

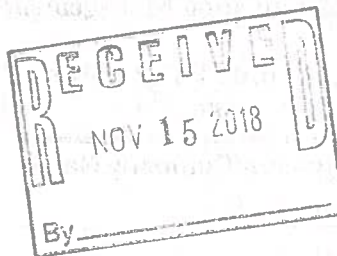
TOLSON AND ASSOCIATES, LLC

COPY

24024 Frederick Road
Office (301) 428-0800

Clarksburg, MD 20871

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

Y900

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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

Date

11/14/18

DO NOT WRITE IN THIS BLOCK

2. REGISTRATION NUMBER

County No.

Premises No.

--	--

--	--	--	--

1-2

3-6

Registration Class

Equipment No.

--

--	--	--	--

7

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

City/Town

State

Zip

(301) 428-0800

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

10/1/2019

Company Arch Insurance Company

Binder/Policy Number

Expiration Date

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

Form Number: 5

Rev. 9/27/2002

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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☐

24-1

Spray/Adsorb
Tower☐

24-2

Venturi
Scrubber☐

24-3

Carbon
Adsorber☐

24-4

Electrostatic
Precipitator☐

24-5

Baghouse

☐

24-6

Thermal/Catalytic
Afterburner☐

24-7

Dry
Scrubber☐

24-8

Other

☒

Describe

Water Spray

24-9

10. Annual Fuel Consumption for this Equipment

OIL-1000 GALLONS

				4	3
--	--	--	--	---	---

26-31

SULFUR %

	5
--	---

32-33

GRADE

--

34

NATURAL GAS-1000 FT³

--	--	--	--	--	--	--	--

35-41

LP GAS-100 GALLONS

--	--	--	--	--

42-45

GRADE

--

COAL- TONS

--	--	--	--	--	--	--

46-52

SULFUR %

--	--	--

53-55

ASH%

--	--	--

56-58

WOOD-TONS

--	--	--	--	--

59-63

MOISTURE %

--	--	--

64-65

OTHER FUELS

☐

ANNUAL AMOUNT CONSUMED

(Specify Type)

66-1

(Specify Units of Measure)

OTHER FUEL

☐

ANNUAL AMOUNT CONSUMED

(Specify Type)

66-2

(Specify Units of Measure)

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

11. Operating Schedule (for this Equipment)

Continuous Operation

☐

67-1

Batch Process

☐

67-2

Hours per Batch

--	--

68-69

Batch per Week

☐

Hours per Day

1	0
---	---

70-71

Days Per Week

5

72

Days per Year

1	2	7
---	---	---

73-75

Seasonal Variation in Operation:

No Variation

☐

76

Winter Percent

1	0
---	---

77-78

Spring Percent

2	0
---	---

79-80

Summer Percent

5	0
---	---

81-82

Fall Percent

2	0
---	---

83-84

(Total Seasons= 100%)



12. Equivalent Stack Information- is Exhaust through Doors, Windows, etc. Only? (Y/N) ☐

See Equipment Literature for Details

85

If not, then

Height Above 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)

INPUT RATE

NAME	CAS NO. (IF APPLICABLE)	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

OUTPUT RATE

NAME	CAS NO. (IF APPLICABLE)	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

OUTPUT RATE

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

TOTAL

Form Number: 5

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

Particulate Matter					Oxides of Sulfur					Oxides of Nitrogen					
								2	5				1	2	8
99-104					105-110					111-116					
Carbon Monoxide					Volatile Organic Compounds					PM-10					
				8	2				3	0				2	7
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					
				1	8					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		Reviewed by State
Date _____ By _____		Date _____ By _____

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

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

Staff Code	VOC Code	SIP Code	Regulation Code	Confidentiality
_____	_____	_____	_____	_____
208-210	211 212	213 214	215-218	219
Point Description				Action
_____				_____
220-238				239



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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 ($\mu\text{g}/\text{m}^3$)			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 $200 \mu\text{g}/\text{m}^3$.

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 $200 \mu\text{g}/\text{m}^3$, and any applicable annual screening level for the TAP must be greater than $1 \mu\text{g}/\text{m}^3$.

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 (µg/m³)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis (µg/m³)			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 literature 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	☐ Thermal Oxidizer	No. _____
☐ Baghouse	☐ Regenerative	
☐ Cyclone	☐ Catalytic Oxidizer	No. _____
☐ Elec. Precipitator (ESP)	☐ Nitrogen Oxides Reduction	No. _____
☐ Dust Suppression System	☐ Selective	☐ Non-Selective
☐ Venturi Scrubber	☐ Catalytic	☐ Non-Catalytic
☐ Spray Tower/Packed Bed	☐ Other	No. _____
☐ Carbon Adsorber	Specify:	
☐ Cartridge/Canister		
☐ Regenerative		

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

[illegible]

(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 literature 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		☐ Thermal Oxidizer	No. _____
☐ Baghouse	No. _____	☐ Regenerative	
☐ Cyclone	No. _____	☐ Catalytic Oxidizer	No. _____
☐ Elec. Precipitator (ESP)	No. _____	☐ Nitrogen Oxides Reduction	No. _____
☐ Dust Suppression System	No. _____	☐ Selective	☐ Non-Selective
☐ Venturi Scrubber	No. _____	☐ Catalytic	☐ Non-Catalytic
☐ Spray Tower/Packed Bed	No. _____	☐ Other	No. _____
☐ Carbon Adsorber	No. _____	Specify:	
☐ Cartridge/Canister			
☐ Regenerative			

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

[illegible]

(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 literature 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	☐ Thermal Oxidizer	No. _____
☐ Baghouse	☐ Regenerative	No. _____
☐ Cyclone	☐ Catalytic Oxidizer	No. _____
☐ Elec. Precipitator (ESP)	☐ Nitrogen Oxides Reduction	No. _____
☐ Dust Suppression System	☐ Selective	☐ Non-Selective
☐ Venturi Scrubber	☐ Catalytic	☐ Non-Catalytic
☐ Spray Tower/Packed Bed	☐ Other	No. _____
☐ Carbon Adsorber	Specify:	
☐ Cartridge/Canister		
☐ Regenerative		

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

[illegible]

(Attach additional sheets as necessary.)

573.8

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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 literature 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		☐ Thermal Oxidizer	No. _____
☐ Baghouse	No. _____	☐ Regenerative	
☐ Cyclone	No. _____	☐ Catalytic Oxidizer	No. _____
☐ Elec. Precipitator (ESP)	No. _____	☐ Nitrogen Oxides Reduction	No. _____
☐ Dust Suppression System	No. _____	☐ Selective	☐ Non-Selective
☐ Venturi Scrubber	No. _____	☐ Catalytic	☐ Non-Catalytic
☐ Spray Tower/Packed Bed	No. _____	☐ Other	No. _____
☐ Carbon Adsorber	No. _____	Specify:	
☐ Cartridge/Canister			
☐ Regenerative			

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

[illegible]

(Attach additional sheets as necessary.)

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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 Commission 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

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

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.

10	1270
Hours per day	Hours per year

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. ZAWC19389702

☐ 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."



E. Michael Ensor Senior Vice President

Printed Name & Title

Date

LEAVE BLANK, MDE use only

☐ Permit

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

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

AI: _____

Emissions
Stack

Fugitive

SOx

Nox

CO

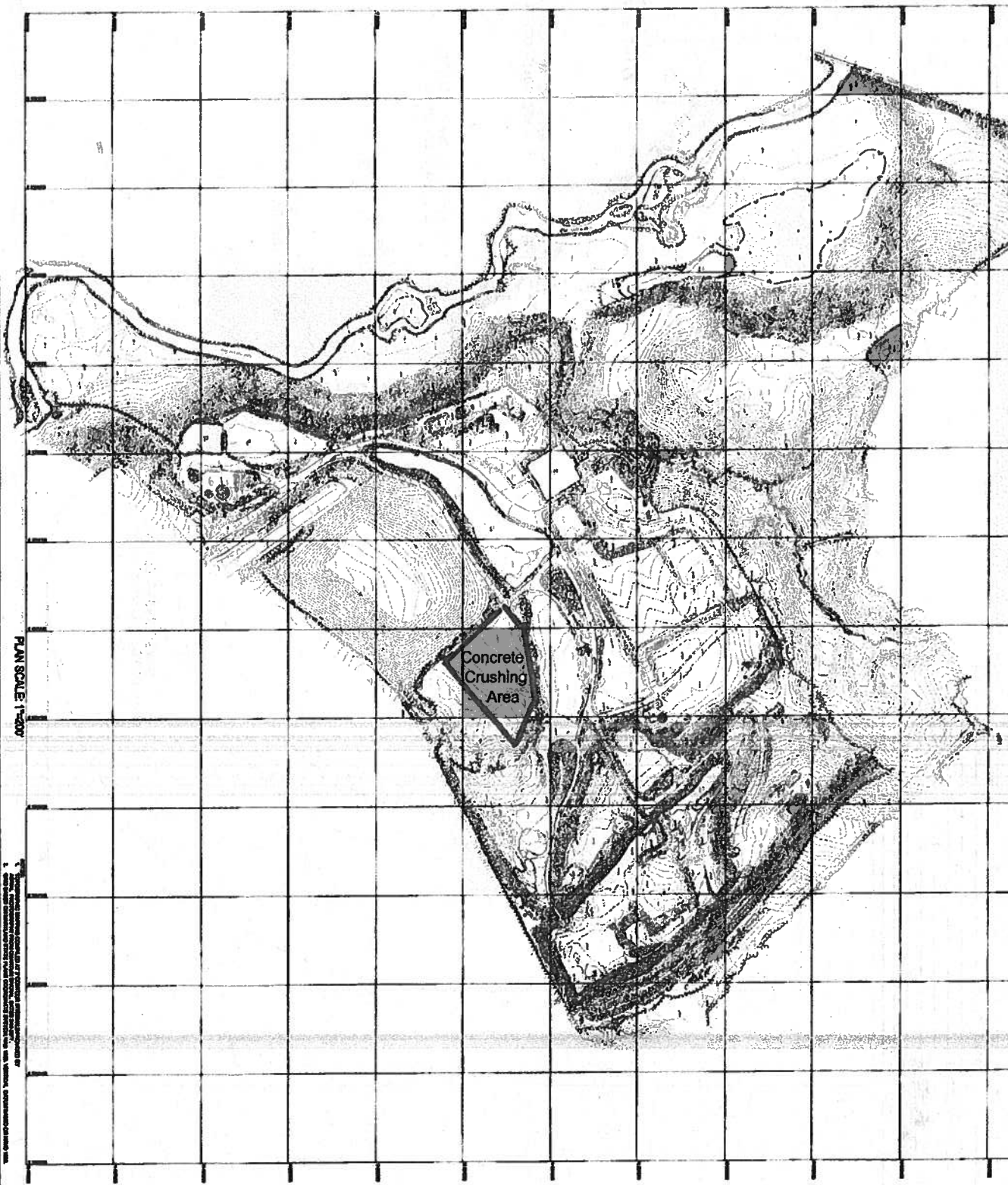
VOC

PM

PM-10

Waltham Cray 1973

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PLAN SCALE 1"=200'

1. This map was prepared by the Maryland Department of the Environment, Office of the Secretary, Division of Air and Noise Management, based on data provided by the Maryland Department of Transportation, Division of State Highway Administration, and the Maryland Department of the Environment, Office of the Secretary, Division of Air and Noise Management.

AERIAL 2' CONTOURS - 2/10/2017

TOLSON RUBBLE LANDFILL
CROFTON, MARYLAND

TAX MAP BLOCK 4, PARCELS 6, 10 & 20
FOURTH DISTRICT ANNE ARUNDEL COUNTY



Revisions		Revised By	Date



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 138' 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, 9.8 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:	01
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
CAKSHAFT 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	933	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	0.361	11.6	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 29.92 IN HG)	WET EXH VOL FLOW RATE (32 DEG F AND 29.92 IN HG)	WET EXH VOL FLOW RATE (32 DEG F AND 29.92 IN HG)
RPM	BHP	IN HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	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	645.4
2,100	300	48	327.2	710.7	1,835.8	3,112.8	3,222.1	677.9	622.3	622.3
2,000	300	48	326.0	683.7	1,788.9	2,993.4	3,101.4	652.7	598.0	598.0
1,900	300	49	326.4	656.5	1,748.0	2,871.5	2,979.6	627.0	573.2	573.2
1,800	300	49	327.5	630.7	1,708.4	2,755.3	2,861.1	602.2	549.1	549.1
1,700	293	49	326.6	600.6	1,646.1	2,615.5	2,718.6	571.9	520.5	520.5
1,600	284	48	325.3	567.2	1,577.8	2,461.7	2,561.9	538.2	488.8	488.8
1,500	274	47	323.4	530.2	1,506.6	2,294.5	2,391.5	502.3	454.6	454.6
1,400	264	46	320.7	490.0	1,436.0	2,115.7	2,209.7	465.2	419.2	419.2
1,300	244	47	308.9	439.1	1,323.3	1,889.5	1,977.8	414.0	371.0	371.0
1,200	226	37	294.8	394.8	1,204.9	1,649.1	1,731.8	361.8	321.9	321.9
1,100	207	32	278.2	326.9	1,080.0	1,393.9	1,471.0	309.5	273.1	273.1

Heat Rejection Data Top

ENGINE SPEED	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST 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	32,390	34,514
1,700	293	5,171	1,825	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	9,206	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	180	75.1	30.0
PERCENT LOAD	%	100	75	80	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/HR	1,339.3	933.2	753.5	823.0	977.4
TOTAL CO	(CORR 5% O2) MG/HR	1,223.0	1,648.0	657.8	1,691.4	2,759.6

TOTAL HC	(CORR 5% O2)	MG/MM3	119.4	201.7	299.0	718.9	1,205.0
PART MATTER	(CORR 5% O2)	MG/MM3	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/MM3	1,240.1	864.1	697.7	762.1	905.0
TOTAL CO	(CORR 5% O2)	MG/MM3	654.0	881.3	351.8	904.5	1,475.7
TOTAL HC	(CORR 5% O2)	MG/MM3	63.2	106.7	158.2	380.4	637.5
PART MATTER	(CORR 5% O2)	MG/MM3	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	Year/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	NORMAL
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	M8D00001	E705	
3271007	JSC00001	E705	
3930595	JSC00001	E705	
3964949	JSC00001	E705	

Test Specification Data

Test Spec	Setting	Effective Serial Number	Engine Arrangement
OK4893	PP5337	JSC00001	2446783
OK4893	PP5337	JSC00001	2524430
OK4894	PP5372	M8D00001	2524430
OK4893	PP5337	JSC00001	3271007
OK4893	PP5337	JSC00001	3930595
OK4893	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 JAN2014 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/L4er (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 output 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 Cycle Type and H/W 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

LT 113

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
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[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	EXHAUST 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 output 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: P3070A

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 INFLD P IN-HG	INTAKE AIR FLOW CFM	EXH STACK TEMP DEG F	EXH GAS FLOW CFM
2,200	100	237.49	113.18	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/HR	REJ TO ATMOS BTU/HR	REJ TO EXHAUST BTU/HR
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 L/MIN
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.W10A	PEEC' Personality Cont Mod Ref	
Aux Coolant Pump Perf Ref:			
Cooling System Perf Ref:		Turbocharger Model	
Certification Ref:	1 PA T11 R 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

ST 3.8

Reference
Number: P3030A

JPA 111 R 333

Parameters
Reference:

J1

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Web Master(s) PSG Web Based Systems Support
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ST 2.8

SN 44620743

 CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY AIR RESOURCES BOARD	PERKINS ENGINES COMPANY LTD.	EXECUTIVE ORDER U-R-022-0183 Now Off-Road Compression-Ignition Engines
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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):

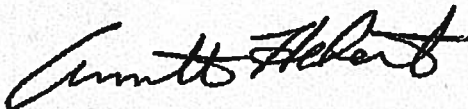
RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
56 ≤ kW < 75	Tier 3	STD	N/A	N/A	4.7	6.0	0.40	20	15	50
		CERT	--	--	4.0	0.7	0.25	18	4	28

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

$$4 \text{ g/kw-hr} = 2941945 \text{ g/(hp-h)}$$

$$2.94 \text{ g/hp-hr} \times 0.003204 = .00648 \times 100 (\text{HP}) = .648 \text{ lbs/hr}$$

