Appendix B - Waste Analysis Plan 2017

1.0 General Waste Analysis – §264.13

Wynnewood Refining Company, LLC ("WRC" or the "Facility") is a generator of hazardous waste and does not receive hazardous waste generated off site. Tank 2007 ("T-2007") is used to store API Separator Sludge (K051) and Dissolved Air Flotation Float (K048) generated by on-site operations. API Separator Sludge (K051) is a dark, oily, water-based sludge with solids that are generally heavier than the aqueous phase. That waste is produced in the Facility's API Separators, also known as oil/water separators. Process wastewaters flow to the API Separators where suspended solids and heavier oils settle out as sludge. The sludge is periodically pumped from the API Separators for storage in Tank 2007 ("T-2007") prior to off-site disposal. Dissolved Air Flotation ("DAF") is an alternative clarification process that uses micro air bubbles to attach and float flocculated particles and suspended solids, referred to as DAF Float (K048), to the water's surface for removal.

1.1 Analytical Methods - §264.13(b)(2)

The basis for listing both K048 and K051 hazardous wastes is because of the possible presence of hexavalent chromium and lead, as found in 40 CFR §261 Appendix VII. Treatment standards under the Land Disposal Restrictions are based on constituent concentrations in the waste or waste extract rather than on specified technologies. Those concentrations are presented in Attachment 1 to this Waste Analysis Plan. Analytical requirements for the waste stored in T-2007 are limited to information required by the TSDF for proper treatment and disposal. Analytical parameters will include flash point, pH, total cyanide, extractable sulfide, TCLP lead, TCLP chromium, TCLP nickel, BETX, and semi-volatile organic compounds. Analytical methods are as follows:

Analytical Parameter	Analytical Method
Flash Point	SW-846 Test Method 1010A
pH	SW-846 Test Method 9040/9045D
Total Cyanide	SW-846 Test Method 9014 or 9213
Extractable Sulfide	SW-846 Test Method 9034 or 9215
Lead (TCLP)	SW-846 Test Method 6010B/6020A
Chromium (TCLP)	SW-846 Test Method 6010B/6020A
Nickel (TCLP)	SW-846 Test Method 6010B/6020A
BETX (benzene, ethylbenzene, toluene and xylene)	SW-846 Test Method 8260B/8021B
Semi-Volatile Organic Compounds	SW-846 Test Method 8270C

Analytical Data on the K048 DAF float and K051 API Separator sludge are included in Attachment 2 to this Waste Analysis Plan.

1.2 Sampling Methods - §264.13(b)(3)

Samples are obtained in such a manner as to ensure that it is representative of all waste stored in T-2007. Samples are managed to ensure the identity and integrity of the sample stays intact, including thorough labeling and use of chain-of-custody. Samples for analysis are obtained from the “deepwell”, which is a sump at the API Separator, using a coliwasa or similar sampling device.

1.3 Frequency of Analysis - §264.13(b)(4)

The wastes accumulated in T-2007 are listed wastes with consistent physical properties and chemical compositions. A sample of the combined API Separator sludge and DAF float will be obtained at least annually for analysis by a contract laboratory. Although the processes generating the wastes, and therefore the physical properties and chemical compositions of the wastes, are not expected to change, should WRC be notified, or have reason to believe, that the process or operation generating the hazardous wastes, has changed, analyses would be repeated.

Wynnewood Refining Company Waste Analysis Plan
Attachment 1
Land Disposal Restriction Treatment Standards

		Regulated Hazardous Constituent		Wastewater	Nonwastewater
Waste Code	**Waste Description**	**Common name**	**CAS number**	**Concentration in mg/L**	**Concentration in mg/kg unless noted as "mg/L TCLP"**
K048	Dissolved air flotation (DAF) float from the petroleum refining industry.	Benzene	71-43-2	0.14	10
		Benzo(a)pyrene	50-32-8	0.061	3.4
		bis(2-Ethylhexyl)phthalate	117-81-7	0.28	28
		Chrysene	218-01-9	0.059	3.4
		Di-n-butyl phthalate	84-74-2	0.057	28
		Ethylbenzene	100-41-4	0.057	10
		Fluorene	86-73-7	0.059	NA
		Naphthalene	91-20-3	0.059	5.6
		Phenanthrene	85-01-8	0.059	5.6
		Phenol	108-95-2	0.039	6.2
		Pyrene	129-00-0	0.067	8.2
		Toluene	108-88-33	0.080	10
		Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)	1330-20-7	0.32	30
		Chromium (Total)	7440-47-3	2.77	0.60 mg/L TCLP
		Cyanides (Total)	57-12-5	1.2	590
		Lead	7439-92-1	0.69	NA
		Nickel	7440-02-0	NA	11 mg/L TCLP

Wynnewood Refining Company Waste Analysis Plan
Attachment 1
Land Disposal Restriction Treatment Standards

		Regulated Hazardous Constituent		Wastewater	Nonwastewater
Waste Code	**Waste Description**	**Common name**	**CAS number**	**Concentration in mg/L**	**Concentration in mg/kg unless noted as "mg/L TCLP"**
K051	API separator sludge from the petroleum refining industry.	Acenaphthene	83-32-9	0.059	NA
		Anthracene	120-12-7	0.059	3.4
		Benz(a)anthracene	56-55-3	0.059	3.4
		Benzene	71-43-2	0.14	10
		Benzo(a)pyrene	50-32-8	0.061	3.4
		bis(2-Ethylhexyl)phthalate	117-81-7	0.28	28
		Chrysene	218-01-9	0.059	3.4
		Di-n-butyl phthalate	105-67-9	0.057	28
		Ethylbenzene	100-41-4	0.057	10
		Fluorene	86-73-7	0.059	NA
		Naphthalene	91-20-3	0.059	5.6
		Phenanthrene	85-01-8	0.059	5.6
		Phenol	108-95-2	0.039	6.2
		Pyrene	129-00-0	0.067	8.2
		Toluene	108-88-3	0.08	10
		Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)	1330-20-7	0.32	30
		Cyanides (Total)	57-12-5	1.2	590
		Chromium (Total)	7440-47-3	2.77	0.60 mg/L TCLP
		Lead	7439-92-1	0.69	NA
		Nickel	7440-02-0	NA	11 mg/L TCLP

