SURFACE WATER SAMPLING REPORT

Wilcox Oil Company Site
Bristow, Creek County, Oklahoma
EPA Identification No. OK0001010917

Prepared by the
U.S. Environmental Protection Agency, Region 6

November 15, 2016

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1 Introduction

The United States Environmental Protection Agency (EPA) Region 6, in cooperation and coordination with the Oklahoma Department of Environmental Quality (ODEQ) and EA Engineering, Science, and Technology, Inc., PBC (EA) conducted surface water sampling of Sand Creek, which borders the Wilcox Oil Company Superfund Site located in Bristow, Creek County, Oklahoma.

This supplemental sampling event performed by EPA, with ODEQ and EA support, was conducted in accordance with the site's Final Sample and Analysis Plan, Mobilization 1 (September 2016), including all quality assurance specifications and standard operating procedures (Appendix A). Surface water samples were sent through the EPA Regional Laboratory or the Contract Laboratory Program for analysis of inorganic and organic compounds.

The objective of this supplemental surface water sampling event is to provide surface water data specifically targeting stream segments suspected of being impacted by potential contaminant migration from site source areas. A subset of sample locations were selected such that the areas of suspected migration were bracketed with an upgradient, adjacent, and downgradient location.

2 Site Information and Background

2.1 Location and General Information

The Wilcox Oil Company Superfund Site (Site) is an abandoned and demolished oil refinery and associated tank farm located north of Bristow, Creek County, Oklahoma (Figure 1). The Site consists of contaminated areas, including surface water bodies, due to releases from the former Lorraine and former Wilcox Refineries (Figure 2) (EPA 2013, 2015). The Site spans approximately 140 to 150 acres located in the N ½ of the NW ¼ of S29 T16N R9E and the SW ¼ of the SW ¼ of S20 T16N R9E. The approximate geographic coordinates for the Site are 35°50'31" North latitude and 96°23'02" West longitude.

The Site operated as an oil refinery from 1915 until November 1963 (EPA 2013, 2015). The former Lorraine refinery, including associated tank farm, operated under numerous companies from approximately 1915 to 1937 when the property was sold to Wilcox Oil and Gas Company. Wilcox Oil and Gas Company purchased the remaining acres east of the railroad tracks and operated as a crude oil refinery from the 1920s until the property was sold on 1 November 1963. The main components of the plant consisted of a skimming plant, cracking unit, and re-distillation battery with a vapor recovery system and treatment equipment. Most of the equipment and storage tanks were auctioned or salvaged for scrap metal prior to merging with Tenneco Oil Company in 1967.

Between 1975 and 2004, a church and six private residences were constructed on land that was part of the former refinery operations. A building used by the former refinery as an office/laboratory building was repurposed as a residence. As a result, there are a total of seven residences on the Site, all of which are located on former tank or refinery operations locations. At the time of this report, the church is no longer being used and two residential properties are vacant.

The refinery waste source areas of interest include a backfilled oily waste pond and pit, a breached settling pond, a former pond apparently backfilled with solid refinery waste, and a number of former tank

storage areas. The contaminants of potential concern are metals and organic compounds [Total Petroleum Hydrocarbons (TPH) and Polycyclic Aromatic Hydrocarbons (PAHs)]. These potential contaminants of concern are found in soil, sediment, and waste material.

2.2 Site Description

The Site can be divided into five major former operational areas: the Wilcox refinery, the Lorraine refinery, the north tank farm, the east tank farm, and the loading dock area (Figure 2).

- The former Wilcox refinery area is fenced and covers approximately 26 acres. Most of the equipment and storage tanks that remained on-site in 1963 were auctioned and have been salvaged for scrap iron by private land owners, and what remains are in ruins. Four aboveground storage tanks (12,500 gallons each) remain standing, in addition to a number of buildings, discarded drums and pieces of scrap iron and piping. There are multiple areas of stressed vegetation, barren areas, and visible areas of black tarry waste of a hydrocarbon nature. An office/laboratory building in the northern part of the former refinery has been converted to a residence. An intermittent creek flows southward across the eastern portion of the refinery area through a small pond in the southeast corner of the refinery area and into Sand Creek.

- The former Lorraine refinery area covers approximately 8 acres and includes the southwestern portion of the Site, south of Refinery Road and west of the railroad. No refinery structures remain in the processing area. The First Assembly of God Church, a playground, and one residence are located here. There are multiple areas of stressed vegetation, barren areas, and visible areas of black tarry waste of a hydrocarbon nature.

- The former East tank farm was a large crude oil storage area/tank farm covering approximately 80 acres. This area contains pits, ponds, and a number of circular berms that surrounded former tank locations. All of the tanks have been cut down and removed; however, remnants of the tank locations remain and are visible. Many of the berms surrounding the pits, ponds, and former tanks have been cut or leveled. An intermittent creek is located in the eastern portion of the tank farm and flows south to Sand Creek. A pumping or gas compressor station exists in the north-central portion of the Site, and an active pipeline crosses from northwest to southeast across the middle of the Site. There are four residences located on top of or directly next to former tank locations. There are multiple areas of stressed vegetation, barren areas, and visible areas of black tarry waste of a hydrocarbon nature. Waste was also observed in several drainage channels that empty into Sand Creek.

- The former North tank farm was a crude and fuel oil storage area consisting of approximately 20 acres. No refinery structures remain in the product storage area, and all tanks have been cut down and removed. Remnants of the tank locations are not visible, and historic locations are difficult to pinpoint. One residence is located in this area.

- The former loading dock area encompasses approximately 7 acres and was used for loading and unloading product by rail. Just a few refinery structures/supports remain and are generally located parallel to the existing rail lines. There are multiple areas of stressed vegetation, barren areas, and visible areas of black tarry waste of a hydrocarbon nature.

3 Field Activities

Beginning Monday, October 31, 2016, through Wednesday, November 2, 2016, the field sample team performed surface water sampling within Sand Creek. All samples were collected and handled in accordance with the Final Sampling and Analysis Plan dated September 12, 2106. Samples were sent via FedEx either to the U.S. EPA Region 6 Laboratory, 10625 Fallstone Road, Houston, Texas 77099, or to Shealy Environmental Services, 106 Vantage Point Drive, West Columbia, SC 29172, through the Contract Laboratory Program.

Refer to the following tables providing information on the field sample team, sample equipment, sample locations, quality control, and sample parameters and methods.

Table 1: Field Sample Team

Name	Agency	Dates of Participation
Katrina Higgins-Coltrain	EPA	October 31 – November 2, 2016
Bret Kendrick	EPA	October 31 – November 2, 2016
Jason Stroup	EA	October 31 – November 2, 2016
Todd Downham	ODEQ	November 1 – November 2, 2016

Table 2: Field Sample Equipment

Equipment	Use
Geotech Geopump Peristaltic Pump	Surface water sample collection
YSI 556 Multiprobe Water Quality Meter	Surface water field parameters (dissolved oxygen, temperature, pH, conductivity, oxidation-reduction potential)
Lamotte Model 2020WE	Turbidity

Table 3: Field Quality Control

Type	Frequency
Trip Banks	1 per cooler containing volatile organic compounds
YSI 556 Multiprobe Water Quality Meter calibration	daily
Temperature Blanks	1 per cooler
Field Duplicate	1 per 10 sample locations
Matrix Spike/Matrix Spike Duplicate	1 per 10 samples

Table 4: Sample Locations			
Name	**Location**		**Purpose**
	Latitude	**Longitude**	
SC-SW-03	35.837290	-96.380629	Downgradient of site and observed odors/seeps
SC-SW-04	35.837503	-96.381875	In the area of observed seeps; MS/MSD location
SC-SW-05	35.838071	-96.382548	Between two locations of observed odors/seeps
SC-SW-05A	35.839200	-96.384101	Location added due to strong presence of odors and notable oil sheen created when bottom sediments are disturbed
SC-SW-05A-D	35.839200	-96.384101	Duplicate of this location due to observed presence of odors and oil sheens
SCPPE-SW-01	35.838570	-96.383338	Discharge location of site drainage ditch
C2-SW	35.839415	-96.384407	Discharge location of west tributary
SCPPE-SW-03	35.839683	-96.384888	Discharge location of site drainage ditch
SC-SW-06	35.839941	-96.386273	Downgradient of railroad and Wilcox process area
SC-SW-07	35.840593	-96.387556	Upgradient of railroad and downgradient of Lorraine process area
SC-SW-07-D	35.840593	-96.387556	Duplicate due to last location relative to Lorraine process area
SC-SW-08	35.841636	-96.387794	Downgradient of potential seep
SCPPE-SW-05	35.842545	-96.387423	Downgradient of potential seep; site location adjusted just downgradient of discharge location of drainage ditch to coincide with observed seep area; MS/MSD location

Table 5: Sample Parameters and Methods				
Parameter	**Method**	**Volume/container**	**Preservative**	**Holding Time**
Hexavalent Chromium Dissolved	EPA Method 218.7	One 125-milliliter HDPE bottle One 125-milliliter HDPE bottle	NH4OH/(NH4)2SO4 (pH>8); Store at <6°C (4+2°C)	14 days
Metals (including Mercury) Dissolved	CLP ISM02.3 (ICS/AES and ICS/MS)	One 1-liter HDPE bottle One 1-liter HDPE bottle	HNO3 to pH ≤ 2; Store at <6°C (4+2°C)	180 days (28 days for Hg)
cyanide	CLP ISM02.3	One 1-liter HDPE bottle	NaOH to pH >12; Store at <6°C (4+2°C)	14 days
semivolatile organic compounds – selective ion monitoring	CLP SOM02.3	Four 1-liter amber glass bottles	Store at <6°C (4+2°C)	7 days
volatile organic compounds Ethylene dibromide	CLP SOM02.3	Three 40-milliliter amber glass VOA vials Two 40-milliliter amber glass VOA vials	HCL to pH <2; Store at <6°C (4+2°C)	14 days
Field Parameters Dissolved Oxygen pH Conductivity Oxidation-reduction potential temperature	YSI 556 Multiprobe Water Quality Meter	Not applicable	Not applicable	Not applicable
Field Parameter turbidity	Lamotte Model 2020WE	Not applicable	Not applicable	Not applicable
Field Parameter Temperature	Temperature probe	Not applicable	Not applicable	Not applicable

Table 6: Field Parameter Summary									
Location	**Temperature** [degrees Fahrenheit (°F)]	**pH** [standard units]	**Conductivity** [milliSiemens per centimeter (mS/cm)]	**Oxidation-Reduction Potential** [millivolts (mV)]	**Dissolved Oxygen** [milligrams per liter (mg/L)]	**Turbidity** [Nephelometric turbidity unit (NTU)]	**Water Depth** [inches (in)]	**Sediment Bed Depth & Temperature**	
								Depth (in)	**Temp** (°F)
SC-SW-03	68.2	6.1	1010	30.6	Not recorded	2.52	7	6 12	64.2 63.9
SC-SW-04	68	6.7	1004	8.7	6.56	2.7	13.5	6 Refusal	65.1
SC-SW-05	64.8	7.3	1214	-27.6	2.88	5.18	7.5	0.5 Refusal	64.9
SC-SW-05A	66.5	6.71	1220	-30.9	3.21	1.81	8	3 Refusal	65.0
SCPPE-SW-01	63.21	7.19	1173	-37.5	2.46	5.9	18.5	6 12	63.5 63.2
C2-SW	68.96	7.55	1222	-32	9	.86	2.5	6 12	66.3 65.0
SCPPE-SW-03	65.96	6.86	1175	-28.8	3.98	2.51	7	Refusal	
SC-SW-06	67.86	7.26	11.57	-33.7	4.85	2.13	2.5	2 Refusal	66.7
SC-SW-07	69.69	6.89	1160	-38.9	3.35	3.11	12	6 12	66.3 65.0
SC-SW-08	72.8	7.38	1248	-44.5	3.72	2.07	8	3 Refusal	67.9
SCPPE-SW-05	73.49	7.56	1347	-70.3	2.25	4.19	8.5	Refusal	

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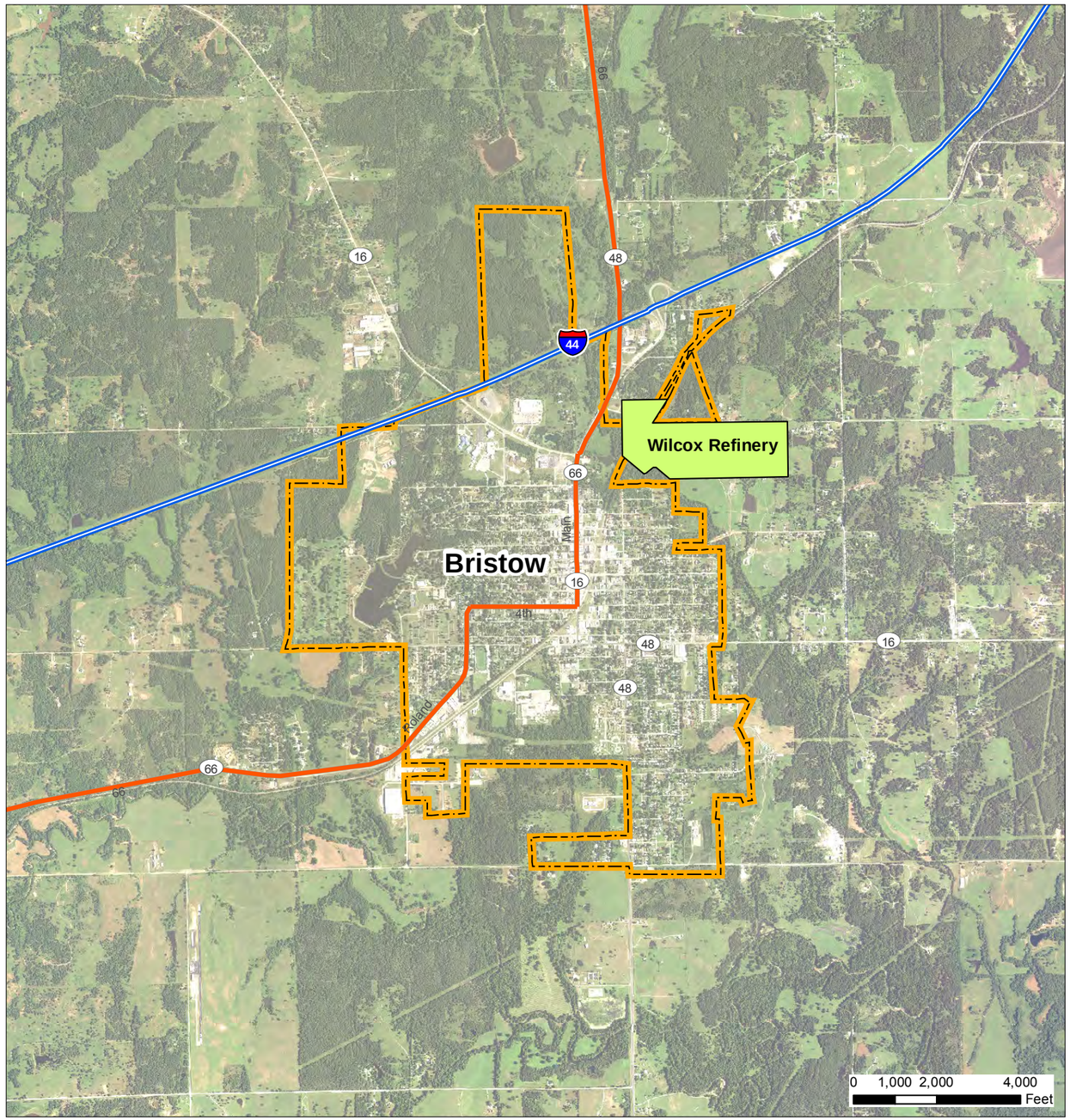
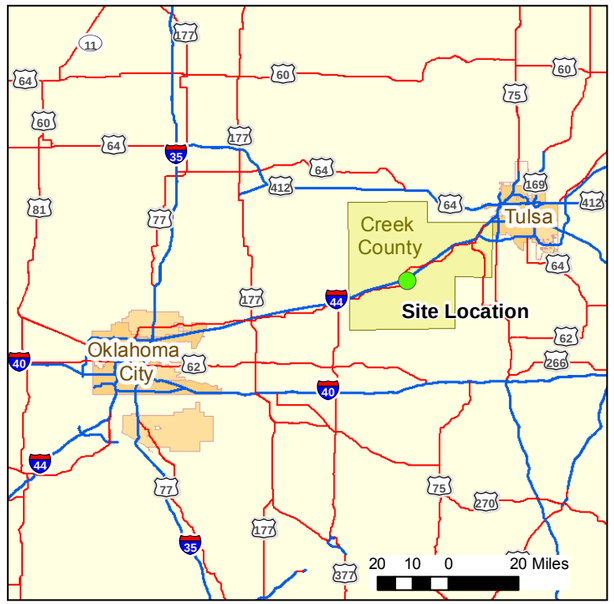