Attachment 1 of 1

Engine Model Summary Template

57 2.8

U-R-022-0163

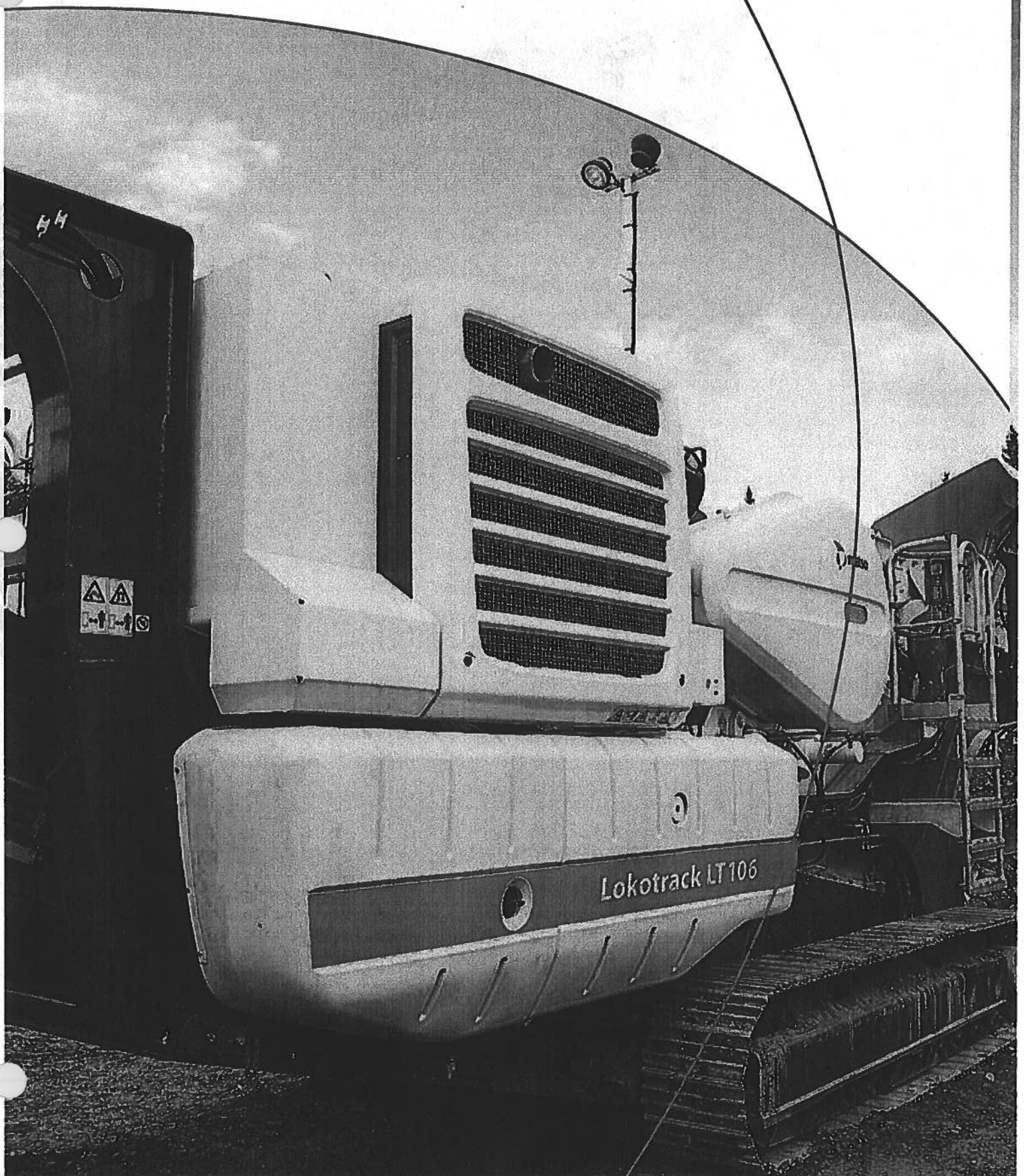
12-3-2010

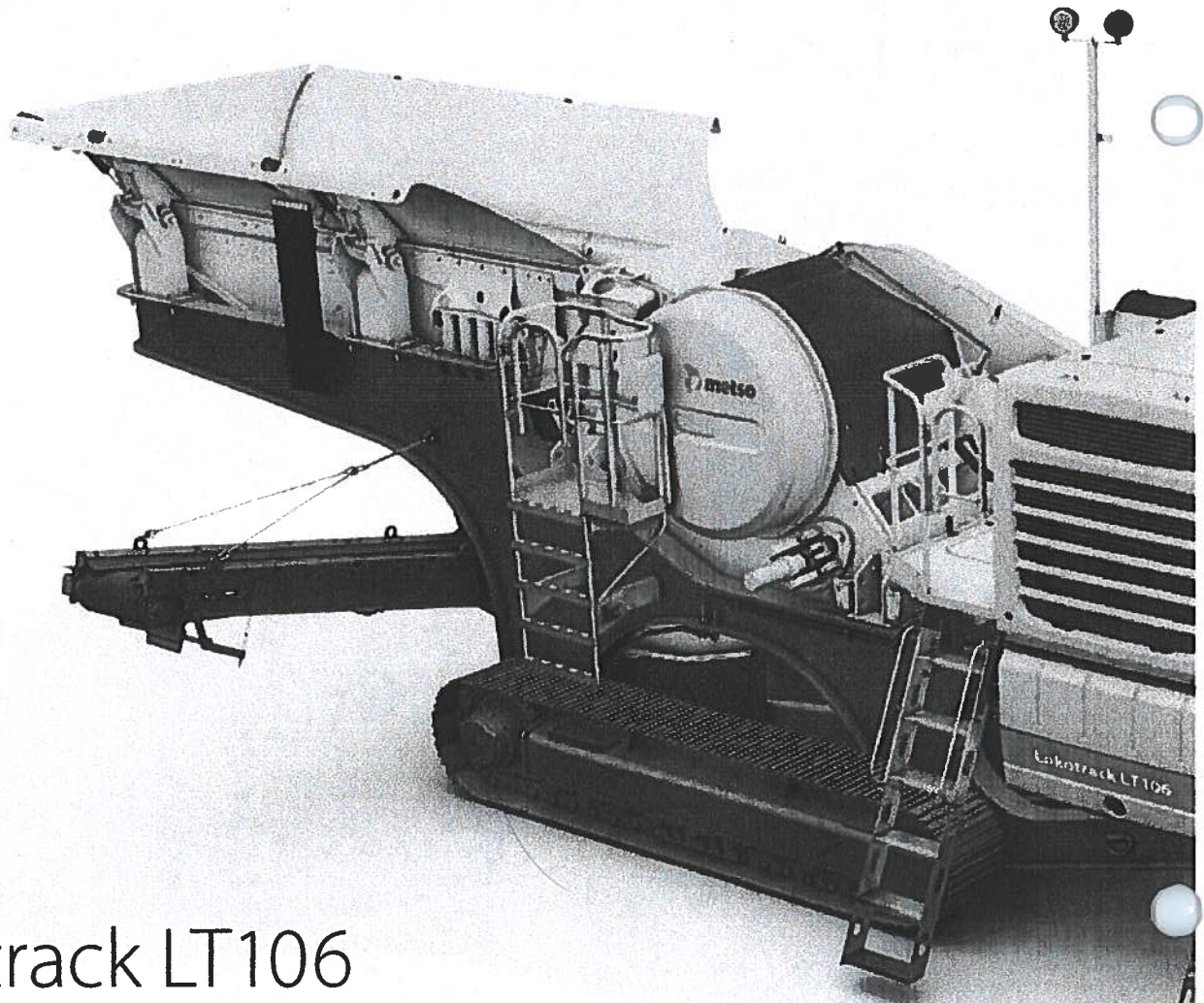
Engine Family	1. Engine Code	2. Engine Model	3. BHP @ RPM (SAE Gross)	4. Fuel Rate: m³/hr @ peak HP (for diesel only)	5. Fuel Rate: lb/hr @ peak HP (for diesel only)	6. Torque @ RPM (SAE Gross)	7. Fuel Rate: m³/hr @ peak torque	8. Fuel Rate: lb/hr @ peak torque Device Per SAE J1930	9. Emission Control
BPKXL04.4NM2	1	2872/2200	100.4@2200	84.4	40.7	304@1400	98.1	30.1	TC, DDI TAA, AAE, 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	3056/2300	91.2@2300	74.4	37.5	285@1400	93.3	28.6	DDI TAA
BPKXL04.4NM2	10	3056/2200	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	93.8@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

40.7 lbs/hr = 6.78 gal/hr

Mobile crushing plant Lokotrack LT106

 **metso**
Expect results





Lokotrack LT106

Groundbreaking Excellence

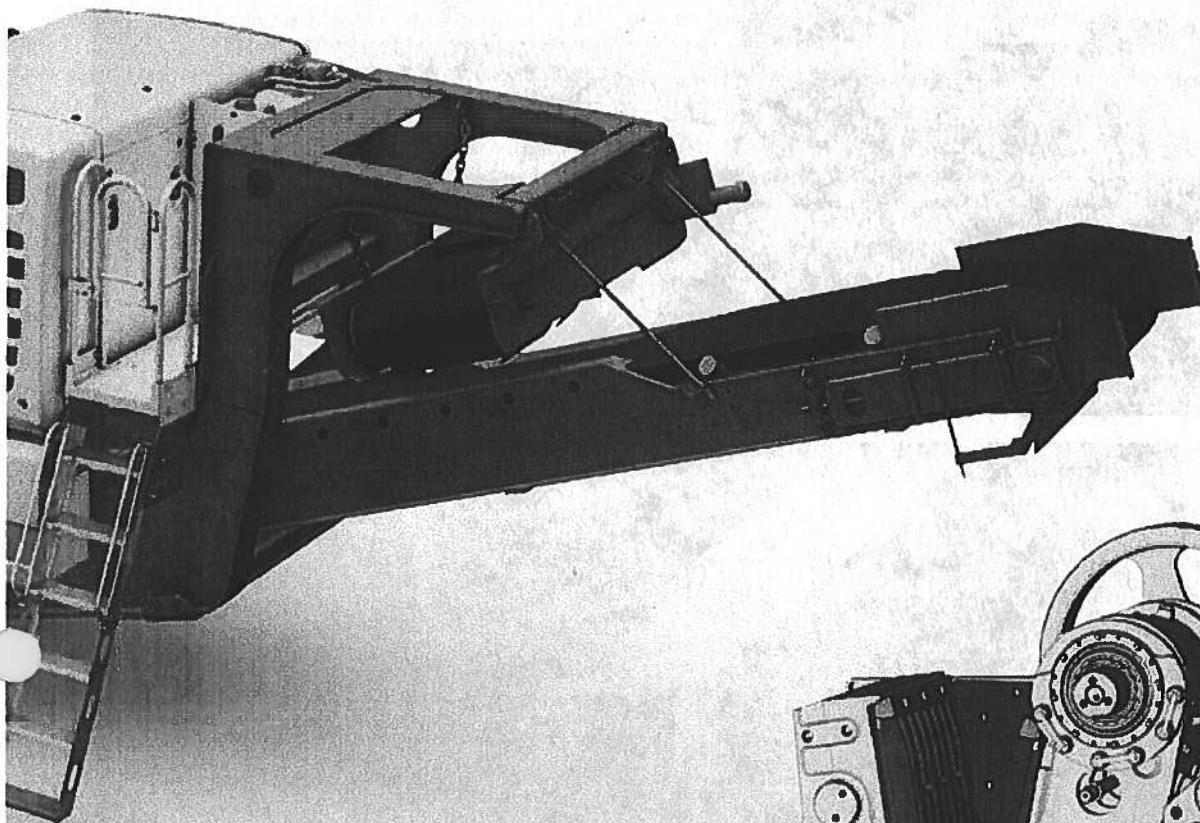
The improved successor to the industry benchmark in mobile crushing takes production capacity to a whole new level, while simultaneously cutting operating costs and generating the highest customer value possible. By combining over 25 years of experience in mobile equipment with 21st century materials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

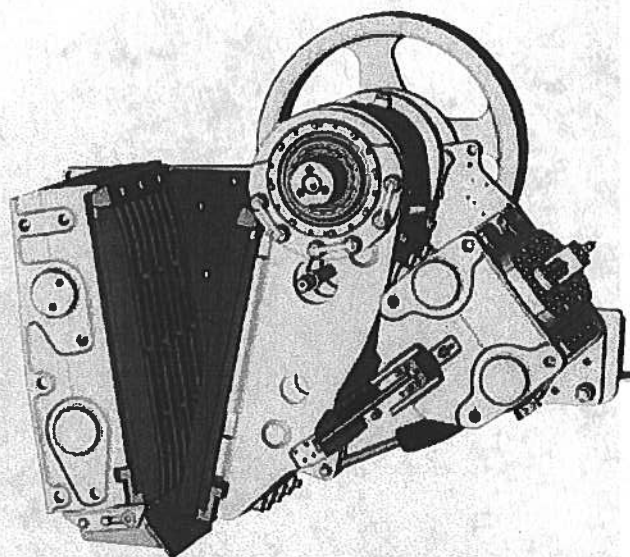


Safe and easy to operate

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.



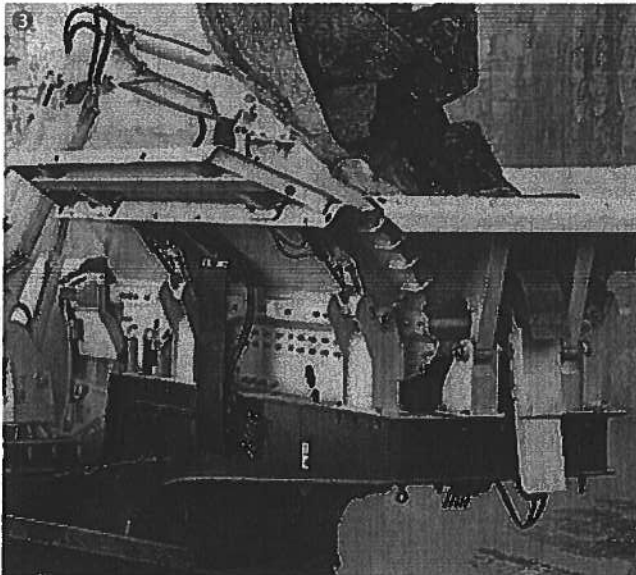
Active Setting Control is available for Lokotrack LT106.

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





- ① Composite material increases accessibility and enables easy and safe service.
- ② Radial side conveyor can be turned to either side, thereby increasing process flexibility.
- ③ Feed hopper sides and locking mechanism are hydraulically operated.
- ④ Compact dimensions make LT106 easily transportable on trailer. The unit pictured is equipped with an optional screen module.

