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ENVIRONMENTAL PROTECTION  
AGENCY-REGION VII  
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 7  
901 NORTH 5<sup>TH</sup> STREET  
KANSAS CITY, KANSAS 66101

IN THE MATTER OF: )  
)  
Frontier El Dorado Refining LLC )  
and )  
Equilon Enterprises LLC )  
d/b/a Shell Oil Products US )  
)  
RESPONDENTS )  
)  
)  
Proceeding under Section 3008(h) )  
of the Resource Conservation and )  
Recovery Act (RCRA), 42 U.S.C. Section )  
6901, et seq., as amended. )  
)

EPA DOCKET NO.  
RCRA-07-2011-0011

RCRA § 3008(h) ADMINISTRATIVE ORDER ON CONSENT  
FRONTIER EI DORADO REFINING LLC, EL DORADO, KANSAS  
EQUILON ENTERPRISES LLC d/b/a SHELL OIL PRODUCTS US

## TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	JURISDICTION .....	2
III.	PARTIES BOUND.....	2
IV.	DEFINITIONS .....	3
V.	EPA'S FINDINGS OF FACT .....	5
VI.	EPA'S CONCLUSIONS OF LAW AND DETERMINATIONS.....	13
VII.	ORDER ON CONSENT.....	14
VIII.	WORK TO BE PERFORMED .....	14
IX.	EPA APPROVAL OF DELIVERABLES .....	18
X.	MODIFICATION OF WORK PLANS .....	20
XI.	QUALITY ASSURANCE .....	20
XII.	DOCUMENT CERTIFICATION .....	21
XIII.	SAMPLING, ACCESS, AND DATA AVAILABILITY .....	22
XIV.	COMPLIANCE WITH OTHER LAWS .....	24
XV.	RECORD RETENTION .....	24
XVI.	DISPUTE RESOLUTION.....	25
XVII.	PENALTIES.....	26
XVIII.	FORCE MAJEURE.....	29
XIX.	RESERVATION OF RIGHTS.....	31
XX.	OTHER CLAIMS .....	32

**XXI. COST ESTIMATES AND FINANCIAL ASSURANCE ..... 32**

**XXII. INDEMNIFICATION ..... 33**

**XXIII. MODIFICATION OF THIS AOC ..... 33**

**XXIV. ADDITIONAL WORK ..... 33**

**XXV. TERMINATION AND SATISFACTION ..... 34**

**XXVI. SEVERABILITY ..... 34**

**XXVII. NOTICE..... 34**

**XXVIII. EFFECTIVE DATE..... 36**

**ATTACHMENTS**

- A. Statement of Work**
- B. Facility Map**
- C. Legal Description of Facility**
- D. List of AOCS/SWMUs**
- E. Financial Assurance**

## I. INTRODUCTION

1. This Administrative Order on Consent ("AOC") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and Respondents Frontier El Dorado Refining LLC ("Frontier") and Equilon Enterprises LLC d/b/a Shell Oil Products US ("SOPUS") for the performance of work to investigate and remediate releases of solid wastes and hazardous wastes or hazardous constituents, and to perform Interim Measures related to same, at or from the Frontier petroleum refinery addressed at 1401 Douglas Road, El Dorado, Kansas. This work is described in the Statement of Work ("SOW") and Section VIII (Work to be Performed), and includes any Additional Work that may be required by Section XXIV (Additional Work) of this AOC, of Respondents in connection with the Facility.
2. In entering into this AOC, the mutual objectives of EPA and Respondents are for Respondents to perform the following work to investigate and address environmental impacts of contamination originating at or from the Facility, in accordance with the terms and conditions of this AOC and the Statement of Work attached hereto as Attachment A:
  - a. To prepare a Facility Sampling and Analysis Plan ("SAP"), Quality Assurance Project Plan ("QAPP") Plan, and Health and Safety Plan;
  - b. To perform and/or continue "Interim Measures" as necessary to investigate, control, abate or mitigate threats to human health or the environment that are potentially posed by releases of solid and/or hazardous wastes and/or hazardous constituents during the period in advance of implementation of final corrective measures at the Facility. The parties anticipate that such interim measures may be incorporated into, be part of, and consistent with any final corrective measures;
  - c. To provide a Current Conditions Report ("CCR") that provides (1) all available information describing the past and present use of and/or releases of known solid and/or hazardous wastes and/or hazardous constituents at or from the Facility, and (2) a summary and evaluation of the effectiveness of the current remediation, recovery and monitoring systems in place at the Facility;
  - d. To establish and maintain financial assurance for the benefit of the EPA, in order to secure the completion of the Work required by this AOC, in accordance with the terms, schedule and conditions set forth in Section XXI of this AOC;
  - e. To perform a focused RCRA Facility Investigation ("RFI"), including a human health and screening ecological risk assessment; and
  - f. To perform a Corrective Measures Study ("CMS") to identify and evaluate alternatives for corrective measures necessary to prevent, mitigate, and/or remediate any migration or release of solid and/or hazardous wastes or hazardous

constituents at or from the Facility.

3. Respondents' agreement to and participation in this AOC shall not constitute or be construed as an admission of liability. Respondents neither admit nor deny the factual allegations and neither admit nor deny the legal conclusions set forth in this AOC (Sections V- EPA's Findings of Fact and VI- EPA's Conclusions of Law and Determinations).
4. EPA and Respondents acknowledge that this AOC has been negotiated by the parties in good faith.

## **II. JURISDICTION**

5. This AOC is issued under the authority vested in the Administrator of EPA by Section 3008(h) of RCRA, 42 U.S.C. §§ 6928(h), which authority has been delegated to the Regional Administrators of EPA by Delegations Nos. 8-31 and 8-32 (April 16, 1985), 8-22-A and 8-22-C (April 20, 1994), and redelegated to the Director, Air and Waste Management Division of EPA, Region 7, by Delegations R7-8-032, R7-8-022-A and R7-8-022-C, dated January 1, 1995, and revised September 16, 2007.
6. Respondents agree to undertake and complete all actions required by the terms and conditions of this AOC. In any action by EPA, or the United States (on behalf of EPA) to enforce the terms of this AOC, Respondents consent to and agree not to contest the authority or jurisdiction of the EPA to issue or enforce this AOC, and agree not to contest the validity of this AOC or its terms or conditions, provided that such agreement does not extend to any proceeding other than a proceeding to enforce this AOC and a subsequent administrative or judicial appeal of any enforcement action arising under this AOC, and provided further that the Respondents reserve the right to utilize the dispute resolution provisions of the AOC regarding EPA's interpretations and decisions pursuant to this AOC. For purposes of clarity, Respondents' consent and agreement to not contest the authority, jurisdiction and/or validity of this AOC is specific to and for purposes of this AOC only, and is not binding or admissible in any other matter, issue or proceeding.

## **III. PARTIES BOUND**

7. This AOC shall apply to and be binding upon EPA, and on Respondents and Respondents' officers, directors, employees, agents, authorized representatives, successors, assigns, trustees, receivers, including but not limited to contractors and consultants acting on behalf of Respondents. Any change in the ownership or corporate status of Respondents including, but not limited to, any transfer of assets shall not alter Respondents' responsibilities under this AOC.
8. Respondents shall provide a copy of this AOC to any subsequent owners or successors of Respondents before a controlling interest in ownership rights, stock, or assets of

Respondents is transferred. Respondents shall be responsible for and liable for completing all of the activities required pursuant to this AOC, regardless of whether there has been a transfer of ownership or control of the Facility or whether said activities are to be performed by employees, agents, contractors, subcontractors, laboratories, or consultants of Respondents. If a copy of this AOC has not already been provided, Respondents shall provide a copy of this AOC within **21 days** of the Effective Date of this AOC, or the date that such services are retained, to all contractors, subcontractors, laboratories, and consultants that are retained to conduct or monitor any portion of the Work performed pursuant to this AOC. Respondents shall condition all contracts or agreements with contractors, subcontractors, laboratories, and/or consultants in connection with this AOC on general compliance with applicable law and compliance with the terms of this AOC.

9. Not later than **30 days** prior to any voluntary transfer by Respondents of any interest in the Facility, (except for a change in a non-controlling stock interest in Respondents), Respondents shall notify EPA of the proposed transfer. In the event Respondents obtain a real property ownership interest in areas that are not part of the Facility, but are contiguous to the Facility (as described by Attachment C), not later than **30 days** prior to such acquisition by Respondents of any interest in such property, Respondents shall notify EPA of the proposed acquisition. The parties may shorten this period by mutual agreement. In the case of a voluntary transfer through a bankruptcy of either Respondent, Respondents shall notify EPA within **three business days** after receipt of notice of the decision to transfer property. Respondents shall notify EPA of any involuntary transfers immediately upon either Respondent's initial receipt of notice of any involuntary transfer. Not later than **three business days** after any transfer, Respondents shall submit copies of the transfer documents to EPA.
10. The Parties to this AOC acknowledge that the Kansas Department of Health and the Environment ("KDHE") and Texaco Refining & Marketing, Inc., have been parties to the August 31, 1988 consent order No. 87-E-26. It is also the understanding of the parties to this AOC that all future corrective action at the Facility will be conducted pursuant to this AOC rather than under corrective action requirements of the State of Kansas.

#### IV. DEFINITIONS

11. Unless otherwise expressly provided herein, terms used in this AOC that are defined in the RCRA statute shall have the meaning assigned to them in that statute or associated regulations and published RCRA corrective action guidance. Whenever the terms listed below are used in this AOC the following definitions apply:
  - a. "AOC" or "Order" shall mean this Administrative Order on Consent, any approved amendments and attachments thereto, and any documents incorporated by reference into this AOC as approved deliverables under this AOC.

- b. "Area of Concern" shall mean a specified area of the Facility, as designated pursuant to the terms of this Order, other than RCRA-regulated units, and solid waste management units (SWMUs), encompassing spill areas or other areas of contamination.
- c. "Business Day" shall mean a day other than a Saturday, Sunday or Federal holiday.
- d. "Data Quality Objectives" shall mean those qualitative and quantitative statements derived from the outputs of a scientific and legally defensible data collection planning process.
- e. "Day" shall mean a calendar day unless expressly stated otherwise. If the last day of any time period imposed under this AOC falls on a Saturday, Sunday, or federal holiday, then the last day of the applicable period shall be the following Business Day.
- f. "Effective Date" shall be the date specified in Section XXVIII of this AOC.
- g. "Facility" shall mean the Frontier El Dorado Refining LLC refinery located in El Dorado, Kansas, and all contiguous property under the control of Frontier El Dorado Refining LLC. Attachment C to this AOC sets forth the legal description of the Facility.
- h. "Interim Measures" or "IM" shall mean those corrective measures to address releases of solid or hazardous wastes and/or hazardous constituents at and/or from the Facility which have been, or can be initiated in advance of implementation of the final corrective measures for the Facility.
- i. "Material defect" shall mean the failure of a submittal to respond to EPA's comments, or a bad faith lack of effort to submit an acceptable deliverable.
- j. "RCRA" shall mean the Resource Conservation and Recovery Act (also known as the Solid Waste Disposal Act), as amended, 42 U.S.C. § 6901, *et seq.*
- k. "RCRA Facility Investigation" or "RFI" shall mean the investigation and characterization of the source(s) of contamination and the nature, extent, direction, rate, movement and concentration of the source(s) of contamination and releases of hazardous waste, including hazardous constituents, which have been or are likely to be released into the environment from the Facility as described in more detail in the SOW.

- l. “Respondents” shall mean Respondent Frontier El Dorado Refining LLC (“Frontier”), a limited liability company organized pursuant to the laws of the State of Delaware and authorized to do business in the State of Kansas, and Respondent Equilon Enterprises LLC d/b/a Shell Oil Products US (“SOPUS”), a limited liability company organized pursuant to the laws of the State of Delaware and authorized to do business in the State of Kansas.
- m. “Solid Waste Management Unit” or “SWMU” shall mean any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at the Facility at which solid wastes have been routinely and systematically released. The definition includes units (i.e., landfills, surface impoundments, waste piles and land treatment units) subject to regulation under RCRA.
- n. “SOW” shall mean the Statement of Work marked as Attachment A to this AOC.
- o. “Work” shall mean all the activities and requirements specified in this AOC including, but not limited to the SOW and in Sections VIII (Work to Be Performed) and XXIV (Additional Work) of this AOC.
- p. “Work Plan” shall mean documents designated as a work plan in this AOC, or SOW (not including QAPP/SAP/HSP).

**V. EPA’S FINDINGS OF FACT**  
**Site Background**

- 12. Respondent Frontier El Dorado Refining LLC (“Frontier”) is a limited liability company organized pursuant to the laws of the State of Delaware and authorized to do business in the State of Kansas.
- 13. Respondent Equilon Enterprises LLC d/b/a/ Shell Oil Products US (“SOPUS”) is a limited liability company organized pursuant to the laws of the State of Delaware and authorized to do business in the State of Kansas.
- 14. The Facility is located at the southwestern corner of the City of El Dorado, Butler County, Kansas, as illustrated and described in Attachments B and C to this Order, respectively. The entire Facility encompasses greater than 1,000 acres of land. Surrounding land uses include agriculture, residential properties, light industrial and other bulk petroleum storage and transmission facilities.
- 15. The Facility is bounded by Southwest Trafficway to the north, by the Walnut River to the east, by Constant Creek to the northeast, and by Salt Creek to the west. The Walnut River and Constant and Salt Creeks flow generally south. The Walnut River receives



groundwater flow from the eastern half of the Facility. Constant Creek is a perennial stream fed by streams and springs north of the plant. Constant Creek receives groundwater from the northeastern quadrant of the Facility. Salt Creek is an ephemeral stream which occasionally ceases to flow during the late fall and winter. Salt Creek receives groundwater from the western portion of the Facility.

16. The Walnut River is also the receiving stream for wastewater treated and discharged pursuant to Frontier's National Pollutant Discharge Elimination System (NPDES) Permit.
17. The refinery at the Facility was first built by Midland Refining Co. in the mid 1910's and purchased by the Skelly Oil Company in 1922, and has been in existence and continuously operated since that time. Through various corporate changes, Texaco entities later owned and operated the facility, and in 1998 those Texaco entities formed the joint venture named "Equilon" with Shell entities. In November 1999, the refinery was sold to Frontier El Dorado Refining Company, now Frontier El Dorado Refining LLC. Frontier continues to own and operate the Facility today. Shell entities purchased Texaco's interest in Equilon in 2003, and established the entity's name as Equilon Enterprises LLC d/b/a Shell Oil Products US, or SOPUS.
18. The refinery at the Facility produces motor fuels, residential fuel oils, and petroleum coke for sale, among other products.

#### **Regulatory History**

19. From 1980 to the present, the Facility has been operated as a large quantity generator of hazardous wastes which have included, but are not limited to, characteristic and listed hazardous wastes identified as: D007, D008, F037, F038, K048, K049, K050, K051, K052 (as set forth in 40 C.F.R. §§ 261.24, 261.31, and 261.32).
20. On August 8, 1980, pursuant to the requirements of Section 3010(a) of RCRA, 42 U.S.C. § 6930(a), the Facility (Getty) notified EPA of its status as a generator and owner/operator of treatment, storage, and/or disposal facility for hazardous waste. This notification was confirmed by EPA on October 30, 1980, and the Facility was assigned EPA identification number KSD007233422.
21. On August 8, 1980, and October 9, 1980, Getty submitted initial Part A Hazardous Waste Permit applications ("Part A application") for the Facility to EPA, pursuant to Section 3005(e) of RCRA, 42 U.S.C. § 6925(e). In these Part A applications, Getty identified the generation of both "characteristic" and "listed" hazardous wastes (K022, K048-52, and various "U" listed wastes), and identified three surface impoundments (the industrial landfill and the two slop oil pits at the wastewater treatment area) as regulated "treatment, storage and disposal" units.

22. A partial list of Solid Waste Management Units ("SWMUs") at the facility, as identified by EPA, is attached hereto as Attachment D (List of AOCs/SWMUs). A partial list of SWMUs, or areas that have managed solid and/or hazardous wastes, and a description of the solid waste, hazardous waste, and/or hazardous constituents managed in each is presented below:
- a. Slop Oil Pits: Two "slop oil" earthen storage pits were operated at the wastewater treatment facility through at least December 1989.
  - b. Industrial Landfill: The landfill is an unlined land disposal facility. From 1980 through 1989, the landfill received a combination of sludges, inclusive of leaded tank bottoms, slop oil emulsion solids, heat exchanger bundle cleaning sludges, dissolved air floatation unit solids, petroleum impacted soils, tank bottom sludges, and other oily wastes. This landfill is planned for closure by the State of Kansas as a solid waste landfill.
  - c. Leaded Tank Bottom Burial Areas: Until at least 1970, leaded tank bottoms from tanks containing leaded gasoline, formulated with tetraethyl lead, were buried adjacent to such tanks throughout the Facility.
  - d. Heat Exchanger Bundle Sludge Cleaning Areas: In the 1980s and 1990s, KDHE RCRA inspections documented that heat exchanger bundles were cleaned on pads located adjacent to process units.
  - e. Cooling Tower Blowdown/Sludge Disposal Areas: The Facility's cooling towers used chromium-based corrosion inhibitors through at least 1996. Blowdown and/or sludges from these cooling towers was released or placed into areas adjacent to the towers and/or washed into the Facility drainage system, which consisted of a network of unlined ditches until at least 1991.
  - f. Former Unlined Equalization Basin: The former Equalization Basin was operated as an unlined surface impoundment that received inflow from the former API Separator. The Equalization Basin operated until approximately 1990-91.
  - g. Former Unlined Complete Mix Activated Sludge ("CMAS") Basin: The Facility wastewater treatment facility includes a CMAS basin. This basin was unlined through at least the summer of 1990.
  - h. Ditches, Sewers, Boxes, and Traps: A network of ditches, sewers, boxes, and traps has been utilized at the Facility to route process wastewaters to the wastewater treatment plant. During the Facility's history, this network has been continuously altered to accommodate changes in Facility operations. Unlined surface ditches were historically used for conveyance of both process wastewater during dry weather and stormwater during wet weather. Texaco reported to EPA

that in 1991 and 1992 it separated process water from stormwater conveyances and enclosed all process water conveyances.

- i. **Stormwater Flumes:** Located directly in front of the API Separator, the Facility has two concrete lined flumes that historically received both process wastewater and stormwater. The flumes have received process wastewater and sludges that include, but are not limited to, cooling tower blowdown and sludges, slop oil emulsion solids, heat exchanger bundles sludge, leaded tank bottoms, and primary sludges.
- j. **Main Stormwater Pond:** Located north of the Facility wastewater treatment facility and the API separator, the stormwater pond has received overflows from the Stormwater flume during high flows in the wastewater treatment system.

### **Site Area Geology**

23. The Facility lies in the Flint Hills Uplands physiographic province along the Walnut River valley. Soils beneath the Facility consist primarily of the Verdigris-Brewer-Norge association, composed of nearly level to sloping, deep soils that have a silt loam or silty clay loam surface layer and a silty clay loam or silty clay subsoil and occur on flood plains and terraces. Soils in the northwestern portion of the Facility include those of the Dwight-Labette association, composed of similar, thinner soils that form on uplands.
24. Geologic structure at the Facility relates to the Nemaha Arch, a major structural dome trending north to south across the State of Kansas and located west of the Facility. Small scale normal faults, joints, and folds are common around the Facility, due in part to the proximity of the Nemaha Arch. The Facility is situated on a shallow syncline along the east limb of the arch, which is cross-folded by a subdued east-west-trending anticline. As a result of these structures, several formations subcrop beneath the shallow Quaternary alluvial and terrace deposits at the Facility, including the Holmesville Shale, three members of the Fort Riley Limestone, and the Florence Limestone.
25. Area groundwater is recharged from highlands located north of the Facility. Groundwater discharges into Salt Creek, Constant Creek, and the Walnut River. The uppermost water bearing zone underlying some portions of the Facility consists of shallow Quaternary unconsolidated deposits ranging from clay on the upland portions of the Facility to coarse gravel deposits along the Walnut River course. The thickness of the unconsolidated deposits ranges from less than five feet to greater than 30 feet across the Facility. The unconsolidated deposits and the underlying Holmesville Shale, Fort Riley Limestone, and Florence Limestone units, each of which subcrops in different parts of the Facility, are hydraulically interconnected. No aquitards have been identified that would separate or isolate water bearing zones within the various formations immediately underlying the Facility. Joint and fracture permeability causes the shallow groundwater in the various formations to behave as a single water-bearing zone.

