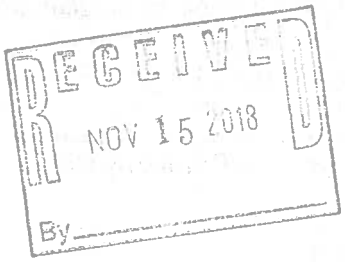
TOLSON AND ASSOCIATES, LLC

24024 Frederick Road **Clarksburg, MD 20871**
Office (301) 428-0800



November 14, 2018

Mr. Matt Hafner
Maryland Department of the Environment
Air and Radiation Management Administration
Air Quality Permits Program
1800 Washington Blvd. Suite 720
Baltimore, Maryland 21230

Re: Tolson And Associates, LLC Air Permit to Operate Crushing Operation
Permit Application

Dear Mr. Hafner:

Tolson And Associates, LLC is making a permit application for construction and operation of a Crushing Operation at the Tolson Rubble Landfill, Refuse Disposal Permit No.2003-WRF-0580 in Crofton, Maryland. .

The equipment to be used is the same that is currently used at our Crushing Operation at the Ritchie Land Reclamation facility Permit No. 033-2331-6-1529. As noted in correspondence with Ms. Sariscak in her e-mail dated 10-29-2018 we are including the same information from that application in the new application.

Enclosed please find three copies of our complete application package for a Permit to Construct and Operate a Crushing and Screening Operation at a Permanent Site.

Form Number 5
Form Number 5EP
Form Number 5T
Form Number 44
Site Map
Capacities
Drawings and Vendor Literature
Emissions calculations
Fugitive Dust Control Program
Certificate of Insurance (Workman's Compensation Insurance)
Zoning Letter verifying Crushing Operation is a permitted use
E-mail from Suna Yi Sariscak (New site using same Equipment as Ritchie Land Reclamation)
Opacity Testing Report for Ritchie Land Reclamation

We thank you in advance for an expeditious processing of our permit application.

If you should have any questions or require additional information, I can be reached on my cell phone at 301-639-4413, office 301-428-0800 or by e-mail me@pleasants.org .

Sincerely,
Tolson And Associates, LLC.

E. Michael Ensor
Senior Vice President

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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(410) 537-3230 ▪1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PROCESSING/MANUFACTURING EQUIPMENT

Permit to Construct ☐ Registration Update ☐ Initial Registration ☐

1A. Owner of Equipment/Company Name

Tolson And Associates, LLC

Mailing Address

24024 Frederick Rd.
Street Address

Clarksburg | MD | 20871
City | State | Zip

Telephone Number

(301) 428-0800

Signature

E. Michael Ensor Senior Vice President
Print Name and Title

11/14/18
Date

DO NOT WRITE IN THIS BLOCK

2. REGISTRATION NUMBER

County No. (1-2) | Premises No. (3-6)
Registration Class (7) | Equipment No. (8-11)
Data Year (12-13) | Application Date

1B. Equipment Location and Telephone Number (if different from above)

End of Capitol Raceway Rd.
Street Number and Street Name

Crofton | MD | 21114 | (301) 428-0800
City/Town | State | Zip | Telephone Number

Premises Name (if different from above)

3. Status (A= New, B= Modification to Existing Equipment, C= Existing Equipment)

Status	New Construction Begun (MM/YY)	New Construction Completed (MM/YY)	Existing Initial Operation (MM/YY)
A			
15	16-19	20-23	20-23

4. Describe this Equipment: Make, Model, Features, Manufacturer (include Maximum Hourly Input Rate, etc.)

See Attached Equipment List

5. Workmen's Compensation Coverage ZAWCI9389702 (Binder/Policy Number) 10/1/2019 (Expiration Date)

Company Arch Insurance Company

NOTE: Before a Permit to Construct may be issued by the Department, the applicant must provide the Department with proof of worker's compensation coverage as required under Section 1-202 of the Worker's Compensation Act.

6A. Number of Pieces of Identical Equipment Units to be Registered/Permitted at this Time _____

6B. Number of Stack/Emission Points Associated with this Equipment 4

7. Person Installing this Equipment (if different from Number 1 on Page 1)

Name _____ Title _____

Company _____

Mailing Address/Street _____

City/Town _____ State _____ Telephone (_____) _____

8. Major Activity, Product or Service of Company at this Location

Rubblefill, Construction and Demolition Debris Recycling

9. Control Devices Associated with this Equipment

None [ ] 24-0

Simple/Multiple Cyclone	Spray/Adsorb Tower	Venturi Scrubber	Carbon Adsorber	Electrostatic Precipitator	Baghouse	Thermal/Catalytic Afterburner	Dry Scrubber
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
24-1	24-2	24-3	24-4	24-5	24-6	24-7	24-8

Other

[x] Describe Water Spray

24-9

10. Annual Fuel Consumption for this Equipment

OIL-1000 GALLONS	SULFUR %	GRADE	NATURAL GAS-1000 FT^3	LP GAS-100 GALLONS	GRADE
43	5				
26-31	32-33	34	35-41	42-45	

COAL- TONS	SULFUR %	ASH%	WOOD-TONS	MOISTURE %
46-52	53-55	56-58	59-63	64-65

OTHER FUELS _____ (Specify Type) [ ] 66-1 ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

OTHER FUEL _____ (Specify Type) [ ] 66-2 ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

1= Coke 2= COG 3=BFG 4=Other

11. Operating Schedule (for this Equipment)

Continuous Operation	Batch Process	Hours per Batch	Batch per Week	Hours per Day	Days Per Week	Days per Year
[ ]	[ ]		[ ]	10	5	127
67-1	67-2	68-69		70-71	72	73-75

Seasonal Variation in Operation:

No Variation	Winter Percent	Spring Percent	Summer Percent	Fall Percent	(Total Seasons= 100%)
[ ]	10	20	50	20	
76	77-78	79-80	81-82	83-84	

12. Equivalent Stack Innformation- is Exhaust through Doors, Windows, etc. Only? (Y/N) [ ] 85

See Equipment Literature for Details

If not, then

Height Avove Ground (FT)	Inside Diameter at Top	Exit Temperature (°F)	Exit Velocity (FT/SEC)
1 0			
86-88	89-91	92-95	96-98

NOTE:
Attach a block diagram of process/process line, indicating new equipment as reported on this form and all existing equipment, including control devices and emission points.

13. Input Materials (for this equipment only)
Is any of this data to be considered confidential? [ ] (Y or N)

	NAME	CAS NO. (IF APPLICABLE)	INPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.	Concrete		200	tons	254000	tons
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

14. Output Materials (for this equipment)
Process/Product Stream

	NAME	CAS NO. (IF APPLICABLE)	OUTPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.	Reclaim Concrete Aggregates		200	tons	254000	tons
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

15. Waste Streams- Solid and Liquid

	NAME	CAS NO. (IF APPLICABLE)	OUTPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

16. Total Stack Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter	Oxides of Sulfur	Oxides of Nitrogen
	25	128
99-104	105-110	111-116

Carbon Monoxide	Volatile Organic Compounds	PM-10
82	30	27
177-122	123-128	129-134

17. Total Fugitive Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter	Oxides of Sulfur	Oxides of Nitrogen
18	0	0
135-139	140-144	145-149

Carbon Monoxide	Volatile Organic Compounds	PM-10
0	0	7
150-154	155-159	160-164

Method Used to Determine Emissions **(1= Estimate 2= Emission Factor 3= Stack Test 4= Other)**

TSP	SOX	NOX	CO	VOC	PM10
2	2	2	2	2	2
165	166	167	168	169	170

AIR AND RADIATION MANAGEMENT ADMINISTRATION USE ONLY

18. Date Rec'd. Local _____ **Date Rec'd. State** _____ **Return to Local Jurisdiction** Date_____ By_____

Reviewed by Local Jurisdiction Date_____ By_____ **Reviewed by State** Date_____ By_____

19. Inventory Date **Month/Year** (171-174) **Equipment Code** (175-177) **SCC Code** (178-185)

20. Annual Operating Rate (186-192) **Maximum Design Hourly Rate** (193-199) **Permit to Operate Month** (200-201) **Transaction Date (MM/DD/YR)** (202-207)

Staff Code (208-210) **VOC Code** (211 212) **SIP Code** (213 214) **Regulation Code** (215-218) **Confidentiality** (219)

Point Description (220-238) **Action** (239) A: Add C: Change

Form Number: 5
Rev. 9/27/2002
TTY Users 1-800-735-2258

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FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Applicant Name: Tolson And Associates, LLC

Step 1: Quantify premises-wide emissions of Toxic Air Pollutants (TAP) from new and existing installations in accordance with COMAR 26.11.15.04. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Class I or Class II?	Screening Levels (µg/m³)			Estimated Premises Wide Emissions of TAP			
						Actual Total Existing TAP Emissions	Projected TAP Emissions from Proposed Installation	Premises Wide Total TAP Emissions	
			1-hour	8-hour	Annual	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)
ex. ethanol	*64175*	*II*	*18843*	*3769*	*N/A*	*0.60*	*0.15*	*0.75*	*1500*
ex. benzene	*71432*	*I*	*80*	*16*	*0.13*	*0.5*	*0.75*	*1.00*	*400*
NA									

(attach additional sheets as necessary.)

Note: Screening levels can be obtained from the Department's website (http://www.mde.maryland.gov) or by calling the Department.

Step 2: Determine which TAPs are exempt from further review. A TAP that meets either of the following Class I or Class II small quantity emitter exemptions is exempt from further TAP compliance demonstration requirements under Step 3 and Step 4.

Class II TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(a))
A Class II TAP is exempt from Step 3 and Step 4 if the Class II TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour, and any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m³.

Class I TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(b))
A Class I TAP is exempt from Step 3 and Step 4 if the Class I TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour and 350 pounds per year, any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m³, and any applicable annual screening level for the TAP must be greater than 1 µg/m³.

If a TAP meets either the Class I or Class II TAP Small Quantity Emitter Exemption Requirements, no further review under Step 3 and Step 4 are required for that specific TAP.

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Step 3: Best Available Control Technology for Toxics Requirement (T-BACT, COMAR 26.11.15.05)
In the following table, list all TAP emission reduction options considered when determining T-BACT for the proposed installation. The options should be listed in order beginning with the most effective control strategy to the least effective strategy. Attach supporting documentation as necessary.

Target Pollutants	Emission Control Option	% Emission Reduction	Costs		T-BACT Option Selected? (yes/no)
			Capital	Annual Operating	
ex. ethanol and benzene	*Thermal Oxidizer*	*99*	*$50,000*	*$100,000*	*no*
ex. ethanol and benzene	*Low VOC materials*	*80*	*0*	*$100.000*	*yes*
NA					

(attach additional sheets as necessary)

Step 4: Demonstrating Compliance with the Ambient Impact Requirement (COMAR 26.11.15.06)
Each TAP not exempt in Step 2 must be individually evaluated to determine that the emissions of the TAP will not adversely impact public health. The evaluation consists of a series of increasingly non-conservative (and increasingly rigorous) tests. Once a TAP passes a test in the evaluation, no further analysis is required for that TAP. "Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06)" provides guidance on conducting the evaluation. Summarize your results in the following table. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Screening Levels ($\mu g/m^3$)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis ($\mu g/m^3$)			Compliance Method Used?
		1-hour	8-hour	Annual	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	1-hour	8-hour	Annual	AER or Screen
ex. ethanol	*64175*	*18843*	*3769*	*N/A*	*0.75*	*1500*	*0.89*	*N/A*	*N/A*	*N/A*	*N/A*	*AER*
ex. benzene	*71432*	*80*	*16*	*0.13*	*1.00*	*400*	*0.04*	*36.52*	*1.5*	*1.05*	*0.12*	*Screen*
NA												

(attach additional sheets as necessary)

If compliance with the ambient impact requirement cannot be met using the allowable emissions rate method or the screening analysis method, refined dispersion modeling techniques may be required. Please consult with the Department's Air Quality Permit Program prior to conducting dispersion modeling methods to demonstrate compliance.

LT 106

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: Tolson And Associates, LLC

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
1 Company List LT106)

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
Jaw Crusher,Diesel Powered, with Water Spray LT106 (See attached leterature for additional information)

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☐ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	10
Hours per day:	10	Spring Percent	20
Days per week:	5	Summer Percent	50
Weeks per year:	25.4	Fall Percent	20

4. Emission Point Information

Height above ground (ft):	10	Length and width dimensions at top of rectangular stack (ft):	Length:	Width:	
Height above structures (ft):					
Exit temperature (°F):		Inside diameter at top of round stack (ft):			
Exit velocity (ft/min):		Distance from emission point to nearest property line (ft):		400'	
Exhaust gas volumetric flow rate (acfm):		Building dimensions if emission point is located on building (ft)	Height	Length	Width

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

☐ None

☐ Baghouse No. _____

☐ Cyclone No. _____

☐ Elec. Precipitator (ESP) No. _____

☐ Dust Suppression System No. _____

☐ Venturi Scrubber No. _____

☐ Spray Tower/Packed Bed No. _____

☐ Carbon Adsorber No. _____

- ☐ Cartridge/Canister
- ☐ Regenerative

☐ Thermal Oxidizer No. _____

- ☐ Regenerative

☐ Catalytic Oxidizer No. _____

☐ Nitrogen Oxides Reduction No. _____

- ☐ Selective ☐ Non-Selective
- ☐ Catalytic ☐ Non-Catalytic

☐ Other No. _____
Specify:

LT10C

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.67	0.210		0.130
Particulate Matter (filterable as PM2.5)				
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)	0.76	0.23		0.15
Oxides of Sulfur (SOx)	0.63	0.19		0.13
Oxides of Nitrogen (NOx)	0.61	0.61		0.40
Carbon Monoxide (CO)	2.06	0.63		0.41
Lead (Pb)	-			

Greenhouse Gases (GHG)	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				

List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)

(Attach additional sheets as necessary.)

LT 213

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: Tolson And Associates, LLC

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
2 Company List LT213)

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
Impact Crusher,Diesel Powered, with Water Spray LT213 (See attached leterature for additional information)

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☐ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	10
Hours per day:	10	Spring Percent	20
Days per week:	5	Summer Percent	50
Weeks per year:	25.4	Fall Percent	20

4. Emission Point Information

Height above ground (ft):	10	Length and width dimensions at top of rectangular stack (ft):	Length:	Width:	
Height above structures (ft):					
Exit temperature (°F):		Inside diameter at top of round stack (ft):			
Exit velocity (ft/min):		Distance from emission point to nearest property line (ft):		400'	
Exhaust gas volumetric flow rate (acfm):		Building dimensions if emission point is located on building (ft)	Height	Length	Width

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

☐ None

☐ Baghouse No. _____

☐ Cyclone No. _____

☐ Elec. Precipitator (ESP) No. _____

☐ Dust Suppression System No. _____

☐ Venturi Scrubber No. _____

☐ Spray Tower/Packed Bed No. _____

☐ Carbon Adsorber No. _____

- ☐ Cartridge/Canister
- ☐ Regenerative

☐ Thermal Oxidizer No. _____

- ☐ Regenerative

☐ Catalytic Oxidizer No. _____

☐ Nitrogen Oxides Reduction No. _____

- ☐ Selective ☐ Non-Selective
- ☐ Catalytic ☐ Non-Catalytic

☐ Other No. _____
Specify:

LT 213

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.92	0.33		0.210
Particulate Matter (filterable as PM2.5)				
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)	1.04	0.37		0.24
Oxides of Sulfur (SOx)	0.86	0.31		0.20
Oxides of Nitrogen (NOx)	0.34	0.34		0.22
Carbon Monoxide (CO)	2.81	1.0		0.65
Lead (Pb)	-			
Greenhouse Gases (GHG)	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				
List individual federal Hazardous Air Pollutants (HAP) below:	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**

(Attach additional sheets as necessary.)

ST 2.8

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: Tolson And Associates, LLC

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
3 Company List ST 2.8)

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
Portable Screening Deck, Diesel Powered, with Water Spray ST 2.8 (See attached leterature for additional information)

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☐ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	10
Hours per day:	10	Spring Percent	20
Days per week:	5	Summer Percent	50
Weeks per year:	25.4	Fall Percent	20

4. Emission Point Information

Height above ground (ft):	10	Length and width dimensions at top of rectangular stack (ft):	Length:	Width:	
Height above structures (ft):					
Exit temperature (°F):		Inside diameter at top of round stack (ft):			
Exit velocity (ft/min):		Distance from emission point to nearest property line (ft):		400'	
Exhaust gas volumetric flow rate (acfm):		Building dimensions if emission point is located on building (ft)	Height	Length	Width

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

☐ None

☐ Baghouse No. _____

☐ Cyclone No. _____

☐ Elec. Precipitator (ESP) No. _____

☐ Dust Suppression System No. _____

☐ Venturi Scrubber No. _____

☐ Spray Tower/Packed Bed No. _____

☐ Carbon Adsorber No. _____

- ☐ Cartridge/Canister
- ☐ Regenerative

☐ Thermal Oxidizer No. _____

- ☐ Regenerative

☐ Catalytic Oxidizer No. _____

☐ Nitrogen Oxides Reduction No. _____

- ☐ Selective ☐ Non-Selective
- ☐ Catalytic ☐ Non-Catalytic

☐ Other No. _____
Specify:

ST 2.8

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.290	0.23		0..15
Particulate Matter (filterable as PM2.5)				
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)	0.33	0.37		0.24
Oxides of Sulfur (SOx)	0.27	0.26		0.17
Oxides of Nitrogen (NOx)	0.51	0.51		0.33
Carbon Monoxide (CO)	0.88	0.69		0.45
Lead (Pb)	-			
Greenhouse Gases (GHG)	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				
List individual federal Hazardous Air Pollutants (HAP) below:	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**

(Attach additional sheets as necessary.)

ST 3.8

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: Tolson And Associates, LLC

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
4 Company List ST 3.8)

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
Portable Screening Deck, Diesel Powered, with Water Spray ST 3.8 (See attached leterature for additional information)

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☐ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	10
Hours per day:	10	Spring Percent	20
Days per week:	5	Summer Percent	50
Weeks per year:	25.4	Fall Percent	20

4. Emission Point Information

Height above ground (ft):	10	Length and width dimensions at top of rectangular stack (ft):	Length:	Width:	
Height above structures (ft):					
Exit temperature (°F):		Inside diameter at top of round stack (ft):			
Exit velocity (ft/min):		Distance from emission point to nearest property line (ft):		400'	
Exhaust gas volumetric flow rate (acfm):		Building dimensions if emission point is located on building (ft)	Height	Length	Width

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

☐ None

☐ Baghouse No. _____

☐ Cyclone No. _____

☐ Elec. Precipitator (ESP) No. _____

☐ Dust Suppression System No. _____

☐ Venturi Scrubber No. _____

☐ Spray Tower/Packed Bed No. _____

☐ Carbon Adsorber No. _____

- ☐ Cartridge/Canister
- ☐ Regenerative

☐ Thermal Oxidizer No. _____

- ☐ Regenerative

☐ Catalytic Oxidizer No. _____

☐ Nitrogen Oxides Reduction No. _____

- ☐ Selective ☐ Non-Selective
- ☐ Catalytic ☐ Non-Catalytic

☐ Other No. _____
Specify:

5 T 3.8

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.250	0.23		0.15
Particulate Matter (filterable as PM2.5)				
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)	0.28	0.26		0.17
Oxides of Sulfur (SOx)	24.0	21.0		14.0
Oxides of Nitrogen (NOx)	3.57	3.22		2.09
Carbon Monoxide (CO)	0.77	0.69		0.45
Lead (Pb)	-			

Greenhouse Gases (GHG)	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				

List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)

(Attach additional sheets as necessary.)

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Air and Radiation Management Administration / Air Quality Permits Program
1800 Washington Boulevard, STE 720 Baltimore, MD 21230-1720
(410) 537-3230 ●1-800-633-6101 ● **www.mde.state.md.us**

Mail application to
MDE/ARMA
1800 Washington Blvd, Suite 720
Baltimore, MD 21230-1720

Don't forget to:
✓*Sign the application*
✓*Include vendor literature*

Air Quality Permit to Construct & Registration Application for

INTERNAL COMBUSTION ENGINES

(Electrical Power Generators, Power Equipment, Fire Protection Pumps)

1) Applicability

You must check off one the following items to use this application form

☐ Electrical power generation (off grid, base load, peak, load shaving,, etc)
- Use MDE Form 42 for emergency use only generators

☒ Power equipment (hydraulic, mechanical, etc)
☐ Fire protection pump

***For electrical power generators only**, you must check off one the following items to use this application form*

☐ I have a CPCN Exemption from the Public Service Commission for this generator (contact the Public Service Commision at 410.767.8131)
☐ This generator was installed before October 1, 2001 and I do not need a CPCN Exemption

2) Business/Institution/Facility where the engine will be located ☐ Check if this is a federal facility

Name: Tolson And Associates, LLC Phone: 301-428-0800

Street Address: End of Capitol Raceway Rd.

City: Crofton State: MD Zip Code: 21114 County: Anne Arundel

3) Owner/Operator of the engine (if different than above)

Name: _____ Phone: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

4) Installer ☐ Check if installer is applying for permit. If checked, complete the following:

Name: _____ Phone: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

5) Engine Information

Installation Date	Engine Manufacturer & Model	Horsepower	Manufacture Date	Fuel Type
02/2016	John Deere Co. 1E6068HFG95	252	2013	Diesel

6) Operating Information

Intended use description: (Examples, "a portable generator at a construction site" or "peak shaving with the emergency generator", etc)

Provide power for stacking conveyors at Crushing operation.

Hours per day	Hours per year
10	1270

7) Required Attachments

(Check that they are attached)

☒ Vendor literature

☐ CPCN Exemption from the Public Service Commission

- Electrical generators only
- Not needed for generators installed before October 1, 2001

8) Workers Compensation (Environmental article §1-202)

Workers insurance policy or binder number: Arch Insurance Co. ZAWCI9389702

☐ Check if self employed or otherwise exempt from this requirement

"I CERTIFY UNDER PENALTY OF LAW THAT THE INFORMATION SUBMITTED IN THIS REQUEST FOR COVERAGE IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

Owners Signature	Printed Name & Title	Date
	E. Michael Ensor Senior Vice President	

LEAVE BLANK, MDE use only

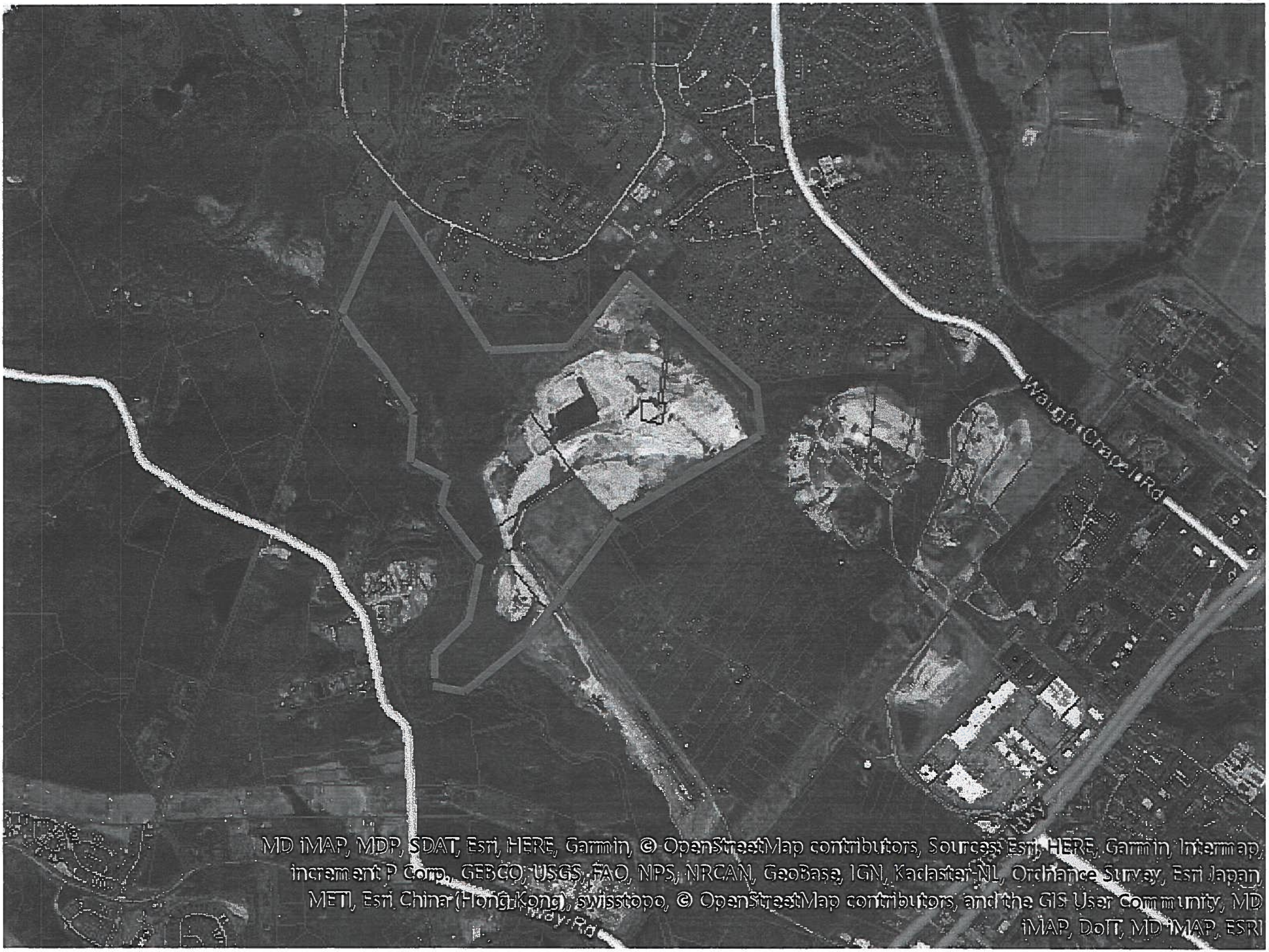
☐ Permit

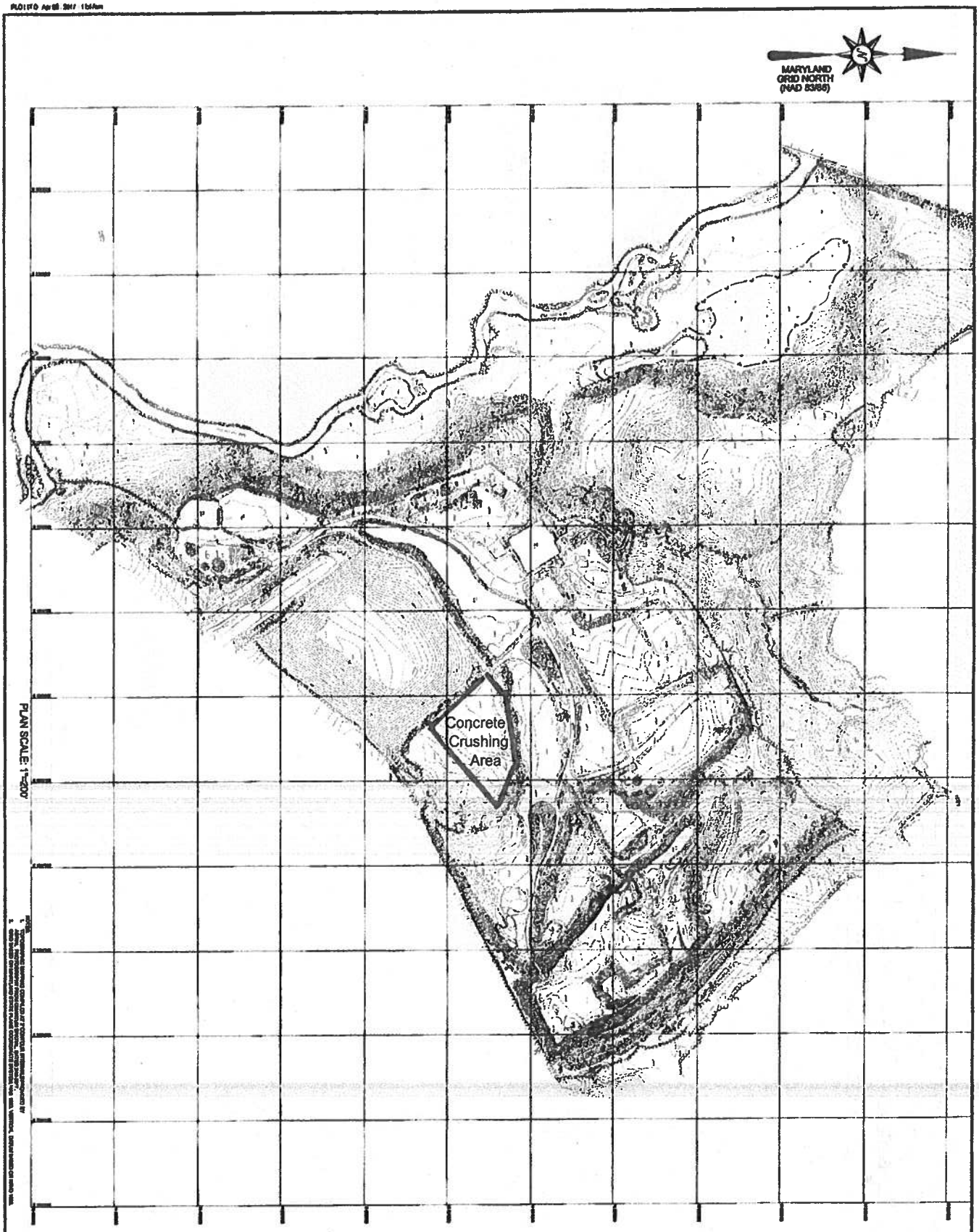
☐ Registration (Less than 1,000 brake horsepower & installed prior to 11/24/03)

Permit/Registration Number: _____ - ____ - _____ - _____

AI: _____

	SOx	Nox	CO	VOC	PM	PM-10
Emissions Stack						
Fugitive						


Waugh Chapel Rd
Crain Hwy
MD iMAP, MDP, SDAT, Esri, HERE, Garmin, © OpenStreetMap contributors, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community, MD iMAP, DoIT, MD iMAP, ESRI



AERIAL 2' CONTOURS - 2/10/2017

AERIAL LANDFILL

TOLSON RUBBLE LANDFILL

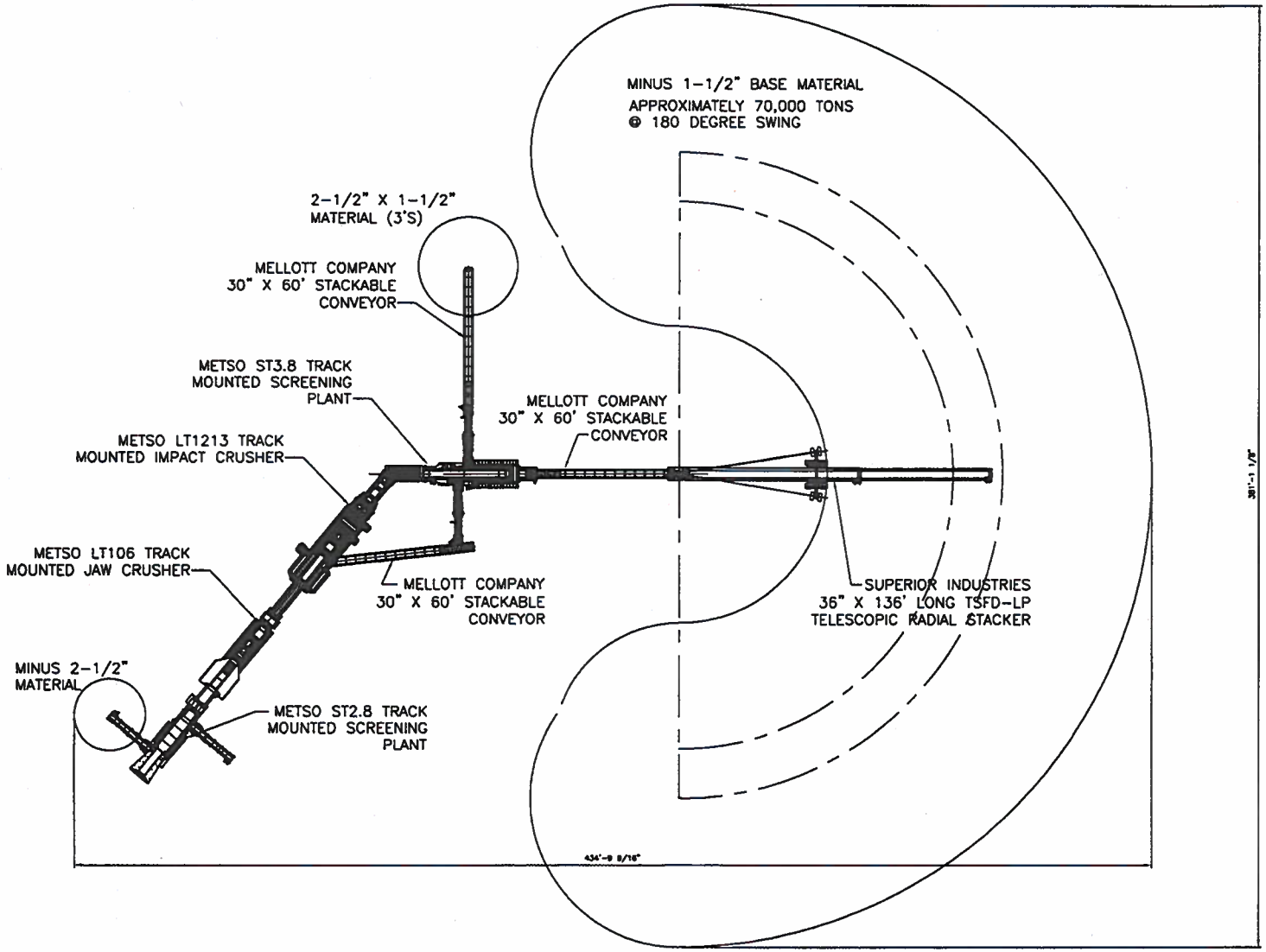
CROFTON, MARYLAND

TAX MAP 38, BLOCK 6, PARCEL 6, 10 & 239

FOURTH DISTRICT ANNE ARUNDEL COUNTY

Sheet No. 1 OF 1

Bay Engineering Inc.



REV	DATE	BY	CHK	DESCRIPTION

NOTICE

MELLOTT COMPANY

PROPOSED CONCRETE RECYCLING CIRCUIT

KLINE, LLC

RDC 10/8/13

1" = 20'-0"

P100615 (CONC)

TABLE 1
RITCHIE LAND RECLAMATION LLC
Equipment List
February 10, 2016

	Permit Approved Equipment	Equipment Description		Equipment I.D. No.
Primary Crushers				
1	Primary Jaw	Metso, 106 Jaw Crusher	LT106	TBD
Secondary/Tertiary Crushers				
2	Secondary Cone Crusher	Metso, LT1213 Crusher	LT1213	TBD
Fines Crushing				
NA	None	None		
Screens				
3	ST2.8 Track Scalping Scre	Metso, 2-Deck, 5' X 16' Screen	ST2.8	TBD
4	ST3.8 Screen	Metso, 2-deck, 18" x 5' screen	ST3.8	TBD
Conveyors				
5	48" Conveyor	48" x 16' Oversize Conveyor	ST2.8	TBD
6	32" Conveyor	32" x 28' Left Wing Conveyor	ST2.8	TBD
7	32" Conveyor	32" x 28' Right Wing Conveyor	ST2.8	TBD
8	48" Conveyor	48" x 16' Underscreen Conveyor	ST2.8	TBD
9	40" Conveyor	40" x 45' Primary Conveyor	LT106	TBD
10	20" Conveyor	20" x 12 Side Conveyor (NOT IN USE)	LT106	TBD
11	48" Conveyor	48" x 45' Under Crusher Conveyor	LT1213	TBD
12	20" Conveyor	20" x 12' Side Conveyor (NOT IN USE)	LT1213	TBD
13	42" Conveyor	42" x 15' Feed Conveyor	ST3.8	TBD
14	42" Conveyor	42" x 36' Lifting Conveyor	ST3.8	TBD
15	32" Conveyor	32" x 32' Left Wing Conveyor	ST3.8	TBD
16	32" Conveyor	32" x 32' Right Wing Conveyor	ST3.8	TBD
17	48" Conveyor	48" x 28' Underscreen Conveyor	ST3.8	TBD
18	30" Conveyor	30" x 60' Conveyor		
19	30" Conveyor	30" x 60' Conveyor		
20	30" Conveyor	30" x 60' Conveyor		
21	36" Conveyor	30" x 136' Conveyor		
Generators / Power Units				
22	CAT, C4.4 Power Unit	Cat, C4.4, 100 HP, Diesel Engine	ST2.8	TBD
23	LT106 Diesel Engine	CAT, C9, 300 HP Diesel Engine	LT106	TBD
24	LT1213 Diesel Engine	CAT, C13, 415 HP Diesel Engine	LT1213	TBD
25	CAT, C4.4 Power Unit	Cat, C4.4, 100 HP, Diesel Engine	ST3.8	TBD
26	Magnum Generator	John Deere, Model 6068, 252 HP, Diesel Engine		
Bins / Chutes				
27	Primary Grizzly Feeder	Vibrating Grizzly Feed Hopper	LT106	TBD
28	Hopper	Metso, 9.6 Cubic Yard Hopper	ST3.8	TBD
29	Apron Feeder	Apron Feeder	ST2.8	TBD
30	Vibrating Grizzly Feeder	Vibrating Grizzly Feed Hopper	LT1213	TBD
Other				

PERFORMANCE DATA [REH04781]

JANUARY 15, 2016

For Help Desk Phone Numbers Click here

LT 106

Perf No: DM8117 Change Level: 03

General | Heat Rejection | Emissions | Regulatory | Altitude Derate | Cross Reference | Perf Param Ref

View PDF

SALES MODEL:	C9	COMBUSTION:	DI
ENGINE POWER (BHP):	300	ENGINE SPEED (RPM):	2,200
PEAK TORQUE (FT-LB):	987.3	PEAK TORQUE SPEED (RPM):	1,400
COMPRESSION RATIO:	16.1	TORQUE RISE (%):	37
RATING LEVEL:	INDUSTRIAL B	ASPIRATION:	TA
PUMP QUANTITY:	1	AFTERCOOLER TYPE:	ATAAC
FUEL TYPE:	DIESEL	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
MANIFOLD TYPE:	DRY	INLET MANIFOLD AIR TEMP (F):	120
GOVERNOR TYPE:	ELEC	JACKET WATER TEMP (F):	192.2
CAMSHAFT TYPE:	STANDARD	TURBO CONFIGURATION:	SINGLE
IGNITION TYPE:	CI	TURBO QUANTITY:	1
INJECTOR TYPE:	EUI	TURBOCHARGER MODEL:	S310G-1.10
REF EXH STACK DIAMETER (IN):	4	CERTIFICATION YEAR:	2005
MAX OPERATING ALTITUDE (FT):	8,501	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,150.9

INDUSTRY	SUB INDUSTRY	APPLICATION
INDUSTRIAL	FORESTRY	INDUSTRIAL
INDUSTRIAL	GENERAL INDUSTRIAL	INDUSTRIAL
OIL AND GAS	WELL SERVICING	INDUSTRIAL
INDUSTRIAL	CONSTRUCTION	INDUSTRIAL
OIL AND GAS	LAND PRODUCTION	INDUSTRIAL
INDUSTRIAL	AGRICULTURE	INDUSTRIAL
INDUSTRIAL	MATERIAL HANDLING	INDUSTRIAL
INDUSTRIAL	MINING	INDUSTRIAL

General Performance Data Top

ENGINE SPEED	ENGINE POWER	ENGINE TORQUE	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
RPM	BHP	LB-FT	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
2,200	300	717	201	0.368	15.8	46.0	118.6	1,086.8	44.5	862.6
2,100	300	751	211	0.364	15.6	46.2	116.3	1,093.2	42.5	871.8
2,000	300	789	221	0.359	15.4	46.6	115.3	1,106.3	40.5	888.0
1,900	300	830	233	0.355	15.2	47.2	115.5	1,126.5	38.3	911.0
1,800	300	876	246	0.352	15.1	47.8	114.4	1,148.2	36.3	935.3
1,700	293	907	254	0.352	14.8	47.6	111.8	1,166.0	33.8	955.6
1,600	284	913	262	0.353	14.3	46.9	109.3	1,189.3	31.2	981.6
1,500	274	959	269	0.354	13.9	45.8	107.2	1,220.1	28.4	1,015.2

1,400	264	989	277	0.356	11.4	44.7	105.6	1,260.4	25.6	1,058.2
1,300	244	988	277	0.461	17.6	41.1	102.4	1,302.4	22.0	1,111.8
1,200	226	988	277	0.366	11.8	36.7	98.9	1,354.3	18.3	1,177.9
1,100	207	988	277	0.373	11.0	31.6	95.2	1,415.6	14.5	1,256.0

ENGINE SPEED	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
RPM	BHP	IN HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
2,200	300	48	329.7	734.7	1,887.9	3,224.6	3,335.2	702.0	645.4
2,100	300	48	327.2	710.7	1,835.8	3,112.8	3,222.1	677.9	622.3
2,000	300	48	326.0	683.7	1,788.9	2,993.4	3,101.4	652.7	598.0
1,900	300	49	326.4	656.5	1,748.0	2,871.5	2,979.6	627.0	573.2
1,800	300	49	327.5	630.7	1,708.4	2,755.3	2,861.1	602.2	549.1
1,700	293	49	326.6	600.6	1,646.1	2,615.5	2,718.6	571.9	520.5
1,600	284	48	325.3	567.2	1,577.8	2,461.7	2,561.9	538.2	488.8
1,500	274	47	324.4	530.2	1,506.6	2,294.5	2,391.5	502.3	454.6
1,400	264	46	320.7	490.0	1,436.0	2,115.7	2,209.7	465.2	419.2
1,300	244	43	308.9	439.1	1,323.3	1,889.5	1,977.8	414.0	371.0
1,200	226	37	294.8	384.8	1,204.9	1,649.1	1,731.8	361.8	321.9
1,100	207	32	278.2	326.9	1,080.0	1,393.9	1,471.0	309.5	273.1

Heat Rejection Data Top

ENGINE SPEED	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
RPM	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
2,200	300	5,271	2,154	13,255	7,215	1,807	2,725	12,739	33,930	36,144
2,100	300	5,220	2,120	12,990	7,105	1,785	2,629	12,739	33,511	35,698
2,000	300	5,177	2,023	12,789	7,066	1,763	2,525	12,739	33,092	35,251
1,900	300	5,102	1,915	12,658	7,097	1,742	2,426	12,739	32,705	34,839
1,800	300	5,056	1,825	12,543	7,130	1,726	2,352	12,739	32,399	34,514
1,700	293	5,171	1,625	12,235	7,028	1,686	2,250	12,443	31,657	33,723
1,600	284	5,131	1,526	11,900	6,929	1,637	2,129	12,056	30,737	32,743
1,500	274	4,905	1,621	11,555	6,838	1,584	1,986	11,618	29,745	31,686
1,400	264	4,663	1,786	11,212	6,761	1,533	1,822	11,175	28,780	30,658
1,300	244	4,454	1,784	10,633	6,550	1,440	1,563	10,367	27,036	28,801
1,200	226	4,350	1,783	9,985	6,282	1,349	1,294	9,571	25,330	26,983
1,100	207	4,401	1,775	9,286	5,900	1,259	1,021	8,775	23,636	25,178

Emissions Data Top

Units Filter All Units

RATED SPEED POTENTIAL SITE VARIATION: 2200 RPM

ENGINE POWER		BHP	300	225	150	75.1	30.0
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	907	512	305	192	135
TOTAL CO		G/HR	828	903	263	393	381
TOTAL HC		G/HR	93	127	139	193	192
PART MATTER		G/HR	30.7	34.9	47.3	49.0	40.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,339.3	933.2	753.5	823.0	977.4
TOTAL CO	(CORR 5% O2)	MG/NM3	1,223.0	1,648.0	657.8	1,691.4	2,759.6

TOTAL HC	(CORR 5% O2)	MG/NM3	119.4	201.7	299.0	718.9	1,205.0
PART MATTER	(CORR 5% O2)	MG/NM3	38.4	54.8	102.4	188.5	268.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	652	455	367	401	476
TOTAL CO	(CORR 5% O2)	PPM	978	1,318	526	1,353	2,208
TOTAL HC	(CORR 5% O2)	PPM	223	376	558	1,342	2,249
TOTAL NOX (AS NO2)		G/HP-HR	3.05	2.29	2.05	2.56	4.52
TOTAL CO		G/HP-HR	2.78	4.04	1.77	5.26	12.74
TOTAL HC		G/HP-HR	0.31	0.57	0.93	2.58	6.44
PART MATTER		G/HP-HR	0.10	0.16	0.32	0.66	1.35
TOTAL NOX (AS NO2)		LB/HR	2.00	1.13	0.67	0.42	0.30
TOTAL CO		LB/HR	1.83	1.99	0.58	0.87	0.84
TOTAL HC		LB/HR	0.21	0.28	0.31	0.42	0.42
PART MATTER		LB/HR	0.07	0.08	0.10	0.11	0.09

RATED SPEED NOMINAL DATA: 2200 RPM

ENGINE POWER		BHP	300	225	150	75.1	30.0
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	840	474	282	177	125
TOTAL CO		G/HR	443	483	141	210	204
TOTAL HC		G/HR	49	67	74	102	102
TOTAL CO2		KG/HR	152	123	92	54	31
PART MATTER		G/HR	15.8	17.9	24.3	25.1	20.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,240.1	864.1	697.7	762.1	905.0
TOTAL CO	(CORR 5% O2)	MG/NM3	654.0	881.3	351.8	904.5	1,475.7
TOTAL HC	(CORR 5% O2)	MG/NM3	63.2	106.7	158.2	380.4	637.5
PART MATTER	(CORR 5% O2)	MG/NM3	19.7	28.1	52.5	96.7	137.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	604	421	340	371	441
TOTAL CO	(CORR 5% O2)	PPM	523	705	281	724	1,181
TOTAL HC	(CORR 5% O2)	PPM	118	199	295	710	1,190
TOTAL NOX (AS NO2)		G/HP-HR	2.82	2.12	1.89	2.37	4.19
TOTAL CO		G/HP-HR	1.49	2.16	0.94	2.81	6.81
TOTAL HC		G/HP-HR	0.17	0.30	0.49	1.36	3.41
PART MATTER		G/HP-HR	0.05	0.08	0.16	0.34	0.69
TOTAL NOX (AS NO2)		LB/HR	1.85	1.05	0.62	0.39	0.28
TOTAL CO		LB/HR	0.98	1.06	0.31	0.46	0.45
TOTAL HC		LB/HR	0.11	0.15	0.16	0.22	0.22
TOTAL CO2		LB/HR	336	272	203	118	69
PART MATTER		LB/HR	0.03	0.04	0.05	0.06	0.05
OXYGEN IN EXH		%	11.0	12.2	13.5	15.3	17.0
DRY SMOKE OPACITY		%	0.5	0.6	1.0	1.3	1.1
BOSCH SMOKE NUMBER			0.37	0.54	0.93	1.15	1.00

Regulatory Information Top

CHINA STAGE II **2010 - ----**

THIS ENGINE HAS BEEN TESTED IN ACCORDANCE WITH THE PROVISIONS OF THE PEOPLE'S REPUBLIC OF CHINA NATIONAL STANDARD #GB 20891-2007, AND COMPLIES WITH THE STATED LIMITS OF CO, HC, NOX, AND PM FOR STAGE II

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
CHINA	CHINA	NON-ROAD	STAGE II	CO: 3.5 NOx: 6.0 HC: 1.0 PM: 0.20

EPA TIER 3 **2005 - 2010**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 3	CO: 3.5 NOx + HC: 4.0 PM 0.20

EU STAGE IIIA **2006 - 2010**

GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 97/68/EC, ECE REGULATION NO. 96 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOx. GASEOUS EMISSION VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
EUROPE	EU	NON-ROAD	STAGE IIIA	CO: 3.5 NOx + HC: 4.0 PM: 0.20

IMO II **2011 - ----**

GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN REGULATION 13 OF REVISED ANNEX VI OF MARPOL 73/78 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THIS ENGINE CONFORMS TO INTERNATIONAL MARINE ORGANIZATION'S (IMO) MARINE COMPRESSION-IGNITION EMISSION REGULATIONS.

Altitude Derate Data Top

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NOMINAL
ALTITUDE (FT)													
0	300	300	300	300	300	300	300	300	300	300	300	300	300
1,000	300	300	300	300	300	300	300	300	300	300	300	300	300
2,000	300	300	300	300	300	300	300	300	300	300	300	300	300
3,000	300	300	300	300	300	300	300	300	300	300	300	300	300
4,000	300	300	300	300	300	300	300	300	300	300	300	300	300
5,000	300	300	300	300	300	300	300	300	300	300	300	300	300
6,000	300	300	300	300	300	300	300	300	300	300	300	297	300
7,000	300	300	300	300	300	300	300	300	300	295	290	285	300
8,000	300	300	300	300	300	300	299	294	288	283	279	274	300
9,000	300	300	300	300	298	292	287	282	277	272	268	263	300
10,000	300	300	297	291	286	281	276	271	266	261	257	253	300
11,000	297	291	285	280	274	269	264	260	255	251	246	242	291
12,000	285	279	274	268	263	258	254	249	245	241	236	233	281
13,000	273	268	262	257	252	248	243	239	235	231	227	223	272
14,000	262	256	251	247	242	237	233	229	225	221	217	214	262
15,000	251	246	241	236	232	227	223	219	215	212	208	205	253

Cross Reference Top

Engine Arrangement

Arrangement Number	Effective Serial Number	Engineering Model	Engineering Model Version
2446783	JSC00001	E705	
2524430	JSC00001	E705	
2524430	MBD00001	E705	
3271007	JSC00001	E705	
3930595	JSC00001	E705	
3984949	JSC00001	E705	

Test Specification Data

Test Spec	Setting	Effective Serial Number	Engine Arrangement
0K4893	PP5337	JSC00001	2446783
0K4893	PP5337	JSC00001	2524430
0K4894	PP5372	MBD00001	2524430
0K4893	PP5337	JSC00001	3271007
0K4893	PP5337	JSC00001	3930595
0K4893	PP5337	JSC00001	3964949

Performance Parameter Reference Top

Parameters Reference: DM9600 - 08

PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600

APPLICATION:
Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.

PERFORMANCE PARAMETER TOLERANCE FACTORS:
Power +/- 3%
Torque +/- 3%
Exhaust stack temperature +/- 8%
Inlet airflow +/- 5%
Intake manifold pressure-gage +/- 10%
Exhaust flow +/- 6%
Specific fuel consumption +/- 3%
Fuel rate +/- 5%
Specific DEF consumption +/- 3%
DEF rate +/- 5%
Heat rejection +/- 5%
Heat rejection exhaust only +/- 10%
Heat rejection CEM only +/- 10%

Heat Rejection values based on using treated water.

Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.

On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.

These values do not apply to C280/3600. For these models, see the tolerances listed below.

C280/3600 HEAT REJECTION TOLERANCE FACTORS:
Heat rejection +/- 10%
Heat rejection to Atmosphere +/- 50%
Heat rejection to Lube Oil +/- 20%
Heat rejection to Aftercooler +/- 5%

TEST CELL TRANSDUCER TOLERANCE FACTORS:

Torque +/- 0.5%
Speed +/- 0.2%
Fuel flow +/- 1.0%
Temperature +/- 2.0 C degrees
Intake manifold pressure +/- 0.1 kPa

OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.

REFERENCE ATMOSPHERIC INLET AIR
FOR 3500 ENGINES AND SMALLER
SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.

FOR 3600 ENGINES
Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.

MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE
Location for air temperature measurement air cleaner inlet at stabilized operating conditions.

REFERENCE EXHAUST STACK DIAMETER
The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.

REFERENCE FUEL
DIESEL
Reference fuel is #2 distillate diesel with a 35API gravity;

A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 29 (84.2), where the density is 838.9 G/Liter (7.001 Lbs/Gal).

GAS
Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD
Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.

ALTITUDE CAPABILITY
Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.

Standard temperature values versus altitude could be seen on TM2001.

When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.

Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.

Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE
TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.

Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSIONS DEFINITIONS:
Emissions : DM1176

HEAT REJECTION DEFINITIONS:
Diesel Circuit Type And HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS:
3500: DM1500

RATING DEFINITIONS:
Agriculture : TM6008

Fire Pump : TM6009

Generator Set : TM6035

Generator (Gas) : TM6041

Industrial Diesel : TM6010

Industrial (Gas) : TM6040

Irrigation : TM5749

Locomotive : TM6037

Marine Auxiliary : TM6036

Marine Prop (Except 3600) : TM5747

Marine Prop (3600 only) : TM5748

MSHA : TM6042

Oil Field (Petroleum) : TM6011

Off-Highway Truck : TM6039

On-Highway Truck : TM6038

SOUND DEFINITIONS:
Sound Power : DM8702

Sound Pressure : TM7080

Date Released : 7/7/15

LT 213

PERFORMANCE DATA [KWJ03625]

SEPTEMBER 25, 2015

(KWJ03625)-ENGINE (BEA064572A)-CEM

For Help Desk Phone Numbers Click here

LT1213-011-78125 - CAT-P80

Perf No: EM0188

Change Level: 06

General | Heat Rejection | Sound Emissions Regulatory | Altitude Derate | Cross Reference | Supplementary Data | Perf Param Ref

View PDF

SALES MODEL:	C13	COMBUSTION:	DI
ENGINE POWER (BHP):	415	ENGINE SPEED (RPM):	2,100
PEAK TORQUE (FT-LB):	1,401.4	PEAK TORQUE SPEED (RPM):	1,400
COMPRESSION RATIO:	17	TORQUE RISE (%):	35
RATING LEVEL:	INDUSTRIAL B	ASPIRATION:	TA
PUMP QUANTITY:	1	AFTERCOOLER TYPE:	ATAAC
FUEL TYPE:	DIESEL	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
MANIFOLD TYPE:	DRY	INLET MANIFOLD AIR TEMP (F):	122
GOVERNOR TYPE:	ELEC	JACKET WATER TEMP (F):	192.2
INJECTOR TYPE:	EUI	TURBO CONFIGURATION:	SINGLE
REF EXH STACK DIAMETER (IN):	5	TURBO QUANTITY:	1
MAX OPERATING ALTITUDE (FT):	8,501	TURBOCHARGER MODEL:	GTB4594 0.67
		CERTIFICATION YEAR:	2011
		PISTON SPD @ RATED ENG SPD (FT/MIN):	2,163.4

INDUSTRY	SUB INDUSTRY	APPLICATION
INDUSTRIAL	FORESTRY	INDUSTRIAL
INDUSTRIAL	GENERAL INDUSTRIAL	INDUSTRIAL
INDUSTRIAL	AGRICULTURE	INDUSTRIAL
INDUSTRIAL	CONSTRUCTION	INDUSTRIAL
INDUSTRIAL	MATERIAL HANDLING	INDUSTRIAL
OIL AND GAS	LAND PRODUCTION	INDUSTRIAL
INDUSTRIAL	MINING	INDUSTRIAL
OIL AND GAS	WELL SERVICING	INDUSTRIAL

General Performance Data Top

Note(s)

INLET MANIFOLD AIR TEMPERATURE ("INLET MFLD TEMP") FOR THIS CONFIGURATION IS MEASURED AT THE OUTLET OF THE AFTERCOOLER.

ENGINE SPEED	ENGINE POWER	ENGINE TORQUE	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
RPM	BHP	LB-FT	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
2,100	415	1,038	205	0.361	21.6	62.4	121.0	1,074.3	82.3	646.5
2,000	415	1,090	215	0.352	21.2	62.2	120.8	1,072.7	78.4	645.4
1,900	415	1,147	227	0.348	20.8	62.1	120.9	1,077.2	76.3	651.0
1,800	415	1,210	239	0.344	20.5	61.5	120.8	1,087.4	73.9	656.8

1,700	411	1,269	251	0.341	20.1	60.9	120.7	1,102.6	71.1	667.8
1,600	402	1,319	261	0.343	19.6	55.2	120.4	1,161.0	64.2	680.0
1,500	389	1,364	270	0.341	18.9	52.3	120.0	1,189.9	58.4	713.7
1,400	374	1,401	277	0.345	18.3	49.9	119.9	1,233.0	54.0	742.2
1,350	356	1,386	274	0.344	17.4	47.1	120.2	1,245.1	50.4	739.6
1,300	336	1,359	269	0.343	16.5	43.7	121.0	1,252.0	46.6	739.9
1,200	301	1,318	260	0.344	14.9	37.8	119.4	1,278.6	39.7	745.0
1,100	261	1,246	246	0.346	13.1	31.4	119.3	1,311.4	32.4	748.3
1,000	217	1,142	226	0.362	11.2	24.4	119.5	1,307.0	25.5	714.8
975	207	1,117	221	0.355	10.5	23.0	120.1	1,292.4	24.2	679.3
900	178	1,038	205	0.345	8.8	18.7	120.1	1,225.8	21.4	634.1
800	142	934	185	0.364	7.4	12.7	119.0	1,190.2	14.7	570.1
700	117	879	174	0.362	6.2	9.6	120.5	1,192.5	10.9	545.5
600	90.8	795	157	0.385	5.0	6.3	121.0	1,143.9	7.4	513.7

ENGINE SPEED	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
RPM	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
2,100	415	66	371.9	843.2	1,569.5	3,681.3	3,832.7	697.6	633.6
2,000	415	65	365.9	817.1	1,540.6	3,556.3	3,704.6	685.5	621.9
1,900	415	65	363.6	800.7	1,532.0	3,477.5	3,623.1	678.2	615.1
1,800	415	64	360.2	781.6	1,520.7	3,388.5	3,532.0	669.7	606.8
1,700	411	63	358.1	758.5	1,502.3	3,281.5	3,422.3	655.1	593.1
1,600	402	57	340.8	667.4	1,422.0	2,860.5	2,998.0	613.5	550.0
1,500	389	54	334.3	617.0	1,392.1	2,635.7	2,768.3	583.3	520.6
1,400	374	51	330.5	572.6	1,356.1	2,440.9	2,569.3	554.8	492.7
1,350	356	48	323.2	540.3	1,304.4	2,295.7	2,417.5	534.8	474.5
1,300	336	45	310.6	505.2	1,249.6	2,143.4	2,259.0	512.1	453.6
1,200	301	39	292.3	442.5	1,143.6	1,871.1	1,975.6	466.8	412.0
1,100	261	32	272.9	375.2	1,018.7	1,583.9	1,675.5	414.6	364.7
1,000	217	25	237.3	313.8	883.1	1,322.1	1,400.7	369.7	324.1
975	207	24	230.3	302.5	845.1	1,271.7	1,345.5	364.8	320.6
900	178	19	207.4	271.5	737.6	1,143.4	1,205.3	331.6	293.6
800	142	13	170.3	213.5	581.1	896.3	947.8	277.4	244.1
700	117	10	155.8	172.5	476.5	723.9	767.0	233.1	204.3
600	90.8	6	135.2	136.2	371.5	572.0	607.3	187.7	163.8

Heat Rejection Data Top

ENGINE SPEED	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
RPM	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
2,100	415	11,909	4,177	11,538	4,756	2,446	3,699	17,596	45,922	48,919
2,000	415	11,432	3,958	11,296	4,582	2,389	3,491	17,604	44,855	47,782
1,900	415	10,956	3,909	11,279	4,569	2,356	3,380	17,595	44,232	47,119
1,800	415	10,674	3,975	11,124	4,544	2,331	3,248	17,591	43,756	46,611
1,700	411	9,511	5,314	10,403	4,567	2,288	3,119	17,413	42,957	45,760
1,600	402	10,631	4,348	10,411	4,178	2,248	2,525	17,037	42,198	44,952
1,500	389	9,582	5,981	9,075	4,272	2,171	2,262	16,517	40,758	43,417
1,400	374	9,806	5,091	9,342	4,294	2,107	2,059	15,841	39,557	42,138

1,350	356	9,807	4,162	9,045	4,014	1,999	1,866	15,106	37,536	39,986
1,300	336	9,800	2,826	9,165	3,758	1,884	1,628	14,268	35,379	37,687

Sound Data Top

Note(s)

SOUND DATA REPRESENTATIVE OF NOISE PRODUCED BY THE "ENGINE AND CEM" AS A UNIT WITHOUT A MUFFLER INSTALLED

EXHAUST: Sound Power (1/3 Octave Frequencies)

ENGINE SPEED	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,100	415	94.0	85.6	73.7	80.4	83.6	80.1	78.8	81.5	81.5	81.8	81.7
2,000	415	94.1	86.4	76.2	78.6	82.4	78.8	78.7	82.1	81.1	81.0	80.8
1,900	415	94.1	87.6	78.8	78.1	83.5	80.7	80.4	82.5	80.8	80.4	80.2
1,800	415	94.0	86.0	82.0	78.7	85.2	84.0	82.3	82.6	80.5	79.8	79.7
1,700	411	94.2	77.3	87.4	80.5	83.3	83.2	81.8	82.8	79.8	78.9	78.9
1,600	402	94.2	71.2	90.4	82.7	82.7	81.8	81.1	83.3	79.5	78.1	78.0
1,500	389	93.1	74.3	85.4	83.1	83.6	81.3	81.2	84.2	79.6	77.7	77.3
1,400	374	92.4	79.8	81.1	83.8	84.3	80.9	81.5	84.9	79.5	77.2	76.6
1,350	356	92.9	81.6	82.9	84.1	84.4	80.2	81.2	85.2	80.1	76.6	75.9
1,300	336	93.5	83.0	85.4	84.4	84.6	79.0	80.8	85.3	80.6	75.9	75.0
1,200	301	94.3	85.0	90.2	85.1	84.9	76.3	79.8	84.8	80.3	74.2	73.4
1,100	261	91.8	82.8	88.6	82.1	78.7	74.3	78.5	81.5	76.3	72.0	71.4
1,000	217	86.3	75.7	82.8	75.5	66.9	73.4	75.8	74.7	70.1	69.2	68.7
975	207	84.5	73.3	80.8	73.5	63.5	73.5	74.9	72.7	68.5	68.5	67.9
900	178	79.3	65.5	75.2	67.3	53.7	74.0	71.7	66.3	64.6	66.3	65.4

EXHAUST: Sound Power (1/3 Octave Frequencies)

ENGINE SPEED	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,100	415	81.7	82.0	81.4	81.5	82.4	81.6	77.5	75.6	76.0	71.9	67.6
2,000	415	80.4	80.9	80.6	80.7	81.5	80.4	76.5	74.7	74.9	71.2	66.6
1,900	415	79.5	79.6	79.9	80.0	80.5	79.6	75.5	73.9	74.1	70.4	65.7
1,800	415	79.0	79.7	79.1	79.2	79.7	79.1	74.7	73.0	73.8	69.7	65.0
1,700	411	78.3	78.9	78.1	78.1	78.8	77.9	73.6	72.0	72.9	68.6	63.8
1,600	402	77.4	77.8	76.9	76.8	77.7	76.5	72.4	70.9	71.9	67.4	62.5
1,500	389	76.7	77.0	75.9	75.8	76.7	75.1	71.5	70.2	70.8	66.5	61.7
1,400	374	76.1	76.1	75.0	75.0	75.8	74.0	70.6	69.3	69.6	65.4	60.6
1,350	356	75.3	75.3	74.2	74.5	75.3	73.2	69.7	68.4	68.2	64.1	59.4
1,300	336	74.5	74.4	73.3	73.9	74.7	72.4	68.6	67.2	66.7	62.6	57.8
1,200	301	72.6	72.6	71.5	72.8	73.4	70.8	66.4	64.7	63.7	59.4	54.6
1,100	261	70.1	70.2	69.3	71.4	71.6	68.9	64.0	62.1	60.7	56.1	51.4
1,000	217	67.3	68.2	67.2	70.0	70.5	67.1	61.8	59.9	58.3	53.6	49.8
975	207	66.7	67.9	66.8	69.8	70.3	66.8	61.3	59.5	57.9	53.2	49.6
900	178	64.9	67.1	65.8	69.0	70.2	65.9	60.2	58.5	56.8	52.2	49.1

MECHANICAL: Sound Power (1/3 Octave Frequencies)

ENGINE SPEED	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,100	415	118.2	66.1	79.9	86.3	87.8	91.7	93.5	93.9	101.1	101.6	105.1
2,000	415	117.4	67.4	79.5	85.5	87.2	90.1	91.4	93.4	101.2	100.7	103.9

1,900	415	116.6	68.6	82.2	85.0	87.6	88.6	90.4	92.9	101.2	100.1	102.9
1,800	415	115.6	69.0	85.7	84.4	87.4	87.4	90.2	92.5	100.7	99.5	101.6
1,700	411	114.6	68.0	84.0	83.2	84.6	86.9	90.2	91.8	98.3	98.0	100.1
1,600	402	113.4	66.7	82.6	81.6	81.6	86.9	90.3	90.6	96.3	96.4	98.6
1,500	389	112.2	65.5	81.3	80.8	79.4	86.3	88.7	89.0	96.1	95.3	97.7
1,400	374	111.3	64.5	80.2	79.6	78.0	85.4	87.2	87.7	96.3	94.6	97.2
1,350	356	111.1	64.3	80.1	77.8	77.7	85.3	87.7	87.1	96.2	94.5	96.9
1,300	336	110.9	64.3	79.7	75.9	77.5	85.3	88.3	86.7	96.0	94.3	96.8
1,200	301	110.4	64.8	78.3	72.4	77.9	84.9	89.0	86.0	95.2	94.1	96.7
1,100	261	109.4	65.0	73.5	71.3	78.5	83.8	87.7	85.1	94.0	93.6	96.1
1,000	217	108.2	63.9	67.2	72.1	79.2	82.9	86.0	85.2	92.8	92.9	94.9
975	207	107.9	63.4	65.4	72.5	79.4	82.8	85.6	85.3	92.6	92.7	94.5
900	178	107.1	61.4	60.5	74.1	79.9	82.9	85.1	86.2	92.3	92.1	93.4

MECHANICAL: Sound Power (1/3 Octave Frequencies)

ENGINE SPEED	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,100	415	107.3	110.0	109.1	109.1	110.8	109.7	105.3	102.1	99.9	96.5	92.1
2,000	415	106.6	109.0	108.4	108.2	110.1	108.8	104.1	101.1	99.1	96.0	91.2
1,900	415	105.5	108.0	107.5	107.3	109.5	107.9	103.0	100.2	98.3	95.5	90.5
1,800	415	103.9	106.9	106.7	106.5	108.9	106.9	101.8	99.3	97.5	94.9	90.1
1,700	411	103.2	106.1	105.5	105.4	108.1	105.5	100.5	98.3	96.6	94.2	89.9
1,600	402	102.5	105.2	103.9	104.0	107.1	104.0	99.1	97.4	95.6	93.2	89.8
1,500	389	101.4	104.0	102.4	102.6	106.0	102.5	97.8	96.6	94.9	92.7	89.3
1,400	374	100.6	103.2	101.4	101.8	105.2	101.3	96.9	95.9	94.4	92.4	88.7
1,350	356	100.6	103.0	101.3	101.6	104.9	100.9	96.5	95.6	94.2	91.8	88.4
1,300	336	100.6	102.9	101.2	101.5	104.5	100.5	96.2	95.3	94.1	91.2	88.1
1,200	301	100.4	102.5	101.1	101.2	103.7	99.7	95.7	94.6	93.6	89.8	87.6
1,100	261	99.6	101.4	100.3	100.5	102.5	98.4	94.8	93.3	92.3	88.4	87.0
1,000	217	98.3	100.1	99.5	99.4	101.3	97.1	93.9	91.6	90.3	87.0	86.7
975	207	97.9	99.8	99.3	99.1	101.0	96.9	93.7	91.2	89.9	86.7	86.6
900	178	96.5	99.0	98.7	98.2	100.4	96.3	93.2	90.0	88.5	86.0	86.2

Emissions Data Top

Units Filter All Units

RATED SPEED NOMINAL DATA: 2100 RPM

ENGINE POWER		BHP	415	311	208	104	41.5
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	428	274	177	160	122
TOTAL CO		G/HR	23	19	13	10	14
TOTAL HC		G/HR	6	5	6	10	22
TOTAL CO2		KG/HR	214	168	121	71	43
PART MATTER		G/HR	0.5	0.2	0.3	1.3	0.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	469.0	376.4	339.1	532.4	556.2
TOTAL CO	(CORR 5% O2)	MG/NM3	25.0	26.6	24.4	33.3	62.5
TOTAL HC	(CORR 5% O2)	MG/NM3	5.3	5.9	10.5	29.7	85.0
PART MATTER	(CORR 5% O2)	MG/NM3	0.5	0.3	0.5	3.7	1.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	228	183	165	259	271
TOTAL CO	(CORR 5% O2)	PPM	20	21	20	27	50
TOTAL HC	(CORR 5% O2)	PPM	10	11	20	55	159
TOTAL NOX (AS NO2)		G/HP-HR	1.04	0.88	0.86	1.54	2.94
TOTAL CO		G/HP-HR	0.06	0.06	0.06	0.10	0.34
TOTAL HC		G/HP-HR	0.01	0.02	0.03	0.10	0.53
PART MATTER		G/HP-HR	0.00	0.00	0.00	0.01	0.01
TOTAL NOX (AS NO2)		LB/HR	0.94	0.60	0.39	0.35	0.27

TOTAL CO	LB/HR	0.05	0.04	0.03	0.02	0.03
TOTAL HC	LB/HR	0.01	0.01	0.01	0.02	0.05
TOTAL CO2	LB/HR	471	371	266	156	95
PART MATTER	LB/HR	0.00	0.00	0.00	0.00	0.00
OXYGEN IN EXH	%	9.2	10.0	11.2	14.1	16.0

SECONDARY SPEED NOMINAL DATA: 1800 RPM

ENGINE POWER		**BHP**	**414**	**311**	**207**	**104**	**41.4**
PERCENT LOAD		**%**	**100**	**75**	**50**	**25**	**10**
TOTAL NOX (AS NO2)		G/HR	539	260	156	155	155
TOTAL CO		G/HR	13	4	3	7	9
TOTAL HC		G/HR	1	2	1	5	16
TOTAL CO2		KG/HR	203	158	110	66	40
PART MATTER		G/HR	0.2	0.1	0.0	0.1	0.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	617.4	377.4	329.6	556.2	965.4
TOTAL CO	(CORR 5% O2)	MG/NM3	14.5	6.1	6.9	25.1	54.5
TOTAL HC	(CORR 5% O2)	MG/NM3	1.2	2.2	2.6	16.0	86.7
PART MATTER	(CORR 5% O2)	MG/NM3	0.2	0.1	0.1	0.2	0.9
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	301	184	161	271	470
TOTAL CO	(CORR 5% O2)	PPM	12	5	5	20	44
TOTAL HC	(CORR 5% O2)	PPM	2	4	5	30	162
TOTAL NOX (AS NO2)		G/HP-HR	1.31	0.84	0.75	1.50	3.75
TOTAL CO		G/HP-HR	0.03	0.01	0.02	0.07	0.21
TOTAL HC		G/HP-HR	0.00	0.01	0.01	0.05	0.39
PART MATTER		G/HP-HR	0.00	0.00	0.00	0.00	0.00
TOTAL NOX (AS NO2)		LB/HR	1.19	0.57	0.34	0.34	0.34
TOTAL CO		LB/HR	0.03	0.01	0.01	0.02	0.02
TOTAL HC		LB/HR	0.00	0.00	0.00	0.01	0.04
TOTAL CO2		LB/HR	448	349	243	146	88
PART MATTER		LB/HR	0.00	0.00	0.00	0.00	0.00
OXYGEN IN EXH		%	8.7	8.7	10.0	13.0	16.7
DRY SMOKE OPACITY		%	1.1	1.7	2.0	1.3	1.1
BOSCH SMOKE NUMBER			0.70	1.14	1.30	0.85	0.70

Regulatory Information Top

EPA TIER 4 INTERIM **2011 - 2013**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1039 SUBPART F AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 4 INTERIM	CO: 3.5 NOx: 2.0 HC: 0.19 PM: 0.02

EU STAGE IIIB **2011 - 2013**

GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 97/68/EC, ECE REGULATION NO. 96 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSION VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
EUROPE	EU	NON-ROAD	STAGE IIIB	CO: 3.5 NOx: 2.0 HC: 0.19 PM: 0.025

Altitude Derate Data Top

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	NORMAL
ALTITUDE (FT)										
0	415	415	415	415	414	413	413	413	413	415
1,000	415	415	415	414	413	412	412	412	412	414
2,000	415	414	413	411	411	411	411	411	411	412
3,000	413	412	410	409	409	409	409	409	409	411
4,000	410	409	408	407	407	407	407	407	407	409
5,000	408	407	405	404	404	404	404	404	393	407
6,000	405	404	404	404	404	404	404	393	376	404
7,000	404	405	407	407	407	407	399	385	370	404
8,000	410	409	409	407	407	404	392	378	362	410
9,000	413	411	409	405	402	396	382	368	352	414
10,000	413	410	406	402	395	385	371	357	341	415
11,000	411	406	401	395	385	372	359	345	331	414
12,000	393	388	383	377	365	351	337	323	309	398
13,000	373	368	362	356	344	330	316	302	289	381
14,000	353	347	342	335	323	309	296	283	272	365
15,000	319	315	311	307	302	289	277	265	247	341

Cross Reference Top

Engine Arrangement

Arrangement Number	Effective Serial Number	Engineering Model	Engineering Model Version
3479721	KWJ00001	EE019	-
3660289	KWJ00001	EE019	-

Supplementary Data Top

Type	Classification	Performance Number
AMBIENT TEMP	50C (122F)	EM0238

Performance Parameter Reference Top

Parameters Reference: DM9600 - 08

PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600

APPLICATION:
Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in

part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.

PERFORMANCE PARAMETER TOLERANCE FACTORS:
Power +/- 3%
Torque +/- 3%
Exhaust stack temperature +/- 8%
Inlet airflow +/- 5%
Intake manifold pressure-gage +/- 10%
Exhaust flow +/- 6%
Specific fuel consumption +/- 3%
Fuel rate +/- 5%
Specific DEF consumption +/- 3%
DEF rate +/- 5%
Heat rejection +/- 5%
Heat rejection exhaust only +/- 10%
Heat rejection CEM only +/- 10%

Heat Rejection values based on using treated water.

Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.

On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.

These values do not apply to C280/3600. For these models, see the tolerances listed below.

C280/3600 HEAT REJECTION TOLERANCE FACTORS:
Heat rejection +/- 10%
Heat rejection to Atmosphere +/- 50%
Heat rejection to Lube Oil +/- 20%
Heat rejection to Aftercooler +/- 5%

TEST CELL TRANSDUCER TOLERANCE FACTORS:

Torque +/- 0.5%
Speed +/- 0.2%
Fuel flow +/- 1.0%
Temperature +/- 2.0 C degrees
Intake manifold pressure +/- 0.1 kPa

OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.

REFERENCE ATMOSPHERIC INLET AIR
FOR 3500 ENGINES AND SMALLER
SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.

FOR 3600 ENGINES
Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.

MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE
Location for air temperature measurement air cleaner inlet at stabilized operating conditions.

REFERENCE EXHAUST STACK DIAMETER
The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.

REFERENCE FUEL
DIESEL
Reference fuel is #2 distillate diesel with a 35API gravity; A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 29 (84.2), where the density is 838.9 G/Liter (7.001 Lbs/Gal).

GAS
Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD
Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.

ALTITUDE CAPABILITY
Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.

Standard temperature values versus altitude could be seen on

TM2001.

When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.

Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.

Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE
TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.

Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSIONS DEFINITIONS:
Emissions : DM1176

HEAT REJECTION DEFINITIONS:
Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS:
3500: EM1500

RATING DEFINITIONS:
Agriculture : TM6008

Fire Pump : TM6009

Generator Set : TM6035

Generator (Gas) : TM6041

Industrial Diesel : TM6010

Industrial (Gas) : TM6040

Irrigation : TM5749

Locomotive : TM6037

Marine Auxiliary : TM6036

Marine Prop (Except 3600) : TM5747

Marine Prop (3600 only) : TM5748

MSHA : TM6042

Oil Field (Petroleum) : TM6011

Off-Highway Truck : TM6039

On-Highway Truck : TM6038

SOUND DEFINITIONS:
Sound Power : DM8702

Sound Pressure : TM7080

Date Released : 7/7/15

ST 3.8

INDUSTRIAL ENGINE PERFORMANCE DATA [44424108]

JANUARY 13, 2016

For Help Desk Phone Numbers Click here

Performance Number: P3030A

Change Level: 00

Sales Model: C4.4 DIT	**Combustion:** DI	**Aspr:** T
Engine Power: 100 HP	**Speed:** 2,200 RPM	**After Cooler:**
Manifold Type:	**Governor Type:**	**After Cooler Temp(F):** 32
Turbo Quantity:	**Engine App:** IN	**Turbo Arrangement:**
Application Type: INDUSTRIAL	**Engine Rating:** IN	**Strategy:**
Rating Type:	**Certification:** EPA TIER 3 -	

General Performance Data 1

ENGINE SPEED RPM	ENGINE POWER BHP	ENGINE TORQUE LB.FT	ENGINE BMEP PSI	FUEL BSFC LB/BHP-HR	FUEL RATE GPH	INTAKE MFLD P IN-HG	INTAKE AIR FLOW CFM	EXH STACK TEMP DEG F	EXH GAS FLOW CFM
2,200	100	237.49	133.38	0.42	5.93	37.08	251.44	1,025.6	627.9

Engine Heat Rejection Data

ENGINE SPEED RPM	ENGINE POWER BHP	REJ TO JW BTU/MIN	REJ TO ATMOS BTU/MIN	REJ TO EXHAUST BTU/MIN
2,200	100	3,105.1	909.9	4,612.1
2,100	100	3,082.4	836.0	4,538.2
2,000	100	3,048.2	790.5	4,470.0
1,800	99	2,962.9	710.9	4,265.2
1,600	93	2,758.2	608.5	3,833.0
1,500	88	2,621.7	580.1	3,582.8
1,400	83	2,502.3	580.1	3,361.0
1,300	76	2,229.3	415.1	2,815.1
1,200	69	2,030.2	358.3	2,377.2
1,000	52	1,598.0	261.6	1,581.0
800	38	1,273.9	199.0	1,018.0

EMISSIONS DATA

EPA TIER 3 - J1

No notes were found for this certification...

REFERENCE EXHAUST STACK DIAMETER	0 IN
WET EXHAUST MASS	1,137.6 LB/HR
WET EXHAUST FLOW (– STACK TEMP)	--
WET EXHAUST FLOW RATE (32 DEG F AND 29.98 IN HG)	--
DRY EXHAUST FLOW RATE (32 DEG F AND 29.98 IN HG)	--
FUEL FLOW RATE	--

The powers listed above and all the Powers displayed are Corrected Powers

Identification Reference and Notes

Engine Arrangement:		**Lube Oil Press @ Rated Spd(PSI):**	41.5
Effective Serial No:		**Piston Speed @ Rated Eng SPD(FT/Min):**	--
Primary Engine Test Spec:		**Max Operating Altitude(FT):**	9,842.5
Performance Parm Ref:		**PEEC Elect Control Module Ref**	
Performance Data Ref:	P.9030A	**PEEC Personality Cont Mod Ref**	
Aux Coolant Pump Perf Ref:			
Cooling System Perf Ref:		**Turbocharger Model**	
Certification Ref:	EPA TIER 3	**Fuel Injector**	
Certification Year:		**Timing-Static (DEG):**	--
Compression Ratio:	0.0	**Timing-Static Advance (DEG):**	--
Combustion System:	DI	**Timing-Static (MM):**	--
Aftercooler Temperature (F):	32	**Unit Injector Timing (MM):**	--
Crankcase Blowby Rate(CFH):	--	**Torque Rise (percent)**	30.5
Fuel Rate (Rated RPM) No Load(Gal/HR):	--	**Peak Torque Speed RPM**	1400
Lube Oil Press @ Low Idle Spd(PSI):	25.5	**Peak Torque (LB.FT):**	309.8

Reference Number: P3030A

Parameters Reference: J1

ST 2.8 SN 44620743

California Environmental Protection Agency AIR RESOURCES BOARD	PERKINS ENGINES COMPANY LTD.	EXECUTIVE ORDER U-R-022-0163 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2011	BPKXL04.4NM2	4.4	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Mechanical Direct Injection, Turbocharger, Charge Air Cooler, Smoke Puff Limiter	Crane, Loader, Tractor, Dozer, Pump, Compressor, Generator Set, Other Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
56 ≤ kW < 75	Tier 3	STD	N/A	N/A	4.7	5.0	0.40	20	15	50
		CERT	--	--	4.0	0.7	0.25	18	4	29

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 13 day of December 2010.

Annette Hebert, Chief
Mobile Source Operations Division

4 g/kw-hr = .2941945 g/(hp-h)

2.94 g/hp-hr X 0.00220 = .00648 x 100 (HP) = .648 lbs/hr

Attachment 1 of 1

ST 2.8

U-R-022-0163

12-3-2010

Engine Model Summary Template

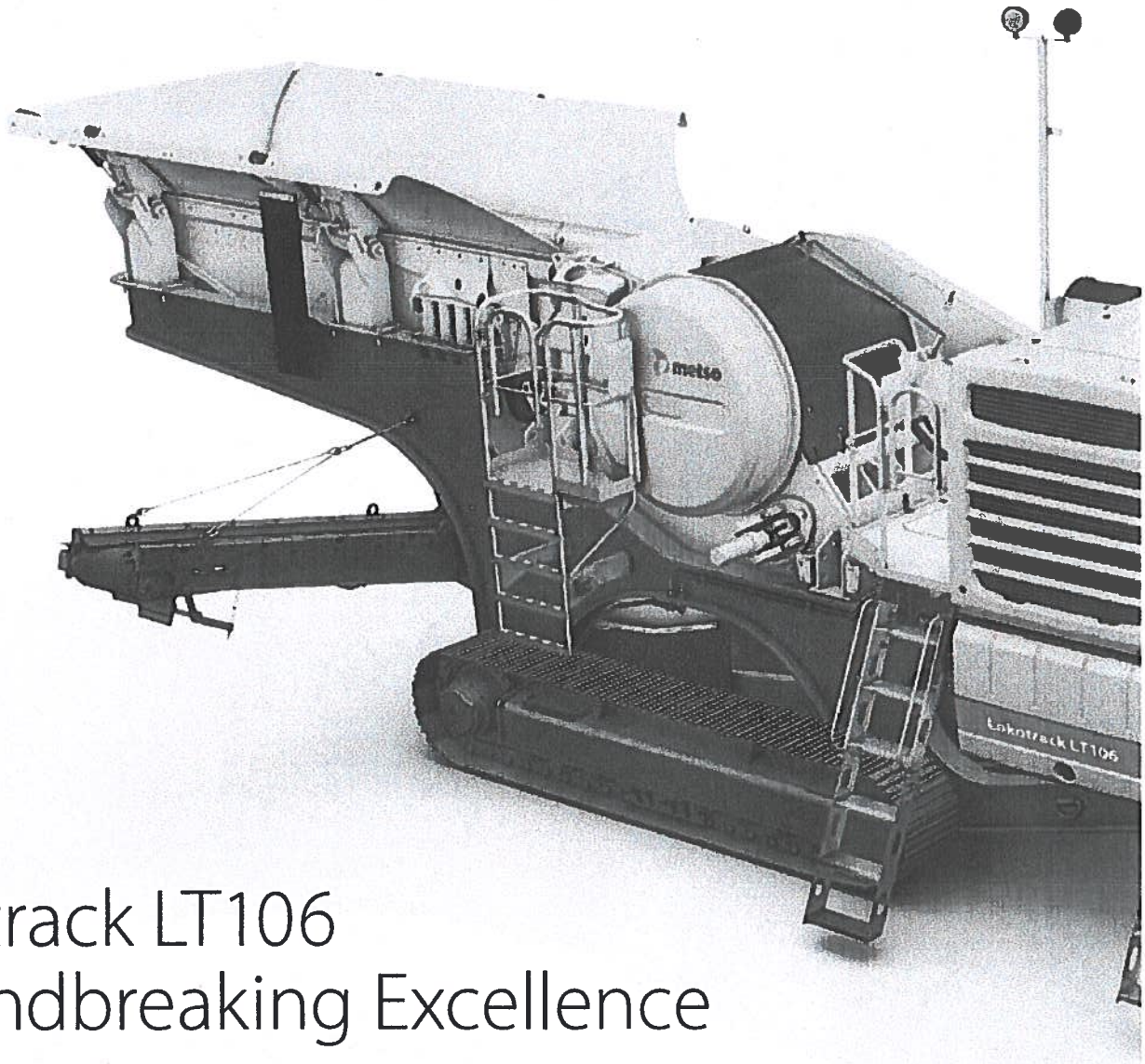
Engine Family	1.Engine Code	2 Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5 Fuel Rate (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930			
BPKXL04.4NM2	1	2972/2200	100.4@2200	84.4	40.7	304@1400	98.1	30.1	TC	DDI TAA	CAC	SPL
BPKXL04.4NM2	2	3056/2400	99.9@2400	76.6	40.3	302@1400	96.6	29.6		DDI TAA		
BPKXL04.4NM2	3	3056/2300	99.9@2300	78.6	39.6	302@1400	96.6	29.6		DDI TAA		
BPKXL04.4NM2	4	3056/2200	99.9@2200	79.2	38.2	302@1400	96.7	29.7		DDI TAA		
BPKXL04.4NM2	9	3055/2300	91.2@2300	74.4	37.5	285@1400	93.3	28.6		DDI TAA		
BPKXL04.4NM2	10	3055/2200	91.2@2200	75.5	36.4	285@1400	93.3	28.6		DDI TAA		
BPKXL04.4NM2	8	3496/2200	99.9@2200	82	39.5	295@1400	98.1	30.1		DDI TAA		
BPKXL04.4NM2	11	3500/2200	99.9@2200	83.5	37.4	295@1400	93.3	28.6		DDI TAA		
BPKXL04.4NM2	12	3500/2300	93.9@2300	76.1	38.4	291@1400	93.6	28.7		DDI TAA		
BPKXL04.4NM2	13	3499/2200	100.4@2200	83.1	40.1	307@1400	98.1	30.1		DDI TAA		

6.78

40.7 lbs/hr = gal/hr

Mobile crushing plant
Lokotrack LT106

metso
Expect results



Lokotrack LT106 Groundbreaking Excellence

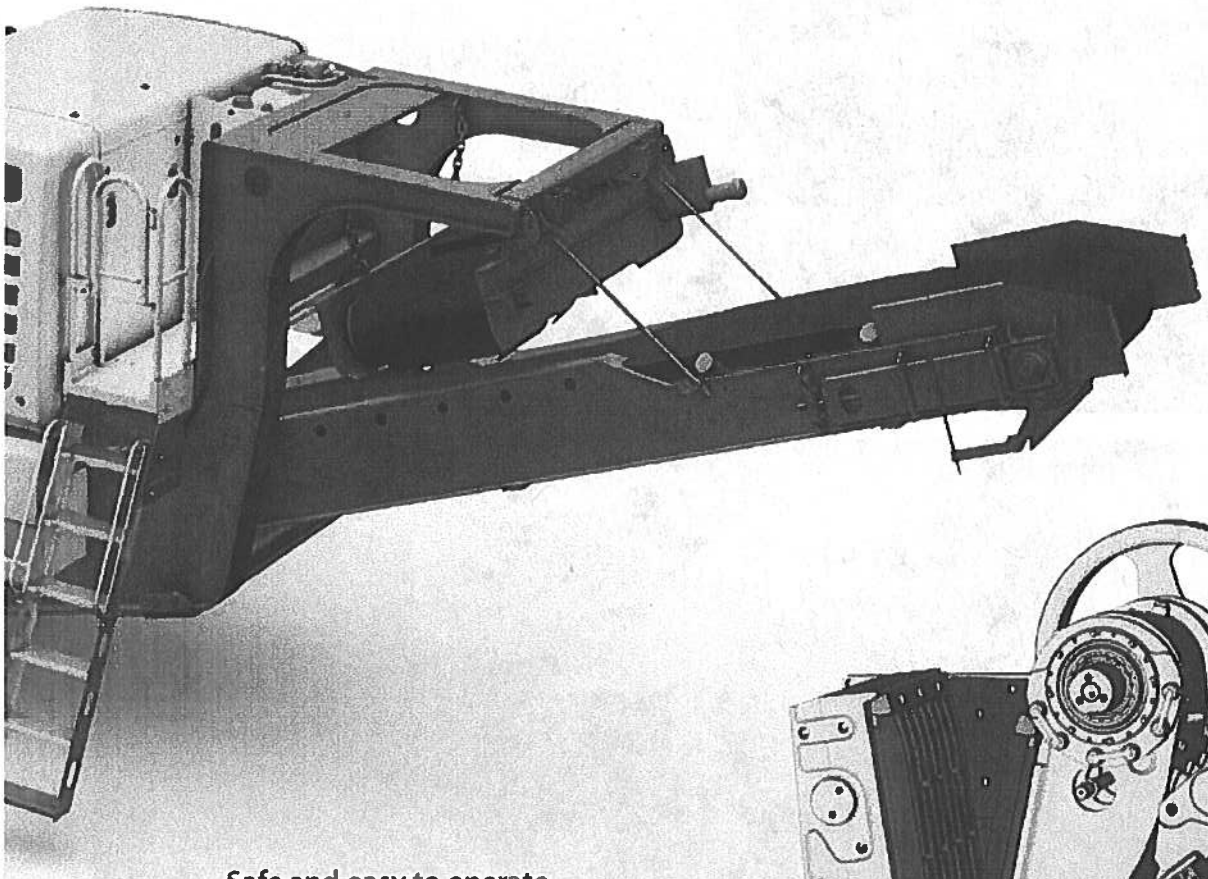
The improved successor to the industry benchmark in mobile crushing takes production capacity to a whole new level, while simultaneously cutting operating costs and generating the highest customer value possible. By combining over 25 years of experience in mobile equipment with 21st century materials and design, the LT106 takes a giant leap forward in the mobile crushing industry.

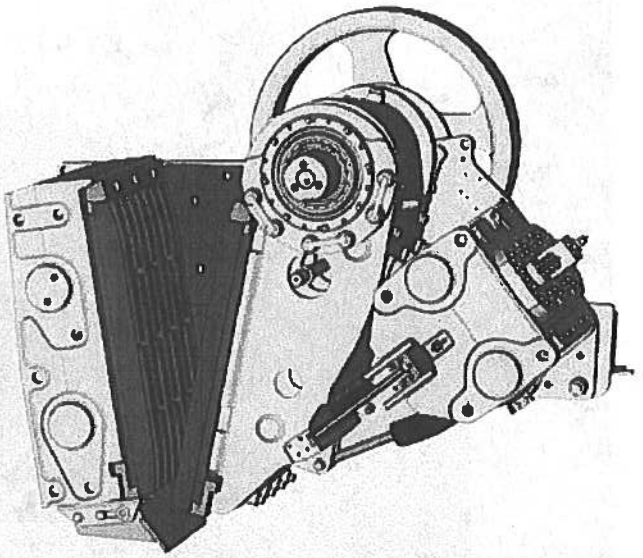
New generation of proven performance

The Lokotrack LT106 is built around the world-renowned C106 jaw crusher, with a proven track record in the toughest of applications. New features, such as a radial side conveyor, high inertia flywheels and an IC700 automation system that utilizes an ultrasonic material level sensor, offer the best capacity and cost efficiency in the 40-ton size class. The totally new fuel-efficient CAT9.3 Tier 4 engine with hydraulic drive ensures trouble-free operation and enables the direction of the crusher to be changed in the event of a blockage.

Setting standards in mobility

The Lokotrack LT106's compact dimensions and agility on tracks mean lower transport costs between and within crushing sites. The chassis design, with good clearance on both ends, enables safe and easy loading onto a trailer. Thanks to the feed hopper sides, with a patented and safe hydraulic securing system and radial side conveyor, the unit is ready for crushing or transport within minutes.





Active Setting Control is available for Lokotrack LT106.

Safe and easy to operate

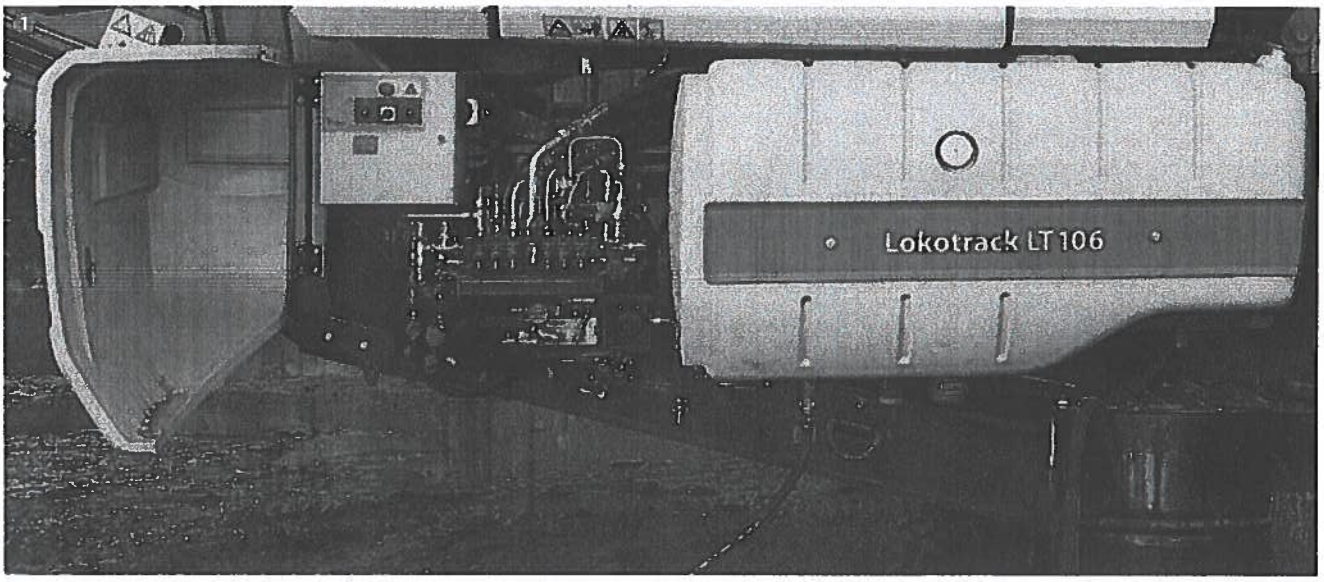
New design features, such as engine and flywheel composite covers, together with spacious service platforms and general excellent accessibility make daily operations safe and easy.

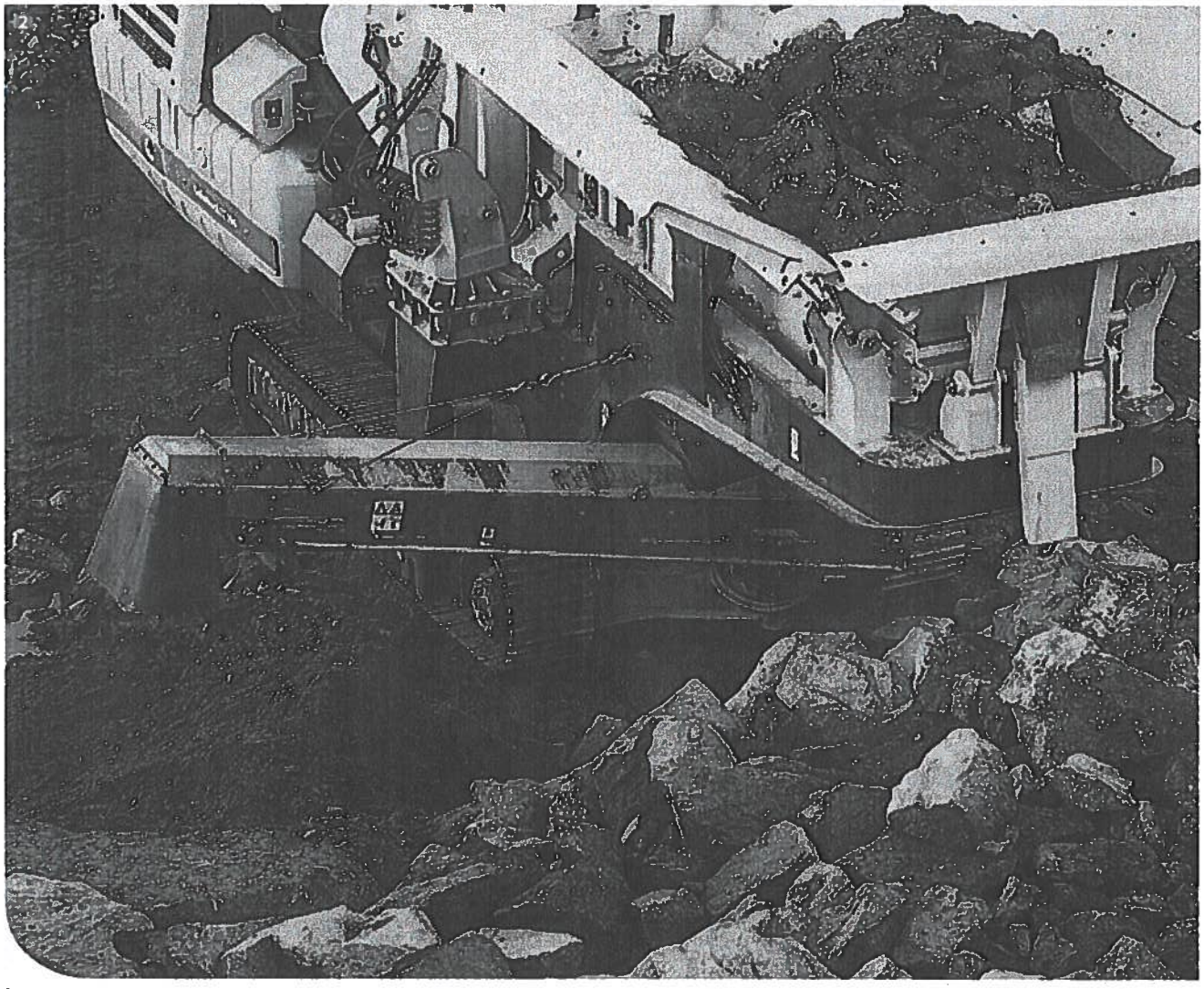
Flexible and fuel-efficient solution for the value-driven customer

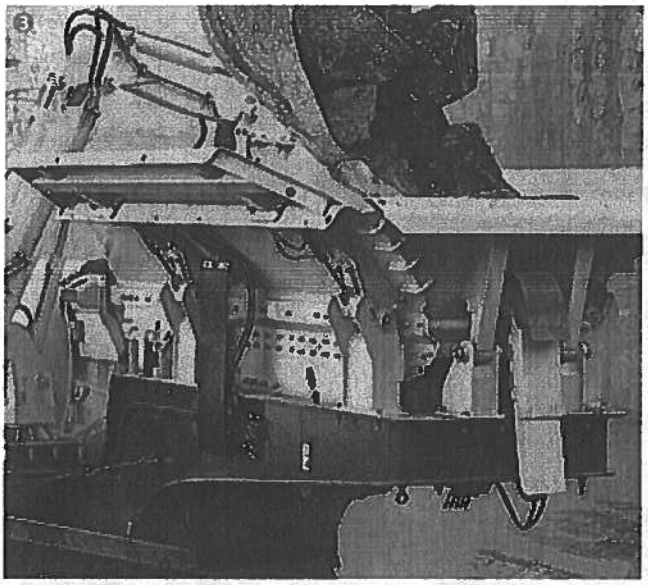
Active setting control, screen module, Metso hammer and a wide range of other options give the Lokotrack LT106 unmatched process flexibility and the capability to work in the most demanding aggregate and recycling processes. A new hydraulic system, coupled with an environmentally friendly, low-emission Caterpillar C9.3 Tier 4 or C9 Tier 3 engine and high inertia flywheels, offers excellent fuel efficiency of 17–22 liters per hour on average without compromising process flexibility, safety and the durability of the hydraulic drive.

Lokotrack LT106:

- Proven C106 crusher with new features offers higher capacity and lower operational costs
- Compact and agile to transport
- Availability and productivity maximized through high-quality components and process automation
- 21st century design for safe and easy operation and maintenance


Lokotrack LT106



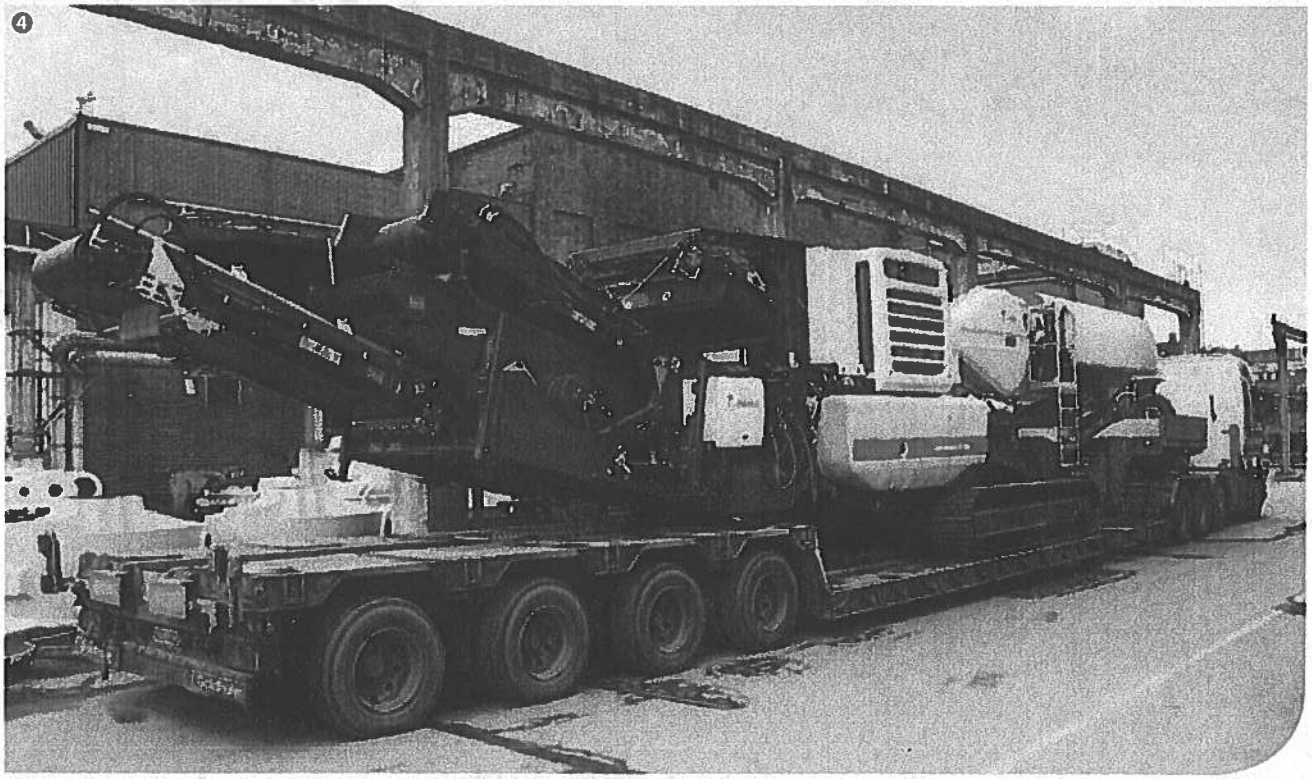


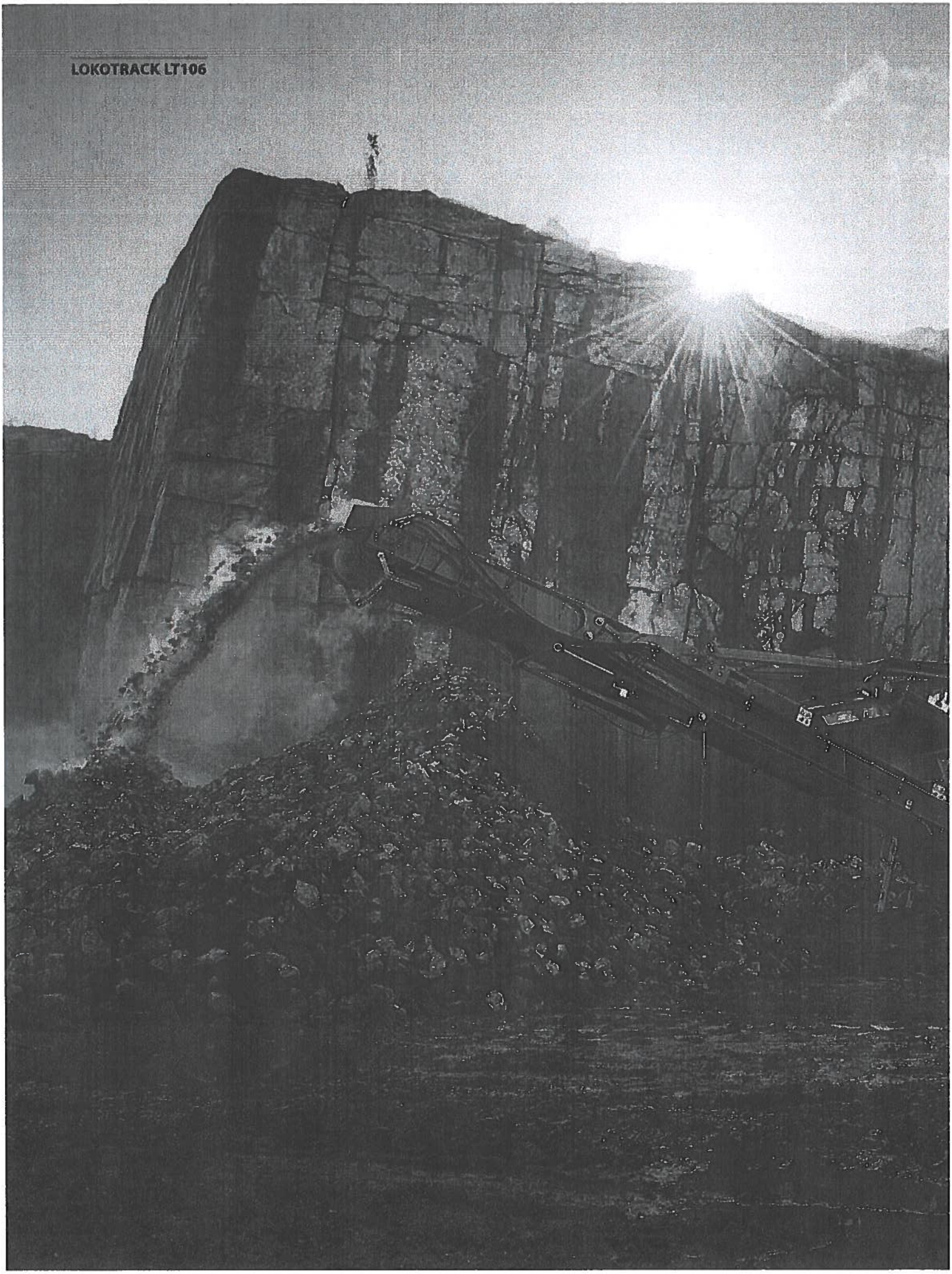
Basic dimensions LT106		
C106 jaw crusher		
Feed opening	1060 x 700 mm	42 x 28"
Feed hopper		
Standard	6 m³	8 yd³
With extensions	9 m³	12 yd³
Loading height	3.9 m	12' 10"
Feeder		
Width	1100 mm	3' 7"
Length	4150 mm	13' 8"
Main conveyor		
Width	1000 mm	39"
Discharge height (standard)	2800 mm	9' 7"
Discharge height (optional)	3900 mm	12' 9"
Engine		
Caterpillar C9.3	224 kW (1800 rpm)	300 hp
Transport dimensions		
Length	15200 mm	49' 9"
Width	2800 mm	9' 2"
Height	3400 mm	11' 2"
Weight	41 tons	90400 lbs
Noise emissions		
L_{WA} (EN ISO 9614)*	124 dB	
L_{pA} (EN ISO 11202)**	99 dB	
Options		

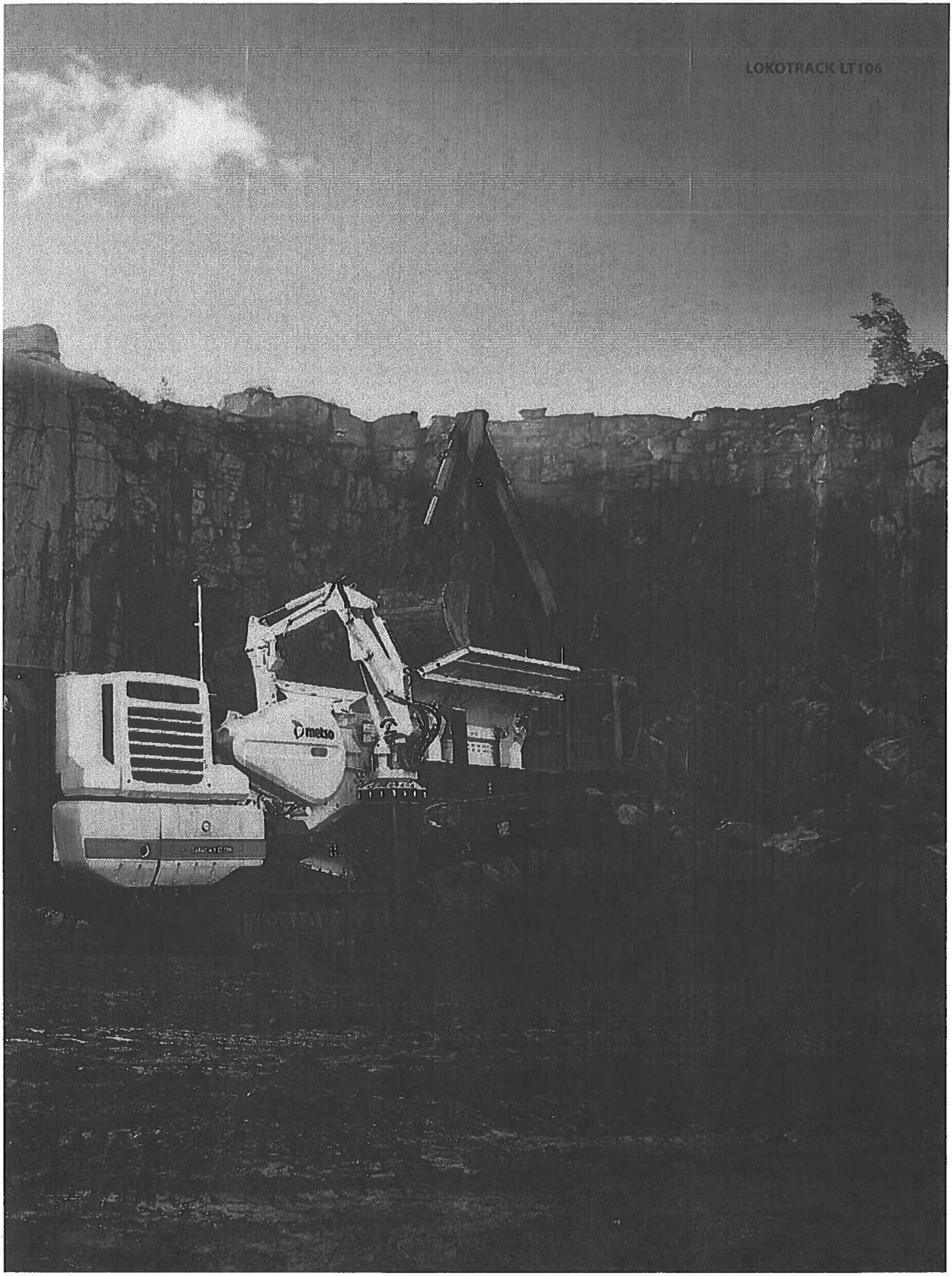
Screen module, long main conveyor, side conveyor, active setting control for crusher (ASC), crusher wear plates for recycling and quarry, hammer and boom, magnetic separator, automatic lubrication unit, radio remote control, conveyor dust covers and discharge hoods, high pressure water spraying system, belt protection plate, additional side plates for hopper, rubber bottom for feeder, hydraulic generator, hydraulic power takeoff, additional service platform, pre-heater for engine, interlocking cable, hot and cold climate kits.

*L_{WA} =A-weighted sound power level
**L_{pA} =A-weighted sound pressure level at the workstation

❶ *Composite material increases accessibility and enables easy and safe service.*
❷ *Radial side conveyor can be turned to either side, thereby increasing process flexibility.*
❸ *Feed hopper sides and locking mechanism are hydraulically operated.*
❹ *Compact dimensions make LT106 easily transportable on trailer. The unit pictured is equipped with an optional screen module.*






metso

Metso´s Mining and Construction crushing and screening equipment

Product families:

Crushers

- C series jaw crushers
- SUPERIOR® gyratory crushers
- GP series cone crushers
- HP series cone crushers
- MP series cone crushers
- NP series horizontal impact crushers
- Barmac series vertical impact crushers

Screens

- DF series screens
- CVB series screens
- FS series screens
- TS series screens
- MF series screens
- RF series screens

Feeders

- TK series feeders
- VF series feeders
- LH.G series feeders
- VG series feeders
- PF series feeders
- HRBM series feeders

Mobile crushing and screening plants

- Lokotrack LT series track-mounted crushing plants
- Lokotrack ST series track-mounted screening plants
- Lokotrack CT and CW series track- and wheel-mounted conveyors
- Nordberg NW series wheel-mounted crushing and screening plants

Stationary crushing plants

- Complete plants for aggregates production
- Complete plants for recycling applications

All Metso Minerals Oy Tampere Works equipment is produced in accordance with a quality assurance system that complies with the ISO 9001 standard, as certified by Lloyd's Register Quality Assurance Limited.

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Subject to alteration without prior notice. Brochure No. 2712-06-12-ESBL/Tampere-English.

Metso´s Mining and Construction crushing and screening equipment

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- SUPERIOR® gyratory crushers
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Stationary crushing plants
- Complete plants for aggregates production
- Complete plants for recycling applications

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Mobile crushing plants
Lokotrack LT1213 & LT1213S

metso
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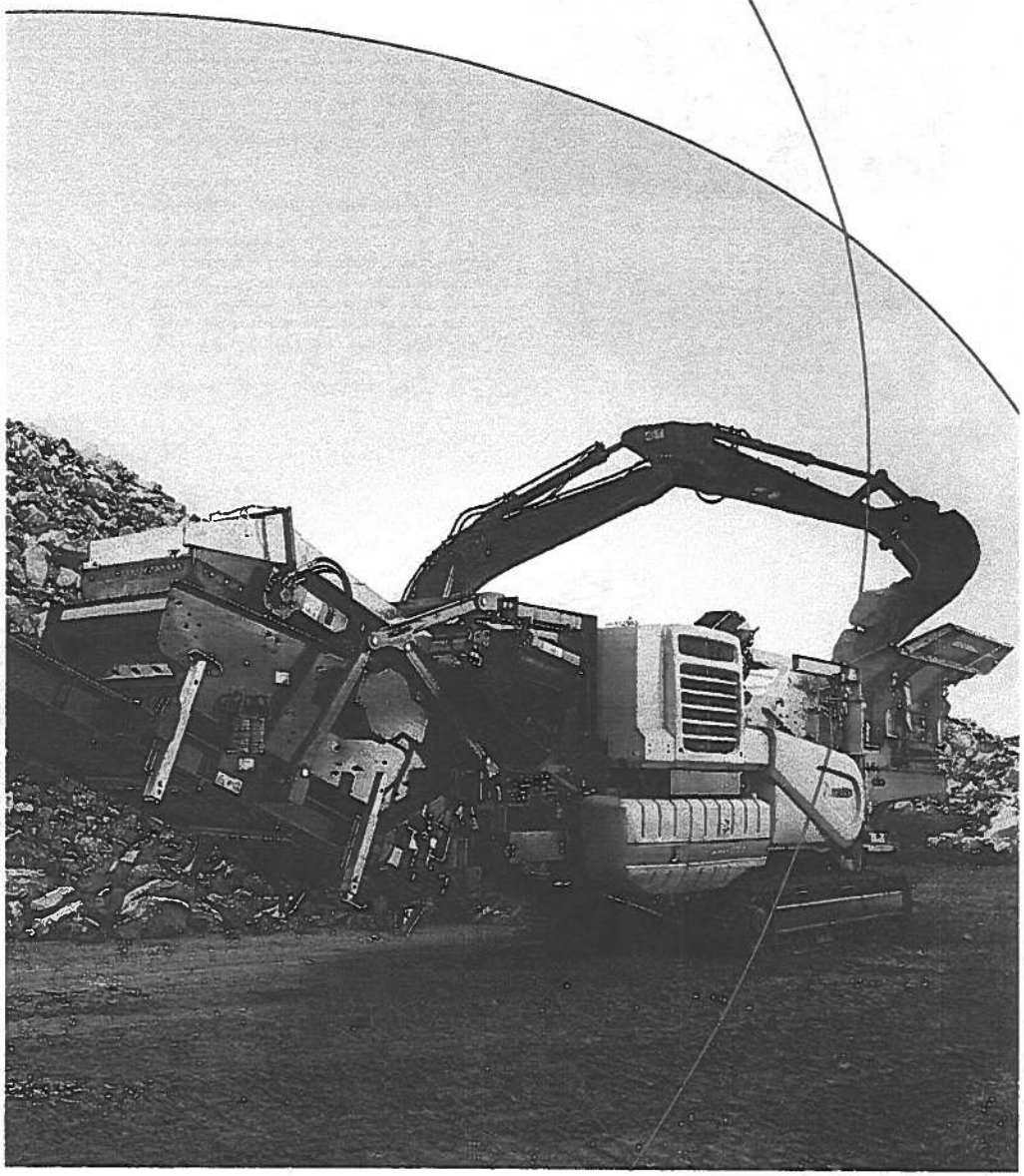
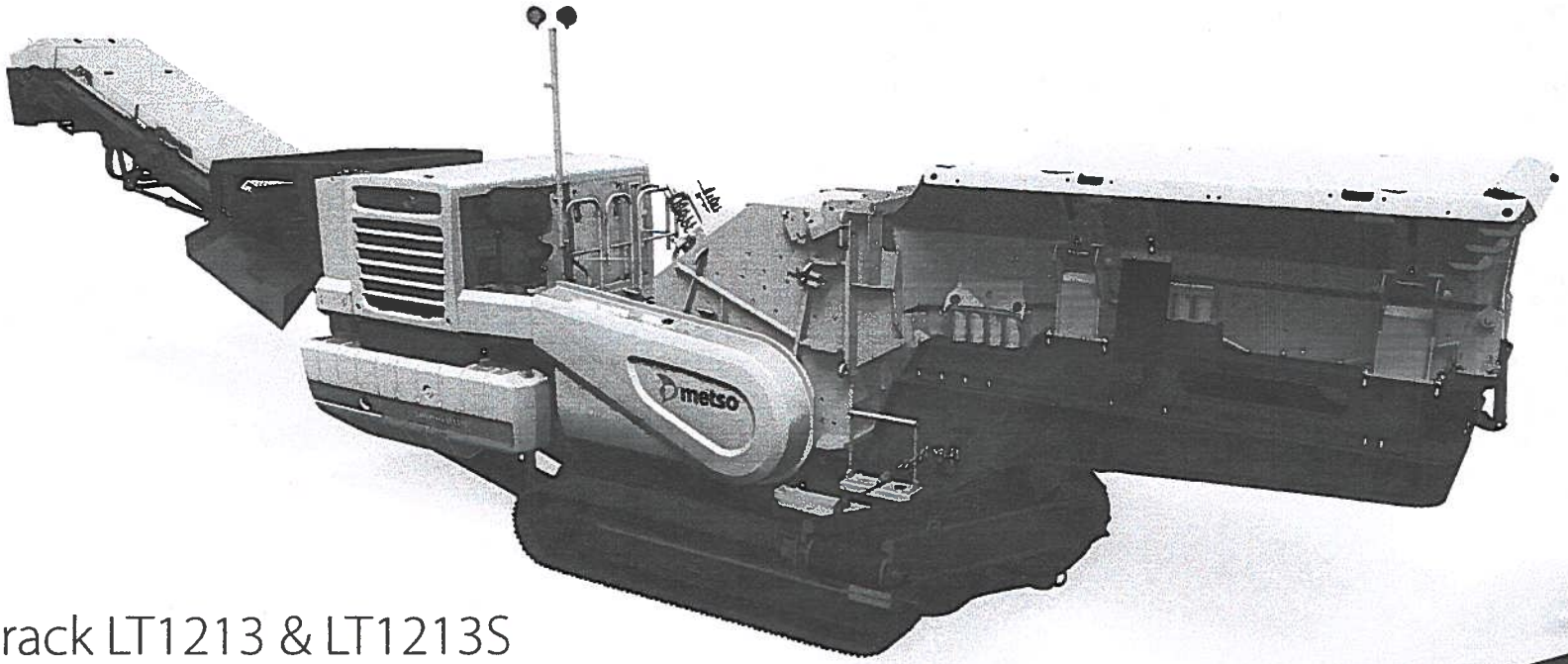




Lokotrack LT1213 & LT1213S
The desired impact

Metso Lokotrack LT1213S is fully equipped mobile impactor plant with high capacity screen and return conveyor. LT1213 has the same features and options available but no screen nor return conveyor. The crushing plants have been built around powerful Caterpillar C13 diesel engine and capacity is provided by the refreshed NP1213M impact crusher. Lokotrack LT1213 and LT1213S can be transported as a single unit on a low bed trailer.

Flexibility in applications

New radial return conveyor makes Lokotrack LT1213S easy to operate in closed and open circuits. The conveyor turns hydraulically. Lokotrack LT1213S has the brand new dual slope screen to provide high on board screening capacity. The screening unit can be docked in a few minutes. Both Lokotracks are designed to operate together with other Lokotrack mobile crushing and screening plants. LT1213 and LT1213S can be fine tuned for aggregate, quarry or recycling applications with features like vibrating grizzly or pan feeder under the crusher.

Energy saving built-in

Lokotrack LT1213 and LT1213S have advanced gearbox as a standard. The Metso gearbox provides the most efficient crusher drive system on the market with assisted start and brake. Optimized hydraulic circuit with independent fan and stand-by function gives up to 20% lower fuel consumption and more power for the crusher.

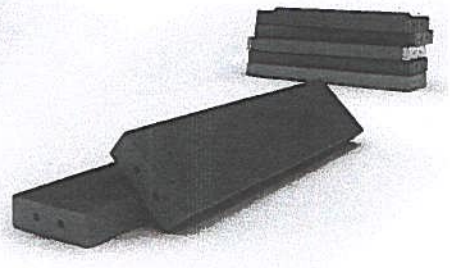
LOKOTRACK LT1213 & LT1213S

Safe to operate and maintain

The crusher service rotation is done by 24V hydraulic power pack. New tools are provided to help changing the blow bars and breaker plates. Special attention is being paid on access to the service locations and trouble free material flow. Stand-by function helps to save fuel and reduce noise when idling.

Profitable crushing for different customers

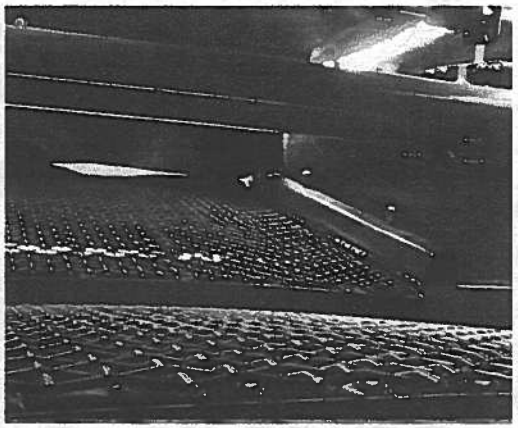
Fast set up is important when crushing plants are moving regularly. Lokotrack LT1213 and LT1213S are ready for crushing only few moments after arriving onsite. Any tools or cranes are not required. IC700 control system with single button start and stop makes the Lokotrack easy to use. Parameters for different sites can be stored and even setting can be optionally adjusted from control display. Lokotrack LT1213 and LT1213S come always with high quality blow bars for efficient crushing. Operation and service DVD with scheduled maintenance, equipment protection plan and extended warranty maximize the availability and profitability.

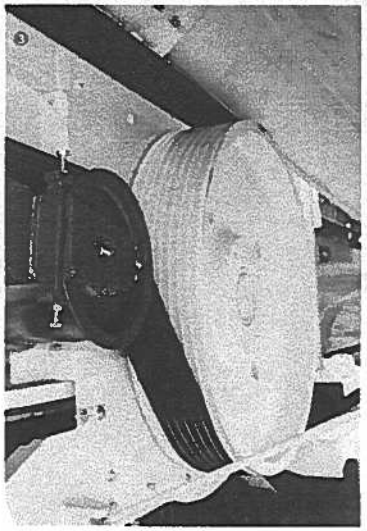


High quality blow bars as a standard

Lokotrack LT1213 & LT1213S:

- The excellent capacity is a combination of high performance and reliability
- The efficient power transmission provides up to 20% lower fuel consumption
- Compact dimensions and easy setting of the screen for mobility
- New features, like service rotation provides easy and safe operation





1. *No tools are required for set-up.*
2. *Dual slope screen enables efficient & accurate separation.*
3. *Metso gearbox and direct drive enable efficient crushing.*
4. *Return conveyor always on board in LT1213S.*

Lokotrack LT1213			
Nordberg NP1213M impact crusher			
	Rotor dimensions	1 300 x 1 200 mm	51 1/5" x 47 1/5"
Feed hopper			
	Standard	6 m³	8 yd³
	With extensions	9 m³	12 yd³
	Loading height	4.1 m	14'9"
Feeder			
	Width	1 100 mm	43 1/3"
	Length	4 200 mm	13'9"
Main conveyor			
	Width	1 200 mm	47"
	Discharge height*	4 000 mm	13'2"
Engine			
	Caterpillar C13	310 kW	415 hp
Transport dimensions			
	Length*	16 850 mm	55'3"
	Width	2 980 mm	9'9"
	Height	3 600 mm	11'9"
	Weight*	45 tons	99 000 lbs

* = Dimensions with a long main conveyor, magnetic separator, side conveyor and feed hopper extensions

Lokotrack LT1213S			
Nordberg NP1213M impact crusher			
	Rotor dimensions	1 300 x 1 200 mm	51 1/5" x 47 1/5"
Screen DS16-36			
	Area	5.75 m²	6.9 yd²
Feed hopper			
	Standard	6 m³	8 yd³
	With extensions	9 m³	12 yd³
	Loading height	4.1 m	14'9"
Feeder			
	Width	1 100 mm	43 1/3"
	Length	4 200 mm	13'9"
Main conveyor			
	Width	1 200 mm	47"
	Discharge height	3 100 mm	10'2"
Engine			
	Caterpillar C13	310 kW	415 hp
Transport dimensions			
	Length	19 400 mm	63'7"
	Width	3 200 mm	10'6"
	Height	3 600 mm	11'9"
	Weight**	55 tons	121 000 lbs

** = Dimensions with all options

The Lokotrack LT1213S is easily transportable on a trailer.

LOKOTRACK LT1213 & LT1213S

Lokotrack ST2.8 makes the scalping of sticky recycling material look easy. The design principle has been simple: to optimize capacity in demanding scalping and to minimize unprofitable time on site.

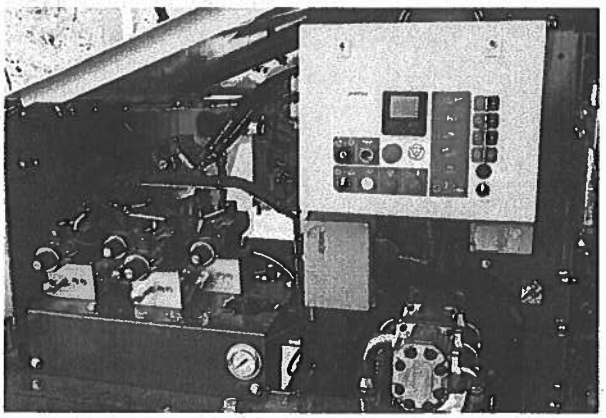
The stickier the feed material the more throw needed in the scalping screen. Lokotrack ST2.8 has the biggest eccentric throw on the market to make it the best unit for the screening of top soil, demolition waste and river gravel. Additionally, ST2.8 can be fine tuned even for sand applications. The clearance under the screen has been increased by 20% and the bottom deck area is larger compared with ST272™.

In multistage crushing processes, the removal of fines is easy with a two-way split option. This feature combines material flow from the first and second deck to the main conveyor and maximizes the capacity and efficiency of the crushing process. Belt feeder and chevron belts are standard features of Lokotrack ST2.8.

Lokotrack ST2.8 is ready for screening in minutes thanks to hydraulically operated conveyors and screen including a patent pending feeder mechanism. Lokotrack ST2.8 is 25% lighter than similar machines. Because the weight is lower, transportation is easier. The fuel-efficient scalping process can be started with safe push buttons or by the optional Metso IC300™ process control system.

Features

Screen	4 866 x 1 524 mm (16' x 5')
Feed hopper	4.5 m³ (5.9 yd³)
Engine	CAT® C4.4, 75 kW (100 hp)
Weight	26 000 kg (57 000 lbs)



The Lokotrack ST engine module provides you with an easy user interface and good access for daily maintenance.

Lokotrack ST3.8

The Lokotrack® ST3.8™ mobile screen provides precise screening and high capacity within compact dimensions. Its double deck screen, the IC300™ process control system and powerful CAT® C4.4 makes it a great unit to work with in various standalone and Lokotrack multistage processes.

The new engine package provides the best fuel efficiency due to the optimized hydraulic system and easy access to the service locations. The IC300 process control system offers single-button start-up and the possibility to interlock the ST3.8 with other Lokotrack crushing and screening plants.

Screen meshes are interchangeable, which means less hassle on-site and with inventory, in addition to quick adaption to different applications. Side platforms come as standard to enable safe maintenance of the unit.

High-quality components and engineering without compromises ensure trouble-free production. With features like radio remote control and a double-deck vibrating grizzly, you can fine-tune the Lokotrack ST3.8 to perfectly match your personal requirements.

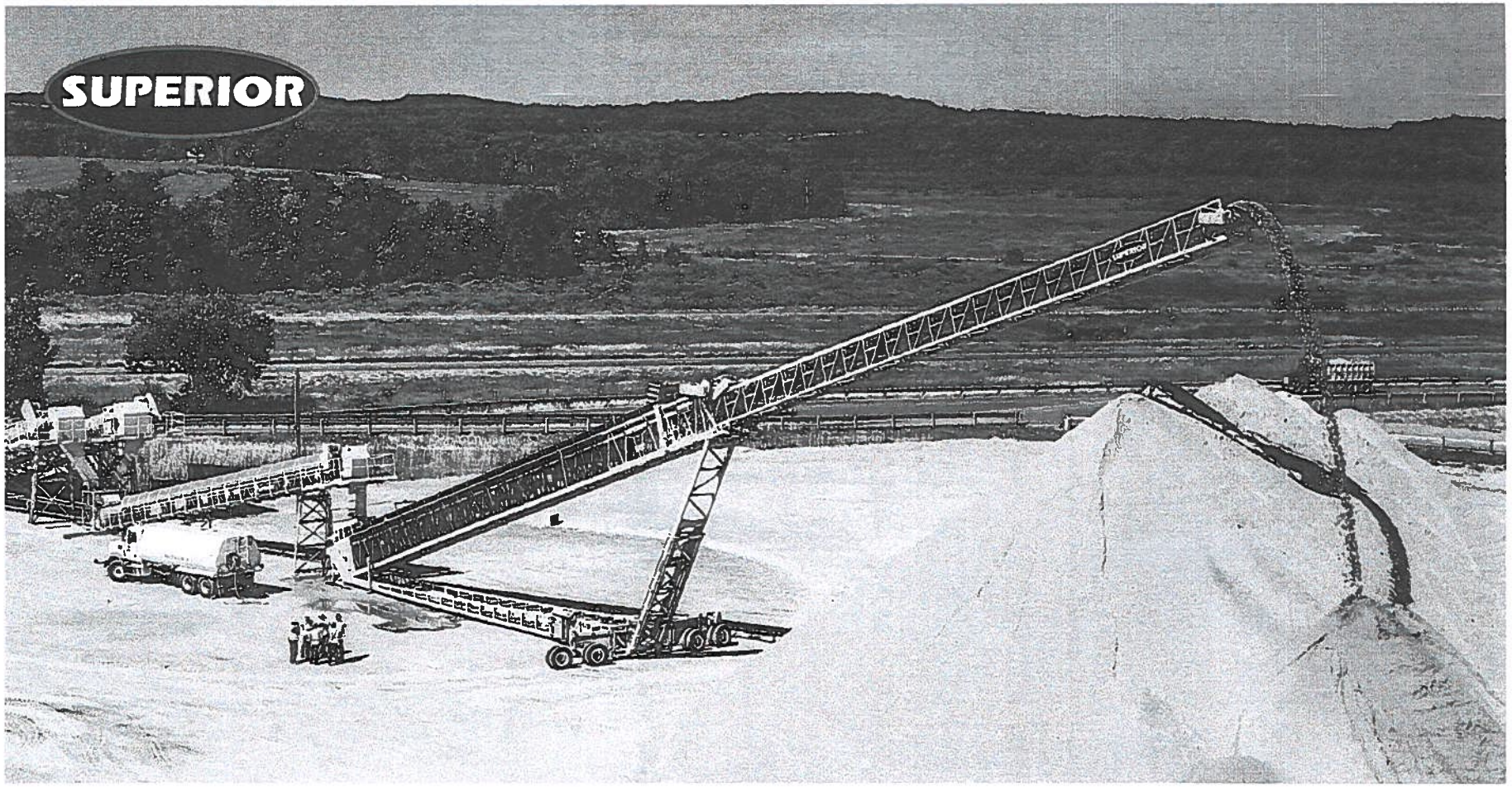
Features

Screen	5 480 x 1 524 mm (18' x 5')
Feed hopper	7.5 m³ (9.6 yd³)
Engine	CAT® C4.4, 75 kW (100 hp)
Weight	28 000 kg (62 000 lbs)

Lokotrack mobile screens

	ST2.4™	ST2.8™	ST3.5™	ST3.8™	ST4.8™	ST620™
Transport dimensions						
Length	14 200 mm (46' 7")	15 400 mm (50' 7")	14 350 mm (47' 1")	18 300 mm (60')	18 320 mm (60' 1")	14 900 mm (48' 10")
Width	2 990 mm (9' 10")	3 000 mm (9' 10")	3 000 mm (9' 10")	3 190 mm (10' 6")	3 190 mm (10' 6")	3 000 mm (9' 10")
Height	3 400 mm (11' 2")	3 560 mm (11' 8")	3 460 mm (11' 4")	3 420 mm (11' 3")	3 630 mm (11' 11")	3 800 mm (12' 5")
Weight	23 500 kg (52 000 lbs)	26 000 kg (57 000 lbs)	23 000 kg (51 000 lbs)	28 000 kg (62 000 lbs)	32 000 kg (71 000 lbs)	30 500 kg (67 000 lbs)
Screen						
Size	3 640 x 1 524 mm (12' x 5')	4 870 x 1 524 mm (16' x 5')	3 580 x 1 524 mm (11' 9" x 5')	5 480 x 1 524 mm (18' x 5')	5 480 x 1 524 mm (18' x 5')	6 000 x 1 800 mm (19' 8" x 5' 11")
Area (top deck)	5.6 m^2 (6.7 yd^2)	7.4 m^2 (8.9 yd^2)	5.5 m^2 (6.6 yd^2)	8.4 m^2 (10 yd^2)	8.4 m^2 (10 yd^2)	11 m^2 (13 yd^2)
Number of decks	2	2	2	2	3	3
Feeder						
Hopper	4.5 m^3 (5.9 yd^3)	4.5 m^3 (5.9 yd^3)	5.5 m^3 (7.2 yd^3)	7.5 m^3 (9.6 yd^3)	7.5 m^3 (9.6 yd^3)	1.7 / 3 m^3 (2.2 / 4 yd^3)
Loading height	3 054 / 3 450 mm (10' / 11' 3")	3 300 / 3 680 mm (10' 10" / 11' 1")	3 290 mm (10' 9")	2 315 / 3 345 mm (7' 7" / 11')	2 315 / 3 345 mm (7' 7" / 11')	2 180 / 2 325 mm (7' 1" / 7' 7")
Loading width	3 000 mm (9' 10")	3 000 mm (9' 10")	4 260 mm (14')	4 650 mm (15' 4")	4 650 mm (15' 4")	2 100 / 2 600 mm (6' 11" / 8' 7")
Conveyors' discharge height						
Product conveyor oversize	3 300 mm (10' 10")	3 440 mm (11' 3")	o	o	o	o
Side conveyor oversize	o	o	3 860 / 4 500 mm (12' 9" / 14' 8")	4 390 mm (13' 7")	4 770 mm (14' 7")	2 890 mm (9' 6")
Side conveyor midsize	3 650 mm (12')	4 190 mm (13' 9")	3 860 / 4 500 mm (12' 9" / 14' 8")	4 390 mm (13' 7")	3 883 mm (12' 9")	2 850 mm (9' 5")
Side conveyor bottom deck	o	o	o	o	4 165 mm (13' 8")	2 850 mm (9' 5")
Side conveyor undersize	3 780 mm (12' 5")	4 340 mm (14' 3")	o	o	o	o
Product conveyor undersize	o	o	3 080 mm (10' 3")	4 300 mm (14' 4")	4 300 mm (14' 2")	3 750 mm (12' 4")
Engine						
Model	CAT® C4.4	CAT® C4.4	CAT® C4.4	CAT® C4.4	CAT® C4.4	CAT® C6.6
Power	75 kW (100 hp)	75 kW (100 hp)	75 kW (100 hp)	75 kW (100 hp)	75 kW (100 hp)	130 kW (175 hp)
Fuel tank capacity	273 l (71 gal)	273 l (71 gal)	273 l (71 gal)	273 l (71 gal)	273 l (71 gal)	310 l (82 gal)
Process control	o	IC300™*	o	IC300™	IC300™	IC300™
Options						
Various grizzly options	•	•	•	•	•	o
Various screening medias	•	•	•	•	•	•
Apron feeder	•	•	o	o	o	o
Vibrating grizzly	o	o	•	•	o	o
Light mast	•	•	•	•	•	•
Remote radio control	•	•	•	•	•	•
Hopper extensions	•	•	o	o	o	•
Dust encapsulation	o	o	•	•	•	•
Water spraying system	o	o	•	•	•	•
Pre-heater for engine	•	•	•	•	•	•
Hot / cold climate kit	•	•	•	•	•	•
Extreme cold climate kit	•	•	•	•	•	•
Heavy duty air filter	•	•	•	•	•	•
Rear platform	o	o	•	•	•	o
Overband magnetic separator	•	•	o	o	o	o
Hydraulic power take off	o	o	•	•	o	o
Feeder stop with LT IC	•	•	•	o	o	o
Interlocking cable	o	•	o	•	•	•
Rock box	o	o	•	•	•	o

*option



TELESTACKER® CONVEYOR

110' / 130' / 136' / 150' / 158' / 170' / 190'

With more than **1,000 units manufactured** and capacities up to 5,000 TPH, Superior is the world's leading builder of telescopic conveyors. ■

Our commitment to **cutting-edge technology** means we're working to identify, create and perfect the TeleStacker Conveyor. ■

Our legacy of **structurally sound engineering and manufacturing** is vital for safety and endurance in all applications. ■

Defeat costly material segregation and build the **highest volume, in-spec stockpiles.** ■

FD AXLE TSFD SPECIFICATIONS

OPERATING DIMENSIONS	110'	130'	136' *	150'	158' *
Conveyor Length (m)	**110'-0"** (33.5)	**130'-0"** (39.6)	**136'-0" LP** (41.5)	**150'-0"** (45.7)	**158'-0" LP** (48.0)
Highest Extended Discharge Height (m)	**41'-3"** (12.6)	**45'-5"** (13.8)	**44'-0"** (13.4)	**52'-9"** (16.1)	**48'-10"** (14.8)
Lowest Extended Discharge Height (m)	**18'-10"** (5.7)	**19'-4"** (5.9)	**18'-6"** (5.6)	**19'-6"** (5.9)	**19'-6"** (5.9)
Highest Retracted Discharge Height (m)	**25'-0"** (7.6)	**27'-3"** (8.3)	**27'-1"** (8.2)	**30'-10"** (9.4)	**30'-10"** (9.4)
Lowest Retracted Discharge Height (m)	**11'-8"** (3.5)	**13'-1"** (4.0)	**12'-8"** (3.8)	**12'-6"** (3.8)	**12'-4"** (3.7)
Anchor Pivot to Center of Axle (m)	**39'-8"** (12.1)	**49'-0"** (15.0)	**55'-4"** (16.9)	**54'-9"** (16.7)	**70'-11"** (21.6)
STOCKPILE DIMENSIONS					
Maximum Pile Height (m)	**39'-2"** (11.9)	**43'-0"** (13.1)	**43'-2"** (13.1)	**50'-0"** (15.2)	**47'-3"** (14.4)
Lowered Stockpile Height (m)	**15'-6"** (4.7)	**15'-10"** (4.8)	**14'-9"** (4.5)	**16'-7"** (5.0)	**18'-10"** (5.7)
Anchor Pivot to Center of Pile (m)	**100'-2"** (30.5)	**115'-8"** (35.2)	**126'-4"** (38.5)	**132'-6"** (40.4)	**145'-6"** (44.3)
TRAVEL DIMENSIONS					
Travel Length - Kingpin to Rear (m)	**60'-0"** (18.2)	**70'-0"** (21.3)	**80'-0"** (24.4)	**80'-0"** (24.4)	**97'-6"** (29.7)
Travel Height (m)	**12'-5"** (3.8)	**13'-9"** (4.2)	**13'-0"** (3.9)	**13'-10"** (4.2)	**14'-0"** (4.3)
Travel Width (m)	**11'-11"** (3.6)	**11'-11"** (3.6)	**11'-11"** (3.6)	**11'-11"** (3.6)	**11'-6"** (3.5)
Kingpin to End of Tow Eye (m)	**5'-10"** (1.7)	**5'-10"** (1.7)	**5'-10"** (1.7)	**5'-11"** (1.8)	**6'-0"** (1.9)
Kingpin to Axle (m)	**37'-11"** (11.5)	**47'-7"** (14.5)	**54'-0"** (16.4)	**53'-10"** (16.4)	**70'-0"** (21.3)
Axle to Head Pulley (m)	**22'-0"** (6.7)	**22'-4"** (6.8)	**25'-6"** (7.7)	**26'-1"** (7.9)	**27'-6"** (8.3)
FD Axle Size	**FD40**	**FD40**	**FD40**	**FD50**	**FD50**
Weight at Axle - 36" Belt Width (kg)	**30,500** (13,830)	**34,800** (15,785)	**36,000** (16,329)	**40,000** (18,144)	**53,200** (24,131)
Weight at Kingpin - 36" Belt Width (kg)	**12,500** (5,670)	**18,300** (8,300)	**13,000** (5,897)	**24,600** (11,158)	**16,000** (7,257)

* Denotes Low Profile Model

XTP AXLE TSXTP SPECIFICATIONS

OPERATING DIMENSIONS	130'	150'	170'	190'
Conveyor Length (m)	**130'-0"** (39.6)	**150'-0"** (45.7)	**170'-0"** (51.8)	**190'-0"** (57.9)
Highest Extended Discharge Height (m)	**47'-0"** (13.8)	**52'-6"** (16.0)	**60'-0"** (18.5)	**67'-8"** (20.5)
Lowest Extended Discharge Height (m)	**14'-5"** (6.0)	**15'-10"** (6.0)	**14'-11"** (4.5)	**16'-1"** (5.0)
Highest Retracted Discharge Height (m)	**27'-3"** (8.0)	**30'-10"** (3.0)	**38'-6"** (11.0)	**53'-7"** (16.5)
Lowest Retracted Discharge Height (m)	**13'-1"** (4.0)	**12'-6"** (4.0)	**10'-8"** (4.0)	**11'-4"** (3.5)
Anchor Pivot to Center of Axle (m)	**48'-6"** (14.5)	**56'-4"** (17.0)	**73'-10"** (22.5)	**73'-10"** (22.5)
STOCKPILE DIMENSIONS				
Maximum Pile Height (m)	**44'-5"** (13.5)	**50'-0"** (15.2)	**58'-3"** (17.7)	**66'-1"** (20.1)
Lowered Stockpile Height (m)	**11'-5"** (3.4)	**12'-10"** (3.9)	**11'-11"** (3.6)	**14'-3"** (4.3)
Anchor Pivot to Center of Pile (m)	**116'-2"** (35.4)	**125'-0"** (38.1)	**153'-9"** (46.8)	**163'-1"** (49.7)
TRAVEL DIMENSIONS				
Travel Length - Kingpin to Rear (m)	**80'-0"** (24.3)	**80'-0"** (24.3)	**100-0"** (30.5)	**115'-0"** (35.0)
Travel Height (m)	**12'-3"** (3.7)	**13'-9"** (4.2)	**13-9"** (4.2)	**14-0"** (4.2)
Travel Width (m)	**11'-11"** (3.6)	**11'-11"** (3.6)	**11'-11"** (3.6)	**11'-11"** (3.6)
Kingpin to End of Tow Eye (m)	**5'-10"** (1.7)	**5'-11"** (1.8)	**5'-11"** (1.8)	**5'-11"** (1.8)
Kingpin to Axle (m)	**52'-3"** (15.9)	**59'-9"** (18.2)	**77'-3"** (23.5)	**94'-6"** (28.8)
Axle to Head Pulley (m)	**27'-5"** (8.3)	**20'-4"** (6.1)	**22'-10"** (6.9)	**22'-10"** (6.9)
Weight at Axle - 36" Belt Width (kg)	**37,500** (17,000)	**38,000** (17,235)	**46,000** (20,865)	**47,000** (21,318)
Weight at Kingpin - 36" Belt Width (kg)	**13,600** (6,168)	**18,550** (8,414)	**20,865** (9,464)	**22,500** (10,205)

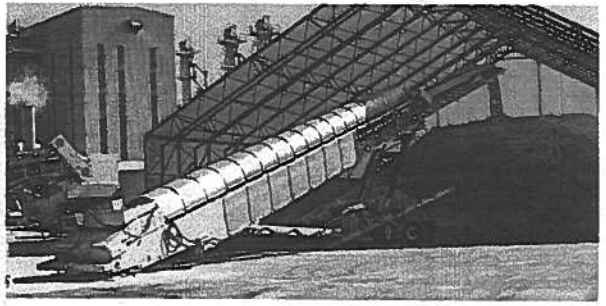
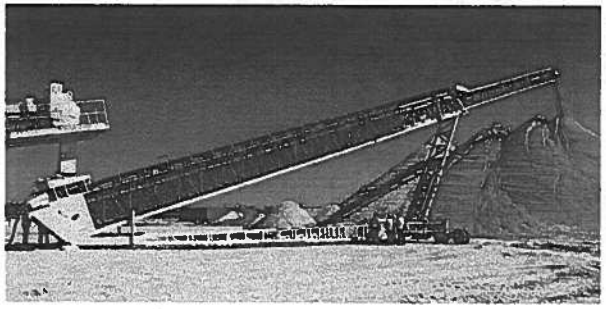
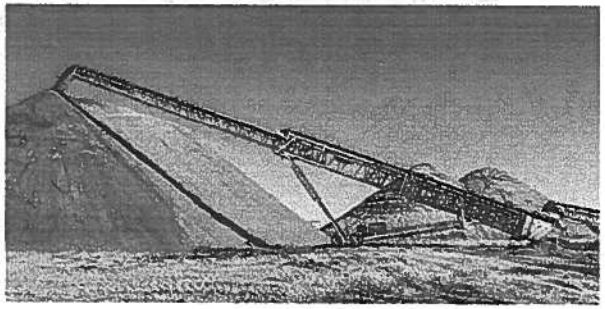
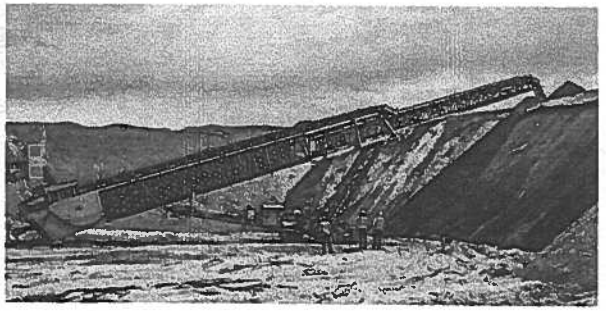
STOCKPILE CAPACITIES

MAXIMUM STOCKPILE CAPACITIES (MANUAL PILES) Assumptions based on aggregate which has a 37° angle of repose and 100 PCF (1.6 ± m³) material density.

Conveyor Length	Stockpile Height (m)	Stockpile Volume in Cubic Yards (m³)				Stockpile Volume in Tons (MT)			
		Conical	90°	180°	270°	Conical	90°	180°	270°
110 TSFD	**39'-0"** (11.8)	**4,900** (3,200)	**19,700** (15,000)	**34,400** (26,300)	**49,200** (37,600)	**6,600** (6,000)	**26,600** (24,100)	**46,500** (42,200)	**66,500** (60,300)
130 TSFD	**42'-0"** (12.8)	**6,200** (4,700)	**27,300** (20,900)	**48,300** (37,000)	**69,300** (53,000)	**8,400** (7,600)	**36,800** (33,400)	**65,200** (59,100)	**93,600** (84,900)
130 TSXTP	**45'-6"** (13.8)	**6,700** (5,100)	**27,700** (21,200)	**48,700** (37,200)	**69,700** (53,300)	**9,000** (8,200)	**37,400** (34,000)	**65,800** (59,600)	**94,200** (85,500)
136 TSFD-LP	**41'-6"** (12.6)	**6,900** (5,300)	**30,000** (23,000)	**53,300** (40,800)	**76,500** (58,500)	**9,300** (8,400)	**40,600** (36,800)	**71,900** (65,200)	**103,200** (93,600)
150 TSFD	**50'-0"** (15.2)	**9,300** (7,100)	**41,000** (31,300)	**72,600** (55,500)	**104,300** (79,800)	**12,600** (11,400)	**55,300** (50,200)	**98,100** (89,000)	**140,800** (127,700)
150 TSXTP	**50'-0"** (15.2)	**9,200** (7,000)	**40,100** (30,700)	**71,000** (54,300)	**102,000** (78,000)	**12,400** (11,200)	**54,100** (49,000)	**95,900** (87,000)	**137,700** (124,900)
158 TSFD-LP	**47'-0"** (14.3)	**9,400** (7,200)	**49,800** (38,100)	**90,100** (68,900)	**103,500** (99,800)	**12,700** (11,500)	**67,200** (61,000)	**121,700** (110,400)	**176,200** (159,900)
170 TSXTP	**58'-0"** (17.6)	**12,900** (9,900)	**56,100** (42,900)	**99,300** (76,000)	**142,400** (108,900)	**17,500** (15,900)	**75,800** (68,800)	**134,000** (121,600)	**192,300** (174,500)
190 TSXTP	**66'-0"** (20.1)	**18,700** (14,300)	**82,300** (63,000)	**145,800** (111,500)	**209,300** (160,000)	**25,300** (23,000)	**111,100** (100,800)	**196,800** (178,500)	**282,600** (256,400)
72x190 TSPP	**61'-0"** (18.6)	**16,700** (12,800)	**75,700** (57,900)	**134,800** (103,000)	**193,800** (148,200)	**22,500** (20,400)	**102,200** (92,700)	**181,600** (164,700)	**261,600** (237,300)

PHOTO GALLERY



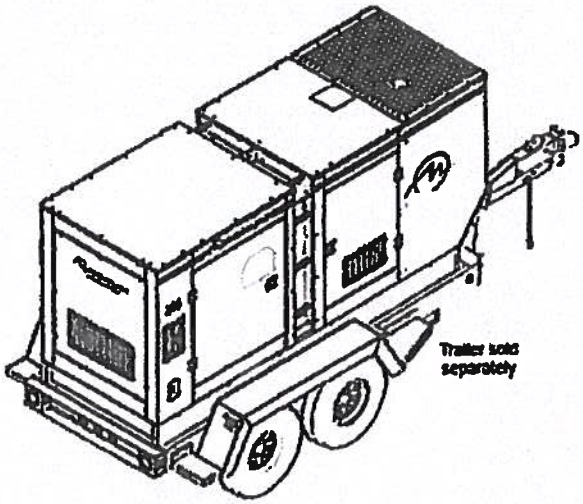





MAGNUM
A Generac Company

Customer Driven • Unsurpassed Value

Magnum Mobile Generator – MMG205 Specifications

ENGINE



- John Deere® PE6068HFG95 - turbocharged, diesel engine
  - Prime - 252 hp @ 1800 rpm
  - Standby - 268 hp @ 1800 rpm
  - 6 cylinder
  - 6.8 L displacement
  - Interim Tier IV emissions
- Steel, single wall fuel tank
  - 342 gal. capacity
  - 24.5 hr. run time – full load
  - Fuel tank built into skid of generator set
- Fuel consumption at prime:
  - 100% - 12.8 gph (48.5 Lph)
  - 75% - 9.6 gph (36.3 Lph)
  - 50% - 6.4 gph (24.2 Lph)
- Cooling system capable of operating at 120°F ambient
- Low coolant shutdown
- Radiator and oil drains plumbed to exterior
- Rubber vibration dampers isolate engine/generator from frame
- Disposable air filter - paper element
- Air filter restriction indicator mounted on control panel
- 60 Hz engine/generator
- Electronic isochronous governing
- Utilizes DOC / DPF exhaust filter
- Variable Geometry Turbocharger (VGT)

GENERATOR

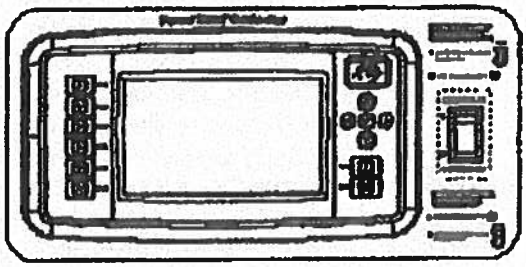
- Marathon Electric®
  - Brushless
  - 4 pole
  - Class H insulation
- Voltage regulation +/- 1% with Marathon SE350 Voltage Regulator

SYSTEM OUTPUT

- 3 Position voltage selector switch:
  - Single phase – 120/240V Zig Zag
  - Three phase – 120 / 208V Low Wye
  - Three phase – 277 / 480V High Wye
- 174 kW / 217 kVA – standby, three phase
- 164 kW / 205 kVA – prime, three phase
- 155 kW / 155 kVA – standby, single phase
- 142 kW / 142 kVA – prime, single phase

SYSTEM CONTROLS

- Power Zone™ controller and display
  - Backlit, 800 x 480 pixel resolution color display
  - -40°F to 185°F operating temperature range
  - Automatic coarse voltage adjustment
  - Integrated fine voltage adjustment
  - PLC functionality
- Push buttons for easy operation
  - Manual or Auto Start
  - Engine Start
  - Engine Stop/Reset
  - Alarm Mute
  - Operator Screens
    - Home
    - Engine
    - Generator
    - Voltage Adjust
  - Scrolling Arrows for Diagnostic Information
    - Engine diagnostic display
      - Oil pressure
      - Engine temperature
      - Fuel level
      - Battery
      - Aftertreatment inlet/outlet temperature
      - Ash/soot levels
    - Generator diagnostic display
      - System kW output display
      - Line output & frequency display
    - Alarms
      - Warning
      - Shutdown
      - Electrical Trip
      - Engine
    - Alarm list – warnings / shutdowns 250 event history log – date/time stamp
      - Fuel level: warning – 15%; shutdown – 5%
      - Overspeed protection: shutdown – 115%
      - Oil pressure: warning – 25 psi; shutdown – 20 psi
      - Coolant temperature: warning – 220°F; shutdown – 230°F
      - Battery voltage: over – 15VDC; under – 11VDC
      - Generator over voltage: warning – 110%; electrical trip – 111%
      - Generator under voltage: warning – 87%; electrical trip – 86%
      - Generator over frequency: warning – 105%; electrical trip – 110%
      - Generator under frequency: warning – 95%; electrical trip – 90%
      -
    - Inputs/Outputs
    - Auto Schedule
    - Status
      - Configuration of controller, firmware and connections



ELECTRICAL CONTROLS

- Remote start / stop contacts located next to lug box
- Lockable control box door with diagnostics window
- Lockable lug box with safety switch
  - Trips main breaker when lug door is opened
  - Disables voltage regulator
- Cable entry guides to the lug box
  - Restricts access of foreign objects
- Output ground connection lug inside lug box
- 800A main breaker with shunt trip
- Convenience receptacles with individual breakers (restricted use in high wye mode)
  - (2) 120V 20 Amp GFCI duplex outlets (Nema 5-20R type)
  - (3) 125 / 250V 50 Amp, 3 pole, 4 wire twistlock (Non-Nema 6369)
- Panel mounted rheostat for voltage adjustment - +/- 10%
- 1000 CCA wet cell battery

ENCLOSURE

- Aluminum, sound attenuated enclosure
  - UV & fade resistant, high temperature cured, white polyester powder paint
  - Insulated and baffled
  - 68 dB(A) at 23 feet – prime power
- Fully lockable enclosure including doors and fuel fill
- Stainless steel hinges on doors
- Emergency stop switch located on outside of enclosure
- Central lifting point
- Multi-lingual operating/safety decals
- Document holder with operating manual including AC/DC wiring diagrams

TRAILER

- DOT approved tail, side, brake, and directional lights
  - Recessed rear lights
- Transportation tie downs
- Safety chains with spring loaded safety hooks
- 3" lunette ring hitch
- (2) 6000 lb. axles with surge brakes
- 5000 lb. tongue jack with footplate
- ST235/80R16 tubeless tires – 10 ply
- NATM compliant

WEIGHTS & DIMENSIONS

Skid mounted

- Dry weight: 6624 lbs (3005 kg)
- Operating weight: 9052 lbs (4106 kg)
- 144 x 50 x 77 in
  (3.66 x 1.27 x 1.96 m)

Trailer mounted

Dry weight: 8020 lbs (3638 kg)

- Operating weight: 10448 lbs (4739 kg)
- 210 x 86 x 93 in
  (5.33 x 2.18 x 2.36 m)

WARRANTY

- Engine and generator covered under OEM warranty - consult factory for details.

CERTIFICATIONS

- CSA certified

MMG205 Options

ENGINE OPTIONS

- In-line engine block heater (Kim Hotstart)
- Fuel transfer pump

ELECTRICAL CONTROLS OPTIONS

- Battery disconnect
- Battery charger – 2A trickle

GENERATOR OPTIONS

- PMG Generator - critical grade power quality
- SUPERSTART™ Generator - motor starting applications
  - 178 kW / 222 kVA – standby, three phase
  - 166 kW / 208 kVA – prime, three phase
  - 176 kW / 176 kVA – standby, single phase
  - 167 kW / 167 kVA – prime, single phase

VOLTAGE OUTPUT OPTIONS

- 4 position phase switch
  - Single phase – 120 / 240V Zig Zag
  - Three phase – 120 / 208V Low Wye
  - Three phase – 277 / 480V High Wye
  - Three phase – 120 / 240V Delta
- Dedicated voltage configurations
- Buck Transformer kit - Provides 120V at GFCI outlets when in 277/480V
- Cam locks

SYSTEM CONTROLS OPTIONS

- Auxiliary strobe/audible indication for soft & hard alarm conditions

COOLANT OPTIONS

- 60/40 Coolant - cold weather applications

ENCLOSURE OPTIONS

- Fire extinguisher
- Interior cabinet light
- Control panel light

FUEL TANK OPTIONS

- 120% Containment

TRAILER OPTIONS

- Tandem axle trailer w/ electric brakes
- 6 pin or 7 spade electrical connectors
- Spare tire/wheel kit

TABLE 2
RITCHIE LAND RECLAMATION LLC
PARTICULATE MATTER EMISSIONS ESTIMATE - PROCESSING PLANT EQUIPMENT
February 10, 2016

Plan/Permit I.D.	Permit Approved Equipment	Estimated Potential Capacity (Tons/Hour)	PM Factor (a)		HOURLY PM EMISSIONS		ANNUAL PM EMISSIONS			
					Maximum Potential Emission Rates		Maximum Potential Emission Rates	Estimated Actual Emission Rates	Maximum Potential Emission Rates	Estimated Actual Emission Rates
			Controlled (lb/Ton)	Uncontrolled (lb/Ton)	Controlled (lb/Hour)	Uncontrolled (lb/Hour)	Controlled (Tons/yr)	Controlled (Tons/yr)	Uncontrolled (Tons/yr)	Uncontrolled (Tons/yr)
Primary Crushers			0.001200	0.005400						
1	Primary Jaw	200	0.001200	0.005400	0.240	1.080	1.051	0.156	4.730	0.702
Secondary/Tertiary Crushers			0.001200	0.005400						
2	Secondary Cone Crusher	200	0.001200	0.005400	0.240	1.080	1.051	0.156	4.730	0.702
Fines Crushing			0.003000	0.039000						
NA	None									
Screens			0.002200	0.025000						
3	ST2.8 Track Scalping Screen	200	0.002200	0.025000	0.440	5.000	1.927	0.286	21.900	3.250
4	ST3.8 Screen	200	0.002200	0.025000	0.440	5.000	1.927	0.286	21.900	3.250
Conveyors			0.000140	0.003000						
5	48" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
6	32" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
7	32" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
8	48" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
9	40" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
10	20" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
11	48" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
12	20" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
13	42" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
14	42" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
15	32" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
16	32" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
17	48" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
18	30" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
19	30" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
20	30" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
21	36" Conveyor	200	0.000140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390
Bins/Feeders			0.000007	0.000033						
27	Primary Grizzly Feeder	200	0.000007	0.000033	0.001	0.007	0.006	0.001	0.029	0.004
28	Hopper	200	0.000007	0.000033	0.001	0.007	0.006	0.001	0.029	0.004
29	Apron Feeder	200	0.000007	0.000033	0.001	0.007	0.006	0.001	0.029	0.004
30	Vibrating Grizzly Feeder	200	0.000007	0.000033	0.001	0.007	0.006	0.001	0.029	0.004
			PM TOTALS		1.84	22.39	8.07	1.20	98.05	14.55

PLANT OPERATING SCHEDULE

Notes: (a) PM Emission Factors are from AP-42, Table 11.19.2-2

8,760 **Potential Operating Hours**

1,300 **Estimated Actual Hours of Operation**

TABLE 3
RITCHIE LAND RECLAMATION LLC
PM10 EMISSIONS ESTIMATE - PROCESSING PLANT EQUIPMENT
February 10, 2016

Plan Permit I.D.	Permit Approved Equipment	Estimated Potential Capacity (Tons/Hour)	PM 10 Factor (a)		HOURLY PM 10 EMISSIONS		ANNUAL PM 10 EMISSIONS			
					Maximum Potential Emission Rates		Maximum Potential Emission Rates	Estimated Actual Emission Rates	Maximum Potential Emission Rates	Estimated Actual Emission Rates
			Controlled (lb/Ton)	Uncontrolled (lb/Ton)	Controlled (lb/Hour)	Uncontrolled (lb/Hour)	Controlled (Tons/yr)	Controlled (Tons/yr)	Uncontrolled (Tons/yr)	Uncontrolled (Tons/yr)
Primary Crushers			0.000540	0.002400						
1	Primary Jaw	200	0.000540	0.002400	0.108	0.480	0.473	0.070	2.102	0.312
Secondary/Tertiary Crushers			0.000540	0.002400						
2	Secondary Cone Crusher	200	0.000540	0.002400	0.108	0.480	0.473	0.070	2.102	0.312
Fines Crushing			0.001200	0.015000						
NA	None									
Screens			0.000740	0.008700						
3	ST2.8 Track Scalping Screen	200	0.000740	0.008700	0.148	1.740	0.648	0.096	7.621	1.131
4	ST3.8 Screen	200	0.000740	0.008700	0.148	1.740	0.648	0.096	7.621	1.131
Conveyors			0.000046	0.001100						
5	48" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
6	32" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
7	32" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
8	48" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
9	40" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
10	20" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
11	48" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
12	20" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
13	42" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
14	42" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
15	32" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
16	32" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
17	48" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
18	30" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
19	30" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
20	30" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
21	36" Conveyor	200	0.000046	0.001100	0.009	0.220	0.040	0.006	0.964	0.143
Bins/Feeders			0.000004	0.000016						
27	Primary Grizzly Feeder	200	0.000004	0.000016	0.001	0.003	0.003	0.000	0.014	0.002
28	Hopper	200	0.000004	0.000016	0.001	0.003	0.003	0.000	0.014	0.002
29	Apron Feeder	200	0.000004	0.000016	0.001	0.003	0.003	0.000	0.014	0.002
30	Vibrating Grizzly Feeder	200	0.000004	0.000016	0.001	0.003	0.003	0.000	0.014	0.002
			PM 10 TOTALS		0.67	8.19	2.94	0.44	35.88	5.33

PLANT OPERATING SCHEDULE

Notes: (a) PM 10 Emission Factors are from AP-42, Table 11.19.2-2

8,760 **Potential Operating Hours**

1,300 **Estimated Actual Hours of Operation**

TABLE 4
RITCHIE LAND RECLAMATION LLC
PM2.5 EMISSIONS ESTIMATE - PROCESSING PLANT EQUIPMENT
February 10, 2016

Plan Permit I.D.	Permit Approved Equipment	Estimated Potential Capacity (Tons/Hour)	PM2.5 Factor (a) Controlled (lb/Ton)	HOURLY 2.5 EMISSIONS Maximum Potential Emission Rates Controlled (lb/Hour)	ANNUAL 2.5 EMISSIONS Maximum Potential Emission Rates Controlled (Tons/yr)	ANNUAL 2.5 EMISSIONS Estimated Actual Emission Rates Controlled (Tons/yr)
Primary Crushers			0.000100			
1	Primary Jaw	200	0.000100	0.020	0.088	0.013
Secondary/Tertiary Crushers			0.000100			
2	Secondary Cone Crusher	200	0.000100	0.020	0.088	0.013
Fines Crushing			0.000070			
NA	None					
Screens			0.000050			
3	ST2.8 Track Scalping Screen	200	0.000050	0.010	0.044	0.007
4	ST3.8 Screen	200	0.000050	0.010	0.044	0.007
Conveyors			0.000013			
5	48" Conveyor	200	0.000013	0.003	0.011	0.002
6	32" Conveyor	200	0.000013	0.003	0.011	0.002
7	32" Conveyor	200	0.000013	0.003	0.011	0.002
8	48" Conveyor	200	0.000013	0.003	0.011	0.002
9	40" Conveyor	200	0.000013	0.003	0.011	0.002
10	20" Conveyor	200	0.000013	0.003	0.011	0.002
11	48" Conveyor	200	0.000013	0.003	0.011	0.002
12	20" Conveyor	200	0.000013	0.003	0.011	0.002
13	42" Conveyor	200	0.000013	0.003	0.011	0.002
14	42" Conveyor	200	0.000013	0.003	0.011	0.002
15	32" Conveyor	200	0.000013	0.003	0.011	0.002
16	32" Conveyor	200	0.000013	0.003	0.011	0.002
17	48" Conveyor	200	0.000013	0.003	0.011	0.002
18	30" Conveyor	200	0.000013	0.003	0.011	0.002
19	30" Conveyor	200	0.000013	0.003	0.011	0.002
20	30" Conveyor	200	0.000013	0.003	0.011	0.002
21	36" Conveyor	200	0.000013	0.003	0.011	0.002
Bins/Feeders			0.000013			
27	Primary Grizzly Feeder	200	0.000013	0.003	0.011	0.002
28	Hopper	200	0.000013	0.003	0.011	0.002
29	Apron Feeder	200	0.000013	0.003	0.011	0.002
30	Vibrating Grizzly Feeder	200	0.000013	0.003	0.011	0.002
			PM2.5 TOTALS	0.11	0.50	0.07

PLANT OPERATING SCHEDULE

Notes: (a) PM2.5 Emission Factors are from AP-42, Table 11.19.2-2
From AP-42 Table 11.19.2-2 No Data available for Uncontrolled PM 2.5 emissions.

8,760 Potential Operating Hours

1,300 Estimated Actual Hours of Operation

RITCHIE LAND RECLAMATION LLC
EMISSIONS ESTIMATE - MOBILE PLANT ENGINES
February 10, 2018

Fire/Permit I.D.	Diesel Powered Power Units Permit Approved Equipment		POTENTIAL FUEL USE: Potential Fuel Use Per Hour of Operation (gal/hr)	POTENTIAL FUEL USE: Potential Fuel Use per year of Operation (gals/yr)	ACTUAL FUEL USE: Actual Fuel Use Per Hour of Operation (gal/hr)	ACTUAL FUEL USE: Actual Fuel Use per year of Operation (gals/yr)	ACTUAL Nox EMISSIONS: Units (lb Nox/ Gal Fuel)	Emission Factor References (See Note 7)	Actual NOx Per Hour of Operation (lb/hr)	Actual NOx per year of Operation (Tons/yr)
22	Cat, C4.4, 100 HP, Diesel Engine	ST2.8	6.78	59,393	5.33	6,929	0.0956	B		
23	CAT, C9, 300 HP Diesel Engine	LT106	15.80	138,408	4.85	6,305	[illegible]	C	[illegible]	[illegible]
24	CAT, C13, 415 HP Diesel Engine	LT1213	21.60	189,216	7.72	10,036	[illegible]	D	[illegible]	[illegible]
25	Cat, C4.4, 100 HP, Diesel Engine	ST3.8	5.93	51,947	5.33	6,929				
26	John Deere, Model 6068, 252 HP, Diesel Engine		12.89	112,928	9.60	12,480				
		TOTALS	62.91	551,092	32.83	42,679			1.64	0.95

Fire/Permit I.D.	Diesel Powered Power Units Permit Approved Equipment	POTENTIAL MmBTU'S: Potential MmBTU'S Per Hour of Operation (MmBtu/hr)	POTENTIAL MmBTU'S: Potential MmBTU's per year of Operation (MmBtu/yr)	ACTUAL MmBTU'S: Actual MmBTU'S Per Hour of Operation (MmBtu/hr)	ACTUAL MmBTU'S: Actual MmBTU's per year of Operation (MmBtu/yr)
22	Cat, C4.4, 100 HP, Diesel Engine	0.97	8,138.40	0.73	949.48
23	CAT, C9, 300 HP Diesel Engine	2.17	18,966.05	0.66	863.97
24	CAT, C13, 415 HP Diesel Engine	2.96	25,928.27	1.06	1,375.73
25	Cat, C4.4, 100 HP, Diesel Engine	0.81	7,118.27	0.73	949.48
26	John Deere, Model 6068, 252 HP, Diesel Engine	1.76	15,364.90	1.32	710.13
	TOTALS	8.62	75,516.08	4.50	5,848
		1.57	22,483.17	2.05	2,659.62

ESTIMATED EMISSIONS - ALL DIESEL FUELED GENERATORS

ITEM	POLLUTANT	Emission Factor	Units	POTENTIAL EMISSIONS: Per Hour of Operation (lbs/hr)	POTENTIAL EMISSIONS: Per year of Operation (tons/year)	ACTUAL EMISSIONS: Per Hour of Operation (lbs/hr)	ACTUAL EMISSIONS: Per year of Operation (tons/year)	Emission Factor References (See Note 9)
1	PM-10	0.31000000	lb/MmBtu	2.67	11.70	1.39	0.93	A
2	NOx	4.41000000	lb/MmBtu	11.72	49.58	9.02	5.86	A
2A	NOx Actual (see notes B,C,D)			1.46	6.39	1.46	0.95	B,C,D
3	CO	0.95000000	lb/MmBtu	8.19	35.87	4.27	2.78	A
4	SOx	0.31000000	lb/MmBtu	2.50	10.95	1.30	0.85	A
5	Total Organic Compounds (TOC)	0.25000000	lb/MmBtu	3.02	13.22	1.57	1.02	A2
6	Benzene*	0.00093300	lb/MmBtu	0.01	0.04	0.00	0.00	A2
7	Toluene*	0.00040900	lb/MmBtu	0.00	0.02	0.00	0.00	A2
8	Xylenes*	0.00028500	lb/MmBtu	0.00	0.01	0.00	0.00	A2
9	Propylene*	0.00025800	lb/MmBtu	0.00	0.01	0.00	0.00	A2
10	1,3-Butadiene*	0.00009918	lb/MmBtu	0.00	0.00	0.00	0.00	A2
11	Formaldehyde*	0.00118100	lb/MmBtu	0.01	0.04	0.01	0.00	A2
12	Acetaldehyde*	0.00076700	lb/MmBtu	0.01	0.03	0.00	0.00	A2
13	Acrolein*	0.00009250	lb/MmBtu	0.00	0.00	0.00	0.00	A2
14	Naphthalene*	0.00008460	lb/MmBtu	0.00	0.00	0.00	0.00	A2
	HAP Total			0.03	0.15	0.02	0.01	

* Hazardous air pollutant (HAP) listed in the Clean Air Act.
TOC includes VOC's

Notes
1 Estimated hourly fuel use based on estimated maximum data, actual fuel use from field measured identical engines which has been shown to be much lower.
2 Potential Use indicates Continuous operation 24 hr/day 365 days a year, or 8,760 hours total.
3 Per TABLE 3.4-1 US EPA AP-42 (10/96) - Heating value of diesel assumed to be 19,300 Btu/lb, with a density of 7.1 lb/gal.
Therefore 19,300 Btu/lb x 7.1 lb/gal = 137,030 Btu/gal.
4 Percent Sulfur in Fuel Oil = [illegible]
5 Actual Hours of Operation [illegible]
6 Potential Hours of Operation 8,760
7 Emission Factor references
A EPA AP-42 Emission Factors, Sec 3.4-Gasoline and Diesel Industrial Engines, Table 3.3-1 (SCC 20200401)
A2 EPA AP-42 Emission Factors, Sec 3.4-Gasoline and Diesel Industrial Engines, Table 3.3-2 (SCC 20200401)
B (ST2.8) Estimated Nox emissions from Manufacturer's data sheet for Cat C4.4 Diesel engine: A2200 rpm=0.648 lb/hr Nox per 6.78 gal./fuel use; therefore, estimated Nox = 0.0956 lb Nox/gallon
C (LT106) Estimated Nox emissions from Manufacturer's data sheet for Cat C4.4 Diesel engine; A2200 rpm=2.0 lb/hr Nox per 15.8 gal./fuel use therefore, estimated Nox = 0.1266 lb Nox/gallon
D (LT1213)Estimated Nox emissions from Manufacturer's data sheet for Cat C-13 Diesel engine; A2100 rpm=0.94 lb/hr Nox per 21.6 gal./fuel use; therefore, estimated Nox = 0.0435 lb Nox/gallon

TABLE 6
RITCHIE LAND RECLAMATION LLC
EMISSIONS SUMMARY
February 10, 2016

ITEM	POLLUTANT	POTENTIAL CONTROLLED PLANT EMISSIONS		ESTIMATED ACTUAL CONTROLLED PLANT EMISSIONS	
		Per Hour of Operation (lbs/hr)	Per year of Operation (tons/year)	Per Hour of Operation (lbs/hr)	Per year of Operation (tons/year)
1	PM	4.51	19.77	3.24	2.10
2	PM-10	3.34	14.65	2.07	1.34
3	PM 2.5	1.51	6.61	1.51	0.98
4	NOx	12.78	55.97	10.48	6.81
5	CO	8.19	35.87	4.27	2.78
6	SOx	2.50	10.95	1.30	0.85
7	Total Organic Compounds (TOC)	3.02	13.22	1.57	1.02
8	Benzene*	0.01	0.04	0.00	0.00
9	Toluene*	0.00	0.02	0.00	0.00
10	Xylenes*	0.00	0.01	0.00	0.00
11	Propylene*	0.00	0.01	0.00	0.00
12	1,3-Butadiene*	0.00	0.00	0.00	0.00
13	Formaldehyde*	0.01	0.04	0.01	0.00
14	Acetaldehyde*	0.01	0.03	0.00	0.00
15	Acrolein*	0.00	0.00	0.00	0.00
16	Naphthalene*	0.00	0.00	0.00	0.00
	HAP Total	0.03	0.15	0.02	0.01

* Hazardous Air Pollutant (HAP) listed in the Cear Air Act.
TOC includes VOC's

Notes
1. See Tables 2 - 6 for detailed calculations
2. Diesel Engine PM-10 and PM2.5 emissions assumed to equal PM Emissions
3. ND = Not Determined, no uncontrolled emissions factors available for PM 2.5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2013 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT OF 1990

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: Deere & Company
(U.S. Manufacturer or Importer)

Certificate Number: DJDXL06.8204-009

Effective Date: 10/05/2012

Expiration Date: 12/31/2013

Byron J. Bunker, Acting Division Director
Compliance Division

Issue Date: 10/05/2012

Revision Date: N/A

Model Year: 2013
Manufacturer Type: Original Engine Manufacturer
Engine Family: DJDXL06.8204

Mobile/Stationary Indicator: Both
Emissions Power Category: 130<kW<=560
Fuel Type: Diesel
After Treatment Devices: Diesel Oxidation Catalyst, PTOX-DPF-Active
Non-after Treatment Devices: Engine Design Modification, Non-standard Non-After Treatment Device Installed, Electronic/Electric EGR - Cooled, Smoke Puff Limiter, Electronic Control
FELs: PM 0.01 g/kW-hr

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Parts 60 and 1039, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Parts 60 and 1039 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Parts 60 and 1039 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Parts 60 and 1039.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Parts 60 and 1039. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Parts 60 and 1039.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

This certificate of conformity is conditional upon compliance of said manufacturer with the averaging, banking and trading provisions of 40 CFR Part 1039, Subpart H. Failure to comply with these provisions may render this certificate void *ab initio*

California Environmental Protection Agency Air Resources Board	JOHN DEERE POWER SYSTEMS	EXECUTIVE ORDER U-R-004-0465 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2013	DJDXL06.8204	6.8	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Charge Air Cooler, Diesel Oxidation Catalyst, Electronic Direct Injection, Electronic Control Module, Exhaust Gas Recirculation, Periodic Trap Oxidizer, Smoke Puff Limiter, Turbocharger	Tractor, Loaders, Generator Set

The engine models and codes are attached.

The following are the exhaust certification standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			NMHC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
130 ≤ kW < 560	Interim Tier 4 / ALT NOx	STD	0.19	2.0	N/A	3.5	0.02	N/A	N/A	N/A
		FEL	--	--	--	--	0.01	--	--	--
		CERT	0.003	1.7	--	0.03	0.01	--	--	--

BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any engine within this engine family under 13 CCR Sections 2423 and 2427.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 31 day of October 2012.

Annette Hebert, Chief
Mobile Source Operations Division

9-28-12

Engine Model Summary Form

Attachment: Page 1 of 2

Manufacturer: John Deere Power Systems
Engine category: Nonroad CI
EPA Engine Family: DJDXL06.8204
Mfr Family Name: 350HBA
Process Code: New Submission

EO#: U-R-004-0465

1. Engine code	2. Engine Model	3. kW@RPM (SAE Gross)	4. Fuel Rate: mm/stroke@peak kW (for diesel only)	5. Fuel Rate: (kg/hr)@peak kW (for diesels only)	6. Torque (Nm) @RPM (SEA Gross)	7. Fuel Rate: mm/stroke@peak torque	8. Fuel Rate: (kW/hr)@peak torque	9. Emission Control Device Per SAE J1930
6068WR414	6068	221.0@2100	143.1@2100	45.98@2100	1057@1700	151.3@1700	39.35@1700	EC SPL CAC TC
6068RW402	6068	190.0@2100	128@2100	41.13@2100	1025@1500	151.5@1500	34.77@1500	EC SPL CAC TC
6068RW404	6068	190.0@2100	128@2100	41.13@2100	1025@1500	151.5@1500	34.77@1500	EC SPL CAC TC
6068HZ491	6068	190.0@2400	117.5@2400	43.15@2400	1025@1500	152.4@1500	34.98@1500	EC SPL CAC TC
6068HFC94M	6068	138.0@2400	85.3@2400	31.32@2400	741@1550	105.8@1550	25.09@1550	EC SPL CAC TC
6068HFC94N	6068	138.0@2200	90.8@2200	30.56@2200	809@1500	118.2@1500	27.13@1500	EC SPL CAC TC
6068HL497	6068	189.0@2100	123.8@2100	39.78@2100	1025@1500	147.3@1500	33.81@1500	EC SPL CAC TC
6068HFC94D	6068	168.0@2400	102@2400	37.45@2400	902@1500	128.7@1500	29.54@1500	EC SPL CAC TC
6068HPRNT4	6068	208.0@2400	123.5@2400	45.35@2400	1105@1600	159.3@1600	39.0@1600	EC SPL CAC TC
6068HFC95C	6068	205.0@2400	126.1@2400	46.3@2400	1057@1700	156.6@1700	40.73@1700	EC SPL CAC TC
6068HN058	6068	224.0@2400	135.5@2400	49.76@2400	1057@1700	153.2@1700	39.85@1700	EC SPL CAC TC
6068HFC95B	6068	168.0@2200	109.4@2200	36.82@2200	984@1500	145.2@1500	33.32@1500	EC SPL CAC TC
6068HT080	6068	189.0@2100	123.8@2100	39.78@2100	1025@1500	147.3@1500	33.81@1500	EC SPL CAC TC
6068HFC94K	6068	149.0@2000	104.9@2000	32.1@2000	963@1500	144.3@1500	33.12@1500	EC SPL CAC TC
6068HFC95E	6068	224.0@2400	135.5@2400	49.76@2400	1057@1700	153.2@1700	39.85@1700	EC SPL CAC TC
6068HFC94R	6068	149.0@2000	103.6@2000	31.7@2000	963@1500	137.6@1500	31.58@1500	EC SPL CAC TC
6068HFC94L	6068	138.0@2400	85.3@2400	31.32@2400	741@1500	105.8@1500	24.28@1500	EC SPL CAC TC
6068HFG94A	6068	180.0@1800	137.5@1800	37.87@1800				EC SPL CAC TC
6068HFC94H	6068	149.0@2400	91.2@2400	33.49@2400	800@1500	114.8@1500	26.35@1500	EC SPL CAC TC
6068RW401	6068	190.0@2100	128@2100	41.13@2100	1025@1500	151.5@1500	34.77@1500	EC SPL CAC TC
6068HFC94P	6068	187.0@2000	130.7@2000	39.99@2000	1025@1500	148.7@1500	34.13@1500	EC SPL CAC TC
6068HFC95D	6068	205.0@2400	126.1@2400	46.3@2400	1057@1700	156.6@1700	40.73@1700	EC SPL CAC TC
6068HFC94B	6068	187.0@2200	119.6@2200	40.28@2200	1025@1500	147.6@1500	33.87@1500	EC SPL CAC TC
6068WR415	6068	221.0@2100	143.1@2100	45.98@2100	1057@1700	151.3@1700	39.35@1700	EC SPL CAC TC
6068HDW78	6068	167.0@2200	108.5@2200	36.52@2200	918@1600	133.7@1600	32.73@1600	EC SPL CAC TC
6068HL495	6068	167.0@2100	114.1@2100	36.66@2100	918@1600	133.7@1600	32.73@1600	EC SPL CAC TC
6068HFG94B	6068	150.0@1800	115@1800	31.87@1800				EC SPL CAC TC
6068HTJ90	6068	160.0@2000	113.4@2000	34.7@2000	945@1500	131.8@1500	30.25@1500	EC SPL CAC TC
6068HFC94O	6068	138.0@2000	97.7@2000	29.9@2000	890@1500	133.9@1500	30.73@1500	EC SPL CAC TC
6068HL496	6068	190.0@2100	128@2100	41.13@2100	1025@1500	151.5@1500	34.77@1500	EC SPL CAC TC
6068HFC94C	6068	187.0@2000	131@2000	40.09@2000	1025@1500	152.9@1500	35.09@1500	EC SPL CAC TC
6068HT074	6068	167.0@2100	114.1@2100	36.66@2100	918@1600	133.7@1600	32.73@1600	EC SPL CAC TC
6068HFC94Q	6068	168.0@2000	117.5@2000	35.96@2000	1025@1500	146.8@1500	33.69@1500	EC SPL CAC TC
6068HFC94E	6068	168.0@2400	101.6@2400	37.31@2400	902@1500	128.4@1500	29.47@1500	EC SPL CAC TC
6068HFC94S	6068	138.0@2000	97.2@2000	29.74@2000	890@1500	128.5@1500	29.49@1500	EC SPL CAC TC
6068RW403	6068	167.0@2100	114.1@2100	36.66@2100	918@1600	133.7@1600	32.73@1600	EC SPL CAC TC
6068HT073	6068	189.0@2100	123.8@2100	39.78@2100	1025@1500	147.3@1500	33.81@1500	EC SPL CAC TC
6068HFG95A	6068	216.0@1800	166.6@1800	45.88@1800				EC SPL CAC TC
6068HFG95B	6068	241.0@1800	190.9@1800	52.57@1800				EC SPL CAC TC
6068HFC94F	6068	168.0@2200	109.1@2200	36.72@2200	984@1500	142.6@1500	32.73@1500	EC SPL CAC TC
6068HFC94A	6068	187.0@2400	111.4@2400	40.91@2400	1025@1500	144.9@1500	33.25@1500	EC SPL CAC TC
6068HDW85	6068	169.0@1900	123.4@1900	35.87@1900	1013@1425	147@1425	32.05@1425	EC SPL CAC TC
6068HFC94G	6068	168.0@2000	117.2@2000	35.86@2000	1025@1500	141.5@1500	32.47@1500	EC SPL CAC TC
6068HFC94I	6068	149.0@2400	90.8@2400	33.34@2400	800@1500	114@1500	26.16@1500	EC SPL CAC TC

DDI, PTOX, EGR, DOC

6068HT084	6068	190.0@1900	138.1@1900	40.15@1900	1025@1500	154.2@1500	35.39@1500	EC SPL CAC TC
6068HT088	6068	189.0@2100	123.8@2100	39.78@2100	1025@1500	147.3@1500	33.81@1500	EC SPL CAC TC
6068HFC94J	6068	149.0@2200	98.6@2200	33.19@2200	873@1500	128.3@1500	29.45@1500	EC SPL CAC TC
6068HFC95A	6068	187.0@2200	121.4@2200	40.86@2200	1025@1500	151.7@1500	34.82@1500	EC SPL CAC TC

DDI, PTOX, EGR, DOC

Date: 9-28-12

EO#: 4-R-004-0465

Attachment: Page 2 of 2

Fugative Dust Control Plan - Crushing operation

TOLSON AND ASSOCIATES

End of Capitol Raceway Road
Crofton, Maryland 21114

Best Management Practices will be used to control emmissions of particulate matter from roadways, stockpiles and materials handling operations

Avoid overfilling loader buckets and minimize drop heghts.

Wet supression system to be used whenever necessary to control particulate emissions.

Water and or chemical dust supressants to be used to control fugative dust from roads or stockpiles.

Control Traffic Speeds and Flush sweep roadways as necessary.

Minimize work of stockpiles on windy days

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 11/12/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Riggs, Counselman, Michaels & Downes
555 Fairmount Avenue
Baltimore, MD 21286
(410) 339-7263

CONTACT NAME: Courtney Mitchell
PHONE (A/C, No, Ext): 240 4821704 1704 FAX (A/C, No): (410) 339-7234
E-MAIL ADDRESS: cmitchell@rcmd.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Arch Insurance Company	11150
INSURER B : American Guarantee and Liability Ins Co	26247
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Pleasants Construction, Inc.; Environmental Alternatives, LLC
24024 Frederick Rd

Clarksburg, MD 20871

COVERAGES **CERTIFICATE NUMBER:** 1018292 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR [X] Blanket Contractual Liability GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [X] LOC			ZAGLB9220402	10/1/2018	10/1/2019	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$ 1,000,000 $ 100,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
A	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [X] HIRED AUTOS [X] NON-OWNED AUTOS			ZACAT9242402	10/1/2018	10/1/2019	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) $	$ 2,000,000 $ $ $ $
B	[X] UMBRELLA LIAB [X] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [X] RETENTION $ NIL			AUC682124100	10/1/2018	10/1/2019	EACH OCCURRENCE AGGREGATE Prod/Comp. Ops	$ 20,000,000 $ 20,000,000 $ 20,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N] If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		ZAWCI9389702	10/1/2018	10/1/2019	[X] WC STATU-TORY LIMITS [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
A	Business Auto			ZACAT9242402	10/1/2018	10/1/2019	MCS-90 Endorsement Included $1,000,000 Limit	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
General proof of coverage. Named Insured includes Tolson & Associates LLC.

CERTIFICATE HOLDER

Maryland Department of the Environment
1800 Washington Boulevard

Baltimore , MD 21230

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE:

Albert R. Counselman

Client # 790 Mst # 18Oct PCI EAI GAU5W Subject

ANNE ARUNDEL COUNTY
MARYLAND
Office of Planning and Zoning

2664 Riva Road, P.O. Box 6675
Annapolis, MD 21401
410-222-7450

Philip R. Hager
Planning and Zoning Officer

October 1, 2018

Rich & Henderson, P.C
Attorneys at Law
Attention: Anthony G. Gorski
51 Franklin Street, Suite 300
Annapolis, Maryland 21401

RE: Tolson Rubble Landfill
Capital Raceway Road
Odenton, Maryland

Dear Mr. Gorski:

This correspondence is pursuant to your letter of March 22, 2018, requesting that this Office recognize recycling activities, such as natural wood waste recycling, composting, and concrete crushing as authorized accessory activities within scope of the landfill operation. According to the information you provided, the Landfill operates under Refuse Disposal Permit #2003-WRF-0580. The State of Maryland controls design and operational aspects of the Landfill, including its recycling operations.

Special Exception Case Nos. BA 65-92S, BA 66-92S, BA 68-92S and BA 69-92S was conditionally approved on December 8, 1993 to allow sand and gravel operation and a rubble landfill at the referenced site.

County staff recently visited the site and determined that the requested recycling operations will not affect the Special Exception approval. Therefore, Tolson Rubble Landfill is authorized to engage in natural wood waste processing, composting, and concrete crushing as an accessory use, provided the recycling operations function are accessory to the principal landfill use under a valid Solid Waste Disposal permit issued by the Maryland Department of the Environment.

If you have any questions concerning this matter, please do not hesitate to contact my Zoning Administrator, Lori Rhodes at 410-222-6770.

Sincerely,

Philip R. Hager
Planning and Zoning Officer

cc: Greg Swain, Office of Law
Christopher Phipps, Department of Public Works
Rhody Holthaus, Department of Public Works
Joannie Coleman-Casey, Zoning Enforcement
Lori Rhodes, Zoning Division
Jean Tinsley, Planning and Zoning Administration
Mike Ensor, Tolson and Assoc., LLC

Mike Ensor

From: Suna Yi Sariscak -MDE <suna.sariscak@maryland.gov>
Sent: Monday, October 29, 2018 3:21 PM
To: Mike Ensor
Cc: Matthew Hafner -MDE-
Subject: Voicemail Message - New Site using Same Equipment from Ritchie Land Reclamation

Hi Mike,

This is in response to your voice mail message regarding permit application requirements for a new crushing and screening site using the same equipment permitted at Ritchie Land Reclamation. A new site would require the same public review permit to construct process as Ritchie Land Reclamation. Since the equipment is the same, you can include the same information from that application in the new application. However, you will also need to provide evidence of zoning approval in the form of a letter from the local zoning authority stating that crushing and screening is an allowed use at the new site. We cannot accept the application without this approval. The application process may take 6 months or longer depending on the level of public interest in the application.

The equipment will not require a new performance test if you can provide a copy of the initial test results conducted at the Ritchie site.

If you have any questions, you may contact Matt Hafner who is the new Unit Lead for the group that processes crushing and screening plant permits. He is copied on this email. He can assist you with the process and assign a permit engineer to review the application. Thank you.

Sincerely,

Suna Yi Sariscak, Chief
Technical Support Division - Air Quality Permits Program
Air and Radiation Administration
Phone: 410-537-4129
Fax: 410-537-3202
Email: suna.sariscak@maryland.gov

EA Engineering, Science, and Technology, Inc.

225 Schilling Circle, Suite 400
Hunt Valley, MD 21031
Telephone: 410-584-7000
Fax: 410-771-1625
www.eaest.com

September 1, 2016

Ms. Suna Yi Sariscak
Maryland Department of the Environment
Air and Radiation Management Administration
Air Quality Permits Program
1800 Washington Blvd. Suite 720
Baltimore, Maryland 21230

RE: Visible Emissions Report
Ritchie Land Reclamation, LLC

Dear Ms. Sariscak,

Enclosed, find one (1) copy of the Method 9 Opacity Testing Report prepared as required on the Ritchie Land Reclamation Crushing and Screening Plant Permit-to-Construct (PTC). The report includes the following attachments:

- Section 1: Table of observed process units
- Section 2: Results of the observations
- Section 3: Evaluator certificate

If there are any questions concerning this report, please contact me at 410-584-7000 ext. 5141 or Myrna I. Pacheco at 410-584-7000 ext. 5217.

Sincerely,
EA Engineering, Science, and Technology, Inc.

John H. Kumm, P.E., BCEE, CEM, LEED AP
Senior Project Manager

Enclosure

cc: Karen G. Irons, MDE
E. Michael Ensor, Ritchie Land Reclamation, LLC

Method 9 Opacity Testing Report
for Ritchie Landfill Screening and Crushing Operation
Upper Marlboro, Maryland

Prepared for

Ritchie Land Reclamation, LLC
24024 Frederick Road
Clarksburg, MD 20871

Prepared by

EA Engineering, Science, and Technology, Inc., PBC
225 Schilling Circle, Suite 400
Hunt Valley, Maryland 21031
(410) 584-7000

August 2016

TABLE OF CONTENTS

Executive Summary

The Environmental Protection Agency (EPA) Method 9 – *Visual Determination of the Opacity of Emissions from Stationary Sources* was used to test the visible emissions from process equipment located in the screening and crushing plant at the Ritchie Land Reclamation facility (Ritchie Landfill) in order to verify compliance with permit conditions.

The Ritchie Landfill crushing and screening plant is subject to EPA regulations for nonmetallic mineral processing plants (40 CFR Subpart OOO). This regulation requires that fugitive emissions for the plant must not exceed 12 percent opacity for crushers and 7 percent opacity for screening operations and transfer points on belt conveyors (40 CFR Subpart 60.672(b) and Table 3 to 40 CFR 60 Subpart OOO). The average percent opacity of five, 6-minute averages shall not exceed these limits at each emission points subject to the requirements.

Ritchie Landfill's crushing and screening plant is subject to conditions contained in the Permit-to Construct (PTC) No. 033-2331-6-1529, and shall demonstrate compliance with applicable opacity standards within 60 days after achieving the maximum production rate, but no later than 180 days after initial startup.

All observable screening operations, transfer points on belt conveyors, and crushers were observed for visible emissions (VE) by EA Engineering, Science, and Technology, Inc. PBC (EA). Section 1 contains a table of observed and present process equipment.

Emission points were observed for 30 minutes each, following the standard EPA Method 9 and additional procedures specified in the PTC. The average percent opacity for each point was calculated based on the average of five, 6-minute observation cycles, and this average was compared to the applicable EPA opacity limits. Of the 14 emission points observed at Ritchie Landfill, none were observed to have visible emissions above the regulatory limitations.

Introduction

The Environmental Protection Agency (EPA) Method 9 – *Visual Determination of the Opacity of Emissions from Stationary Sources* was used to monitor the fugitive dust from the transfer points on belt conveyors, screening operations, and crushers at the screening and crushing operation at Ritchie Landfill in order to verify compliance.

The Ritchie Landfill crushing and screening plant is subject to EPA regulations for nonmetallic mineral processing plants. EPA regulation requires that crushers for which a capture system is not used have a fugitive emissions limit of 12 percent opacity. Fugitive emissions from screening operations and transfer points on belt conveyors shall not exceed 7 percent opacity (40 CFR Subpart 60.672(b) and Table 3 to 40 CFR 60 Subpart OOO).

Opacity observations were made to demonstrate compliance with the above emissions limitations on August 16 and August 17, 2016. A list of screening operations, transfer points on belt conveyors, and crushers installed in 2016 at the crushing and screening operation was compiled based on the PTC (June 2016) and information provided by the facility manager. Each fugitive emission point was observed for visible emissions by EA personnel qualified in the use of EPA Method 9. A copy of the observer's visible emissions evaluator certification is included in Section 3.

Method

The EPA Method 9 determines the opacity of a plume or fugitive emission being emitted from a source. The observer followed standard EPA Method 9 procedure, with some additional procedures per the Ritchie Landfill crushing and screening plant PTC. The observer stood a minimum15 feet from the observation point, provided that the observer had a clear view of any emissions from the source. The observer minimized interference from other fugitive emission sources in the observation, and did not consider water mist used for dust suppression to be visible emissions. Whenever visible mist was generated by the water spraying system, the observation was made at a point in the plume where the mist is no longer visible. The observer ensured that the sun was positioned within a 140 degree arc sector to the observer's back. Note that due to building configuration, this may not have always been possible. However, the observer attempted to have the sun at his or her back as prescribed by the methodology.

The duration of the Method 9 (40 CFR, Part 60 Appendix A-4) observations at each points were 30 minutes (five, 6-minute periods). Determination of compliance with the applicable opacity standards was based on the average of the five, 6-minute averages at each observation point. An opacity Method 9 Observation Record and field data sheet was used to record the individual 15-second opacity readings. Recorded field data included weather conditions, time, location of observation, and a summary of the opacity reading.

The procedure for conducting the 2016 opacity observations at Ritchie Landfill's screening and crushing emissions is as follows:

1. The permittee notified MDE of the intended date of the required Method 9 observations at least 30 days prior to that date.

2. Each process unit was observed for 30 minutes, with opacity readings taken every 15 seconds, as required by the EPA Method 9, resulting in 120 readings per location. The following criteria were used to determine compliance:

    a. If the average opacity based on the five, 6-minute averages for crushers exceeded 12 percent OR if the average opacity based on the five, 6-minute averages for other fugitive sources exceeded 7 percent opacity, the source was considered to be in non-compliance.

    b. If the average opacity based on the five, 6-minute averages for crushers did not exceed 12 percent OR if the average opacity based on the five, 6-minute averages for other fugitive sources did not exceed 7 percent opacity, the source was considered to be in compliance.

Observations

A total of 14 units of process equipment at the Ritchie Landfill crushing and screening operation were observed. Five additional process units listed in the permit were excluded from observation because they are located inside other structures such that no emissions were observable.

Of the observed units of processing equipment, none were found to have visible emissions above the regulatory limits. For the average percent opacity at each observation point, see Table 1.

Table 1. Percent opacity at 15 observation points as average of five, 6-minute averages

Observation Point	Opacity (%) (Average of five, 6-minute averages)	Applicable Opacity Limit (%)
1	1.71	7
2	1.54	12
3	1.67	7
5	0.21	7
6	0.42	7
7	0.25	7
9	0.29	7
10	0.58	12
11	0.08	7
13	2.21	7
14	2.58	7
17	0.42	7
18	1.04	7
19	2.54	7

Section 1
Observed Active Emission Points

Process Equipment Observed for Visible Emissions*

ARMA Registration No.	Description	Correspondent Number on Observation Record	Installation Date
033-2331-6-1529	(1) Metso Primary jaw crusher	2	2016
	(1) Metso secondary cone crusher	10	
	(1) Metso 2-deck, 5' X 16' screen	6	
	(1) Metso 2-deck, 18" X 5' screen	14	
	15 conveyors	1, 3, **4**, 5, 7, **8**, 9, 10, 11, **12**, 13, **15**, **16**, 17, 18, 19	

*Emissions at observation points in bold type are located inside other structures such that no emissions were observable. Therefore, visible emissions observations were not conducted.

Section 2
VE Results of
Observed Active Emission Points

(1)

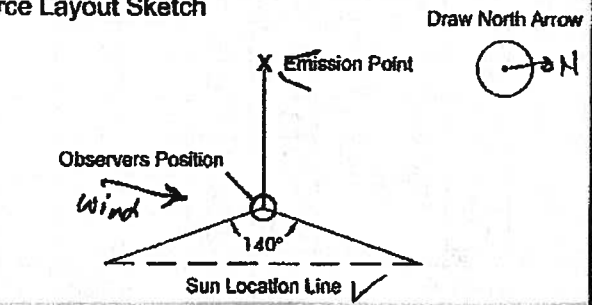
AeroMet
Engineering, Inc
www.aeromet.org

Visible Emissions Observation Form

PTI - 033-2231-6-1529

SOURCE NAME	Ritchie Land Reclamation, LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38°51'22" N / 76°49'42" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-3567
SOURCE ID NUMBER	AI# 29007
PROCESS EQUIPMENT	Conveyor Belt to Crusher
OPERATING MODE	200 tph
CONTROL EQUIPMENT	
OPERATING MODE	
DESCRIBE EMISSION POINT	START Transfer Pt, Feed into Crusher
HEIGHT ABOVE GROUND LEVEL	13.5 ft
HEIGHT RELATIVE TO OBSERVER	START 9 ft STOP 9 ft
DISTANCE FROM OBSERVER	START 30 m STOP 21 m
DIRECTION FROM OBSERVER	START 270° STOP 290°
DESCRIBE EMISSIONS	START Fugitive STOP Fugitive
EMISSION COLOR	START White STOP White
PLUME TYPE: CONTINUOUS ☐	FUGITIVE ☑ INTERMITTENT ☑
WATER DROPLETS PRESENT:	NO ☑ YES ☐
IF WATER DROPLET PLUME:	ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED	START 1' STOP 1'
DESCRIBE BACKGROUND	START BLUE STOP WHITE
BACKGROUND COLOR	START BLUE STOP
SKY CONDITIONS	START SUNNY STOP CLOUDY
WIND SPEED	START 4 MPH STOP 5 MPH
WIND DIRECTION	START SW STOP SSW
AMBIENT TEMP	START 84°F STOP 84°F
WET BULB TEMP	
RH.percent	

Source Layout Sketch



Key
Sun Plume Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE Tom J. Wh
MANAGER
DATE 8-17-16

OBSERVATION DATE 8/16/16
START TIME 9:46 am
STOP TIME 9:17 am

MIN	SEC 0	15	30	45	MIN	SEC 0	15	30	45
1	0	5	0	0	31				
2	0	0	0	5	32				
3	5	0	0	0	33				
4	0	0	0	0	34				
5	0	0	5	0	35				
6	5	5	0	5	36				
7	5	0	10	5	37				
8	0	0	5	0	38				
9	0	0	0	0	39				
10	5	5	5	0	40				
11	0	0	5	5	41				
12	0	5	5	0	42				
13	0	0	5	0	43				
14	0	5	5	5	44				
15	5	0	0	0	45				
16	0	0	0	0	46				
17	0	5	0	5	47				
18	0	5	5	0	48				
19	0	5	0	5	49				
20	0	0	0	0	50				
21	5	5	5	0	51				
22	5	10	0	0	52				
23	0	0	0	0	53				
24	0	5	0	0	54				
25	0	0	0	5	55				
26	0	0	0	0	56				
27	0	5	5	0	57				
28	0	0	0	5	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD
NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 10%
OBSERVER'S NAME (PRINT) NAVEEN KUMAR DENATA
OBSERVER'S SIGNATURE
DATE 8/16/16
ORGANIZATION EA
CERTIFIED BY: AEROMET ENGINEERING INC
DATE 4/20/2016
VERIFIED BY:
DATE

(V)

AeroMet Engineering, Inc

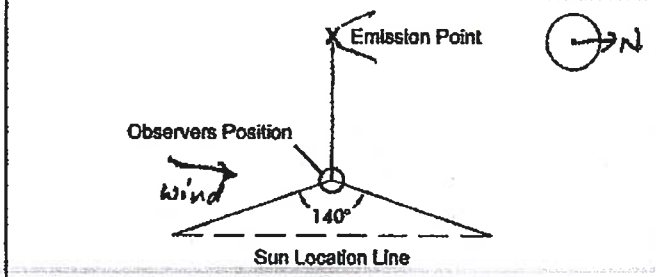
www.aeromet.org

Visible Emissions Observation Form

PTI - 033-2331-6-1529

SOURCE NAME	Ritchie Land Reclamation, LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38° 51' 22" N / 76° 49' 42" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-3568
SOURCE ID NUMBER	A2 # 29007
PROCESS EQUIPMENT	CRUSHER (PRIMARY)
OPERATING MODE	200 tpy
CONTROL EQUIPMENT	Water Sprinkler
OPERATING MODE	
DESCRIBE EMISSION POINT START	PRIMARY CRUSHER
HEIGHT ABOVE GROUND LEVEL	13.5 ft
HEIGHT RELATIVE TO OBSERVER START	9.1 ft STOP 9.1 ft
DISTANCE FROM OBSERVER START	20 m STOP 20 m
DIRECTION FROM OBSERVER START	290° STOP 290°
DESCRIBE EMISSIONS START	Fugitive STOP Fugitive
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	2' STOP 2'
DESCRIBE BACKGROUND START	White / Cloudy STOP Cloudy.
BACKGROUND COLOR START	White STOP Blue
SKY CONDITIONS START	Cloudy STOP Cloudy
WIND SPEED START	4 mph STOP 9 mph
WIND DIRECTION START	SSW STOP SSW
AMBIENT TEMP START	75 F STOP 79 F
WET BULB TEMP	
RH percent	

Source Layout Sketch



Key: Sun | Plume | Wind

OBSERVATION DATE	START TIME	STOP TIME
8/16/16	9:23 am	9:53 am

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31				
2	0	0	0	0	32				
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26	5	0	5	0	56				
27	0	5	5	0	57				
28	0	0	0	0	58				
29	0	5	5	0	59				
30	5	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD	NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM	0 % MAXIMUM 10 %
OBSERVER'S NAME (PRINT)	NAVEEN KUMAR DENATA
OBSERVER'S SIGNATURE	DATE 8/16/16
ORGANIZATION	EA
COMMENTS	
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	CERTIFIED BY: Aeromet Engineering Inc DATE 4/20/2016
TITLE MANAGER	DATE 8-17-16
	VERIFIED BY: DATE

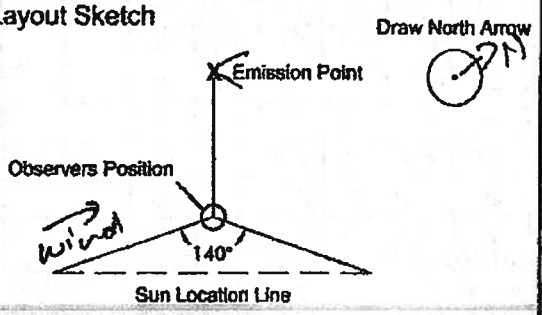
AeroMet
Engineering, Inc
www.aeromet.org

Visible Emissions Observation Form

PTI- 033-2331-6-1529

SOURCE NAME	Ritchie Land Reclamation, LLC
ADDRESS	2001 Ritchie Marlboro Rd
	38°51'44" N / 76°45'42" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-3568
SOURCE ID NUMBER	AI # 29007
PROCESS EQUIPMENT	Metal Conveyor (Transfer Pt)
OPERATING MODE	200 tph
CONTROL EQUIPMENT	
OPERATING MODE	
DESCRIBE EMISSION POINT START	Metals Conveyor belt (Fugitive)
HEIGHT ABOVE GROUND LEVEL	10.4 ft
HEIGHT RELATIVE TO OBSERVER START	5.4 ft STOP 5.4 ft
DISTANCE FROM OBSERVER START	18 m STOP 18 m
DIRECTION FROM OBSERVER START	310° STOP 310°
DESCRIBE EMISSIONS START	Fugitive (white) STOP Fugitive (white)
EMISSION COLOR START	white STOP white
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	2' STOP 2'
DESCRIBE BACKGROUND START	Partly Cloudy STOP Partly cloudy
BACKGROUND COLOR START	white STOP white
SKY CONDITIONS START	Cloudy STOP Cloudy
WIND SPEED START	8 mph STOP 8 mph
WIND DIRECTION START	S STOP S
AMBIENT TEMP START	77 F STOP 81 F
WET BULB TEMP	
RH,percent	

Source Layout Sketch



Key
Sun Plume Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE Tony Lewis
TITLE MANAGER
DATE 8-17-16

OBSERVATION DATE 8/16/16
START TIME 9:57 am
STOP TIME 10:29 am

MIN	SEC 0	15	30	45	MIN	SEC 0	15	30	45
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30	5	5	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD
NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 10%
OBSERVER'S NAME (PRINT) NAVEEN KUMAR DEVATA
OBSERVER'S SIGNATURE
DATE 8/16/16
ORGANIZATION EA
CERTIFIED BY: Aeromet Engineering Inc
DATE 8/20/2016
VERIFIED BY:
DATE

(5)

AeroMet Engineering, Inc

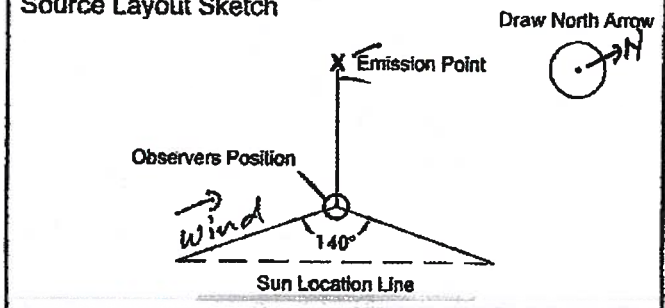
www.aeromet.org

Visible Emissions Observation Form

PTI-037-2231-6-1529

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38° 51' 22" N / 76° 49' 42" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-3568
SOURCE ID NUMBER	AI # 29007
PROCESS EQUIPMENT	Transfer Pt (Conveyor to Screen) 200 tph
OPERATING MODE	
CONTROL EQUIPMENT	
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive (Conveyor to Screen)
HEIGHT ABOVE GROUND LEVEL	15 ft
HEIGHT RELATIVE TO OBSERVER START	20ft STOP 22ft
DISTANCE FROM OBSERVER START	218 m STOP 218 m
DIRECTION FROM OBSERVER START	293° STOP 293°
DESCRIBE EMISSIONS START	Fugitive (White) STOP Fugitive (White)
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐	FUGITIVE ☑ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☑ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	D! STOP D!
DESCRIBE BACKGROUND START	Partly Cloudy STOP Partly Cloudy
BACKGROUND COLOR START	Blue STOP White
SKY CONDITIONS START	Cloudy STOP Cloudy
WIND SPEED START	8 mph STOP 9 mph
WIND DIRECTION START	S STOP S
AMBIENT TEMP START	81 F STOP 81 F
WET BULB TEMP	
RH,percent	

Source Layout Sketch



Key

Sun | Plume | Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE Tony J. [illegible]

TITLE MANAGER

DATE 8-17-16

OBSERVATION DATE 8/16/16

START TIME 10:31 am

STOP TIME 11:02 am

MIN	SEC 0	15	30	45	MIN	SEC 0	15	30	45
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28	0	0	0	5	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD

NUMBER OF READINGS ABOVE % WERE

RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 5%

OBSERVER'S NAME (PRINT) NAVEEN KUMAR NOVATA

OBSERVER'S SIGNATURE [signature] DATE 8/16/16

ORGANIZATION EA

CERTIFIED BY: Aeromet Engineering Inc DATE 4/20/2016

VERIFIED BY: DATE

(6)

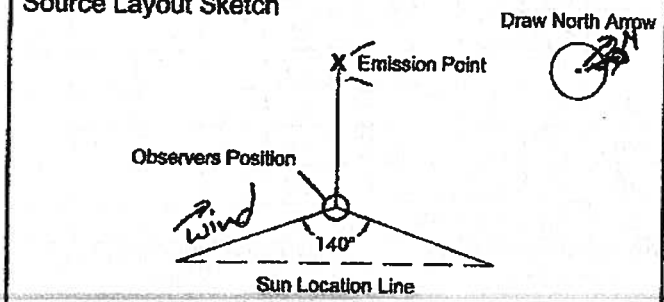
AeroMet
Engineering, Inc
www.aeromet.org

Visible Emissions Observation Form

PTI-033-2331-6-1529

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38° 51' 22" N / 76° 49' 42" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-3568
SOURCE ID NUMBER	AI# 29007
PROCESS EQUIPMENT	Screen (Primary)
OPERATING MODE	200 tph
CONTROL EQUIPMENT	Water Sprinkler
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	14.5 ft
HEIGHT RELATIVE TO OBSERVER START	9.5 ft STOP 9.5 ft
DISTANCE FROM OBSERVER START	23 m STOP 23m
DIRECTION FROM OBSERVER START	308° STOP 308°
DESCRIBE EMISSIONS START	fugitive STOP Fugitive
EMISSION COLOR START	white STOP White
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	1' STOP 1'
DESCRIBE BACKGROUND START	Blue (Sunny) STOP Blue (Sunny)
BACKGROUND COLOR START	Blue STOP Blue
SKY CONDITIONS START	Sunny STOP Sunny
WIND SPEED START	9 mph STOP 8 mph
WIND DIRECTION START	S STOP S
AMBIENT TEMP START	84 F STOP 82 F
WET BULB TEMP	
RH.percent	

Source Layout Sketch



Key
Sun | Plume | Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE Tom J. Hall
TITLE MANAGER
DATE 8-17-16

OBSERVATION DATE 8/16/16
START TIME 11:05 am
STOP TIME 11:35 am

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
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27	0	0	0	0	57				
28	0	0	0	0	58				
29	5	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD
NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 5%
OBSERVER'S NAME (PRINT) NAVEEN KUMAR DEVATA
OBSERVER'S SIGNATURE
DATE 8/16/16
ORGANIZATION EA
CERTIFIED BY: Aeromet Engineering Inc
DATE 4/20/2016
VERIFIED BY:
DATE

(2)

AeroMet Engineering, Inc

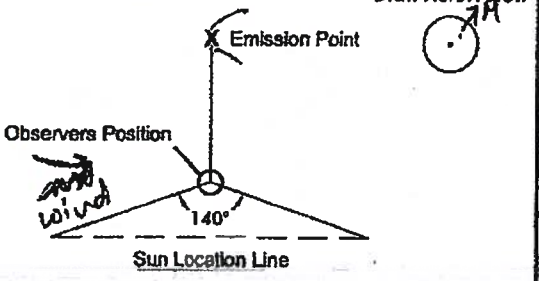
www.aeromet.org

Visible Emissions Observation Form

PTI - 033 - 2331 - 6 - 1529

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd
	38° 51' 21" N) 76° 49' 44" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240 - 876 - 3568
SOURCE ID NUMBER	AI# 29007
PROCESS EQUIPMENT	Conveyor Belt (Transfer Pt)
OPERATING MODE	200 tpy
CONTROL EQUIPMENT	
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	17.3 ft
HEIGHT RELATIVE TO OBSERVER START	7 ft STOP 7 ft
DISTANCE FROM OBSERVER START	25 m STOP 24 m
DIRECTION FROM OBSERVER START	344° STOP 341°
DESCRIBE EMISSIONS START	White (Fugitive) STOP White (Fugitive)
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐	FUGITIVE ☑ INTERMITTENT ☐
WATER DROPLETS PRESENT:	NO ☑ YES ☐
IF WATER DROPLET PLUME:	ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	1' STOP 1'
DESCRIBE BACKGROUND START	Sky (Blue) STOP Sky (Blue)
BACKGROUND COLOR START	Blue STOP Blue
SKY CONDITIONS START	Sunny STOP Sunny
WIND SPEED START	7 mph STOP 5 mph
WIND DIRECTION START	SW STOP SW
AMBIENT TEMP START	88 F STOP 90 F
WET BULB TEMP	
RH percent	

Source Layout Sketch



Key: Sun | Plume | Wind

OBSERVATION DATE	8/16/16
START TIME	12:06 pm
STOP TIME	12:36 pm

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26	0	0	0	0	56				
27	0	0	0	0	57				
28	0	0	5	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD	NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM	0 % MAXIMUM 5 %
OBSERVER'S NAME (PRINT)	NAVEEN KUMAR DEVATA
OBSERVER'S SIGNATURE	
DATE	8/16/16
ORGANIZATION	~~Aeromet Engineering Inc~~ EA
CERTIFIED BY:	Aeromet Engineering Inc
DATE	4/20/2016
VERIFIED BY:	
DATE	
COMMENTS	
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	Tom
TITLE	MANAGER
DATE	8-17-16

(9)

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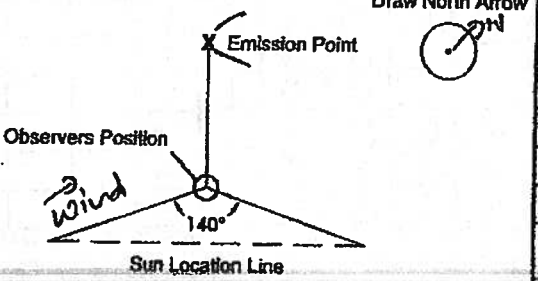
Visible Emissions Observation Form

PTI - 033 - 2331 - 6 - 1529

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd
	38° 51' 21" N / 76° 49' 44" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-3568
SOURCE ID NUMBER	A1# 29007
PROCESS EQUIPMENT	Secondary Crusher Plant
OPERATING MODE	200 tpy
CONTROL EQUIPMENT	
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	14.7 ft
HEIGHT RELATIVE TO OBSERVER START	14.7 ft STOP 14.7 ft
DISTANCE FROM OBSERVER START	30m STOP 30m
DIRECTION FROM OBSERVER START	310° STOP 310°
DESCRIBE EMISSIONS START	Fugitive (white) STOP Fugitive (white)
EMISSION COLOR START	white STOP white
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	1
STOP	1
DESCRIBE BACKGROUND START	BLUE SKY
STOP	BLUE SKY
BACKGROUND COLOR START	BLUE
STOP	BLUE
SKY CONDITIONS START	SUNNY
STOP	SUNNY
WIND SPEED START	5 mph
STOP	5 mph
WIND DIRECTION START	S
STOP	S
AMBIENT TEMP START	97F
STOP	89F
WET BULB TEMP	
RH,percent	

Source Layout Sketch



Key
☼ Sun < Plume → Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE: MANAGER
DATE: 8-17-16

OBSERVATION DATE: 8/16/16
START TIME: 12:38 pm
STOP TIME: 1:08 PM

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
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27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD
NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 5%
OBSERVER'S NAME (PRINT): NAVEEN KUMAR DEVATA
OBSERVER'S SIGNATURE
DATE: 8/16/16
ORGANIZATION: EA
CERTIFIED BY: Aeromet Engineering Inc
DATE: 9/20/16
VERIFIED BY:
DATE

(10)

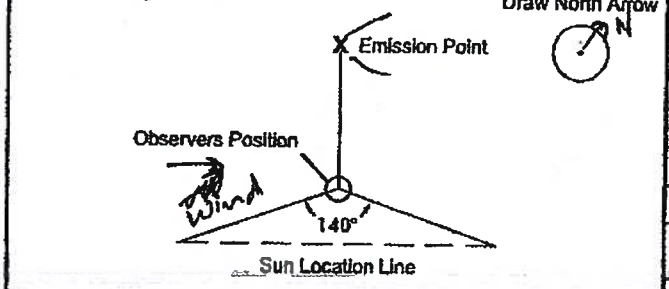
AeroMet
Engineering, Inc
www.aeromet.org

Visible Emissions Observation Form

PTI-033-2331-6-1529

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38° 51' 50" N / 76° 49' 36" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-3568
SOURCE ID NUMBER	AP # 29007
PROCESS EQUIPMENT	Secondary Crusher
OPERATING MODE	200 tph
CONTROL EQUIPMENT	Water Sprinkler
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	14.3 ft
HEIGHT RELATIVE TO OBSERVER START	14.3 ft STOP 14.3 ft
DISTANCE FROM OBSERVER START	92 m STOP 73 m
DIRECTION FROM OBSERVER START	349° STOP 349°
DESCRIBE EMISSIONS START	Fugitive (white) STOP Fugitive (white)
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	1' STOP 1'
DESCRIBE BACKGROUND START	Blue Sky STOP Blue Sky
BACKGROUND COLOR START	Blue STOP Blue
SKY CONDITIONS START	Sunny STOP Sunny
WIND SPEED START	5 mph STOP 6 mph
WIND DIRECTION START	SW STOP SW
AMBIENT TEMP START	89 F STOP 90 F
WET BULB TEMP	
RH percent	

Source Layout Sketch



Key
Sun | Plume | Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE Tom J. Lui
TITLE Manager
DATE 8-17-16

OBSERVATION DATE	START TIME	STOP TIME
8/16/16	1:10 pm	1:41 pm

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
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26	0	0	0	0	56				
27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD	NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM 0 %	MAXIMUM 15 %
OBSERVER'S NAME (PRINT)	Naveen Kumar Devata
OBSERVER'S SIGNATURE	DATE 8/16/16
ORGANIZATION	EA
CERTIFIED BY: Aeromet Engineering Inc	DATE 4/20/2016
VERIFIED BY:	DATE

AeroMet
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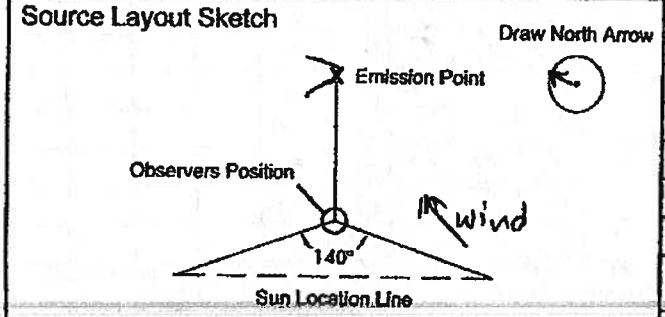
Visible Emissions Observation Form

PTI-033-2231-1529

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38° 51' 21" N / 76° 49' 44" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-870-3568
SOURCE ID NUMBER	AI # 29007
PROCESS EQUIPMENT	Concrete Batch Plant for Metal Recycling
OPERATING MODE	200 tpy
CONTROL EQUIPMENT	
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	10.7 ft
HEIGHT RELATIVE TO OBSERVER START	10.7ft STOP 10.7ft
DISTANCE FROM OBSERVER START	15 m STOP 15 m
DIRECTION FROM OBSERVER START	75° STOP 75°
DESCRIBE EMISSIONS START	Fugitive
STOP	Fugitive
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	2'
STOP	2'
DESCRIBE BACKGROUND START	Blue Sky
STOP	Blue Sky
BACKGROUND COLOR START	Blue STOP Blue
SKY CONDITIONS START	Sunny STOP Sunny
WIND SPEED START	9 mph STOP 10 mph
WIND DIRECTION START	SW STOP SW
AMBIENT TEMP START	91 F STOP 91 F
WET BULB TEMP	
RH.percent	

Source Layout Sketch



Key
Sun < Plume --- Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE Tony [illegible]
TITLE MANAGER
DATE 8-17-16

OBSERVATION DATE 8/16/16
START TIME 1:55 PM
STOP TIME 2:28

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
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5	0	0	0	0	35				
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27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD
NUMBER OF READINGS ABOVE ___% WERE
RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 5%
OBSERVER'S NAME (PRINT) NAVEEN KUMAR DEVATA
OBSERVER'S SIGNATURE
DATE 8/16/16
ORGANIZATION EA
CERTIFIED BY: Aeromet Engineering Inc
DATE 4/20/16.
VERIFIED BY:
DATE

(13)

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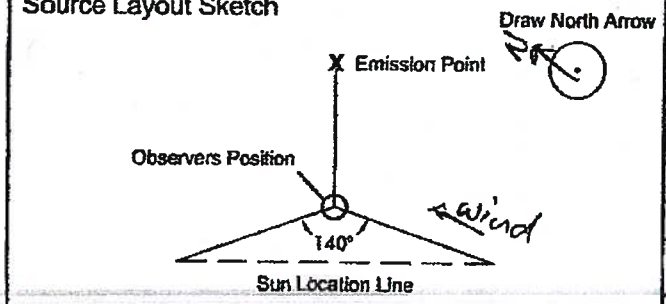
PT2 - 033 - 2331 - 1529

Visible Emissions Observation Form

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38°51' 21" N / 76° 49' 44" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-3568
SOURCE ID NUMBER	AI# 29007
PROCESS EQUIPMENT	Conveyor belt to Screen
OPERATING MODE	200 tpy
CONTROL EQUIPMENT	
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	14.5 ft
HEIGHT RELATIVE TO OBSERVER START	14.5 ft STOP 14.5 ft
DISTANCE FROM OBSERVER START	14 m STOP 14 m
DIRECTION FROM OBSERVER START	68° STOP 65°
DESCRIBE EMISSIONS START	Fugitive STOP Fugitive
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐	FUGITIVE ☑ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☑ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	1' STOP 1'
DESCRIBE BACKGROUND START	Blue Sky STOP Blue Sky
BACKGROUND COLOR START	Blue STOP Blue
SKY CONDITIONS START	Sunny STOP Sunny
WIND SPEED START	10 mph STOP 11 mph
WIND DIRECTION START	S STOP S
AMBIENT TEMP START	91F STOP 92F
WET BULB TEMP	
RH.percent	

Source Layout Sketch



Key
Sun = Plume → Wind

OBSERVATION DATE	START TIME	STOP TIME
8/16/16	2:30 pm	3:01 pm

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26	0	0	0	0	56				
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28	0	0	0	0	58				
29	0	0	5	10	59				
30	5	5	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD	NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM	0% MAXIMUM 10%
OBSERVER'S NAME (PRINT)	NAVEEN KUMAR DEVATA
OBSERVER'S SIGNATURE	DATE 8/16/16
ORGANIZATION	EA
CERTIFIED BY:	Aeromet Engineering Inc. DATE 4/20/16
VERIFIED BY:	DATE
COMMENTS	
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
TITLE MANAGER	DATE 8-17-16

(14)

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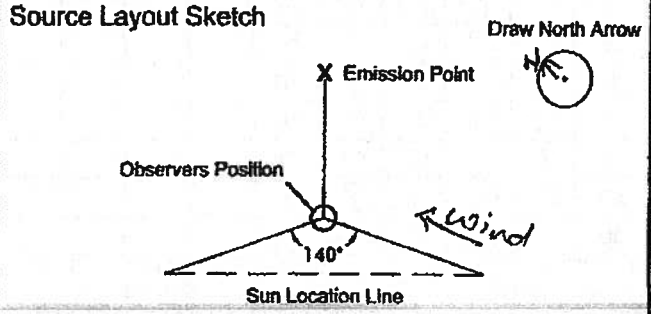
Visible Emissions Observation Form

PTI - 023 - 2331 - 1529

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	39° 51' 21" N / 76° 49' 44" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240 - 876 - 3563
SOURCE ID NUMBER	AI# 29007
PROCESS EQUIPMENT	Secondary Screen
OPERATING MODE	200 tph.
CONTROL EQUIPMENT	Water Sprinkler
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	11 ft
HEIGHT RELATIVE TO OBSERVER START	11 ft STOP 11 ft
DISTANCE FROM OBSERVER START	10 m STOP 10 m
DIRECTION FROM OBSERVER START	65° STOP 65°
DESCRIBE EMISSIONS START	Fugitive STOP Fugitive
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	' STOP '
DESCRIBE BACKGROUND START	Blue Sky STOP Blue Sky
BACKGROUND COLOR START	Blue STOP Blue
SKY CONDITIONS START	Sunny STOP Sunny
WIND SPEED START	11 mph STOP 10 mph
WIND DIRECTION START	S STOP S
AMBIENT TEMP START	92 F STOP 91 F
WET BULB TEMP	
RH percent	

Source Layout Sketch



Key

☼ Sun < Plume → Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE: MANAGER

DATE: 8-17-16

OBSERVATION DATE: 8/16/16

START TIME: 3:02 pm

STOP TIME: 3:32 pm

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
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3	0	0	0	0	33				
4	0	0	0	0	34				
5	0	0	5	0	35				
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27	0	0	0	0	57				
28	0	5	0	0	58				
29	5	5	0	0	59				
30	5	0	0	5	60				

AVERAGE OPACITY FOR HIGHEST PERIOD

NUMBER OF READINGS ABOVE % WERE

RANGE OF OPACITY READINGS: MINIMUM 0% MAXIMUM 15%

OBSERVER'S NAME (PRINT): NAVEEN KUMAR DEVATA

OBSERVER'S SIGNATURE

DATE: 8/16/16

ORGANIZATION: EA

CERTIFIED BY: Aeromet Engineering Inc

DATE: 4/20/16.

VERIFIED BY:

DATE

(17)

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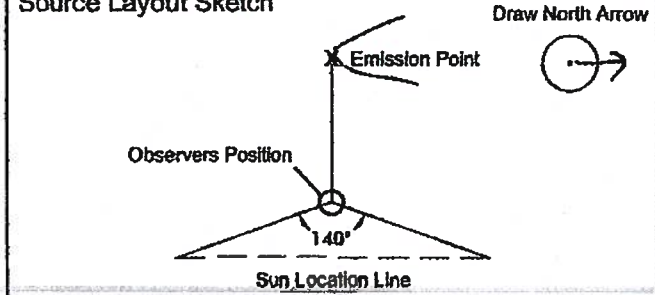
Visible Emissions Observation Form

PTI - 033-B331-6-1529

SOURCE NAME: Ritchie Land Reclamation LLC	OBSERVATION DATE: 8/17/16	START TIME: 9:37 am / STOP TIME: 10:07 am
ADDRESS: 2001 Ritchie Marlboro Rd.		
38°51'23" N / 76°45' 44" W		
CITY: Upper Marlboro / STATE: MD / ZIP: 20774		
PHONE: 240-876-3568 / SOURCE ID NUMBER: AI # 29007		
PROCESS EQUIPMENT: Conveyor from Screen. / OPERATING MODE: 200 tph		
CONTROL EQUIPMENT: / OPERATING MODE:		
DESCRIBE EMISSION POINT: START Fugitive		
HEIGHT ABOVE GROUND LEVEL: 16.5 ft / HEIGHT RELATIVE TO OBSERVER: START 16.5 ft STOP 16.5 ft		
DISTANCE FROM OBSERVER: START 13m STOP 14 m / DIRECTION FROM OBSERVER: START 261° STOP 297°		
DESCRIBE EMISSIONS: START Fugitive STOP Fugitive		
EMISSION COLOR: START White STOP White / PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐		
WATER DROPLETS PRESENT: NO ☒ YES ☐ / IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐		
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START 1' STOP 1'		
DESCRIBE BACKGROUND: START Partly cloudy sky STOP Partly cloudy sky		
BACKGROUND COLOR: START Blue STOP Blue / SKY CONDITIONS: START Partly Cloudy STOP Partly Cloudy		
WIND SPEED: START 7mph STOP 9 mph / WIND DIRECTION: START WSW STOP W		
AMBIENT TEMP: START 84F STOP 86F / WET BULB TEMP: / RH,percent:		

Source Layout Sketch



Key
Sun — Plume — Wind

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
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3	0	0	0	0	33				
4	0	0	0	0	34				
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6	10	0	0	0	36				
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26	5	5	0	0	56				
27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD	NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS: MINIMUM 0% MAXIMUM 5%	
OBSERVER'S NAME (PRINT): NAVEEN KUMAR DEVATA	
OBSERVER'S SIGNATURE: NKD	DATE: 8/17/16
ORGANIZATION: EA	
COMMENTS:	
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS / SIGNATURE: Tony	CERTIFIED BY: Aeromet Engineering Inc / DATE: 4/20/16.
TITLE: MANAGER / DATE: 8-17-16	VERIFIED BY: / DATE:

2

(18)

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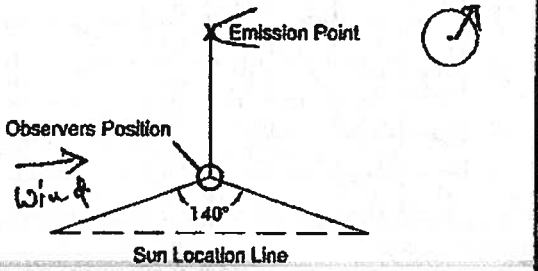
Visible Emissions Observation Form

PTI-033-2331-6-1529

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38°51'22" N / 76°49'45" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-870-3569
SOURCE ID NUMBER	AI # 29007
PROCESS EQUIPMENT	Conveyor from Screen
OPERATING MODE	200 tph.
CONTROL EQUIPMENT	Water
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	14.2 ft
HEIGHT RELATIVE TO OBSERVER	START 14.8 ft STOP 14.8 ft
DISTANCE FROM OBSERVER START	11 m STOP 11 m
DIRECTION FROM OBSERVER START	302° STOP 298°
DESCRIBE EMISSIONS START	Fugitive STOP Fugitive
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	1' STOP 1'
DESCRIBE BACKGROUND START	Blue Sky STOP Blue Sky
BACKGROUND COLOR START	Blue STOP Blue
SKY CONDITIONS START	Sunny STOP Sunny
WIND SPEED START	6 mph STOP 6 mph
WIND DIRECTION START	SW STOP SW
AMBIENT TEMP START	82 F STOP 83 F
WET BULB TEMP	
RH.percent	

Source Layout Sketch



Key
Sun = Plume — Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE Tony
TITLE MANAGER
DATE 8-17-16

OBSERVATION DATE 8/17/16
START TIME 8:29 am
STOP TIME 9:00 am

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
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6	0	5	0	0	36				
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26	0	0	0	0	56				
27	0	0	5	5	57				
28	0	0	0	0	58				
29	0	0	5	0	59				
30	0	0	0	5	60				

AVERAGE OPACITY FOR HIGHEST PERIOD

NUMBER OF READINGS ABOVE % WERE

RANGE OF OPACITY READINGS MINIMUM 0 % MAXIMUM 5 %

OBSERVER'S NAME (PRINT) NAVEEN KUMAR DEVATA
OBSERVER'S SIGNATURE
DATE 8/17/16
ORGANIZATION EA
CERTIFIED BY: Aeromet Engineering Inc
DATE 4/20/16
VERIFIED BY:
DATE

(19)

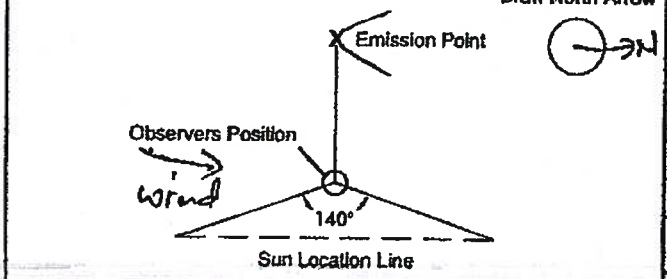
AeroMet
Engineering, Inc
www.aeromet.org

PTI - 033-2331-6-1529

Visible Emissions Observation Form

SOURCE NAME	Ritchie Land Reclamation LLC
ADDRESS	2001 Ritchie Marlboro Rd.
	38° 51' 23" N / 76° 49' 45" W
CITY	Upper Marlboro
STATE	MD
ZIP	20774
PHONE	240-876-2568
SOURCE ID NUMBER	AI # 29007
PROCESS EQUIPMENT	Conveyor belt from Screen
OPERATING MODE	200 tph
CONTROL EQUIPMENT	
OPERATING MODE	
DESCRIBE EMISSION POINT START	Fugitive
HEIGHT ABOVE GROUND LEVEL	15-3 ft
HEIGHT RELATIVE TO OBSERVER START	14-3ft STOP 14-3ft
DISTANCE FROM OBSERVER START	17m STOP 17m
DIRECTION FROM OBSERVER START	291° STOP 290°
DESCRIBE EMISSIONS START	Fugitive STOP Fugitive
EMISSION COLOR START	White STOP White
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☑ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	1' STOP 1'
DESCRIBE BACKGROUND START	Partly cloudy sky STOP Partly Cloudy sky
BACKGROUND COLOR START	BLUE STOP BLUE
SKY CONDITIONS START	Partly cloudy STOP Partly Cloudy
WIND SPEED START	7mph STOP 8 mph
WIND DIRECTION START	WSW STOP WSW
AMBIENT TEMP START	84°F STOP
WET BULB TEMP	
RH.percent	

Source Layout Sketch



Key
Sun Plume Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE Tony Ritchie
TITLE MANAGER
DATE 8-17-16

OBSERVATION DATE 8/17/16
START TIME 9:04 am
STOP TIME 9:35 am

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
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6	0	0	5	0	36				
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26	15	5	5	5	56				
27	0	5	5	0	57				
28	0	0	0	0	58				
29	0	5	0	0	59				
30	5	5	0	5	60				

AVERAGE OPACITY FOR HIGHEST PERIOD
NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM 0 % MAXIMUM 15 %
OBSERVER'S NAME (PRINT) NAVEEN KUMAR DOVATA
OBSERVER'S SIGNATURE
DATE 8/17/16
ORGANIZATION EA
CERTIFIED BY: Aeromet Engineering Inc
DATE 4/20/16
VERIFIED BY:
DATE

Section 3
VE Observer's Certificate

AeroMet
Engineering, Inc.
Solutions for a Changing Environment

Certification of Visible Opacity Reading

Naveen Kumar Devata

qualified to conduct EPA Method 9 Tests for visible opacity in accordance with the methods established for such qualification in 40 CFR Part 60 Appendix A.

Certification Date: April 20, 2016

Expiration Date: October 20, 2016

Trey Beauchamp

AeroMet Instructor: Trey Beauchamp

AEROMET ENGINEERING INC. CERTIFIES THA

Naveen Kumar Devata

has qualified as a CERTIFIED VISIBLE EMISSIONS READER per Title 40 Part 60 Appendix A USEPA Method 9

Issued: 04/20/2016 **Expires: 10/20/2016**

Questions? Call 573.636.6393