Basic dimensions LT106
C106 jaw crusher

Feed opening	1060 x 700 mm	42 x 28"
--------------	---------------	----------

Feed hopper

Standard	6 m ³	8 yd ³
With extensions	9 m ³	12 yd ³
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

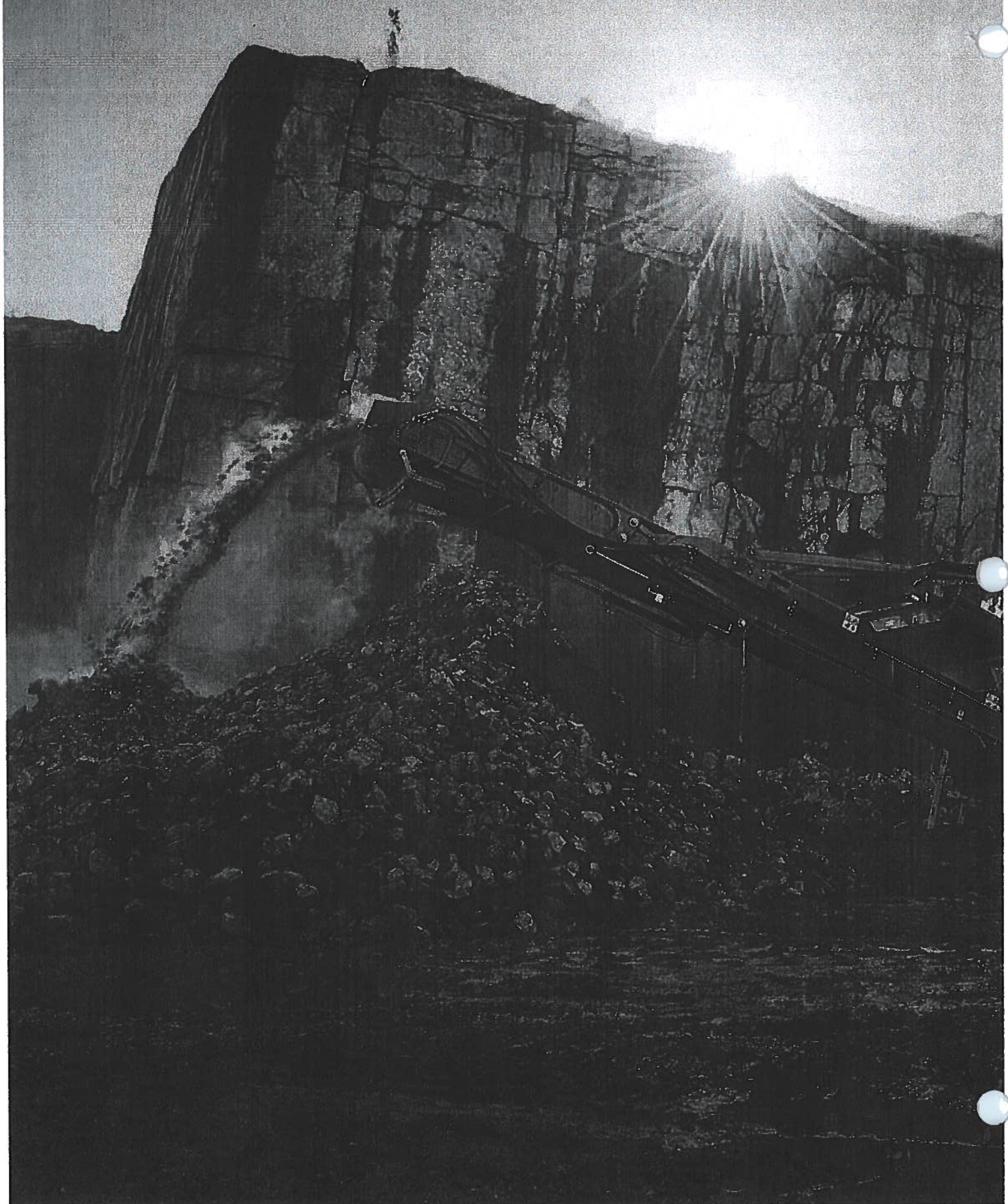
Screen module, long main conveyor, side conveyor, active setting control for crusher (ASC), crusher wear plates for recycling and quarry, hammer and boom, magnetic separator, automatic lubrication unit, radio remote control, conveyor dust covers and discharge hoods, high pressure water spraying system, 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

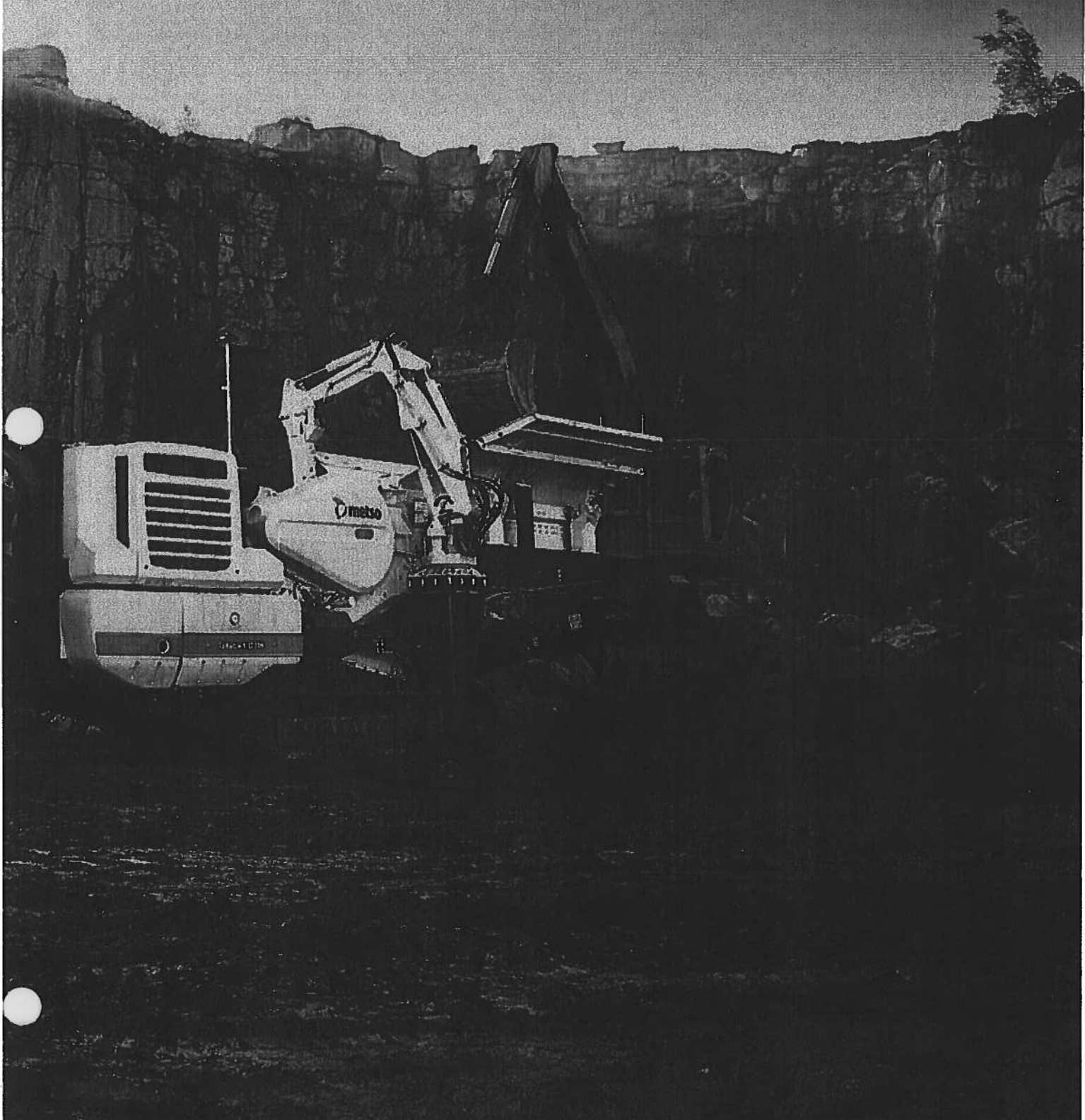
**L_{PA} = A-weighted sound pressure level at the workstation



LOKOTRACK LT106



LOKOTRACK LT106



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.



www.metso.com
minerals.info.csr@metso.com

AUSTRALIA AND NEW ZEALAND

Metso Minerals (Australia) Ltd
1110 Hay Street
West Perth, WA 6005
Australia
Phone: +61 8 9420 5555
Fax: +61 8 9320 2500

CHINA

Metso Minerals (Beijing) Ltd
19/F, The Exchange Beijing, Tower 4
No. 118 Jian Guo Lu Yi Chaoyang District
100022 Beijing
China
Phone: +86 10 6566 6600
Fax: +86 10 6566 2583

EUROPE, MIDDLE EAST AND AFRICA

Metso Minerals España, S.A.
C/ Rivas N° 4
28032 Madrid
Spain
Phone: +34 91 825 5700
Fax: +34 91 825 5740

INDIA AND ASIA-PACIFIC

Metso Minerals (India) Pvt Ltd
1st Floor, DLF Building No. 10,
Tower A, DLF Cybercity
DLF Phase II
Gurgaon 122002
India
Phone: +91 124 235 1541
Fax: +91 124 235 1601

NORTH AND CENTRAL AMERICA

Metso Minerals Industries Inc.
20965 Crossroads Circle
Waukesha, WI 53186
U.S.A.
Phone: +1 262 717 2500
Fax: +1 262 717 2504

RUSSIA AND OTHER CIS COUNTRIES

ZAO Metso Minerals (CIS)
Pulkovskoe shosse, 40/4 "A"
office building "Technopolis"
196158, St. Petersburg
Russia
Phone: +7 812 333 40 00
Fax: +7 812 333 40 01

SOUTH AMERICA

Metso Minerals Indústria e Comércio Ltda
Avenida Independência, 2500 - Éden
18087-050 Sorocaba
Brazil
Phone: +55 15 2102 1300
Fax: +55 15 2102 1696

METSO'S MINING AND CONSTRUCTION

Lokomonkatu 3, P.O.Box 306
FI-33101 Tampere
Finland
Phone: +358 20 484 142
Fax: +358 20 484 143

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
- LHG 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
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Stationary crushing plants

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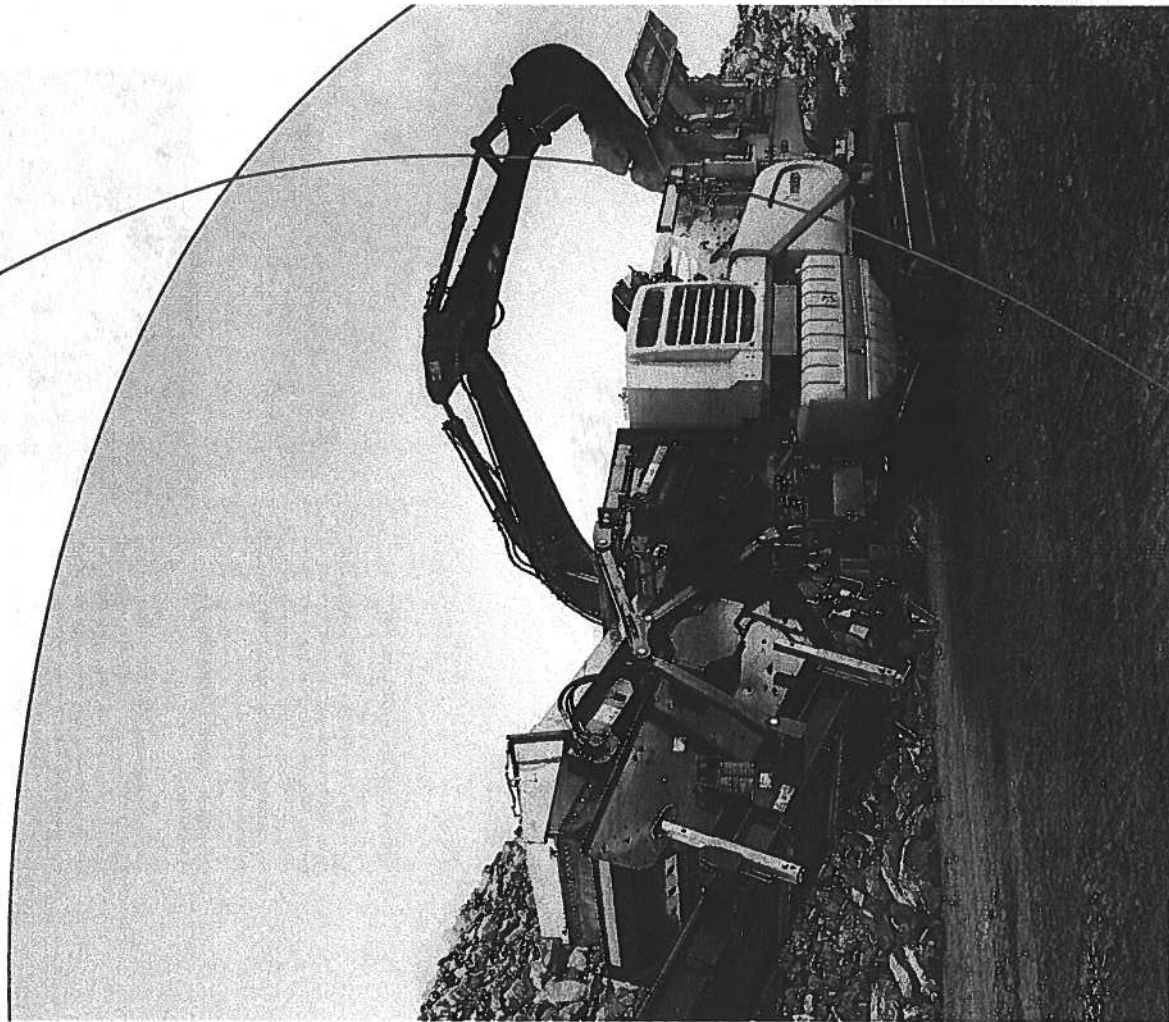


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www.metso.com
minerals.info.csr@metso.com

Mobile crushing plants Lokotrack LT1213 & LT1213S



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AUSTRALIA AND NEW ZEALAND

Metso Minerals (Australia) Ltd
 1110 Hay Street
 West Perth, WA 6005
 Australia
 Phone: +61 8 9420 5555
 Fax: +61 8 9320 2500

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 19/F, The Exchange Beijing, Tower 4
 No. 118 Jian Guo Lu Yi Chaoyang District
 100022 Beijing
 China

Phone: +86 10 6566 6600
 Fax: +86 10 6566 2583

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 C/ Rivas N° 4
 28032 Madrid
 Spain
 Phone: +34 91 825 5700
 Fax: +34 91 825 5740

INDIA AND ASIA-PACIFIC

Metso Minerals (India) Pvt Ltd
 1st Floor, DLF Building No. 10,
 Tower A, DLF Cybercity
 DLF Phase II
 Gurgaon 122002
 India

Phone: +91 124 235 1541
 Fax: +91 124 235 1601

NORTH AND CENTRAL AMERICA

Metso Minerals Industries Inc.
 20965 Crossroads Circle
 Waukegan, WI 53186
 U.S.A.
 Phone: +1 262 717 2500
 Fax: +1 262 717 2504

RUSSIA AND OTHER CIS COUNTRIES

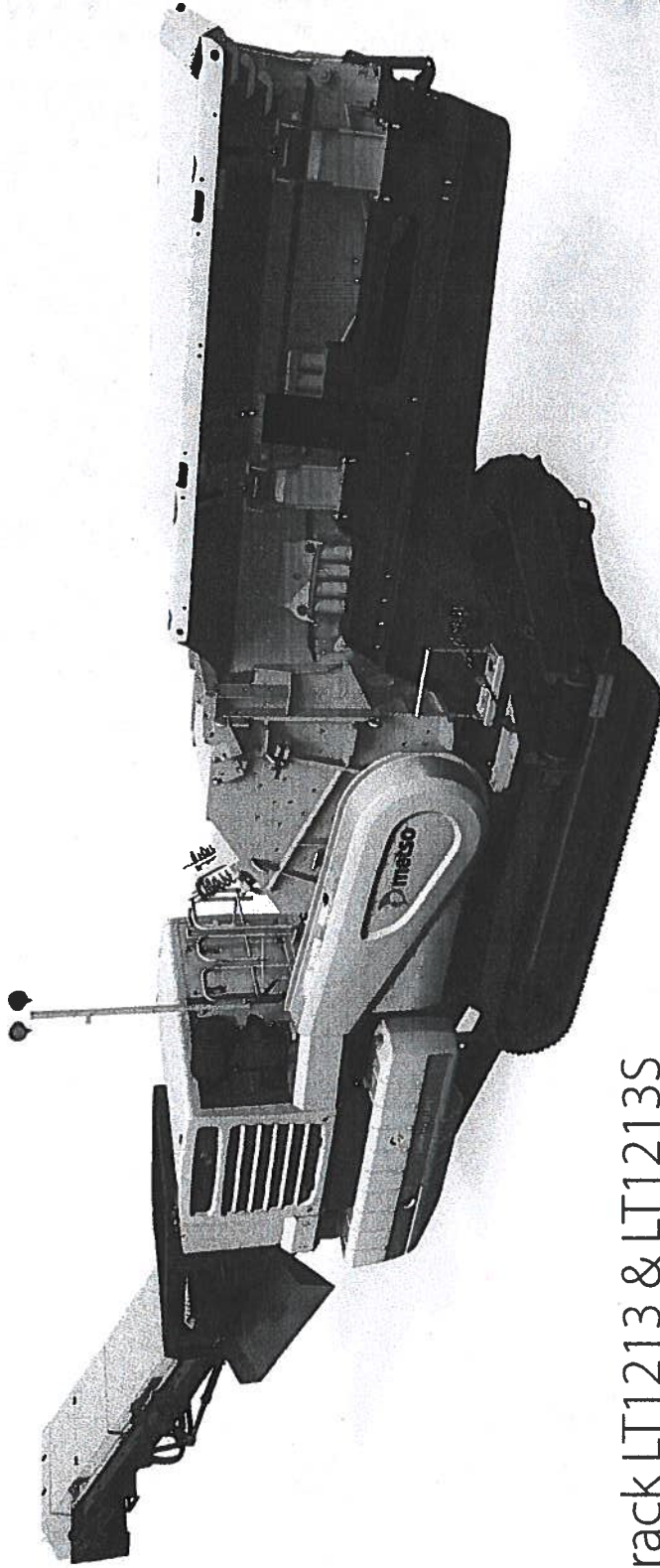
ZAO Metso Minerals (CS)
 Pulikovskaya strasse, 40/4 25,
 office building "Technopolis"
 196158, St. Petersburg
 Russia
 Phone: +7 812 333 40 00
 Fax: +7 812 333 40 01

SOUTH AMERICA

Metso Minerals Indústria e Comércio Ltda
 Avenida Independência, 2500 - Eden
 18087-050 Sorocaba
 Brazil
 Phone: +55 15 2102 1300
 Fax: +55 15 2102 1696

METSO'S MINING AND CONSTRUCTION

Lohmonkatu 3, P.O.Box 306
 FI-33101 Tampere
 Finland
 Phone: +358 20 484 142
 Fax: +358 20 484 143



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 or 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 Lokotacks 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.

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 bar for efficient crushing. Operation and service DVD with scheduled maintenance, equipment protection plan and extended warranty maximize the availability and profitability.

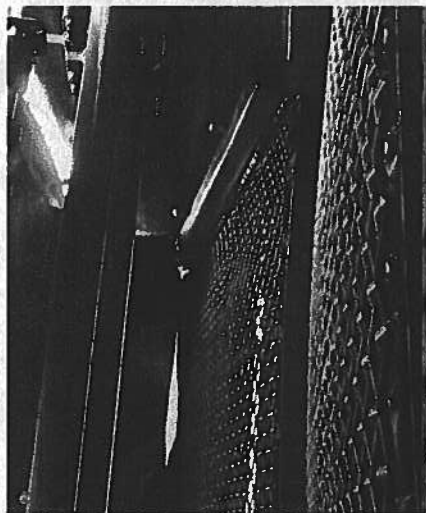
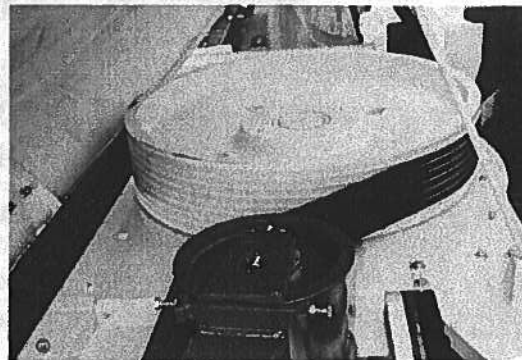
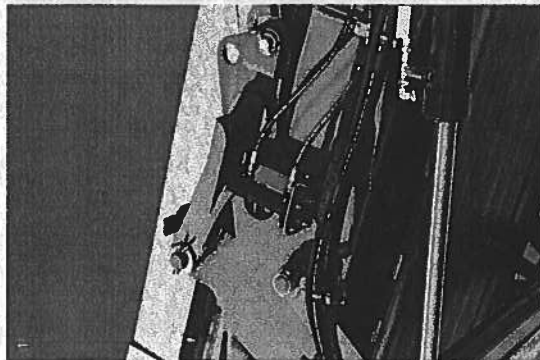
High quality blow bars as a standard



Lokotrack LT1213 & LT1213S:

- High capacity (up to 1000 t/h) and high reliability
- The efficient power transmission provides up to 10% fuel consumption
- Compact dimensions and easy setup, service, operation
- New features like service tool box, new display, and easy operation

LOKOTRACK LT1213 & LT1213S



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

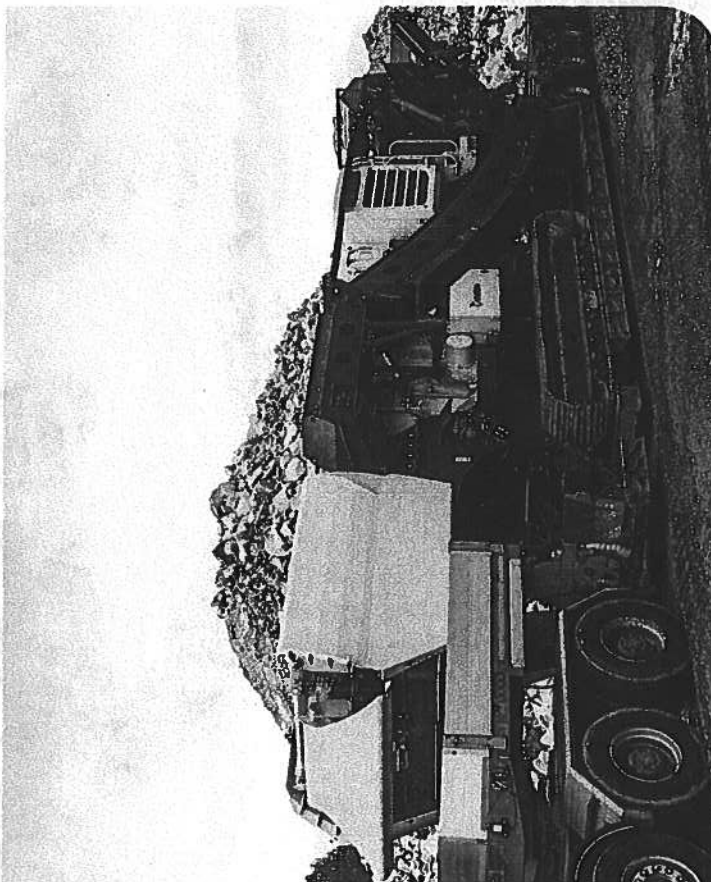
LOKOTRACK LT1213	
Horizontal HP2213M Impact crusher	
Feeder dimensions	
Screen D16-54	1 300 x 1 200 mm
Area	575 m²
Standard	6 m²
With extensions	9 m²
Loading height	4.1 m
Feeder	
Width	1 100 mm
Length	4 200 mm
Main conveyor	
Width	1 200 mm
Discharge height	4 000 mm
Engine	
Capacity C13	310 kW
Transport dimensions	
Length*	16 850 mm
Width	2 980 mm
Height	600 mm
Weight*	45 tons

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

LOKOTRACK LT1213S	
Horizontal HP2213M Impact crusher	
Feeder dimensions	
Screen D16-54	1 300 x 1 200 mm
Area	575 m²
Standard	6 m²
With extensions	9 m²
Loading height	4.1 m
Feeder	
Width	1 100 mm
Length	4 200 mm
Main conveyor	
Width	1 200 mm
Discharge height	3 100 mm
Engine	
Capacity C13	310 kW
Transport dimensions	
Length*	19 400 mm
Width	3 200 mm
Height	1 100 mm
Weight*	55 tons

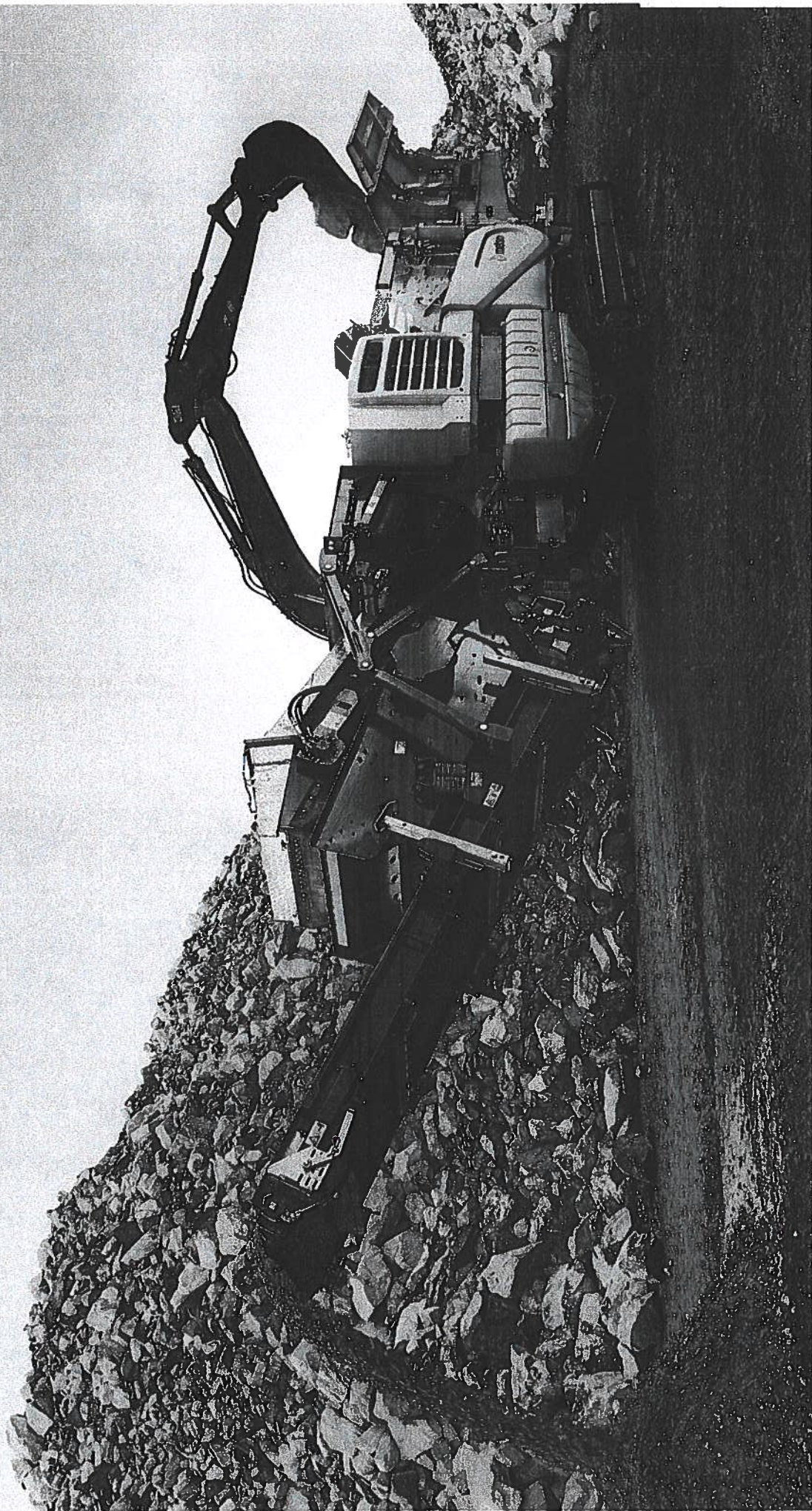
* Dimensions with all options

The Lokotrack LT1213S is easily transportable on a trailer



LOKOTRACK LT1213 & LT1213S

LOKOTRACK LT1213 & LT1213S





Lokotrack ST2.8

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.

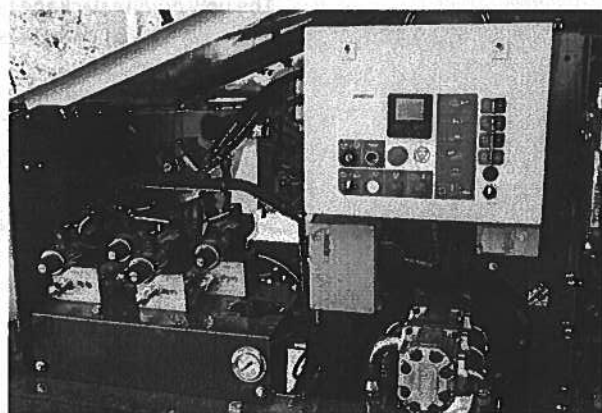
The stickier the feed material the more throw needed in the scalping screen. Lokotrack ST2.8 has the biggest eccentric throw on the market to make it the best unit for the screening of top soil, demolition waste and river gravel. Additionally, ST2.8 can be fine tuned even for sand applications. The clearance 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® C14, 75 kW (100 hp)
Weight	25 000 kg (55 000 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.

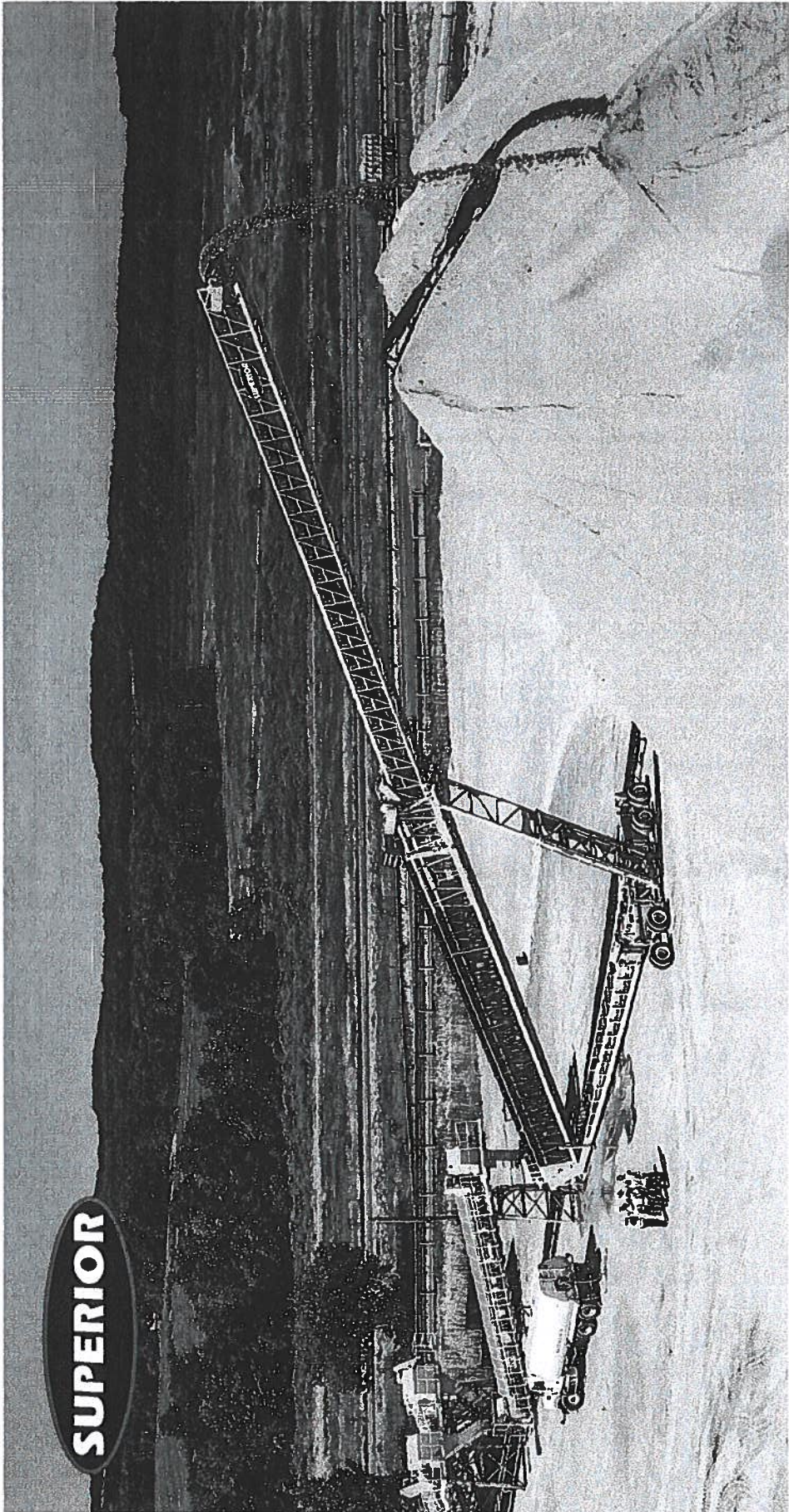
Features

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	26 000 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 m² (6.7 yd²)	7.4 m² (8.9 yd²)	5.5 m² (6.6 yd²)	8.4 m² (10 yd²)	8.4 m² (10 yd²)	11 m² (13 yd²)
Number of decks	2	2	2	2	3	3
Feeder						
Hopper	4.5 m³ (5.9 yd³)	4.5 m³ (5.9 yd³)	5.5 m³ (7.2 yd³)	7.5 m³ (9.6 yd³)	7.5 m³ (9.6 yd³)	1.7 / 3 m³ (2.2 / 4 yd³)
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 ₁	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