26. Groundwater flow generally parallels the slope of the land surface. The depth to groundwater is generally between 10 and 20 feet below ground surface at the Facility, but locally ranges from less than five to more than 30 feet below ground surface. Groundwater levels typically fluctuate up to four feet seasonally and are artificially depressed in areas with operating remediation systems.
27. Shallow groundwater in the vicinity of the Facility is employed for domestic water supply, domestic irrigation, and livestock watering, although the majority of water users in the area obtain their domestic water supply from the city of El Dorado or from rural water district suppliers. The city of El Dorado obtains its water supply from the El Dorado Reservoir located northeast of the city, upgradient and upriver from the Facility.

#### **Summary of Previous Environmental Investigations and Remedial Actions**

28. In 1977, Barnett, Stuart, and Dow, Inc. performed a detailed hydrogeologic investigation of the Facility. Following that investigation, groundwater pumping wells were installed at the facility in 1978 to reduce the amount of light non-aqueous phase liquid (LNAPL) migrating through the subsurface to the Walnut River.
29. In 1981, Getty began construction of an "oil retention barrier" on the east side of the refinery consisting of an iron sheet wall and groundwater/hydrocarbon recovery wells (East Side system). The East Side system became operational in 1983 and currently remains in operation.
30. In 1985, Texaco began construction of a groundwater containment system on the west side of the refinery east of Salt Creek. The West Side system began operation in 1987. The system consists of a reinforced concrete wall, approximately 5,800 feet in length, and five recovery wells. The recovery wells were designed to depress the water table by pumping and removing LNAPL. Impacted groundwater produced by the system is routed to the facility wastewater treatment plant for treatment prior to discharge. Two additional recovery wells have been added to enhance the effectiveness of the containment system since its original construction.
31. In 1989, Texaco installed the "east side interceptor trench," also known as the Santa Fe Sump, to remove LNAPL from the water table under the railroad corridor upgradient of the main stormwater pond in the northeastern portion of the Facility. The Santa Fe Sump continues to operate.
32. In 1989, Texaco began recovering LNAPL from beneath the oxidation ponds downgradient of the industrial landfill. That recovery well is no longer in use as of the effective date of this order. In 1990, Texaco added two LNAPL and dissolved-phase hydrocarbon recovery trenches, INT-1 and INT-2, between the landfill and the oxidation ponds in response to significant product thicknesses encountered on the water table

beneath the landfill and the oxidation ponds. Those systems are currently not in use because the presence of LNAPL has not been detected in this area during recent groundwater monitoring events.

33. Beginning in 1989, Texaco also converted several additional wells and sumps to recover impacted groundwater and LNAPL in the tank farm and office areas of the Facility. As of the effective date of this Order, approximately 37 recovery wells and two interceptor trenches are operating in the tank farm area in the northern portion of the Facility to recover LNAPL from the subsurface.
34. Also in 1990, Texaco completed a "North Property Field Investigation" at the request of KDHE to evaluate impacted groundwater and LNAPL beyond the Facility north property boundary. Attribution of the source of off-site impacts in this area has remained in dispute between the Facility and the owners/operators of adjacent petroleum storage and transmission facilities to the north of the Facility.
35. Correspondence between KDHE and Texaco in the early 1990s documents the presence of impacted groundwater beyond the Facility boundary to the west of Haverhill Road. RWD#2 was required to relocate the water supply lines outside of the known areas of impacted subsurface soils.
36. In 1996 and 1997, Texaco conducted investigation and groundwater modeling activities in the "Northeast Area" of the Facility to evaluate the potential for LNAPL and dissolved-phase hydrocarbon impacts in that area to migrate beyond the Facility property boundary. Additional investigation activities were performed in this area in 2005, 2006, 2008, and 2009. While the Kansas State Cooperative Program has previously acknowledged that the Facility is not the source, evaluation of the source(s) of impacts is ongoing.
37. As of the effective date of this Order, the Facility is operating the Santa Fe Sump, recovery well MW-148, and Interceptor Trenches INT-4, INT-6, and INT-7 in the "Northeast Area" to recover LNAPL from groundwater and to attempt to prevent migration of constituents of concern to the northeast, beyond the Facility property boundary.
38. From 1996 to 1998, at KDHE's direction, Texaco conducted a series of investigations in the "Well 88" area south of the East Side containment system to evaluate whether impacted groundwater was migrating to the Walnut River around the south end of the barrier.
39. Spills of petroleum hydrocarbons and other chemicals are known to have occurred at the Facility. The ongoing impact of such spills on subsurface soils and groundwater has not been fully characterized.

40. Groundwater and surface water monitoring has been conducted at the Facility since August 31, 1988. The results of this monitoring have demonstrated the presence of "dissolved phase" constituents of concern in groundwater at the Facility, including volatile organic compounds, semi-volatile organic compounds, and metals at levels above Maximum Contaminant Levels (MCLs).
41. Routine sampling of surface water from Constant Creek, Salt Creek, and the Walnut River is also conducted by Facility representatives. Since 2000, surface water monitoring has detected the presence of constituents of concern in these surface waters at low levels.
42. Over the years, the focus of the groundwater management program at the Facility has been boundary control, containment, monitoring, and hydrocarbon recovery.
43. The groundwater monitoring network consists of approximately 235 observation and recovery wells and five surface-water gauging stations. Fluid levels are gauged semiannually at all wells and surface-water gauging stations. The network includes approximately 60 groundwater and hydrocarbon recovery wells and interceptor trenches. Approximately 25 wells located around the perimeter of the refinery and five surface-water locations are sampled quarterly.
44. From the northern Facility border groundwater generally follows topography and flows to the south, west, and east. Hydraulic depressions (changes in groundwater flow) are created by the recovery wells.
45. A primary goal of the Facility groundwater management program has been, and continues to be, containment and recovery of LNAPL and removal and treatment of impacted groundwater. Since 1981, two physical barriers, 29 recovery wells, eight interceptor trenches, and one air-sparge/vapor extraction (AS/VE) system have been installed along the property boundaries. The physical barriers consist of a sheet-pile barrier and associated recovery wells located adjacent to the Walnut River along the east side of the refinery, and a concrete barrier wall and associated recovery wells located adjacent to Salt Creek along the west side of the refinery. Both barrier systems were keyed into underlying bedrock. Most of the recovery wells and interceptor trenches in the interior of the Refinery are located in the Tank Farm and surrounding areas (northwest and north-central part of the refinery). Two interceptor trenches were constructed in the southern part of the refinery in the early 1990s to recover LNAPL, but have been shut down because LNAPL was no longer detected. In addition to the active recovery wells, there is an ongoing "well slurping" program by which LNAPL is removed from wells with LNAPL thickness greater than one foot with a vacuum truck on a weekly basis.
46. Recovered hydrocarbon and groundwater volumes are recorded on a weekly basis. Since 1988, approximately 200,000 barrels of hydrocarbon have been recovered. The recovered hydrocarbon is reintroduced into the refining process. Currently,

approximately 20,000 to 30,000 barrels of groundwater are recovered each week. The recovered groundwater is treated through the refinery's NPDES-permitted wastewater treatment system. A marked decline in recovered hydrocarbon volume has been observed over the past 4 years. Hydrocarbon production decreased from approximately 13,000 barrels per year in 2006 to 10,000 barrels in 2007 (25 percent decline); 10,000 barrels in 2007 to 3,500 barrels in 2008 (65 percent decline); and 3,500 barrels in 2008 to 1,000 barrels in 2009 (70 percent decline) and 1,000 barrels in 2009 to 400 in 2010 (60 percent decline). Throughout this period, the same number of recovery systems was active. Between 2006 and 2010 a 97 percent decline in recovered hydrocarbon volume occurred. This decline in hydrocarbon production is attributed by Respondents to the effectiveness of the remediation systems, the years spent running those systems, and source control.

47. Approximately 25 wells located around the perimeter of the Facility and 5 surface water locations are sampled quarterly for benzene, ethylbenzene, toluene, xylenes, methyl tert-butyl ether, and gasoline-range and diesel-range total petroleum hydrocarbons; select wells and surface water locations are also sampled for arsenic and lead. Certain volatile organic compounds, semi-volatile organic compounds, and metals were recently dropped from the parameter list with KDHE approval because they have not been detected. Four additional surface water monitoring locations are sampled monthly for benzene, ethylbenzene, toluene, and xylenes. In 2006 and 2007, an expanded network of wells was sampled at KDHE's request to evaluate the adequacy of the monitoring network.

#### **Constituents of Concern**

48. The major known constituents of concern released at, or from, the Facility include, but are not limited to: benzene, lead, hexavalent chromium, toluene, ethylbenzene and xylenes (The term "constituents of concern," as used in this AOC, is not limited to these listed major known constituents). The potential health and/or environmental threat of the solid and/or hazardous wastes and/or hazardous constituents that may have been released from the Facility is documented in EPA's administrative file record for this AOC and may also be found in EPA's Integrated Risk Information System ("IRIS") and the Agency for Toxic Substances and Disease Registry ("ASTDR") found at the following internet sites: [www.epa.gov/iris/index.html](http://www.epa.gov/iris/index.html) and [www.atsdr.cdc.gov/toxfaqs/index.asp](http://www.atsdr.cdc.gov/toxfaqs/index.asp).

#### **Potential Receptors**

49. Potential exposure pathways of the hazardous wastes and/or hazardous constituents managed and/or released at the Facility include, but are not limited to, the following:
  - a. Groundwater: Groundwater beneath and in the area of the Facility is impacted by volatile and semi-volatile organic compounds as well as metals. Any water produced from wells installed into the impacted water-bearing zones beneath the Facility or in adjacent properties could result in exposures to impacted water

through ingestion, inhalation of fugitive vapors, or dermal contact. Impacted groundwater also poses a significant potential threat to Constant Creek, Salt Creek, and the Walnut River and associated ecological receptors and human users.

- b. **Indoor Air Contamination:** The potential migration of volatile organic compound contaminant vapors from impacted soil and groundwater to the indoor air of occupied structures could pose risk to occupants of such structures.
- c. **Surface Water:** Persons and ecological receptors could be exposed to surface water runoff impacted by contact with soil contamination at the Facility.
- d. **Soil:** Persons at the Facility or persons working or living in areas where soil contamination is present outside the Facility could be exposed to impacted surface and subsurface soils
- e. **Ecological Receptors:** In addition to potential ecological receptors associated with the creeks and river adjacent to the Facility, impacted surface and subsurface soil, surface water runoff, and fugitive vapors could result in exposures to wildlife throughout undeveloped areas that constitute potential habitat at the Facility. If further corrective measures are not implemented at the Facility to protect human health and the environment, the hazardous waste and/or hazardous constituents released into the environment may persist and may migrate off the Facility property.

## **VI. EPA'S CONCLUSIONS OF LAW AND DETERMINATIONS**

50. Based on the Findings of Fact set forth above, and an administrative record supporting this AOC, EPA has determined that:
- a. Respondents Frontier and SOPUS are each a "person" as defined in Section 1004(15) of RCRA, 42 U.S.C. § 6903(15).
  - b. Certain wastes and constituents thereof found at the Facility are solid and/or hazardous wastes and/or hazardous constituents as defined by Section 1004(5) of RCRA, 42 U.S.C. § 6903(5), Section 3001 of RCRA, 42 U.S.C. § 6921 and 40 C.F.R. Parts 260 and 261.
  - c. There is or has been a release of solid wastes and/or hazardous wastes into the environment from the Facility.
  - d. Respondents are, or have previously been, each an owner and/or operator of the Facility. The Facility has previously been authorized to operate, or should have



been authorized to operate under the interim status requirements of RCRA, pursuant to Section 3005(e) of RCRA, 42 U.S.C. § 6925(e)

- e. Respondents have each contributed to the generation, handling, storage, treatment, or disposal of solid and/or hazardous wastes at the Facility that resulted in releases of solid and hazardous wastes and hazardous constituents into the environment.
- f. The actions required by this AOC may be necessary to protect human health and/or the environment.

## VII. ORDER ON CONSENT

- 51. Based upon EPA's review of the available record for the Facility and Sections V (EPA's Findings of Fact) and VI (EPA's Conclusions of Law and Determinations) set forth above, and in consideration of the promises set forth herein, the following is hereby agreed to and ordered. Respondents shall comply with all provisions of this AOC, including, but not limited to, all attachments to this AOC and all documents incorporated by reference into this AOC as approved deliverables under this AOC.
- 52. Respondents shall ensure the financing of, and performance of, the Work required by this AOC and SOW; in accordance with the plans, standards, specifications and schedules set forth in this AOC, or as developed by Respondents and approved by EPA pursuant to this AOC and the SOW.

## VIII. WORK TO BE PERFORMED

- 53. Project Coordinators. On or before **10 days** after the Effective Date of this AOC, Respondents shall designate a Project Coordinator and notify EPA in writing of the name, address, phone number, email address, and qualifications of this Project Coordinator. The EPA Project Coordinator shall be EPA's designated representative for the Site. The EPA Project Coordinator will be Kurt Limesand: address - U.S. EPA, Region 7, AWMD/RCAP, 901 N. 5<sup>th</sup> Street, Kansas City, Kansas 66101; telephone (913) 551-7184; email, limesand.kurt@epa.gov. EPA may also designate an Alternate Project Coordinator. Each Project Coordinator shall be responsible for overseeing the implementation of this AOC. EPA and Respondents have the right to change their respective Project Coordinators. Respondents must notify EPA in writing at least **five days** prior to any such change unless circumstances require that such change be made sooner and notice is given as soon as possible.
- 54. EPA will approve/disapprove of Respondents' Project Coordinator (original or replacement) based upon the person's qualifications and ability to effectively perform this role. Respondents shall be authorized to proceed with actions necessary to comply with this AOC pending EPA's approval. The qualifications of the persons directing the

Work for Respondents shall be subject to EPA's review and comment for verification that such persons meet minimum licensing, technical background and experience requirements of the EPA.

55. Respondents shall undertake and complete all of the Work in compliance with the requirements of this AOC. All of the Work performed under this AOC shall be under the direction and supervision of Respondents' Project Coordinator and shall be in accordance with the terms of this AOC and the Statement of Work, marked as Attachment A and which is incorporated herein by this reference. On or before **30 days** after the Effective Date of this AOC, Respondents shall notify EPA in writing of the names, and qualifications of the primary persons, consulting firms and laboratories, to be used in carrying out the IM, RFI, CCR, and CMS Work to the extent known at that time. Within **10 days** of retaining new or additional consulting firms to perform the work, the Respondents shall notify EPA of their names and qualifications.
56. Respondents' obligation to perform the Work will begin on the Effective Date of this AOC. The Work undertaken pursuant to this AOC shall be conducted in compliance with all applicable published EPA RCRA corrective action guidance, and with this AOC, subject to EPA approval. EPA shall cooperate with Respondents in any of their voluntary efforts to achieve consistency with the National Contingency Plan.
57. SOW Task IA – Groundwater and Surface Water Monitoring Work Plan, Facility Sampling and Analysis Plan, and Quality Assurance Project Plan: Within **75 days** of the effective date of this AOC, Respondents shall prepare and submit to EPA for review and approval a Groundwater and Surface Water Monitoring Work Plan (GSMWP), a Facility Sampling and Analysis Plan ("SAP") and a Quality Assurance Project Plan ("QAPP") for current monitoring activities at the Facility. Those documents shall be prepared in accordance with Task 1A of the SOW. EPA shall review and provide comments on the GSMWP, and shall review, approve or modify the QAPP and SAP according to Section IX of this AOC (EPA Approval of Deliverables).
58. SOW Task IB – Health and Safety Plan: Within **45 days** of the effective date of this AOC, Respondents shall prepare and submit to EPA a Facility Health and Safety Plan ("HSP") in accordance with Task 1B of the SOW. The HSP is submitted to EPA for documentation purposes and is not approved by EPA.
59. SOW Task II – Quarterly Progress Reports: **30 days** following the end of each calendar quarter (i.e., April 30, July 30, October 30, and January 30) occurring after the effective date of this AOC, and quarterly thereafter, Respondents shall prepare and submit to EPA a Quarterly Progress Report in accordance with Task II of the SOW. EPA shall review and approve or modify the Quarterly Progress Reports according to Section IX of this AOC (EPA Approval of Deliverables).

60. SOW Task III – Interim Measures: Respondents shall perform the following “Interim Measures” in advance of the selection of the final corrective measures at the Facility in accordance with Task III of the SOW and schedules approved pursuant to Work Plans submitted pursuant to the SOW. These deliverables require EPA review and approval pursuant to Section IX of this AOC (EPA Approval of Deliverables):
- a. Upon the effective date of the AOC, Respondents shall incorporate and continue operation of the environmental remediation systems at the Facility that previously were operated under the oversight of the Kansas Department of Health and Environment/Bureau of Environmental Remediation; and
  - b. Within **90 days** of the effective date of the AOC, Respondents shall submit to EPA for review and approval a proposed Interim Measure Hydrocarbon Recovery Work Plan (HRWP). EPA shall review and approve or modify the HRWP according to Section IX of this AOC (EPA Approval of Deliverables). Following EPA’s approval of the HRWP, Respondents shall implement the hydrocarbon recovery interim measures in accordance with the approved HRWP.
61. Additional Interim Measures: In the event Respondents identify an immediate threat to human health and/or the environment, based on a discovery of releases of hazardous waste and/or hazardous constituents, not previously identified, Respondents shall notify EPA’s Project Coordinator orally within **48 hours** of discovery and notify EPA in writing within **7 days** of such discovery summarizing the immediacy and magnitude of the threat(s) to human health and/or the environment. (Newly discovered SWMUs may be reported pursuant to the Quarterly reporting requirements in the SOW.) For the reported threat, such written notice shall include a copy of all release or spill reports submitted to KDHE, and a description of all spill cleanup actions taken under KDHE’s oversight. Within **30 days** of written request of EPA, Respondents shall submit to EPA an IM Work Plan to address such newly discovered conditions, releases, or SWMUs in accordance with the approved SAP/QAPP. If EPA determines that immediate action is required, the EPA Project Coordinator may orally authorize Respondents to act prior to EPA’s receipt of the IM Work Plan.
62. If EPA identifies an immediate or potential threat to human health and/or the environment, discovers new releases of hazardous waste and/or hazardous constituents not previously identified, or discovers solid waste management units not previously identified, EPA will notify Respondent in writing. Within **45 days, or such other time agreed to by the parties**, of receiving EPA’s written notification, Respondents, as necessary and if requested by EPA, shall submit to EPA an IM Workplan prepared in accordance with approved QAPP/SAP that identifies interim measures which will mitigate the threat. If EPA determines that immediate action is required, EPA’s Project Coordinator may orally require Respondents to act prior to Respondents’ receipt of EPA’s written notification.