Legend

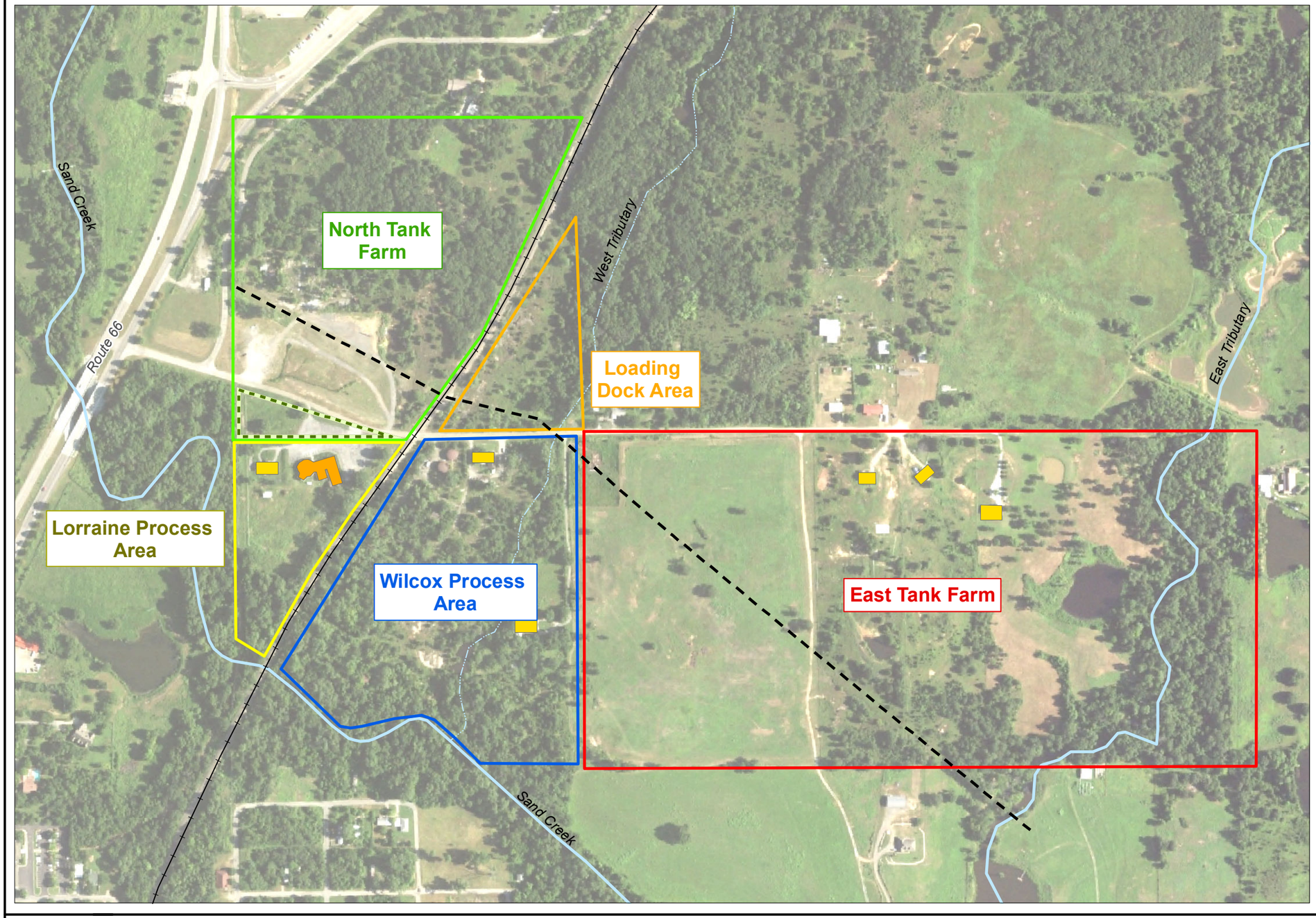
- Interstate
- Highway
- Bristow City Boundary

Sampling and Analysis Plan for
Remedial Investigation
for Wilcox Oil Company Superfund Site
Bristow, Creek County, Oklahoma

Image Source: National Agriculture Imagery Program 2015

FIGURE 1
SITE LOCATION

P:\gis\Projects\Wilcox\MXDs\SAP\02 SAP revised 062016\4-Site Layout.mxd 6/23/2016 EA mullen



0 200 400 800 Feet

1 inch = 400 feet

Legend

- Stream, Intermittent
- Stream, Perennial
- Pipeline
- Railroad

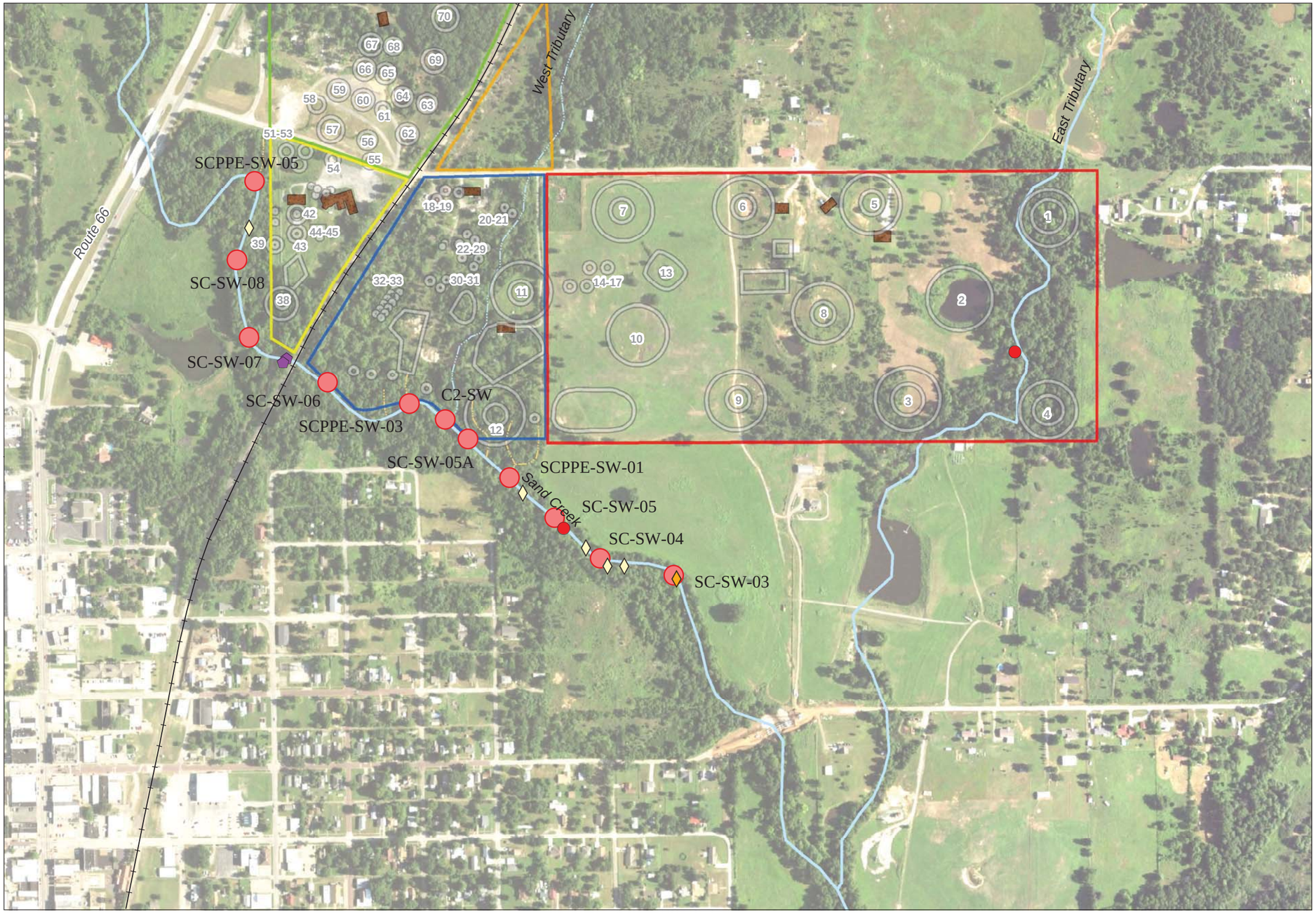
On-Site Building

- Church
- Residence
- Area will be designated as part of Lorraine Process Area for this investigation.

Image Source: National Agriculture Imagery Program 2015.

Sampling and Analysis Plan for
Remedial Investigation
for Wilcox Oil Company Superfund Site
Bristow, Creek County, Oklahoma

FIGURE 2
SITE LAYOUT



0 200 400 800 Feet

1 inch = 500 feet

Legend

- RR Culvert
- Pipes

SEEP

- SEEP
- SEEP ODOR

Proposed Sample

- Surface Water Sample Location to be collected week of October 31
- Railroad
- East Tank Farm
- Loading Dock Area
- Lorraine Process Area
- North Tank Farm
- Wilcox Process Area
- Historical Feature
- On-Site Building
- Drainage
- Stream, Intermittent
- Stream, Perennial

Image Source: National Agriculture Imagery Program 2015.

Sampling and Analysis Plan for
Remedial Investigation
for Wilcox Oil Company Superfund Site
Bristow, Creek County, Oklahoma

FIGURE 3
Surface Water Sample Locations

Standard Operating Procedure No. 007
for
Surface Water Sampling

Prepared by

EA Engineering, Science, and Technology, Inc., PBC
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Hunt Valley, Maryland 21031

Revision: 1
December 2014

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1. SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to delineate protocols for sampling surface water. This procedure can be applied to the collection of surface water samples from marine and estuarine systems, streams, rivers, ditches, lakes, ponds, and lagoons. Surface water samples provide an indication of the amount of contaminant in the surface water. It is, therefore, important to collect a representative sample.

2. MATERIALS

The following materials may be required:

0.45-µ disposable filters	Sample bottles
Cooler with ice	Short-handled dip sampler (PTFE or stainless steel)
Long-handled dip sampler (polytetrafluoroethelyne [PTFE] or stainless steel)	Stainless steel or PTFE-lined bucket
Peristaltic pump with 0.45-µM filters and disposable Tygon tubing	Niskin bottle (or similar sampling device)

3. PROCEDURE

For all surface water samples, use a Global Positioning System to record sampling coordinates and mark the sampling locations on a site map. Photograph (if cameras are allowed onsite) and describe each location, place a numbered stake above the visible high water mark on the bank closest to the sampling location, and/or mark adjacent trees with surveyor's flagging. The photographs and descriptions must be adequate to allow the sampling station to be relocated at some future date by someone other than the original sampling crew. Use a long-handled dip sampler where access is poor or non-contact with water is suggested in the Health and Safety Plan.

Sampling should be performed deliberately and methodically to minimize disturbance of bottom sediments, yet as quickly as possible to ensure a representative sample. If wading in a stream, sample downstream of the sampling location to prevent disturbance of the bottom. To prevent contamination of the exterior of the sample container, and/or potential contamination of the surface water sample by laboratory contaminants on the exterior of the bottle, the sample container should never be dipped into the water, rather a decontaminated sampling device should be used to collect unfiltered samples.

Sampling with the PTFE or stainless steel sampler (long-handled or measuring cup-type):

- Remove the cap from the sample bottle.
- Dip a sample of surface water using the sampler.

- Tilt sample bottle and gently pour sample from sampler into the bottle. Allow the sample to trickle down the side of the bottle. Avoid aerating the sample.

- Add preservative as required by SOP No. 039. Replace cap, and place in cooler immediately.

Sampling with stainless steel or PTFE-lined bucket:

- Remove cap from sample bottle.

- Gently dip collection bucket in the water. Fill bucket and carefully lift from water body.

- Tilt sample bottle and gently pour sample from sampler into the bottle. Allow the sample to trickle down the side of the bottle. Avoid aerating the sample.

- Add preservative as specified by the project-specific Sampling and Analysis Plan. Replace cap, and place in cooler immediately.

– OR –

- Use smaller sampling cup to transfer sample from bucket to sample bottle as described above.

Sampling with a Niskin bottle (or similar device):

- Prepare the bottle for deployment by placing the ends of the bottle in the open position and lock the ends into the trigger mechanism.

- Lower the bottle to desired depth of sampling (on either a wire cable or rope).