SUPERIOR

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

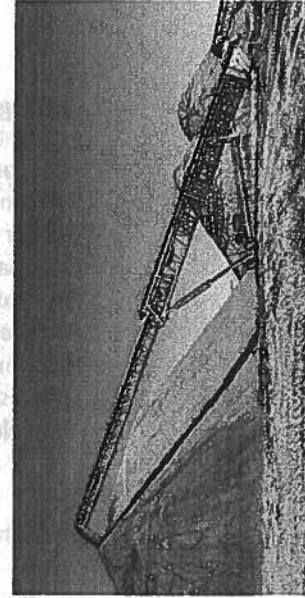
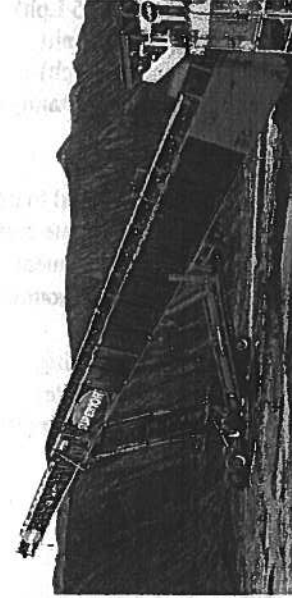
OPERATING DIMENSIONS		130'	150'	170'	190'
Conveyor Length (m)		130'-0" (39.6)	150'-0" (45.7)	170'-0" (51.8)	190'-0" (57.9)
Highest Extended Discharge Height (m)		47'-0" (13.8)	52'-6" (16.0)	60'-0" (18.5)	67'-8" (20.5)
Lowest Extended Discharge Height (m)		14'-5" (6.0)	15'-10" (6.0)	14'-11" (4.5)	16'-1" (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)

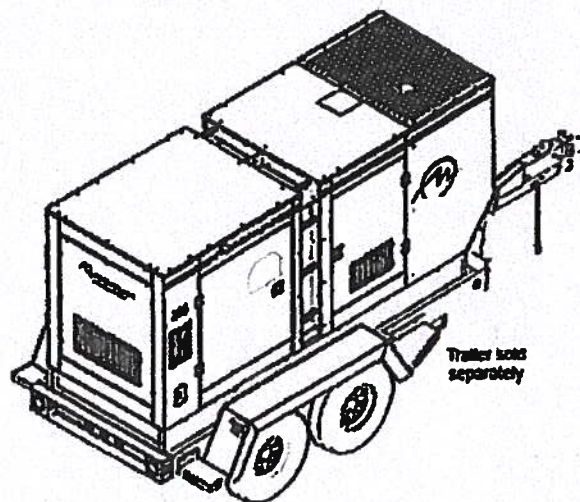
PHOTO GALLERY



Magnum 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

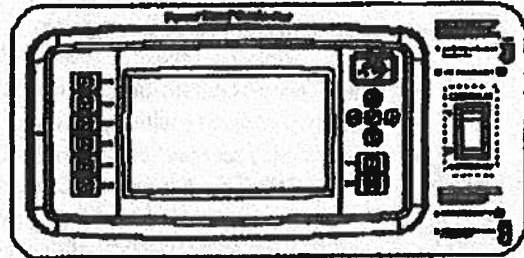
- Marathon Electric®
 - Brushless
 - 4 pole
 - Class H insulation
- Voltage regulation +/- 1% with Marathon SE350 Voltage Regulator

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

Plant/Permit ID	Permit Approved Equipment	Estimated Potential Capacity (Tons/Hour)	PM Factor (a)		HOURLY PM EMISSIONS				ANNUAL PM EMISSIONS			
			Controlled (lb/Ton)	Uncontrolled (lb/Ton)	Maximum Potential Emission Rates Controlled (lb/Hour)	Uncontrolled (lb/Hour)	Maximum Potential Emission Rates Controlled (Tons/Yr)	Estimated Actual Emission Rates Controlled (Tons/Yr)	Maximum Potential Emission Rates Uncontrolled (Tons/Yr)	Estimated Actual Emission Rates Uncontrolled (Tons/Yr)		
Primary Crushers												
1	Primary Jaw	200	0.001200	0.006400	0.240	1.080	1.051	0.156	4.730	0.702		
Secondary/Tertiary Crushers												
2	Secondary Cone Crusher	200	0.001200	0.005400	0.240	1.080	1.051	0.156	4.730	0.702		
Feed Crushing												
NA	None											
Screens												
3	ST2.8 Track Scaling 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												
5	48" Conveyor	200	0.001140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390		
6	32" Conveyor	200	0.001140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390		
7	32" Conveyor	200	0.001140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390		
8	48" Conveyor	200	0.001140	0.003000	0.028	0.600	0.123	0.018	2.628	0.390		
9	48" Conveyor	200	0.001140	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		
BlowFeeders												
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

February 10, 2016

PLAST OPERATING SCHEDULE

(a) P.M.10 Emission Factors are from AP-42, Table 11.19.2-2.

1,300 Estimated Actual Hours of Operation

TABLE 4
PM2.5 EMISSIONS ESTIMATE - PROCESSING PLANT EQUIPMENT
 February 10, 2016

Plant Permit ID	Permit Approved Equipment	Estimated Potential Capacity (Tons/Hour)	PM2.5 Factor (a)		HOURLY 2.5 EMISSIONS		ANNUAL 2.5 EMISSIONS	
			Controlled	(lb./Ton)	Maximum Potential Emission Rates Controlled (lb./hour)	Controlled	Maximum Potential Emission Rates Controlled (Tons/yr)	Estimated Annual Emission Rates Controlled (Tons/yr)
1	Primary Jaw	200	0.000100		0.020		0.068	0.013
2	Secondary/Tertiary Crushers	200	0.000100					
3	Secondary Cone Crusher	200	0.000100		0.020		0.068	0.013
4	Flare Crushing	200	0.000070					
5	Screen	200	0.000050					
6	Screen	200	0.000050		0.010		0.046	0.007
7	Screen	200	0.000050		0.010		0.046	0.007
8	Conveyors	200	0.000013		0.003		0.011	0.002
9	48" Conveyor	200	0.000013		0.003		0.011	0.002
10	48" Conveyor	200	0.000013		0.003		0.011	0.002
11	48" Conveyor	200	0.000013		0.003		0.011	0.002
12	48" Conveyor	200	0.000013		0.003		0.011	0.002
13	48" Conveyor	200	0.000013		0.003		0.011	0.002
14	48" Conveyor	200	0.000013		0.003		0.011	0.002
15	48" Conveyor	200	0.000013		0.003		0.011	0.002
16	48" Conveyor	200	0.000013		0.003		0.011	0.002
17	48" Conveyor	200	0.000013		0.003		0.011	0.002
18	48" Conveyor	200	0.000013		0.003		0.011	0.002
19	48" Conveyor	200	0.000013		0.003		0.011	0.002
20	48" Conveyor	200	0.000013		0.003		0.011	0.002
21	48" Conveyor	200	0.000013		0.003		0.011	0.002
22	Blow Feeders	200	0.000013					
23	Primary Grizzly Feeder	200	0.000013		0.003		0.011	0.002
24	Hopper	200	0.000013		0.003		0.011	0.002
25	Apron Feeder	200	0.000013		0.003		0.011	0.002
26	Variable Grizzly Feeder	200	0.000013		0.003		0.011	0.002
PM2.5 TOTALS					0.11		0.50	0.07

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

Emission Unit	Emission Factor	POTENTIAL EMISSIONS		ACTUAL EMISSIONS		ACTUAL EMISSIONS	
		Potential	Actual	Potential	Actual	Factor	Actual
1.0. Diesel Engine Power Units							
22. CAT C4. 100 HP, Diesel Engine	1.17108	6.32	1.3430	4.85	6.019	B	0.77
23. CAT C4. 300 HP Diesel Engine	1.17108	11.40	18.216	7.75	10.034	D	0.72
24. CAT C13.455 HP Diesel Engine	1.17108	5.07	51.867	5.07	6.599		0.77
25. CAT C4. 100 HP, Diesel Engine	1.17108	11.40	18.216	7.75	10.034		0.72
26. John Deere Model 600, 100 HP Diesel Engine	1.17108	11.40	18.216	7.75	10.034		0.72
TOTALS		6.32	51.867	31.83	41.579		0.65

Emission Unit	Emission Factor	POTENTIAL EMISSIONS		ACTUAL EMISSIONS	
		Potential	Actual	Potential	Actual
1.0. Diesel Engine Power Units					
22. CAT C4. 100 HP, Diesel Engine	1.17108	6.32	1.3430	4.85	6.019
23. CAT C4. 300 HP Diesel Engine	1.17108	11.40	18.216	7.75	10.034
24. CAT C13.455 HP Diesel Engine	1.17108	5.07	51.867	5.07	6.599
25. CAT C4. 100 HP, Diesel Engine	1.17108	11.40	18.216	7.75	10.034
26. John Deere Model 600, 100 HP Diesel Engine	1.17108	11.40	18.216	7.75	10.034
TOTALS		6.32	51.867	31.83	41.579

DILUTED EXHAUST - ALL DIESEL FIRED GENERATORS

ITEM	FUEL/STANT	Emission Factor	Units	POTENTIAL EMISSIONS		ACTUAL EMISSIONS		Emission Factor Reference (See Note 1)
				Per Hour of Operation (lb/hr)	Per Year of Operation (lb/yr)	Per Hour of Operation (lb/hr)	Per Year of Operation (lb/yr)	
1. NO _x	1.17108	4.100000	lb/hr	2.61	11.78	2.61	11.78	A
2. CO	1.17108	8.950000	lb/hr	1.46	6.39	1.46	6.39	B.C.D
3. SO ₂	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
4. Total Organic Compound (TOC)	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
5. Benzene	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
6. Formaldehyde	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
7. Nitrogen	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
8. Sulfur	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
9. Particulate	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
10. Lead	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
11. Arsenic	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
12. Cadmium	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
13. Mercury	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A
14. PCBs	1.17108	0.000000	lb/hr	0.00	0.00	0.00	0.00	A

1. Emission factor based on estimated maximum data, actual fuel use from field measured device engine which has been shown to be much lower.

2. Potential use reference: Continuous operation 24 hours a day, 365 days a year, or 8,760 hours total.

3. EPA 1994, 3.4.1 US EPA 1994 (1008) - Heating value of diesel assumed to be 19,500 Btu/lb., with a density of 7.1 lb/gal.

4. Percent sulfur in fuel oil = 0.50

5. Percent sulfur in fuel oil = 0.50

6. Percent sulfur in fuel oil = 0.50

7. Percent sulfur in fuel oil = 0.50

8. Percent sulfur in fuel oil = 0.50

9. Percent sulfur in fuel oil = 0.50

10. Percent sulfur in fuel oil = 0.50

11. Percent sulfur in fuel oil = 0.50

12. Percent sulfur in fuel oil = 0.50

13. Percent sulfur in fuel oil = 0.50

14. Percent sulfur in fuel oil = 0.50

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 Clean 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

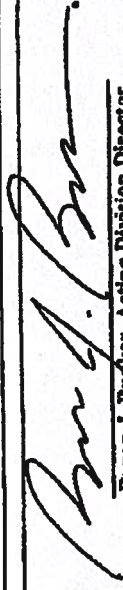
OFFICE OF TRANSPORTATION
AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

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. Buckner, 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*.

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	--	--	--

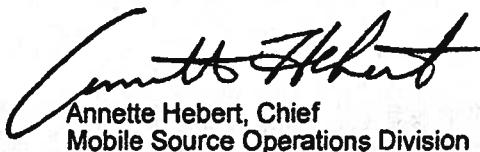
BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any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

Engine Model Summary Form

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

9-28-12

A Hachmest. Page 1 of 2

FO#: 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	180.0@2100	128@2100	41.13@2100	1025@1500	151.5@1500	34.77@1500	EC SPL CAC TC
6068RW404	6068	180.0@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	162.4@1500	34.88@1500	EC SPL CAC TC
6068HFC94M	6068	138.0@2200	85.3@2200	31.32@2200	741@1550	105.8@1550	25.09@1550	EC SPL CAC TC
6068HFC94N	6068	138.0@2200	80.8@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@2200	102@2200	37.45@2200	902@1500	128.7@1500	29.54@1500	EC SPL CAC TC
6068HPRNT4	6068	208.0@2400	123.5@2400	45.35@2400	1105@1800	159.3@1800	39.0@1800	EC SPL CAC TC
6068HFC95C	6068	205.0@2400	126.1@2400	46.3@2400	1057@1700	156.8@1700	40.73@1700	EC SPL CAC TC
6068HN058	6068	224.0@2200	135.5@2200	49.76@2200	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	137.8@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
6068HFC94A	6068	180.0@1800	137.5@1800	37.87@1800	800@1500	114.8@1500	26.35@1500	EC SPL CAC TC
6068HFC94H	6068	148.0@2400	91.2@2400	33.49@2400	1025@1500	151.5@1500	34.77@1500	EC SPL CAC TC
6068RW401	6068	180.0@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	156.8@1700	40.73@1700	EC SPL CAC TC
6068HFC94B	6068	187.0@2200	119.6@2200	40.26@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@1800	133.7@1800	32.73@1800	EC SPL CAC TC
6068HL495	6068	167.0@2100	114.1@2100	38.86@2100	918@1600	133.7@1600	32.73@1600	EC SPL CAC TC
6068HFC94B	6068	150.0@1800	115@1800	31.87@1800	945@1500	131.8@1500	30.25@1500	EC SPL CAC TC
6068HTJ80	6068	160.0@2000	113.4@2000	34.7@2000	800@1500	133.9@1500	30.73@1500	EC SPL CAC TC
6068HFC94O	6068	138.0@2000	97.7@2000	29.9@2000	800@1500	133.9@1500	30.73@1500	EC SPL CAC TC
6068HL496	6068	180.0@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	36.86@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	33.88@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	196.0@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	36.86@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
6068HFC95A	6068	216.0@1800	168.6@1800	45.88@1800	984@1500	142.6@1500	32.73@1500	EC SPL CAC TC
6068HFC95B	6068	241.0@1800	190.9@1800	52.57@1800	984@1500	142.6@1500	32.73@1500	EC SPL CAC TC
6068HFC94F	6068	168.0@2200	109.1@2200	36.72@2200	1025@1500	144.9@1500	33.25@1500	EC SPL CAC TC
6068HFC94A	6068	187.0@2400	111.4@2400	40.91@2400	1013@1425	147@1425	32.05@1425	EC SPL CAC TC
6068HDW85	6068	169.0@1900	123.4@1900	35.87@1900	1025@1500	141.5@1500	32.47@1500	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

QAT, P10X, EGR, DOC

6088	190.0@1900	138.1@1900	40.15@1900	1025@1500	154.2@1500	35.38@1500	EC SPL CAC TC
6088	189.0@2100	123.8@2100	39.78@2100	1025@1500	147.3@1500	33.81@1500	EC SPL CAC TC
6088	149.0@2200	98.6@2200	33.19@2200	873@1500	128.3@1500	29.45@1500	EC SPL CAC TC
6088	187.0@2200	121.4@2200	40.88@2200	1025@1500	151.7@1500	34.82@1500	EC SPL CAC TC

Date: 9-28-12

FO#: 4-K-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 emissions of particulate matter from roadways, stockpiles and materials handling operations

Avoid overfilling loader buckets and minimize drop heights.

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

Water and or chemical dust suppressants 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	
INSURED Pleasants Construction, Inc.; Environmental Alternatives, LLC 24024 Frederick Rd Clarksburg, MD 20871	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:	

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

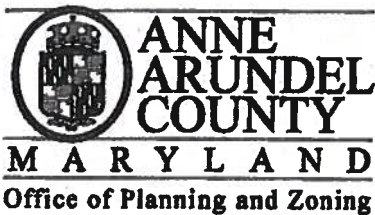
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
General proof of coverage. Named Insured includes Tolson & Associates LLC.

CERTIFICATE HOLDER**CANCELLATION**Maryland Department of the Environment
1800 Washington Boulevard

Baltimore, MD 21230

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:



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.

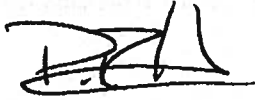
Special Exception Case Nos. BA 65-92S, BA 66-92S, BA 68-92S and BA 69-92S was conditionally approved on December 8, 1993 to allow sand and gravel operation and a rubble landfill at the referenced site.

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.

Page 2

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

[Click here](#) to complete a three question customer experience survey.



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.

MSW
MDE
SEP 01 2016
1:50

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

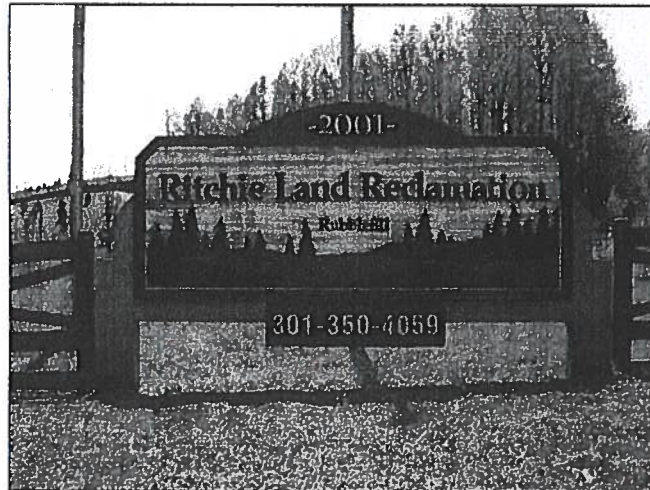
John H. Kumm, P.E., BCEE, CEM, LEED AP
Senior Project Manager

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



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Section 3: Evaluator Certificate

Visible Emissions Evaluator Certificate for Naveen Devata



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 minimum 15 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.



Method 9 Opacity Testing Report for Ritchie Landfill Screening and Crushing
Upper Marlboro, MD
August 2016

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



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Visible Emissions Observation Form

PTI-033-231-6-1529

SOURCE NAME Ritchie Land Reclamation, LLC			OBSERVATION DATE 8/16/16				START TIME 9:46 am		STOP TIME 9:17 am			
ADDRESS 2001 Ritchie Marlboro Rd.			SEC MIN 0 15 30 45				SEC MIN 0 15 30 45					
CITY Dover Marlboro			STATE MD		ZIP 20774		1 0 5 0 0 31					
PHONE 240-876-3563			SOURCE ID NUMBER AI# 29007				2 0 0 0 5 32					
PROCESS EQUIPMENT Conveyor Belt to Crusher			OPERATING MODE 200tpy				3 5 0 0 0 33					
CONTROL EQUIPMENT			OPERATING MODE				4 0 0 0 0 34					
DESCRIBE EMISSION POINT Transfer Pt. Feed into Crusher							5 0 0 5 0 35					
HEIGHT ABOVE GROUND LEVEL 13.3 ft			HEIGHT RELATIVE TO OBSERVER START 9 ft STOP 9 ft				6 5 5 0 5 36					
DISTANCE FROM OBSERVER START 30m STOP 21m			DIRECTION FROM OBSERVER START 270° STOP 290°				7 5 0 10 5 37					
DESCRIBE EMISSIONS START Fugitive STOP Fugitive							8 0 0 5 0 38					
EMISSION COLOR START White STOP White			PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☒				9 0 0 0 0 39					
WATER DROPLETS PRESENT: NO ☒ YES ☐			IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐				10 5 5 5 0 40					
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START 1' STOP 1'							11 0 0 5 5 41					
DESCRIBE BACKGROUND START BLUE STOP WHITE							12 0 5 5 0 42					
BACKGROUND COLOR START BLUE STOP			SKY CONDITIONS START SUNNY STOP CLOUDY				13 0 0 5 0 43					
WIND SPEED START 4 MPH STOP 5 MPH			WIND DIRECTION START SW STOP SW				14 0 5 5 5 44					
AMBIENT TEMP START 84°F STOP 74°F			WET BULB TEMP		RH, percent		15 5 0 0 0 45					
Source Layout Sketch			Draw North Arrow				16 0 0 0 0 46					
							17 0 5 0 5 47					
Key ☀ Sun — Plume → Wind							18 0 5 5 0 48					
COMMENTS							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 DEVATA									
			OBSERVER'S SIGNATURE 		DATE 8/16/16							
			ORGANIZATION EA									
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS			CERTIFIED BY: AEROMET ENGINEERING INC		DATE 8/20/2016							
SIGNATURE Tom J. W. Jr.			DATE 8-17-16									
MANGER												



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Visible Emissions Observation Form

PTI - 023-2331-6-1529

SOURCE NAME			OBSERVATION DATE				START TIME		STOP TIME			
Ritchie Land Reclamation, LLC			8/16/16				9:23 am		9:53 am			
ADDRESS			SEC	0	15	30	45	SEC	0	15	30	45
2001 Ritchie Marlboro Rd.			MIN					MIN				
33° 51' 22" N / 76° 49' 42" W			1	0	0	0	0	31				
CITY	STATE	ZIP	2	0	0	0	0	32				
Upper Marlboro	MD	20774	3	0	0	0	0	33				
PHONE	SOURCE ID NUMBER		4	5	0	5	5	34				
240-876-3568	A2 # 29007		5	0	0	0	5	35				
PROCESS EQUIPMENT	OPERATING MODE		6	0	5	0	5	36				
CRUSHER (PRIMARY)	200tpy		7	0	0	0	5	37				
CONTROL EQUIPMENT	OPERATING MODE		8	0	0	0	0	38				
Water Sprinkler			9	0	0	0	5	39				
DESCRIBE EMISSION POINT			10	0	0	5	10	40				
START PRIMARY CRUSHER			11	0	5	5	5	41				
HEIGHT ABOVE GROUND LEVEL	HEIGHT RELATIVE TO OBSERVER		12	0	0	0	0	42				
13.5 ft	START 9.1 ft STOP 9.1 ft		13	5	5	0	0	43				
DISTANCE FROM OBSERVER	DIRECTION FROM OBSERVER		14	5	5	0	0	44				
START 20 m STOP 20 m	START 290° STOP 290°		15	0	0	0	0	45				
DESCRIBE EMISSIONS			16	0	0	0	0	46				
START fugitive	STOP fugitive		17	0	5	5	0	47				
EMISSION COLOR	PLUME TYPE: CONTINUOUS ☐		18	0	5	0	0	48				
START white STOP white	FUGITIVE ☒ INTERMITTENT ☐		19	0	0	0	0	49				
WATER DROPLETS PRESENT:	IF WATER DROPLET PLUME:		20	0	0	0	0	50				
NO ☒ YES ☐	ATTACHED ☐ DETACHED ☐		21	0	5	0	0	51				
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED			22	0	0	0	5	52				
START 2' STOP 2'			23	5	5	0	5	53				
DESCRIBE BACKGROUND			24	0	5	0	0	54				
START white/cloudy	STOP cloudy		25	0	5	5	5	55				
BACKGROUND COLOR	SKY CONDITIONS		26	5	0	5	0	56				
START white STOP BLUE	START cloudy STOP cloudy		27	0	5	5	0	57				
WIND SPEED	WIND DIRECTION		28	0	0	0	0	58				
START 4 mph STOP 9 mph	START SSW STOP SSW		29	0	5	5	0	59				
AMBIENT TEMP	WET BULB TEMP	RH, percent	30	5	0	0	0	60				
START 75 F STOP 79 F			AVERAGE OPACITY FOR HIGHEST PERIOD			NUMBER OF READINGS ABOVE % WERE						
Source Layout Sketch			Draw North Arrow			RANGE OF OPACITY READINGS						
						MINIMUM 0% MAXIMUM 10%						
Key: Sun, Plume, Wind			OBSERVER'S NAME (PRINT)			OBSERVER'S SIGNATURE						
			NAVEEN KUMAR DEVATA			DATE 8/16/16						
COMMENTS			ORGANIZATION			DATE						
			EA			4/20/2016						
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS			CERTIFIED BY:			DATE						
SIGNATURE Tom J. [Signature]			Aeromet Engineering Inc			DATE						
TITLE MANAGER			VERIFIED BY:			DATE						
DATE 8-17-16												



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Visible Emissions Observation Form

PTL-023-2231-6-1529

SOURCE NAME Ritchie Land Reclamation, LLC			OBSERVATION DATE 8/16/16				START TIME 9:57 am				STOP TIME 10:29 am																								
ADDRESS 2001 Ritchie Marlboro Rd			SEC MIN 0 15 30 45				SEC MIN 0 15 30 45																												
38°51' 00" N / 76°45' 42" W			1 0 5 5 5 31				2 0 5 0 0 32																												
CITY Upper Marlboro			3 5 5 0 0 33				4 0 0 0 0 34																												
STATE MD			5 0 0 0 5 35				6 0 0 0 0 36																												
ZIP 20774			7 0 5 0 0 37				8 0 5 5 5 38																												
PHONE 240-876-3568			9 5 0 5 0 39				10 5 0 0 0 40																												
SOURCE ID NUMBER AI#29007			11 0 0 5 0 41				12 0 5 5 5 42																												
PROCESS EQUIPMENT Metal Conveyor (Transfer Pt)			13 0 0 0 0 43				14 5 10 5 5 44																												
OPERATING MODE 200 tpy			15 0 0 5 0 45				16 0 0 0 5 46																												
CONTROL EQUIPMENT			17 5 0 0 0 47				18 0 0 0 0 48																												
OPERATING MODE			19 5 0 0 0 49				20 0 5 0 0 50																												
DESCRIBE EMISSION POINT START Metals Conveyor belt (Fugitive)			21 0 0 0 0 51				22 0 0 5 0 52																												
HEIGHT ABOVE GROUND LEVEL 10.4 ft			23 0 0 0 0 53				24 0 5 0 5 54																												
HEIGHT RELATIVE TO OBSERVER START 5.4 ft STOP 5.4 ft			25 0 0 0 0 55				26 5 5 0 5 56																												
DISTANCE FROM OBSERVER START 18 m STOP 18 m			27 0 0 5 5 57				28 0 0 0 0 58																												
DIRECTION FROM OBSERVER START 310° STOP 310°			29 5 0 0 5 59				30 5 5 0 0 60																												
DESCRIBE EMISSIONS START Fugitive (white) STOP Fugitive (white)			AVERAGE OPACITY FOR HIGHEST PERIOD											NUMBER OF READINGS ABOVE % WERE																					
EMISSION COLOR START white STOP white			RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 10%																																
PLUME TYPE: ☐ CONTINUOUS ☒ FUGITIVE ☒ INTERMITTENT ☐			OBSERVER'S NAME (PRINT) NAVEEN KUMAR DENAJA																																
WATER DROPLETS PRESENT: ☐ NO ☒ YES ☐			OBSERVER'S SIGNATURE [Signature]											DATE 8/16/16																					
IF WATER DROPLET PLUME: ☐ ATTACHED ☐ DETACHED ☐			ORGANIZATION EA																																
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START 2' STOP 2'			I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS											CERTIFIED BY: Aeromet Engineering Inc											DATE 8/20/2016										
DESCRIBE BACKGROUND START Partly Cloudy STOP Partly cloudy			SIGNATURE [Signature]											TITLE MANAGER											DATE 8-17-16										
BACKGROUND COLOR START white STOP white			SKY CONDITIONS START Cloudy STOP Cloudy																																
WIND SPEED START 8 mph STOP 8 mph			WIND DIRECTION START SW STOP S																																
AMBIENT TEMP START 77°F STOP 81°F			WET BULB TEMP											RH, percent																					
Source Layout Sketch			Draw North Arrow																																
Key ☀ Sun < Plume → Wind																																			
COMMENTS																																			



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Visible Emissions Observation Form

PTI-022-2231-6-1529

SOURCE NAME <i>Ritchie Land Reclamation LLC</i>		OBSERVATION DATE <i>8/16/16</i>		START TIME <i>10:31am</i>		STOP TIME <i>11:02am</i>	
ADDRESS <i>2001 Ritchie Marlboro Rd.</i>		SEC MIN		0	15	30	45
<i>38° 51' 22" N / 76° 49' 42" W</i>		1		0	0	0	0
CITY <i>Upper Marlboro</i>		2		0	0	0	0
STATE <i>MD</i>		3		0	0	0	0
ZIP <i>20774</i>		4		0	0	0	0
PHONE <i>240-876-3568</i>		5		0	0	0	0
SOURCE ID NUMBER <i>A2 # 29007</i>		6		0	0	5	0
PROCESS EQUIPMENT <i>Transfer Pt (conveyor to screen)</i>		7		0	0	0	0
OPERATING MODE <i>200 tph</i>		8		0	0	0	0
CONTROL EQUIPMENT		9		0	5	0	0
OPERATING MODE		10		0	0	0	0
DESCRIBE EMISSION POINT <i>Transfer Pt (conveyor to screen)</i>		11		0	0	0	0
START <i>15 ft</i>		12		0	0	5	0
HEIGHT ABOVE GROUND LEVEL <i>15 ft</i>		13		0	0	0	0
HEIGHT RELATIVE TO OBSERVER <i>292 ft</i>		14		0	0	0	0
START <i>292 ft</i>		15		0	0	0	0
STOP <i>292 ft</i>		16		0	0	0	0
DISTANCE FROM OBSERVER <i>210 m</i>		17		0	0	0	0
START <i>210 m</i>		18		0	0	0	0
STOP <i>210 m</i>		19		0	0	0	0
DIRECTION FROM OBSERVER <i>293°</i>		20		0	0	0	0
START <i>293°</i>		21		0	0	0	0
STOP <i>293°</i>		22		0	0	0	0
DESCRIBE EMISSIONS <i>Fugitive (white)</i>		23		0	0	0	0
START <i>White</i>		24		0	0	0	0
STOP <i>White</i>		25		0	0	0	0
EMISSION COLOR <i>White</i>		26		0	0	0	0
PLUME TYPE: CONTINUOUS ☐		27		0	0	0	0
FUGITIVE ☒ INTERMITTENT ☐		28		0	0	0	5
WATER DROPLETS PRESENT: NO ☒ YES ☐		29		0	0	0	0
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐		30		0	0	0	0
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED <i>0'</i>		AVERAGE OPACITY FOR HIGHEST PERIOD		NUMBER OF READINGS ABOVE % WERE			
START <i>0'</i>		STOP <i>0'</i>		RANGE OF OPACITY READINGS			
DESCRIBE BACKGROUND <i>Partly Cloudy</i>		START <i>Partly Cloudy</i>		MINIMUM <i>0%</i> MAXIMUM <i>5%</i>			
BACKGROUND COLOR <i>Blue</i>		STOP <i>White</i>		OBSERVER'S NAME (PRINT) <i>NAVEEN KUMAR DEVATA</i>			
SKY CONDITIONS <i>Cloudy</i>		START <i>Cloudy</i>		OBSERVER'S SIGNATURE <i>NA</i>			
WIND SPEED <i>8 mph</i>		STOP <i>9 mph</i>		DATE <i>8/16/16</i>			
WIND DIRECTION <i>S</i>		START <i>S</i>		ORGANIZATION <i>EA</i>			
STOP <i>S</i>		WET BULB TEMP		CERTIFIED BY: <i>Aeromet Engineering Inc</i>			
RH percent		DATE <i>8/20/2016</i>		VERIFIED BY:			
Source Layout Sketch		DATE <i>8-17-16</i>		TITLE <i>MANAGER</i>			
Draw North Arrow							
X Emission Point							
Observers Position							
Wind							
Sun Location Line							
Key							
☀ Sun							
— Plume							
— Wind							
COMMENTS							
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS							
SIGNATURE <i>Tom J. ...</i>							

(6)



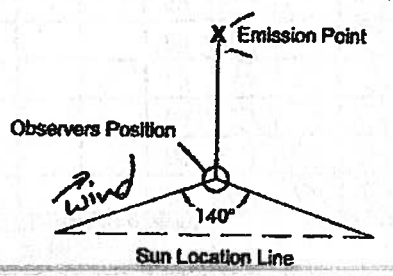
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Visible Emissions Observation Form