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ANA-LAB CORP. THE COMPLETE SERVICE LAB

Project Result Summary

Printed 10/24/2016

Project 758780

Account WYNN - K

Default

Report To

Wynnewood Refining Co
Evan Hilburn
906 South Powell
PO Box 305
Wynnewood, OK 73098-

	Solid & Chemical Materials				
	1532194 10/11/16 11:00 DAF Float				
Administrative					
Reactivity	Review				
EPA 9045D,					
Corrosivity (Solids by pH)	Non-Corrosive				
Distillations					
ASTM D 4978-95/SW 9031,					
Sulfide Screen	POSITIVE				
EPA 9014, mg/kg					
Total Cyanide	<8.37				
Gravimetrics					
SM2540 G-1997 /MOD, %					
Total Solids for Dry Wt	16.8				
Metals					
EPA 6020A, mg/kg					
Lead, Total (7439-92-1)	76.2				
Barium (7440-39-3)	498				
Arsenic, Total (7440-38-2)	16.0				
Chromium, Total (7440-47-3)	85.1				
Selenium, Total (7782-49-2)	10.1				
Silver, Total (7440-22-4)	0.744				
Cadmium, Total (7440-43-9)	0.714				
EPA 6020A, mg/L					
TCLP Arsenic (7440-38-2)	<0.050				
TCLP Barium (7440-39-3)	1.06				
TCLP Cadmium (7440-43-9)	<0.005				
TCLP Chromium (7440-47-3)	0.0937				
TCLP Lead (7439-92-1)	<0.050				
TCLP Selenium (7782-49-2)	<0.050				
TCLP Silver (7440-22-4)	<0.050				
EPA 7470A, mg/L					
TCLP Mercury (7439-97-6)	<0.002				
EPA 7471A, mg/kg					
Mercury (7439-97-6)	1.48				
Organics					

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Project Result Summary

Printed 10/24/2016

Account: WYNN - K

Project: 758780

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Report To

Wynnewood Refining Co
Evan Hilburn
906 South Powell
PO Box 305
Wynnewood, OK 73098-

Organics	1532194 10/11/16 11:00 DAF Float				
EPA 8260B, mg/L					
TCLP 1,2-Dichloroethane (107-06-2)	<0.010				
TCLP 1,1-Dichloroethene (75-35-4)	<0.010				
TCLP 1,4 Dichlorobenzene (106-46-7)	<0.010				
TCLP Benzene (71-43-2)	**0.622**				
TCLP Carbon tetrachloride (56-23-5)	<0.010				
TCLP Chlorobenzene (108-90-7)	<0.010				
TCLP Chloroform (67-66-3)	<0.010				
TCLP MEK (78-93-3)	<0.050				
TCLP Tetrachloroethylene (127-18-4)	<0.010				
TCLP Trichloroethylene (79-01-6)	<0.010				
TCLP Vinyl chloride (75-01-4)	<0.010				
EPA 8260B, ug/kg					
Benzene (71-43-2)	**483000**				
Carbon Tetrachloride (56-23-5)	<2980				
Chlorobenzene (108-90-7)	<2980				
Chloroform (67-66-3)	<2480				
p-Dichlorobenzene (106-46-7)	<2980				
1,2-Dichloroethane (107-06-2)	<5950				
1,1-Dichloroethylene (75-35-4)	<2980				
Methyl ethyl ketone (Butanone) (78-93	<14900				
Tetrachloroethylene (127-18-4)	<2980				
Trichloroethylene (79-01-6)	<2980				
Vinyl chloride (75-01-4)	<2980				
EPA 8270C, mg/L					
TCLP bis(2-Chloroethyl)ether (111-44-	<0.010				
TCLP 3&4-Methylphenol (m&p-Creso	**0.142**				
TCLP 2-Methylphenol (o-Cresol)	<0.100				
TCLP 2,4-Dinitrotoluene (121-14-2)	<0.020				
TCLP Hexachlorobenzene (118-74-1)	<0.010				
TCLP Hexachlorobutadiene (87-68-3)	<0.0103				
TCLP Hexachloroethane (67-72-1)	<0.020				
TCLP Nitrobenzene (98-95-3)	<0.010				
TCLP Pentachlorophenol (87-86-5)	<0.050				
TCLP Pyridine (Reg. Limit 5) (110-86-1	<0.0135				
TCLP Total Cresols (Reg Lim 200) (10	**0.142**				
TCLP 2,4,6-Trichlorophenol (88-06-2)	<0.020				
TCLP 2,4,5-Trichlorophenol (95-95-4)	<0.050				

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Project Result Summary

Printed 10/24/2016

Account **WYNN - K**

Project 758780

Default

Report To

Wynnewood Refining Co
Evan Hilburn
906 South Powell
PO Box 305
Wynnewood, OK 73098-

	1532194 10/11/16 11:00 DAF Float				
Organics					
EPA 8270C, ug/kg					
Bis(2-chloroethyl)ether (111-44-4)	<9940				
3&4-Methylphenol (m&p-Cresol) (MEP	<26200				
2-Methylphenol (o-Cresol) (95-48-7)	<99400				
2,4-Dinitrotoluene (121-14-2)	<12800				
Hexachlorobenzene (118-74-1)	<9940				
Hexachlorobutadiene (87-68-3)	<9940				
Hexachloroethane (67-72-1)	<9940				
Nitrobenzene (98-95-3)	<9940				
Pentachlorophenol (87-86-5)	<11700				
Pyridine (110-86-1)	<16800				
2,4,6-Trichlorophenol (88-06-2)	<26600				
2,4,5-Trichlorophenol (95-95-4)	<9940				
Wet Bench					
Ana-Lab Method,					
Reactivity with Water	NON-REACTIVE				
EPA 1010A, Degrees F					
Flash Point (Reg. Limit 140.0 F)	>201				
EPA 9031, mg/kg					
Extractable Sulfide	7740				
EPA 9045D, SU					
pH Measured in Water	8.80				

Paul Zhang, Ph.D., Quality Director

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Results

Account	*Project*
WYNN-K	**758780**

Report To

Wynnewood Refining Co
Evan Hilburn
906 South Powell
PO Box 305
Wynnewood, OK 73098-

Results

1532194 **DAF Float** *Received:* 10/12/2016

Solid & Chemical Mat *Collected by:* Client *Affiliation:* Wynnewood Refining C 10/11/2016 11:00:00

	Parameter	Results	Units	RL	Flags	MAL	CAS	Bottle
	Prepared: 10/21/2016 16:46:04 *Calculated* 10/21/2016 16:46:04 CAL							
N	**Reactivity**	**Review**				0		
	Ana-Lab Method *Prepared:* 686946 10/13/2016 11:25:00 *Analyzed* 686946 10/13/2016 11:25:00 TDD							
	Reactivity with Water	**NON-REACTIVE**						02
	ASTM D 4978-95/SW 9031 *Prepared:* 686775 10/13/2016 13:20:00 *Analyzed* 686775 10/13/2016 13:20:00 GWA							
	Sulfide Screen	**POSITIVE**		1.00		500		01
	EPA 1010A *Prepared:* 687259 10/17/2016 10:05:00 *Analyzed* 687259 10/17/2016 10:05:00 NHL							
N	**Flash Point (Reg. Limit 140.0 F)**	**>201**	**Degrees F**					01
	EPA 6020A *Prepared:* 686734 10/13/2016 11:30:00 *Analyzed* 687096 10/14/2016 20:37:00 CLK							
N	**Arsenic, Total**	**16.0 ***	**mg/kg**	0.586		41.0	**7440-38-2**	03
N	**Barium**	**498 ***	**mg/kg**	0.293			**7440-39-3**	03
N	**Cadmium, Total**	**0.714 ***	**mg/kg**	0.293		39.0	**7440-43-9**	03
N	**Chromium, Total**	**85.1 ***	**mg/kg**	0.293			**7440-47-3**	03
N	**Lead, Total**	**76.2 ***	**mg/kg**	0.293		300	**7439-92-1**	03
N	**Selenium, Total**	**10.1 ***	**mg/kg**	0.881		100	**7782-49-2**	03
N	**Silver, Total**	**0.744 ***	**mg/kg**	0.293			**7440-22-4**	03
	EPA 6020A *Prepared:* 687060 10/14/2016 15:31:00 *Analyzed* 687281 10/17/2016 17:01:00 CLK							
N	**TCLP Arsenic**	**<0.050**	**mg/L**	0.050		5.00	**7440-38-2**	11
N	**TCLP Barium**	**1.06**	**mg/L**	0.050		100	**7440-39-3**	11
N	**TCLP Cadmium**	**<0.005**	**mg/L**	0.005		1.00	**7440-43-9**	11
N	**TCLP Chromium**	**0.0937**	**mg/L**	0.050		5.00	**7440-47-3**	11
N	**TCLP Lead**	**<0.050**	**mg/L**	0.050		5.00	**7439-92-1**	11
N	**TCLP Selenium**	**<0.050**	**mg/L**	0.050		1.00	**7782-49-2**	11
N	**TCLP Silver**	**<0.050**	**mg/L**	0.050		5.00	**7440-22-4**	11

* Dry Weight Basis

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Results

Printed: 10/24/2016

1532194 **DAF Float** *Received:* 10/12/2016

Solid & Chemical Mat *Collected by:* Client *Affiliation:* Wynnewood Refining C 10/11/2016 11:00:00

EPA 7470A		*Prepared: 686953*	*10/14/2016*	*10:45:00*	*Analyzed 687184*	*10/17/2016*	*11:59:00*	*LPS*
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**TCLP Mercury**	**<0.002**	**mg/L**	0.002		0.200	**7439-97-6**	08

EPA 7471A		*Prepared: 686873*	*10/14/2016*	*08:30:00*	*Analyzed 687224*	*10/17/2016*	*13:35:00*	*LPS*
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**Mercury**	**1.48 ***	**mg/kg**	0.116		17.0	**7439-97-6**	07

* Dry Weight Basis

EPA 8260B		*Prepared: 687230*	*10/17/2016*	*14:45:00*	*Analyzed 687528*	*10/18/2016*	*15:57:00*	*JRH*
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**TCLP 1,1-Dichloroethene**	**<0.010**	**mg/L**	0.010		0.700	**75-35-4**	20
N	**TCLP 1,2-Dichloroethane**	**<0.010**	**mg/L**	0.010		0.500	**107-06-2**	20
N	**TCLP 1,4 Dichlorobenzene**	**<0.010**	**mg/L**	0.010		7.50	**106-46-7**	20
N	**TCLP Benzene**	**0.622**	**mg/L**	0.010		0.500	**71-43-2**	20
N	**TCLP Carbon tetrachloride**	**<0.010**	**mg/L**	0.010		0.500	**56-23-5**	20
N	**TCLP Chlorobenzene**	**<0.010**	**mg/L**	0.010		100	**108-90-7**	20
N	**TCLP Chloroform**	**<0.010**	**mg/L**	0.010		6.00	**67-66-3**	20
N	**TCLP MEK**	**<0.050**	**mg/L**	0.050		200	**78-93-3**	20
N	**TCLP Tetrachloroethylene**	**<0.010**	**mg/L**	0.010		0.700	**127-18-4**	20
N	**TCLP Trichloroethylene**	**<0.010**	**mg/L**	0.010		0.500	**79-01-6**	20
N	**TCLP Vinyl chloride**	**<0.010**	**mg/L**	0.010		0.200	**75-01-4**	20
EPA 8260B		*Prepared: 688007*	*10/20/2016*	*15:52:00*	*Analyzed 688007*	*10/20/2016*	*15:52:00*	*JRH*
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**1,1-Dichloroethylene**	**<2980 ***	**ug/kg**	2980	(	50.1	**75-35-4**	01
N	**1,2-Dichloroethane**	**<5950 ***	**ug/kg**	5950	(	13.7	**107-06-2**	01
N	**Benzene**	**483000 ***	**ug/kg**	2980	(	26.0	**71-43-2**	01
N	**Carbon Tetrachloride**	**<2980 ***	**ug/kg**	2980	(	61.9	**56-23-5**	01
N	**Chlorobenzene**	**<2980 ***	**ug/kg**	2980	(	1090	**108-90-7**	01
N	**Chloroform**	**<2480 ***	**ug/kg**	2480	(	417	**67-66-3**	01
N	**Methyl ethyl ketone (Butanone)**	**<14900 ***	**ug/kg**	14900	(	29300	**78-93-3**	01
N	**p-Dichlorobenzene**	**<2980 ***	**ug/kg**	2980	(	5.00	**106-46-7**	01
N	**Tetrachloroethylene**	**<2980 ***	**ug/kg**	2980	(	50.2	**127-18-4**	01
N	**Trichloroethylene**	**<2980 ***	**ug/kg**	2980	(	33.6	**79-01-6**	01
N	**Vinyl chloride**	**<2980 ***	**ug/kg**	2980	(	22.3	**75-01-4**	01

* Dry Weight Basis

EPA 8270C		*Prepared: 687178*	*10/17/2016*	*10:30:00*	*Analyzed 688389*	*10/24/2016*	*12:43:00*	*SLC*
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**2,4,5-Trichlorophenol**	**<9940 ***	**ug/kg**	9940		33800	**95-95-4**	14
N	**2,4,6-Trichlorophenol**	**<26600 ***	**ug/kg**	26600		594	**88-06-2**	14
N	**2,4-Dinitrotoluene**	**<12800 ***	**ug/kg**	12800		5.32	**121-14-2**	14
N	**2-Methylphenol (o-Cresol)**	**<99400 ***	**ug/kg**	99400		7120	**95-48-7**	14
N	**3&4-Methylphenol (m&p-Cresol)**	**<26200 ***	**ug/kg**	26200		632	**MEPH34**	14
N	**Bis(2-chloroethyl)ether**	**<9940 ***	**ug/kg**	9940		2.11	**111-44-4**	14

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Results

1532194 **DAF Float** *Received:* 10/12/2016

Solid & Chemical Mat *Collected by:* Client *Affiliation* Wynnewood Refining C 10/11/2016 11:00:00

EPA 8270C	*Prepared: 687178*	*10/17/2016*	*10:30:00*	*Analyzed 688389*	*10/24/2016*	*12:43:00*	*SLC*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**Hexachlorobenzene**	**<9940 ***	**ug/kg**	9940		1100	**118-74-1**	14
N	**Hexachlorobutadiene**	**<9940 ***	**ug/kg**	9940		1370	**87-68-3**	14
N	**Hexachloroethane**	**<9940 ***	**ug/kg**	9940		1840	**67-72-1**	14
N	**Nitrobenzene**	**<9940 ***	**ug/kg**	9940		87.9	**98-95-3**	14
N	**Pentachlorophenol**	**<11700 ***	**ug/kg**	11700		3.58	**87-86-5**	14
N	**Pyridine**	**<16800 ***	**ug/kg**	16800		69.0	**110-86-1**	14
EPA 8270C	*Prepared: 687197*	*10/17/2016*	*12:00:00*	*Analyzed 688360*	*10/19/2016*	*16:36:00*	*SLC*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**TCLP 2,4,5-Trichlorophenol**	**<0.050**	**mg/L**	0.050		1.00	**95-95-4**	17
N	**TCLP 2,4,6-Trichlorophenol**	**<0.020**	**mg/L**	0.020		2.00	**88-06-2**	17
N	**TCLP 2,4-Dinitrotoluene**	**<0.020**	**mg/L**	0.020		0.130	**121-14-2**	17
N	**TCLP 2-Methylphenol (o-Cresol)**	**<0.100**	**mg/L**	0.100		200		17
N	**TCLP 3&4-Methylphenol (m&p-Creso**	**0.142**	**mg/L**	0.080		200		17
N	**TCLP bis(2-Chloroethyl)ether**	**<0.010**	**mg/L**	0.010		0.100	**111-44-4**	17
N	**TCLP Hexachlorobenzene**	**<0.010**	**mg/L**	0.010		0.130	**118-74-1**	17
N	**TCLP Hexachlorobutadiene**	**<0.0103**	**mg/L**	0.0103		0.500	**87-68-3**	17
N	**TCLP Hexachloroethane**	**<0.020**	**mg/L**	0.020		3.00	**67-72-1**	17
N	**TCLP Nitrobenzene**	**<0.010**	**mg/L**	0.010		2.00	**98-95-3**	17
N	**TCLP Pentachlorophenol**	**<0.050**	**mg/L**	0.050		100	**87-86-5**	17
N	**TCLP Pyridine (Reg. Limit 5)**	**<0.0135**	**mg/L**	0.0135		5.00	**110-86-1**	17
EPA 8270C	*Prepared: 687197*	*10/17/2016*	*12:00:00*	*Calculated 688360*	*10/24/2016*	*13:22:11*	*CAL*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**TCLP Total Cresols (Reg Lim 200)**	**0.142**	**mg/L**	0.080		200	**108-39-4,ect.**	17
	* Dry Weight Basis							

EPA 9014	*Prepared: 688011*	*10/21/2016*	*09:40:00*	*Analyzed 688203*	*10/21/2016*	*14:47:00*	*MLC*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**Total Cyanide**	**<8.37**	**mg/kg**	8.37	P	250		21
EPA 9031	*Prepared: 687599*	*10/17/2016*	*07:45:00*	*Analyzed 687599*	*10/17/2016*	*07:45:00*	*BAA*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**Extractable Sulfide**	**7740 ***	**mg/kg**	119	P			01
	* Dry Weight Basis							
EPA 9045D	*Prepared:*	*10/20/2016*	*13:10:25*	*Calculated*	*10/20/2016*	*13:10:25*	*CAL*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**Corrosivity (Solids by pH)**	**Non-Corrosive**						
EPA 9045D	*Prepared: 686992*	*10/14/2016*	*09:20:00*	*Analyzed 686992*	*10/14/2016*	*09:20:00*	*SEH*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*
N	**pH Measured in Water**	**8.8 @ 21 C**	**SU**	2.00				01
SM2540 G-1997 /MOD	*Prepared: 686835*	*10/13/2016*	*10:00:00*	*Analyzed 686835*	*10/13/2016*	*10:00:00*	*JWK*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*	*Bottle*

Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

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Employee Owned Integrity Caring Continual Improvement

Results

1532194 **DAF Float** *Received:* 10/12/2016

Solid & Chemical Mat *Collected by:* Client *Affiliation:* Wynnewood Refining C 10/11/2016 11:00:00

SM2540 G-1997 /MOD		*Prepared: 686835*	*10/13/2016*	*10:00:00*	*Analyzed 686835*	*10/13/2016*	*10:00:00*	*JWK*	
	Parameter	*Results*	*Units*	*RL*	*Flags*	*MAL*	*CAS*		*Bottle*
N	**Total Solids for Dry Wt**	**16.8**	**%**	0.010					02

Sample Preparation

1532194 **DAF Float** *Received:* 10/12/2016

Calculation		*Prepared:*	*10/24/2016*	*14:38:11*	*Calculated*	*10/24/2016*	*14:38:11*	*CAL*	
	As Received to Dry Weight Basis	**Calculated**							
EPA 3510C		*Prepared: 686806*	*10/13/2016*	*14:45:00*	*Analyzed 687197*	*10/17/2016*	*12:00:00*	*KRR*	
	TCLP Liquid-Liquid Extract	**1/100**	**ml**						06
EPA 1311		*Prepared: 686806*	*10/13/2016*	*14:45:00*	*Analyzed 686806*	*10/13/2016*	*14:45:00*	*TDD*	
N	**TCLP Extraction Non-Volatile**	**SOLID EXT 2**							02
EPA 1311ZHE		*Prepared: 687230*	*10/17/2016*	*14:45:00*	*Analyzed 687230*	*10/17/2016*	*14:45:00*	*TDD*	
N	**TCLP Extraction ZHE Volatiles**	**100.0% SOLID**							02
EPA 200.2 2.8		*Prepared: 686734*	*10/13/2016*	*11:30:00*	*Analyzed 686734*	*10/13/2016*	*11:30:00*	*TES*	
N	**Solid Metals Digestion**	**50/5.08**	**grams**						01
EPA 3005A		*Prepared: 686806*	*10/13/2016*	*14:45:00*	*Analyzed 687060*	*10/14/2016*	*15:31:00*	*ALH*	
N	**Metals Digestion TCLP Extract**	**50/10**	**ml**						05
EPA 3550B		*Prepared: 687178*	*10/17/2016*	*10:30:00*	*Analyzed 687178*	*10/17/2016*	*10:30:00*	*CRG*	
N	**Sonic Extraction**	**5/30**	**grams**						01
EPA 7470A		*Prepared: 686806*	*10/13/2016*	*14:45:00*	*Analyzed 686953*	*10/14/2016*	*10:45:00*	*ALB*	
N	**Metals Digestion TCLP 7470**	**50/2.5**	**ml**						05

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Employee Owned Integrity Caring Continual Improvement

Results

Printed: 10/24/2016

1532194 **DAF Float** *Received:* 10/12/2016

EPA 7471A		*Prepared: 686873*	*10/14/2016*	*08:30:00*	*Analyzed*	*686873*	*10/14/2016*	*08:30:00*	*ALB*
N	**Solid Metals Digestion Hg**	**50/0.5127**	**grams**					01	
EPA 8260B		*Prepared: 687230*	*10/17/2016*	*14:45:00*	*Analyzed*	*687528*	*10/18/2016*	*15:57:00*	*JRH*
N	**MS TCLP Volatile Analysis**	**Entered**						20	
EPA 8260B		*Prepared: 688007*	*10/20/2016*	*15:52:00*	*Analyzed*	*688007*	*10/20/2016*	*15:52:00*	*JRH*
N	**Volatiles as Totals**	**Entered**			(			01	
EPA 8270C		*Prepared: 687178*	*10/17/2016*	*10:30:00*	*Analyzed*	*688389*	*10/24/2016*	*12:43:00*	*SLC*
N	**Semivolatile Exp**	**Entered**						14	
EPA 8270C		*Prepared: 687197*	*10/17/2016*	*12:00:00*	*Analyzed*	*688360*	*10/19/2016*	*16:36:00*	*SLC*
N	**MS TCLP Semivolatile Analysis**	**Entered**						17	
EPA 9010 C MOD		*Prepared: 688011*	*10/21/2016*	*09:40:00*	*Analyzed*	*688011*	*10/21/2016*	*09:40:00*	*GWA*
	Reactivity Distillation	**10/0.1195**	**grams**					01	
SM 2540 G-1997		*Prepared: 686565*	*10/13/2016*	*10:00:00*	*Analyzed*	*686565*	*10/13/2016*	*10:00:00*	*JWK*
N	**Total Solids Start Code**	**Started**							

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Employee Owned Integrity Caring Continual Improvement

Results

Printed: 10/24/2016

(- Sample from Bulk Container P - Spike recovery outside control limits due to matrix effects

We report results on an 'As Received' or wet basis unless marked 'Dry Weight' Unless otherwise noted, testing was performed at Ana-lab's corporate laboratory that holds the following Federal and State certificates Texas Department of Health Lead Firm Certificate 2110076, US Department of Agriculture Soil Import Permit S-37592, Texas Commisson on Environmental Quality Drinking Water Laboratory Certificate TX219, Texas Commission on Environmental Quality NELAP T104704201, Oklahoma Department of Environmental Quality Drinking Water Certification Lab ID# D9913, EPA Lab Number TX00063, USEPA Approved Perchlorate Testing Lab, Oklahoma Department of Environmental Quality Laboratory Certificate8125, Arkansas Department of Environmental Quality Certification #03-070-0, Louisiana Department of Environmental Quality Laboratory Certification(NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) # LA030020, US Department of Energy Approved, State of Kansas Department of Health and Environment Waste Water and Solid/Hazardous Waste Cert. E-10365. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC
RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL

Paul Zhang, Ph.D., Quality Director

ANA-LAB CORP.
THE COMPLETE SERVICE LAB

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Oklahoma 405.292.8630
Louisiana 318.216.8300
North TX 817.261.8404
Gulf Coast 281.333.9414
Central TX 512.821.0045
Alabama 256.651.7264

Report to: Evan Hilburn — Project name/location

Company name: Wynnewood Refining Co LLC — Billing Address (if different)

Address: 906 S Powell — City / State / Zip

City Wynnewood — State OK — Zip 73098 — Phone — Fax

Phone 405-665-6515 — Fax — Affiliation — PO Number

Sampler Signature — Printed Name — Affiliation

Lab Number Do Not Use	Field Identification	Date	Time	Matrix	# of Containers	Notes	Analysis Requested: Total BTEX	Total BTEX MtBE	Total BTEX Naphthalene	TCLP BTEX	TCLP BTEX Naphthalene	TCLP BTEX Naphthalene MtBE	
	DAF Float 1532194	10/11/16	11am	Sludge	2		X	X	X	X	X	X	

0058# DF CF
00586 DF CF
003886

☐ Wastewater ☐ Drinking Water ☐ SW846
Samples contain ☐ HF ☐ CN ☐ Ss ☐ other##

	Printed Name	Affiliation	Signature
10/11/16 1137	Evan Hilburn		
10/11/16 1701	Laura Bullock	AL	Laura Bullock
10/12/16 0820	SSO		

Printed Name: Debra Glezan — Affiliation: Ana-Lab — Signature

Samples Received on Ice? ☐ Yes ☐ No — Method of Shipment ☐ Bus ☐ FedEX ☐ Lone Star ☐ UPS ☐ Hand delivered ☐ Airborne ☐ other — ##comments

Cooler/Sample Secure? ☐ Yes ☐ No — Tracking or Shipping Number 233404119

Requested TAT ☐ Courtesy ☐ 3 day ☐ 2 Day ☐ 24 Hr. ☐ 2-8 Hour — Samples contain ## — CN

Ana-Lab personnel collect samples as specified by Ana-Lab SOP #000320.

Sample analysis will be provided according to Ana-Lab's Standard Terms and Conditions of Agreement, available upon request and at www.ana-lab.com. Any other terms proposed by Client are deemed material alterations and are rejected unless expressly agreed to in writing by Ana-Lab.

0.4pc

758780 CoC Print Group 001 of 001

Airbill No. Z3364749

SHIP TO:
LOGIN
ANA-LAB CORPORATION
2600 DUDLEY RD.
KILGORE, TX 75663
9039840551

0.4°C

From:
MONICA TORRES
ANA-LAB CORPORATION
1824 ATCHISON DR.
SUITE F
NORMAN, OK 73069
4055902533

GGGG LSO ECONOMY NEXT DAY
3:00 IN MOST AREAS
LATER IN REMOTE AREAS

PRINT DATE: 10/3/2016
QUICKCODE: LAB
REF 1: 1D00V.0000
WEIGHT: 10.00LBS

Fold on above line and place shipping label in pouch on package. Please be sure the barcodes and addresses can be read and scanned. Shipping Instructions

1. Fold this page along the horizontal line above.
2. Place this Airbill in the shipping label pouch on the package you are shipping. Please be sure the barcodes and addresses can be read and scanned.
3. To locate a drop box near you, click on **Find A Drop Box** from the home page main menu.
4. To schedule a pickup, click on **Request Pickup.**

WARNING: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your Lone Star Overnight account number.
This label is valid for use for 3 months from the date printed. Use of expired labels may result in delayed billing and / or additional research charges.

LIMIT OF LIABILITY: We are not responsible for claims in excess of $100 for any reason unless you: 1) declare a greater value (not to exceed $25,000); 2) pay an additional fee; 3) and document your actual loss in a timely manner. We will not pay any claim in excess of the actual loss. We are not liable for any special or consequential damages. Additional limitations of liability are contained in our current Service Guide. If you ask us to deliver a package without obtaining a delivery signature, you release us of all liability for claims resulting from such service. NO DELIVERY SIGNATURE WILL BE OBTAINED FOR 8:30 AM DELIVERIES OR RESIDENTIAL DELIVERIES.

ENVIRONMENTAL RESOURCE TECHNOLOGIES, LLC

EPA laboratory code: OK00921

Oklahoma DEQ Certification No. 8304 7211 8316

Certificate of Analysis

SN4393
- Refinery Sludge

Client Name: Wynnewood Refining Co LLC

Date Received: 12/5/2012

Project: *T2007 K051*

Report Date: 12/18/2012

ERT Lab Log #	Sample Identification	Date Sampled	Analysis Date	Time	Analyzed By	Parameter	Results	Units	Method
WW1212060	**T2007 K051**	**12/04/12**	12/06/12	18:31	SM	**TCLP Chromium**	**0.061**	mg/L	200.7/6010B
			12/06/12	18:31	SM	**TCLP Lead**	**<0.001**	mg/L	200.7/6010B
			12/06/12	18:31	SM	**TCLP Nickel**	**0.778**	mg/L	200.7/6010B
			12/12/12	11:21	PM	**Benzene**	**9.71**	mg/Kg	8021B
			12/12/12	11:21	PM	**Toluene**	**58.2**	mg/Kg	8021B
			12/12/12	11:21	PM	**Ethylbenzene**	**50.0**	mg/Kg	8021B
			12/12/12	11:21	PM	**Xylene (m,p & o)**	**170**	mg/Kg	8021B
			12/11/12	13:08	CDH	**Acenaphthene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Anthracene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Benzo(a)anthracene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Benzo(a)pyrene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Chrysene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Fluorene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Naphthalene**	**95.8**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Phenanthrene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Phenol**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Pyrene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**bis(2-Ethylhexyl)phthalate**	**<160**	mg/Kg	8070D
			12/11/12	13:08	CDH	**di-n-Butylphthalate**	**<80**	mg/Kg	8070D
			12/14/12	15:45	AL	**BTU**	**3680**	BTU/lb	BTU
			12/12/12	10:00	DS	**Cyanide**	**<0.500**	mg/Kg	9010C

Laboratory Authorized Signature

MDL = Method Detection Limit.

BDL = Analyte was analyzed for but not detected above MDL.
PM, DS, CDH = Subcontracted to ODEQ Lab #7211
AL = Subcontracted to ODEQ Lab #8316

131 Arlington St. Ada OK 74820
(580) 332-8808 Phone (580) 421-9110 Fax

ENVIRONMENTAL RESOURCE TECHNOLOGIES, LLC

EPA laboratory code: OK00921

Oklahoma DEQ Certification No. 8304 7211 8316

Quality Control Report

Client Name: Wynnewood Refining Co LLC

Date Received: 12/5/2012

Report Date: 12/18/2012

Date Sampled	Parameter	Method	MDL	Duplicate % Difference	BLANK	Spike Recovery	Standard % Recovery
12/4/2012	TCLP Chromium	200.7/6010B	0.001 mg/L	2.25	BDL	83.7	96.5
	TCLP Lead	200.7/6010B	0.001 mg/L	3.17	BDL	89.9	101.2
	TCLP Nickel	200.7/6010B	0.001 mg/L	2.00	BDL	90.3	104.7
	Benzene	8021B	0.025 mg/Kg	NA	BDL	107	96
	Toluene	8021B	0.025 mg/Kg	NA	BDL	106	98
	Ethylbenzene	8021B	0.025 mg/Kg	NA	BDL	101	99
	Xylene (m,p & o)	8021B	0.025 mg/Kg	NA	BDL	102	99
	Phenol	8070D	0.4 mg/Kg	NA	BDL	D	65
	Acenaphthene	8070D	0.4 mg/Kg	NA	BDL	D	72
	Pyrene	8070D	0.4 mg/Kg	NA	BDL	D	107
	Cyanide	9010C	0.050 mg/Kg	NA	BDL	103	108

Laboratory Authorized Signature

MDL = Method Detection Limit.

BDL = Analyte was analyzed for but not detected above MDL.

D = Surrogate or Matrix Spike Diluted Out

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED, AND ARE NOT INDICATIVE OF THE QUANITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED O 15 DAYS AFTER THE SAMPLE IS REPORTED.

131 Arlington St. Ada OK 74820

(580) 332-8808 Phone (580) 421-9110 Fax

Environmental Resource Technologies

13526 CR 3630 / 131 Arlington Ada, Oklahoma 74820
Phone (580) 332-8808 Fax (580) 421-9110

CHAIN OF CUSTODY

Client Name:Wynnewood Refining_____ Project Name:_ T2007 K051

Lab Log #	Date Sample Taken	Time Sample Taken	Matrix Water (W) Soil (S) Sludge (Sl) Other	G R A B	C O M P	Client I.D. Sample Location	Temp C, F	No. of Container (p)=plastic (g)=glass	Analysis Requested	Sample Presv.
1205212660	12/4/2012	12:00 PM	Sludge (Sl)	X		T2007 K051		2g	BTU Value + Land Treatment Standards Attached	Cool

Comments:

Sampled By: [signature]	Date/Time: 12/04/12 12pm	Received By: Don Wallis	Date/Time: 12-5-12 0830
Relinquished By: ~~Bambi W~~	Date/Time:	Received By:	Date/Time:
Relinquished to Lab By: Don Wallis	Date/Time: 12-5-12 11:00	Received at Lab By: [signature]	Date/Time: 12-5-12 1600

Report To: EHilburn@CVRenergy.com	Send Invoice To:
Address:	Address:
Phone/Fax Number:	Phone/Fax Number:

ENVIRONMENTAL RESOURCE TECHNOLOGIES, LLC

EPA laboratory code: OK00921

Oklahoma DEQ Certification No. 8304 7211 8316

Certificate of Analysis

SN4393
- Refinery Sludge

Client Name: Wynnewood Refining Co LLC

Date Received: 12/5/2012

Project: *T2007 K051*

Report Date: 12/18/2012

ERT Lab Log #	Sample Identification	Date Sampled	Analysis Date	Time	Analyzed By	Parameter	Results	Units	Method
WW1212060	**T2007 K051**	**12/04/12**	12/06/12	18:31	SM	**TCLP Chromium**	**0.061**	mg/L	200.7/6010B
			12/06/12	18:31	SM	**TCLP Lead**	**<0.001**	mg/L	200.7/6010B
			12/06/12	18:31	SM	**TCLP Nickel**	**0.778**	mg/L	200.7/6010B
			12/12/12	11:21	PM	**Benzene**	**9.71**	mg/Kg	8021B
			12/12/12	11:21	PM	**Toluene**	**58.2**	mg/Kg	8021B
			12/12/12	11:21	PM	**Ethylbenzene**	**50.0**	mg/Kg	8021B
			12/12/12	11:21	PM	**Xylene (m,p & o)**	**170**	mg/Kg	8021B
			12/11/12	13:08	CDH	**Acenaphthene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Anthracene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Benzo(a)anthracene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Benzo(a)pyrene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Chrysene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Fluorene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Naphthalene**	**95.8**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Phenanthrene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Phenol**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**Pyrene**	**<80**	mg/Kg	8070D
			12/11/12	13:08	CDH	**bis(2-Ethylhexyl)phthalate**	**<160**	mg/Kg	8070D
			12/11/12	13:08	CDH	**di-n-Butylphthalate**	**<80**	mg/Kg	8070D
			12/14/12	15:45	AL	**BTU**	**3680**	BTU/lb	BTU
			12/12/12	10:00	DS	**Cyanide**	**<0.500**	mg/Kg	9010C

Laboratory Authorized Signature

MDL = Method Detection Limit.

BDL = Analyte was analyzed for but not detected above MDL.
PM, DS, CDH = Subcontracted to ODEQ Lab #7211
AL = Subcontracted to ODEQ Lab #8316

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ENVIRONMENTAL RESOURCE TECHNOLOGIES, LLC

EPA laboratory code: OK00921

Oklahoma DEQ Certification No. 8304 7211 8316

Quality Control Report

Client Name: Wynnewood Refining Co LLC

Date Received: 12/5/2012

Report Date: 12/18/2012

Date Sampled	Parameter	Method	MDL	Duplicate % Difference	BLANK	Spike Recovery	Standard % Recovery
12/4/2012	TCLP Chromium	200.7/6010B	0.001 mg/L	2.25	BDL	83.7	96.5
	TCLP Lead	200.7/6010B	0.001 mg/L	3.17	BDL	89.9	101.2
	TCLP Nickel	200.7/6010B	0.001 mg/L	2.00	BDL	90.3	104.7
	Benzene	8021B	0.025 mg/Kg	NA	BDL	107	96
	Toluene	8021B	0.025 mg/Kg	NA	BDL	106	98
	Ethylbenzene	8021B	0.025 mg/Kg	NA	BDL	101	99
	Xylene (m,p & o)	8021B	0.025 mg/Kg	NA	BDL	102	99
	Phenol	8070D	0.4 mg/Kg	NA	BDL	D	65
	Acenaphthene	8070D	0.4 mg/Kg	NA	BDL	D	72
	Pyrene	8070D	0.4 mg/Kg	NA	BDL	D	107
	Cyanide	9010C	0.050 mg/Kg	NA	BDL	103	108

Laboratory Authorized Signature

MDL = Method Detection Limit.

BDL = Analyte was analyzed for but not detected above MDL.

D = Surrogate or Matrix Spike Diluted Out

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED, AND ARE NOT INDICATIVE OF THE QUANITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED O 15 DAYS AFTER THE SAMPLE IS REPORTED.

131 Arlington St. Ada OK 74820

(580) 332-8808 Phone (580) 421-9110 Fax

Environmental Resource Technologies

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CHAIN OF CUSTODY

Client Name:Wynnewood Refining_____ Project Name:_ T2007 K051

Lab Log #	Date Sample Taken	Time Sample Taken	Matrix Water (W) Soil (S) Sludge (Sl) Other	G R A B	C O M P	Client I.D. Sample Location	Temp C, F	No. of Container (p)=plastic (g)=glass	Analysis Requested	Sample Presv.
1205212660	12/4/2012	12:00 PM	Sludge (Sl)	X		T2007 K051		2g	BTU Value + Land Treatment Standards Attached	Cool

Comments:

Sampled By: [signature]	Date/Time: 12/04/12 12pm	Received By: Don Wallis	Date/Time: 12-5-12 0830
Relinquished By: ~~Bambi W~~	Date/Time:	Received By:	Date/Time:
Relinquished to Lab By: Don Wallis	Date/Time: 12-5-12 11:00	Received at Lab By: [signature]	Date/Time: 12-5-12 1600

Report To: EHilburn@CVRenergy.com	Send Invoice To:
Address:	Address:
Phone/Fax Number:	Phone/Fax Number:

ENVIRONMENTAL RESOURCE TECHNOLOGIES, LLC

EPA laboratory code: OK00921

Oklahoma DEQ Certification No. 8304 7211

Certificate of Analysis

Client Name: **Wynnewood Refining Co LLC**

Date Received: 12/5/2012

Project: ***T2007 K051***

Report Date: 12/18/2012

ERT Lab Log #	Sample Identification	Date Sampled	Analysis Date	Time	Analyzed By	Parameter	Results	Units	Method
WW1212061	**T2007 K051**	**12/04/12**	12/12/12	10:57	PM	**Benzene**	**10.4**	mg/Kg	8021B
			12/12/12	10:57	PM	**Toluene**	**57.6**	mg/Kg	8021B
			12/12/12	10:57	PM	**Ethylbenzene**	**46.5**	mg/Kg	8021B
			12/12/12	10:57	PM	**Xylene (m,p & o)**	**168**	mg/Kg	8021B

Laboratory Authorized Signature

MDL = Method Detection Limit.

BDL = Analyte was analyzed for but not detected above MDL.

PM = Subcontracted to ODEQ Lab #7211

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ENVIRONMENTAL RESOURCE TECHNOLOGIES, LLC

EPA laboratory code: OK00921

Oklahoma DEQ Certification No. 8304 7211

Quality Control Report

Client Name **Wynnewood Refining Co LLC**

Date Received: 12/5/2012

Report Date: 12/18/2012

Date Sampled	Parameter	Method	MDL	Duplicate % Difference	BLANK	Spike Recovery	Standard % Recovery
12/4/2012	Benzene	8021B	0.025 mg/Kg	NA	BDL	107	96
	Toluene	8021B	0.025 mg/Kg	NA	BDL	106	98
	Ethylbenzene	8021B	0.025 mg/Kg	NA	BDL	101	99
	Xylene (m,p & o)	8021B	0.025 mg/Kg	NA	BDL	102	99

Laboratory Authorized Signature

MDL = Method Detection Limit.

BDL = Analyte was analyzed for but not detected above MDL.

D = Surrogate or Matrix Spike Diluted Out

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Environmental Resource Technologies

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Phone (580) 332-8808 Fax (580) 421-9110

CHAIN OF CUSTODY

Client Name:Wynnewood Refining

Project Name:_ T2007 K051

Lab Log #	Date Sample Taken	Time Sample Taken	Matrix Water (W) Soil (S) Sludge (Sl) Other	G R A B	C O M P	Client I.D. Sample Location	Temp C, F	No. of Container (p)=plastic (g)=glass	Analysis Requested	Sample Presv.
CC1212061	12/4/2012	12:00 PM	Sludge (Sl)	X		T2007 K051		1g	BTEX	Cool

Comments:

Sampled By: [signature]	Date/Time: 12/04/12 12pm	Received By: Dan Wells	Date/Time: 12-5-12 08:30
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished to Lab By: Dan Wells	Date/Time: 12-5-12 16:00	Received at Lab By: [signature]	Date/Time: 12-5-12 16:00

Report To: EHilburn@CVRenergy.com	Send Invoice To:
Address:	Address:
Phone/Fax Number:	Phone/Fax Number: