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BEFORE THE EXECUTIVE DIRECTOR
UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter of: Revolution Fuels, LLC Coal to Liquid Facility, Air Quality Approval Order (DAQE-AN154900001-16)	**OBJECTION TO THE ADMINISTRATIVE RECORD** Administrative Law Judge Bret F. Randall October 12, 2016

Pursuant to Utah Administrative Code R305-7-209(4), Respondent Revolution Fuels, LLC ("Revolution Fuels") submits this Objection to the Administrative Record ("Objection").

The document identified in the Index of Administrative Record as Entry Number 33-2, "E-mail attachment: Final Emission Calculations rev3 flare" is incomplete. [AR002377.] In an e-mail from Melissa Armer (Trinity Consultants) to Tad Anderson (UDAQ) on March 16, 2016, Revolution Fuels transmitted an excel file titled "Final Emission Calculations rev3 flare.xlsx." [AR002336.] The excel file transmitted to UDAQ contained sixteen separate tabs that include

various calculations of Revolution Fuels' emissions.[1] The document entered into the record only contains the information from the tab entitled "Facility Wide PTE." [AR002377.]

Pursuant to Utah Code section 19-1-301.5(9)(b)(vii) and Utah Administrative Code R305-7-209(1)(i) and (ii), the complete document is properly part of the administrative record. Revolution Fuels requests that administrative record be revised to include the complete version of the excel file.

DATED October 12, 2016.

/s/ Jacob A. Santini
Michael A. Zody
Jacob A. Santini
PARSONS BEHLE & LATIMER

Attorneys for Revolution Fuels, LLC

[1] Revolution Fuels has attached a copy of the complete document to this Objection as attachment A.

CERTIFICATE OF SERVICE

I hereby certify that on this 12th day of October, 2016, a true and correct copy of the forgoing **OBJECTION TO THE ADMINISTRATIVE RECORD** was filed via e-mail with the following:

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Attorneys for Revolution Fuels, LLC

Attachment A

Operational Parameter Assumptions

Coal Feed and Crushing	Parameter	Units	Description/Comment
Coal feed conveyor throughput	273,750	ton/yr	Total coal feed throughput to crushing circuit; 500 tpd + 50% for 365 day/yr
Coal moisture content	10	%	
Gasification- Gasifier Reactor			
Coal Throughput	500	ton/day	Dry basis
Burner system #1	33.6	MMBtu/hr	Pyrolysis burner system will included (3) 6-inch Kinemax LE burners each providing a maximum of 11.2 MMBtu/hr
Burner system #2	300	MMBtu/hr	Coil burner system will include (5) 14-inch Kinemax LE burners each providing a maximum of 60 MMBtu/hr
Fuel heat content	913	Btu/scf	
Gasification system- operating hrs	8,400	hr/yr	
Flue gas- operating hrs	8,400	hr/yr	
Syngas Compression and Amine CO_2 Removal			
CO_2 vent- operating hours	8,400	hr/yr	
Fischer-Tropsch (FT) Synthesis			
FT Activation/Regeneration Heater #1- size	1.12	MMBtu/hr	Equipt with low NOx burner
FT Activation/Regeneration Heater #1- operating hrs	4,032	hr/yr	
FT Activation/Regeneration Heater #2- size	0.60	MMBtu/hr	Equipt with low NOx burner
FT Activation/Regeneration Heater #2- operating hrs	2,016	hr/yr	
FT Activation/Regeneration Heater Fuel Heat Content	918	Btu/scf	
Purge stream- min	36,960	min lb/yr	Air diluted with nitrogen, contains CO2
Purge stream- max	59,136	max lb/yr	The Fischer-Tropsch Synthesis process is a closed loop system. There are fugitive VOCs via equipment leaks.
Purge stream- operating hrs	1,344	hr/yr	
Product Upgrading (Hydrotreating and Fractionation)			
Product Upgrading Fired Heater #1- size	4.85	MMBtu/hr	
Product Upgrading Fired Heater #1- operating hrs	8,400	hr/yr	
Product Upgrading Fired Heater #2- size	10.25	MMBtu/hr	
Product Upgrading Fired Heater #2- operating hrs	8,400	hr/yr	
Product Upgrading Fired Heater Fuel Heat Content	1020	Btu/scf	
Flare Pilot			
Burner size	1	MMBtu/hr	
Flare Pilot operating hours	8,760	hr/yr	
Cooling Towers			
Number of cooling towers	1		
Liquid circulation rate	665	gal/min	Based on preliminary engineering design from Fluor
Water total dissolved solids content	1,110	ppm	Based on 3-yr average analytical results from DMR reports at Price River
Cooling Tower- operating hours	8,400	hr/yr	
Ash Handling			
Pyrolysis ash vibrating conveyor throughput	52,560	ton/yr	Based on 6,000 lb/hr * 200%
Coil ash vibrating conveyor	4,818	ton/yr	Based on 550 lb/hr * 200%
Ash covered day bin	57,378	ton/yr	Sum of pyrolysis ash conveyor and ash day bin
Auxillary Systems			
Emergency generator (diesel)- size	1,482	Hp	
Emergency generator (diesel)- operating hours	500	hr/yr	
Auxillary boiler- size	73.88	MMBtu/hr	
Auxillary boiler- operating hours	500	hr/yr	
Fire water pump (diesel)- size	220	Hp	
Fire water pump (diesel)- operating hours	500	Hr/yr	
ac - acre (43,560 ft2, 4840 yd2)			
ft - feet			
gal - gallon			
Hp- Horsepower			
in - inch			
lb - pound			
mi - mile			
MMBtu/hr - million British Thermal Units per hour			
% - percent			
yd^3 - cubic yard			
hours/year - 8,760			
pounds/ton - 2,000			

FACILITY WIDE POTENTIAL TO EMIT

Source ID	Source Description	NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		Lead		CO_2		N_2O		CH_4		HAPs	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
	Truck unloading									0.07	0.10	0.01	0.01										
	Coal storage pile- wind erosion									0.36	1.36	0.05	0.20										
	Paved haul road									0.04	0.07	0.01	0.02										
200-3	Coal handling baghouse									0.01	0.01	0.00	0.00										
200-4	Coal silo baghouse									0.02	0.03	0.01	0.02										
F	Gasification flue gas without SCR	20.35	85.47	17.35	72.86	2.01	8.44	0.39	1.63	2.78	11.66	2.78	11.66	0.0002	0.0008	43,847	184,156	0.23	0.98	0.84	3.53	3.82E-01	1.4
	Gasification flue gas with SCR	3.67	15.41	14.68	61.65	0.00	0.00																
240-1	Ash handling baghouse									0.000	0.001	0.000	0.000										
240-2	Ash bin baghouse									0.000	0.001	0.000	0.000										
E	Flare Pilot	0.05	0.21	0.08	0.36	0.01	0.02	0.00	0.00	0.01	0.03	0.01	0.03	4.9E-07	2.1E-06	118	515	0.001	0.003	0.002	0.010		
A	CO_2 Vent			3.4	14.1											23,874	100,272						
H	Activation/Regeneration Heater #1	0.06	0.12	0.10	0.21	0.01	0.01	0.00	0.00	0.01	0.02	0.01	0.02	6.1E-07	1.2E-06	146	295	0.001	0.002	0.003	0.006		
I	Activation/Regeneration Heater #2	0.03	0.03	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	3.3E-07	3.3E-07	78	79	0.0004	0.0004	0.002	0.002		
D	Fischer Tropsch purge gas															0.23	0.16						
B	Product Upgrading Heater #1	0.24	1.0	0.40	1.7	0.03	0.11	0.00	0.01	0.04	0.15	0.04	0.15	2.4E-06	1.0E-05	571	2,396	0.00	0.01	0.01	0.05		
C	Product Upgrading Heater #2	0.50	2.1	0.84	3.5	0.06	0.23	0.01	0.03	0.08	0.32	0.08	0.32	5.0E-06	2.1E-05	1,206	5,065	0.01	0.03	0.02	0.10		
G	Auxillary boiler	3.6	0.91	6.1	1.5	0.40	0.10	0.04	0.01	0.55	0.14	0.55	0.14			8,692	2,173	0.05	0.01	0.17	0.04		
J	Emergency generator (diesel)	12.91	3.23	2.16	0.54	0.23	0.06	0.36	0.09	0.36	0.09	0.36	0.09			1719.12	430	0.01	0.06	0.07	0.29		
960	Fire water pump (diesel)	1.20	0.30	0.58	0.14	0.03	0.01	0.45	0.11	0.07	0.02	0.07	0.02			253.00	63	0.002	0.009	0.010	0.043		
910	Tanks					0.05	0.23																
920	Cooling Tower									1.8	7.8	1.8	7.8										
	Fugitive Equipment Leaks					1.72	7.52															1.43	6.25
	TOTAL POINT SOURCES (without SCR)		**93.4**		**95.0**		**9.2**		**1.9**		**20.2**		**20.2**		**0.001**		**295,445**		**1.1**		**4.1**		**8.9**
	TOTAL POINT SOURCES (with SCR)		**23.3**		**83.8**																		

[1] Utilizes a global warming potential of 298 for N_2O and 25 for CH_4 per updated ruling 11/29/13 78 FR 71904

CO_2e^1 = **329.1** **101.6**

AIR DISPERSION MODELING DETERMINATION- WORST CASE WITHOUT SCR

Threshold	NO_x tons/yr	CO tons/yr	SO_2 tons/yr	PM_{10} tons/yr	$PM_{2.5}$ tons/yr
PTE non-fugitive sources	93.4	95.0	1.9	20.2	20.21
Modeling threshold	40	100	40	15	15
Exceeds modeling threshold (Y/N)	Y	N	N	Y	Y

Threshold	PM_{10} tons/yr	$PM_{2.5}$ tons/yr
PTE fugitive sources	1.5	0.2
Modeling threshold	5	5
Exceeds modeling threshold (Y/N)	N	N

Pollutant	Emissions (lb/hr)	Emissions (tpy)	Ave. Time	ETV (lb/hr)	Modeling Required?
Benzene	7.66E-02	2.95E-01	Chronic, 8 Hour	0.3163	No
Dichlorobenzene	5.47E-04	1.95E-03	Chronic, 8 Hour	11.905	No
1,3 butadiene	6.02E-05	1.51E-05	Chronic, 8 Hour	0.292	No
Formaldehyde	3.51E-02	1.22E-01	Acute, 1hour	0.0567	No
Hexane	1.28E+00	4.93E+00	Chronic, 8 Hour	34.895	No
Napthalene	6.99E-02	3.02E-01	Chronic, 8 Hour	10.381	No
Toluene	2.69E-01	1.16E+00	Chronic, 8 Hour	14.922	No
Xylene	4.67E-01	2.03E+00	Chronic, 8 Hour	85.97	No
Acetaldehyde	1.44E-03	3.61E-04	Acute, 1hour	6.9363	No
Acrolein	2.24E-04	5.60E-05	Chronic, 8 Hour	0.0353	No

1 Assumes all emission points are vertically unrestricted and less than 50 m from property boundary

FACILITY WIDE UNCONTROLLED POTENTIAL TO EMIT

Source ID	Source Description	NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		Lead		CO_2		N_2O		CH_4		HAPs	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
	Truck unloading									0.07	0.10	0.01	0.01										
	Coal storage pile- wind erosion									0.36	1.36	0.05	0.20										
	Paved haul road									0.04	0.07	0.01	0.02										
200-3	Coal handling									0.14	0.20	0.02	0.03										
200-4	Coal silo									0.33	0.52	0.25	0.36										
F	Gasification flue gas	20.35	85.47	17.35	72.86	2.01	8.44	0.39	1.63	2.78	11.66	2.78	11.66	0.0002	0.0008	43,847	184,156	0.23	0.98	0.84	3.53	3.82E-01	1.4
240-1	Ash handling									0.005	0.020	0.001	0.003										
240-2	Ash bin									0.005	0.020	0.001	0.003										
E	Flare Pilot	0.05	0.21	0.08	0.36	0.01	0.02	0.00	0.00	0.01	0.03	0.01	0.03	4.9E-07	2.1E-06	118	515	0.001	0.003	0.002	0.010		
A	CO_2 Vent			3.4	14.1											23,874	100,272						
H	Activation/Regeneration Heater #1	0.06	0.12	0.10	0.21	0.01	0.01	0.00	0.00	0.01	0.02	0.01	0.02	6.1E-07	1.2E-06	146	295	0.001	0.002	0.003	0.006		
I	Activation/Regeneration Heater #2	0.03	0.03	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	3.3E-07	3.3E-07	78	79	0.0004	0.0004	0.002	0.002		
D	Fischer Tropsch purge gas															0.23	0.16						
B	Product Upgrading Heater #1	0.24	1.0	0.40	1.7	0.03	0.11	0.00	0.01	0.04	0.15	0.04	0.15	2.4E-06	1.0E-05	571	2,396	0.00	0.01	0.01	0.05		
C	Product Upgrading Heater #2	0.50	2.1	0.84	3.5	0.06	0.23	0.01	0.03	0.08	0.32	0.08	0.32	5.0E-06	2.1E-05	1,206	5,065	0.01	0.03	0.02	0.10		
G	Auxillary boiler	3.6	0.91	6.1	1.5	0.40	0.10	0.04	0.01	0.55	0.14	0.55	0.14			8,692	2,173	0.05	0.01	0.17	0.04		
J	Emergency generator (diesel)	12.91	3.23	2.16	0.54	0.23	0.06	0.36	0.09	0.36	0.09	0.36	0.09			1719.12	430	0.01	0.06	0.07	0.29		
960	Fire water pump (diesel)	1.20	0.30	0.58	0.14	0.03	0.01	0.45	0.11	0.07	0.02	0.07	0.02			253.00	63	0.002	0.009	0.010	0.043		
910	Tanks					0.05	0.23																
920	Cooling Tower									1.8	7.8	1.8	7.8										
	TOTAL POINT SOURCES		**93.4**		**95.0**		**9.2**		**1.9**		**21.0**		**20.6**		**0.001**		**295,445**		**1.1**		**4.1**		**3.1**

[1] Utilizes a global warming potential of 298 for N_2O and 25 for CH_4 per updated ruling 11/29/13 78 FR 71904

CO_2e^1 = 329.1 101.6

[2] Operating hours and throughputs limitted as identified in combustion and material handling calculations

AIR DISPERSION MODELING DETERMINATION

Threshold	NO_x tons/yr	CO tons/yr	SO_2 tons/yr	PM_{10} tons/yr	$PM_{2.5}$ tons/yr
PTE non-fugitive sources	93.4	95.0	1.9	21.0	20.59
Modeling threshold	40	100	40	15	15
Exceeds modeling threshold (Y/N)	Y	N	N	Y	Y

Threshold	PM_{10} tons/yr	$PM_{2.5}$ tons/yr
PTE fugitive sources	1.5	0.2
Modeling threshold	5	5
Exceeds modeling threshold (Y/N)	N	N

Pollutant	Emissions (lb/hr)	Emissions (tpy)	Ave. Time	ETV (lb/hr)	Modeling Required?
Benzene	1.05E-02	5.78E-03	Chronic, 8 Hour	0.3163	No
Dichlorobenzene	5.47E-04	1.95E-03	Chronic, 8 Hour	11.905	No
1,3 butadiene	6.02E-05	1.51E-05	Chronic, 8 Hour	0.292	No
Formaldehyde	3.51E-02	1.22E-01	Acute, 1hour	0.0567	No
Hexane	8.20E-01	2.92E+00	Chronic, 8 Hour	34.895	No
Napthalene	1.20E-03	1.02E-03	Chronic, 8 Hour	10.381	No
Toluene	5.23E-03	6.40E-03	Chronic, 8 Hour	14.922	No
Xylene	2.97E-03	6.10E-04	Chronic, 8 Hour	85.97	No
Acetaldehyde	1.44E-03	3.61E-04	Acute, 1hour	6.9363	No
Acrolein	2.24E-04	5.60E-05	Chronic, 8 Hour	0.0353	No

1 Assumes all emission points are vertically unrestricted and less than 50 m from property boundary

EXTERNAL NATURAL GAS COMBUSTION UNIT CRITERIA POLLUTANTS EMISSION CALCULATIONS

Source ID#	Source Name	Heat Input (MMBtu/hr)	Average Gas Heating Value (btu/scf)	Annual Hours of Operation	NO_x[1]		CO[1]		VOC[2]		SO_2[7]		PM_{10}[3]		$PM_{2.5}$[3]		$Lead$[2]		CO_2		N_2O		CH_4	
					50	lb/10^6 scf	84	lb/10^6 scf	5.5	lb/10^6 scf	0.6	lb/10^6 scf	7.6	lb/10^6 scf	7.6	lb/10^6 scf	0.0005	lb/10^6 scf	120,000	lb/10^6 scf	0.64	lb/10^6 scf	2.3	lb/10^6 scf
					lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
F	Gasification burner #1[5] (without SCR)	33.6	913	8,400	2.05	8.61	1.75	7.34	0.20	0.85	0.04	0.16	0.28	1.17	0.28	1.17	0.00	0.00	4,416	18,548	0.02	0.1	0.08	0.4
F	Gasification burner #2 [5] (without SCR)	300	913	8,400	18.30	76.86	15.60	65.52	1.81	7.59	0.35	1.47	2.50	10.49	2.50	10.49	0.00	0.00	39,430	165,608	0.21	0.9	0.76	3.2
F	Gasification burner #1[5] (with SCR)	33.6	913	8,400	0.37	1.55	1.48	6.21																
F	Gasification burner #2 [5] (with SCR)	300	913	8,400	3.30	13.86	13.20	55.44																
E	Gasifier flare pilot	1.0	1,020	8,760	0.05	0.21	0.08	0.36	0.01	0.02	0.0006	0.003	0.01	0.03	0.01	0.03	0.00	0.00	118	515	0.001	0.003	0.002	0.01
H	FT Activation/Regeneration Heater #1	1.12	918	4,032	0.06	0.12	0.10	0.21	0.01	0.01	0.0007	0.001	0.01	0.0187	0.01	0.02	0.00	0.00	146	295	0.001	0.002	0.003	0.01
I	FT Activation/Regeneration Heater #2	0.60	918	2,016	0.03	0.03	0.05	0.06	0.00	0.00	0.0004	0.000	0.00	0.01	0.00	0.01	0.00	0.00	78	79	0.0004	0.000	0.002	0.002
B	Product upgrading heater #1	4.85	1,020	8,400	0.24	1.00	0.40	1.68	0.03	0.11	0.0029	0.01	0.04	0.15	0.04	0.15	0.00	0.00	571	2,396	0.003	0.01	0.01	0.05
C	Product upgrading heater #2	10.25	1,020	8,400	0.50	2.11	0.84	3.55	0.06	0.23	0.0060	0.03	0.08	0.32	0.08	0.32	0.00	0.00	1,206	5,065	0.01	0.03	0.02	0.1
G	Auxiliary boiler	73.88	1,020	500	3.62	0.91	6.08	1.52	0.40	0.10	0.0435	0.01	0.55	0.14	0.55	0.14	0.00	0.00	8,692	2,173	0.05	0.01	0.17	0.04
	TOTAL WITHOUT SCR ON GASIFICATION FLUE GAS:					**89.85**		**80.22**		**8.92**		**1.69**		**12.33**		**12.33**		**0.0008**		**194,680**		**1.04**		**3.73**
	TOTAL WITH SCR ON GASIFICATION FLUE GAS:					**19.80**		**69.02**																

[1] AP-42 Tables 1.4-1 for low Nox burners

[2] AP-42 Tables 1.4-2

[3] AP-42 Tables 1.4-2. All PM is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factor is used to estimate PM10 and PM2.5 emissions.

[4] FT activation/regeneration heater emissions provided by Velocys

[5] Gasification burner emission factor without SCR provided by vendor (Maxon) NOx = 0.061 lb/MMBtu; CO = 0.052 lb/MMBtu

[6] Gasification burner emission factor with SCR provided by vendor (Nationwide) NOx = 0.011 lb/MMBtu; CO = 0.044 lb/MMBtu

[7] Gasification burner SO_2 emissions assume 6ppm sulfur content ~ 3,546 grains/10^6 scf based on manufacturer information

EXTERNAL NATURAL GAS HAZARDOUS AIR POLLUTANT EMISSION CALCULATIONS

Pollutant	Emission Factor (lb/10^6 scf)	Emissions (lb/hr)	Emissions (tpy)
Benzene	2.10E-03	9.57E-04	3.41E-03
Dichlorobenzene	1.20E-03	5.47E-04	1.95E-03
Formaldehyde	7.50E-02	3.42E-02	1.22E-01
Hexane	1.80E+00	8.20E-01	2.92E+00
Naphthalene	6.10E-04	2.78E-04	9.90E-04
Toluene	3.40E-03	1.55E-03	5.52E-03
		8.57E-01	3.05E+00

[1] Emission factors per AP-42 Table 1.4-3

[2] Emissions threshold values assume vertically unrestricted releases

Emissions from all stacks were added together and the distance associated with the nearest stack to the property boundary was selected = <50 m

INTERNAL DIESEL COMBUSTION UNIT EMISSION CALCULATIONS

Source ID#	Source Name	Size (hp/hr)	MMBtu/hr	Annual Hours of Operation	NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		CO_2 [2]		N_2O		CH_4	
					3.95 g/Hp-hr		0.66 g/Hp-hr		0.07 g/Hp-hr		0.11 g/Hp-hr		0.11 g/Hp-hr		0.11 g/Hp-hr		1.16 lb/Hp-hr		0.60 g/mmBtu		3.0 g/mmBtu	
					lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
J	Emergency generator (diesel) [1]	1,482	10.4	500	12.91	3.23	2.16	0.54	0.23	0.06	0.36	0.09	0.36	0.09	0.36	0.09	1,719	429.78	0.01	0.1	0.07	0.3
				TOTAL:		**3.23**		**0.54**		**0.06**		**0.09**		**0.09**		**0.09**						

[1] Emission factors based on manufacturer data. Cummins QST30-G5-NR2, Full standby g/Hp-hr.