DTI-023-2331-6-1529

SOURCE NAME <u>Ritchie Land Reclamation LLC</u>				OBSERVATION DATE <u>8/16/16</u>				START TIME <u>11:05 am</u>				STOP TIME <u>11:36 am</u>			
ADDRESS <u>2001 Ritchie Marlboro Rd.</u>				SEC MIN				SEC MIN							
<u>38°51'22" N / 76°49'42" W</u>				0 15 30 45				0 15 30 45							
CITY <u>Upper Marlboro</u>		STATE <u>MD</u>		ZIP <u>20734</u>		1 0 0 0 0 31		2 0 0 0 0 32		3 0 0 0 5 33					
PHONE <u>240-876-3568</u>		SOURCE ID NUMBER <u>AI# 29007</u>		4 5 0 0 0 34		5 0 0 0 0 35		6 0 5 0 0 36		7 0 0 0 0 37					
PROCESS EQUIPMENT <u>Screen (Primary)</u>		OPERATING MODE <u>200 lpy</u>		8 5 0 0 0 38		9 0 0 0 0 39		10 5 5 0 5 40		11 5 0 0 0 41					
CONTROL EQUIPMENT <u>Water Sprinkler</u>		OPERATING MODE		12 0 0 5 0 42		13 0 0 0 0 43		14 0 0 0 0 44		15 5 0 0 0 45					
DESCRIBE EMISSION POINT START <u>Fugitive</u>				16 0 0 5 5 46				17 5 0 0 0 47				18 0 0 0 0 48			
HEIGHT ABOVE GROUND LEVEL <u>14.5 ft</u>		HEIGHT RELATIVE TO OBSERVER START <u>9.5 ft</u> STOP <u>9.5 ft</u>		19 5 5 5 0 49				20 5 0 5 5 50				21 0 5 0 5 51			
DISTANCE FROM OBSERVER START <u>2.7 m</u> STOP <u>2.7 m</u>		DIRECTION FROM OBSERVER START <u>308°</u> STOP <u>308°</u>		22 0 0 0 0 52				23 0 0 0 5 53				24 0 0 0 0 54			
DESCRIBE EMISSIONS START <u>fugitive</u> STOP <u>Fugitive</u>				25 0 0 0 0 55				26 0 5 0 0 56				27 0 0 0 0 57			
EMISSION COLOR START <u>white</u> STOP <u>white</u>		PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐		28 0 0 0 0 58				29 5 0 0 0 59				30 0 0 0 0 60			
WATER DROPLETS PRESENT: NO ☒ YES ☐		IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐		AVERAGE OPACITY FOR HIGHEST PERIOD				NUMBER OF READINGS ABOVE % WERE							
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START <u>1'</u> STOP <u>1'</u>				RANGE OF OPACITY READINGS MINIMUM <u>0%</u> MAXIMUM <u>5%</u>				OBSERVER'S NAME (PRINT) <u>NAUGEN KUMAR DEVATA</u>				OBSERVER'S SIGNATURE <u>NA</u>			
DESCRIBE BACKGROUND START <u>blue (sunny)</u> STOP <u>blue (sunny)</u>				OBSERVER'S SIGNATURE <u>NA</u>				DATE <u>8/16/16</u>							
BACKGROUND COLOR START <u>blue</u> STOP <u>blue</u>		SKY CONDITIONS START <u>SUNNY</u> STOP <u>SUNNY</u>		ORGANIZATION <u>EA</u>				CERTIFIED BY: <u>Aeromet Engineering Inc</u>				DATE <u>4/20/2016</u>			
WIND SPEED START <u>9 mph</u> STOP <u>8 mph</u>		WIND DIRECTION START <u>S</u> STOP <u>S</u>		VERIFIED BY:				DATE							
AMBIENT TEMP START <u>84 F</u> STOP <u>82 F</u>		WET BULB TEMP		RH percent											
Source Layout Sketch 															
Key ☀ Sun ← Plume → Wind															
COMMENTS															
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE <u>Tom J. Hall</u>															
TITLE <u>MANAGER</u>		DATE <u>8-17-16</u>													



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Visible Emissions Observation Form

PTI - 033 - 2331 - 6 - 1529

SOURCE NAME Ritche Land Reclamation LLC		OBSERVATION DATE 8/16/16		START TIME 12:06pm		STOP TIME 12:36pm		
ADDRESS 2001 Ritchie Marlboro Rd		SEC MIN 0 15 30 45		SEC MIN 0 15 30 45				
38°51'21"N 76°49'44"W		1 0 0 0 0 31		2 0 0 0 0 32				
CITY Upper Marlboro	STATE MD	ZIP 20774	3 0 0 0 0 33		4 0 0 0 0 34			
PHONE 240-876-3563	SOURCE ID NUMBER AZ# 29007		5 0 5 0 0 35		6 0 0 0 0 36			
PROCESS EQUIPMENT Conveyor Belt (Transfer Pl)	OPERATING MODE 200tpy		7 0 0 0 0 37		8 0 0 0 0 38			
CONTROL EQUIPMENT	OPERATING MODE		9 0 0 0 0 39		10 0 0 0 0 40			
DESCRIBE EMISSION POINT START Five Five			11 0 0 0 0 41		12 0 0 0 0 42			
HEIGHT ABOVE GROUND LEVEL 17.3 ft			13 0 0 5 0 43		14 0 0 0 0 44			
HEIGHT RELATIVE TO OBSERVER START 7 ft STOP 7 ft			15 0 0 0 5 45		16 0 0 0 0 46			
DISTANCE FROM OBSERVER START 25m STOP 24m			17 0 0 0 0 47		18 0 0 0 0 48			
DIRECTION FROM OBSERVER START 344° STOP 341°			19 0 0 5 0 49		20 5 0 0 0 50			
DESCRIBE EMISSIONS START White (Fugitive) STOP White (Fugitive)			21 0 0 0 0 51		22 0 0 0 0 52			
EMISSION COLOR START White STOP White			23 0 0 0 0 53		24 0 0 0 0 54			
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐			25 0 0 0 0 55		26 0 0 0 0 56			
WATER DROPLETS PRESENT: NO ☒ YES ☐			27 0 0 0 0 57		28 0 0 5 0 58			
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐			29 0 0 0 0 59		30 0 0 0 0 60			
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START 1' STOP 1'			AVERAGE OPACITY FOR HIGHEST PERIOD					NUMBER OF READINGS ABOVE % WERE
DESCRIBE BACKGROUND START SKY (BLUE) STOP SKY (BLUE)			RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 5%					
BACKGROUND COLOR START BLUE STOP BLUE			OBSERVER'S NAME (PRINT) NAVEEN KUMAR DEVATA					
SKY CONDITIONS START SUNNY STOP SUNNY			OBSERVER'S SIGNATURE NA					DATE 8/16/16
WIND SPEED START 2 mph STOP 5 mph			ORGANIZATION AeroMet Engineering Inc EA					
WIND DIRECTION START SW STOP SW			CERTIFIED BY: AeroMet Engineering Inc					DATE 4/20/2016
AMBIENT TEMP START 88 F STOP 90 F			VERIFIED BY:					DATE
WET BULB TEMP								
RH percent								
Source Layout Sketch Key: Sun (circle with rays), Plume (line), Wind (arrow) Comments: I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE: Tom J. Hill 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		OBSERVATION DATE 8/16/16		START TIME 12:38 pm		STOP TIME 1:08 pm	
ADDRESS 2001 Ritchie Marlboro Rd		SEC MIN		SEC MIN			
38° 51' 21" N / 76° 49' 44" W		0 15 30 45		0 15 30 45			
CITY Upper Marlboro	STATE MD	ZIP 20774		1 31			
PHONE 240-876-3568	SOURCE ID NUMBER A1# 29002		2 32				
PROCESS EQUIPMENT Secondary Crusher Unit	OPERATING MODE 200 tpy		3 33				
CONTROL EQUIPMENT	OPERATING MODE		4 34				
DESCRIBE EMISSION POINT		5 35		5 35			
START Fugitive		6 36		6 36			
HEIGHT ABOVE GROUND LEVEL 14.7 ft		7 37		7 37			
HEIGHT RELATIVE TO OBSERVER START 14.7 ft STOP 14.7 ft		8 38		8 38			
DISTANCE FROM OBSERVER START 30m STOP 30m		9 39		9 39			
DIRECTION FROM OBSERVER START 310° STOP 310°		10 40		10 40			
DESCRIBE EMISSIONS		11 41		11 41			
START Fugitive (white) STOP Fugitive (white)		12 42		12 42			
EMISSION COLOR		13 43		13 43			
START white STOP white		14 44		14 44			
WATER DROPLETS PRESENT: NO ☒ YES ☐		15 45		15 45			
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐		16 46		16 46			
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START 1 STOP 1		17 47		17 47			
DESCRIBE BACKGROUND		18 48		18 48			
START Blue Sky STOP Blue Sky		19 49		19 49			
BACKGROUND COLOR		20 50		20 50			
START Blue STOP Blue		21 51		21 51			
WIND SPEED		22 52		22 52			
START 5 mph STOP 5 mph		23 53		23 53			
WIND DIRECTION		24 54		24 54			
START S STOP S		25 55		25 55			
AMBIENT TEMP		26 56		26 56			
START 87F STOP 89F		27 57		27 57			
WET BULB TEMP		28 58		28 58			
RH, percent		29 59		29 59			
Source Layout Sketch		30 60		30 60			
		AVERAGE OPACITY FOR HIGHEST PERIOD		NUMBER OF READINGS ABOVE % WERE			
Key Sun ← Plume → Wind		RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 5%					
COMMENTS		OBSERVER'S NAME (PRINT) NAVJEN KUNAR DEVATA		OBSERVER'S SIGNATURE <i>NAJEN</i>		DATE 8/16/16	
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS		ORGANIZATION EA		CERTIFIED BY: Aeromet Engineering Inc		DATE 8/20/16	
SIGNATURE <i>Tom J. L.</i>		VERIFIED BY:		DATE			
TITLE MANAGER		DATE 8-17-16					

(10)



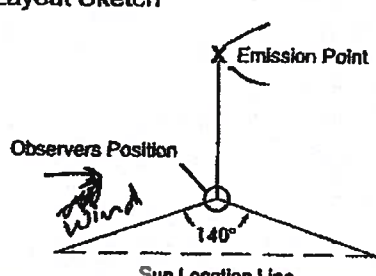
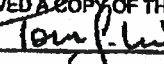
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Visible Emissions Observation Form

PTZ-033-2331-6-1529

SOURCE NAME Kitchie Land Reclamation LLC		OBSERVATION DATE 8/16/16		START TIME 1:10 pm		STOP TIME 1:41 pm	
ADDRESS 2001 Ritchie Marlboro Rd.		SEC MIN		SEC MIN			
38° 51' 50" N / 76° 49' 36" W		0 15 30 45		0 15 30 45			
CITY Upper Marlboro	STATE MD	ZIP 20774		1 31			
PHONE 240-876-3568	SOURCE ID NUMBER AP# 29007		2 32				
PROCESS EQUIPMENT Secondary Crusher	OPERATING MODE 200 tph		3 33				
CONTROL EQUIPMENT Water Sprinkler	OPERATING MODE		4 34				
DESCRIBE EMISSION POINT START Fugitive		5 35		6 36			
HEIGHT ABOVE GROUND LEVEL 14.3 ft		HEIGHT RELATIVE TO OBSERVER START 14.3 ft STOP 14.3 ft		7 37			
DISTANCE FROM OBSERVER START 22m STOP 22m		DIRECTION FROM OBSERVER START 349° STOP 349°		8 38			
DESCRIBE EMISSIONS START Fugitive (white) STOP Fugitive (white)		9 39		10 40			
EMISSION COLOR START white STOP white		11 41		12 42			
WATER DROPLETS PRESENT: NO ☒ YES ☐		IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐		13 43			
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START 1' STOP 1'		14 44		15 45			
DESCRIBE BACKGROUND START Blue Sky STOP Blue Sky		16 46		17 47			
BACKGROUND COLOR START Blue STOP Blue		18 48		19 49			
SKY CONDITIONS START Sunny STOP Sunny		20 50		21 51			
WIND SPEED START 5 mph STOP 6 mph		22 52		23 53			
WIND DIRECTION START SW STOP SW		24 54		25 55			
AMBIENT TEMP START 89 F STOP 90 F		26 56		27 57			
WET BULB TEMP		28 58		29 59			
RH. percent		30 60					
Source Layout Sketch 		AVERAGE OPACITY FOR HIGHEST PERIOD		NUMBER OF READINGS ABOVE % WERE			
Key ☀ Sun ← Plume → Wind		RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 18%		OBSERVER'S NAME (PRINT) NAVEEN KUMAR DEWATA			
COMMENTS		OBSERVER'S SIGNATURE 		DATE 8/16/16			
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS		ORGANIZATION EA		CERTIFIED BY: Aeromet Engineering Inc		DATE 4/20/2016	
SIGNATURE 		VERIFIED BY:		DATE			
TITLE manager		DATE 8-17-16					

PTL-033-2211-1529

SOURCE NAME				OBSERVATION DATE				START TIME				STOP TIME			
Ritchie Land Reclamation LLC				8/16/16				1:55 PM				2:08			
ADDRESS				SEC				MIN				SEC			
2001 Ritchie Marlboro Rd.				0 15 30 45				0 15 30 45				0 15 30 45			
37° 51' 21" N / 76° 49' 44" W				1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30				31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60							
CITY		STATE		ZIP											
Upper Marlboro		MD		20774											
PHONE		SOURCE ID NUMBER													
240-876-3568		AI # 29007													
PROCESS EQUIPMENT		OPERATING MODE													
Control Equipment		200tpy													
DESCRIBE EMISSION POINT															
START Fugitive															
HEIGHT ABOVE GROUND LEVEL		HEIGHT RELATIVE TO OBSERVER													
10.7 ft		START 10.7 ft STOP 10.7 ft													
DISTANCE FROM OBSERVER		DIRECTION FROM OBSERVER													
START 15 m STOP 15 m		START 75° STOP 75°													
DESCRIBE EMISSIONS															
START Fugitive STOP Fugitive															
EMISSION COLOR		PLUME TYPE: CONTINUOUS ☐													
START White STOP White		FUGITIVE ☐ INTERMITTENT ☐													
WATER DROPLETS PRESENT:		IF WATER DROPLET PLUME:													
NO ☒ YES ☐		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		SKY CONDITIONS													
START Blue STOP Blue		START Sunny STOP Sunny													
WIND SPEED		WIND DIRECTION													
START 9 mph STOP 10 mph		START S/W STOP S/W													
AMBIENT TEMP		WET BULB TEMP		RH. percent											
START 91 F STOP 91 F															
Source Layout Sketch															
Key															
COMMENTS															
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS															
SIGNATURE		DATE													
TITLE		DATE													
MANAGER		8-17-16													
AVERAGE OPACITY FOR HIGHEST PERIOD															
RANGE OF OPACITY READINGS															
MINIMUM 0% MAXIMUM 5%															
OBSERVER'S NAME (PRINT)															
NAVJEN KUMAR DEVATA															
OBSERVER'S SIGNATURE															
DATE															
8/16/16															
ORGANIZATION															
EA															
CERTIFIED BY:															
Aeromet Engineering Inc															
DATE															
4/20/16															
VERIFIED BY:															
DATE															



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Visible Emissions Observation Form

PT2 - 020 - 2331-1529

SOURCE NAME <i>Ritchie Land Reclamation LLC</i>		OBSERVATION DATE <i>8/16/16</i>		START TIME <i>2:30 pm</i>		STOP TIME <i>3:01 pm</i>	
ADDRESS <i>2001 Ritchie Marlboro Rd.</i>		SEC MIN 0 15 30 45		SEC MIN 0 15 30 45			
<i>33° 51' 21" N / 76° 49' 44" W</i>		1 0 0 10 5		31			
CITY <i>Upper Marlboro</i>		2 0 0 0 0		32			
STATE <i>MD</i>		3 5 5 5 0		33			
ZIP <i>20774</i>		4 5 5 0 0		34			
PHONE <i>240-876-3568</i>		5 0 0 0 0		35			
SOURCE ID NUMBER <i>AZ# 29007</i>		6 0 0 5 0		36			
PROCESS EQUIPMENT <i>Conveyer belt to screen</i>		7 0 5 5 5		37			
OPERATING MODE <i>200tpy</i>		8 0 5 0 5		38			
CONTROL EQUIPMENT		9 5 10 0 5		39			
OPERATING MODE		10 0 0 0 0		40			
DESCRIBE EMISSION POINT		11 5 5 5 0		41			
START <i>Fugitive</i>		12 5 10 5 0		42			
HEIGHT ABOVE GROUND LEVEL <i>14.5 ft</i>		13 0 0 0 0		43			
HEIGHT RELATIVE TO OBSERVER START <i>14.5 ft</i> STOP <i>14.5 ft</i>		14 0 0 5 5		44			
DISTANCE FROM OBSERVER START <i>10 m</i> STOP <i>14 m</i>		15 5 5 0 0		45			
DIRECTION FROM OBSERVER START <i>68°</i> STOP <i>65°</i>		16 0 5 5 0		46			
DESCRIBE EMISSIONS		17 10 5 0 0		47			
START <i>Fugitive</i> STOP <i>Fugitive</i>		18 0 0 0 0		48			
EMISSION COLOR START <i>white</i> STOP <i>white</i>		19 0 0 5 5		49			
PLUME TYPE: CONTINUOUS ☐		20 0 0 0 0		50			
FUGITIVE ☒ INTERMITTENT ☐		21 0 0 0 5		51			
WATER DROPLETS PRESENT: NO ☒ YES ☐		22 5 0 5 5		52			
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐		23 10 0 5 5		53			
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START <i>0.1</i> STOP <i>0.1</i>		24 0 5 0 5		54			
DESCRIBE BACKGROUND		25 0 0 0 0		55			
START <i>Blue sky</i> STOP <i>Blue sky</i>		26 0 0 0 0		56			
BACKGROUND COLOR START <i>Blue</i> STOP <i>Blue</i>		27 0 0 5 0		57			
SKY CONDITIONS START <i>Sunny</i> STOP <i>Sunny</i>		28 0 0 0 0		58			
WIND SPEED START <i>10 mph</i> STOP <i>11 mph</i>		29 0 5 5 10		59			
WIND DIRECTION START <i>S</i> STOP <i>S</i>		30 5 5 0 0		60			
AMBIENT TEMP START <i>91F</i> STOP <i>92F</i>							
WET BULB TEMP							
RH percent							
Source Layout Sketch							
Key ☀ Sun ← Plume → Wind							
COMMENTS							
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS							
SIGNATURE <i>Tamara</i>							
TITLE <i>MANAGER</i>							
DATE <i>8-17-16</i>							
AVERAGE OPACITY FOR HIGHEST PERIOD							
RANGE OF OPACITY READINGS MINIMUM <i>0%</i> MAXIMUM <i>10%</i>							
OBSERVER'S NAME (PRINT) <i>NAVEEN KUMAR DEVATA</i>							
OBSERVER'S SIGNATURE <i>NA</i>							
DATE <i>8/16/16</i>							
ORGANIZATION <i>EA</i>							
CERTIFIED BY: <i>Aeromet Engineering Inc.</i>							
DATE <i>4/20/16</i>							
VERIFIED BY:							
DATE							



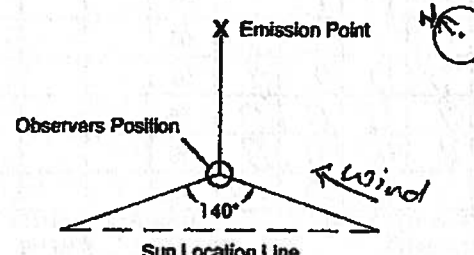
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Visible Emissions Observation Form

PTZ-023-2331-1529

SOURCE NAME Ritchie Land Reclamation LLC				OBSERVATION DATE 8/16/16				START TIME 3:02 pm				STOP TIME 3:32 pm			
ADDRESS 2001 Ritchie Marlboro Rd.				SEC MIN 0 15 30 45				SEC MIN 0 15 30 45							
39° 51' 21" N / 76° 49' 44" W				1 0 0 0 0 31				2 0 0 0 0 32							
CITY Upper Marlboro		STATE MD		ZIP 20794		3 0 0 0 0 33		4 0 0 0 0 34		5 0 0 0 0 35					
PHONE 240-876-3568		SOURCE ID NUMBER A2# 29007		6 0 0 0 0 36		7 5 5 10 5 37		8 0 5 5 0 38		9 5 10 10 5 40					
PROCESS EQUIPMENT Secondary Screen		OPERATING MODE 200 tpy		10 5 10 10 5 40		11 5 0 5 5 41		12 5 5 5 5 42		13 15 5 5 0 43					
CONTROL EQUIPMENT Water Sprinkler		OPERATING MODE		14 0 10 5 0 44		15 0 5 0 0 45		16 0 0 0 5 46		17 5 0 5 5 47					
DESCRIBE EMISSION POINT START Fugitive				18 0 5 5 0 48				19 5 0 10 5 49							
HEIGHT ABOVE GROUND LEVEL 11 ft		HEIGHT RELATIVE TO OBSERVER START 11 ft STOP 11 ft		20 5 10 5 0 50				21 0 10 10 5 51							
DISTANCE FROM OBSERVER START 12m STOP 12m		DIRECTION FROM OBSERVER START 65° STOP 65°		22 0 0 0 5 52				23 0 0 0 0 53							
DESCRIBE EMISSIONS START Fugitive STOP Fugitive				24 0 0 0 0 54				25 0 0 0 5 55							
EMISSION COLOR START White STOP White		PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐		26 0 5 5 0 56				27 0 0 0 0 57							
WATER DROPLETS PRESENT: NO ☒ YES ☐		IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐		28 0 5 0 0 58				29 5 5 0 0 59							
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START 1' STOP 1'				30 5 0 0 5 60											
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 92 F		WET BULB TEMP RH percent													
Source Layout Sketch 															
Key ☀ Sun ← Plume → Wind				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 NA				DATE 8/16/16							
				ORGANIZATION EA											
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS				CERTIFIED BY: Aeromet Engineering Inc				DATE 4/20/16							
SIGNATURE Touffer		DATE 8-17-16		VERIFIED BY:				DATE							
TITLE MANAGER															



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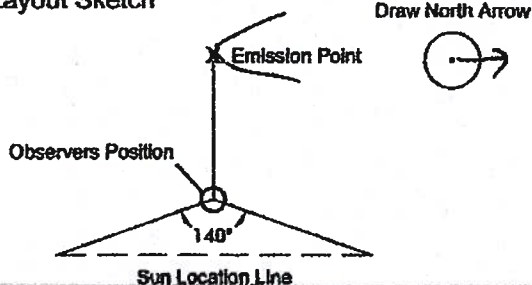
www.aeromet.org

Visible Emissions Observation Form

PT2 - 000-2331-6-1529

SOURCE NAME <i>Ritchie Land Reclamation LLC</i>		OBSERVATION DATE <i>8/17/16</i>		START TIME <i>9:37am</i>		STOP TIME <i>10:07am</i>		
ADDRESS <i>2001 Ritchie Marlboro Rd.</i>		SEC MIN 0 15 30 45		SEC MIN 0 15 30 45				
<i>37°51'23"N / 76°45'44"W</i>		1 0 0 0 0 31		2 0 0 0 0 32		3 0 0 0 0 33		
CITY <i>Upper Marlboro</i>	STATE <i>MD</i>	ZIP <i>20724</i>	4 0 0 0 0 34		5 5 0 0 0 35		6 0 0 0 0 36	
PHONE <i>240-876-3568</i>	SOURCE ID NUMBER <i>AI # 29007</i>		7 0 0 0 0 37		8 0 0 0 0 38		9 0 0 0 0 39	
PROCESS EQUIPMENT <i>Conveyor from screen.</i>	OPERATING MODE <i>200 tpy</i>		10 0 0 0 0 40		11 5 5 0 0 41		12 0 0 0 0 42	
CONTROL EQUIPMENT	OPERATING MODE		13 0 0 0 0 43		14 0 0 0 0 44		15 0 0 0 0 45	
DESCRIBE EMISSION POINT			16 0 0 0 0 46		17 0 0 0 0 47		18 0 0 0 0 48	
START <i>Fugitive</i>			19 0 0 0 0 49		20 0 0 0 0 50		21 0 0 0 0 51	
HEIGHT ABOVE GROUND LEVEL <i>16.5 ft</i>			22 0 0 0 0 52		23 0 0 0 0 53		24 5 0 0 0 54	
HEIGHT RELATIVE TO OBSERVER START <i>16.5 ft</i> STOP <i>16.5 ft</i>			25 0 0 0 0 55		26 5 5 0 0 56		27 0 0 0 0 57	
DISTANCE FROM OBSERVER START <i>13m</i> STOP <i>14m</i>			28 0 0 0 0 58		29 0 0 0 0 59		30 0 0 0 0 60	
DIRECTION FROM OBSERVER START <i>261°</i> STOP <i>293°</i>			AVERAGE OPACITY FOR HIGHEST PERIOD		NUMBER OF READINGS ABOVE % WERE			
DESCRIBE EMISSIONS START <i>Fugitive</i> STOP <i>Fugitive</i>			RANGE OF OPACITY READINGS MINIMUM <i>0%</i> MAXIMUM <i>5%</i>					
EMISSION COLOR START <i>white</i> STOP <i>white</i>			OBSERVER'S NAME (PRINT) <i>NAVEEN KUMAR DEVATA</i>					
PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☐ INTERMITTENT ☐			OBSERVER'S SIGNATURE <i>NAVEEN KUMAR DEVATA</i>					
WATER DROPLETS PRESENT: NO ☒ YES ☐			DATE <i>8/17/16</i>					
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐			ORGANIZATION <i>EA</i>					
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START <i>1'</i> STOP <i>1'</i>			I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS					
DESCRIBE BACKGROUND START <i>Partly cloudy sky</i> STOP <i>Partly cloudy sky</i>			SIGNATURE <i>Tamara</i>					
BACKGROUND COLOR START <i>Blue</i> STOP <i>Blue</i>			TITLE <i>MANAGER</i>					
WIND SPEED START <i>7 mph</i> STOP <i>9 mph</i>			DATE <i>8-17-16</i>					
WIND DIRECTION START <i>WSW</i> STOP <i>W</i>			CERTIFIED BY: <i>Aeromet Engineering Inc</i>					
AMBIENT TEMP START <i>84F</i> STOP <i>86F</i>			DATE <i>4/20/16.</i>					
WET BULB TEMP			VERIFIED BY:					
RH. percent			DATE					

Source Layout Sketch



Key

☀ Sun ← Plume → Wind

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE

MANAGER

DATE

8-17-16

CERTIFIED BY:

Aeromet Engineering Inc

VERIFIED BY:

DATE

4/20/16.

DATE

118



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Visible Emissions Observation Form

PT1-033-2331-6-1529

SOURCE NAME <i>Ritchie Land Reclamation LLC</i>			OBSERVATION DATE <i>8/17/16</i>				START TIME <i>8:29 am</i>				STOP TIME <i>9:00 am</i>			
ADDRESS <i>2001 Ritchie Marlboro Rd.</i>			SEC MIN				SEC MIN				SEC MIN			
<i>78°11'22" N / 76°49'45" W</i>			0 15 30 45				0 15 30 45				0 15 30 45			
CITY <i>Upper Marlboro</i>			STATE <i>MD</i>				ZIP <i>20774</i>							
PHONE <i>240-870-3569</i>			SOURCE ID NUMBER <i>AI# 29007</i>											
PROCESS EQUIPMENT <i>Converter from screen</i>			OPERATING MODE <i>200 tpy.</i>											
CONTROL EQUIPMENT <i>date</i>			OPERATING MODE											
DESCRIBE EMISSION POINT START <i>Fugitive</i>														
HEIGHT ABOVE GROUND LEVEL <i>14.8 ft</i>			HEIGHT RELATIVE TO OBSERVER START <i>14.8 ft</i> STOP <i>14.8 ft</i>											
DISTANCE FROM OBSERVER START <i>11 m</i> STOP <i>11 m</i>			DIRECTION FROM OBSERVER START <i>302°</i> STOP <i>298°</i>											
DESCRIBE EMISSIONS START <i>Fugitive</i> STOP <i>Fugitive</i>														
EMISSION COLOR START <i>White</i> STOP <i>White</i>			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 <i>1'</i> STOP <i>1'</i>														
DESCRIBE BACKGROUND START <i>BLUE SKY</i> STOP <i>BLUE SKY</i>														
BACKGROUND COLOR START <i>BLUE</i> STOP <i>BLUE</i>			SKY CONDITIONS START <i>SUNNY</i> STOP <i>SUNNY</i>											
WIND SPEED START <i>6 mph</i> STOP <i>6 mph</i>			WIND DIRECTION START <i>SW</i> STOP <i>SW</i>											
AMBIENT TEMP START <i>82 F</i> STOP <i>83 F</i>			WET BULB TEMP				RH, percent							
Source Layout Sketch			Draw North Arrow											
Key ☀ Sun ← Plume → Wind														
COMMENTS														
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE <i>Tony</i>			OBSERVER'S NAME (PRINT) <i>NAVEEN KUMAR DEVATA</i>				OBSERVER'S SIGNATURE <i>NA</i>				DATE <i>8/17/16</i>			
TITLE <i>MANAGER</i>			ORGANIZATION <i>EA</i>				CERTIFIED BY: <i>Aeromet Engineering Inc</i>				DATE <i>4/20/16</i>			
DATE <i>8-17-16</i>			VERIFIED BY:								DATE			



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Visible Emissions Observation Form

PR2-033-2331-6-1529

SOURCE NAME Ritchie Land Reclamation LLC				OBSERVATION DATE 8/17/16				START TIME 9:04am				STOP TIME 9:35am					
ADDRESS 2001 Ritchie Marlboro Rd.				SEC MIN 0 15 30 45				SEC MIN 0 15 30 45									
33° 51' 20" N / 75° 49' 45" W				1 0 0 0 0				31									
CITY Upper Marlboro		STATE MD		ZIP 20774		2 0 0 5 0				32							
PHONE 240-876-2568		SOURCE ID NUMBER AZ # 29007		3 0 0 0 0				33									
PROCESS EQUIPMENT Conveyor belt from screen		OPERATING MODE 200tpy		4 0 0 0 0				34									
CONTROL EQUIPMENT		OPERATING MODE		5 5 0 0 0				35									
				6 0 0 5 0				36									
				7 0 0 5 0				37									
				8 0 0 0 0				38									
DESCRIBE EMISSION POINT START Fugitive				9 0 0 0 0				39									
HEIGHT ABOVE GROUND LEVEL 15.3 ft		HEIGHT RELATIVE TO OBSERVER START 14.3 ft STOP 14.3 ft		10 5 5 5 0				40									
DISTANCE FROM OBSERVER START 17m STOP 17m		DIRECTION FROM OBSERVER START 290° STOP 290°		11 0 0 0 0				41									
DESCRIBE EMISSIONS START Fugitive STOP Fugitive				12 0 0 0 0				42									
EMISSION COLOR START white STOP white		PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☒ INTERMITTENT ☐		13 5 0 5 5				43									
WATER DROPLETS PRESENT: NO ☒ YES ☐		IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐		14 0 0 0 5				44									
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START 1' STOP 1'				15 0 0 0 0				45									
DESCRIBE BACKGROUND START Partly cloudy sky STOP Partly cloudy sky				16 0 0 0 0				46									
BACKGROUND COLOR START BLUE STOP BLUE		SKY CONDITIONS START Partly cloudy STOP Partly cloudy		17 0 0 0 0				47									
WIND SPEED START 7 mph STOP 8 mph		WIND DIRECTION START WSW STOP WSW		18 5 0 5 5				48									
AMBIENT TEMP START 84°F STOP		WET BULB TEMP RH. percent		19 5 5 0 5				49									
				20 0 0 0 5				50									
				21 0 0 0 0				51									
				22 5 5 5 5				52									
				23 5 5 5 5				53									
				24 5 0 5 5				54									
				25 5 5 5 10				55									
				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									
Source Layout Sketch				AVERAGE OPACITY FOR HIGHEST PERIOD				NUMBER OF READINGS ABOVE % WERE									
				RANGE OF OPACITY READINGS MINIMUM 0% MAXIMUM 15%													
Key ☀ Sun ← Plume → Wind				OBSERVER'S NAME (PRINT) NAVJEN KUMAR DEVATA													
COMMENTS				OBSERVER'S SIGNATURE <i>[Signature]</i>				DATE 8/17/16									
				ORGANIZATION EA													
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS				CERTIFIED BY: Aeromet Engineering Inc				DATE 4/20/16									
SIGNATURE <i>[Signature]</i>				VERIFIED BY:				DATE									
TITLE MANAGER				DATE 8-17-16													

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 THAT

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

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