63. SOW Task IV – Land Disturbance Work Plan: Within **120 days** of the effective date of this AOC, Respondents shall submit to EPA for review and approval a proposed Land Disturbance Work Plan in accordance with Task IV of the SOW. EPA shall review and approve or modify the Land Disturbance Work Plan according to Section IX of this AOC (EPA Approval of Deliverables).
64. SOW Task V – Current Conditions Report: Within **180 days** of the effective date of this AOC, Respondents shall submit a Current Conditions Report (“CCR”) to EPA that provides comprehensive background information of pertinent historical conditions at the Facility, environmental impacts located at or originating from the Facility, and investigative work previously performed at the Facility, in accordance with Task V of the SOW. EPA shall review and approve or modify the CCR according to Section IX of this AOC (EPA Approval of Deliverables).
65. SOW Task VIA – Focused RCRA Facility Investigation: Within **90 days** of receipt of approval or comments from EPA on the CCR, Respondents shall submit a Focused RCRA Facility Investigation Work Plan (RFI Work Plan) that shall propose and describe the work necessary to characterize the nature and extent of contamination at or from the Facility, in accordance with Task VIA of the SOW. The RFI Work Plan shall propose a schedule for completing all requirements of the RCRA Facility Investigation and for submitting a Focused RFI Report. EPA will review and/or approve and/or modify and approve the RFI Work Plan and the Risk Assessment Work Plan, in accordance with Section IX of this AOC (EPA Approval of Deliverables). Respondents may reference and utilize studies, surveys, and data previously prepared and/or collected concerning the Facility and may utilize monitoring wells and other monitoring/data devices as an element of performance of the work required under this AOC. As an individual component of the RFI Work Plan, Respondents shall submit a Risk Assessment Work Plan.
66. Within the timeframes specified in the approved RFI Work Plan, Respondents shall conduct investigations necessary to characterize the facility (Environmental Setting); define the source(s) of contamination (Source Characterization); define the nature and extent of contamination (Contamination Characterization); identify actual or potential receptors (Potential Receptor Identification), and determine the impact(s) of constituents of concern on human health and/or ecological receptors (Risk Assessment). The investigation should result in data of adequate technical quality to support the development and evaluation of the corrective measures alternative(s) during the Corrective Measures Study.
67. SOW Task VIB – RFI and Risk Assessment Reports - Within the times frames specified in the approved RFI Work Plan, Respondents shall submit a RFI Report to EPA for review and approval. Within **75 days** of EPA’s approval of the RFI Report, or other time period approved by EPA, Respondents shall submit a Risk Assessment Report to EPA for review and approval. EPA shall review and approve or modify the RFI Report and Risk

Assessment Report according to Section IX of this AOC (EPA Approval of Deliverables).

68. SOW Task VII - Corrective Measures Study: Within **60 days** following EPA approval of the Risk Assessment Report, Respondents shall submit for EPA approval a Corrective Measures Study (CMS) Work Plan for identifying cleanup alternatives for mitigation of environmental impacts in all affected media and for all exposure pathways, both onsite and offsite. The CMS Work Plan shall be developed in accordance with Task VII of the SOW. EPA will review and/or approve and/or modify and approve the CMS Work Plan in accordance with Section IX of this AOC (EPA Approval of Deliverables).
69. As provided in the approved CMS Work Plan, Respondents shall submit the Corrective Measures Study (CMS) Report detailing the corrective measures alternative(s) evaluation in accordance with threshold and balancing criteria listed in Task VII of the SOW. EPA will review and approve or modify the submittal in accordance with Section IX of this AOC (EPA Approval of Deliverables). The EPA may approve the CMS Report without prejudice to EPA's rights and authority to select final corrective measures different from the corrective measures alternative(s) preferred by Respondents.
70. EPA will provide Respondents and the public an opportunity to review and comment on a Statement of Basis describing EPA's proposed final corrective measures for the Facility, including EPA's justification for proposing such corrective measures

#### **IX. EPA APPROVAL OF DELIVERABLES**

71. Deliverables required by this AOC shall be submitted to EPA for approval or modification pursuant to **Paragraph 72**. All deliverables must be postmarked or otherwise sent to EPA (at the address specified in Section XXVII, Notice) by the due date specified in this AOC or by schedules developed and approved by EPA pursuant to this AOC.
72. After review of any deliverable that is required pursuant to this AOC, EPA will: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies and approve the modified version; (d) disapprove, in whole or in part, the submission, directing that Respondents modify the submission; or (e) any combination of the above. However, EPA will not modify a submission without first providing Respondents at least one notice of deficiency that shall provide specific comments outlining the basis for EPA's determination of deficiency and an opportunity to cure within **10 days** or such longer time as specified by EPA in such notice, except where (i) EPA determines that to do so would cause serious disruption to the Work or (ii) where EPA has disapproved previous submission(s) due to Material Defects and EPA determines that the deficiencies in the submission under consideration indicate failure to respond to EPA's comments, or a bad faith lack of effort to submit an acceptable deliverable.

73. In the event of approval, approval upon conditions, or modification by EPA, pursuant to **Paragraph 72(a), (b), or (c)**, Respondents shall proceed to take any action required by the deliverable, as approved or modified by EPA subject only to Respondents' right to invoke the Dispute Resolution procedures set forth in Section XVI (Dispute Resolution) with respect to the modifications or conditions made by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to **Paragraph 72(c)** and EPA determines the submission has a Material Defect, EPA retains its right to seek stipulated penalties, as provided in Section XVII (Penalties).
74. Resubmission of Deliverable Upon receipt of a notice of disapproval, in whole or in part, pursuant to **Paragraph 72(d)**, Respondent shall, within **10 days** or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. Any stipulated penalties applicable to the submission, as provided in Section XVII (Penalties), shall accrue during the **10 day** opportunity to cure period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a Material Defect as provided in **Paragraphs 72 and 73**.
75. Notwithstanding the receipt of a notice of disapproval pursuant to **Paragraph 72(d)**, Respondents shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Other than the 10 day period to cure defects, Respondents' implementation of any non-deficient portion of a submission shall not relieve Respondents of any liability for stipulated penalties for the deficient portion of the deliverable under Section XVII (Penalties).
76. In the event that a resubmitted deliverable, or portion thereof, is disapproved by EPA, EPA may again require Respondents to correct the deficiencies, in accordance with the preceding Paragraphs. EPA also retains the right to modify or develop the plan, report or other item. Respondent shall implement any action as required in a deliverable which has been modified or developed by EPA, subject only to Respondents' right to invoke the procedures set forth in Section XVI (Dispute Resolution).
77. If upon resubmission, a deliverable is disapproved or modified by EPA due to a Material Defect, Respondents shall be deemed to have failed to submit such deliverable timely and adequately unless Respondents invoke the dispute resolution procedures set forth in Section XVI (Dispute Resolution) and EPA's action to disapprove or modify a deliverable is overturned pursuant to that Section. The provisions of Section XVI (Dispute Resolution) and Section XVII (Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XVII (Penalties), except as otherwise provided in Section IX, **Paragraph 74** of this AOC ("Resubmission of Deliverable").

78. All deliverables required to be submitted to EPA under this AOC, shall, upon approval or modification by EPA, be incorporated into and be enforceable under this AOC. In the event EPA approves or modifies a portion of a deliverable required to be submitted to EPA under this AOC, the approved or modified portion shall be enforceable under this AOC.

#### **X. MODIFICATION OF WORK PLANS**

79. If at any time during the implementation of the Work, Respondents identify a need for a compliance date modification or revision of a Work Plan, Respondents shall submit a written request, with adequate supporting documentation of the need for the modification or revision, to the EPA Project Coordinator. If needed to prevent disruption of Work, such request may be made orally. EPA in its discretion will determine if the modification or revision is warranted and may provide written approval or disapproval. Any approved modified compliance date or Work Plan modification is incorporated by reference into this AOC.

#### **XI. QUALITY ASSURANCE**

80. As provided in Section VIII (Work to be Performed) and the SOW, Respondents shall submit an updated QAPP, for EPA review and approval. The QAPP shall address quality assurance, quality control, and chain of custody procedures for all sampling, monitoring, and analytical activities. Respondents shall follow "EPA Requirements for Quality Assurance Project Plans (QA/R5)" (EPA/240/B-01/003, March 2001), and "Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998), as well as other applicable, published guidance documents. The QAPP shall be incorporated into this AOC by reference.
81. Respondents shall include Data Quality Objectives for any data collection activity to ensure that data of known and appropriate quality are obtained and that data are sufficient to support their intended use as required by this AOC.
82. Respondents shall ensure that laboratories used by Respondents for analysis perform such analysis according to the latest approved edition of "Test Methods for Evaluating Solid Waste (SW-846)" or other methods approved by EPA. If methods other than EPA methods are to be used, Respondent shall specify all such protocols in the applicable Work Plan. EPA may reject any data that does not meet the requirements of the approved Work Plan and EPA analytical methods and may require resampling and additional analysis.
83. Respondents shall ensure that all laboratories used by them for analyses have National Environmental Laboratory Accreditation Program certification. Respondents shall, upon EPA's request, make arrangements for EPA to conduct a performance and quality assurance/quality control ("QA/QC") audit of the laboratories chosen by Respondents,

whether before, during, or after sample analyses. Upon EPA's request, Respondents shall have their laboratories perform analyses of samples provided by EPA to demonstrate laboratory QA/QC and performance. If the audit reveals deficiencies in a laboratory's performance or QA/QC, Respondents shall submit a plan to address the deficiencies and EPA may require resampling and additional analysis.

84. EPA reserves the right to require a change in laboratories for reasons which may include, but shall not be limited to, QA/QC, performance, conflict of interest, or confidential agency audit information. If possible, without revelation of confidential information, EPA agrees to provide a written explanation of any request for laboratory change. In the event EPA requires a laboratory change, and the Respondents are not able to cure any laboratory deficiencies noted for change, Respondents shall propose two alternative laboratories within **30 calendar days of a final determination by EPA for change**. Once EPA approves of the laboratory change. Respondent shall ensure that laboratory service shall be made available within **15 calendar days**.

## XII. DOCUMENT CERTIFICATION

85. Any report or workplan submitted by Respondents pursuant to the SOW, or required for additional IM or Additional Work shall be certified by a Respondents' designated Project Coordinator or a responsible corporate officer of Respondents or other person authorized to provide such certification by a responsible corporate officer by means of a written delegation. A responsible corporate officer means: a president, secretary, treasurer, or vice-president in charge of a principal business function, or any other person who performs similar policy or decision-making functions.
86. The certification required by the preceding paragraph, shall be in the following form:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_



### XIII. SAMPLING, ACCESS, AND DATA AVAILABILITY

87. All results of sampling, testing, modeling or other data generated (including raw data if requested) by Respondents, or on Respondents' behalf, during implementation of this AOC shall be validated by Respondents and submitted to EPA within **45 days** of Respondents' receipt of the data or such other time period approved by EPA. Respondents shall tabulate data chronologically by media (air, soil, groundwater, surface water). EPA will make available to Respondents data generated by EPA for the purposes of oversight of the Work unless it is exempt from disclosure under a government deliberative privilege by any federal or state law or regulation.
88. Respondents shall notify EPA at least **30 days** prior to conducting field sampling, or other time period approved by EPA. At EPA's request, Respondents shall allow split or duplicate samples to be taken by EPA or EPA's representative. EPA shall allow Respondents to split samples of any samples that EPA takes, if sufficient volume exists to allow for split samples.
89. Duty to Provide Information and Facility Access. Respondents shall provide access to the Facility at reasonable times to EPA and EPA's authorized representatives. Respondents shall also provide access at reasonable times to EPA and EPA's authorized representatives to all non-privileged records and documentation in its possession or control, including those records and documents in the possession or control of Respondents' contractors and employees, related to fulfillment of the requirements of this AOC. Respondents shall use their best efforts to gain access to areas owned by or in the possession of someone other than Respondents, as necessary to implement this AOC, as described in **Paragraph 92**. Such access shall be provided to EPA and/or EPA's authorized representatives where Respondents are able to gain access. These individuals, upon showing their official credentials or documentation, shall be permitted to move freely about the Facility and appropriate off-site areas where access has been granted in order to conduct actions relating to EPA oversight of the Work or other compliance with this AOC. EPA and/or EPA's authorized representatives shall notify Respondents of their presence on the Facility by presenting their credentials or documentation of their status as an authorized representative of EPA. All parties with access to the Facility under this Paragraph shall comply with all approved health and safety plans and regulations. EPA shall allow Respondents to split samples of any samples that EPA takes, if sufficient volume exists to allow for split samples.
90. Respondents shall have the right to recommend appropriate, knowledgeable Facility personnel or contractors for interviews performed pursuant to this Section, and to designate a knowledgeable representative to be present during such interviews. EPA and

EPA's authorized representatives reserve the right to request interviews of Facility personnel not recommended by Respondents.

91. Pursuant to this Section, any denial of access to the Facility at reasonable times to any portion of the Facility property where a request for access was made for the purposes of enforcing the requirements of RCRA or this AOC shall be construed as a violation of the terms of this AOC subject to the penalty provisions outlined in Section XVII (Penalties) of this AOC.
92. Access Agreements. Where action under this AOC is to be performed in areas owned by, or in possession of, someone other than Respondents, Respondents shall use their best efforts to obtain all necessary access agreements within **30 days** of approval of any Work Plan, or other longer period approved by EPA, for which access is necessary or as otherwise specified, in writing, by the EPA Project Coordinator. Any such access agreement shall provide for access by EPA and its authorized representatives, upon showing their official credentials, or documentation of being authorized representatives of EPA, to move freely in order to conduct actions related to EPA oversight of the Work or other compliance with this AOC. The access agreement shall specify that Respondents are not EPA's representative with respect to any liabilities associated with activities to be performed. Respondents shall provide EPA's Project Coordinator with copies of any access agreements. Respondents shall immediately notify EPA if after using Respondents' best efforts they are unable to obtain such agreements within the time required. Best efforts as used in this Paragraph shall include, at a minimum, a certified letter from Respondents to the present owner of such property requesting access agreements to permit Respondents, EPA, and EPA's authorized representatives to enter such property and the offer of consideration and/or indemnification for granting access. Respondents shall, within **10 days** of its receipt of a denial of access, submit in writing to EPA, a description of efforts to obtain access. EPA may, at its discretion, assist Respondents in obtaining access. In the event EPA obtains access, Respondents shall undertake the Work on such property.
93. Confidential Business Information Respondents may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this AOC under 40 C.F.R. § 2.203 in the manner described at 40 C.F.R. §2.203(b) and substantiated with the information described at 40 C.F.R. §2.204(e)(4). Information EPA determines is confidential will be given the protection specified in 40 C.F.R. § Part 2. If no such claim or substantiation accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the state without further notice to Respondents, although EPA may notify Respondents and provide Respondents an opportunity to oppose public disclosure. Respondents agree not to assert confidentiality claims with respect to any analytical data or reports required or submitted pursuant to this AOC, or generated pursuant to this AOC.

94. Privileged Documents. In the event that Respondents withhold documents requested by EPA or their authorized representatives on the basis of a claim of privilege, Respondents shall provide a written description of each document withheld that describes the content of the document withheld and the basis of the privilege being claimed. Respondents shall redact and provide all requested non-privileged portions of documents that may be subject to a partial claim of privilege. Nothing herein shall authorize access to, or inspection of, any attorney client communications or material subject to attorney work product immunity. However, no analytical data required under this AOC shall be withheld by Respondents on the basis of a claim of privilege. Subject to the reservations set forth in Section XIX (Reservation of Rights), the obligation to describe privileged documents under this AOC does not apply to (i) attorney client communications; or (ii) attorney work product that does not constitute the basis of any deliverable or data required to be submitted under this AOC.
95. Nothing in this AOC shall be construed to limit EPA's right of access, entry, inspection, and information gathering pursuant to applicable law, including but not limited to Section 3007 of RCRA, 42 U.S.C. § 6927.

#### XIV. COMPLIANCE WITH OTHER LAWS

96. Respondents shall perform all actions required pursuant to this AOC in accordance with all applicable local, state, and federal laws and regulations. Respondents shall timely apply for, and obtain or cause their representatives to obtain all permits and approvals necessary under such laws and regulations to comply with this AOC.

#### XV. RECORD RETENTION

97. Respondents shall preserve all documents and information, including raw data, relating to the Work performed under this AOC, or relating to any solid waste or hazardous waste found at the Facility, for **five years** following completion of the Work required by this AOC.
98. Respondents shall acquire and retain for **five years** following completion of the Work required by this AOC copies of all documents that relate to the performance of the Work required pursuant to the AOC, including historical information describing the Facility (and off-site impacts from the Facility) that are in the possession of its employees, agents, accountants, contractors or attorneys.
99. After the **five year** retention period and **90 days** before any document or information described in **Paragraphs 97 and 98** above are destroyed (e.g., documents relating to work performed under the AOC, including documents subject to claims of privilege, but excluding attorney work product or attorney client communications related to this AOC (See, **Paragraph 94**)), Respondents shall notify EPA that such documents and information are available to EPA for inspection, and upon request, shall provide the

originals or copies (at no extra cost) of such non-privileged documents and information to EPA. Notification shall be in writing and shall reference the effective date, caption, and docket number of this AOC and shall be addressed to the EPA Project Coordinator with a copy to KDHE. In addition, Respondents shall provide non-privileged documents and information retained under this Section at any time before expiration of the retention period at the written request of EPA.

100. All non-privileged documents that relate to Work required to be performed pursuant to this AOC shall be stored by Respondents in a centralized location at the Facility, or an alternative location mutually approved by Respondents and EPA, to promote easy access by EPA or its representatives.

## **XVI. DISPUTE RESOLUTION**

101. Respondents shall raise any disputes concerning the Work required under this AOC to EPA, in writing, within **15 days** after receiving written notice from EPA regarding any aspect of the Work required under this AOC that Respondents dispute. EPA and Respondents shall expeditiously and informally attempt to resolve any disagreements. EPA's and Respondents' Project Coordinators shall first confer in an effort to resolve the dispute and shall schedule a conference call or meeting to discuss the issue(s) in dispute. If the Project Coordinators are unable to meet or informally resolve the dispute within **30 days** of Respondents' notice to EPA, or such longer time agreed to by the parties to the dispute, Respondents shall provide EPA written objections. Written objections shall identify Respondents' objections, state the basis for those objections, and provide all data, analyses and information relied upon by Respondents. EPA and Respondents shall then have an additional **14 days** from EPA's receipt of the objections to reach agreement. If an agreement is not reached within the **14 days**, Respondents may within **10 days** request, in writing, a determination resolving the dispute by EPA Region 7's Regional Judicial Officer ("RJO"). The request should provide all information that Respondents believe is relevant to the dispute. If such request is submitted within **10 days**, the RJO shall thereafter issue a determination in writing. The RJO's final decision shall be incorporated into and become an enforceable part of this AOC and shall no longer be subject to dispute pursuant to this AOC. Respondents shall proceed in accordance with the final decision regarding the matter in dispute, regardless of whether Respondents agree with the decision. If Respondents do not agree to perform or do not actually perform the Work in accordance with the RJO's decision, EPA reserves the right in its sole discretion to conduct the Work itself, seek reimbursement from Respondents, seek enforcement of this AOC, seek stipulated penalties, and/or any other appropriate relief. Any disputes arising under this AOC are not subject to judicial review until such time as EPA seeks to enforce this AOC. If both parties agree in writing to a mutual extension, the time periods in this Section XVI may be extended.

102. If EPA and Respondents reach agreement on the dispute at any stage, the agreement shall be set forth in writing and shall, upon signature of both parties, be incorporated into and become an enforceable part of this AOC.
103. The existence of a dispute and EPA's consideration of matters placed in dispute shall not excuse, toll, or suspend any direct compliance obligation or deadline under dispute and required pursuant to this AOC during the pendency of the dispute resolution process except as agreed by EPA in writing. The invocation of dispute resolution does not stay the accrual of stipulated penalties under this AOC.

## XVII. PENALTIES

104. Stipulated Penalties. Any time Respondents fail to comply with any requirement of this AOC, Respondents shall be liable for stipulated penalties in the amounts set forth in this Section unless a Force Majeure event has occurred as defined in Section XVIII (Force Majeure) and EPA has approved the extension of a deadline as required by Section XVIII (Force Majeure). Compliance with this AOC by Respondents shall include completion of an activity or any matter under this AOC to EPA's satisfaction in accordance with this AOC, and within the specified time schedules approved under this AOC.

