - 10.23@17.5c



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REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B
Sample ID : 697-05-63B 9000 FT
Collected By : CJB
Collection Date : 01/04/12 05:45

ESC Sample # : L554746-03

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	1.0	0.71	2.0	mg/kg	J	3060A/7	01/11/12	1
Chromium, Trivalent	4.4	0.17	2.0	mg/kg		Calc.	01/13/12	1
ORP	-23.			mV	T8	2580	01/10/12	1
pH	10.			su	T8	9045D	01/09/12	1
Sodium Adsorption Ratio	68.					Calc.	01/11/12	1
Specific Conductance	1900			umhos/cm		9050AMo	01/10/12	1
Mercury	0.016	0.00080	0.020	mg/kg	J	7471	01/10/12	1
Arsenic	6.5	0.32	1.0	mg/kg		6010B	01/13/12	1
Barium	180	0.050	0.25	mg/kg		6010B	01/13/12	1
Cadmium	0.69	0.040	0.25	mg/kg		6010B	01/13/12	1
Chromium	5.4	0.085	0.50	mg/kg		6010B	01/13/12	1
Copper	31.	0.21	1.0	mg/kg		6010B	01/13/12	1
Lead	9.7	0.090	0.25	mg/kg	B	6010B	01/13/12	1
Nickel	15.	0.26	1.0	mg/kg		6010B	01/13/12	1
Selenium	0.54	0.32	1.0	mg/kg	J	6010B	01/13/12	1
Silver	0.43	0.16	0.50	mg/kg	J	6010B	01/13/12	1
Zinc	85.	0.34	1.5	mg/kg		6010B	01/13/12	1
TPH (GC/FID) Low Fraction	3.7	0.25	0.50	mg/kg		8015D/G	01/08/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	93.1			% Rec.		602/801	01/08/12	5
Benzene	0.067	0.0017	0.0050	mg/kg		8260B	01/08/12	5
Toluene	0.086	0.0016	0.025	mg/kg		8260B	01/08/12	5
Ethylbenzene	0.0032	0.0019	0.0050	mg/kg	J	8260B	01/08/12	5
Total Xylenes	0.080	0.0023	0.015	mg/kg		8260B	01/08/12	5
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	01/08/12	5
Dibromofluoromethane	89.9			% Rec.		8260B	01/08/12	5
a,a,a-Trifluorotoluene	101.			% Rec.		8260B	01/08/12	5
4-Bromofluorobenzene	110.			% Rec.		8260B	01/08/12	5
TPH (GC/FID) High Fraction	1800	3.8	20.	mg/kg		3546/DR	01/11/12	5
Surrogate recovery (%) o-Terphenyl	23600			% Rec.	J1	3546/DR	01/11/12	5

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Reported: 01/15/12 15:47 Printed: 01/15/12 15:48

L554746-03 (SV8270PAHSIM) - Dilution due to matrix

L554746-03 (PH) - 10.20@18.1c

L554746-03 (DRO) - Previous run also had high SURR recovery. Matrix effect.



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REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B
Sample ID : 697-05-63B 9000 FT
Collected By : CJB
Collection Date : 01/04/12 05:45

ESC Sample # : L554746-03

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.015	0.12	mg/kg		8270C-S	01/09/12	20
Acenaphthene	0.091	0.014	0.12	mg/kg	J	8270C-S	01/09/12	20
Acenaphthylene	0.022	0.011	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(a)anthracene	0.069	0.018	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(a)pyrene	0.035	0.012	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(b)fluoranthene	0.063	0.016	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(g,h,i)perylene	0.032	0.025	0.12	mg/kg	J	8270C-S	01/09/12	20
Benzo(k)fluoranthene	U	0.027	0.12	mg/kg		8270C-S	01/09/12	20
Chrysene	0.20	0.022	0.12	mg/kg		8270C-S	01/09/12	20
Dibenz(a,h)anthracene	0.028	0.022	0.12	mg/kg	J	8270C-S	01/09/12	20
Fluoranthene	0.055	0.021	0.12	mg/kg	J	8270C-S	01/09/12	20
Fluorene	0.49	0.011	0.12	mg/kg		8270C-S	01/09/12	20
Indeno(1,2,3-cd)pyrene	U	0.023	0.12	mg/kg		8270C-S	01/09/12	20
Naphthalene	2.0	0.013	0.12	mg/kg		8270C-S	01/09/12	20
Phenanthrene	1.0	0.015	0.12	mg/kg		8270C-S	01/09/12	20
Pyrene	0.10	0.012	0.12	mg/kg	J	8270C-S	01/09/12	20
1-Methylnaphthalene	1.3	0.016	0.12	mg/kg		8270C-S	01/09/12	20
2-Methylnaphthalene	5.3	0.012	0.12	mg/kg		8270C-S	01/09/12	20
2-Chloronaphthalene	U	0.012	0.12	mg/kg		8270C-S	01/09/12	20
Surrogate Recovery								
Nitrobenzene-d5	0.00			% Rec.	J7	8270C-S	01/09/12	20
2-Fluorobiphenyl	0.00			% Rec.	J7	8270C-S	01/09/12	20
p-Terphenyl-d14	0.00			% Rec.	J7	8270C-S	01/09/12	20

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Reported: 01/15/12 15:47 Printed: 01/15/12 15:48

L554746-03 (SV8270PAHSIM) - Dilution due to matrix

L554746-03 (PH) - 10.20@18.1c

L554746-03 (DRO) - Previous run also had high SURR recovery. Matrix effect.



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B
Sample ID : 697-05-63B 7000 FT
Collected By : CJB
Collection Date : 01/03/12 17:45

ESC Sample # : L554746-04

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/13/12	1
Chromium, Trivalent	7.5	0.17	2.0	mg/kg		Calc.	01/09/12	1
ORP	-32.			mV	T8	2580	01/10/12	1
pH	11.			su	T8	9045D	01/09/12	1
Sodium Adsorption Ratio	49.					Calc.	01/11/12	1
Specific Conductance	1600			umhos/cm		9050AMo	01/10/12	1
Mercury	0.014	0.00080	0.020	mg/kg	J	7471	01/10/12	1
Arsenic	3.5	0.32	1.0	mg/kg		6010B	01/09/12	1
Barium	120	0.050	0.25	mg/kg		6010B	01/09/12	1
Cadmium	0.12	0.040	0.25	mg/kg	J	6010B	01/09/12	1
Chromium	7.5	0.085	0.50	mg/kg		6010B	01/09/12	1
Copper	89.	0.21	1.0	mg/kg		6010B	01/09/12	1
Lead	12.	0.090	0.25	mg/kg		6010B	01/09/12	1
Nickel	9.7	0.26	1.0	mg/kg		6010B	01/09/12	1
Selenium	U	1.6	5.0	mg/kg	O	6010B	01/09/12	5
Silver	0.26	0.16	0.50	mg/kg	J	6010B	01/09/12	1
Zinc	34.	0.34	1.5	mg/kg		6010B	01/09/12	1
TPH (GC/FID) Low Fraction	0.74	0.25	0.50	mg/kg		8015D/G	01/08/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	93.6			% Rec.		602/801	01/08/12	5
Benzene	0.024	0.0017	0.0050	mg/kg		8260B	01/08/12	5
Toluene	0.020	0.0016	0.025	mg/kg	J	8260B	01/08/12	5
Ethylbenzene	0.0025	0.0019	0.0050	mg/kg	J	8260B	01/08/12	5
Total Xylenes	0.016	0.0023	0.015	mg/kg		8260B	01/08/12	5
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	01/08/12	5
Dibromofluoromethane	88.6			% Rec.		8260B	01/08/12	5
a,a,a-Trifluorotoluene	98.5			% Rec.		8260B	01/08/12	5
4-Bromofluorobenzene	109.			% Rec.		8260B	01/08/12	5
TPH (GC/FID) High Fraction	54.	0.77	4.0	mg/kg		3546/DR	01/11/12	1
Surrogate recovery (%) o-Terphenyl	780.			% Rec.	J1	3546/DR	01/11/12	1

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Reported: 01/15/12 15:47 Printed: 01/15/12 15:48

L554746-04 (PH) - 10.76@18.2c

L554746-04 (DRO) - Previous run also had high SURR recovery. Matrix effect.