[2] Emission factors based on AP-42 Table 3.4-1; diesel fuel

[3] N_2O and CH_4 emission factors based on 40 CFR Part 98 Table C-2 Default CH_4 and N_2O emissions factors

LARGE DIESEL HAZARDOUS AIR POLLUTANT CALCULATIONS

Pollutant	Emission Facto (lb/MMBtu)	Emissions (lb/hr)	Emissions (tpy)
Benzene	7.76E-04	8.05E-03	2.01E-03
Formaldehyde	7.89E-05	8.19E-04	2.05E-04
Toluene	2.81E-04	2.92E-03	7.29E-04
Xylene	1.93E-04	2.00E-03	5.01E-04
Acetaldehyde	2.52E-05	2.61E-04	6.54E-05
Acrolein	7.9E-06	8.17E-05	2.04E-05
[1] Emission factors per AP-42 Table 3.4-3		1.41E-02	3.53E-03

[2] Emissions threshold values assume vertically unrestricted releases

Emissions from all stacks were added together and the distance associated with the nearest stack to the property boundary was selected = <20 m

Source ID#	Source Name	Size (hp/hr)	MMBtu/hr	Annual Hours of Operation	NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		CO_2		N_2O		CH_4	
					2.475 g/Hp-hr		1.193 g/Hp-hr		0.062 g/Hp-hr		0.930 g/Hp-hr		0.149 g/Hp-hr		0.149 g/Hp-hr		1.15 lb/Hp-hr		0.60 g/mmBtu		3.0 g/mmBtu	
					lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
960	Fire water pump engine (diesel) [1]	220	1.5	500	1.20	0.30	0.58	0.14	0.03	0.01	0.45	0.11	0.07	0.02	0.07	0.02	253	63.25	0.00	0.01	0.01	0.043
				TOTAL:		**0.30**		**0.14**		**0.01**		**0.11**		**0.02**		**0.02**		**63**				

[1] Emission factors based on manufacturer data. Cummins CFP7E-F50, 15 ppm diesel duel

[2] Emission factors based on AP-42 Table 3.4-1; diesel fuel

[3] N_2O and CH_4 emission factors based on 40 CFR Part 98 Table C-2 Default CH_4 and N_2O emissions factors

SMALL DIESEL HAZARDOUS AIR POLLUTANT CALCULATIONS

Pollutant	Emission Facto (lb/MMBtu)	Emissions (lb/hr)	Emissions (tpy)
Benzene	9.33E-04	1.44E-03	3.59E-04
1,3 butadiene	3.91E-05	6.02E-05	1.51E-05
Formaldehyde	7.89E-05	1.22E-04	3.04E-05
Naphthalene	8.48E-05	1.31E-04	3.26E-05
Toluene	4.09E-04	6.30E-04	1.57E-04
Xylene	2.85E-04	4.39E-04	1.10E-04
Acetaldehyde	7.67E-04	1.18E-03	2.95E-04
Acrolein	9.3E-05	1.42E-04	3.56E-05
[1] Emission factors per AP-42 Table 3.3-2		1.04E-03	

[2] Emissions threshold values assume vertically unrestricted releases

Emissions from all stacks were added together and the distance associated with the nearest stack to the property boundary was selected = <20 m

Source ID#	Source Name	Roundtrip Miles per hour[1]	Roundtrip Miles per year[2]		NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		CO_2	
					2.7084 g/mile		0.6738 g/mile		0.2876 g/mile		g/mile		0.0371 g/mile		0.0371 g/mile		22.20 lb/gal	
					lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
	Haul truck tailpipe emissions	2	6,360		0.01	0.02	0.00	0.005	0.00	0.002	0.00	0.0001	0.00	0.0003	0.00	0.0003	7.80	10.70
				TOTAL:		**0.02**		**0.00**		**0.00**		**0.00**		**0.00**		**0.00**		**11**

[1] Assumes a max hourly coal delivery throughput of 100 ton/hr in 43 ton haul trucks = 2.32 trucks per hr; Roundtrip distance each truck load = 1 miles

[2] Assumes a annual coal delivery throughput of 273,500 ton/year in 43 ton haul trucks =6,360 trucks per year; Roundtrip distance each truck load = 1 miles

[3] SO_2 Assumes a fuel consumption of 6.6 mpg and sulfur content of 15 ppm and diesel fuel density of 7.05 lb/gal

[4] Emission factors derived from Mobile 6 for heavy duty diesel vehicles

Startup

Time	Feed	Feed Rate lb/hr	Pyro Temp F	Coil Temp F	Pyro Heat MMBtu/hr	Coil Heat MMBtu/hr	Total Heat MMBtu/hr	Fuel	Fuel Feed Rate MMBtu/hr	Nat Gas Usage MMBtu	"Syngas" to flare lbs	Syngas Composition H2O	O2	N2	H2	CO	CO2	H2S [b]	METHANE	AMMONIA
0:00								Nat Gas			-	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1:48	Nitrogen	50,031	200	520	1.39	4.02	5.41	Nat Gas	6.8	12.165	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3:36	Nitrogen	50,031	300	520	2.64	2.77	5.41	Nat Gas	6.8	12.165	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5:24	Nitrogen	50,031	400	680	3.89	3.57	7.46	Nat Gas	9.3	16.782	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7:12	Nitrogen	50,031	500	840	5.15	4.40	9.55	Nat Gas	11.9	21.483	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
9:00	Nitrogen	50,031	600	1000	6.43	5.25	11.68	Nat Gas	14.6	26.271	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10:48	Nitrogen	50,031	700	1160	7.72	6.13	13.84	Nat Gas	17.3	31.147	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12:36	Nitrogen	50,031	800	1320	9.02	7.03	16.05	Nat Gas	20.1	36.108	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
14:24	Nitrogen	50,031	900	1480	10.34	7.95	18.29	Nat Gas	22.9	41.150	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
16:12	Nitrogen	50,031	900	1640	10.34	10.22	20.56	Nat Gas	25.7	46.267	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
18:00	Nitrogen	50,031	1000	1800	11.68	11.19	22.87	Nat Gas	28.6	51.452	90,056	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
18:12	Coal	11,666.67	800	1750	47.79	81.33	129.12	Nat Gas	161.4	32.279	2,333	1.03%	0.00%	0.28%	65.98%	11.98%	20.47%	0.23%	0.04%	0.00%
18:24	Coal	15,416.67	800	1750	44.70	95.58	140.29	Nat Gas	175.4	35.071	3,083	1.02%	0.00%	0.29%	64.91%	14.89%	18.57%	0.22%	0.10%	0.00%
18:36	Coal	19,166.67	800	1750	41.54	110.03	151.56	Nat Gas	189.5	37.891	3,833	1.02%	0.00%	0.29%	63.94%	17.49%	16.86%	0.21%	0.19%	0.00%
18:48	Coal	22,916.67	800	1750	38.28	124.54	162.82	Nat Gas	203.5	40.704	4,583	1.02%	0.00%	0.30%	63.03%	19.81%	15.32%	0.21%	0.31%	0.00%
19:00	Coal	26,666.67	800	1750	34.95	138.99	173.95	Nat Gas	217.4	43.487	5,333	1.02%	0.00%	0.31%	62.16%	21.90%	13.93%	0.20%	0.48%	0.00%
19:12	Coal	30,416.67	800	1750	31.60	153.28	184.87	Nat Gas	231.1	46.218	6,083	1.02%	0.00%	0.31%	61.31%	23.79%	12.69%	0.20%	0.69%	0.00%
19:24	Coal	34,166.67	800	1750	28.20	167.30	195.49	Nat Gas	244.4	48.873	6,833	1.02%	0.00%	0.32%	60.47%	25.51%	11.55%	0.20%	0.93%	0.00%
19:36	Coal	37,916.67	800	1750	24.84	181.00	205.84	Nat Gas	257.3	51.459	7,583	1.02%	0.00%	0.33%	59.63%	27.08%	10.54%	0.19%	1.22%	0.00%
19:48	Coal	41,666.67	800	1750	21.42	194.30	215.72	Nat Gas	269.7	53.930	8,333	1.02%	0.00%	0.33%	58.79%	28.51%	9.61%	0.19%	1.54%	0.00%
20:00	Coal	41,666.67	800	1750	21.42	194.30	215.72	Nat Gas	269.7	53.930	8,333	1.02%	0.00%	0.33%	58.79%	28.51%	9.61%	0.19%	1.54%	0.00%
											TOTAL EMISSIONS BASED ON COMPOSITION (TON/YR):					6.74	3.55	0.001	0.25	
											TOTAL EMISSIONS AP-42 (TON/YR) [a]:	CO =				0.11				
												NOx =				0.03				