- Place a messenger (triggering device) on the cable/rope and deploy by allowing free-fall down the cable/rope.

- Bring the bottle back to the surface and pour sample into a sample container.

Sampling with a peristaltic pump and Tygon tubing:

- Cut a length of Tygon tubing to the depth of sampling specified by the client or project-specific Sampling and Analysis Plan.

- Insert one end of the tubing into the intake hose on the peristaltic pump.

- Place a weight on the tubing and lower to the specified depth;

- Cut a length of tubing and insert into the output (out-flow) hose on the peristaltic pump.

- After applying power to the peristaltic pump, proceed to pump site water through the tubing apparatus. Approximately five times the hose volume should be pumped through the tubing before sampling.

- Fill the required sample containers.

- If filtering is required, obtain filtered sample by placing a 0.45-µM in-line filter on the end of the output tube and fill the required sample containers.

Both filtered and unfiltered samples may be required for metals analyses. Bulk samples for filtration will be collected using the stainless steel or PTFE-lined bucket method described above. Sample filtration must be performed immediately upon retrieval of the bulk sample as follows.

Filtration will be performed immediately after collecting sample. Set up filtration equipment prior to collecting sample. Filtration may be accomplished by gravity or, if necessary due to slow filtering, a peristaltic pump will be used to pressure filter the sample. Vacuum filtration will not be used due to the possibility of analyte volatilization.

Gravity filtration will be accomplished as follows:

- Using decontaminated forceps, place a 0.45-µM membrane in a decontaminated filter funnel.

- Slowly pour sample into the funnel and collect filtrate directly into appropriate sample container(s).

- Add preservative(s) as required by project-specific Sampling and Analysis Plan. Immediately cap container and place in cooler.

- Dispose of filter membrane.

Pressure filtration will be accomplished as follows:

- Using previously assembled disposable tubing, 45-µ in-line filter, and peristaltic pump, filter sample from collection bucket into appropriate container.

- Adjust pump rate to avoid aeration of sample.

- Fill container, preserve as indicated in SOP No. 039, immediately cap container, and place in cooler.

- Dispose of filter and tubing.

Refer to SOP Nos. 001, 002, 004, 005, 016, and 039.

4. MAINTENANCE

Refer to manufacturer's specifications for maintenance procedures on generators and pumps.

5. PRECAUTIONS

Avoid disturbing bottom sediments.

Consult the Health and Safety Plan prior to collecting any samples for personal protective equipment such as dermal and respiratory protection and personal flotation devices when sampling in or near deep water or from boats.

Always decontaminate the sampling and filtration equipment, and change gloves between sampling locations to minimize the risk of cross-contamination.

Always set up generators downwind of working area. Never service generators onsite.

6. REFERENCES

None.

Standard Operating Procedure No. 036
for
Turbidity Measurements (DRT 100)

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Revision 0
December 2014

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1. SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to delineate protocols for measuring the turbidity of all types of aqueous solutions, including drinking water, saline water, and industrial and domestic wastes. Turbidity is an indication of the optical properties that cause light to be scattered or absorbed through an aqueous sample. Turbidity is largely a function of the refractive index and the size and shape of the particles suspended or dissolved in the solution. Turbidity meters do not produce an "absolute" measurement, but one that is "relative" to the optical nature of the solids in solution.

Use of brand names in this SOP is not intended as endorsement or mandate that a given brand be used. Alternate equivalent brands of detectors, sensors, meters, etc. are acceptable. If alternate equipment is to be used, the contractor will provide applicable and comparable SOPs for the maintenance and calibration of same.

2. MATERIALS

The following materials may be required:

Turbidity meter (DRT 100 or equivalent)
Lint free laboratory wipes (Kimwipes or equivalent)
Formazin standards (from manufacturer)
Sample bottle
Cuvettes

3. PROCEDURE

Calibration of the turbidity meter will be checked on a daily basis as follows:

- Set the range switch to 1000 range before turning the turbidity meter on and whenever the light shield is not in place over the sample well.
- Allow the turbidity meter 15-60 minutes to warmup.
- Clean the reference standard with kimwipes.
- Place the formazin suspension or reference standard in the turbidity meter sample well.
- Place the light shield over the reference standard.
- Rotate the front panel range switch counterclockwise to the appropriate nephelometric turbidity unit range.

- Adjust the reference adjust knob counterclockwise to read the same value as the reference standard value. This value is stamped on top of the reference standard.
- The turbidity meter is now standardized on all ranges to the factory formazin calibration and unknown samples may be read directly in nephelometric turbidity unit, feeder terminal unit, or Jackson turbidity unit.
- Rotate the range switch clockwise to the 1000 range before removing the reference standard.
- Record reading in field logbook (Refer to SOP Nos. 003 and 016).
- Do not leave the reference standard in the sample well for long periods.

Turbidity will be measured as follows:

- Pour aqueous sample into a new cuvette assuring no air bubbles.
- Place the cuvette into the sample well.
- Place the light shield over the sample.
- Rotate the range switch counterclockwise to the range which provides best readability and sensitivity for the sample being measured.
- Allow the turbidity meter to stabilize before recording the nephelometric turbidity unit value.
- Turn the range switch clockwise to the 1000 range and then remove the sample.
- Do not leave the filled cuvette in the sample well for long periods.
- Repeat above steps for additional samples.

Cuvette cleaning procedure is as follows:

- Cuvette must be clean and free of rubs or scratches.
- Wash the cuvette in a detergent solution.
- Rinse thoroughly 8-10 times, preferably with distilled water to remove all streaks.
- Polish with kimwipes.
- Cuvettes must be stored in a clean dust-free environment.

4. MAINTENANCE

Source lamp may be replaced as follows:

- Remove the instrument case per manufacturer instruction.
- Remove the bulb by loosening a screw and removing the electrical leads.
- Insert the new bulb and reconnect the electrical leads.
- Before tightening the screw, be sure to position the filament so that it will be parallel to the axis of the sample well.
- Insert the lamp alignment tool in the sample well to focus the new bulb.
- Move the lamp bracket assembly in or out until a focused image of the filament is within the rectangular box on the lamp alignment tool.
- Once the filament image has been aligned and focused within the rectangular box on the lamp adjustment tool, tighten all screws snugly.
- Replace the instrument case.

5. PRECAUTIONS

Handle the reference standard or sample cuvettes by the top to prevent surface scratches or finger smudges which will cause analysis errors.

Check the mechanical meter zero when the instrument is in a vertical position and the power switch is off. Adjust to zero only if necessary by means of the black screw on the meter face.

The turbidity meter should be left on for the entire work shift to minimize warm-up and recalibration delays.

Do not leave the reference standard or filled curvette in the sample well for long periods.

Leave the light shield in place on the instrument when it is not in use in order to protect the sample well for long periods.

Always set the range switch to 1000 range before turning the instrument on and whenever the light shield is not in place over the well.

6. REFERENCES

Manufacturer's Manual.

Standard Operating Procedure No. 043 for Multi-Probe Water Quality Monitoring Instruments

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Revision 1
December 2014

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1. PURPOSE AND SCOPE

The purpose of this Standard Operating Procedure is to delineate protocols for field operation of multi-probe water quality instruments. The instrument can monitor a variety of basic parameters including dissolved oxygen, percent saturation, temperature, pH, specific conductance, resistivity, salinity, total dissolved solids, oxidation reduction potential (ORP), level, and depth.

Use of brand names in this Standard Operating Procedure is not intended as endorsement or mandate that a given brand be used. Alternate equivalent brands of detectors, sensors, meters, etc. are acceptable. If alternate equipment is to be used, the contractor will provide applicable and comparable standard operating procedures for the maintenance and calibration of same.

2. MATERIALS

The following materials may be required:

- Multi-probe instrument
- Probe/sonde with appropriate cables
- Appropriate standards
- Accessories (batteries, charger, case, etc.)
- Instrument logbook
- Manufacturer's Operations Manual.

3. CALIBRATION PROCEDURE

Calibration must be performed daily at a minimum before using the instrument. Calibration may be performed in the laboratory or in the field. Detailed step-by-step calibration procedures for the equipment described below are provided in the most recent version of the manufacturer's Operations Manual. Documentation includes at a minimum: time, date, analyst, standard, primary standard lot number, secondary standard lot number, and expiration dates of standards.

Fill the calibration cup with the appropriate standard as follows:

- Temperature: None required
- Specific Conductance: Conductivity standards
- pH: pH 7 buffer plus pH 4 and/or pH 10 buffer
- Dissolved Oxygen: Saturated air or saturated water
- ORP: Quinhydrone (Zobell's Solution)
- Turbidity: Nephelometric turbidity unit (NTU) standards
- Salinity: Calibration for specific conductance
- Depth/Level: Set zero in air.

3.1 CONDUCTIVITY CALIBRATION

Conductivity meters are calibrated at least once per day to at least one standard. The standard should be selected in accordance with the range expected to be measured (e.g., 1.0 µS/cm standard should not be used to calibrate meters being used in saltwater). See manufacturer's recommendations in the Operations Manual for additional information on calibration standard selection. Calibration information is recorded in conjunction with the data collected for that sampling event.

3.2 pH CALIBRATION

The pH meters are calibrated at least once per day to a minimum of two standard buffers (pH 4 and 7, or pH 7 and 10) in accordance with the range expected to be measured. The calibration is verified using a fresh solution of pH 7 buffer post-calibration. Calibration information is recorded in conjunction with the data collected for that sampling event.

3.3 DISSOLVED OXYGEN CALIBRATION

Dissolved oxygen meters are air calibrated at least once per day. Calibration information is recorded in conjunction with the data collected for that sampling event.

3.4 OXIDATION REDUCTION POTENTIAL CALIBRATION

ORP meters are calibrated at least once per day to at least one standard. It is recommended that Zobell's Solution is used; however, another solution can be used as long as it meets the manufacturer's specifications for calibration. Calibration information is recorded in conjunction with the data collected for that sampling event.

3.5 TURBIDITY CALIBRATION

The turbidity meters are calibrated at least once per day to a minimum of two standards (0 NTU and 100 or 126 NTUs recommended) in accordance with the range expected to be measured. Calibration information is recorded in conjunction with the data collected for that sampling event.

3.6 DEPTH/LEVEL CALIBRATION

The depth and level calibration is performed with the depth sensor module in the air and not immersed in any solution. The appropriate correction for height above the water surface is inputted into the meter. Calibration information is recorded in conjunction with the data collected for that sampling event.

3.7 ADDITIONAL CALIBRATIONS

Additional measurements may be taken with the multi-probe water quality instruments. For any of these measurements, the calibration procedures will be conducted in accordance with the manufacturer's specifications. Calibration information is recorded in conjunction with the data collected for that sampling event.

4. FIELD OPERATION

4.1 SETUP OF MULTI-PROBE WATER QUALITY INSTRUMENT

Post-calibration and prior to sampling, the multi-probe water quality instrument will be set up for data collection. If the cables have been unattached, they will be reconnected to the transmitter (if applicable) and the display. Once all cables are attached, the meter will be turned on and allowed to warm up for a few seconds in order to allow the display screen to load.

4.2 SURFACE WATER

Prior to sampling, check the condition of the probes before each deployment. When sampling in surface water, the sensor must be in an amount of water sufficient for all probes to be submerged. Data values displayed on the display screen are recorded in the field logbook and accepted into the instrument's data logger. Post-data collection, the sensor will be retrieved and rinsed for use at the next sample location. If travel time between sample locations is great, the display is to be turned off. When all sampling is completed, disconnect all equipment and return it to its proper storage location.

4.3 GROUNDWATER

Prior to sampling, check the condition of the probes before each deployment. When sampling groundwater, mount sampler on a flow-through sampler cup. Start sampler pump and allow pump/hose system to be purged of air bubbles. Sampling rate should be set to record all parameters each time 1-3 liters (unless otherwise specified in the sampling plan) have been removed from the well. Record all the monitored values in the appropriate field logbook to ensure against inadvertent data loss.

5. MAINTENANCE

All maintenance should be performed in accordance with the manufacturer's Operations Manual.

6. PRECAUTIONS

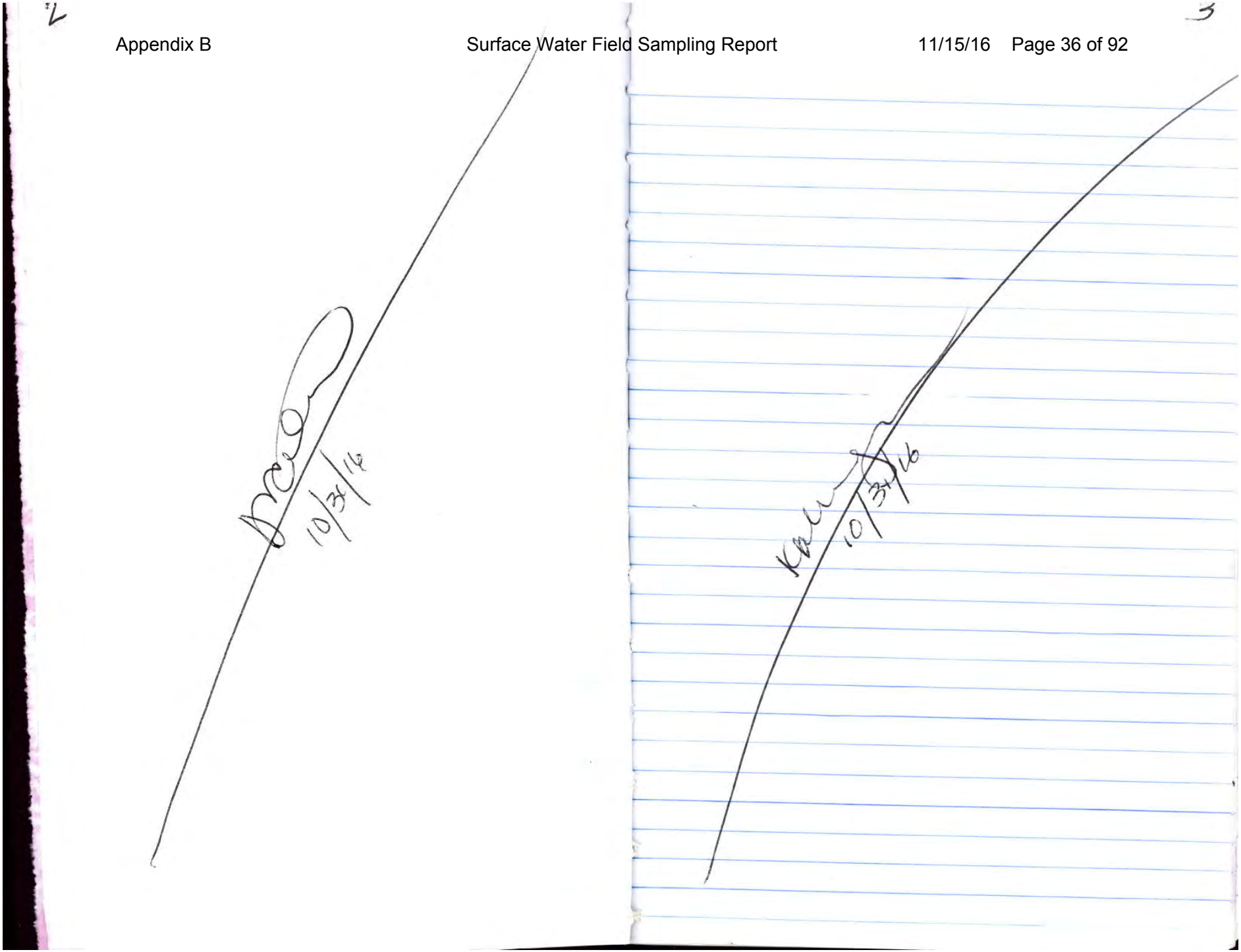
Check the condition of the probes frequently between sampling. Do not force pins into connections, note keying sequence. If field readings are outside the expected range, check for bubbles on, or damage to, the probes. If there are no bubbles or damage, recalibrate the sensor.