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REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B
Sample ID : 697-05-63B 7000 FT
Collected By : CJB
Collection Date : 01/03/12 17:45

ESC Sample # : L554746-04

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	0.0011	0.00076	0.0060	mg/kg	J	8270C-S	01/11/12	1
Acenaphthene	0.0014	0.00071	0.0060	mg/kg	J	8270C-S	01/11/12	1
Acenaphthylene	0.0022	0.00057	0.0060	mg/kg	J	8270C-S	01/11/12	1
Benzo(a)anthracene	0.0014	0.00092	0.0060	mg/kg	J	8270C-S	01/11/12	1
Benzo(a)pyrene	U	0.00062	0.0060	mg/kg		8270C-S	01/11/12	1
Benzo(b)fluoranthene	0.0022	0.00082	0.0060	mg/kg	J	8270C-S	01/11/12	1
Benzo(g,h,i)perylene	U	0.0012	0.0060	mg/kg		8270C-S	01/11/12	1
Benzo(k)fluoranthene	U	0.0013	0.0060	mg/kg		8270C-S	01/11/12	1
Chrysene	0.0026	0.0011	0.0060	mg/kg	J	8270C-S	01/11/12	1
Dibenz(a,h)anthracene	U	0.0011	0.0060	mg/kg		8270C-S	01/11/12	1
Fluoranthene	U	0.0010	0.0060	mg/kg		8270C-S	01/11/12	1
Fluorene	0.0087	0.00055	0.0060	mg/kg		8270C-S	01/11/12	1
Indeno(1,2,3-cd)pyrene	U	0.0012	0.0060	mg/kg		8270C-S	01/11/12	1
Naphthalene	0.052	0.00065	0.0060	mg/kg		8270C-S	01/11/12	1
Phenanthrene	0.015	0.00074	0.0060	mg/kg		8270C-S	01/11/12	1
Pyrene	0.0025	0.00059	0.0060	mg/kg	J	8270C-S	01/11/12	1
1-Methylnaphthalene	0.031	0.00079	0.0060	mg/kg		8270C-S	01/11/12	1
2-Methylnaphthalene	0.058	0.00059	0.0060	mg/kg		8270C-S	01/11/12	1
2-Chloronaphthalene	U	0.00060	0.0060	mg/kg		8270C-S	01/11/12	1
Surrogate Recovery								
Nitrobenzene-d5	75.3			% Rec.		8270C-S	01/11/12	1
2-Fluorobiphenyl	79.3			% Rec.		8270C-S	01/11/12	1
p-Terphenyl-d14	57.8			% Rec.		8270C-S	01/11/12	1

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L554746-04 (PH) - 10.76@18.2c

L554746-04 (DRO) - Previous run also had high SURR recovery. Matrix effect.



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REPORT OF ANALYSIS

Daniel Padilla
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760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B
Sample ID : 697-05-63B 6000 FT
Collected By : CJB
Collection Date : 01/03/12 12:15

ESC Sample # : L554746-05

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Chromium, Hexavalent	U	0.71	2.0	mg/kg		3060A/7	01/13/12	1
Chromium, Trivalent	8.3	0.17	2.0	mg/kg		Calc.	01/09/12	1
ORP	-16.			mV	T8	2580	01/10/12	1
pH	10.			su	T8	9045D	01/09/12	1
Sodium Adsorption Ratio	51.					Calc.	01/11/12	1
Specific Conductance	1800			umhos/cm		9050AMo	01/10/12	1
Mercury	0.014	0.00080	0.020	mg/kg	J	7471	01/10/12	1
Arsenic	1.3	0.32	1.0	mg/kg		6010B	01/09/12	1
Barium	170	0.050	0.25	mg/kg		6010B	01/09/12	1
Cadmium	U	0.040	0.25	mg/kg		6010B	01/09/12	1
Chromium	8.3	0.085	0.50	mg/kg		6010B	01/09/12	1
Copper	5.7	0.21	1.0	mg/kg		6010B	01/09/12	1
Lead	11.	0.090	0.25	mg/kg		6010B	01/09/12	1
Nickel	11.	0.26	1.0	mg/kg		6010B	01/09/12	1
Selenium	U	0.32	1.0	mg/kg		6010B	01/09/12	1
Silver	0.16	0.16	0.50	mg/kg	J	6010B	01/09/12	1
Zinc	45.	0.34	1.5	mg/kg		6010B	01/09/12	1
TPH (GC/FID) Low Fraction	1.1	0.25	0.50	mg/kg		8015D/G	01/08/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene (FID)	94.4			% Rec.		602/801	01/08/12	5
Benzene	0.028	0.0017	0.0050	mg/kg		8260B	01/08/12	5
Toluene	0.015	0.0016	0.025	mg/kg	J	8260B	01/08/12	5
Ethylbenzene	0.0034	0.0019	0.0050	mg/kg	J	8260B	01/08/12	5
Total Xylenes	0.014	0.0023	0.015	mg/kg	J	8260B	01/08/12	5
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	01/08/12	5
Dibromofluoromethane	92.1			% Rec.		8260B	01/08/12	5
a,a,a-Trifluorotoluene	101.			% Rec.		8260B	01/08/12	5
4-Bromofluorobenzene	109.			% Rec.		8260B	01/08/12	5
TPH (GC/FID) High Fraction	31.	0.77	4.0	mg/kg		3546/DR	01/10/12	1
Surrogate recovery(%) o-Terphenyl	266.			% Rec.	J1	3546/DR	01/10/12	1