[a.] AP-42 Table 13.5-1 and 13.5-2 emission factors Nox = 0.068 lb/MMBtu CO = 0.31 lb/MMBtu

[b.] Assumes 98% destruction efficiency for H2S

Shut Down

Time	Feed	Feed Rate lb/hr	Pyro Temp F	Coil Temp F	Pyro Heat MMBtu/hr	Coil Heat MMBtu/hr	Total Heat MMBtu/hr	Fuel	Fuel Feed Rate MMBtu/hr	Nat Gas Usage MMBtu	"Syngas" to flare lb/hr	Syngas Composition H2O	O2	N2	H2	CO	CO2	H2S b	METHANE	AMMONIA
0:00																				
1:00	Nitrogen	22:37	1000	1800	11.7	11.2	22.9	Nat Gas	28.6	28.584	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2:00	Nitrogen	22:37	900	1640	10.3	10.2	20.6	Nat Gas	25.7	25.704	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3:00	Nitrogen	22:37	900	1480	10.3	7.9	18.3	Nat Gas	22.9	22.861	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
4:00	Nitrogen	22:37	800	1320	9.0	7.0	16.0	Nat Gas	20.1	20.060	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5:00	Nitrogen	22:37	700	1160	7.7	6.1	13.8	Nat Gas	17.3	17.304	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6:00	Nitrogen	22:37	600	1000	6.4	5.2	11.7	Nat Gas	14.6	14.595	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7:00	Nitrogen	22:37	500	840	5.2	4.4	9.5	Nat Gas	11.9	11.935	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8:00	Nitrogen	22:37	400	680	3.9	3.6	7.5	Nat Gas	9.3	9.323	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
9:00	Nitrogen	22:37	300	520	2.6	2.8	5.4	Nat Gas	6.8	6.758	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10:00	Nitrogen	22:37	200	520	1.4	4.0	5.4	Nat Gas	6.8	6.758	90,055.7	0.82%	0.00%	99.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
											TOTAL EMISSIONS BASED ON COMPOSITION (TON/YR):					0.00	0.00	0.00	0.00	
											TOTAL EMISSIONS AP-42 (TON/YR) [a]:	CO =				0.03				
												NOx =				0.01				

[a.] AP-42 Table 13.5-1 and 13.5-2 emission factors Nox = 0.068 lb/MMBtu CO = 0.31 lb/MMBtu

TOTAL ANNUAL EMISSIONS BASED ON 4 SS EVENTS (TON/YR):

CO2	H2S	NOx	CO

14.21	0.00	0.12	0.56

FLARE EMERGENCY MALFUNCTION EMISSION CALCULATIONS

Flare Operating Conditions	Duration (hrs/yr)	Mass Flow (lb/hr)	Heat Content (MMBtu/hr)
Gasification		82,795	601
Hydroprocessing		51,878	986
Malfunction (Emergency)[a]	1	134,673	749

[a] Gasification Gas + Hydroprocessing Gas

Flare Emission Factors [a] (lb/MMBtu)	
NOx	0.068
CO	0.31

[a] AP-42 Table 13.5-1 and 13.5-2

	Component	MW	Gasification mol%	Hydro mol%	Gasification MW * mol%	Hydro MW * mol%	Gasification Weight %	Hydro Weight %	CO2 tons	VOC tons	H2S tons	NOx tons	CO tons
	H2	2.0158	58.79	3.50	118.509	7.06	25.570%	0.094%					
	H2O	18.015	1.02	0.8	18.375	14.05	3.965%	0.188%					
	CO	28.010	28.51	0.00	798.565	0.00	172.300%	0.000%					
	CO2	44.01	9.61	0.00	422.936	0.00	91.254%	0.000%					
	H2S	34.076	0.19	0.00	6.474	0.00	1.397%	0.000%					
	Nitrogen	28.013	0.33	0.00	9.244	0.00	1.995%	0.000%					
	Methane	16.043	1.547	0.8	24.819	12.51	5.355%	0.167%					
	Ethane	30.07	0.00	0.8	0.000	23.45	0.000%	0.313%					
VOC Components	Propane	44.097	0.00	0.8	0.000	34.40	0.000%	0.459%					
VOC Components	n-Butane	58.123	0.00	0.8	0.000	45.34	0.000%	0.605%					
VOC Components	n-Pentane	72.15	0.00	3.9	0.000	281.39	0.000%	3.755%					
VOC Components	Hydrocarbons	80	0.00	88.7	0.000	7096.00	0.000%	94.701%					
	TOTAL		100.0	100.0	463.47	7493.08	100.00%	100.00%					
	MALF (EMERG) (TON/YR) [a]								**37.8**	**0.5**	**0.01**	**0.03**	**0.1**

[a] Assumes 98% destruction efficiency for VOC and H2S

[b] Gasification and hydroprocessing gas composition provided by Fluor in "Revolution FuelsPrice, Utah Coal to Liquids ProjectFlare System.pdf" March 11, 2016

	Clean Syngas
VapFrac	0.999
T [F]	120.0
P [psig]	161.3
Mole Flow [lbmol/h]	5,917.3
Mass Flow [lb/h]	82,784.9
Std Gas Volume Flow [MMSCFD]	53.9
Mole Fraction [Fraction]	
WATER	0.01018
OXYGEN	0.00000
NITROGEN	0.00334
HYDROGEN	0.58786
CARBON MONOXIDE	0.28524
CARBON DIOXIDE	0.09602
HYDROGEN SULFIDE	0.00190
ARGON	-
METHANE	0.01547
AMMONIA	0.00000

COAL AND ASH MATERIAL HANDLING EMISSION CALCULATIONS

Description	Baghouse Control Eff (%)	Max Hourly	Max Annual	Units	Emission Factors [1] (lbs/ton) PM	PM_{10}	$PM_{2.5}$	Emissions (lbs/hr) PM	PM_{10}	$PM_{2.5}$	Emissions (ton/yr) PM	PM_{10}	$PM_{2.5}$
Truck unloading [2]		100	273,750	tons	0.0015	0.0007	0.0001	0.151	0.071	0.011	0.21	0.10	0.01
Coal storage pile- wind erosion [8]								0.576	0.288	0.043	2.52	1.26	0.19
Paved haul road [9]					0.11	0.0211	0.0052	0.211	0.042	0.010	0.33	0.07	0.02
Conveyor transfer to hopper [2,4]	95	100	273,750	tons	0.0015	0.0007	0.0001	0.008	0.004	0.001	0.01	0.00	0.00
Radial stacker to coal storage pile		100	273,750	tons	0.0015	0.0007	0.0001	0.151	0.071	0.011	0.21	0.10	0.01
Conveyor transfer to crusher [2,4]	95	100	273,750	tons	0.0015	0.0007	0.0001	0.008	0.004	0.001	0.01	0.00	0.00
Coal crushing [1]	95	100	273,750	tons	0.0054	0.00240	0.00240	0.027	0.012	0.012	0.04	0.02	0.02
Conveyor transfer from crusher to silo day bin [2,4]	95	100	273,750	tons	0.0015	0.0007	0.0001	0.008	0.004	0.001	0.01	0.00	0.00
Conveyor transfer from silo day bin to lockhopper [2,4]	95	31.3	273,750	tons	0.0015	0.0007	0.0001	0.002	0.001	0.000	0.01	0.00	0.00
Pyrolysis ash vibrating conveyor transfer [2,4,5]	95	6.0	52,560	tons	0.0015	0.0007	0.0001	0.000	0.0002	0.0000	0.002	0.001	0.000
Coil ash vibrating conveyor transfer [2,4,6]	95	0.6	4,818	tons	0.0015	0.0007	0.0001	0.00005	0.00002	0.00000	0.0002	0.0001	0.0000
Ash covered day bin transfer [7]	95	6.6	57,378	tons	0.0015	0.0007	0.0001	0.000	0.0002	0.0000	0.0022	0.0010	0.0002
							Total	**1.141**	**0.497**	**0.089**	**3.353**	**1.562**	**0.255**

[1] AP-42, Section 11.19.2-2 for uncontrolled sources with an applied control efficiency of 95% for baghouse control

[2] AP-42, Section 13.2.4 with 20 mph highest daily mean wind speed from weatherpark.com and 10% moisture from the coal analysis

[3] Assumes conservative loading rate of 100 tons per hour through day bin; Assumes gasifier operation at 500 tpd + 50%

[4] Assumes all conveyors are covered

[5] Based on 6,000 lb/hr * 200%

[6] Based on 550 lb/hr * 200%

[7] Sum of coil ash vibrating conveyor and pyrolysis ash vibrating conveyor

[8] AP-42, Table 11.9-1 Storage pile assumed to be ~0.04 acres; particle size multipliers from 13.2.5

[9] AP-42, Table 13.2.1.3 eqn 1; emission factors are in lb/VMT; Roundtrip miles per hour = 2; Roundtrip miles per year = 6,360

CO_2 VENT GAS

Venting hours: 8,400 hr/yr

Component	lbmol/hr	MW	Emissions lb/hr	Emissions tpy
CO	0.12	28	3.4	14.1
H_2	0.29	2	0.6	2.4
CO_2	542.6	44	23,874	100,272
H_2O	32.76	18	590	2,477

[a] Emission rates provided by manufacturer

GASIFICATION FLUE GAS

Venting hours: 8,400 hr/yr
Release amount: 10,898 lbmol/hr

Component	mol%	MW	Emissions lb/hr	Emissions tpy
N_2	72.5	28	221,229	929,163
CO_2	8.4	44	40,279	169,172
H_2O	16.1	18	31,582	132,646
O_2	3.1	32	10,811	45,405

[a] Flue gas composition provided by manufacturer

[c] CO2 emissions from gasification burner emission calculations conservatively used since they were larger than the flue gas values provided by TCG belo

FISCHER TROPSCH PURGE GAS

Venting hours: 1,344 hr/yr
Release amount: 1.6 lbmol/hr

Component	mol%	MW	Emissions lb/hr	Emissions tpy
N_2	95.66	28	42.9	28.8
CO_2	0.33	44	0.2	0.2
Ar	1.01	40	0.6	0.4
O_2	3.0	32	1.5	1.0

[a] Vent gas composition provided by manufacturer

TANK EMISSIONS

Operating hours: 8,760 hr/yr

Tanks	Size	VOC Emissions		Naphthalene		Benzene		Toluene		Xylene	
		lb/hr	tpy	wt%	lb/hr	wt%	lb/hr	wt%	lb/hr	wt%	lb/hr
Jet Fuel [a]	4,021 bbl	0.019	0.08	1.5	0.0003	0.1	2E-05	0.25	5E-05	1	0.00019
Jet Fuel [a]	4,406 bbl	0.019	0.08	1.5	0.0003	0.1	2E-05	0.25	5E-05	1	0.00019
Off Spec Storage [b]	4,406 bbl	0.015	0.06	1.5	0.0002	0.1	1E-05	0.3	4E-05	1.0	0.000148
				Total:	0.0008		0.0001		0.0001		0.0005

[a] Based on U.S. Oil and Rifining Co. MSDS; 4,021 bbl tank = 209,145 bbl/yr; 4,406 bbl tank = 202,940 bbl/yr

[b] Combination of off-spec diesel fuel and off-spec jet fuel

COOLING TOWER EMISSION CALCULATIONS

Total liquid drift factor:	1.7	lb/10^3 gal	AP-42 Table 13.4-1
Total liquid circulation rate	665	gal/min	
Total liquid drift	333	lb/hr	Assume 0.001% of total water circulation rate utilizing drift/mist eliminators
Water total dissolved solids content	5,550	ppm	Based on 5 times the 3-yr average analytical results from DMR reports at Price River
PM10 emissions	1.85	lb/hr	
Operating hours	8,400	hr/yr	
	7.8	ton/yr	

EQUIPMENT LEAKS

Fischer-Tropsch Synthesis

Source	Product	Component Count	Emission Factor [a]	Emission Rate	TOC Weight	VOC Emissions [b]	
			(kg/comp-hr)	(lb/hr)		lb/hr	tpy
Valves	G/V	150	0.0006	0.09	100%	0.09	0.39
Valves	LL	0	0.0017	0.00	100%	0.00	0.00
Pumps	LL	10	0.012	0.12	100%	0.12	0.53
Compressor Seals	G/V	0	0.0894	0.00	100%	0.00	0.00
Pressure-Relief Valves	G/V	10	0.0447	0.45	100%	0.45	1.96
Sampling Connections	All	0	0.00006	0.00	100%	0.00	0.00
Open-ended Lines	All	0	0.0015	0.00	100%	0.00	0.00
					Total VOCs	**0.66**	**2.88**
					Napthalene (4% of VOCs)	0.03	0.12
					Ethylbenzene (7% of VOCs)	0.05	0.20
					Cumene (1% of VOCs)	0.01	0.03
					Hexane (35% of VOCs)	0.23	1.01
					Xylene (35% of VOCs)	0.23	1.01
					Toluene (20% of VOCs)	0.13	0.58
					Benzene (5% of VOCs)	0.03	0.14

Hydroprocessing and Distillation

Source	Product	Component Count	Emission Factor [a]	Emission Rate	TOC Weight	VOC Emissions [b]	
			(kg/comp-hr)	(lb/hr)		lb/hr	tpy
Valves	G/V	150	0.0006	0.09	100%	0.09	0.39
Valves	LL	0	0.0017	0.00	100%	0.00	0.00
Pumps	LL	10	0.012	0.12	100%	0.12	0.53
Compressor Seals	G/V	0	0.0894	0.00	100%	0.00	0.00
Pressure-Relief Valves	G/V	10	0.0447	0.45	100%	0.45	1.96
Sampling Connections	All	0	0.00006	0.00	100%	0.00	0.00
Open-ended Lines	All	0	0.0015	0.00	100%	0.00	0.00
					Total VOCs	**0.66**	**2.88**
					Napthalene (4% of VOCs)	0.03	0.12
					Ethylbenzene (7% of VOCs)	0.05	0.20
					Cumene (1% of VOCs)	0.01	0.03
					Hexane (35% of VOCs)	0.23	1.01
					Xylene (35% of VOCs)	0.23	1.01
					Toluene (20% of VOCs)	0.13	0.58
					Benzene (5% of VOCs)	0.03	0.14

Tank Farm

Source	Product	Component Count	Emission Factor [a]	Emission Rate	TOC Weight	VOC Emissions [b]	
			(kg/comp-hr)	(lb/hr)		lb/hr	tpy
Valves	G/V	100	0.0006	0.06	100%	0.06	0.26
Valves	LL	0	0.0017	0.00	100%	0.00	0.00
Pumps	LL	10	0.012	0.12	100%	0.12	0.53
Compressor Seals	G/V	0	0.0894	0.00	100%	0.00	0.00
Pressure-Relief Valves	G/V	5	0.0447	0.22	100%	0.22	0.98
Sampling Connections	All	0	0.00006	0.00	100%	0.00	0.00
Open-ended Lines	All	0	0.0015	0.00	100%	0.00	0.00
					Total VOCs	**0.40**	**1.77**
					Napthalene (1.5% of VOCs)	0.02	0.07
					Xylene (1% of VOCs)	0.00	0.02
					Toluene (0.3% of VOCs)	0.00	0.01
					Benzene (0.1% of VOCs)	0.00	0.00
					Facility Wide Total VOCs	**1.72**	**7.52**
					Napthalene (4% of VOCs)	0.07	0.30
					Ethylbenzene (7% of VOCs)	0.09	0.40
					Cumene (1% of VOCs)	0.01	0.06
					Hexane (35% of VOCs)	0.46	2.01
					Xylene (35% of VOCs)	0.46	2.03
					Toluene (20% of VOCs)	0.26	1.16
					Benzene (5% of VOCs)	0.07	0.29

[a] Emissions estimation protocol for petroleum refineries. August 2014 version 3. Table 2-3 Screening ranges emission factors <10,000 ppm

[b] Operating hours per year = 8,760

[c] HAPs wt percent in FT and hydroprocessing and distillation based on process knowledge and estimates from similar proposed facilities

[c] HAPs wt percent from tank farm based on worst case tank compositions

POINT SOURCES

Source ID	Stack Release Type (Beta)	FLAT (Non-Default)	Source Description	Easting (x)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter	PM10	PM10_ANN	PM2.5	PM2.5_AN	NO2
				(m)	(m)	(m)	(m)	(K)	(m/s)	(m)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)
COALBH			Coal handling baghouse	527072.00	4376334.00	1643.58	3.66	0.00	40.45	0.6096	0.007134	0.009765	0.001080	0.001479	
SILOBH			Coal silo baghouse	527077.00	4376337.00	1643.64	17.98	0.00	40.45	0.6096	0.016684	0.026190	0.012709	0.017904	
F			Gasification flue gas without SCR	527116.00	4376333.00	1643.92	9.35	394.26	116.59	0.76	2.776955	11.663211	2.776955	11.663211	20.349600
ASHBH			Ash handling baghouse	527093.00	4376330.00	1643.65	3.6576	338.71	40.45	0.6096	0.0002354	0.00102335	3.565E-05	0.000155	
BINBH			Ash bin baghouse	527095.00	4376330.00	1643.66	17.983	338.71	40.45	0.6096	0.0002354	0.00102335	3.565E-05	0.000155	
E			Flare Pilot	526851.00	4376441.00	1645.03	15.24	699.82	61	0.61	0.01	0.03	0.01	0.03	0.05
H			Activation/Regeneration Heater #1	527149.00	4376478.00	1645.27	7.62	644.26	3.2	0.5	0.01	0.02	0.01	0.02	0.06
I			Activation/Regeneration Heater #2	527149.00	4376453.00	1644.87	7.62	616.48	3.7	0.3	0.00	0.01	0.00	0.01	0.03
B			Product Upgrading Heater #1	527019.00	4376459.00	1645.53	15.24	694.26	10.5156	0.2032	0.04	0.15	0.04	0.15	0.24
C			Product Upgrading Heater #2	527019.00	4376483.00	1646	15.24	647.04	10.668	0.3048	0.08	0.32	0.08	0.32	0.50
G			Auxillary boiler	527147.00	4376340.00	1644.45	15.24	449.82	12.4968	0.9144	0.55	0.14	0.55	0.14	3.62156863
J			Emergency generator (diesel)	527149.00	4376505.00	1646.02	3.81	749.82	70.229	0.254	0.36	0.09	0.36	0.09	12.91
960			Fire water pump (diesel)	526942.00	4376455.00	1645.52	3.66	748.15	47.055	0.127	0.07	0.02	0.07	0.02	1.20
920			Cooling Tower	526995.00	4376450.00	1645.36	10.058	313.71	15.24	0.6096	1.8468513	7.75677546	1.8468513	7.7567755	

Area Sources

Source ID	FLAT (Non-Default)	Source Description	Easting (X)	Northing (Y)	Base Elevation	Release Height	Easterly Length	Northerly Length	Angle from North	Initial Vertical Dimension	PM10	PM10_ANN	PM2.5	PM2.5_AN
			(m)	(m)	(m)	(m)	(m)	(m)		(m)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
COAL_STORAGE		Coal Storage Pile	527047.00	4376373.00	1644.04	5	11	15			0.36	1.36	0.05	0.20

Volume Sources

Total For Paved Haul Road

Source ID	FLAT (Non-Default)	Source Description	Easting (x)	Northing (Y)	Base Elevation	Release Height	Init. Horizontal Dimension	Init. Vertical Dimension	PM10	PM10_ANN	PM2.5	PM2.5_AN	NO2	Comments, assumptions made, etc.	PM10	PM10_ANN	PM2.5	PM2.5_AN	NO2
			(m)	(m)	(m)	(m)	(m)	(m)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)
TRK_DMP		Truck Unloading	527031.00	4376329.00	1643.55	0.43	4.186	0.395	7.13E-02	9.76E-02	1.08E-02	1.48E-02	0.00E+00	Assumes a drop height of 0.5 meters.	0.07	0.10	0.01	0.01	
HR1_0001		Paved Haul Road	526372.44	4376247.32	1648.17	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04	Total for access roads divided by 137 volume sources along road.	0.015352	0.067242	0.003813	0.016701	0.013852
HR1_0002		Paved Haul Road	526380.81	4376247.30	1647.8	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0003		Paved Haul Road	526389.18	4376247.29	1647.42	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0004		Paved Haul Road	526397.55	4376247.27	1647.15	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0005		Paved Haul Road	526405.92	4376247.26	1646.88	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0006		Paved Haul Road	526414.29	4376247.24	1646.61	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0007		Paved Haul Road	526422.66	4376247.22	1646.34	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0008		Paved Haul Road	526431.03	4376247.21	1646.08	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0009		Paved Haul Road	526439.40	4376247.19	1645.79	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0010		Paved Haul Road	526447.77	4376247.18	1645.47	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0011		Paved Haul Road	526456.14	4376247.16	1645.14	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0012		Paved Haul Road	526464.51	4376247.14	1644.86	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0013		Paved Haul Road	526472.88	4376247.13	1644.64	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0014		Paved Haul Road	526481.25	4376247.11	1644.42	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0015		Paved Haul Road	526489.62	4376247.10	1644.22	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0016		Paved Haul Road	526497.99	4376247.08	1644.01	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0017		Paved Haul Road	526506.36	4376247.06	1643.81	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0018		Paved Haul Road	526514.73	4376247.05	1643.64	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0019		Paved Haul Road	526523.10	4376247.03	1643.49	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0020		Paved Haul Road	526531.47	4376247.02	1643.33	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0021		Paved Haul Road	526539.84	4376247.00	1643.19	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0022		Paved Haul Road	526548.21	4376246.98	1643.05	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0023		Paved Haul Road	526556.58	4376246.97	1642.91	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0024		Paved Haul Road	526564.95	4376246.95	1642.84	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0025		Paved Haul Road	526573.32	4376246.94	1642.78	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0026		Paved Haul Road	526581.69	4376246.92	1642.71	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0027		Paved Haul Road	526590.06	4376246.90	1642.63	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0028		Paved Haul Road	526598.43	4376246.89	1642.55	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0029		Paved Haul Road	526606.80	4376246.87	1642.47	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0030		Paved Haul Road	526615.17	4376246.86	1642.38	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0031		Paved Haul Road	526623.54	4376246.84	1642.3	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0032		Paved Haul Road	526631.91	4376246.82	1642.24	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0033		Paved Haul Road	526640.28	4376246.81	1642.2	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0034		Paved Haul Road	526648.65	4376246.79	1642.17	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0035		Paved Haul Road	526657.02	4376246.78	1642.14	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0036		Paved Haul Road	526665.39	4376246.76	1642.12	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0037		Paved Haul Road	526673.76	4376246.74	1642.1	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0038		Paved Haul Road	526682.13	4376246.74	1642.08	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0039		Paved Haul Road	526690.50	4376246.78	1642.06	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0040		Paved Haul Road	526698.87	4376246.81	1642.05	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0041		Paved Haul Road	526707.24	4376246.85	1642.04	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0042		Paved Haul Road	526715.61	4376246.89	1642.03	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0043		Paved Haul Road	526723.97	4376246.93	1642.02	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0044		Paved Haul Road	526732.34	4376246.97	1641.99	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0045		Paved Haul Road	526740.71	4376247.00	1641.97	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0046		Paved Haul Road	526749.08	4376247.04	1641.95	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0047		Paved Haul Road	526757.45	4376247.08	1641.95	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0048		Paved Haul Road	526765.82	4376247.12	1641.95	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0049		Paved Haul Road	526774.19	4376247.15	1641.95	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0050		Paved Haul Road	526782.56	4376247.19	1641.93	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0051		Paved Haul Road	526790.93	4376247.23	1641.91	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0052		Paved Haul Road	526799.30	4376247.27	1641.89	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0053		Paved Haul Road	526807.67	4376247.31	1641.88	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0054		Paved Haul Road	526816.04	4376247.34	1641.88	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0055		Paved Haul Road	526824.41	4376247.38	1641.86	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0056		Paved Haul Road	526832.78	4376247.42	1641.84	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0057		Paved Haul Road	526841.15	4376247.46	1641.83	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0058		Paved Haul Road	526849.52	4376247.49	1641.8	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0059		Paved Haul Road	526857.89	4376247.53	1641.77	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0060		Paved Haul Road	526866.26	4376247.57	1641.74	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0061		Paved Haul Road	526874.63	4376247.61	1641.75	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0062		Paved Haul Road	526883.00	4376247.65	1641.76	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0063		Paved Haul Road	526891.37	4376247.68	1641.76	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0064		Paved Haul Road	526899.74	4376247.72	1641.76	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0065		Paved Haul Road	526908.11	4376247.76	1641.75	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0066		Paved Haul Road	526916.48	4376247.80	1641.76	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0067		Paved Haul Road	526924.85	4376247.84	1641.8	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0068		Paved Haul Road	526933.22	4376247.87	1641.84	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0069		Paved Haul Road	526941.59	4376247.91	1641.88	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0070		Paved Haul Road	526949.96	4376247.95	1641.93	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0071		Paved Haul Road	526958.33	4376247.99	1641.98	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0072		Paved Haul Road	526966.70	4376248.02	1642.05	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0073		Paved Haul Road	526975.07	4376248.06	1642.13	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						
HR1_0074		Paved Haul Road	526983.44	4376248.10	1642.21	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04						

HR1_0075		Paved Haul Road	526991.81	4376248.14	1642.27	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0076		Paved Haul Road	527000.18	4376248.18	1642.32	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0077		Paved Haul Road	527008.55	4376248.21	1642.37	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0078		Paved Haul Road	527016.92	4376248.25	1642.44	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0079		Paved Haul Road	527025.29	4376248.29	1642.5	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0080		Paved Haul Road	527033.29	4376248.69	1642.57	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0081		Paved Haul Road	527033.21	4376257.06	1642.68	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0082		Paved Haul Road	527033.13	4376265.43	1642.8	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0083		Paved Haul Road	527033.05	4376273.80	1642.91	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0084		Paved Haul Road	527032.97	4376282.17	1642.99	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0085		Paved Haul Road	527032.89	4376290.54	1643.08	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0086		Paved Haul Road	527032.81	4376298.91	1643.16	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0087		Paved Haul Road	527032.73	4376307.28	1643.26	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0088		Paved Haul Road	527032.64	4376315.65	1643.37	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0089		Paved Haul Road	527032.56	4376324.02	1643.49	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0090		Paved Haul Road	527032.48	4376332.39	1643.6	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0091		Paved Haul Road	527032.40	4376340.76	1643.69	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0092		Paved Haul Road	527032.32	4376349.13	1643.77	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0093		Paved Haul Road	527032.24	4376357.50	1643.86	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0094		Paved Haul Road	527032.16	4376365.87	1643.94	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0095		Paved Haul Road	527032.08	4376374.24	1644.06	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0096		Paved Haul Road	527032.00	4376382.61	1644.17	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0097		Paved Haul Road	527031.92	4376390.98	1644.29	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0098		Paved Haul Road	527031.84	4376399.35	1644.41	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0099		Paved Haul Road	527031.76	4376407.72	1644.55	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0100		Paved Haul Road	527031.68	4376416.09	1644.7	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0101		Paved Haul Road	527031.60	4376424.45	1644.84	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0102		Paved Haul Road	527031.52	4376432.82	1645	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0103		Paved Haul Road	527038.93	4376433.87	1645	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0104		Paved Haul Road	527047.30	4376433.97	1644.96	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0105		Paved Haul Road	527055.67	4376434.08	1644.93	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0106		Paved Haul Road	527064.04	4376434.19	1644.9	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0107		Paved Haul Road	527072.40	4376434.29	1644.87	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0108		Paved Haul Road	527080.41	4376433.41	1644.82	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0109		Paved Haul Road	527086.73	4376427.92	1644.68	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0110		Paved Haul Road	527090.69	4376421.35	1644.57	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0111		Paved Haul Road	527090.77	4376412.98	1644.45	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0112		Paved Haul Road	527090.85	4376404.61	1644.33	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0113		Paved Haul Road	527090.93	4376396.24	1644.21	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0114		Paved Haul Road	527091.01	4376387.87	1644.13	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0115		Paved Haul Road	527091.09	4376379.50	1644.04	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0116		Paved Haul Road	527091.17	4376371.13	1643.96	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0117		Paved Haul Road	527091.25	4376362.76	1643.88	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0118		Paved Haul Road	527091.33	4376354.39	1643.82	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0119		Paved Haul Road	527091.42	4376346.02	1643.77	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0120		Paved Haul Road	527091.50	4376337.65	1643.71	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0121		Paved Haul Road	527091.58	4376329.28	1643.64	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0122		Paved Haul Road	527091.66	4376320.91	1643.55	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0123		Paved Haul Road	527091.74	4376312.54	1643.47	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0124		Paved Haul Road	527091.82	4376304.17	1643.39	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0125		Paved Haul Road	527091.90	4376295.80	1643.32	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0126		Paved Haul Road	527091.98	4376287.43	1643.26	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0127		Paved Haul Road	527092.06	4376279.06	1643.19	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0128		Paved Haul Road	527092.14	4376270.69	1643.13	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0129		Paved Haul Road	527092.22	4376262.32	1643.08	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0130		Paved Haul Road	527092.30	4376253.95	1643.02	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0131		Paved Haul Road	527088.99	4376248.92	1642.96	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0132		Paved Haul Road	527080.62	4376248.89	1642.88	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0133		Paved Haul Road	527072.25	4376248.86	1642.84	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0134		Paved Haul Road	527063.88	4376248.83	1642.79	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0135		Paved Haul Road	527055.52	4376248.80	1642.74	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0136		Paved Haul Road	527047.15	4376248.77	1642.68	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04
HR1_0137		Paved Haul Road	527038.78	4376248.74	1642.62	2.55	4.186	2.372	1.12E-04	4.91E-04	2.78E-05	1.22E-04	1.01E-04

Revolution Fenceline	
East (X)	North (Y)
(m)	(m)
526371	4376533
526365	4376237
527178	4376240
527179	4376547