- a. For failure to submit to EPA any submittal required by this AOC, including those submittals described in the SOW in Attachment A:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$300	1 <sup>st</sup> through 14 <sup>th</sup> day
\$600	15 <sup>th</sup> through 30 <sup>th</sup> day
\$1,000	31 <sup>st</sup> day and beyond

- b. For failure to use best efforts to obtain off site access agreements, following notice of deficiency from EPA and opportunity to cure, and/or to submit a progress report required by Section VIII (Work to be Performed) of this AOC:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$100	1 <sup>st</sup> through 7 <sup>th</sup> day
\$250	8 <sup>th</sup> day through 21 <sup>st</sup> day
\$500	22 <sup>nd</sup> day and beyond

- c. For failure to complete the work specified in any EPA-approved Work Plan submitted pursuant to Section VIII (Work to be Performed) or required by XXIV (Additional Work) of this AOC:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1 <sup>st</sup> through 14 <sup>th</sup> day
\$1,000	15 <sup>th</sup> through 30 <sup>th</sup> day

\$1,500

31<sup>st</sup> day and beyond

105. Payment shall be due within **60 days** of receipt of a demand letter from EPA. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this AOC. EPA will notify the Respondents that a violation has occurred as soon as EPA becomes aware of the violation.
106. If payment is not made within **60 days** of the date of Respondents' receipt from EPA of a written demand for payment of the penalties or of the date of agreement or decision resolving a dispute, interest shall begin to accrue on any unpaid stipulated penalty balance beginning on the first day after Respondents' receipt of EPA's demand letter, or the date of the agreement or decision resolving the dispute, and will accrue until such penalties and interest have been paid in full. Interest shall accrue at the Current Value of Funds Rate established by the Secretary of the Treasury. An additional penalty of six percent (6%) per annum on any unpaid principal shall be assessed for any stipulated penalty payment which is overdue for **90 days** or more. The applicable rate of interest shall be the rate in effect at the time the interest accrues pursuant to 31 U.S.C. § 3717.
107. Respondents shall make payments by money order, certified check, company check, electronic funds transfer, or cashier's check payable to the Treasurer of the United States within **60 days** of Respondents' receipt of EPA's request, and shall be submitted as provided below:

Check Payments:

U.S. Environmental Protection Agency  
Fines and Penalties  
Cincinnati Finance Center  
P.O Box 979077  
St. Louis, Missouri 63197-9000

Wire Transfers:

Federal Reserve Bank of New York  
ABA = 021030004  
Account = 68010727  
SWIFT address = FRNYUS33  
33 Liberty Street  
New York, NY 10045  
Field Tag 42000 of the Fedwire message should read  
"D 68010727 Environmental Protection Agency"

ACH (Also known as REX or remittance express):

Automated Clearinghouse (ACH) for receiving US currency  
PNC Bank  
808 17<sup>th</sup> Street, NW  
Washington, D.C. 20074  
Contact - Jesse White 301-887-6548  
ABA = 051036706  
Transaction Code 22 - checking  
Environmental Protection Agency  
Account 310006  
CTX Format

Overnight Mail:

U.S. Bank  
1005 Convention Plaza  
Mail Station SL-MO-C2GL  
St. Louis, MO 63101  
Contact: Natalie Pearson 314-418-4087

On Line Payment

[www.pay.gov](http://www.pay.gov)  
Enter SFO 1.1 in the "Search Public Forms" field  
Open form and complete

108. Docket No.RCRA-07-2011-0011 should be clearly typed on the check to ensure proper credit. Respondents shall send simultaneous notices of such payments, including copies of the money order, certified check, company check, electronic funds transfer, or cashier's check to the EPA Project Coordinator and the following:

Regional Hearing Clerk  
U.S. EPA, Region 7  
901 North 5<sup>th</sup> Street  
Kansas City, Kansas 66101

109. Respondents may dispute an EPA determination that it failed to comply with this AOC by invoking the dispute resolution procedures under Section XVI (Dispute Resolution) unless the matter has already been in or is the subject of dispute resolution. Penalties shall accrue but need not be paid during the dispute resolution period. If Respondents do not prevail upon resolution, all penalties shall be due to EPA within **60 days** of resolution of the dispute. If Respondents prevail upon resolution, no penalties shall be paid. In the event that Respondents prevail in part, penalties shall be due on those matters in which Respondents did not prevail.

110. Neither the invocation of dispute resolution nor the payment of penalties shall alter in any way Respondents' obligation to comply with the terms and conditions of this AOC. The stipulated penalties set forth in this Section do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondents' failure to comply with any of the terms and conditions of this AOC.
111. No payments under this Section shall be deducted for federal tax purposes.
112. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this AOC.
113. Civil Penalties. Violation of this AOC may subject Respondents to civil penalties of at least seven thousand five hundred dollars (\$7,500.00) per violation per day. The assessment of penalties are provided for in Section 3008(h) of RCRA, 42 U.S.C. §§ 6928(h), as adjusted pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended by the Debt Collection Improvement Act of 1996, 28 U.S.C. § 2461 note (Most recent adjustment, *Civil Monetary Penalty Inflation Adjustment Rule*, 73 Fed. Reg. 75340, Vol. 73, No. 239, 12/11/08). Should Respondents violate this AOC or any portion hereof, EPA may carry out the required actions unilaterally, pursuant to any applicable authorities, and/or may seek judicial enforcement of this AOC, subject to Respondents' right to cure as provided in this AOC. EPA's recovery of statutory penalties shall be reduced by an amount equal to any stipulated penalties paid for the same violations asserted under this AOC.

#### XVIII. FORCE MAJEURE

114. Respondents agree to perform all requirements under this AOC within the time limits established under this AOC, unless the performance is delayed by a force majeure. For purposes of this AOC, a force majeure is defined as any event arising from causes beyond the control of Respondents, or any entity controlled by Respondents or Respondents' contractors, which delays or prevents performance of any obligation under this AOC despite Respondents' best efforts to fulfill the obligation. The requirement that the Respondents exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event: (1) as it is occurring, and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. Force majeure does not include financial inability to complete the Work, increased cost of performance, or changes in Respondents' business or economic circumstances, or inability to attain media cleanup standards.
115. If any event occurs or has occurred that may delay the performance of any obligation under this AOC, if caused by a force majeure event, Respondents shall orally notify EPA within **three business days** of when Respondents knew that the event might cause a



delay. Such notice shall: (1) identify the event causing the delay, or anticipated to cause delay, and the anticipated duration of the delay; (2) provide Respondents' rationale for attributing such delay to a force majeure event; (3) state the measures taken or to be taken to prevent or minimize the delay; (4) estimate the timetable for implementation of those measures; and (5) state whether, in the opinion of Respondents, such event may cause or contribute to an endangerment to public health or the environment. Respondents shall undertake best efforts to avoid and minimize the delay. Failure to comply with the notice provision of this paragraph and to undertake best efforts to avoid and minimize the delay shall waive any claim of force majeure by Respondents. EPA reserves the right to assert that the Respondents should have known about the potential for, or existence of, a force majeure prior to the point in time that the Respondents claim that they first had such knowledge. Should EPA prevail on this issue, then any delay in notification may be taken into account by EPA in establishing the duration of extension to any performance obligations under this AOC as provided in the next paragraph of this Section. Respondents shall be deemed to have notice of any circumstances of which its contractors had or should have had notice.

116. If EPA determines that a delay in performance or anticipated delay in fulfilling a requirement of this AOC is or was attributable to a force majeure, then the time period for performance of that requirement shall be extended as deemed necessary by EPA. If EPA determines that the delay or anticipated delay has been or will be caused by a force majeure, then EPA will notify Respondents, in writing, of the length of the extension, if any, for performance of such obligations affected by the force majeure. Any such extensions shall not alter Respondents' obligation to perform or complete other tasks required by this AOC which are not directly affected by the force majeure.
117. If EPA disagrees with Respondents' assertion of a force majeure, then Respondents may elect to invoke the dispute resolution provision, and shall follow the procedures set forth in Section XVI (Dispute Resolution). In any such proceeding, Respondents shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that Respondents' best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondents complied with the requirements of this Section. If Respondents satisfy this burden, then EPA will extend the time for performance as EPA determines is necessary.

## XIX. RESERVATION OF RIGHTS

118. Notwithstanding any other provisions of this AOC, the EPA retains all of its authority to take, direct, or order any and all actions necessary to protect public health or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants, or contaminants, or hazardous or solid waste or constituents of such wastes, on, at, or from the Facility, including but not limited to the right to bring enforcement actions under RCRA, CERCLA, and any other applicable statutes or regulations. In accordance with the provisions of this AOC, Respondents retain all applicable claims, rights, and defenses with respect to any actions, including enforcement, available under this AOC or, in other administrative or judicial proceedings, as are available under applicable law. In addition, Respondents retain their right to assert claims, including cost recovery claims under CERCLA, against any third parties with respect to the Facility. This AOC shall not require the Respondents to be responsible for remediating sources of environmental releases located outside the current Facility boundaries on properties that are not, or have not been, owned, controlled, or otherwise affiliated with Respondents.
119. Except as provided in **Paragraph 113** above (Civil Penalties), EPA reserves all of its statutory and regulatory powers, authorities, rights, and remedies, both legal and equitable, which may pertain to Respondents' failure to comply with any of the requirements of this AOC, including without limitation the assessment of penalties under Section 3008(h) and 7003(b) of RCRA, 42 U.S.C. §§ 6928(h) and 6973(b).
120. This AOC shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, powers, claims, and/or authorities, civil or criminal, which EPA has under RCRA, CERCLA, or any other statutory, regulatory, or common law authority of the United States.
121. This AOC is not intended to be nor shall it be construed to be a permit. Respondents acknowledge and agree that EPA's approval of the Work and/or Work Plans does not constitute a warranty or representation that the Work and/or Work Plans will achieve the required cleanup or performance standards. Compliance by Respondents with the terms of this AOC shall not relieve Respondents of their obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.
122. Respondents reserve their rights to disagree with EPA's interpretation of the terms of this AOC, while not contesting the terms themselves or the jurisdiction or validity of this specific AOC, in any subsequent proceeding.
123. Notwithstanding any other provision of this AOC, no action or decision by EPA pursuant to this AOC, including without limitation, decisions of the Regional Administrator, the Director Air and Waste Management Division, or any authorized representative of EPA, shall constitute final agency action giving rise to any right of judicial review prior to

EPA's initiation of a judicial action to enforce this AOC, including an action for penalties or an action to compel Respondents' compliance with the terms and conditions of this AOC.

## **XX. OTHER CLAIMS**

124. By issuance of this AOC, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents. By issuance of this AOC, Respondents assume no liability for injuries or damages to persons or property resulting from any acts or omissions of EPA and/or its authorized representatives. The United States or EPA will not be deemed a party to any contract, agreement or other arrangement entered into by Respondents or its officers, directors, employees, agents, successors, assigns, heirs, trustees, receivers, contractors, or consultants in carrying out actions pursuant to this AOC.
125. Respondents waive all claims against the United States and EPA relating to or arising out of conduct of this AOC, including, but not limited to, contribution and counterclaims, except in cases where EPA seeks reimbursement from Respondents for costs incurred in connection with this AOC.
126. The Parties shall bear their own litigation costs and attorney fees.
127. In any subsequent administrative or judicial proceeding initiated by the EPA or the United States for injunctive or other appropriate relief relating to the Facility, Respondents shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the EPA or United States in the subsequent proceeding were or should have been raised in the present matter.

## **XXI. COST ESTIMATES AND FINANCIAL ASSURANCE**

128. Respondents shall establish financial assurance for the work required by this AOC in accordance with the terms of this AOC and Attachment E to this AOC. As set forth in Attachment E, Respondents shall provide initial and revised Cost Estimates for the Work required by the AOC (including Additional Work under Section XXIV of this AOC) and shall establish, update (including for additional Interim Measures and Work), and maintain financial assurance to insure performance of the Work, subject to EPA's review and approval. Respondents must annually adjust the cost estimate(s) for inflation within **120 days** after the close of the fiscal year of the current owner of the Facility (at this time Respondent Frontier) until the Work required by this AOC is completed.
129. Respondents' inability to post financial assurance for completion of the Work shall in no way excuse performance of any other requirements of this AOC, including, without

limitation, Respondents' obligation to complete the Work in strict accordance with the terms of this AOC.

## **XXII. INDEMNIFICATION**

130. Respondents agree to indemnify, save and hold harmless the United States, its officials, agents, contractors, employees, and representatives from any and all claims or causes of action: (a) arising from, or on account of, acts or omissions of Respondents, Respondents' directors, officers, employees, agents, successors, assigns, heirs, trustees, receivers, contractors, or consultants in carrying out actions pursuant to this AOC; and (b) for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondents and any persons for performance of the Work on or relating to the Facility, including claims on account of construction delays. In addition, Respondents agree to pay the United States, on behalf of EPA, all costs incurred by the United States and EPA, including litigation costs arising from or on account of claims made against the United States and/or EPA based on any of the acts or omissions referred to in the preceding sentence. Respondent shall not be responsible for indemnifying EPA or the United States for claims or causes of action to the extent arising from or on account of acts or omissions of EPA.

## **XXIII. MODIFICATION OF THIS AOC**

131. Except for Modification of Work Plans as provided in Section X, this AOC may only be modified by the mutual agreement of EPA and Respondents. Any agreed modifications shall: be in writing; be signed by all parties; have as their effective date the date on which they are signed by EPA; and be incorporated into this AOC.
132. No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to obtain such formal approval as may be required by this AOC, and to comply with all requirements of this AOC unless it is formally modified. Any deliverables, plans, technical memoranda, reports, specifications, schedules and attachments required by this AOC are, upon approval by EPA, incorporated into and enforceable under this AOC.

## **XXIV. ADDITIONAL WORK**

133. EPA may determine or Respondents may propose that certain tasks are necessary in addition to or in lieu of the tasks required under this AOC when such additional work is necessary to meet the objectives set forth in Section I (Introduction). EPA may determine that Respondents shall perform any additional work and EPA will specify, in writing, the basis for its determination that any additional work is necessary. Within **10 days** after the receipt of such determination, Respondents shall have the opportunity to meet or confer with EPA to discuss any additional work. Respondents shall submit for

EPA approval a Work Plan for any additional work. Such Work Plan shall be submitted within **30 days** of Respondents' receipt of EPA's determination that any additional work is necessary, or according to an alternative schedule established by EPA. Upon approval of a Work Plan for any additional work, and unless Respondents invoke Dispute Resolution pursuant to Section XVI, Respondents shall implement the Work Plan for any additional work and provide Final Reports, both of which must be in accordance with the schedule and provisions contained in the approved Work Plan. The Work Plan for any additional work shall be incorporated by reference into this AOC. If Respondents invoke Dispute Resolution for Additional Work requested pursuant to this section, then notwithstanding any other provision of this AOC, the requirement to perform such work shall be stayed until conclusion of the dispute resolution process.

#### **XXV. TERMINATION AND SATISFACTION**

134. The provisions of this AOC shall be deemed terminated and satisfied by Respondents upon written notice from EPA that Respondents have demonstrated that all of the terms of this AOC, including any additional work as may be performed pursuant to Section XXIV (Additional Work) and any stipulated penalties demanded by EPA under Section XVII (Penalties), have been addressed to the satisfaction of EPA. EPA will not unreasonably withhold its notice of termination. Termination of this AOC shall not terminate Respondents' obligation to comply with: Sections XIII (Sampling, Access and Data Availability); XV (Record Retention); XIX (Reservation of Rights); and XXII (Indemnification) of this AOC, and to maintain any potential institutional and engineering controls. This AOC shall also terminate if its terms are superseded by a subsequent EPA administrative order, EPA permit, or other enforceable document issued by EPA pursuant to 40 C.F.R. § 270.1(c)(7).

#### **XXVI. SEVERABILITY**

135. If a court issues an order that invalidates any provision of this AOC or finds that Respondents have sufficient cause not to comply with one or more provisions of this AOC, Respondents shall remain bound to comply with all other provisions of this AOC not invalidated or determined to be subject to a sufficient cause defense by the court's order unless such other provisions are dependent upon the invalidated provisions or the provisions found to be subject to a sufficient cause defense.

#### **XXVII. NOTICE**

136. Unless otherwise provided in this AOC, all work plans, reports, correspondence, notices, or other submittals relating to or required under this AOC shall be in writing and shall be sent to the EPA Project Coordinator specified in **Paragraph 53**, unless notice is given in writing by EPA to Respondent of a change in address. All correspondence shall include a reference to the case caption EPA Docket No. and the Facility RCRA Identification Number, KSD007233422. Until further written notice is received by Respondents from

EPA, one copy of all final work plans, reports, correspondence, notice, and other deliverables shall be submitted to the KDHE. Reports, correspondence, notices, or other submittals shall be delivered by U.S. Postal Service, private courier service or electronic mail. The date of submittal shall be the date of mailing. For submittals by Respondents made by electronic mail, the date of submittal shall be the date of electronic confirmation of receipt of email delivery. Each report, study, notification or other communication from Respondents and/or EPA, as appropriate, shall be addressed as follows:

As to EPA:

Name: Kurt Limesand, Project Coordinator  
Region 7, USEPA/RCAP  
901 N. 5<sup>th</sup> Street  
Kansas City, Kansas 66101

As to KDHE:

Name: Maggie Weiser  
KDHE/BER  
1000 SW Jackson Street, Suite 410  
Topeka, KS 66612

As to Equilon Enterprises LLC  
d/b/a/ Shell Oil Products US:

Name: Kevin E. Dyer, Principal Program  
Manager  
Shell Oil Products US  
17 Junction Drive, PMB #399  
Glen Carbon, IL 62034

With cc to designated counsel for SOPUS:

Name: Lance Tolson  
Senior Legal Counsel  
Legal Services - Shell Oil  
Cross-Business Regulatory  
AT/HSSE  
910 Louisiana, OSP 4874  
Houston, TX. 77002

As to Frontier El Dorado Refining LLC:

Name: Theresa Wheeler  
Manager - Environmental  
Frontier El Dorado Refining LLC  
1401 Douglas Road, P.O. Box 1121  
El Dorado, KS 67042

With cc to designated counsel for Frontier:

Name: Joseph F. Guida  
Guida, Slavich & Flores, P.C.  
750 N. St. Paul Street, Suite 200  
Dallas, Texas 75201

Any party may change either the notice recipient or the address for providing notices to it identified in this Paragraph by serving all other parties with a notice setting forth such new notice recipient or address.

**XXVIII. EFFECTIVE DATE**

137. This AOC shall be effective when EPA signs this AOC. Within two business days of signing this AOC, EPA will provide Respondents with a copy of the signature page of this AOC signed by the Director, Air and Waste Management Division. The undersigned representatives of parties certify that they are fully authorized to enter into the terms and conditions of this AOC and to bind the respective party they represent to this document. Respondents agree not to contest the validity or terms of this specific AOC, or the procedures underlying or relating to it in any action brought by the United States, including EPA, to enforce its terms or seek penalties for its violation. Respondents retain their right to assert claims against any third parties with respect to this Facility.

Agreed this 21 day of October, 2011

Frontier El Dorado Refining LLC

By:

  
\_\_\_\_\_  
Signature

DAVE LAMP  
\_\_\_\_\_  
Print Name

Executive Vice President - Chief Operating Officer  
\_\_\_\_\_  
Title

\_\_\_\_\_  
Corporation Address

IN THE MATTER OF:  
Frontier El Dorado Refining LLC  
And Equilon Enterprises LLC d/b/a Shell Oil Products US

EPA DOCKET NO. RCRA-07-2011-0011

Agreed this 21 day of October, 2011

Equilon Enterprises LLC d/b/a Shell Oil Products US

By:

  
Signature

Wm E Platt  
Print Name

Sr. Mgr. Env. Chem  
Title

910 Louisiana, Houston, Tx. 77002  
Corporation Address



IN THE MATTER OF:  
Frontier El Dorado Refining LLC  
And Equilon Enterprises LLC d/b/a Shell Oil Products US

EPA DOCKET NO. RCRA-07-2011-0011

It is so ORDERED and Agreed this 27<sup>th</sup> day of October, 2011.

By: 

 \_\_\_\_\_  
Rebecca Weber  
Director, Air and Waste Management Division

EFFECTIVE DATE: 10-27-2011

**Attachment A:**  
**Statement of Work**

**ATTACHMENT A:  
STATEMENT OF WORK**

**INTRODUCTION**

The purpose of this Statement of Work (SOW) for the Frontier El Dorado Refining LLC refinery located in El Dorado, Kansas is to define the requirements, standards and guidelines which shall be followed by the Respondents to accomplish the work required by Administrative Order on Consent RCRA-07-2011-0011 (AOC), in accordance with the schedule and terms set forth in the AOC. All submissions pursuant to this SOW shall be subject to review and/or approval and/or modification by EPA pursuant to Section IX of the AOC. All Work Plans submitted pursuant to the AOC shall, upon final approval by EPA, in whole or in part, be incorporated into and enforceable as an element of the AOC. In summary, this SOW describes the following tasks:

Task IA: Submit a Groundwater and Surface Water Monitoring Work Plan (GSMWP) accompanied by a Facility Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP);

Task IB: Submit a Facility Health and Safety Plan;

Task II: Submit Quarterly Progress Reports;

Task III: Perform the following immediate "Interim Measures" in advance of the selection of the final corrective measures at the Facility in accordance with the SOW and schedules in approved Work Plans submitted pursuant to the AOC and this SOW:

- a. Continue operation of the environmental remediation systems at the Facility that were operated under the oversight of the Kansas Department of Health and Environment/Bureau of Environmental Remediation prior to the pendency of the AOC as "Interim Measures" during the period in advance of implementation of final corrective measures at the Facility, as modified and approved pursuant to the AOC, as necessary to control, abate or mitigate threats to human health or the environment that are potentially posed by releases of solid and/or hazardous wastes and/or hazardous constituents; and,
- b. Submit an Interim Measure Hydrocarbon Recovery Work Plan

Task IV: Submit a proposed Land Disturbance Work Plan;

Task V: Submit a Current Conditions Report ("CCR") that provides background information of pertinent historical conditions at the Facility, environmental impacts at the Facility, and investigative work previously performed at the Facility.

Task VIA: Submit a Focused RCRA Facility Investigation Work Plan, including a Risk Assessment Work Plan, and complete a Focused RCRA Facility Investigation to address data gaps and/or deficiencies identified by the CCR, or such other deficiencies or data gaps identified to Respondents by EPA, in order to complete the characterization of the nature and extent of contamination at the Facility;

Task VIB: Submit a Focused RFI Report documenting the findings of the RCRA Facility Investigation, and submit a Risk Assessment Report;

Task VII: Perform a Corrective Measures Study (CMS) that identifies, evaluates, compares and recommends corrective measures alternatives to address the environmental impacts at, and/or originating from, the Facility;

In accomplishing the above tasks, the Respondents shall comply with the provisions of the Administrative Order on Consent (AOC, RCRA-07-2011-0011), this SOW, and all applicable EPA guidance. Applicable guidance may include, but is not limited to, the "RCRA Corrective Action Plan: Final" (EPA 520-R-94-004, OSWER Directive 9902.3-2a, May 1994), "Interim Final RCRA Facility Investigation (RFI) Guidance" (EPA 530/SW-89-031), "RCRA Groundwater Monitoring: Draft Technical Guidance" (November 1992), "Test Methods for Evaluating Solid Waste" (SW-846, most recent method), "Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action" (EPA 530-R-04-030, April 2004), and "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA 530/SW-85-031, July 1986). These and other potentially applicable guidance may be obtained at <http://www.epa.gov/rcraonline/>. Institutional controls implemented pursuant to the AOC must comply with "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups" (EPA 540-F-00-005, OSWER 9355.0-74FS-P) and other guidance documents pertaining to institutional controls found at [www.epa.gov/superfund/policy/ic/guide/index.htm](http://www.epa.gov/superfund/policy/ic/guide/index.htm). Vapor intrusion evaluations at the Facility should be implemented consistent with draft and final guidance available at <http://www.epa.gov/osw/hazard/correctiveaction/eis/vapor.htm> and may propose to incorporate other relevant and appropriate guidance available from relevant agencies and organizations that is consistent with EPA's approach.

1. **Work Plans** developed as part of this SOW shall include the following:
  - a. Clearly stated objectives for the specific sampling event(s), including the planned use of the data that will be generated and the techniques which will ensure that the samples will provide the required data;

- b. A description of all Solid Waste Management Units (SWMUs) and Areas of Concern, as those terms are defined in the AOC, requiring characterization as part of the specific sampling event(s) Work Plan along with the sampling approach/rationale for defining the nature and extent of contamination and its rate of movement in environmental media;
- c. Tables and figures identifying monitoring well and soil boring locations, monitoring well construction details (installed depth, well screen interval, casing diameter, and top of casing elevations), installation, development and sampling procedures for the specific sampling event(s); and
- d. Details of the planned sampling approach for any sampling required to meet the requirements of the Tasks pursuant to the AOC for characterizing the nature and extent, defining the sources of releases (if possible), and identifying potential receptors and human health and/or ecological impacts for the specific sampling event(s). The sampling design shall be prepared in general accordance with EPA *Guidance on Choosing a Sampling Design for Environmental Data Collection*, EPA QA/G-5S, EPA/240/R-02/005, December 2002.
- e. Data Quality Objectives (DQOs) specific to the sampling event(s), which should be developed using steps outlined in *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G-4 (February 2006).
- f. Proposed reporting requirements, including for the submittal of validated analytical data, generated pursuant to implementation of the Work Plan.

#### **TASK IA: GSMWP/QAPP/SAP**

2. **Groundwater and Surface Water Monitoring Work Plan (GSMWP):** Respondents shall submit a Groundwater and Surface Water Monitoring Work Plan (GSMWP) that outlines groundwater and surface water monitoring activities that are currently being conducted at the Facility pursuant to the requirements of the administrative order issued by the Kansas Department of Health and Environment/Bureau of Environmental Remediation: Order No. 87-E-26, Dated August 31, 1988.

3. **Quality Assurance Project Plan (QAPP):** To ensure that data generated are statistically valid, and properly documented, the Respondents shall prepare a QAPP to document all monitoring, sampling, field measurements and sample analysis procedures to be performed during the investigation to characterize the nature and extent of contamination as required in the Tasks pursuant to this AOC. The Respondents shall use quality assurance, quality control, and chain-of-custody procedures approved by the EPA. The QAPP should be prepared in accordance with the EPA *Requirements for Quality Assurance Project Plans*, EPA QA/R-5, EPA/240/B-01/003, March 2001, and follow EPA *Guidance for Preparing Quality Assurance Project Plans*, EPA QA/G-5, EPA/240/R-02/009, December 2002. The minimum elements of Respondents'

quality assurance program for data collection activities are in Chapter One of EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. The QAPP shall include a description and qualifications of personnel directing the Tasks pursuant to this AOC, including contractor personnel. Laboratory standard operating procedures (SOPs) shall be included as attachments to the QAPP if SOPs are cited in the text. The QAPP shall be subject to EPA review and/or approval and/or modification as provided in Section IX of the AOC.

4. **Sampling and Analysis Plan (SAP):** The SAP shall outline the field investigation activity procedures used to implement project-specific Work Plans developed to fulfill the work required pursuant to the AOC. Field SOPs shall be included as attachments to the SAP if SOPs are cited in the text. The SAP shall be subject to EPA review and/or approval and/or modification as provided in Section IX of the AOC. The SAP at a minimum should include the following:

- a. A description of the Facility; and
- b. A discussion of sampling procedures and field procedures which shall include: field quality assurance samples, analyses to be conducted including analytical method numbers, sample containers, sample preservation and shipment, and chain-of-custody procedures.

#### **TASK IB: HEALTH AND SAFETY PLAN**

5. **Health and Safety Plan:** Respondents shall submit a Health and Safety Plan (HSP) for activities pursuant to the AOC. The HSP is submitted to EPA for documentation purposes and is not approved by EPA.

- a. Major elements of the HSP shall include:
  - i. Facility description, including availability of resources such as roads, water supply, electricity and telephone service;
  - ii. Description of the known hazards and evaluation of the risks associated with each activity to be conducted;
  - iii. A listing of key personnel and alternates responsible for Facility safety, response operations, and for protection of public health;
  - iv. Delineation of work areas;
  - v. Description of levels of protection to be worn by personnel in work areas;
  - vi. Establishment of procedures to control Facility access subject to the requirements of the AOC;
  - vii. Description of decontamination procedures for personnel and equipment;
  - viii. Establishment of Facility emergency procedures;
  - ix. Provisions for emergency medical care for injuries and toxicological exposures;

- x. Description of requirements for a medical monitoring program;
  - xi. Descriptions of routine and special training required for responders; and
  - xii. Establishment of procedures for protecting workers from weather-related problems.
- b. The HSP shall be consistent with:
- i. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
  - ii. EPA Order 1440.1 - Respiratory Protection;
  - iii. EPA Order 1440.3 - Health and Safety Requirements for Employees Engaged in Field Activities;
  - iv. EPA Standard Operating Safety Guide (1984);
  - v. OSHA regulations, particularly 29 C.F.R. 1910 and 1926; and
  - vi. State and local occupational safety and health regulations.

## **TASK II: QUARTERLY PROGRESS REPORTS**

6. Respondents shall submit Quarterly Progress Reports according to the terms set forth below. Each Quarterly Progress Report shall include, at a minimum, the following:
- a. Facility name and identifying information;
  - b. Summaries of all findings in the reporting period, including results of the performance of interim measures or pilot studies initiated by Respondents. (This general reporting requirement may be superseded by the reporting requirements contained in an approved Work Plan);
  - c. Copies of daily reports, inspection reports, laboratory/monitoring data, etc. (This general reporting requirement may be superseded by the reporting requirements contained in an approved Work Plan);
  - d. Notification of any newly-identified SWMU(s) or Areas of Concern discovered during the course of work performed pursuant the AOC or other Facility activities. The notification shall include, at a minimum, a unique identifier, the location of the SWMU or Area of Concern, and all available information pertaining to the nature of the SWMU or Area of Concern (e.g., media affected, hazardous constituents released, estimated volume of release and affected area, response actions undertaken and the outcomes of such actions, etc.);
  - e. Ongoing activities and estimated percent complete by activity;
  - f. Upcoming activities for the next reporting period;
  - g. Longer-term planned activities;
  - h. Deviations to the work plans, if any, during the reporting period;
  - i. Identification of all matters inhibiting progress on SOW tasks;
  - j. Actions being taken to rectify these matters; and
  - k. Changes in key personnel during the reporting period.

### **TASK III: INTERIM MEASURES**

7. Respondents shall submit Interim Measures Work Plans according to the terms set forth below. Each Interim Measures Work Plan shall include, at a minimum, the following:

- a. A statement of the objective of the specific interim measure, including but not limited to a description of how the interim measure is designed to control, abate or mitigate threats to human health or the environment;
- b. A statement describing the proposed or existing design (if available) and construction specifications (if available) and operation and maintenance procedures for each specific interim measure;
- c. A proposed schedule for the design, construction, implementation, operation and maintenance requirements for each interim measure, as applicable;
- d. A proposal that describes the operation, maintenance, and monitoring (OM&M) plans for each interim measure;
- e. Proposed criteria for the expansion of or decommissioning of all or part of the interim measure;
- f. A statement of the management procedures to be used for all solid or hazardous wastes generated by the implementation of the specific interim measure; and
- g. A statement of reporting procedures, including submittal of validated analytical data generated during Interim Measures activities.

To the extent available, previous filings with KDHE may be proposed to fulfill these purposes. EPA will review and/or approve and/or modify each required Interim Measures Work Plan in accordance with Section IX of the AOC.

8. Until such time as EPA approves the Interim Measures Work Plans under this AOC, Respondents shall continue the OM&M of the remediation systems at the Facility currently in operation pursuant to the requirements of the administrative order issued by the Kansas Department of Health and Environment/Bureau of Environmental Remediation: Order No. 87-E-26, Dated August 31, 1988

9. Respondents shall submit a proposed Interim Measures Hydrocarbon Recovery Work Plan (HRWP) to EPA that shall include, at a minimum, the following:

- a. A description of existing free product recovery procedures or a proposal for the removal of free product in a manner which minimizes the spread of constituents of concern into previously unimpacted areas by using recovery and disposal techniques appropriate to the hydrogeological conditions at the Facility to the extent practicable and known at the time of submission of the HRWP, and that



- properly treats, discharges or disposes of recovery by-products in compliance with applicable local, state and federal regulations;
- b. An analysis of how the designs of the existing or proposed systems will accomplish the abatement of free product migration and how the ongoing effectiveness of the system will be demonstrated;
  - c. A description of on-going management procedures for recovered free product; and
  - d. Respondents shall report on the continuing implementation of the HRWP, including submittal of validated analytical data, following the reporting requirements outlined in the HRWP.

#### **TASK IV: LAND DISTURBANCE WORK PLAN**

10. For purposes of this scope of work, land disturbance activities (e.g., clearing, grubbing, excavating, and grading) include those activities where the area disturbed will be greater than 625 square feet; these activities do not include routine maintenance or emergency response activities. Nothing herein shall alter the Respondents' obligation to abate an immediate threat to human health or the environment encountered in connection with land disturbance activities.

11. Respondents shall submit a proposed Land Disturbance Work Plan (LDWP) to address soil characterization, management, remediation, and reporting requirements related to future land disturbance activities (e.g., construction of new structures, demolition of structures, pouring concrete, etc.) at the Facility in known or suspected SWMUs or Areas of Concern identified pursuant to the AOC where the area disturbed as part of a larger common plan of development or sale will be at least 625 square feet. The LDWP shall include the following:

- a. Proposed sampling methodology that sets forth standards for the investigation and sampling of those areas in which land disturbance of the Facility is planned by Respondents;
- b. Proposed sampling analysis techniques, consistent with EPA-approved methodology and guidance;
- c. Proposed sampling procedures and protocols, consistent with EPA-approved methodology and guidance;
- d. A proposed project management plan, data management plan, quality assurance project plan and a health and safety plan (if not covered by the Facility-wide programmatic plans);
- e. A proposed framework for remediation of impacted media that provides for implementation of the following corrective action approaches at Respondents' election:
  - i. Use of interim media-specific risk-based cleanup standards protective of human health and the environment for performance of corrective action work in conjunction with land disturbance activities. Such cleanup standards are to be included as a part of the proposed LDWP. (As more information about the Facility becomes

- available, Respondents may propose alternative interim media cleanup standards.); or
- ii. Deferral of immediate corrective action until after comprehensive evaluation of the impacted areas in relation to other SWMUs or Areas of Concern, so long as the planned use or development of the land disturbance area does not prevent or preclude future corrective actions, and either (1) use of interim media-specific risk based cleanup standards for the covered area in connection with the Interim Measures process, or (2) use of media-specific, risk-based cleanup standards to be developed in the Corrective Measures Study.
- f. A proposal for management of impacted materials handled or removed during land disturbance activities, if necessary;
  - g. All sampling procedures proposed by Respondents shall be consistent with those proposed in the Facility-wide programmatic QAPP, SAP, and HSP;
  - h. Provisions for notice of land disturbance activities to EPA;
  - i. A description of and schedule for reporting the findings and results of these activities to EPA following implementation; and
  - j. The LDWP shall be subject to EPA review and/or approval and/or modification as provided in Section IX of the AOC. Respondents shall comply with the terms of the proposed LDWP until such time as EPA has approved the LDWP or it has been modified pursuant to Section IX.

#### **TASK V: CURRENT CONDITIONS REPORT**

12. Respondents shall submit a Current Conditions Report (CCR) to EPA that provides the background information of pertinent historical conditions at the Facility, environmental impacts at the Facility, and work previously performed at the Facility under the supervision of the Kansas Department of Health and Environment/Bureau of Environmental Remediation. EPA will review and/or approve and/or modify and approve the CCR in accordance with Section IX of the AOC. The CCR shall include data gathered during any such previous investigations or inspections and interim measures performed under this AOC and may utilize previous submissions to satisfy the informational aspects of the CCR.

- a. **Facility Environmental Setting:** Respondents' CCR shall summarize the regional location, groundwater and surface water uses in a one-mile radius of the Facility boundary, pertinent boundary features, general Facility physiography, hydrogeology, and historical uses of the Facility, including a description of past and present solid and hazardous waste management practices within the Facility boundaries, that may have affected environmental media quality, to the extent Respondents can identify such practices.

Respondents' CCR shall include, to the extent available:

- i. Maps depicting the following for the Facility:

- (1) General geographic location;
  - (2) Property lines, with the owners of all adjacent properties clearly identified;
  - (3) Topography and surface drainage presented at an appropriate scale and with a contour interval adequate for evaluating flow pathways depicting all waterways, woodlands, floodplains, water features, drainage patterns, water wells, natural gas wells, oil wells and surface water containment areas;
  - (4) All tanks, tank dikes, buildings, landfills, piles, utilities, paved areas, easements, and rights-of way to the extent known;
  - (5) All solid or hazardous waste treatment, storage or disposal areas active after November 19, 1980;
  - (6) All known past solid or hazardous waste treatment, storage or disposal areas at the Facility (regardless of whether they were active on November 19, 1980) that includes a description of the hazardous constituents identified in 40 CFR Part 261 Appendix VIII believed to be contained in the wastes managed in the given SWMU;
  - (7) All known past and present product and waste aboveground and underground tanks and underground piping;
  - (8) Surrounding land uses (residential, commercial, agricultural, recreational); and
  - (9) The location of all oil, gas, and water production and monitoring wells at the Facility and any production or monitoring water wells installed off-site associated with the Facility. These wells shall be clearly labeled and ground and top of casing elevations and construction details included (these elevations and details may be included as an attachment).
- ii. A history and description of the Facility's past ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the Facility, including a narrative description and annual estimate (approximate volume and chemical composition) of how the waste streams generated by the Facility have changed from 1980 to the present based on available data;
  - iii. Copies of representative aerial photographs of the Facility throughout its operational history;
  - iv. The approximate dates and periods of past major, documented petroleum product spills and/or disposal, any documented waste spills and/or disposal, identification of the materials spilled or disposed, the amount spilled or disposed, the location where spilled or disposed, and a description of the response actions conducted (local, state, or federal response units or private parties), including any inspection reports or technical reports generated as a result of the response, a map showing approximate locations of spill or disposal areas at the Facility, and an evaluation of the potential for residual impacts from the spill(s) based on available data. Respondents and EPA have agreed for purposes of this

Task that "major" petroleum product spills refers to spills exceeding 20 barrels for heavy oil (American Petroleum Institute gravity greater than #2 fuel oil) and 10 barrels for light oil (American Petroleum Institute gravity less than #2 fuel oil);

- v. The location of each Area of Concern/SWMU at the Facility based on past solid and/or hazardous waste activities, and/or known releases of solid and hazardous waste releases, and/or releases of hazardous constituents.
- vi. Based on available data, a summary of past and present solid and/or hazardous waste environmental permits requested and/or received, any state or federal solid and/or hazardous waste enforcement actions and their subsequent responses, including any solid or hazardous waste closure activities that are planned or underway, and a list of corresponding documents and studies prepared for the Facility.

**b. Preliminary Nature and Extent of Contamination:**

- i. For each Area of Concern and/or SWMU identified at the Facility, Respondents' CCR shall provide the following information:
  - (1) Location of the area (which shall be depicted on a Facility map);
  - (2) Estimated quantities of solid and hazardous wastes or hazardous constituents released or suspected to have been released; and
  - (3) Solid/hazardous wastes or constituents in the area, to the extent known (including waste analysis data for the wastes, or comparable wastes, if available).
- ii. Respondents shall prepare an assessment and description of the nature and extent of contamination in soil, sediments, surface water and groundwater at the Facility. This shall include:
  - (1) All available analytical data and qualitative information concerning the extent and concentration of solid/hazardous wastes and hazardous constituents within each Area of Concern and/or SWMU;
  - (2) All potential migration pathways, including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and
  - (3) Identification of potential receptors including demography, groundwater and surface water use, and land use.
- iii. The CCR shall include the following information concerning releases to groundwater:
  - (1) Identification of all wells (municipal, domestic, agricultural, industrial, etc.) within a one- (1-) mile radius of the Facility boundary, including a summary of the most recent water sampling data available for any identified municipal or domestic supply wells;

- (2) A well inventory table that lists the following items for each identified well based on available data:
  - (a) Well designation;
  - (b) State ID;
  - (c) Reported owner;
  - (d) Driller;
  - (e) Date of completion;
  - (f) Original use of well;
  - (g) Current use of well;
  - (h) Drilling method;
  - (i) Borehole diameter (inches);
  - (j) Casing diameter (inches);
  - (k) Perforated interval (feet);
  - (l) Gravel pack interval (feet);
  - (m) Total well depth (feet);
  - (n) Depth to water (feet below ground surface); and
  - (o) Date of water level measurement.
- (3) Identification and description of any subsurface water supply lines at the Facility that may be in proximity to known Areas of Concern or SWMUs, and a discussion of the potential threat posed to the water supply quality by the constituents of concern.
- (4) A map showing the groundwater flow direction at the Facility, and the location of all identified wells within a one-mile radius of the Facility boundary;
- (5) Identification and description of any potential groundwater discharges to surface water bodies or groundwater recharge areas, with and without current engineering controls; and
- (6) Identification and listing of all relevant and applicable regulatory water standards for the protection of human health and the environment (e.g., maximum contaminant levels, water quality standards, etc.).

iv. The CCR shall contain the following information concerning surface water:

- (1) Description of the potential beneficial uses of the surface water (e.g., drinking water supply, recreational, agricultural, industrial, or environmentally sensitive);
- (2) Identification of all water supply intake points and contact areas within a one-mile radius of the Facility boundary. Include a summary of the most recent water sampling data available for each of the identified water supply intake points;
- (3) Based on available information, a description of the biota in surface water bodies on, adjacent to, or which could be potentially affected by the release;
- (4) A summary of any available sediment sampling data; and

- (5) A map showing the Facility, surface water flow direction, beneficial use areas, and the location of any identified water supply intake points within a one-mile radius of the Facility boundary.
- v. Respondents shall report their evaluation of geologic and hydrogeologic conditions at the Facility as known at this time. The CCR shall provide the following information:
- (1) A description of the regional- and Facility-specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the Facility, including:
    - (a) Regional- and Facility-specific stratigraphy, description of strata including strike and dip, identification of stratigraphic contacts;
    - (b) Structural geology, including description of local and regional structural features (i.e., folding, faulting, tilting, jointing, etc.);
    - (c) Depositional history;
    - (d) Identification and characterization of areas and amounts of recharge and discharge;
    - (e) Regional- and Facility-specific groundwater flow patterns; and
    - (f) Characterization of the seasonal variations in the groundwater flow regime and their relationship to changes in constituent of concern distribution.
  - (2) An analysis of any topographic features that might influence the groundwater flow system.
  - (3) Based on available field data, testing, cores, structural geology, and interpretive cross-sections showing the depth, thickness, and lateral extent, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the Facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:
    - (a) Hydraulic conductivity and porosity (total and effective);
    - (b) Lithology, grain size, sorting, degree of cementation;
    - (c) An interpretation of hydraulic interconnections between saturated zones;
    - (d) The attenuation capacity and mechanisms of the natural earth materials (i.e., ion exchange capacity, organic carbon content, mineral content, etc.);
    - (e) Sand and gravel deposits in unconsolidated deposits;
    - (f) Zones of fracturing or channeling in consolidated or unconsolidated deposits;
    - (g) Zones of higher permeability or lower permeability that might direct and restrict the flow of constituents of concern;
    - (h) The uppermost aquifer, i.e., the geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs; and

- (i) Water bearing zones above the first confining layer that may serve as a pathway for constituent of concern migration including perched zones of saturation.
- (4) Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential source of environmental impacts, a representative description of water level or fluid pressure monitoring including:
  - (a) Water-level contour and/or potentiometric maps;
  - (b) Hydrologic cross-sections showing vertical gradients;
  - (c) The flow system, including the vertical and horizontal components of flow; and
  - (d) Any temporal changes in hydraulic gradients (e.g., tidal or seasonal influences).
- (5) A description of man-made influences that may affect the hydrogeology of the Facility, identifying:
  - (a) Active and inactive local water-supply and production wells with an approximate schedule of pumping; and
  - (b) Man-made hydraulic structures (pipelines, French drains, ditches, unlined ponds, septic tanks, discharge outfalls, surface water retention areas, etc.).

**c. Source Characterization:**

For each Area of Concern and/or SWMU, Respondents shall provide the following information (if known):

- i. Area Characteristics:
  - (1) Location of area;
  - (2) Type of area;
  - (3) Design features;
  - (4) Operating practices (past and present);
  - (5) Period of operation;
  - (6) General physical condition; and
  - (7) Method used to close the area.
- ii. Waste Characteristics:
  - (1) Type of waste placed in the area:
    - (a) Hazardous waste classification, if applicable (e.g., ignitable, corrosive, Toxicity Characteristic);
    - (b) Quantity; and
    - (c) Chemical composition.
  - (2) Physical and chemical characteristics:
    - (a) Physical form (solid, liquid, gas);
    - (b) Physical description (e.g., powder, oily sludge);

- (c) Temperature;
  - (d) pH;
  - (e) General chemical class (e.g., acid, base, solvent)
  - (f) Molecular weight;
  - (g) Density;
  - (h) Boiling point;
  - (i) Viscosity;
  - (j) Solubility in water;
  - (k) Cohesiveness of the waste;
  - (l) Vapor pressure; and
  - (m) Flash point.
- (3) Migration and dispersal characteristics of the waste:
    - (a) Sorption;
    - (b) Biodegradability, bioconcentration, biotransformation;
    - (c) Photodegradation rates;
    - (d) Hydrolysis rates; and
    - (e) Chemical transformation.
  - (4) Respondents shall document the procedures used in making the above determinations.
- d. **Interim Measures Evaluation:** The CCR shall provide a summary and evaluation of the ongoing performance of any interim measures conducted as of the effective date of this AOC. The CCR shall summarize this work by evaluating the following:
- i. How the investigation and work performed has accomplished the objectives of the specific interim measure;
  - ii. A summary of the ongoing design to the extent available, construction to the extent available, operation, and maintenance requirements of the interim measure(s);
  - iii. The quantity and disposition of hazardous wastes and/or hazardous constituents generated as a result of implementing the interim measure; and
  - iv. Proposed schedules for design, construction and monitoring of any additional work required for the interim measures(s).
- e. **Data Gap Analysis for Performance of a Focused RCRA Facility Investigation:** The CCR shall provide an analysis of data gaps from previous Facility investigations, including ongoing interim measures performed under the AOC, and shall describe and propose any additional field work and/or data that needs to be collected to close the identified data gaps, if any, in order to develop and complete a Facility investigation. The data generated during the Focused RCRA Facility Investigation will be utilized for the evaluation and selection of the final corrective measures.



13. EPA will review Respondents' submittal of the CCR and will either approve the CCR (per Section IX of the AOC) , or may provide comments to Respondents describing EPA's determinations of the CCR's deficiencies of evaluation of the physical features of the Facility (Environmental Setting); description of the nature and extent of contamination (Contamination Characterization); description of the source(s) of environmental impacts (Source Characterization); summary of Interim Measures' progress/implementation (including the GSMWP); and evaluation of Data Gaps in the CCR.

#### **TASK VIA: FOCUSED RCRA FACILITY INVESTIGATION**

14. Respondents shall develop and submit a Focused RCRA Facility Investigation Work Plan (Focused RFI Work Plan) that shall propose and describe the work necessary to characterize the nature and extent of contamination and to address the data gaps described in the CCR as approved or modified by EPA or as otherwise identified by EPA. Additionally, the Focused RFI Work Plan shall describe work necessary to evaluate the actual or potential receptors (Potential Receptor Identification), and to determine the potential or actual impact(s) of constituents of concern on human health and/or ecological receptors (Risk Assessment). EPA will review and/or approve and/or modify and approve the Focused RFI Work Plan in accordance with Section IX of the AOC.

15. In addition to the requirements of Paragraph 14 above, the Focused RFI Work Plan shall include the components described below and shall propose a schedule for completing all requirements of the Focused RFI. During the RFI, it may be necessary to revise the RFI Work Plan to increase or decrease the amount and/or type of information collected to accommodate the Facility-specific situation or to perform subsequent phases of the RFI. The Focused RFI Work Plan shall include the following elements:

- a. Update of the QAPP/SAP and HSP: The Focused RFI Work Plan shall include the proposed updates or modifications as needed to the Facility's approved QAPP/SAP in order to address activities contemplated in the Focused RFI Work Plan, and update the HSP (not subject to EPA's approval);
- b. Update of the GSMWP: The Focused RFI Work Plan shall included proposed updates or modifications to the Facility's Agency-approved GSMWP in order to address activities contemplated in the Focused RFI Work Plan, including:
  - i. A proposal for sampling and analytical methods for the analysis of free product and dissolved-phase constituents of concern;
  - ii. A proposal for sampling methods and monitoring locations capable of detecting the impact of releases from the Facility on surface water quality and potential human users and ecological receptors of Salt Creek, Constant Creek and the Walnut River, in the reaches of potential groundwater recharge into these surface waters and downstream of these locations;

- iii. An evaluation of the ability of the design and location of the Facility's current and proposed monitoring wells (based on the hydrogeology of the Facility, site characteristics, and waste characteristics) to determine the vertical and horizontal extent of groundwater, within and beyond the current boundary control system;
  - iv. A proposal for locations for additional monitoring wells as necessary to evaluate the vertical and horizontal extent of groundwater impacts within and beyond the current boundary control systems;
  - v. The contents and schedule for Groundwater Monitoring Reports will be defined in the updated GSMWP.
  - vi. EPA will review and/or approve and/or modify the updated GSMWP and associated Groundwater Monitoring Reports in accordance with Section IX of the AOC.
- c. Public Involvement Plan: As an individual component of the Focused RFI Work Plan, the Plan shall include a "Public Involvement Plan" detailing how the Facility will inform the public of investigation activities and results. This plan shall conform to EPA's RCRA Public Participation Manual, EPA/530-R-96-007, September 1996. All Public Involvement Plans prepared by Respondents shall be submitted to EPA for comment and approval prior to use. Respondents shall never appear to represent or speak for EPA before the public, other government officials or the media. A schedule for community relations activities shall be included in the Public Involvement Plan. EPA may individually review and approve or modify these submittals in accordance with Section IX of the AOC;
- d. Potential Receptor Identification: The Focused RFI Work Plan shall detail the proposed method(s) to collect data describing the human populations and environmental systems that are susceptible to constituent of concern exposure from the Facility. Chemical analysis of biological samples may be required. Data on observable effects in ecosystems may also be required. The following characteristics shall be identified:
- i. Local uses and possible future uses of groundwater within a one mile radius of the Facility boundary:
    - (1) Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
    - (2) Location of groundwater users, including wells and discharge areas.
  - ii. Local uses and possible future uses of surface waters within a one-mile radius of the Facility boundary that may have a potential hydraulic interaction with impacted environmental media at the facility:
    - (1) Type of use(s) (e.g., domestic municipal, recreational, agricultural, potable, and lawn/garden watering); and
    - (2) Location of designated use area relative to the Facility and the environmental impacts.

- iii. Current and potential human use of or access to the Facility and adjacent lands, including, but not limited to:
    - (1) Types of current and potential uses (e.g. residential, commercial, zoning/deed restrictions); and
    - (2) Any use restrictions relative to the Facility and the contamination.
  - iv. A description of the ecology overlying and in proximity to the Facility including, but not limited to:
    - (1) Location and size of each identified habitat (e.g., streams, wetlands, forested areas);
    - (2) Description and species listing of each habitat's plant and animal (both resident and transient) communities;
    - (3) Non-jurisdictional delineation of any wetlands present; and
    - (4) Database searches for the potential presence of any federal or state listed threatened, endangered, or rare species.
  - v. An evaluation of the pollutant impacts on the ecosystems/populations potentially exposed to environmental impacts. This evaluation may be accomplished through the use of toxicity test (acute and chronic) population surveys and literature reviews.
- e. Risk Assessment: As an individual component of the Focused RFI Work Plan, Respondents shall submit a proposed plan and schedule for submitting a Human Health and Screening Level Ecological Risk Assessment Report (Risk Assessment). The proposed Risk Assessment Work Plan shall outline the procedures and schedule for completing a risk assessment, recognizing the current and likely future use of the Facility as a petroleum refinery, in accordance with EPA's Risk Assessment Guidance for Superfund, EPA/540/1-89/002, December 1989, and the Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, EPA-540-R-97-006, July 1997, and any subsequent updates, amendments or supplements. The Risk Assessment Work Plan shall be subject to review and/or approval and/or modification by EPA pursuant to Section IX of the AOC. Only information and environmental data that have been validated as representative of Facility conditions may be used to describe the potential excess human health and/or ecological risk posed by the Facility. The Risk Assessment Work Plan shall include:
- i. A Facility-specific exposure conceptual model, which either graphically illustrates or states the impacted media and all the primary and secondary exposure pathways; and

- ii. A list of all constituents of concern, standard exposure parameters, land use, methodologies for determining reasonable maximum exposure point concentrations, proxy determinations, and other statistical considerations.

16. **Focused RCRA Facility Investigation:** In accordance with the requirements and schedule set forth in the Focused RFI Work Plan, as approved by EPA, Respondents shall perform the work and conduct investigations necessary to characterize the Facility (Environmental Setting); define the source(s) of environmental impacts (Source Characterization); define the nature and extent of contamination (Contamination Characterization); identify actual or potential receptors (Potential Receptor Identification), and determine the impact(s) of constituents of concern in the environment on human health and/or ecological receptors (Risk Assessment). The investigation shall be performed in a manner sufficient to obtain data of adequate technical quality to support the development and evaluation of the corrective measures alternative(s) during the Corrective Measures Study.

17. Respondents shall report on the continuing implementation of the Focused RCRA Facility Investigation within the quarterly progress reports required by the AOC (See Task II).

#### **TASK VIB: FOCUSED RFI AND RISK ASSESSMENT REPORTS**

18. Upon completion of the work required by the Focused RFI Work Plan, Respondents shall prepare a Focused RFI Report that contains an analysis and summary of all Facility investigations and their results. The objective of this task shall be to ensure that the investigation data are sufficient in quality and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the Corrective Measures Study. The Focused RFI Report contents will be defined in the Agency approved Focused RFI Work Plan. EPA will review and approve and/or modify the submittal in accordance with Section IX of the AOC.

19. Risk Assessment Report: Respondents shall submit a Risk Assessment Report as outlined in the Agency approved Focused RFI Work Plan. EPA will review and approve and/or modify the submittal in accordance with Section IX of the AOC.

#### **TASK VII: CORRECTIVE MEASURES STUDY**

20. CMS Work Plan – Respondents shall submit to EPA for approval a draft CMS Work Plan. The CMS Work Plan shall identify corrective measures alternatives to be evaluated and ranked in the CMS Report. The CMS Work Plan shall address environmental impacts in all affected media and for all exposure pathways, both current and future, for which the EPA-

approved Risk Assessment for the Facility predicts an unacceptable human health or ecological risk. The Federal Remediation Technologies Roundtable, Remediation Technologies Screening Matrix at [http://www.frtr.gov/matrix2/top\\_page.html](http://www.frtr.gov/matrix2/top_page.html) should be consulted for guidance in selecting the appropriate cleanup technologies to be evaluated. The CMS Work Plan shall also include the proposed Media Cleanup Standards (MCSs) for cleanup in all affected media. The CMS Work Plan shall include proposed updates or modifications to the approved QAPP/SAP and HSP as necessary to address additional work elements pursuant to implementation of the CMS. The CMS Work Plan shall contain the schedule for evaluation of cleanup alternatives for all affected media and any pilot or bench scale testing of cleanup alternatives, if necessary. The CMS Work Plan shall be subject to EPA review and/or approval and/or modification in accordance with Section IX of the AOC.

21. Respondents shall conduct a Corrective Measures Study (CMS) that shall identify, screen and develop the corrective measure alternative or alternatives for removal, containment, treatment and/or other remediation of the environmental impacts at the Facility based on the overall protection of human health and the environment. The CMS shall identify/develop how corrective measures alternatives provide human health and environmental protection, specify proposed MCSs developed during the CMS Work Plan, and evaluate corrective measures alternatives based on the ability of each to achieve them. Respondents shall identify/develop how potential corrective measures alternatives control the sources of releases by describing how those alternatives reduce or eliminate further releases to the maximum extent practicable. Respondents shall identify/develop methods to comply with standards for the management of wastes generated during corrective measures.

22. **CMS Report** - In accordance with the schedule in the EPA-approved CMS Work Plan, Respondents shall submit to EPA for approval a draft CMS Report. The CMS Report shall describe a detailed evaluation of corrective measure alternatives and a recommendation as to the alternative (or combination of alternatives) which should be selected to address environmental impacts in all affected Facility media and for all exposure pathways, both current and future, for which there is an unacceptable human health or ecological risk. If the CMS Work Plan will consider corrective measures that leave environmental impacts at a level that does not allow for unrestricted use and unlimited exposure, the Respondents shall include as a component of such corrective measures a plan to implement institutional and/or engineering controls to prevent unacceptable exposures to human health and the environment. Such a plan shall be in general accordance with EPA guidance including but not limited to "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups," EPA 540-F-00-005, OSWER 9355.0-74FS-P, September 2000 and the draft "Institutional Controls: A Guide to Implementing, Monitoring, and Enforcing Institutional Controls at Superfund, Brownfields, Federal Facility, UST and RCRA Corrective Action Cleanups," February 2003. The CMS Report shall address all items set forth below:

- a. **Statement of Purpose:** The CMS Report shall describe the purpose of the document and provide a summary description of the project;

- b. **Description of Current Conditions:** The CMS Report shall summarize any investigations conducted at the Facility after approval of the RFI Report required under this AOC. This discussion shall concentrate on those issues which could significantly affect the evaluation and selection of the corrective measure alternative(s).
- c. **Corrective Action Objectives:** The CMS Report shall describe and propose Respondents' corrective action objectives. Specifically, Respondents shall propose applicable MCSs for all affected media and for all exposure pathways, both current and future, for which the EPA-approved Risk Assessment predicts an unacceptable human health or ecological risk. The corrective action objectives shall be based on promulgated federal or state standards, risk-derived standards, and all data and information gathered during the investigation phases and corrective action process, and/or other applicable guidance documents. If no specific standards exist for a given constituent of concern and media, the Respondents shall propose and justify a MCS for such constituent of concern and/or media. EPA has final approval of all MCSs.
- d. **Identification, Screening, and Development of Corrective Measure Alternatives**
  - i. **Identification of Technologies:**
    - (1) The CMS Report shall list and describe potentially applicable technologies from the EPA-approved CMS Work Plan for each affected medium that may be used to achieve the corrective action objectives proposed by Respondents;
    - (2) The CMS Report may consider innovative treatment technologies, especially in situations where existing corrective measure technologies are limited. Innovative technologies are defined as those technologies utilized for source control other than incineration, solidification/stabilization, and pumping with conventional treatment for impacted groundwater. The EPA may require treatability studies and/or on-site pilot scale studies to evaluate the effectiveness of any proposed innovative treatment technologies;
    - (3) Respondents may conduct, and include in the draft CMS Report, laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to Facility conditions. The methodology of these studies is subject to EPA review and approval;
    - (4) If Respondents propose laboratory and/or bench scale studies, Respondents shall develop and submit a testing plan to the EPA for review and approval that identifies the type(s) and goal(s) of the

study or studies, the level of effort needed, and the procedures to be used for data management and interpretation. Upon completion of the testing, the Respondents shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan; and

- (5) The CMS Report shall summarize the testing program and its results (if studies are performed), both positive and negative.

ii. Screening of Technologies:

- (6) The CMS Report shall present a screening of corrective measures technologies to demonstrate why certain corrective measures technologies may not prove feasible to implement given the waste- and site-specific conditions; and
- (7) Respondents shall present all corrective measures technologies considered in tabular form, and may elect to evaluate the "no action" alternative as well for comparison.

iii. Corrective Measure Development:

- (8) The CMS Report shall assemble the technologies that pass the screening step into specific alternatives that have the potential to meet the corrective action objectives for each environmental medium: and
- (9) Each corrective measure alternative proposed in the CMS Report shall consist of an individual technology or a combination of technologies used in sequence (i.e., a treatment train). Different alternatives may be considered for separate areas of the Facility. The developed alternatives shall be carried forward for evaluation using the EPA's four General Standards for Remedies and Remedy Selection Decision Factors below.

## 23. General Standards for Corrective Measures

For each corrective measure alternative which warrants a more detailed evaluation, the CMS Report shall provide detailed documentation of how the potential alternative will comply with each of the General Standards for Remedies listed below. These standards reflect the major technical components of corrective measures including cleanup of releases, source control, and management of wastes that are generated by corrective measures activities in accordance with the RCRA Corrective Action Plan guidance (OSWER Directive 9902.3-2A, May 1994). Specifically, these standards are:

- a. Be protective of human health and the environment;

- b. Attain media cleanup standards set by the EPA;
- c. Control the source(s) of releases so as to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment;
- d. Comply with any applicable standards for management of wastes; and
- e. Other general factors.

**24. Any Proposed Corrective Measure Must Satisfy the Four General Standards**

Any corrective measure alternative proposed by the Respondents in the CMS Report must satisfy the four General Standards for Remedies in order to be carried forward for evaluation using the Remedy Selection Decision Factors. In evaluating the selected corrective measure alternative or alternatives, the Respondents shall prepare and submit information documenting that the specific corrective measure(s) will meet the standards listed above. A detailed explanation of the General Standards for Remedies is set forth below.

**25. Any Proposed Corrective Measure Must Be Protective of Human Health and the Environment**

Corrective measures must be protective of human health and the environment. Remedies may include those measures that are needed to be protective, but are not directly related to media cleanup, source control, or management of wastes. An example would be providing an alternative drinking water supply in order to prevent exposure to an impacted aquifer used as a drinking water source. This information must be provided in addition to a discussion of how the other corrective measure alternatives meet this standard.

**26. Any Proposed Corrective Measure Must Attain Media Cleanup Standards Set by the EPA**

Corrective Measures will be required to attain media cleanup standards which are set by EPA (based on state or federal regulations (e.g., groundwater standards) or other standards which are set by the EPA). The CMS Report shall address whether the potential corrective measure will achieve the preliminary remediation objective as identified by the EPA as well as other alternative corrective action objectives that may be proposed by the Respondents. Respondents shall also include an estimate of the time frame necessary for each corrective measure alternative to meet these standards.

**27. Any Proposed Corrective Measure Must Control the Sources of Releases**

A critical objective of any corrective measure proposed by Respondents must be to prevent further releases from source areas and prevent migration of the groundwater plume by controlling or eliminating further releases that may pose a threat to human health and the environment. An effective source control program is essential to ensure the long-term effectiveness and protectiveness of the corrective measures program. As part of the CMS Report,



the Respondents shall address the issue of whether source control measures are necessary, and if so, the types of source control actions that would be appropriate. Any source control measure proposed shall include a discussion of how well the method is anticipated to work given the particular situation at the Facility and the known performance potential of the specific technology.

**28. Any Proposed Corrective Measure Must Comply with Any Applicable Standards for Management of Wastes.**

The CMS Report shall include a discussion of how the specific waste management activities will be conducted in compliance with all applicable state or federal regulations (e.g., Land Disposal Restrictions).

**29. Corrective Measure Selection Decision Factors**

Any remedy proposed by Respondents shall be evaluated according to EPA's Corrective Measure Selection Decision Factors. The Corrective Measure Selection Decision Factors are five factors that the EPA considers in selecting/approving a corrective measure that meets the four General Standards listed above. These factors represent a combination of technical measures and management controls for addressing the environmental problems at the Facility. The five factors are:

- a. Long-term reliability and effectiveness;
- b. Reduction in the toxicity, mobility or volume of wastes;
- c. Short-term effectiveness;
- d. Implementability; and
- e. Cost.

The CMS Report shall discuss and provide information in support of Respondents' application of these factors in the evaluation of corrective measures alternatives. Examples of the types of information required are provided below:

**30. Long-Term Reliability and Effectiveness**

Demonstrated and expected reliability is a way of assessing the risk and effect of failure. The CMS Report shall consider whether the technology or a combination of technologies have been used effectively under analogous conditions, whether failure of any one technology in the alternative would have an immediate impact on receptors, and whether the alternative would have the flexibility to deal with uncontrollable changes at the Facility (e.g., heavy rain storms, earthquakes, etc.). The CMS Report shall evaluate each corrective measure alternative in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the level of effectiveness can be maintained.

**31. Reduction in the Toxicity, Mobility or Volume of Wastes**

The CMS Report shall discuss how the alternatives employ techniques, such as treatment technologies, to eliminate or substantially reduce the inherent potential for the wastes in SWMUs (and/or impacted media at the Facility) to cause future environmental releases or other risks to human health and the environment. Considerations include the amount of constituents of concern destroyed or treated, the degree of expected reduction in toxicity, mobility, and volume, the degree to which the treatment is irreversible, and the type and quantity of residuals remaining after treatment.

### **32. Short-Term Effectiveness**

The CMS Report shall evaluate the short-term effectiveness of each of the corrective measure alternatives as proposed. Short-term effectiveness considers the protection of the community and on-site work force (including Facility, remedial, and incidental workers) during the performance of the corrective measures, along with any short-term environmental impacts. An important aspect of the short-term effectiveness factor is the consideration of the time a corrective measure requires to attain the media cleanup standards.

### **33. Implementability**

The CMS Report shall evaluate Respondents' ability to construct and operate each corrective measure alternative proposed. Key elements include the reliability of the technology, the ease of undertaking additional corrective measures (if necessary), and the ability of the Respondents to monitor the effectiveness of the corrective measures. Examples of information the CMS Report shall consider when assessing implementability include:

- i. The administrative activities needed to implement the corrective measure alternative (e.g., permits, rights of way, off-site approvals, etc.) and the length of time these activities will take;
- ii. The constructability, time for implementation, and time for beneficial results;
- iii. The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and
- iv. The availability of prospective technologies for each corrective measure alternative.

### **34. Cost**

The relative cost of a remedy may be considered, particularly when several different technical alternatives to remediation offer equivalent protection of human health and the environment but vary widely in cost. When presenting cost estimates, the CMS Report shall include third-party costs for engineering, site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, training, operation and maintenance, etc., and shall be presented in tabular form. The cost estimates for

the alternatives shall be categorized as capital costs and operation and maintenance costs, and the Respondents shall present the cost of each alternative, or combinations of alternatives, separating the short-term and construction capital costs from the long-term operation and maintenance (O&M) costs. Respondents shall use net present worth for the long-term cost(s) of each alternative using a discount rate of five (5) percent before taxes and after inflation.

**35. Recommended Corrective Measure Alternative(s)**

Respondents may recommend a preferred corrective measure alternative, or combination of alternatives, for consideration by the EPA. Such a recommendation should include a description and supporting rationale for the proposed corrective measure, consistent with the General Standards for Corrective Measures and the Corrective Measures Selection Decision Factors that appear above. EPA will review and/or approve and/or modify this submittal in accordance with Section IX of the AOC. EPA's approval of the CMS Report shall not bind EPA to select Respondents' recommended corrective measure as the final corrective measure selected for the Facility.

**Attachment B:**

**Facility Map**



## Attachment B – Facility Map

Frontier Refinery

El Dorado, Kansas

**Attachment C:**

**Legal Description of Facility**

## TERRACE REFINERY BOUNDARY DESCRIPTION

EL DORADO, BUTLER COUNTY, KANSAS

Beginning at a point on the East line of the West half of the SE 1/4 of Section 10, T26S, R32E of the 6th R.M. Butler County, Kansas, said point being 35 feet South of the Northeast corner of West half of said SE 1/4, thence West parallel to the North line of said SE 1/4 on an assumed bearing of S 88 16' 29" W a distance of 35.00 feet; thence S 01 43' 31" E, 25.00 feet; thence N 57 19' 01" W, 44.24 feet; thence S 88 16' 29" W, 151.00 feet; thence S 01 43' 31" E, 10.00 feet; thence S 88 16' 29" W, 50.00 feet; thence S 01 43' 31" E, 130.00 feet; thence S 88 16' 29" W, 200.00 feet; thence N 01 43' 31" W, 115.00 feet; thence S 88 16' 29" W, 100.00 feet; thence N 01 43' 31" W, 10.00 feet; thence S 88 16' 29" W, 400.00 feet; thence S 01 43' 31" E, 5.00 feet; thence S 88 16' 29" W, 350.19 feet to a point on the East line of the SW 1/4 of said Section 10; said point being 55 feet South of the Northeast corner of said SW 1/4; thence West parallel to the North line of said SW 1/4 on a bearing of S 88 26' 02" W, a distance of 350.10 feet; thence N 01 13' 58" W, 10.00 feet; thence S 88 26' 02" W, 973.56 feet to a point 45 feet South of the Northwest corner of the East

half of said SW 1/4; thence S 01 03' 34" E, 614.86 feet; thence S 88 27' 51" W, 1326.54 feet to a point on the East line of the SE 1/4 of Section 9; thence S 89 14' 58" W to the centerline of Salt Creek, a survey monument being set 1079.10 feet West of the East line of the SE 1/4 of said Section 9; thence on the centerline of Salt Creek being defined by the following bearings, distances and offsets from the centerline of Salt Creek; continuing from said survey monument, said monument being 59 feet more or less East of the centerline of Salt Creek; thence S 10 56' 00" W, 79.91 to a point being 40 feet more or less East of the centerline of Salt Creek; thence S 04 42' 07" E, 119.70 feet to a point being 38 feet more or less East of the centerline of Salt Creek; thence S 28 53' 15" E, 134.29 feet to a point being 43 feet more or less East of the centerline of Salt Creek; thence S 23 31' 21" W, 130.47 feet to a point being 21 feet more or less East of the centerline of Salt Creek; thence S 0 46' 46" E, 124.16 feet to a point being 21 feet more or less East of the centerline of Salt Creek; thence S 20 52' 16" W, 199.80 feet to a point being 15 feet more or less Southeast of the centerline of Salt Creek; thence S 38 22' 40" W, 172.81 feet to a point being 11 feet more or less East of the centerline of Salt Creek; thence S 25 15' 30" E, 151.89 feet to a point being 43 feet more or less East of the centerline of Salt Creek; thence S 35 59' 11" E, 77.47 feet to a point being 31 feet more or less Northeast of the centerline of Salt Creek; thence S 78 21' 29" E, 66.50 feet to a point being 41 feet more or less North of the centerline of Salt Creek; thence N 78 30' 17" E, 68.81 feet to a point being 50 feet more or less North of the centerline of Salt Creek; thence S 75 32' 32" E, 173.46 feet to a point being 20 feet more or less North of the centerline of Salt Creek; thence S 61 36' 57" E, 156.91 feet to a point being 50 feet more



or less North of the centerline of Salt Creek; thence N 70 09' 45" E, 126.58 feet to a point being 35 feet more or less North of the centerline of Salt Creek; thence S 82 30' 29" E, 151.68 feet to a point being 28 feet more or less Northeast of the centerline of Salt Creek; thence S 43 11' 06" E, 306.84 feet to a point being 61 feet more or less East of the centerline of Salt Creek; thence S 0 02' 50" W, 129.91 feet to a point being 50 feet more or less East of the centerline of Salt Creek; thence S 08 10' 27" W, 157.44 feet to a point being 57 feet more or less East of the centerline Salt Creek; thence S 49 17' 14" W, 119.61 feet to a point being 20 feet more or less Southeast of the centerline of Salt Creek; thence S 25 03' 11" W, 191.15 feet to the intersection of the centerline of Salt Creek and the North line of the NE 1/4 of Section 16; thence S 06 26' 00" E, 110.39 feet to a point being 16 feet more or less East of the centerline of Salt Creek; thence S 24 25' 10" W, 162.80 feet to a point being 22 feet more or less Southeast of the centerline of Salt Creek; thence S 35 39' 53" W, 178.73 feet to a point being 26 feet more or less East of the centerline of Salt Creek; thence S 17 29' 16" E, 127.04 feet to a point being 45 feet more or less NE of the centerline of Salt Creek; thence S 65 50' 36" E, 60.60 feet to a point being 28 feet more or less North of the centerline of Salt Creek; thence N 74 24' 30" E, 105.64 feet to a point being 54 feet more or less North of the centerline of Salt Creek; thence S 56 38' 51" E, 91.72 feet to a point being 15 feet more or less NE of the centerline of Salt Creek; thence S 21 00' 33" E, 112.77 feet to a point being 25 feet more or less East of the centerline of Salt Creek; thence S 13 03' 53" W, 271.11 feet to a point being 21 feet more or less SE of the centerline of Salt Creek; thence S 70 19' 22" W, 113.88 feet to a point being 18 feet more or less South

of the centerline of Salt Creek; thence S 85 40' 47" W, 125.72 feet to a point being 39 feet more or less SE of the centerline of Salt Creek; thence S 11 36' 54" E, 77.09 feet to a point being 20 feet more or less East of the centerline of Salt Creek; thence S 24 08' 44" E, 131.22 feet to a point being 49 feet more or less NE of the centerline of Salt Creek; thence S 47 04' 44" E, 132.99 feet to a point being 25 feet more or less East of the centerline of Salt Creek; thence S 22 20' 44" W, 65.26 feet to a point being 21 feet more or less SE of the centerline of Salt Creek; thence S 46 31' 01" W, 116.04 feet to a point being 17 feet more or less SE to the centerline of Salt Creek; thence S 86 41' 49" W, 93.45 feet to a point being 26 feet more or less SE of the centerline of Salt Creek; thence S 31 14' 55" W, 135.05 feet to a point being 38 feet more or less East of the centerline of Salt Creek; thence S 07 12' 46" E, 161.43 feet to a point being 33 feet more or less SE of the centerline of Salt Creek; thence S 50 07' 25" W, 199.78 feet to a point being 40 feet more or less SE of the centerline of Salt Creek; thence S 04 32' 26" W, 432.63 feet to a point being 29 feet more or less East of the centerline of Salt Creek; thence S 40 37' 12" E, 357.14 feet to a point being 33 feet more or less NE of the centerline of Salt Creek; thence S 43 20' 31" E, 225.35 feet to a point being 58 feet more or less East of centerline of Salt Creek, said point being on the North line of the SE 1/4 of said Section 16; thence S 48 48' 43" E, 245.79 feet to a point being 20 feet more or less East of the centerline of Salt Creek; thence S 27 45' 11" W, 122.36 feet to a point being 26 feet more or less East of the centerline of Salt Creek; thence S 52 48' 58" E, 392.31 feet to a point being 20 feet more or less East of the centerline of Salt Creek; thence S 03 44' 37" W, 94.16 feet to a point being 26 feet more or less East of the centerline of

Salt Creek; thence S 34 31' 31" E, 170.02 feet to the intersection of the centerline of Dry Creek and the West line of the SW 1/4 of Section 15; thence S 01 27' 09" E on the West line of said SW 1/4, 548.73 feet to the Southwest corner of the North half of said SW 1/4; thence N 88 22' 48" E on the South line of the North 1/2 of said SW 1/4, a distance of 1783.13 feet to the West-erly line of A. T. & S. E. Railroad right-of-way, said point being point No. 1; thence along the West-erly right-of-way of said railroad the following bearings and distances; continuing from point No. 1; thence N 26 46' 47" E, 1500.90 feet to a point on the South line of the NW 1/4 of said Section 15; thence N 26 46' 47" E, 374.88 feet to a point on the West line of the NE 1/4 of said Section 15; thence N 26 46' 47" E, 2304.54 feet to a point of curve, said curve having a radius of 2914.79 feet a central angle of 11 15' 00" and a chord bearing and distance of N 32 24' 17" E, 571.40 feet; thence on said curve a distance of 572.32 feet to a point in the SE 1/4 of Section 10; thence N 38 01' 47" E, 456.49 feet; thence N 51 58' 13" W, 25.00 feet; thence N 38 01' 47" E, 816.39 feet; thence N 88 23' 58" E, 32.46 feet; thence N 38 01' 47" E, 465.80 feet to the intersection point of the West-erly line of said Railroad right-of-way and the East line of the SE 1/4 of said Section 10; thence N 01 17' 06" W on the East line of said SE 1/4, 567.14 feet; thence S 88 32' 01" W, 554.20 feet; thence N 01 41' 11" W, 85.86 feet; thence S 88 29' 44" W, 761.94 feet to a point on the East line of the West half of the SE 1/4 of said Section 10; thence N 1 20' 53" W, 278.72 feet to the point of beginning.

EXCEPT

Beginning at the Northeast corner of the NE 1/4 Section 16; thence S 01 10' 13" E, on the East line of said NE 1/4 a distance of 179.50 feet; thence S 89 50'

45° W, 149.60 feet; thence N 01 54' 49" E, 178.07 feet to a point on the North line of said NE 1/4; thence N 89 13' 29" E, 140.00 feet to the point of beginning.

AND

From point No. 1; thence N 88 22' 48" E, 111.68 feet to a point on the Easterly right-of-way line of the A. L. & S. P. Railroad, said point being the point of beginning; thence S 26 46' 47" W on said Easterly right-of-way of said Railroad, 1500.67 feet to a point on the South line of the SW 1/4 of Section 15; thence S 26 46' 47" W, 174.25 feet; thence N 88 26' 29" E, 1555.66 feet to a point on the East line the NW 1/4 of Section 22; thence N 01 16' 02" W, 156.87 feet to the Southwest corner of the SE 1/4 of Section 15; thence N 88 16' 33" E on the South line of said SE 1/4, 1333.16 feet to the Southwest corner of the East half of said SE 1/4; thence N 01 44' 49" W on the West line of the East half of said SE 1/4 to the centerline of the Walnut River, a survey monument being set 703.58 feet North of the Southwest corner of the East half of the SE 1/4 of said Section 15; thence on the center of said River being defined by the following bearings, distances and offset from the centerline of said River; continuing from said survey monument, said monument being 107 feet more or less North of the centerline of said River; thence S 69 07' 05" E, 184.90 feet to a point being 64 feet more or less North of the centerline of said River; thence N 88 51' 00" E, 511.04 feet to a point being 97 feet more or less NE of the centerline of said River; thence S 69 54' 50" E, 425.88 feet to a point being 124 feet more or less North of the centerline of said River; thence N 48 34' 49" E, 106.24 feet to a point 91 feet more or less West of the centerline of said River; thence N 16 06' 21" W, 573.50 feet to a point being 97 feet more or less

at of the centerline of said River; thence N 23 15' 08" E, 184.18 feet to a point being 133 feet more or less NW of the centerline of said River; thence N 89 50' 48" E, 199.29 feet to a point being 87 feet more or less North of the centerline of said River; thence N 60 43' 54" E, 291.51 feet to a point being 90 feet more or less NW of the centerline of said River; thence N 08 27' 16" W, 163.33 feet to a point being 88 feet more or less West of the centerline of said River; thence N 38 54' 31" W, 84.41 feet to a point being 68 feet more or less SW of the centerline of said River; thence N 62 37' 27" W, 87.99 feet to a point being 83 feet more or less SW of the centerline of said River; thence N 23 56' 50" W, 253.32 feet to a point being 94 feet more or less West of the centerline of said River; thence N 04 23' 41" E, 267.87 feet to a point being 113 feet more or less NW of the centerline of said River; thence N 65 03' 59" E, 267.38 feet to a point being 72 feet more or less North of the centerline of said River; thence S 84 59' 28" E, 171.26 feet to a point being 135 feet more or less NE of the centerline of said River; thence S 23 32' 36" E, 293.40 feet to a point being 70 feet more or less NE of the centerline of said River; thence S 72 03' 31" E, 238.41 feet to a point being 82 feet more or less North of the centerline of said River; thence N 76 52' 53" E, 179.16 feet to a point being 122 feet more or less North of the centerline of said River; thence S 81 04' 29" E, 287.95 feet to a point being 93 feet more or less North of the centerline of said River; thence N 68 50' 04" E, 243.20 feet to a point being 84 feet more or less NW of the centerline of said River; thence N 37 43' 10" E, 219.19 feet to a point being 81 feet more or less NW of the centerline of said River; thence N 26 07' 46" E, 312.16 feet to a point being 67 feet more or less West of the centerline of said River; thence N 12 47' 09" W, 183.06 feet

to a point on the South line of the NW 1/4 of Section 14, said point being 97 feet more or less West of the centerline of said River; thence N 18 29' 22" E, 1213.24 feet; thence N 88 10' 27" E, 132.00 feet; thence N 43 10' 27" E, 254.00 feet; thence S 88 10' 27" W, 1092.38 feet to a point on the East line of the West half of the NW 1/4 of said Section 14; thence N 01 25 49 W on the East line of the West half of said NW 1/4, 1326.39 feet to the Southeast corner of the West half of the SW 1/4 of Section 11; thence S 88 59' 16" W, 1330.74 feet to the Southeast corner of the SE 1/4 of Section 10; thence S 87 48' 16" W, on the South line of the SE 1/4 of said Section 10 to the centerline of the Walnut River, a survey monument being set 464.48 feet West of the Southeast corner of said SE 1/4; thence on the centerline of said Walnut River being defined by the following bearings, distances and offsets from the centerline of said River; continuing from said survey monument, said monument being 70 feet more or less West of the centerline of said River; thence N 18 47' 43" E, 271.82 feet to a point being 96 feet more or less NW of the centerline of said River; thence N 36 50' 10" E, 209.71 feet to a point being 85 feet more or less NW of the centerline of said River; thence N 58 14' 12" E, 166.35 feet to a point being 52 feet more or less NW of the centerline of said River; thence N 67 41' 13" W, 37.45 feet to a point of curve; said curve having a radius of 225.00 feet a central angle of 90 00' 00" and a chord bearing and distance of N 22 41' 13" W, 318.20 feet; thence on said curve a distance of 151.43 feet; thence N 22 18' 47" E, 354.00 feet to a point of curve, said curve having a radius of 165.00 feet a central angle of 54 03' 13" and a chord bearing and distance of N 4 42' 49" W, 149.95 feet; thence on said curve a distance of 135.66 feet to a point on the Eastern right-of-way line of the A. T. & S. F. Railroad; thence

on the Easterly right-of-way of said Railroad S 38 01' 47" W, 473.28 feet;  
 thence S 51 58' 13" E, 40.00 feet; thence S 38 01' 47" W, 450.48 feet; thence  
 N 51 58' 13" W, 63.00 feet; thence S 38 01' 47" W, 636.49 feet to a point of  
 curve, said curve having a radius of 2764.79 feet, a central angle of 01 08'  
 25" and a chord bearing and distance of S 37 27' 35" W, 53.02 feet; thence  
 on said curve a distance of 51.03 feet; thence S 87 48' 16" W, 64.04 to a  
 point of curve, said curve having a radius of 2814.79 feet, a central angle of  
 09 17' 16" and a chord bearing and distance of S 31 25' 25" W, 453.78 feet;  
 thence on said curve a distance of 456.28 feet; thence S 26 46' 47" W, 2030.13  
 feet; thence S 63 13' 13" E, 20.00 feet; thence S 26 46' 47" W, 300.00 feet  
 to a point on the West line of the NE 1/4 of Section 15, thence S 26 46' 47" W,  
 84.52 feet to a point on the North line of the SW 1/4 of Section 15; thence  
 S 26 46' 47" W, 472.90 feet; thence N 63 13' 13" W, 20 feet; thence S 26 46'  
 47" W, 1038.70 feet to the point of beginning.

AND

Beginning at a point 95.65 feet South and 248.14 feet East of the point of  
 intersection of the West line of the Southwest Quarter (SW 1/4), Section  
 11-1268-25E in Butler County, Kansas, with the East right-of-way line of the  
 Atchison, Topeka & Santa Fe Railroad, thence East parallel to the North line  
 of said SW 1/4 a distance of 321.25 feet; thence on a deflection angle to the  
 right of 38 49' a distance of 746.98 feet to the centerline of the Walnut  
 River, thence on a deflection angle to the right of 141 11' on the centerline of  
 said River a distance 288.71 feet; thence on a deflection angle to the left of  
 13 11' 38" on the centerline of said River a distance of 257 feet; thence on a  
 deflection angle to the left of 25 10' 55" on the centerline of said River a  
 distance of 158.31 feet; thence on a deflection angle to the right of 107 22'  
 39" a distance of 669.30 feet to the point of beginning.

EXHIBIT A

Beginning at a point on the East line of the SE 1/4, Section 8-2368-25N of the Sixth Principal Meridian in Butler County, Kansas, that is 835 feet South of the Northeast Corner thereof, thence S0°00'00"W along the East line 855.0 feet, thence S90°00'00"W a distance of 475.45 feet, thence N0°13'20"W a distance of 152.74 feet, thence S85°31'10"W a distance of 334.03 feet, thence N10°47'40"W a distance of 270.13 feet, thence N14°52'15"W a distance of 381.97 feet, thence S90°00'00"W a distance of 111.06 feet, thence N0°00'00"E a distance of 79.24 feet, thence S90°00'00"W a distance of 671.02 feet to the point of beginning. Said tract contains 15.651 acres, not including the public road.



# Attachment D

## Preliminary List of Areas of Concern/Solid Waste Management Units

1. Slop Oil Pits
2. Industrial Landfill
3. Leaded Tank Bottom Burial Areas
4. Heat Exchanger Bundle Sludge Cleaning Areas
5. Cooling Tower Blowdown/Sludge Disposal Areas
6. Former Unlined Equalization Basin
7. Former Unlined Complete Mix Activated Sludge Basin
8. Ditches, Sewers, Boxes and Traps
9. Stormwater Flumes
10. Main Stormwater Pond

**Attachment E:**  
**Financial Assurance**

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**Financial Assurance for Corrective Action**

**A. Cost Estimates**

1. Within 60 days after the effective date of this AOC Respondents shall submit to EPA a detailed written initial estimate, in current dollars, of the cost of hiring a third party to perform the Work described as Interim Measures in Section VIII (Work to be Performed) and the attached SOW (Attachment A). The initial cost estimate shall account for the total costs of the Interim Measures described in Section VIII and the SOW, including any necessary long term costs (such as operation and maintenance costs and monitoring costs) for a period of five (5) years and may be the discounted present value of such costs. A third party is a party who (i) is neither a parent nor a subsidiary of Respondents and (ii) does not share a common parent or subsidiary with Respondents. The cost estimate shall not incorporate any salvage value that may be realized from the sale of wastes, facility structures or equipment, land or other assets associated with the facility.

2. Within 60 days of EPA approval of additional Work Plan(s) required under Sections VIII and XXIV (Work To Be Performed and/or Additional Work), including any work required as Additional Work under the AOC, Respondents shall submit revised detailed written estimate(s), in current dollars, of the cost of hiring a third party to perform such Work.

3. Respondents shall annually adjust the cost estimate(s) for inflation within 120 days after the close of Respondent Frontier's fiscal year until the Work required by this AOC is completed. Such adjustments shall be adjusted for inflation for the future costs of such work, and may be the discounted present value of future costs.

4. Respondents shall submit each cost estimate to EPA for review and approval. EPA will review each cost estimate and notify Respondents in writing of EPA's approval, disapproval, or modification of the cost estimate pursuant to Section IX of the AOC.

**B. Assurances of Financial Responsibility for Completing the Work**

1. In order to secure the completion of the Work in accordance with this AOC, Respondents shall establish financial assurance for the benefit of the EPA. Concurrently with Respondents' submission of the initial cost estimate required by Paragraph A.1 of this Attachment, Respondents shall submit draft financial assurance instruments for EPA's review and approval. This financial assurance instrument shall state the purpose of the instrument is for performance of the Work required by the referenced AOC, and shall otherwise be established in conformance with the financial assurance mechanisms described within 40 C.F.R. 265.142, 265.143, 265.144, and 265.145, including provisions incorporated from 40 C.F.R. Part 264, except as may be necessary to conform to financial institution requirements, provided that any deviations in form or text are consistent with the objectives of Section B of this Attachment. If EPA determines that Respondents' draft instrument does not satisfy the requirements for financial assurance, EPA may disapprove Respondents' draft financial assurance instruments. EPA will allow 14 days from the date of Respondents' receipt of EPA's disapproval for Respondents to confer with EPA regarding the requirements for approval and/or a different financial assurance method and/or instrument. Unless the basis for EPA's disapproval is resolved to EPA's satisfaction through dialog with Respondents, within 30 days after receipt of EPA's written disapproval, Respondents shall either submit a different financial assurance method and/or instrument(s) for EPA's review and approval, selected from the forms of financial assurance referenced in Paragraph B.2 of this Attachment, or invoke Dispute Resolution provided in Section XVI of the AOC. Respondents shall, within 30 days of receipt of notice of EPA's approval of a submitted form of financial assurance, establish the method and/or instrument of financial assurance approved by EPA. Within 30 days after EPA's approval of both the initial cost estimate and approval of a financial assurance method and/or instrument, whichever date is later, Respondents shall establish and thereafter maintain financial assurance in an amount at least equal to the current cost estimate approved by EPA (including any subsequent adjustments or revisions to the cost estimate approved by EPA).

2. Respondents may use any of the methods and/or instruments generally described in the financial assurance mechanisms described within 40 C.F.R. 265.142, 265.143, 265.144, and 265.145, including provisions incorporated from 40 C.F.R Part 264. These provisions include a fully funded trust fund, a surety bond, irrevocable letters of credit, a policy of insurance, a written guarantee by a parent or subsidiary (subject to the financial test of 40 C.F.R. 264.143(f), or a guarantee based on the financial test of 40 C.F.R. 264.143(f). Any and all financial assurance methods and/or instruments provided pursuant to this AOC shall be subject to EPA's review and approval.

3. If Respondents seek to establish financial assurance by using any method and/or instrument other than a trust fund, Respondents shall also establish and maintain a standby trust fund into which funds from the other financial assurance instrument can be deposited, if the financial assurance provider is directed to do so by EPA, pursuant to Paragraph B.12 below.

4. For purposes of the financial test guarantees described in Paragraph B.2., above,



references in 40 CFR 264.143(f) to “the sum of current closure and post-closure costs and the current plugging and abandonment cost estimates” shall mean the sum of all environmental obligations covered under Section A of this Attachment (and known obligations under CERCLA, RCRA, TSCA and/or any other state or tribal environmental obligation) guaranteed by such company or for which such company is otherwise financially obligated in addition to the cost of the Work to be performed in accordance with this AOC.

5. If Respondents seek to establish financial assurance by providing a guarantee, Respondents shall also comply with the other requirements of 40 C.F.R. Part 264.143(f), 40 C.F.R. Part 264.151(f), and 40 C.F.R. Part 264.151(h)(1) relating to the financial test and corporate guarantee: (i) the initial submission of required reports and statements from the guarantor’s chief financial officer and independent certified public accountant; (ii) the annual re-submission of such reports and statements within 150 days after the close of each of the guarantor’s fiscal years; and (iii) the notification of EPA within 150 days after the close of any of the guarantor’s fiscal years in which any such guarantor no longer satisfies the financial test requirements set forth at 40 C.F.R. Part 264.143(f)(1). EPA reserves the right to request additional information (including financial statements and accountant’s reports) from the Respondents or corporate guarantor at any time.

6. Respondents may combine more than one mechanism to demonstrate financial assurance for the Work required to be performed in accordance with this AOC and may divide or split financial assurance mechanisms between the Respondents by agreement. However, more than one type of mechanism may not be combined for a specific item of Work or a required deliverable. For example, more than one financial assurance method or instrument may not be combined to provide financial assurance for the performance of a specific item of required work such as a Workplan or Study, an itemized Task in the SOW, or the long term operation and maintenance of a required remediation system.

7. The originals of financial assurance method and/or instrument(s) established pursuant to this AOC (including, without limitation, the original versions of letters of credit and other negotiable instruments issued for EPA's benefit) shall be submitted by Respondents to the EPA Project Manager under this AOC, or other person designated by EPA.

8. In the event that EPA determines at any time that the financial assurances provided pursuant to this Attachment to the AOC are inadequate, or in the event that Respondents become aware of information indicating that any financial assurances provided pursuant to this Attachment no longer satisfy the requirements set forth herein (including, without limitation, that any third-party provider of such assurances such as a surety, trustee, financial institution, insurer, and/or any guarantor no longer qualifies to provide such assurances or the amount provided for in such financial assurance instrument becomes inadequate), then Respondents shall, after receipt of notice of EPA's determination invoke Dispute Resolution as provided in Section XVI of the AOC or, as the case may be, within 45 days of becoming aware of such information, obtain and propose to EPA, for approval and approval, a revised draft form of financial assurance (and otherwise acceptable under this Attachment) that covers such cost increase or change in

information. If EPA determines that Respondents' proposed draft instrument does not satisfy the requirements for financial assurance, as set forth in Subparagraphs B.2, above, EPA may disapprove Respondents' draft financial assurance. Unless the basis for EPA's disapproval is resolved to EPA's satisfaction through dialog with Respondents, after receipt of EPA's written disapproval, Respondents shall either invoke Dispute Resolution under Section XVI of the AOC or submit a different financial assurance method and/or instrument(s) for EPA's review and approval, selected from the forms of financial assurance specified in Paragraphs B.2 of this Attachment. Respondents shall, within 30 days of receipt of notice of EPA's approval of a submitted form of financial assurance of a method of financial assurance, establish the method of financial assurance approved or selected by EPA.

9. Whenever the adjusted estimate for the cost of completing the remaining Work exceeds the amount of financial assurances already provided pursuant to this Attachment, the Respondents shall, within 30 days thereafter, obtain and present to EPA for approval a revised form of financial assurance (otherwise acceptable under this Attachment) that covers such cost increase.

10. Respondents' inability to post financial assurance for completion of the Work shall in no way excuse performance of any other requirements of this AOC, including, without limitation, Respondents' obligation to complete the Work in strict accordance with the terms of this AOC.

11. Any and all financial assurance instruments provided by Respondents pursuant to Paragraph B.2 of this Attachment shall require that the instrument(s) shall not be allowed to expire, terminate and/or to be cancelled unless the financial assurance provider has notified both the Respondents and EPA's Project Manager at least 120 days prior to the date of such expiration, termination and/or cancellation of the instrument. Any such instrument shall also provide that the financial assurance provider may not cancel or terminate the financial assurance instrument until 120 days after the latest date of receipt of the notice by both EPA's Project Manager and Respondents. Furthermore, if Respondents have failed to provide alternate financial assurance and obtain EPA's written approval for such financial assurance within 90 days following receipt of such notice by both Respondents and the EPA, then such financial instrument shall authorize EPA to notify the financial assurance provider in writing (prior to the expiration, termination and/or cancellation of the instrument), and to require the financial assurance provider to immediately deposit into the standby trust fund, or a newly created trust fund approved by EPA, the remaining funds obligated under the financial assurance instrument for the performance of the Work in accordance with this AOC.

12. Any and all financial assurance instruments provided pursuant to this AOC shall provide for timely payment, as directed by EPA, or performance of the Work in accordance with this AOC, or a combination of payment and work, in the event that EPA determines that Respondents (i) have ceased implementation of any portion of the Work, (ii) are significantly or repeatedly deficient or late in its performance of the Work, or (iii) are implementing the Work in a manner that may cause an endangerment to human health or the environment. In the event that

EPA determines that any of the circumstances described in clauses (i), (ii), or (iii) of this Paragraph has occurred, Respondents hereby acknowledges that EPA shall have the right to immediately access any and all financial assurance instruments provided pursuant to this Attachment. EPA shall notify in writing both Respondents and the financial assurance provider of such a determination, and shall direct the financial assurance provider to immediately (i) arrange for performance of the work or (ii) deposit into the standby trust fund, or a newly created trust fund approved by EPA, the remaining funds obligated under the financial assurance instrument for the performance of the Work in accordance with this AOC. If EPA is nevertheless unable after reasonable efforts to secure the payment of funds or performance of the Work in accordance with this AOC from the financial assurance provider(s) pursuant to this AOC, then, upon receiving written notice from EPA, Respondents shall either (i) within 15 days thereafter deposit into the standby trust fund, or a newly created trust fund approved by EPA, in immediately available funds and without setoff, counterclaim, or condition of any kind, a cash amount equal to the estimated cost of the remaining Work to be performed in accordance with this AOC as of such date, as determined by EPA, or (ii) within 15 days reestablish financial assurance pursuant to another financial mechanism approved by EPA.

13. Respondents may invoke the procedures set forth in Section XVI (Dispute Resolution), to dispute EPA's determination that any of the circumstances described in clauses (i), (ii), or (iii) of Paragraph 12 have occurred. Invoking the dispute resolution provisions shall not excuse, toll or suspend the obligation of the financial assurance provider, under Paragraph 12 to fund the trust fund, but if Respondents dispute EPA's determination under Paragraph 12, EPA will not direct the trustee to make any payments from the trust fund, pending resolution of the dispute.

14. If Respondents believe that the estimated cost to complete the remaining Work has diminished below the amount covered by the existing financial assurance provided under this AOC, Respondents may, on any anniversary date of the effective date of this AOC, or at any other time agreed to by the Parties, submit a written proposal to EPA to reduce the amount of the financial assurance provided under this Attachment to the estimated cost of the remaining Work to be performed. The written proposal shall specify, at a minimum, the cost of the remaining Work to be performed and the basis upon which such cost was calculated. The decision whether to approve a proposal to reduce the amount of financial assurance shall be within EPA's sole discretion and EPA shall notify Respondents of its decision regarding such a proposal in writing. Respondents may reduce the amount of the financial assurance only after receiving EPA's written decision and only in accordance with and to the extent permitted by such written decision.

15. If Respondents desire to change the form of financial assurance, Respondents may, on any anniversary of the effective date of this AOC, or at any other time agreed to by the Parties, submit a written proposal to EPA to change the form of financial assurance. Such a proposal shall specify, at a minimum, the cost of the remaining Work to be performed, the basis upon which such cost was calculated; and a detailed description of the proposed revised form of financial assurance. The decision whether to approve a proposal to change the form of financial



assurance shall be within EPA's sole discretion. EPA shall notify the Respondents of its decision regarding such a proposal in writing. After receiving EPA's written acceptance, Respondents may change the form of financial assurance in accordance with and to the extent permitted by such written acceptance.