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Reported: 01/15/12 15:47 Printed: 01/15/12 15:48

L554746-05 (DRO) - matrix interference, MS confirms high surrogate

L554746-05 (PH) - 10.46@18.0c



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REPORT OF ANALYSIS

Daniel Padilla
OXY USA Inc - Grand Junction, CO
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

January 15, 2012

Date Received : January 06, 2012
Description : CC 697-05-63B
Sample ID : 697-05-63B 6000 FT
Collected By : CJB
Collection Date : 01/03/12 12:15

ESC Sample # : L554746-05

Site ID :

Project # : 900546.0013

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Polynuclear Aromatic Hydrocarbons								
Anthracene	0.0021	0.00076	0.0060	mg/kg	J	8270C-S	01/11/12	1
Acenaphthene	0.0023	0.00071	0.0060	mg/kg	J	8270C-S	01/11/12	1
Acenaphthylene	0.0054	0.00057	0.0060	mg/kg	J	8270C-S	01/11/12	1
Benzo(a)anthracene	U	0.00092	0.0060	mg/kg		8270C-S	01/11/12	1
Benzo(a)pyrene	U	0.00062	0.0060	mg/kg		8270C-S	01/11/12	1
Benzo(b)fluoranthene	0.0018	0.00082	0.0060	mg/kg	J	8270C-S	01/11/12	1
Benzo(g,h,i)perylene	U	0.0012	0.0060	mg/kg		8270C-S	01/11/12	1
Benzo(k)fluoranthene	U	0.0013	0.0060	mg/kg		8270C-S	01/11/12	1
Chrysene	0.0026	0.0011	0.0060	mg/kg	J	8270C-S	01/11/12	1
Dibenz(a,h)anthracene	U	0.0011	0.0060	mg/kg		8270C-S	01/11/12	1
Fluoranthene	0.0034	0.0010	0.0060	mg/kg	J	8270C-S	01/11/12	1
Fluorene	0.0079	0.00055	0.0060	mg/kg		8270C-S	01/11/12	1
Indeno(1,2,3-cd)pyrene	U	0.0012	0.0060	mg/kg		8270C-S	01/11/12	1
Naphthalene	0.087	0.00065	0.0060	mg/kg		8270C-S	01/11/12	1
Phenanthrene	0.021	0.00074	0.0060	mg/kg		8270C-S	01/11/12	1
Pyrene	0.0034	0.00059	0.0060	mg/kg	J	8270C-S	01/11/12	1
1-Methylnaphthalene	0.064	0.00079	0.0060	mg/kg		8270C-S	01/11/12	1
2-Methylnaphthalene	0.094	0.00059	0.0060	mg/kg		8270C-S	01/11/12	1
2-Chloronaphthalene	U	0.00060	0.0060	mg/kg		8270C-S	01/11/12	1
Surrogate Recovery								
Nitrobenzene-d5	78.4			% Rec.		8270C-S	01/11/12	1
2-Fluorobiphenyl	71.3			% Rec.		8270C-S	01/11/12	1
p-Terphenyl-d14	60.5			% Rec.		8270C-S	01/11/12	1

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L554746-05 (DRO) - matrix interference, MS confirms high surrogate