7. REFERENCES

Manufacturer's Operations Manual.

Wilcox Oil Company
Superfund Site
Bristow, Oklahoma
10/31/16
Surface Water Sampling

10/31/16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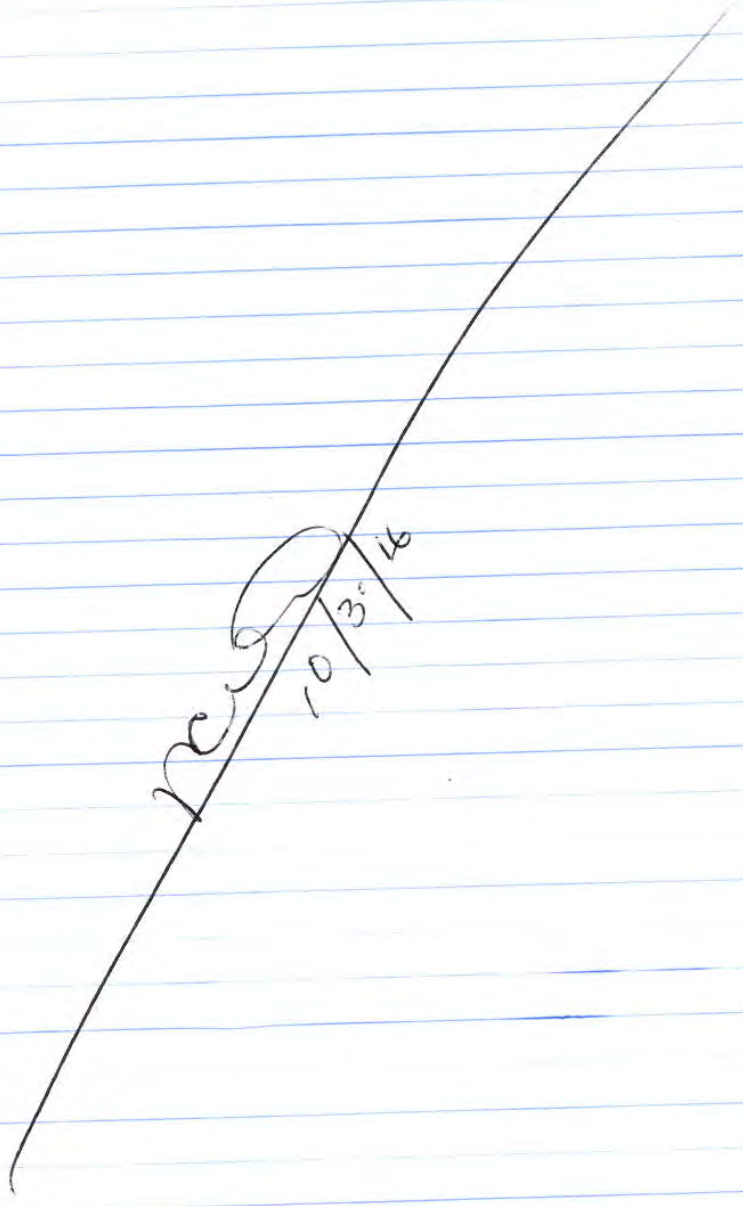
10/31/16



Monday 10/31/16 1300

Sunny, partly cloudy, windy, 82°

But Kendrick, Katrina Higgins · Coltran Jason Stroup ⇒ samplers

- Materials preparation & organization to begin sampling
- arrive 1352 SG-SW-03

picture 1 ⇒ taken of south bank & possible

picture 2 ⇗ seeps

picture 3 ⇒ drainage from north bank

Pump used to collect samples using tubing

negligable flow: water level low

leaf litter present along bottom

Small minnows present · estimate 10-20

iron staining North & Southside of bank

2.52 turbidity water depth = 7 inches

68.2°F 6.1 pH 1010 Conductivity ms/cm

30.6 mv ORP

Temperature readings taken with temperature probe 13 inches below waterline center creek & 19 inches below waterline center creek

13 inches bwl 64.2°F

19 inches bwl 63.9°F

Sampling complete 1454

10/31/16

- Arrive next sample location 1507 water deeper
- Samples collected with the pump & teflon tubing
- noted iron staining and seepages on south bank
  picture 1 = Sample station ID
  picture 2 = Sample probe at end of pump
  picture 3 = South bank iron staing
  picture 4 = North bank
  picture 5 = South bank
- negligible flow, leaf litter present on bottom of creek
- oil on surface after steps made in sediment
- temperature 68.0°F pH 6.7 DO 6.56 Conductivity 1004 µs/cm ORP 87 mv Turbidity 2.70 ntu
- water depth 13.5 inches 67.4°F
- temperature below water level Center of creek 65.1°F at 19.5 inches below water level
- petroleum odors noted
- MS / MSD collected
- Sampling completed at 1613
- return to office
- leave site 1900

Mike 10/31/16

Tuesday November 1, 2016
80's cool, partly cloudy, slight breeze
- arrive at site 0780
- Calibrate YSI pH 7
  pH 6.79 → Calibrate 6.91
- Sample location bottle preparation
- Safety Meeting
- YSI pH 10
  pH 10.24 68.21°F

Calibrate
- YSI pH 4 pH 4.02
- Arrive at Bridge to enter creek 0940
- Waterflow from drainage noted Possible waterline break? no recent rain
  Lat 35.837886
  Long -96.382387
- arrive at SC-SW-05 1016
  Lat 35.833071
  long -96.382548
- waterflow negligible, leaf litter present along bottom
- iron staining & "seep" north side of bank
  Picture 1 = site location ID
  Picture 2 = North bank
- Slight odor noted, oil present when disturbed

Mike 11/1/16

11/1/16 SC-SW-05

Temperature °F 64.8 Turbidity NTU 5.18
ORP mV -27.6 pH 7.3 Conductivity ms/cm 1214
DO 2.88
Water depth 7.5 inches
depth blow water level
8 inches 64.9
- leave SC-SW-05 1106
= Arrived SCPPE-SW-01 1119
water level deeper, leaf litter present
= at drainage location on North bank
picture 1 Sample ID
picture 2 drainage on North bank
Odors noted, oil when disturbed
= begin sampling 1130
- Negligible flow, water more turbid than previous locations
periodic & strong
turbidity NTU 5.90 pH 7.19 ORP mV
Conductivity ms/cm 1173 DO 2.46
Temperature 63.21
Water Depth 18.5 inches 64.7°F
~~water~~ depth below water level
24.5 inches 63.5°F
31.5 inches 63.2°F
- Considerable oil when sediment disturbed; odor associated; leave RIZ

MMS 11/1/14

11/1/16 SC-SW-05A - 05A-D
= arrived at sample location 1447
= discuss whether to sample here or go to designated location, decision to sample here due to odor & presence of oil sheens & oil bubbles when disturbed
= new sample location SC-SW-05-D
= deeper water, leaf litter & tree debris
= odor noted as water pumped through tube
= picture 1 sample ID
picture 2 Sample location
= no water flow noted
- Duplicate collected here
= Begin sampling at 1504
Turbidity NTU 1.81 ORP mV -30.9 DO 3.21
Temperature °F 66.5 pH 6.71
Conductivity ms/cm 1220
= water depth 8 inches
below water level 11 inches
65°F
= oil present throughout sampling = surface of the water
= complete sampling 1605

CZ SW location 1618
= very shallow < 6 inches
= no flow noted
- no odor noted
= confluence of discharge drainage pt

11/1/16 ~~CS~~ C2-SW

= picture 1 Sample ID
picture 2 Sample location
= no seeps noted on either bank
= minnows present → 10+ frogs → 5+
= 0.86 turbidity NTU pH 7.55
ORP mV -32.0 Conductivity ms/cm 1222
DO 9.0 Temperature 68.96
= waterbugs are consistent throughout creek
= no odors noted
= Shallow water, leaf litter on bottom
= 2.5 inches deep 70.1°F
8.5 inches below water surface 66.3°F
14.5 inches below water surface 65°F
= complete sampling 1706
= return to office
= leave site 1847

1-1-16

11/2/16 SCPPE-SW-03
= cool, cloudy, slight breeze
= arrive at site 0700
= prep coolers and bottles, gather equipment
= arrive at creek 0852
= arrive at location 0900
= no flow, odor noted, shallow water low creek level, no oil noted, leaf litter present
= picture 1 Sample ID
picture 2 Sample location
= Sample collection begins 0904
= no seeps noted on either bank
= minnows present
Lat 35.839683
long -96.384888
= turbidity NTU 2.5 conductivity ms/cm 1175
ORP mV -28.8 pH 6.84 DO 3.98
Temperature °F 65.96
= water depth 7 inches 67.5°F
below water level hit bottom
= Complete sampling 0942, move to next location
= arrive 1002 at location SC-SW-06
= Shallow water, no odor or oil noted, leaf litter on bottom
= Small minnows noted
= picture 1 Sample ID

11/2/16 SC-SW-06
= sample collection time 1006
= picture 2 sample location
= no seeps or iron staining noted
= Turbidity NTU 2.13 Temperature °F 68.1
ORP mV -33.7 DO 4.85 pH 7.26
conductivity ms/cm 1157
= water depth 2.5 inches 69.5°F
below water surface 4.5 inches 66.7°F
= complete sampling 1042
= back to office 1115, paperwork
coolers/samples
→ Arrive at sample location SCSW07
1315
= lat 35.540593 long -96.387556
= water clear, leaf litter along bottom
notable flow, no odors or staining
noted, no seeps noted
= picture 1 sample ID
picture 2 sample location
= temperature °F 69.69 ORP mV -38.9
Turbidity NTU 3.11 DO 3.35
pH 6.89 conductivity ms/cm 1160
= Began sampling at 1326
= no odors or flow noted
= relatively deep = water depth 12 inches 69.4°F
below water surface
18 inches 66.3°F 24 inches 65°F
= picture 3 pipe just upgradient - south side

= complete SC-SW07 07-D @ 1423
= move to next location
= arrive at location SC-SW-08
1455
Lat 35.841636 Long -96.387794
= no flow noted, leaf litter on bottom
= relatively deep, no odor or seep noted
= no fish or frogs noted
= picture 1 sample ID
= picture 2 sample location upstream
= begin sampling at 1502 pm
Turbidity NTU conductivity ms/cm 1248
pH 7.38 DO 3.72
ORP mV -44.5 Temperature °F 72.8F
= water depth 8 inches 73.8°F
below water surface ##inches 67.9°F
= complete sampling 1538
move to next location
~~= picture 3 sample location~~ note 11/2/16
= rock outcrops present at
location SCPPE-SW-05
begin sampling at 1554
= picture 1 sample ID
picture 2 sample location - upstream
picture 3 sample location
= refuse debris present pipes, concrete
= frogs noted
= no flow no odor noted
= sample downgradient of possible seep

11/2/16 SCPPE-SW-05

= Iron staining present
= manganese noted
= water depth shallow 8.5 inches below water surface Ø rocky no sediment
= MS/MSD location
Turbidity NTU 4.19 Temperature °F 73.49
Conductivity µs/cm 1349 ORP mV -70.3
DO 2.25 pH 7.56
= completed at 1640
= back to office
= pack, labels, paperwork

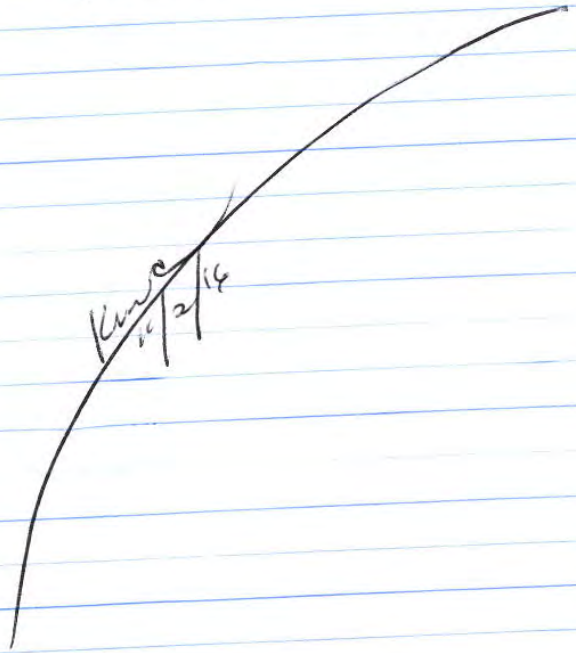


Photo Name: SC-SW-03_103116-001_surface water gear	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-03 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 10/31/16 **Sample Time:** 1416
General Site Description: Sample equipment was floated in using small hunting decoy boats.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-03_103116-004_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-03 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 10/31/16 **Sample Time:** 1416
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-03_103116-001_surface water south bank	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-03 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 10/31/16 **Sample Time:** 1416
General Site Description: South bank with possible seeps as identified by iron staining.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-03_103116-002_surface water south bank	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-03 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 10/31/16 **Sample Time:** 1416
General Site Description: South bank with possible seeps as identified by iron staining.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-03_103116-003_surface water north drainage	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-03 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 10/31/16 **Sample Time:** 1416
General Site Description: North bank with drainage feature.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-04_103116-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-04 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 10/31/16 **Sample Time:** 1520
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-04_103116-002_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-04 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 10/31/16 **Sample Time:** 1520
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-04_103116-003_surface water south bank seep	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-04 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 10/31/16 **Sample Time:** 1520
General Site Description: South bank with possible seeps as identified by iron staining.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-04_103116-004_surface water north bank	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-04 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 10/31/16 **Sample Time:** 1520
General Site Description: Sample location north bank.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-04_103116-005_surface water south bank	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-04 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 10/31/16 **Sample Time:** 1520
General Site Description: Sample location south bank.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-05_110116-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-05 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/01/16 **Sample Time:** 1024
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-05_110116-002_surface water north bank	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-05 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/01/16 **Sample Time:** 1024
General Site Description: North bank with possible seeps as identified by iron staining.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SCPPE-SW-01_110116-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SCPPE-SW-01 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/01/16 **Sample Time:** 1130
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SCPPE-SW-01_110116-002_surface water north bank drainage	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SCPPE-SW-01 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/01/16 **Sample Time:** 1130
General Site Description: Sample location with drainage on north bank.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-05A_110116-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-05A **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/01/16 **Sample Time:** 1504
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-05A_110116-002_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-05A **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/01/16 **Sample Time:** 1504
General Site Description: Sample location added due to presence of strong odor and oil sheen when sediments are disturbed.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: C2-SW_110116-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: C2-SW **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/01/16 **Sample Time:** 1627
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: C2-SW_110116-002_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: C2-SW **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/01/16 **Sample Time:** 1627
General Site Description: Sample location.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SCPPE-SW-03_110216-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SCPPE-SW-03 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/02/16 **Sample Time:** 0904
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SCPPE-SW-03_110216-002_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SCPPE-SW-03**Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/02/16 **Sample Time:** 0904
General Site Description: Sample location.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-06_110216-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-06 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/02/16 **Sample Time:** 1006
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-06_110216-002_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-06 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/02/16 **Sample Time:** 1006
General Site Description: Sample location.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-07_110216-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-07 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/02/16 **Sample Time:** 1326
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-07_110216-002_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-07 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/02/16 **Sample Time:** 1326
General Site Description: Sample location.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

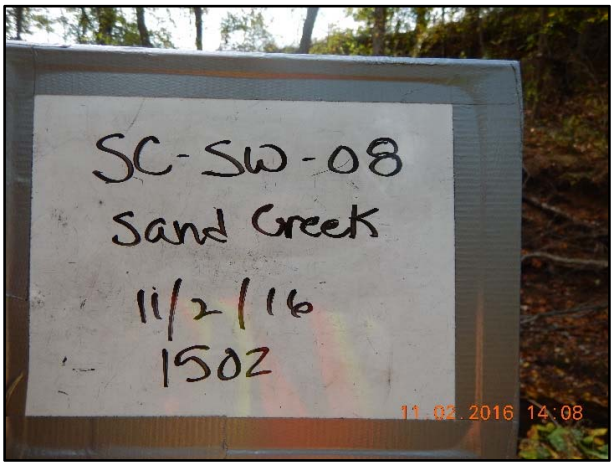


Photo Name: SC-SW-08_110216-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-08 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/02/16 **Sample Time:** 1502
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-SW-08_110216-002_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-SW-08 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/02/16 **Sample Time:** 1502
General Site Description: Sample location.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SCPPE-SW-05_110216-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SCPPE-SW-05 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/02/16 **Sample Time:** 1554
General Site Description: Sample identification.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SCPPE-SW-05_110216-002_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SCPPE-SW-05 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/02/16 **Sample Time:** 1554
General Site Description: Sample location looking upgradient.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SCPPE-SW-05_110216-003_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SCPPE-SW-05 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 11/02/16 **Sample Time:** 1554
General Site Description: Sample location just downgradient of possible seep as seen by the presence of iron staining.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-btw 03-04_103116-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-btw 03-04 **Photographer:** Katrina Higgins-Coltrain	**Sample Date:** 10/31/16 **Sample Time:** 1502
General Site Description: Presence of possible iron stained algae mat.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: SC-btw 04-05_103116-001_surface water	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: SC-btw 04-05 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/01/16 **Sample Time:** unknown
General Site Description: Presence of discharge from south bank drainage. Source unknown. Residential area location at the upgradient end of the drainage.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: Seep-btw 05-PPE01_110116-001_surface water north bank	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: Seep-btw 05-PPE01 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/01/16 **Sample Time:** 1120
General Site Description: Presence of seep from north bank as seen by presence of iron staining and drips of water.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

Photo Name: Seep-btw 05-PPE01_110116-002_surface water north bank	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: Seep-btw 05-PPE01 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/01/16 **Sample Time:** 1120
General Site Description: Presence of seep from north bank as seen by presence of iron staining and drips of water.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

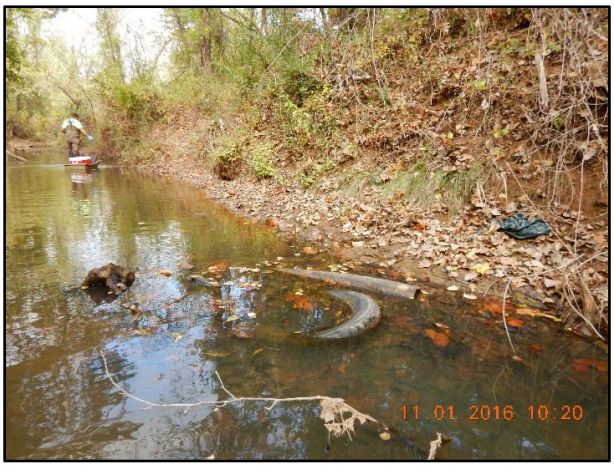


Photo Name: Seep-btw 05-PPE01_110116-003_surface water north bank	
Sample Location: Wilcox Oil Company Superfund Site: Sand Creek	
Sample Identification: Seep-btw 05-PPE01 **Photographer**: Katrina Higgins-Coltrain	**Sample Date**: 11/01/16 **Sample Time:** 1120
General Site Description: North bank downgradient of seeps.	
Note: All time stamps reported on the photographs is incorrect. The internal timing on the camera could not be adjusted. Problem unknown and remained unrectified during the sampling event.	

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1863 3360

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #: 46595
Cooler #:

No: 6-110116-103151-0077
Lab: Shealy Environmental Services
Lab Contact: Brad Belding
Lab Phone: 803-791-9700

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
C2-SW	F2D26	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4261 (Ice to 6C), 4262 (Ice to 6C) (2)	C2-SW	11/01/2016 16:27	Field Sample
SCPPE-SW-01	F2D27	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4271 (Ice to 6C), 4272 (Ice to 6C), 4273 (Ice to 6C), 4274 (Ice to 6C) (4)	SCPPE-SW-01	11/01/2016 11:30	Field Sample

Special Instructions:

Shipment for Case Complete? N
Samples Transferred From Chain of Custody #

Analysis Key: SVOA/SVOASIM=SVOA/SVOASIM (SOM02.3 + MA2544.2)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EPA	11-1-16/1800	FA	11-1-16/1800	
	FA	11-1-16/2000	FedEx (courier)	11-1-16/2000	

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1863 6430

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #: 46595
Cooler #:

No: 6-110116-103152-0078
Lab: Shealy Environmental Services
Lab Contact: Brad Belding
Lab Phone: 803-791-9700

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
C2-SW	F2D26	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4263 (Ice to 6C), 4264 (Ice to 6C) (2)	C2-SW	11/01/2016 16:27	Field Sample
SC-SW-05	F2D28	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4281 (Ice to 6C), 4282 (Ice to 6C), 4283 (Ice to 6C), 4284 (Ice to 6C) (4)	SC-SW-05	11/01/2016 10:24	Field Sample

Special Instructions:

Shipment for Case Complete? N
Samples Transferred From Chain of Custody #

Analysis Key: SVOA/SVOASIM=SVOA/SVOASIM (SOM02.3 + MA2544.2)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EPA	11-1-16/1800	EA	11-1-16/1800	
	EA	11-1-16/2000	FedEx FedEx (courier)	11-1-16/2000	

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1863 9781

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #: 46595
Cooler #:

No: 6-110116-103152-0079
Lab: Shealy Environmental Services
Lab Contact: Brad Belding
Lab Phone: 803-791-9700

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-05A	F2D01	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4011 (Ice to 6C), 4012 (Ice to 6C), 4013 (Ice to 6C), 4014 (Ice to 6C) (4)	SC-SW-05A	11/01/2016 15:04	Field Sample
SC-SW-05A-D	F2D32	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4321 (Ice to 6C), 4322 (Ice to 6C) (2)	SC-SW-05A-D	11/01/2016 15:04	Field Duplicate

Special Instructions:

Shipment for Case Complete? N
Samples Transferred From Chain of Custody #

Analysis Key: SVOA/SVOASIM=SVOA/SVOASIM (SOM02.3 + MA2544.2)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EPA	11-1-16/1800	FA	11-1-16/1800	
	FA	11-2-16/2000	FedEx (courier)	11-2-16/2000	

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1864 2251

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #: 46595
Cooler #:

No: 6-110116-103216-0080
Lab: Shealy Environmental Services
Lab Contact: Brad Belding
Lab Phone: 803-791-9700

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SCPPE-SW-03	F2D25	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4251 (Ice to 6C), 4252 (Ice to 6C), 4253 (Ice to 6C), 4254 (Ice to 6C) (4)	SCPPE-SW-03	11/02/2016 09:04	Field Sample
SC-SW-05A-D	F2D32	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4323 (Ice to 6C), 4324 (Ice to 6C) (2)	SC-SW-05A-D	11/01/2016 15:04	Field Duplicate

Special Instructions:

Shipment for Case Complete? N
Samples Transferred From Chain of Custody #

Analysis Key: SVOA/SVOASIM=SVOA/SVOASIM (SOM02.3 + MA2544.2)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EPA	11-2-16 /1800	EA	11-2-16/1600	
	EA	11-2-16/2000	FEDEX (courier)	11-2-16/2000	

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 2377 9158

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #: 46595
Cooler #:

No: 6-110216-173202-0089
Lab: Shealy Environmental Services
Lab Contact: Brad Belding
Lab Phone: 803-791-9700

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-07-D	F2D02	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4021 (Ice to 6C), 4022 (Ice to 6C) (2)	SC-SW-07-D	11/02/2016 13:26	Field Duplicate
SC-SW-07	F2D23	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4231 (Ice to 6C), 4232 (Ice to 6C), 4233 (Ice to 6C), 4234 (Ice to 6C) (4)	SC-SW-07	11/02/2016 13:26	Field Sample

Special Instructions:

Shipment for Case Complete? N
Samples Transferred From Chain of Custody #

Analysis Key: SVOA/SVOASIM=SVOA/SVOASIM (SOM02.3 + MA2544.2)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EPA	11-2-16/1600	Aaron Bufkin FA	11-2-16/1600	
	Aaron Bufkin FA	11-2-16/2000	FEDEX (courier)	11-2-16/2000	

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 2378 1743

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #: 46595
Cooler #:

No: 6-110216-173203-0090
Lab: Shealy Environmental Services
Lab Contact: Brad Belding
Lab Phone: 803-791-9700

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-07-D	F2D02	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4023 (Ice to 6C), 4024 (Ice to 6C) (2)	SC-SW-07-D	11/02/2016 13:26	Field Duplicate
SC-SW-06	F2D24	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4241 (Ice to 6C), 4242 (Ice to 6C), 4243 (Ice to 6C), 4244 (Ice to 6C) (4)	SC-SW-06	11/02/2016 10:06	Field Sample

Special Instructions:

Shipment for Case Complete? N
Samples Transferred From Chain of Custody #

Analysis Key: SVOA/SVOASIM=SVOA/SVOASIM (SOM02.3 + MA2544.2)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EPA	11-2-16/1800	FA	11-2-16/1800	
	FA	11-2-16/2000	FedEx (courier)	11-2-16/2000	

USEPA CLP COC (REGION COPY)
DateShipped: 11/3/2016
CarrierName: FedEx
AirbillNo: 7776 2605 1317

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #: 46595
Cooler #:

No: 6-110316-073240-0091
Lab: Shealy Environmental Services
Lab Contact: Brad Belding
Lab Phone: 803-791-9700

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
ER-161102	F2C88	Water/ Aaron Bugher	Grab	SVOA/SVOASIM(21)	3881 (Ice to 6C), 3882 (Ice to 6C) (2)	ER-161102	11/02/2016 15:38	Equipment Rinsate
SCPPE-SW-05	F2D21	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4211 (Ice to 6C), 4212 (Ice to 6C), 4213 (Ice to 6C), 4214 (Ice to 6C) (4)	SCPPE-SW-05	11/02/2016 15:54	Field Sample

Special Instructions:

Shipment for Case Complete? Y
Samples Transferred From Chain of Custody #

Analysis Key: SVOA/SVOASIM=SVOA/SVOASIM (SOM02.3 + MA2544.2)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EA	11-2-16/1600	EA	11-2-16/1800	
	EA	11-3-16/2000	FedEx Courier	11-3-16/2000	

USEPA CLP COC (REGION COPY)

DateShipped: 11/3/2016
CarrierName: FedEx
AirbillNo: 7776 2605 4923

CHAIN OF CUSTODY RECORD

Wilcox Oil Company Mob 2/OK
Case #: 46595
Cooler #:

No: 6-110316-073242-0092

Lab: Shealy Environmental Services
Lab Contact: Brad Belding
Lab Phone: 803-791-9700

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
ER-161102	F2C88	Water/ Aaron Bugher	Grab	SVOA/SVOASIM(21)	3883 (Ice to 6C), 3884 (Ice to 6C) (2)	ER-161102	11/02/2016 15:38	Equipment Rinsate
SC-SW-08	F2D22	Surface Water/ Katrina Higgins-Coltrain	Grab	SVOA/SVOASIM(21)	4221 (Ice to 6C), 4222 (Ice to 6C), 4223 (Ice to 6C), 4224 (Ice to 6C) (4)	SC-SW-08	11/02/2016 15:02	Field Sample

Special Instructions:

Shipment for Case Complete? Y

Samples Transferred From Chain of Custody #

Analysis Key: SVOA/SVOASIM=SVOA/SVOASIM (SOM02.3 + MA2544.2)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EPA	11-2-16/1800	FA	11-2-16 /1800	
	FA	11-3-16/2000	FedEx (courier)	11-3-16/2000	

USEPA CLP COC (REGION COPY)
DateShipped: 10/31/2016
CarrierName: FedEx
AirbillNo: 7776 0239 4983

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-103116-174653-0061
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-03		Surface Water/ Jason Stroup	Grab	EDB(35), VOA(35)	105 (Ice to 4C & HCl), 232 (Ice to 4C & HCl) (5)	SC-SW-03	10/31/2016 14:16	Field Sample
SC-SW-04		Surface Water/ Jason Stroup	Grab	EDB(35), VOA(35)	111 (Ice to 4C & HCl), 233 (Ice to 4C & HCl) (15)	SC-SW-04	10/31/2016 15:20	Field Sample
TB-161031-2		Water/ Aaron Bugher	Grab	EDB(35), VOA(35)	900 (Ice to 4C & HCl), 901 (Ice to 4C & HCl) (5)	TB-161031-2	10/31/2016 08:45	Trip Blank

Sample(s) to be used for Lab QC: SC-SW-04 Tag 111, SC-SW-04 Tag 233

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key: EDB=EDB, VOA=VOA

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/1/2016
CarrierName: FedEx
AirbillNo: 7776 0360 4199

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-103116-180338-0062
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-04		Surface Water/ Jason Stroup	Grab	CN(35), TM + Hg(35), Hex Cr(35)	112 (Ice to 4C & NaOH), 113 (Ice to 4C & HNO3), 114 (Ice to 4C & NH4OH/(NH4)2SO4) (6)	SC-SW-04	10/31/2016 15:20	Field Sample
SC-SW-04-F		Surface Water/ Jason Stroup	Grab	Diss Metals + Hg(35), Diss Hex Cr(35)	115 (Ice to 4C & HNO3), 116 (Ice to 4C & NH4OH/(NH4)2SO4) (4)	SC-SW-04-F	10/31/2016 15:20	Field Sample

Sample(s) to be used for Lab QC: SC-SW-04 Tag 112, SC-SW-04 Tag 113, SC-SW-04 Tag 114, SC-SW-04-F Tag 115, SC-SW-04-F Tag 116	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: CN=Cyanide, TM + Hg=Total Metals + Hg, Hex Cr=Hexavalent Chromium, Diss Metals + Hg=Dissolved Metals + Hg, Diss Hex Cr=Dissolved Hexavalent Chromium	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1842 4062

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-073056-0064
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
C2-SW		Surface Water/ Katrina Higgins-Coltrain	Grab	Hex Cr(35)	132 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	C2-SW	11/01/2016 16:27	Field Sample
C2-SW-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	134 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	C2-SW-F	11/01/2016 16:27	Field Sample
ETF-SB-01-0.5		Soil/ Scott Gilrein	Composite	TM + Hg(35)	11003 (Ice to 4C) (1)	ETF-SB-01-0.5	11/02/2016 12:05	Field Sample
ETF-SB-01-2.0		Soil/ Scott Gilrein	Composite	TM + Hg(35)	11004 (Ice to 4C) (1)	ETF-SB-01-2.0	11/02/2016 12:10	Field Sample
ETF-SB-01-6.0		Soil/ Scott Gilrein	Composite	TM + Hg(35)	11005 (Ice to 4C) (1)	ETF-SB-01-6.0	11/02/2016 12:15	Field Sample
ETF-SB-06-0.5		Soil/ Scott Gilrein	Composite	TM + Hg(35)	11020 (Ice to 4C) (1)	ETF-SB-06-0.5	11/02/2016 13:30	Field Sample
ETF-SB-06-2.0		Soil/ Scott Gilrein	Composite	TM + Hg(35)	11021 (Ice to 4C) (1)	ETF-SB-06-2.0	11/02/2016 13:35	Field Sample
ETF-SB-06-2.0-D		Soil/ Scott Gilrein	Composite	TM + Hg(35)	11023 (Ice to 4C) (1)	ETF-SB-06-2.0-D	11/02/2016 13:35	Field Duplicate
SC-SW-05A		Surface Water/ Katrina Higgins-Coltrain	Grab	Hex Cr(35)	20014 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-05A	11/01/2016 15:04	Field Sample

Sample(s) to be used for Lab QC: ETF-SB-01-2.0 Tag 11004, ETF-SB-06-0.5 Tag 11020	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: Hex Cr=Hexavalent Chromium, Diss Hex Cr=Dissolved Hexavalent Chromium, TM + Hg=Total Metals + Hg	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1842 4062

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-073056-0064
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-05A-D		Surface Water/ Katrina Higgins-Coltrain	Grab	Hex Cr(35)	20009 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-05A-D	11/01/2016 15:04	Field Duplicate
SC-SW-05A-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	20005 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-05A-F	11/01/2016 15:04	Field Sample
SC-SW-05A-F-D		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	20003 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-05A-F-D	11/01/2016 15:04	Field Duplicate

Special Instructions:

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key: Hex Cr=Hexavalent Chromium, Diss Hex Cr=Dissolved Hexavalent Chromium, TM + Hg=Total Metals + Hg

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1842 7852

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-073057-0065
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
C2-SW		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), TM + Hg(35)	130 (Ice to 4C & NaOH), 131 (Ice to 4C & HNO3) (2)	C2-SW	11/01/2016 16:27	Field Sample
C2-SW-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	133 (Ice to 4C & HNO3) (1)	C2-SW-F	11/01/2016 16:27	Field Sample
SCPPE-SW-01		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), TM + Hg(35)	124 (Ice to 4C & NaOH), 125 (Ice to 4C & HNO3) (2)	SCPPE-SW-01	11/01/2016 11:30	Field Sample
SCPPE-SW-01-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	127 (Ice to 4C & HNO3) (1)	SCPPE-SW-01-F	11/01/2016 11:30	Field Sample
SC-SW-03		Surface Water/ Jason Stroup	Grab	CN(35), TM + Hg(35)	106 (Ice to 4C & NaOH), 107 (Ice to 4C & HNO3) (2)	SC-SW-03	10/31/2016 14:16	Field Sample
SC-SW-03-F		Surface Water/ Jason Stroup	Grab	Diss Metals + Hg(35)	109 (Ice to 4C & HNO3) (1)	SC-SW-03-F	10/31/2016 14:16	Field Sample

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: CN=Cyanide, TM + Hg=Total Metals + Hg, Diss Metals + Hg=Dissolved Metals + Hg	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/1/2016
CarrierName: FedEx
AirbillNo: 7776 0360 8275

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-073100-0066
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
ETF-SB-04-0.5		Soil/ Scott Gilrein	Composite	TM + Hg(35)	10002 (Ice to 4C) (1)	ETF-SB-04-0.5	11/01/2016 16:30	Field Sample
ETF-SB-04-2.0		Soil/ Scott Gilrein	Composite	TM + Hg(35)	10004 (Ice to 4C) (1)	ETF-SB-04-2.0	11/01/2016 16:35	Field Sample
ETF-SB-04-6.0		Soil/ Scott Gilrein	Composite	TM + Hg(35)	10005 (Ice to 4C) (1)	ETF-SB-04-6.0	11/01/2016 16:40	Field Sample
ETF-SB-05-0.5		Soil/ Scott Gilrein	Composite	TM + Hg(35)	10006 (Ice to 4C) (1)	ETF-SB-05-0.5	11/01/2016 15:00	Field Sample
ETF-SB-05-10.0		Soil/ Scott Gilrein	Composite	TM + Hg(35)	10007 (Ice to 4C) (1)	ETF-SB-05-10.0	11/01/2016 15:15	Field Sample
ETF-SB-05-2.0		Soil/ Scott Gilrein	Composite	TM + Hg(35)	10008 (Ice to 4C) (1)	ETF-SB-05-2.0	11/01/2016 15:05	Field Sample
ETF-SB-05-6.0		Soil/ Scott Gilrein	Composite	TM + Hg(35)	10009 (Ice to 4C) (1)	ETF-SB-05-6.0	11/01/2016 15:10	Field Sample
SCPPE-SW-01		Surface Water/ Katrina Higgins-Coltrain	Grab	Hex Cr(35)	126 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SCPPE-SW-01	11/01/2016 11:30	Field Sample
SCPPE-SW-01-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	128 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SCPPE-SW-01-F	11/01/2016 11:30	Field Sample

Sample(s) to be used for Lab QC: ETF-SB-04-6.0 Tag 10005	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: TM + Hg=Total Metals + Hg, Hex Cr=Hexavalent Chromium, Diss Hex Cr=Dissolved Hexavalent Chromium	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/1/2016
CarrierName: FedEx
AirbillNo: 7776 0360 8275

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-073100-0066
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-03		Surface Water/ Jason Stroup	Grab	Hex Cr(35)	108 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-03	10/31/2016 14:16	Field Sample
SC-SW-03-F		Surface Water/ Jason Stroup	Grab	Diss Hex Cr(35)	110 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-03-F	10/31/2016 14:16	Field Sample
SC-SW-05		Surface Water/ Katrina Higgins-Coltrain	Grab	Hex Cr(35)	120 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-05	11/01/2016 10:24	Field Sample
SC-SW-05-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	20001 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-05-F	11/01/2016 10:24	Field Sample

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: TM + Hg=Total Metals + Hg, Hex Cr=Hexavalent Chromium, Diss Hex Cr=Dissolved Hexavalent Chromium	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/1/2016
CarrierName: FedEx
AirbillNo: 7776 0360 8908

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-073107-0067
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
ETF-SB-04-0.5		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	187 (Ice to 4C), 263 (Ice to 4C) (4)	ETF-SB-04-0.5	11/01/2016 16:30	Field Sample
ETF-SB-04-2.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	188 (Ice to 4C), 264 (Ice to 4C) (4)	ETF-SB-04-2.0	11/01/2016 16:35	Field Sample
ETF-SB-04-6.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	189 (Ice to 4C), 265 (Ice to 4C) (12)	ETF-SB-04-6.0	11/01/2016 16:40	Field Sample
ETF-SB-05-0.5		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	192 (Ice to 4C), 268 (Ice to 4C) (4)	ETF-SB-05-0.5	11/01/2016 15:00	Field Sample
ETF-SB-05-10.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	195 (Ice to 4C), 271 (Ice to 4C) (4)	ETF-SB-05-10.0	11/01/2016 15:15	Field Sample
ETF-SB-05-2.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	193 (Ice to 4C), 269 (Ice to 4C) (4)	ETF-SB-05-2.0	11/01/2016 15:05	Field Sample
ETF-SB-05-6.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	194 (Ice to 4C), 270 (Ice to 4C) (4)	ETF-SB-05-6.0	11/01/2016 15:10	Field Sample
SCPPE-SW-01		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	123 (Ice to 4C & HCl), 236 (Ice to 4C & HCl) (5)	SCPPE-SW-01	11/01/2016 11:30	Field Sample
SC-SW-05		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	117 (Ice to 4C & HCl), 234 (Ice to 4C & HCl) (5)	SC-SW-05	11/01/2016 10:24	Field Sample

Sample(s) to be used for Lab QC: ETF-SB-04-6.0 Tag 189, ETF-SB-04-6.0 Tag 265	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: VOA=VOA, VOA Moisture=VOA Moisture, EDB=EDB	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/1/2016
CarrierName: FedEx
AirbillNo: 7776 0360 8908

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-073107-0067
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
TB-161101-2		Water/ Aaron Bugher	Grab	EDB(35), VOA(35)	102 (Ice to 4C & HCl), 228 (Ice to 4C & HCl) (5)	TB-161101-2	11/01/2016 08:45	Trip Blank

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: VOA=VOA, VOA Moisture=VOA Moisture, EDB=EDB	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/3/2016
CarrierName: FedEx
AirbillNo: 7776 2600 1595

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-102738-0076
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SCPPE-SW-05		Surface Water/ Katrina Higgins-Coltrain	Grab	TM + Hg(35)	161 (Ice to 4C & HNO3) (2)	SCPPE-SW-05	11/02/2016 15:54	Field Sample
SCPPE-SW-05-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	163 (Ice to 4C & HNO3) (2)	SCPPE-SW-05-F	11/02/2016 15:54	Field Sample
SC-SW-07		Surface Water/ Katrina Higgins-Coltrain	Grab	TM + Hg(35)	149 (Ice to 4C & HNO3) (1)	SC-SW-07	11/02/2016 13:26	Field Sample
SC-SW-07-D		Surface Water/ Katrina Higgins-Coltrain	Grab	TM + Hg(35)	20095 (Ice to 4C & HNO3) (1)	SC-SW-07-D	11/02/2016 13:26	Field Duplicate
SC-SW-07-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	151 (Ice to 4C & HNO3) (1)	SC-SW-07-F	11/02/2016 13:26	Field Sample
SC-SW-07-F-D		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	20091 (Ice to 4C & HNO3) (1)	SC-SW-07-F-D	11/02/2016 13:26	Field Duplicate
SC-SW-08		Surface Water/ Katrina Higgins-Coltrain	Grab	TM + Hg(35)	155 (Ice to 4C & HNO3) (1)	SC-SW-08	11/02/2016 15:02	Field Sample

Sample(s) to be used for Lab QC: SCPPE-SW-05 Tag 161, SCPPE-SW-05-F Tag 163	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: TM + Hg=Total Metals + Hg, Diss Metals + Hg=Dissolved Metals + Hg	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/3/2016
CarrierName: FedEx
AirbillNo: 7776 2600 1595

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110116-102738-0076
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-08-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	157 (Ice to 4C & HNO3) (1)	SC-SW-08-F	11/02/2016 15:02	Field Sample

Special Instructions:	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: TM + Hg=Total Metals + Hg, Diss Metals + Hg=Dissolved Metals + Hg	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1843 1888

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110216-111607-0084
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-05		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), TM + Hg(35)	118 (Ice to 4C & NaOH), 119 (Ice to 4C & HNO3) (2)	SC-SW-05	11/01/2016 10:24	Field Sample
SC-SW-05A		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), TM + Hg(35)	20012 (Ice to 4C & NaOH), 20013 (Ice to 4C & HNO3) (2)	SC-SW-05A	11/01/2016 15:04	Field Sample
SC-SW-05A-D		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), TM + Hg(35)	20007 (Ice to 4C & NaOH), 20008 (Ice to 4C & HNO3) (2)	SC-SW-05A-D	11/01/2016 15:04	Field Duplicate
SC-SW-05A-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	20006 (Ice to 4C & HNO3) (1)	SC-SW-05A-F	11/01/2016 15:04	Field Sample
SC-SW-05A-F-D		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	20004 (Ice to 4C & HNO3) (1)	SC-SW-05A-F-D	11/01/2016 15:04	Field Duplicate
SC-SW-05-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35)	20002 (Ice to 4C & HNO3) (1)	SC-SW-05-F	11/01/2016 10:24	Field Sample

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: CN=Cyanide, TM + Hg=Total Metals + Hg, Diss Metals + Hg=Dissolved Metals + Hg	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1843 5520

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110216-111608-0085
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SCPPE-SW-03		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), TM + Hg(35), Hex Cr(35)	136 (Ice to 4C & NaOH), 137 (Ice to 4C & HNO3), 138 (Ice to 4C & NH4OH/(NH4)2SO4) (3)	SCPPE-SW-03	11/02/2016 09:04	Field Sample
SCPPE-SW-03-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35), Diss Hex Cr(35)	139 (Ice to 4C & HNO3), 140 (Ice to 4C & NH4OH/(NH4)2SO4) (2)	SCPPE-SW-03-F	11/02/2016 09:04	Field Sample
SC-SW-06		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), TM + Hg(35), Hex Cr(35)	142 (Ice to 4C & NaOH), 143 (Ice to 4C & HNO3), 144 (Ice to 4C & NH4OH/(NH4)2SO4) (3)	SC-SW-06	11/02/2016 10:06	Field Sample
SC-SW-06-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Metals + Hg(35), Diss Hex Cr(35)	145 (Ice to 4C & HNO3), 146 (Ice to 4C & NH4OH/(NH4)2SO4) (2)	SC-SW-06-F	11/02/2016 10:06	Field Sample

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #

Analysis Key: CN=Cyanide, TM + Hg=Total Metals + Hg, Hex Cr=Hexavalent Chromium, Diss Metals + Hg=Dissolved Metals + Hg, Diss Hex Cr=Dissolved Hexavalent Chromium

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1844 6262

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110216-112130-0087
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
C2-SW		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	129 (Ice to 4C & HCl), 237 (Ice to 4C & HCl) (5)	C2-SW	11/01/2016 16:27	Field Sample
SCPPE-SW-03		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	135 (Ice to 4C & HCl), 238 (Ice to 4C & HCl) (5)	SCPPE-SW-03	11/02/2016 09:04	Field Sample
SC-SW-05A		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	20011 (Ice to 4C & HCl), 20015 (Ice to 4C & HCl) (5)	SC-SW-05A	11/01/2016 15:04	Field Sample
SC-SW-05A-D		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	20006 (Ice to 4C & HCl), 20010 (Ice to 4C & HCl) (5)	SC-SW-05A-D	11/01/2016 15:04	Field Duplicate
SC-SW-06		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	141 (Ice to 4C & HCl), 240 (Ice to 4C & HCl) (5)	SC-SW-06	11/02/2016 10:06	Field Sample
SC-SW-07		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	147 (Ice to 4C & HCl), 241 (Ice to 4C & HCl) (5)	SC-SW-07	11/02/2016 13:26	Field Sample
SC-SW-07-D		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	20093 (Ice to 4C & HCl), 20097 (Ice to 4C & HCl) (5)	SC-SW-07-D	11/02/2016 13:26	Field Duplicate

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: EDB=EDB, VOA=VOA	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/2/2016
CarrierName: FedEx
AirbillNo: 7776 1844 6262

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110216-112130-0087
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
TB-161102-2		Water/ Aaron Bugher	Grab	EDB(35), VOA(35)	103 (Ice to 4C & HCl), 229 (Ice to 4C & HCl) (5)	TB-161102-2	11/02/2016 08:45	Trip Blank

Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key: EDB=EDB, VOA=VOA	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/3/2016
CarrierName: FedEx
AirbillNo: 7776 2603 3693

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110316-084516-0097
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SCPPE-SW-05		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), Hex Cr(35)	160 (Ice to 4C & NaOH), 162 (Ice to 4C & NH4OH/(NH4)2SO4) (4)	SCPPE-SW-05	11/02/2016 15:54	Field Sample
SCPPE-SW-05-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	164 (Ice to 4C & NH4OH/(NH4)2SO4) (2)	SCPPE-SW-05-F	11/02/2016 15:54	Field Sample
SC-SW-07		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), Hex Cr(35)	148 (Ice to 4C & NaOH), 150 (Ice to 4C & NH4OH/(NH4)2SO4) (2)	SC-SW-07	11/02/2016 13:26	Field Sample
SC-SW-07-D		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), Hex Cr(35)	20094 (Ice to 4C & NaOH), 20096 (Ice to 4C & NH4OH/(NH4)2SO4) (2)	SC-SW-07-D	11/02/2016 13:26	Field Duplicate
SC-SW-07-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	152 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-07-F	11/02/2016 13:26	Field Sample
SC-SW-07-F-D		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	20090 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-07-F-D	11/02/2016 13:26	Field Duplicate
SC-SW-08		Surface Water/ Katrina Higgins-Coltrain	Grab	CN(35), Hex Cr(35)	154 (Ice to 4C & NaOH), 156 (Ice to 4C & NH4OH/(NH4)2SO4) (2)	SC-SW-08	11/02/2016 15:02	Field Sample

Sample(s) to be used for Lab QC: SCPPE-SW-05 Tag 160, SCPPE-SW-05 Tag 162, SCPPE-SW-05-F Tag 164	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: CN=Cyanide, Hex Cr=Hexavalent Chromium, Diss Hex Cr=Dissolved Hexavalent Chromium	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/3/2016
CarrierName: FedEx
AirbillNo: 7776 2603 3693

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110316-084516-0097
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
SC-SW-08-F		Surface Water/ Katrina Higgins-Coltrain	Grab	Diss Hex Cr(35)	158 (Ice to 4C & NH4OH/(NH4)2SO4) (1)	SC-SW-08-F	11/02/2016 15:02	Field Sample

Special Instructions:	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: CN=Cyanide, Hex Cr=Hexavalent Chromium, Diss Hex Cr=Dissolved Hexavalent Chromium	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/3/2016
CarrierName: FedEx
AirbillNo: 7776 2603 8228

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110316-084636-0098
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
ETF-SB-08-0.5		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	207 (Ice to 4C), 283 (Ice to 4C) (4)	ETF-SB-08-0.5	11/03/2016 09:45	Field Sample
ETF-SB-08-10.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	210 (Ice to 4C), 286 (Ice to 4C) (4)	ETF-SB-08-10.0	11/03/2016 10:00	Field Sample
ETF-SB-08-14.5		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	211 (Ice to 4C), 287 (Ice to 4C) (4)	ETF-SB-08-14.5	11/03/2016 10:05	Field Sample
ETF-SB-08-2.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	208 (Ice to 4C), 284 (Ice to 4C) (4)	ETF-SB-08-2.0	11/03/2016 09:50	Field Sample
ETF-SB-08-6.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	209 (Ice to 4C), 285 (Ice to 4C) (4)	ETF-SB-08-6.0	11/03/2016 09:55	Field Sample
ETF-SB-09-0.5		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	212 (Ice to 4C), 288 (Ice to 4C) (4)	ETF-SB-09-0.5	11/03/2016 11:30	Field Sample
ETF-SB-09-2.0		Soil/ Scott Gilrein	Composite	VOA(35), VOA Moisture(35)	213 (Ice to 4C), 289 (Ice to 4C) (4)	ETF-SB-09-2.0	11/03/2016 11:35	Field Sample
SCPPE-SW-05		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	159 (Ice to 4C & HCl), 244 (Ice to 4C & HCl) (5)	SCPPE-SW-05	11/02/2016 15:54	Field Sample
SC-SW-08		Surface Water/ Katrina Higgins-Coltrain	Grab	EDB(35), VOA(35)	153 (Ice to 4C & HCl), 242 (Ice to 4C & HCl) (5)	SC-SW-08	11/02/2016 15:02	Field Sample

Special Instructions:	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: VOA=VOA, VOA Moisture=VOA Moisture, EDB=EDB	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (REGION COPY)
DateShipped: 11/3/2016
CarrierName: FedEx
AirbillNo: 7776 2603 8228

CHAIN OF CUSTODY RECORD
Wilcox Oil Company Mob 2/OK
Case #:
Cooler #:

No: 6-110316-084636-0098
Lab: EPA Region 6 Laboratory
Lab Contact: Christy Warren
Lab Phone: 281-983-2137

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
TB-161103-2		Water/ Aaron Bugher	Grab	EDB(35), VOA(35)	104 (Ice to 4C & HCl), 230 (Ice to 4C & HCl) (5)	TB-161103-2	11/03/2016 08:45	Trip Blank

Special Instructions:	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: VOA=VOA, VOA Moisture=VOA Moisture, EDB=EDB	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

Wilcox Oil Company Superfund Site
Bristow, Creek County, Oklahoma

Page: 1 of 2
Date: 10/31/16

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.837290

Long: -96.380629

Sampling Personnel: Bret Kendrick, Jason Stroup

Sample Date: 10/31/16

Weather Conditions: Sunny, Partcloudy, 82°

Surface Water ID: Sand Creek SC-SW-03

Collection Time: 1416

Sediment ID: NA

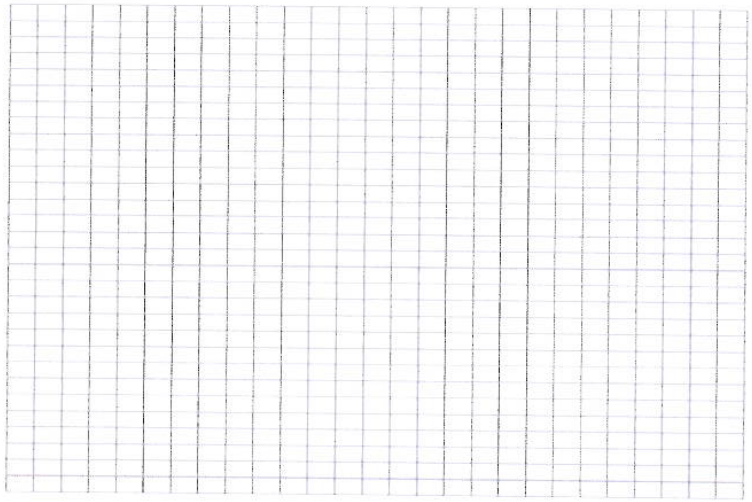
Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 68.2 °C / °F pH: 6.1 Conductivity: 1010 ms/cm DO: not recorded ppm TDS: ppm ORP: 30.6 mv Turbidity: 2.52 ntu

Location Map:



Depth (bgs): 7inches BWL 13inches Bed depth 64.2°F
center 19inches Bed depth 63.9 °F

Sampling Method:
- Geoprobe
- Slide Hammer Probe
- Scoop
- Ponar
- Core Sampler
- (Pump)
- Dipper

Analyses:
- (VOCs)
- (SVOCS)
- (Metals)
- (Hexavalent Chromium)
- Pesticides
- Aroclors

Notes/Comments: BWL = Below water level - centerline
NA = not applicable
VOCs, EDB, Total Metals, Total Hex Chromium
SVOCs, Dissolved metals, Dissolved Hex Chromium
Cyanide

Recorded By: Katrina Higgins-Coltrain

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.837503

Long: -96.381875

Sampling Personnel: Bret Kevichick - Jason Stroup

Sample Date: 10/31/16

Weather Conditions: Sunny, partly cloudy, windy 82°

Surface Water ID: Sand Creek SC-SW-04

Collection Time: 1520

Sediment ID: NA

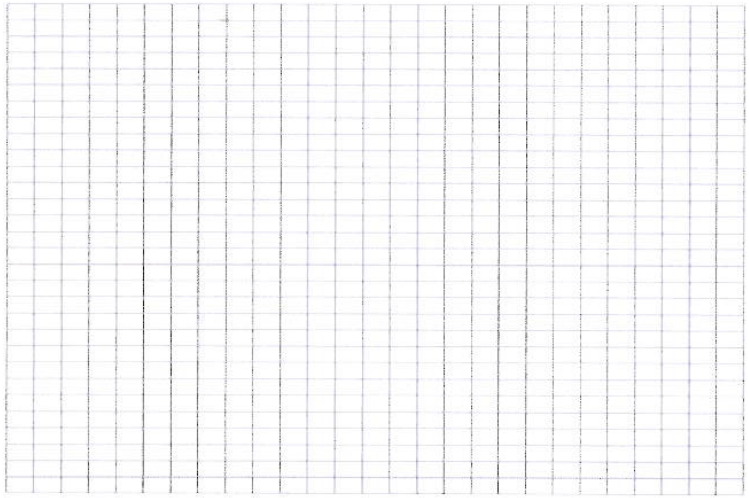
Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 68.0 °C °F pH: 6.7 Conductivity: 1004 ms/cm DO 6.56 TDS: ppm ORP: 8.7 mv Turbidity: 2.70 ntu

Location Map:



Depth ~~(bgs)~~: water 13.5 inches 67.4 °F

BW center 19.5 65.1°F. rock at 19.5 inches

Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler
~~Pump~~
Dipper

Analyses:
~~VOCs~~
~~SVOCs~~
~~Metals~~
Hexavalent Chromium
Pesticides
Aroclors

Notes/Comments: NA = not applicable BW = below water level (center Creek
VOCs EDB, cyanide
total metals, total Hex Chromium
dissolved metal, dissolved Hex Chromium
SVOCs MS/MSD

Recorded By: Katrina Higgins-Coltrain

Wilcox Oil Company Superfund Site
Bristow, Creek County, Oklahoma

Page: 1 of 4
Date: 11/1/16

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.838071

Long: -96.382548

Sampling Personnel: Bret Kendrick Susan Stroup Todd Downham

Sample Date: 11/1/16

Weather Conditions: Partly cloudy, slight breeze

Surface Water ID: SC-SW-05

Collection Time: 1024

Sediment ID: NA

Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 64.8 °C pH: 7.3 Conductivity: 1214 ms/cm TDS: NA ppm ORP: -27.6 mv Turbidity: 5.18 ntu DO 2.88

Depth (bgs): 7.5 inches DepthBwL 8 inches 64.97F

Location Map:

Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler

Pump
Dipper

Analyses:
~~VOCs~~
~~SVOCS~~
~~Metals~~
Hexavalent Chromium
Pesticides
Aroclors

Notes/Comments: NA = not applicable BwL = below water level
VOCs, EDB SVOA
Metals = total and dissolved
Hexavalent Chromium total & dissolved

Recorded By: Katrina Higgins-Coltrain

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.535570

Long: -96.383338

Sampling Personnel: Bret Kenduck, Jason Stamp, Todd Downham

Sample Date: 11/1/16

Weather Conditions: Partly Sunny, Slight Breeze

Surface Water ID: SCPPE-SW-01

Collection Time: 1130

Sediment ID: NA

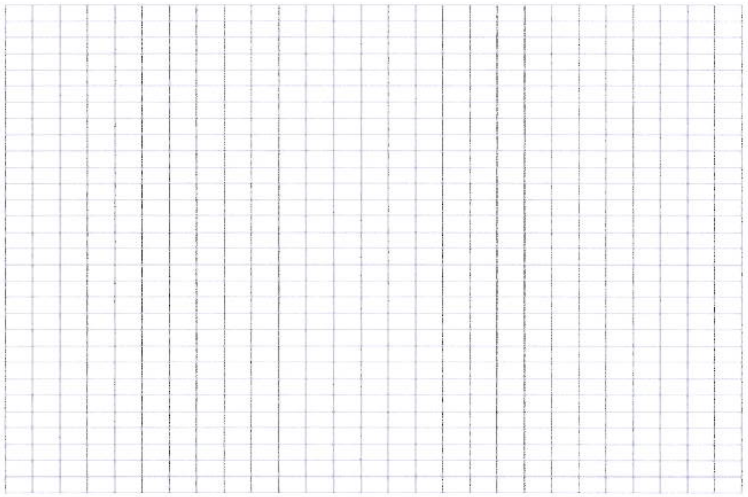
Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 63.21 °F pH: 7.19 Conductivity: 1173 ms/cm ~~TDS~~ DO: 2.46 ppm ORP: -37.5 mv Turbidity: 5.90 ntu

Location Map:



Depth (bgs): 18.5 inches 64.7°F BWL = 24.5 inches 63.5°F
31.5 inches 63.2°F

Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler
(Pump)
Dipper

Analyses:
(VOCs)
(SVOCs)
~~Metals~~
(Hexavalent Chromium)
Pesticides
Aroclors

Notes/Comments: NA= not applicable BWL- below water level
VOCs EDB SVOCs
Metals - total & dissolved
Hexavalent Chromium total & dissolved

Recorded By: Katrina Higgins - Voltrain

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.839200

Long: -96.385401

Sampling Personnel: Bret Kendrick Jason Stroup Todd Downham

Sample Date: 11/1/16

Weather Conditions: Partly Cloudy, Light Breeze, 80°

Surface Water ID: SC-SW-05A

Collection Time: 1504

Sediment ID: NA

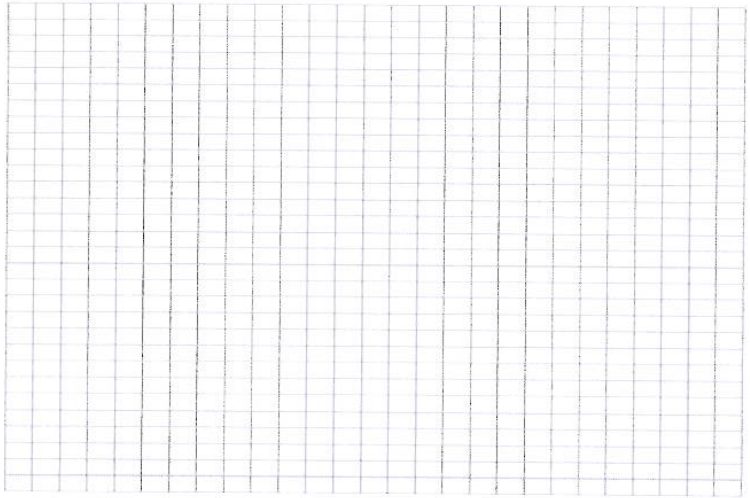
Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 66.5 °C / °F pH: 6.71 Conductivity: 7220 ms/cm DO TDS: 3.21 ppm ORP: -309 mv Turbidity: 1.81 ntu

Location Map:



Depth (bgs): 8 inches 69.9°F BWL 11 inches 65°F

Sampling Method:
- Geoprobe
- Slide Hammer Probe
- Scoop
- Ponar
- Core Sampler
- (Pump)
- Dipper

Analyses:
- (VOCs)
- (SVOCS)
- ~~Metals~~
- (~~Hexavalent Chromium~~)
- Pesticides
- Aroclors

Notes/Comments: NA = not applicable BWL Below water level
VOCs, SVOCs, Metals total & dissolved Duplicate taken
Hexavalent Chromium total & dissolved

Recorded By: Katrina Higgins-Coltrain

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.839415

Long: -96.384407

Sampling Personnel: Jason Stroup Bret Kindrick Bob Dunham

Sample Date: 11/1/16

Weather Conditions: Partly Cloudy, 80°, cool Breeze

Surface Water ID: CS-SW

Collection Time: 1627

Sediment ID: NA

Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 68.96 °C pH: 7.55 Conductivity: 1222 ms/cm ~~TDS~~ DO: 9.0 ppm ORP: -32.0 mv Turbidity: 0.86 ntu

Location Map:

Depth (bgs): 2.5 inches 70°F

BwL 8.5 inches 66.3°F
14.5 inches 65°F

Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler
~~Pump~~
~~Dipper~~

Analyses:
VOCs
SVOCs
Metals
~~Hexavalent Chromium~~
~~Pesticides~~
Aroclors

Notes/Comments: NA = not applicable BwL = below water level
VOC, SVOCs, EDB, metals - total & dissolved
Hexavalent Chromium total & dissolved

Recorded By: Katrina Higgins-Coltrain

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.839683

Long: -96.384888

Sampling Personnel: Brett Kendrick, Jason Stroup

Sample Date: 11/2/16

Weather Conditions: cool, cloudy, slight breeze

Surface Water ID: SCPPE-SW-03

Collection Time: 0904

Sediment ID: NA

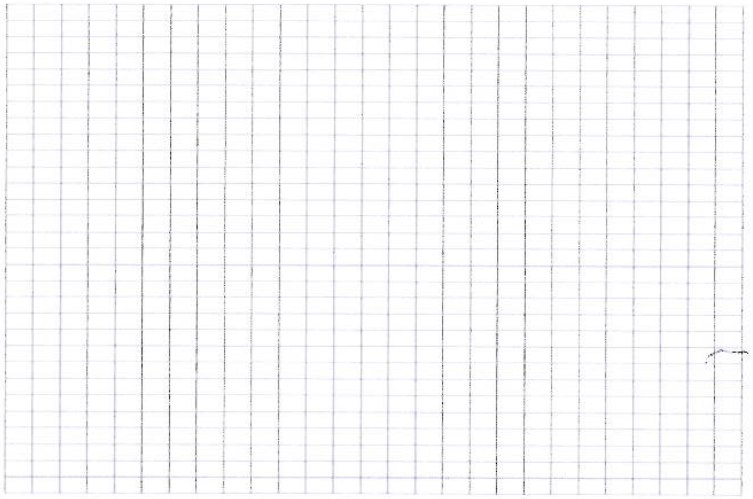
Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 65.96 °F pH: 6.86 Conductivity: 1175 ms/cm ~~TDS~~ DO: 3.98 ppm ORP: -28.8 mv Turbidity: 2.51 ntu

Location Map:



Depth (bgs): 7 inches 67.5°F BWL = ∅, hit bottom

Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler
(Pump)
Dipper

Analyses:
(VOCs)
(SVOCs)
~~Metals~~
~~Hexavalent Chromium~~
Pesticides
Aroclors

Notes/Comments: NA = not applicable BWL: below water level
VOCs, SVOCs, metals = total & dissolved
Hexavalent Chromium total & dissolved
EDD

Recorded By: Katrina Huggins-Colbrain

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.839941

Long: -96.386273

Sampling Personnel: Bret Kendrick, Jason Stroup

Sample Date: 11/2/16

Weather Conditions: Cool, cloudy

Surface Water ID: SC-SW-06

Collection Time: 1006

Sediment ID: NA

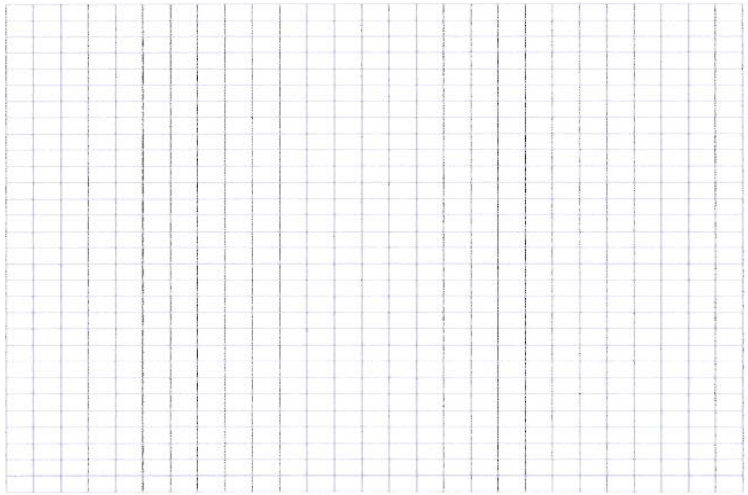
Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 67.86 °F pH: 7.26 Conductivity: 1157 ms/cm DO TDS: 4.85 ppm ORP: -33.1 mv Turbidity: 2.13 ntu

Location Map:



Depth (bgs): 2.5 inches BWL = 4.5 inches 66.7°F

Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler
Pump
Dipper

Analyses:
VOCs
SVOCs
Metals
Hexavalent Chromium
Pesticides
Aroclors

Notes/Comments: NA = not applicable BWL = below water level
VOCs SVOCs EDB metals - dissolved & total
Hexavalent chromium - dissolved & total

Recorded By: Keishana Higgins - Coldwater

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.840593

Long: -96.387556

Sampling Personnel: Bret Hendrick Jason Stroup Todd Downham

Sample Date: 11/2/16

Weather Conditions: Partly cloudy, breezy 81°

Surface Water ID: SC-SW-07 -07-D

Collection Time: 1326

Sediment ID: NA

Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 69.69 °C pH: 6.89 Conductivity: 1160 ms/cm DO TDS: 3.35 ppm ORP: -38.7 mv Turbidity: 3.11 ntu

Location Map:

Depth (bgs): 12 inches 69.6°F below water level 18 inches 66.3°F 24 inches 65°F

Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler
~~Pump~~
Dipper

Analyses:
VOCs
SVOCS
Metals
~~Hexavalent Chromium~~
Pesticides
Aroclors

Notes/Comments: NA not applicable BGS = below water level
VOCs, SVOCs, Metals = Total & dissolved
EDB Hexavalent Chromium = total & dissolved
Duplicate taken

Recorded By: Katrina Higgins - Ottrain

Sediment and Surface Water Collection Field Form

Exposure Area: EFA Sand Creek

GPS Coordinates:

Lat: 35.841636

Long: -96.387794

Sampling Personnel: Bret Kendrick Jason Stroup

Sample Date: 11/2/16

Weather Conditions: Partly cloudy, Breezy, 80°

Surface Water ID: SC-SW-08

Collection Time:

Sediment ID: NA

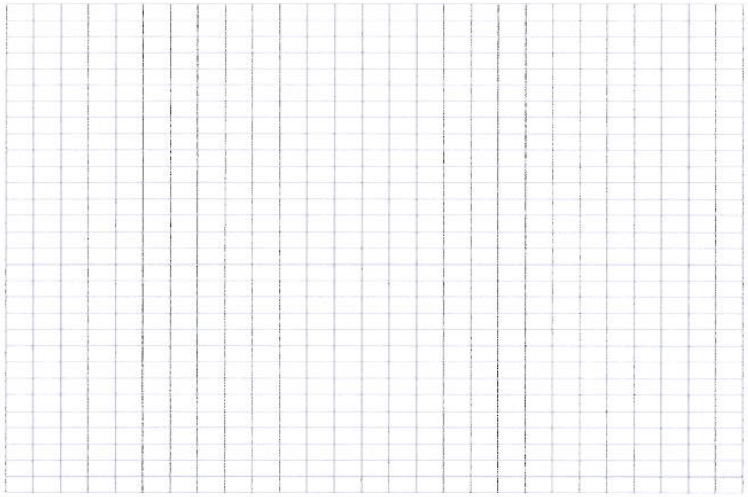
Collection Time: NA

Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 72.8 °C pH: ~~7.38~~ 7.38 Conductivity: 1248 ms/cm DO ~~TDS~~: 3.72 ppm ORP: -44.5 mv Turbidity: 2.07 ntu

Location Map:



Depth (bgs): 8 inches 73.8 BWL = 11 inches 67.9°F

Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler
~~Pump~~
Dipper

Analyses:
~~VOCs~~
~~SVOCs~~
~~Metals~~
~~Hexavalent Chromium~~
Pesticides
Aroclors

Notes/Comments: NA = not applicable BWL = below water level
VOCs SVOCs metals = total & dissolved
DO Hexavalent Chromium = total & dissolved

Recorded By: Katrina Higgins - Cottrain

Sediment and Surface Water Collection Field Form

Exposure Area: Sand Creek

GPS Coordinates:

Lat: 35.842545

Long: -96.387423

Sampling Personnel: Bret Kendrick, Jason Stroup

Sample Date: 11/2/15

Weather Conditions: partly cloudy, breezy

Surface Water ID: SCPDE-SW-05

Collection Time: 1554

Sediment ID: NA

Collection Time: NA

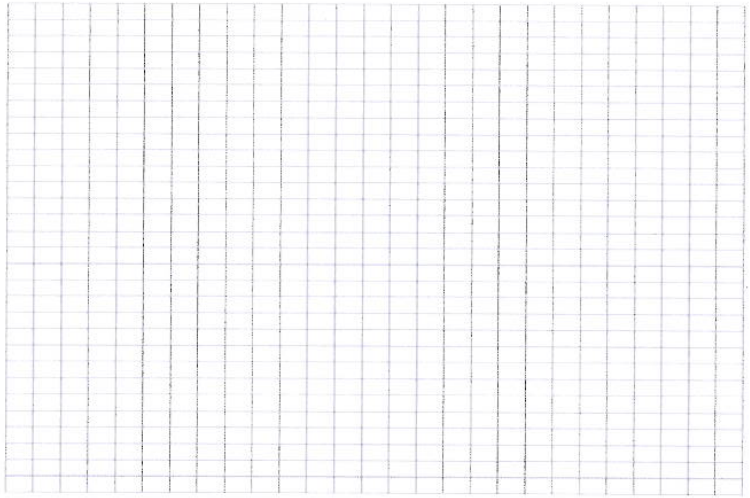
Sediment Description (soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other):

Surface Water Parameters:

Temperature: 73.19 °C pH: 7.56 Conductivity: 1347 ms/cm DO TDS: 2.25 ppm ORP: -70.3 mv Turbidity: 4.19 ntu

Depth (bgs): 8.5 inches 74.7 °F BwL = Ø rock

Location Map:



Sampling Method:
Geoprobe
Slide Hammer Probe
Scoop
Ponar
Core Sampler
Pump
Dipper

Analyses:
VOCs
SVOCs
Metals
Hexavalent Chromium
Pesticides
Aroclors

Notes/Comments: NA = not applicable BwL = below waterlevel
VOCs SVOCs Metals = total & dissolved
EPB Hexavalent Chromium, total & dissolved MS/MSD

Recorded By: Katrina Higgins - Ceitrem