L554746-05 (PH) - 10.46@18.0c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L554746-01	WG573253	SAMP	Lead	R1999212	B
	WG573253	SAMP	Silver	R1999212	J
	WG573544	SAMP	o-Terphenyl	R1996993	J1
	WG573149	SAMP	Mercury	R1994836	J
	WG573183	SAMP	Ethylbenzene	R1992397	J
	WG573142	SAMP	pH	R1993172	T8
	WG573130	SAMP	Anthracene	R1993453	J
	WG573130	SAMP	Acenaphthene	R1993453	J
	WG573130	SAMP	Benzo(a)pyrene	R1993453	J
	WG573130	SAMP	Benzo(b)fluoranthene	R1993453	J
	WG573130	SAMP	Fluoranthene	R1993453	J
	WG573130	SAMP	Pyrene	R1993453	J
	WG573130	SAMP	Nitrobenzene-d5	R1993453	J7
	WG573130	SAMP	2-Fluorobiphenyl	R1993453	J7
	WG573130	SAMP	p-Terphenyl-d14	R1993453	J7
	WG573400	SAMP	ORP	R1994952	T8
L554746-02	WG573253	SAMP	Lead	R1999212	B
	WG573544	SAMP	TPH (GC/FID) High Fraction	R1996993	J6
	WG573544	SAMP	o-Terphenyl	R1996993	J1
	WG573149	SAMP	Mercury	R1994836	J
	WG573183	SAMP	Ethylbenzene	R1992397	J
	WG573142	SAMP	pH	R1993172	T8
	WG573130	SAMP	Benzo(a)anthracene	R1993453	J
	WG573130	SAMP	Fluorene	R1993453	J
	WG573130	SAMP	Phenanthrene	R1993453	J
	WG573130	SAMP	Pyrene	R1993453	J
	WG573400	SAMP	ORP	R1994952	T8
L554746-03	WG573253	SAMP	Lead	R1999212	B
	WG573253	SAMP	Selenium	R1999212	J
	WG573253	SAMP	Silver	R1999212	J
	WG573544	SAMP	o-Terphenyl	R1996993	J1
	WG573347	SAMP	Chromium, Hexavalent	R1996232	J
	WG573149	SAMP	Mercury	R1994836	J
	WG573183	SAMP	Ethylbenzene	R1992397	J
	WG573142	SAMP	pH	R1993172	T8
	WG573130	SAMP	Acenaphthene	R1993453	J
	WG573130	SAMP	Acenaphthylene	R1993453	J
	WG573130	SAMP	Benzo(a)anthracene	R1993453	J
	WG573130	SAMP	Benzo(a)pyrene	R1993453	J
	WG573130	SAMP	Benzo(b)fluoranthene	R1993453	J
	WG573130	SAMP	Benzo(g,h,i)perylene	R1993453	J
	WG573130	SAMP	Dibenz(a,h)anthracene	R1993453	J
	WG573130	SAMP	Fluoranthene	R1993453	J
	WG573130	SAMP	Pyrene	R1993453	J
	WG573130	SAMP	Nitrobenzene-d5	R1993453	J7
	WG573130	SAMP	2-Fluorobiphenyl	R1993453	J7
	WG573130	SAMP	p-Terphenyl-d14	R1993453	J7
L554746-04	WG573400	SAMP	ORP	R1994952	T8
	WG573146	SAMP	Cadmium	R1994233	J
	WG573146	SAMP	Selenium	R1994233	O
	WG573146	SAMP	Silver	R1994233	J
	WG573544	SAMP	o-Terphenyl	R1996993	J1
	WG573149	SAMP	Mercury	R1994836	J
	WG573183	SAMP	Toluene	R1992397	J
	WG573183	SAMP	Ethylbenzene	R1992397	J
	WG573142	SAMP	pH	R1993172	T8
	WG573134	SAMP	Anthracene	R1995752	J
	WG573134	SAMP	Acenaphthene	R1995752	J
	WG573134	SAMP	Acenaphthylene	R1995752	J
	WG573134	SAMP	Benzo(a)anthracene	R1995752	J
	WG573134	SAMP	Benzo(b)fluoranthene	R1995752	J
	WG573134	SAMP	Chrysene	R1995752	J
	WG573134	SAMP	Pyrene	R1995752	J
	WG573400	SAMP	ORP	R1994952	T8
L554746-05	WG573146	SAMP	Silver	R1994233	J
	WG573093	SAMP	o-Terphenyl	R1995812	J1
	WG573149	SAMP	Mercury	R1994836	J
	WG573183	SAMP	Toluene	R1992397	J
	WG573183	SAMP	Ethylbenzene	R1992397	J

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
	WG573183	SAMP	Total Xylenes	R1992397	J
	WG573142	SAMP	pH	R1993172	T8
	WG573134	SAMP	Anthracene	R1995752	J
	WG573134	SAMP	Acenaphthene	R1995752	J
	WG573134	SAMP	Acenaphthylene	R1995752	J
	WG573134	SAMP	Benzo(b)fluoranthene	R1995752	J
	WG573134	SAMP	Chrysene	R1995752	J
	WG573134	SAMP	Fluoranthene	R1995752	J
	WG573134	SAMP	Pyrene	R1995752	J
	WG573400	SAMP	ORP	R1994952	T8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
B	(EPA) - The indicated compound was found in the associated method blank as well as the laboratory sample.
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy** - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision** - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate** - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC** - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
01/15/12 at 15:48:04

TSR Signing Reports: 134
R5 - Desired TAT

Sample: L554746-01 Account: OXYGJCO Received: 01/06/12 09:00 Due Date: 01/13/12 00:00 RPT Date: 01/15/12 15:47
Sample: L554746-02 Account: OXYGJCO Received: 01/06/12 09:00 Due Date: 01/13/12 00:00 RPT Date: 01/15/12 15:47
Sample: L554746-03 Account: OXYGJCO Received: 01/06/12 09:00 Due Date: 01/13/12 00:00 RPT Date: 01/15/12 15:47
Sample: L554746-04 Account: OXYGJCO Received: 01/06/12 09:00 Due Date: 01/13/12 00:00 RPT Date: 01/15/12 15:47
Sample: L554746-05 Account: OXYGJCO Received: 01/06/12 09:00 Due Date: 01/13/12 00:00 RPT Date: 01/15/12 15:47

OXY USA Inc. - Grand Junction, CO
760 Horizon Dr., Ste 101
Grand Junction, CO 81506

Alternate billing information:
CO Table 910

Report to: Daniel Padilla / Blair Rollins
Email to: daniel_padilla@oxy.com, blai

Project Description: LC 697-05-63B
Client Project #: 906546.0013.010
Phone: (970) 263-3601
FAX: ESC Key: OXYGJCO-TABLE910

Collected by: CSB
Site/Facility ID#: P.O.#:

Collected by (Signature): *[Signature]*
Rush? (Lab MUST Be Notified)
Same Day.....200%
Next Day.....100%
Two Day.....50%

CoCode OXYGJCO (lab use only)
Template/Prelogin T74772

Shipped Via:

Remarks/Contaminant

Sample # (lab only)

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cnts	V8260BTEX, GRO	DRO, SV8270PAHSIM	SAR, SPCON, pH	MRCRA8 + Cu, Ni, Zn	CR3, CR6SS	Condition:
LC 697-05-63B	Grab	SS	TD	11/4/12	8:45	3	X	X	X	X	X	(lab use only)
697-05-63B	Grab	SS	800'	11/4/12	0045	3	X	X	X	X	X	02
697-05-63B	Grab	SS	900'	11/4/12	5:45	3	X	X	X	X	X	03
697-05-63B	Grab	SS	7000	11/31/12	1345	3	X	X	X	X	X	04
697-05-63B	Grab	SS	6000	11/31/12	1215	3	X	X	X	X	X	05

Chain of Custody
Page 1 of 2
Prepared by: E049

ENVIRONMENTAL SCIENCE CORP.

12065 Lebanon Road
Mt Juliet, TN 37122

Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

Matrix: SS - Soil/Solid GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other

pH _____ Temp _____
Flow _____ Other _____

Remarks:

5010 0623 5604

Relinquished by: (Signature)

Date: 11/5/12 Time: 5:50

Received by: (Signature)

Samples returned via: ☒ UPS ☐ FedEx ☐ Courier

Condition: (lab use only)

Relinquished by: (Signature)

Date: _____ Time: _____

Received by: (Signature)

Temp: 3.2 Bottles Received: 15-862

Condition: (lab use only)

Relinquished by: (Signature)

Date: _____ Time: _____

Received for lab by: (Signature)

Date: 1-6-18 Time: 0900

pH Checked:

NCF: