
312 Justice Avenue
Logan, WV 25601

Phone (304) 752-8320
Fax (304) 752-7488

October 31, 2016

Mr. William F. Durham, Director
Division of Air Quality
601 57th Street SE
Charleston, WV 25304

RE: Greenbrier Minerals
Toney Fork Rock Crusher
Facility ID: 045-00149

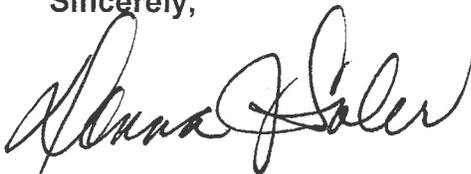
Dear Mr. Durham:

On behalf of Greenbrier Minerals, LLC, we submit the enclosed General Permit Construction Registration for the above-referenced facility. Included is a check in the amount of \$1,500.00, which represents the submittal fee, and two additional permit copies for your review and approval.

The application addresses the construction and operation of a 400TPH rock crushing and screening plant to be located on the Toney Fork Surface Mine, Logan County, WV.

If additional information or clarification is needed, please contact me at the Logan address listed above or call 304-752-8320.

Sincerely,



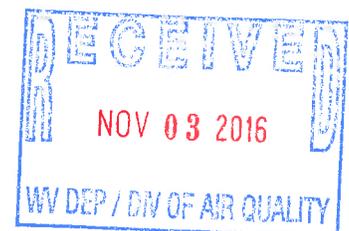
Donna J. Toler
Air Quality Project Manager

donnatoler@suddenlink.net



TABLE OF CONTENTS

	WVDAQ Registration Application
Section A	Current Business Certificate
Section B	Process Description
Section C	Description of Fugitive Emissions
Section D	Process Flow Diagram
Section E	Plot or Site Plan
Section F	Area Map
Section G	Affected Source Sheets
Section H	Baghouse Information
Section I	Emission Calculations
Section J	Class I Legal Advertisement
Section K	Electronic Submittal Diskette
Section L	Certification
Section M	Check List
Section N	Equipment Specs





WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF AIR QUALITY
 601 - 57th Street SE
 Charleston, WV 25304
 Phone: (304) 926-0475 • www.wvdep.org

APPLICATION FOR GENERAL PERMIT REGISTRATION
 CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE
 A STATIONARY SOURCE OF AIR POLLUTANTS

PLEASE CHECK ALL THAT APPLY (IF KNOWN):

- CONSTRUCTION MODIFICATION RELOCATION
 ADMINISTRATIVE UPDATE AFTER-THE-FACT

FOR AGENCY USE ONLY: PLANT I.D. # _____

PERMIT # _____ PERMIT WRITER: _____

CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

- | | |
|--|---|
| <input type="checkbox"/> G10-C – Coal Preparation and Handling | <input checked="" type="checkbox"/> G40-C – Nonmetallic Minerals Processing |
| <input type="checkbox"/> G20-B – Hot Mix Asphalt | <input type="checkbox"/> G50-B – Concrete Batch |
| <input type="checkbox"/> G30-D – Natural Gas Compressor Stations | <input type="checkbox"/> G60-C - Class II Emergency Generator |
| <input type="checkbox"/> G33-A – Class I Spark Ignition Internal Combustion Engine | <input type="checkbox"/> G65-C – Class I Emergency Generator |
| <input type="checkbox"/> G35-A – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit) | |

SECTION I. GENERAL INFORMATION

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):

GREENBRIER MINERALS, LLC

2. FEDERAL EMPLOYER ID NO. (FEIN):

26-1413283

3. APPLICANT'S MAILING ADDRESS:

**PO BOX 446
 MAN, WV 25635**

4. IF APPLICANT IS A SUBSIDIARY CORPORATION, PLEASE PROVIDE THE NAME OF PARENT CORPORATION:

CORONADO COAL, LLC, 4425 ANJEAN ROAD, RUPERT, WV 25984

5. WV BUSINESS REGISTRATION. IS THE APPLICANT A RESIDENT OF THE STATE OF WEST VIRGINIA? YES NO

⇒ IF YES, PROVIDE A COPY OF THE CERTIFICATE OF INCORPORATION / ORGANIZATION / LIMITED PARTNERSHIP (ONE PAGE) INCLUDING ANY NAME CHANGE AMENDMENTS OR OTHER BUSINESS CERTIFICATE AS ATTACHMENT A.

⇒ IF NO, PROVIDE A COPY OF THE CERTIFICATE OF AUTHORITY / AUTHORITY OF L.L.C. / REGISTRATION (ONE PAGE) INCLUDING ANY NAME CHANGE AMENDMENTS OR OTHER BUSINESS CERTIFICATE AS ATTACHMENT A.

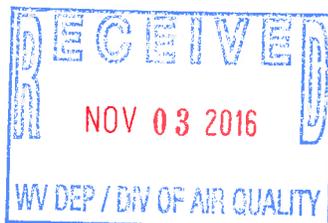
SECTION II. FACILITY INFORMATION

7. TYPE OF PLANT OR FACILITY (STATIONARY SOURCE) TO BE CONSTRUCTED, MODIFIED, RELOCATED OR ADMINISTRATIVELY UPDATED (E.G., COAL PREPARATION PLANT, PRIMARY CRUSHER, ETC.):

Rock Crushing and Screening Plant

8. STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODE FOR THE FACILITY:

1221 TONEY FORK SURFACE MINE



<p>9A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY):</p> <p>045-00149 Toney Fork</p>	<p>10A. LIST ALL CURRENT 45CSR13 AND 45CSR30 (TITLE V) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR EXISTING FACILITY ONLY):</p> <p>Existing coal screening plant at this facility G10-D164</p>
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PRIMARY OPERATING SITE INFORMATION

<p>11A. NAME OF PRIMARY OPERATING SITE:</p> <p>Toney Fork Surface Mine</p>	<p>12A. MAILING ADDRESS OF PRIMARY OPERATING SITE:</p> <p>PO Box 446, Man, WV 25635</p>
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13A. DOES THE APPLICANT OWN, LEASE, HAVE AN OPTION TO BUY, OR OTHERWISE HAVE CONTROL OF THE *PROPOSED SITE*?

YES NO

⇒ IF YES, PLEASE EXPLAIN: **OWNER/OPERATOR**

⇒ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14A. ⇒ FOR **MODIFICATIONS** or **ADMINISTRATIVE UPDATES**, AT AN EXISTING FACILITY, PLEASE PROVIDE DIRECTIONS TO THE *PRESENT LOCATION* OF THE FACILITY FROM THE NEAREST STATE ROAD;

⇒ FOR **CONSTRUCTION** OR **RELOCATION PERMITS**, PLEASE PROVIDE DIRECTIONS TO *THE PROPOSED NEW SITE LOCATION* FROM THE NEAREST STATE ROAD.

From Charleston, follow US119S to Route 10 Intersection, proceed toward Man, turn left onto Buffalo Creek Road – proceed toward Saunders – turn left onto Toney Fork Road, entrance to surface mine of left – proceed to guard shack

INCLUDE A MAP AS ATTACHMENT F.

<p>15A. NEAREST CITY OR TOWN:</p> <p align="center">Lorado</p>	<p>16A. COUNTY:</p> <p align="center">Logan</p>	
<p>17A. UTM NORTHING (KM):</p> <p align="center">4185323.10(4185.32310)</p>	<p>18A. UTM EASTING (KM):</p> <p align="center">435916.31(435.91631)</p>	<p>19A. UTM ZONE:</p> <p align="center">17</p>

*******LAT 37-48-47 AND LONG 81-43-41**

2ND ALTERNATE OPERATING SITE INFORMATION (G20-B, G40-C, G50-C only)

11C. NAME OF PRIMARY OPERATING SITE: _____	12C. MAILING ADDRESS OF PRIMARY OPERATING SITE: _____	
<p>13C. DOES THE APPLICANT OWN, LEASE, HAVE AN OPTION TO BUY, OR OTHERWISE HAVE CONTROL OF THE <i>PROPOSED SITE</i>?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>⇒ IF YES, PLEASE EXPLAIN: _____</p> <p>_____</p> <p>⇒ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>		
<p>14C. ⇒ FOR MODIFICATIONS or ADMINISTRATIVE UPDATES, AT AN EXISTING FACILITY, PLEASE PROVIDE DIRECTIONS TO THE PRESENT LOCATION OF THE FACILITY FROM THE NEAREST STATE ROAD;</p> <p>⇒ FOR CONSTRUCTION OR RELOCATION PERMITS, PLEASE PROVIDE DIRECTIONS TO THE PROPOSED NEW SITE LOCATION FROM THE NEAREST STATE ROAD.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>INCLUDE A MAP AS ATTACHMENT F.</p>		
15C. NEAREST CITY OR TOWN:	16C. COUNTY:	
17C. UTM NORTHING (KM):	18C. UTM EASTING (KM):	19C. UTM ZONE:
<p>20. PROVIDE THE DATE OF ANTICIPATED INSTALLATION OR CHANGE: January 1, 2017</p> <p>⇒ IF THIS IS AN AFTER-THE-FACT PERMIT APPLICATION, PROVIDE THE DATE UPON WHICH THE PROPOSED CHANGE DID HAPPEN: ____/____/____</p>		<p>21. DATE OF ANTICIPATED START-UP IF REGISTRATION IS GRANTED:</p> <p align="center">January 1, 2017</p>
<p>22. PROVIDE MAXIMUM PROJECTED OPERATING SCHEDULE OF ACTIVITY/ ACTIVITIES OUTLINED IN THIS APPLICATION:</p> <p>HOURS PER DAY 24 DAYS PER WEEK 7 WEEKS PER YEAR 52 PERCENTAGE OF OPERATION 100</p>		

**WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE**

ISSUED TO:
**GREENBRIER MINERALS, LLC
ANJEAN RD
RUPERT, WV 25984-0000**

BUSINESS REGISTRATION ACCOUNT NUMBER: **1032-1821**

This certificate is issued on: **06/15/2011**

*This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code*

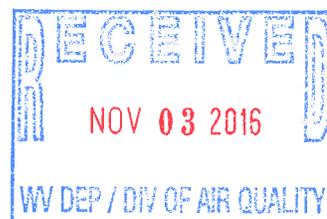
*The person or organization identified on this certificate is registered
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued.
This certificate shall be permanent until cessation of the business for which the certificate of registration
was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new
certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of
this certificate displayed at every job site within West Virginia.

atL006 v.4
L1541364864



Attachment B

DETAILED PROCESS DESCRIPTION

The rock crushing and screening system will be located in a remote area of the Toney Fork Surface Mine, near Pardee/Saunders, WV.

This system will be used to crush and screen rock for drainage ditches and road repair.

Material from the overburden area will be fed by front-end loader to a 15 ton bin BS-01(PW) @ TP-01(UD-PW); transfer to belt conveyor BC-01(NC) @ TP-02(TC-PE); to a fully enclosed crusher CR-01(FE) @ TP-03(TC-FE); to screen feed conveyor BC-02(NC) @ TP-04(TC-FW); and to the screen SS-01(PW) @ TP-05(TC-PW). The screen will discharge depending on size to the three transfer conveyors BC-03(NC), BC-04(NC), BC-05(NC) @ TP-06(TC-FE), TP-09(TC-FE), TP-12(TC-FE) for disposal into three separate open stockpiles OS-01(SW-WS), OS-03(SW-WS) and OS-04(SW-WS). The stockpiled material will be transferred to truck by front-end loader for distribution.

The fuel tank holds 108 gallons sufficient for a 12 hour shift which equals use of 9 gallons per hour. Our calculations are based on this fuel usage.

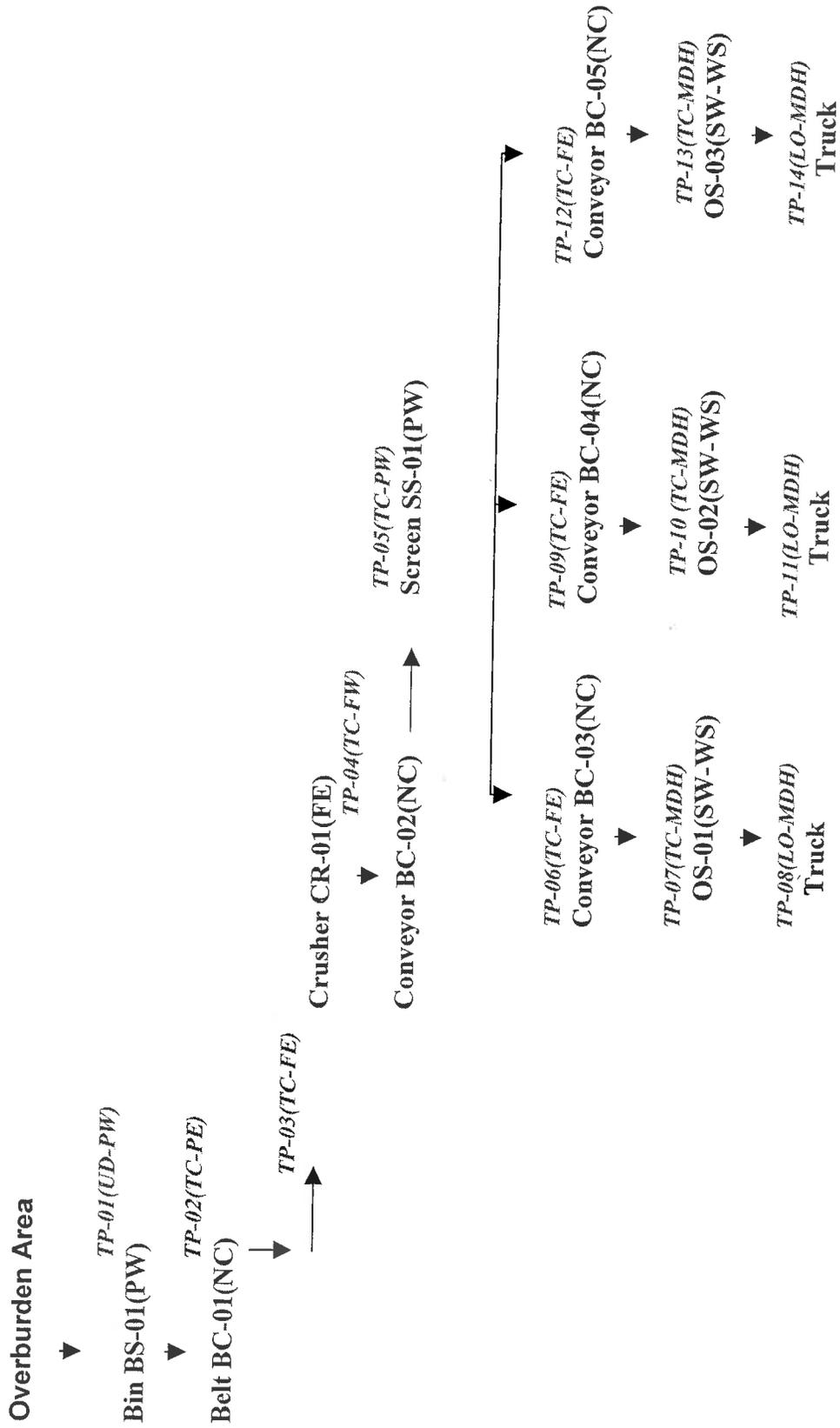
ATTACHMENT C

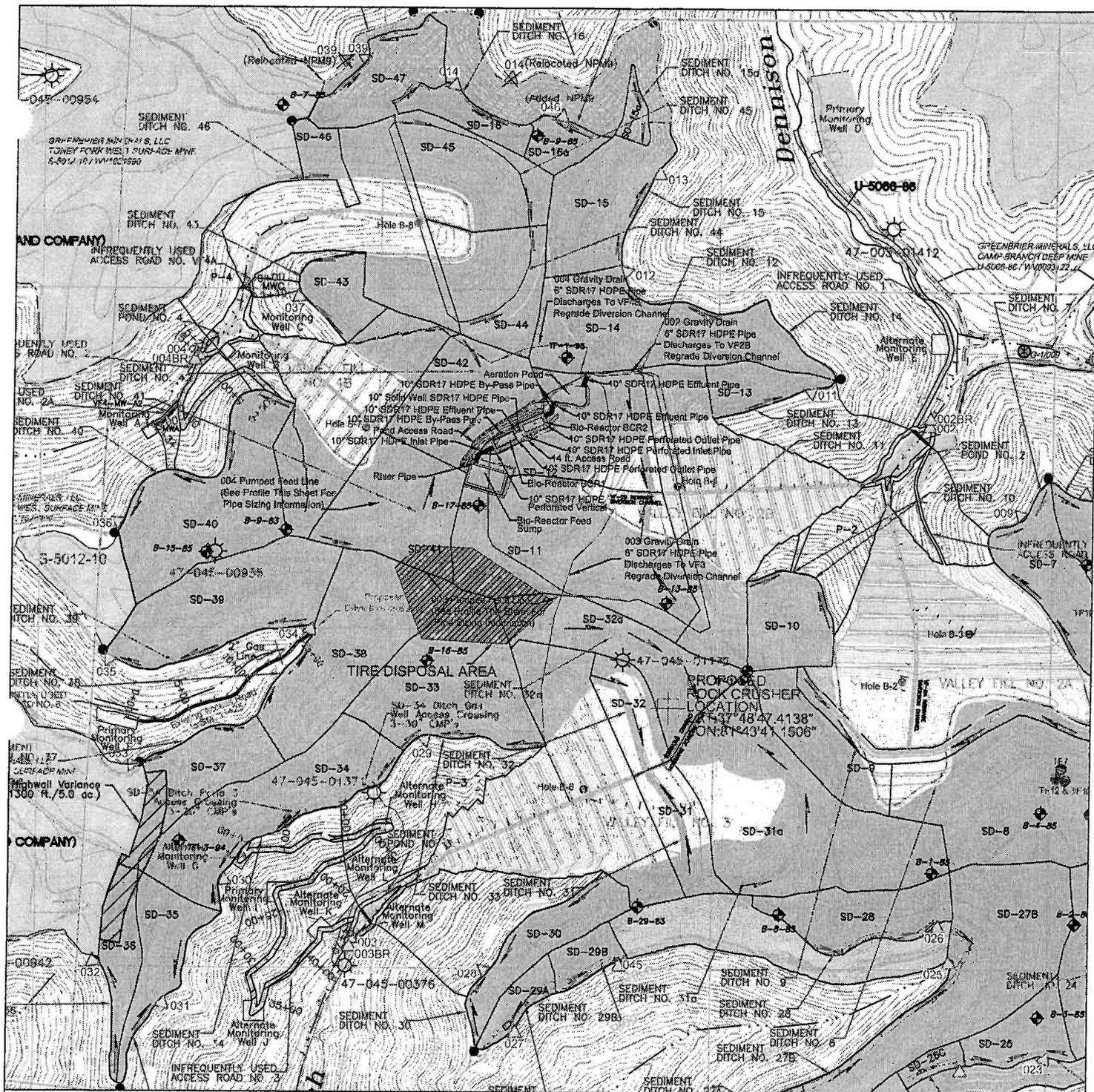
DESCRIPTION OF FUGITIVE EMISSIONS

Potential sources of fugitive particulate emissions for this facility include emissions, which are not captured by pollution control equipment and emissions from open stockpiles and vehicular traffic on unpaved haulroads and work areas. The haulroads and work areas will be controlled by water truck in accordance with section E.6.c.i. of the General Permit. The stockpile areas will be controlled by water truck with pressurized pumps sufficient to control emissions. The water truck will be operated three times daily, and more as needed in dry periods.

An additive to prevent freezing will be utilized in the winter months when freezing conditions are present. New course rock base material will be added to unpaved haulroads as needed.

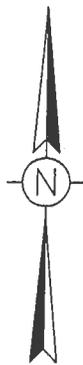
GREENBRIER MINERALS, LLC
MATERIAL FLOW DIAGRAM – TONEY FORK SURFACE
400TPH ROCK CRUSHING/SCREENING PLANT





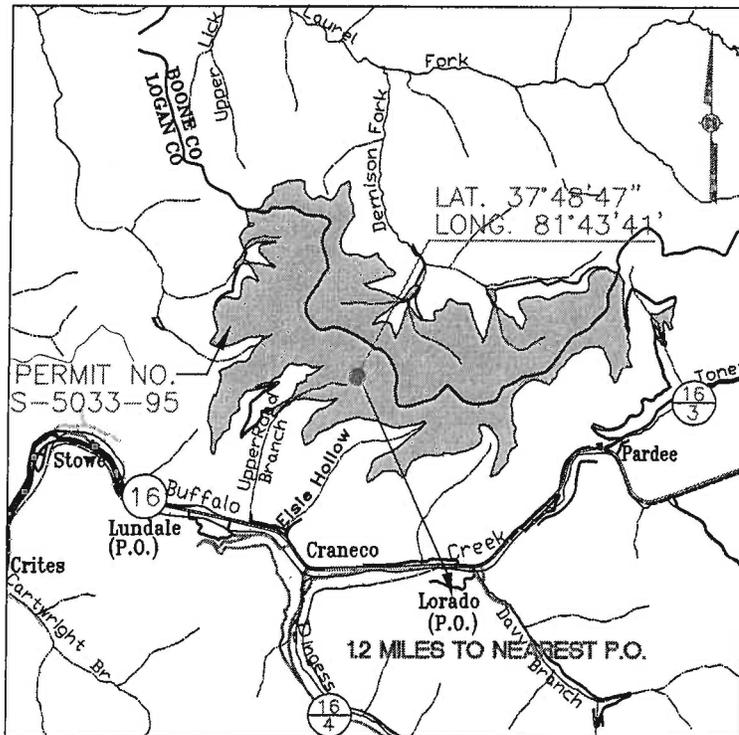
Toney Fork Surface Mine No. 2

Division of Air Quality Site Plan



1 inch = 1000 feet

October 24, 2016



LOCATION MAP

PERMIT NO. S-5033-95

U.S.G.S. LORADO & AMHERSTDALE QUADRANGLES
 LOGAN & TRIDELPHIA DISTRICTS OF LOGAN COUNTY
 AND WASHINGTON DISTRICT OF BOONE COUNTY

SCALE: 1"=1 MILE

Lon/Lat

Longitude: - 81 d 43 m 41.00 s

Latitude: + 37 d 48 m 47.00 s

DD: -81.728056 37.813056

Datum: NAD27 NAD83

UTM

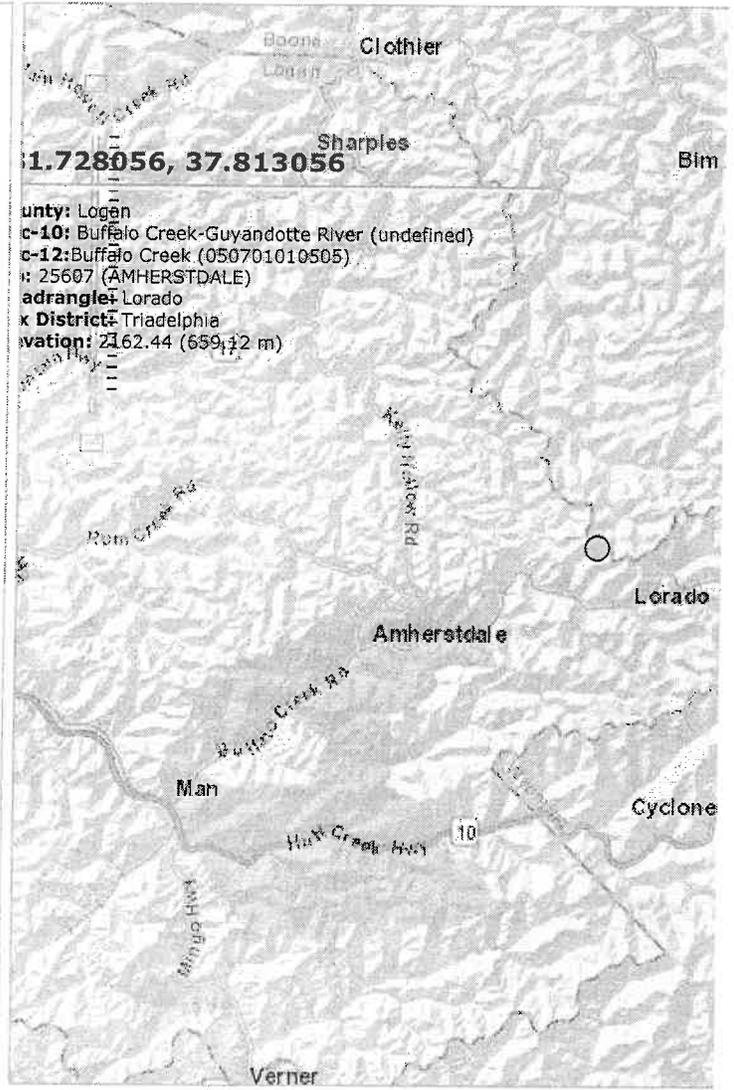
Coordinates: 435916.31 E 4185323.10 N

Datum: NAD27 NAD83 Zone: 17

WV State Plane (feet)

Coordinates: 1324614.83 E -242248.14 N

Datum: NAD27 NAD83 Zone: North



street map image topo

CRUSHING AFFECTED SOURCE SHEET

Source Identification Number ¹		CR-01				
Type of Crusher or Screen ²		Jaw				
Date of Manufacture ³		2015				
Maximum Throughput ⁴	tons/hour	400				
	tons/year	3,504,000				
Material sized from/to: ⁵		4x0				
Average Moisture Content (%) ⁶		4				
Control Device ID Number ⁷		FW				
Baghouse Stack Parameters ⁸	height (ft)	N/A				
	diameter (ft)					
	volume (ACFM)					
	exit temp (°F)					
	UTM Coordinates					
Maximum Operating Schedule ⁹	hours/day	24				
	days/year	365				
	hours/year	8760				
Percentage of Operation ¹⁰	January-March	25				
	April-June	25				
	July-September	25				
	Oct-December	25				

1. Enter the appropriate Source Identification Number for each crusher and screen. For example, in the case of an operation which incorporates multiple crushers, the crushers should be designated CR-1, CR-2, CR-3 etc. beginning with the breaker or primary crusher. Multiple screens should be designated S-1, S-2, S-3 etc.
2. Describe types of crushers and screens using the following codes:

HM	Hammermill	SS	Stationary Screen
DR	Double Roll Crusher	SD	Single Deck Screen
BM	Ball Mill	DD	Double-Deck Screen
RB	Rotary Breaker	TD	Triple Deck Screen
JC	Jaw Crusher	OT	Other
GC	Gyratory Crusher		
OT	Other - Quadroll		
3. Enter the date that each crusher and screen was manufactured.
4. Enter the maximum throughput for each crusher and screen in tons per hour and tons per year.
5. Describe the nominal material size reduction (e.g. +2"/-").
6. Enter the average percent moisture content of the material processed.
7. Enter the appropriate Control Device Identification Number for each crusher and screen. Refer to Table A - *Control Device Listing and Control Device Identification Number Instructions* in the *Reference Document* for Control Device ID prefixes and numbering.
8. Enter the appropriate stack parameters if a baghouse control device is used.
9. Enter the maximum operating schedule for each crusher and screen in hours per day, days per year and hours per year.
10. Enter the estimated percentage of operation throughout the year for each crusher and screen.

CRUSHING AFFECTED SOURCE SHEET

Source Identification Number ¹		SS-01				
Type of Crusher or Screen ²		DD				
Date of Manufacture ³		2015				
Maximum Throughput ⁴	tons/hour	400				
	tons/year	3,504,000				
Material sized from/to: ⁵		4x0				
Average Moisture Content (%) ⁶		4				
Control Device ID Number ⁷		PW				
Baghouse Stack Parameters ⁸	height (ft)	N/A				
	diameter (ft)					
	volume (ACFM)					
	exit temp (°F)					
	UTM Coordinates					
Maximum Operating Schedule ⁹	hours/day	24				
	days/year	365				
	hours/year	8760				
Percentage of Operation ¹⁰	January-March	25				
	April-June	25				
	July-September	25				
	Oct-December	25				

1. Enter the appropriate Source Identification Number for each crusher and screen. For example, in the case of an operation which incorporates multiple crushers, the crushers should be designated CR-1, CR-2, CR-3 etc. beginning with the breaker or primary crusher. Multiple screens should be designated S-1, S-2, S-3 etc.
2. Describe types of crushers and screens using the following codes:

HM	Hammermill	SS	Stationary Screen
DR	Double Roll Crusher	SD	Single Deck Screen
BM	Ball Mill	DD	Double-Deck Screen
RB	Rotary Breaker	TD	Triple Deck Screen
JC	Jaw Crusher	OT	Other
GC	Gyratory Crusher		
OT	Other - Quadroll		
3. Enter the date that each crusher and screen was manufactured.
4. Enter the maximum throughput for each crusher and screen in tons per hour and tons per year.
5. Describe the nominal material size reduction (e.g. +2" - "_").
6. Enter the average percent moisture content of the material processed.
7. Enter the appropriate Control Device Identification Number for each crusher and screen. Refer to Table A - *Control Device Listing* and *Control Device Identification Number Instructions* in the *Reference Document* for Control Device ID prefixes and numbering.
8. Enter the appropriate stack parameters if a baghouse control device is used.
9. Enter the maximum operating schedule for each crusher and screen in hours per day, days per year and hours per year.
10. Enter the estimated percentage of operation throughout the year for each crusher and screen.

STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number ¹	BS-01				
Type of Material Stored ²	Rock				
Average Moisture Content (%) ³	4				
Maximum Yearly Storage Throughput (tons) ⁴	3,504,000				
Maximum Storage Capacity (tons) ⁵	15				
Maximum Base Area (ft ²) ⁶					
Maximum Pile Height (ft) ⁷					
Method of Material Load-in ⁸	FE				
Load-in Control Device Identification Number ⁹	UD-PW				
Storage Control Device Identification Number ⁹	SW-PW				
Method of Material Load-out ⁸	SS				
Load-out Control Device Identification Number ⁹	TC-FE				

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.

- | | |
|---|--------------------------------------|
| BS Bin or Storage Silo (full enclosure) | E3 Enclosure (three sided enclosure) |
| OS Open Stockpile | SB Storage Building (full enclosure) |
| SF Stockpiles with wind fences | OT Other |

2. Describe the type of material stored or stockpiled (e.g. clean coal, raw coal, refuse, etc).

3. Enter the average percent moisture content of the stored material.

4. Enter the maximum yearly storage throughput for each storage activity.

5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)

6. For stockpiles, enter the maximum stockpile base area.

7. For stockpiles, enter the maximum stockpile height.

8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:

- | | |
|---|--------------------------------|
| CS Clamshell | SS Stationary Conveyor/Stacker |
| FC Fixed Height Chute from Bins | ST Stacking Tube |
| FE Front Endloader | TC Telescoping Chute from Bins |
| MC Mobile Conveyor/Stacker | TD Truck Dump |
| UC Under-pile or Under-Bin Reclaim Conveyor | PC Pneumatic Conveyor/Stacker |
| RC Rake or Bucket Reclaim Conveyor | OT Other |

STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number ¹	OS-01	OS-02	OS-03		
Type of Material Stored ²	Rock	Rock	Rock		
Average Moisture Content (%) ³	4	4	4		
Maximum Yearly Storage Throughput (tons) ⁴	3,504,000	3,504,000	3,504,000		
Maximum Storage Capacity (tons) ⁵	2,000	2,000	2,000		
Maximum Base Area (ft ²) ⁶	3,869	3,869	3,869		
Maximum Pile Height (ft) ⁷	20'	20'	20'		
Method of Material Load-in ⁸	SS	SS	SS		
Load-in Control Device Identification Number ⁹	TC-MDH	TC-MDH	TC-MDH		
Storage Control Device Identification Number ⁹	SW-WS	SW-WS	SW-WS		
Method of Material Load-out ⁸	EndLoader FE	EndLoader FE	EndLoader FE		
Load-out Control Device Identification Number ⁹	LO-MDH	LO-MDH	LO-MDH		

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.

BS Bin or Storage Silo (full enclosure)	E3 Enclosure (three sided enclosure)
OS Open Stockpile	SB Storage Building (full enclosure)
SF Stockpiles with wind fences	OT Other - Pressurized Water Truck
2. Describe the type of material stored or stockpiled (e.g. clean coal, raw coal, refuse, etc).
3. Enter the average percent moisture content of the stored material.
4. Enter the maximum yearly storage throughput for each storage activity.
5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)
6. For stockpiles, enter the maximum stockpile base area.
7. For stockpiles, enter the maximum stockpile height.
8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:

CS Clamshell	SS Stationary Conveyor/Stacker
FC Fixed Height Chute from Bins	ST Stacking Tube
FE Front Endloader	TC Telescoping Chute from Bins
MC Mobile Conveyor/Stacker	TD Truck Dump
UC Under-pile or Under-Bin Reclaim Conveyor	PC Pneumatic Conveyor/Stacker
RC Rake or Bucket Reclaim Conveyor	OT Other

ATTACHMENT H

BAGHOUSE AIR POLLUTION CONTROL DEVICE SHEET
Not applicable for this facility

Complete a Baghouse Air Pollution Control Device Sheet for each baghouse control device.

1. Baghouse Control Device Identification Number:
2. Manufacturer's name and model identification:
3. Number of compartments in baghouse:
4. Number of compartments online during normal operation and conditions:
5. Gas flow rate into baghouse: _____ ACFM @ _____ °F and _____ PSIA
6. Total cloth area: _____ ft²
7. Operating air to cloth ratio: _____ ft/min
8. Filter media type: _____
9. Stabilized static pressure drop across baghouse: _____ inches H₂O
10. Baghouse operation is:
 Continuous Automatic Intermittent
11. Method used to clean bags:
 Shaker Pulse jet Reverse jet Other
12. Emission rate of particulate matter entering and exiting baghouse at maximum design operating conditions:
Entering baghouse: _____ lb/hr and _____ grains/ACF
Exiting baghouse: _____ lb/hr and _____ grains/ACF
13. Guaranteed minimum baghouse collection efficiency: _____ %
14. Provide a written description of the capture system (e.g. hooding and ductwork arrangement), size of ductwork and hoods and air volume, capacity and operating horsepower of fan:
15. Describe the method of disposal for the collected material:

EMISSIONS SUMMARY

Name of applicant: Greenbrier Minerals
 Name of plant: Toney Fork Rock Crusher

Particulate Matter or PM (for 45CSR14 Major Source Determination)

Uncontrolled PM		Controlled PM	
lb/hr	TPY	lb/hr	TPY

FUGITIVE EMISSIONS				
<i>Stockpile Emissions</i>	0.15	0.65	0.04	0.16
<i>Unpaved Haulroad Emissions</i>	230.03	1,007.53	57.51	251.88
<i>Paved Haulroad Emissions</i>	0.00	0.00	0.00	0.00
Fugitive Emissions Total	230.18	1,008.18	57.54	252.04

POINT SOURCE EMISSIONS				
<i>Equipment Emissions</i>	12.88	56.41	2.58	11.28
<i>Transfer Point Emissions</i>	0.03	0.13	0.02	0.07
Point Source Emissions Total*	12.91	56.55	2.59	11.36

*Note: Point Source Total Controlled PM TPY emissions is used for 45CSR14 Major Source determination (see below)

Facility Emissions Total	243.09	1,064.73	60.14	263.40
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***Facility Potential to Emit (PTE) (Baseline Emissions) = 11.36**
(Based on Point Source Total controlled PM TPY emissions from above) ENTER ON LINE 26 OF APPLICATION

Particulate Matter under 10 microns, or PM-10 (for 45CSR30 Major Source Determination)

Uncontrolled PM-10		Controlled PM-10	
lb/hr	TPY	lb/hr	TPY

FUGITIVE EMISSIONS				
<i>Stockpile Emissions</i>	0.07	0.31	0.02	0.08
<i>Unpaved Haulroad Emissions</i>	48.39	211.96	12.10	52.99
<i>Paved Haulroad Emissions</i>	0.00	0.00	0.00	0.00
Fugitive Emissions Total	48.46	212.27	12.12	53.07

POINT SOURCE EMISSIONS				
<i>Equipment Emissions</i>	6.13	26.86	1.23	5.37
<i>Transfer Point Emissions</i>	0.01	0.06	0.01	0.04
Point Source Emissions Total*	6.15	26.93	1.23	5.41

*Note: Point Source Total Controlled PM-10 TPY emissions is used for 45CSR30 Major Source determination

Facility Emissions Total	54.61	239.20	13.35	58.48
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1. Emissions From CRUSHING AND SCREENING

1a. Primary Crushing

Primary Crusher ID Number	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
CR-01	0.28	1.23	0.06	0.25	0.13	0.58	0.03	0.12
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.28	1.23	0.06	0.25	0.13	0.58	0.03	0.12

1b. Secondary and Tertiary Crushing

Secondary & Tertiary Crusher ID	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1c. Screening

Screen ID Number	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
SS-01	12.60	55.19	2.52	11.04	6.00	26.28	1.20	5.26
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	12.60	55.19	2.52	11.04	6.00	26.28	1.20	5.26

Crushing and Screening	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
TOTAL	12.88	56.41	2.58	11.28	6.13	26.86	1.23	5.37

1. Emissions From CRUSHING AND SCREENING (Continued)

EMISSION FACTORS

source: AP42, Fifth Edition, Revised 01/95

(lb/ton of material throughput)

PM	
Primary Crushing	0.0007
Tertiary Crushing	0.00504
Screening	0.0315

PM-10	
Primary Crushing	0.000333
Tertiary Crushing	0.0024
Screening	0.015

2. Emissions From TRANSFER POINTS (continued)

Transfer Point ID No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	0.03	0.13	0.02	0.07	0.01	0.06	0.01	0.04

Source:

AP-42 Fifth Edition

13.2.4 Aggregate Handling and Storage Piles

Emissions From Batch Drop

$$E = k \cdot (0.0032) \cdot [(U/5)^{1.3}] / [(M/2)^{1.4}] = \text{pounds/ton}$$

Where:

		PM	PM-10
k =	Particle Size Multiplier (dimensionless)	0.0029	0.0014
U =	Mean Wind Speed (mph)		
M =	Material Moisture Content (%)		

Assumptions:

k - Particle size multiplier

For PM (< or equal to 30um) k = 0.0029

For PM-10 (< or equal to 10um) k = 0.0014

For PM $E(M) = 1.437E-05 \cdot [1 / ((M/2)^{1.4})] = \text{pounds/ton}$

For PM-10 $E(M) = 6.938E-06 \cdot [1 / ((M/2)^{1.4})] = \text{pounds/ton}$

For lb/hr $[\text{lb/ton}] \cdot [\text{ton/hr}] = [\text{lb/hr}]$

For Tons/year $[\text{lb/ton}] \cdot [\text{ton/yr}] \cdot [\text{ton}/2000\text{lb}] = [\text{ton/yr}]$

3. Emissions From WIND EROSION OF STOCKPILES

Stockpile ID No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
OS-01	0.05	0.22	0.01	0.05	0.02	0.10	0.01	0.03
OS-02	0.05	0.22	0.01	0.05	0.02	0.10	0.01	0.03
OS-03	0.05	0.22	0.01	0.05	0.02	0.10	0.01	0.03
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	0.15	0.65	0.04	0.16	0.07	0.31	0.02	0.08

Source:

Air Pollution Engineering Manual

Storage Pile Wind Erosion (Active Storage)

$$E = 1.7 * [s/1.5] * [(365-p)/235] * [f/15] = (\text{lb/day/acre})$$

Where:

s =	silt content of material
p =	number of days with >0.01 inch of precipitation per year
f =	percentage of time that the unobstructed wind speed exceeds 12 mph at the mean pile height

For PM $E(s) = 1.3374941 * s = \text{lb/day/acre}$

For PM-10 $E(s) = 0.6286222 * s = \text{lb/day/acre}$

For lb/hr $[\text{lb/day/acre}] * [\text{day}/24\text{hr}] * [\text{base area of pile (acres)}] = \text{lb/hr}$

For Ton/yr $[\text{lb/day/acre}] * [365\text{day/yr}] * [\text{Ton}/2000\text{lb}] * [\text{base area of pile (acres)}] = \text{Ton/yr}$

4. Emissions From UNPAVED HAULROADS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	227.49	996.39	56.87	249.10	47.85	209.57	11.96	52.39
3	2.54	11.14	0.64	2.78	0.55	2.40	0.14	0.60
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	230.03	1007.53	57.51	251.88	48.39	211.96	12.10	52.99

Source:

AP-42 9/98 Edition

13.2.2 Unpaved Roads

Emission Estimate For Unpaved Haulroads at Industrial Sites (equation 1)

$$E = [(k*(s/12)^a * (W/3)^b) / ((M_{dry}/0.2)^c)] * [(365-p)/365] = \text{lb / Vehicle Mile Traveled (VMT)}$$

Where:

		PM	PM-10
k =	particle size multiplier	10.00	2.60
a =	empirical constant	0.8	0.8
b =	empirical constant	0.5	0.4
c =	empirical constant	0.4	0.3
M _{dry} =	surface material moisture content (%) - dry conditions	0.2	
p =	number of days with at least 0.01 inches of precipitation	157	
s =	silt content of road surface material (%)	10	
W =	Mean vehicle weight (tons)		

5. Emissions From INDUSTRIAL PAVED HAULROADS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source:

AP-42 10/01 Edition

13.2.1 PAVED ROADS

Emission Estimate For Paved Haulroads

$$E = k * [sL/2]^{0.65} * [W/3]^{1.5} * [1 - (P / (2*N))] = \text{lb / Vehicle Mile Traveled (VMT)}$$

Where:

		PM	PM-10
k =	particle size multiplier	0.082	0.016
sL =	road surface silt loading, (g/m ²)	70	
P =	number of days per year with precipitation >0.01 inch	157	
N =	number of days in averaging period	365	
W =	average vehicle weight, (ton)		

Legal Advertisement

**AIR QUALITY PERMIT NOTICE
Notice of Application**

Notice is given that Greenbrier Minerals, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a General Permit Registration for a Rock Crushing and Screening Plant System to be located on Toney Fork Surface Mine, Buffalo Creek Road near Lorado in Logan County, West Virginia. The facility coordinates are as follows: latitude 37.813056 and longitude -81.728056.

The applicant estimates the potential to discharge the following Regulated Air Pollutants from the diesel combustion engine will be: criteria pollutants for the engine is estimated to be: NOx 6.448 tons per year, CO 1.389 tons per year, VOC 0.514 tons per year, SOx 0.426 tons per year and PM10 0.458 tons per year. The potential to emit hazardous pollutants from the engine is estimated to be: Benzene 0.000906 tons per year, Toluene 0.000397 tons per year, Xylene 0.000277 tons per year, Acetaldehyde 0.000745 tons per year, and Formaldehyde 0.001146 tons per year.

The applicant estimates the potential to discharge the following Regulated Air Pollutants associated with the operation of the crushing/screening plant will be: facility particulate matter potential to emit baseline emissions of 11 tons per year, particulate matter less than 10 microns emissions total of 5 tons per year and particulate matter facility emissions total of 263 tons per year.

Startup of operation is planned to begin upon permit approval. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1260, during normal business hours.

Dated this the 2nd day of November 2016

By: Greenbrier Minerals, LLC
Robert L. Cline
Vice President - Engineering
4425 Anjean Road
Rupert, WV 25984

ATTACHMENT K

**ELECTRONIC SUBMITTAL DISC LOCATED IN ORIGINAL
APPLICATION**

SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

I certify that I am the President, General Partner or General Manager

FOR A SOLE PROPRIETORSHIP

I certify that I am the Owner and Proprietor

is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Chief of the Office of Air Quality immediately, and/or,

I hereby certify that all information contained in this General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible

Signature

(please use blue ink)

Responsible Official

10/23/16

Date

Name & Title **ROBERT L. CLINE, VP OF ENGINEERING**

(please print or type)

Signature

(please use blue ink)

Authorized Representative (if applicable)

Date

Applicant's Name: **GREENBRIER MINERALS, LLC**

Phone: **304-392-1000**

Email: rcline@gscoal.com (Leslie Lavender, contact at llavender@gscoal.com)

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

PLEASE CHECK ALL ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

Please See the appropriate reference document for an explanation of the attachments listed below.

- ATTACHMENT A : CURRENT BUSINESS CERTIFICATE
- ATTACHMENT B: PROCESS DESCRIPTION
- ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS
- ATTACHMENT D: PROCESS FLOW DIAGRAM
- ATTACHMENT E: PLOT PLAN
- ATTACHMENT F: AREA MAP
- ATTACHMENT G: AFFECTED SOURCE SHEETS
- ATTACHMENT H: BAGHOUSE AIR POLLUTION CONTROL DEVICE SHEET
- ATTACHMENT I: EMISSIONS CALCULATIONS
- ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT
- ATTACHMENT K: ELECTRONIC SUBMITTAL DISKETTE
- CERTIFICATION OF INFORMATION
- APPLICATION FEE

PLEASE MAIL AN ORIGINAL AND TWO COPIES OF THE COMPLETE GENERAL PERMIT REGISTRATION APPLICATION WITH THE SIGNATURE(S) TO THE DAQ PERMITTING SECTION AT THE ADDRESS SHOWN ON THE FRONT PAGE. PLEASE DO NOT FAX PERMIT APPLICATIONS. FOR QUESTIONS REGARDING APPLICATIONS OR WEST VIRGINIA AIR POLLUTION RULES AND REGULATIONS PLEASE CALL (304) 926-3727.

**GREENBRIER MINERALS - Toney Fork
ROCK CRUSHING PLANT**

ID No. 045-00149 10/31/2016

POWER SCREEN PREMIERTRAK 400

TERIA POLLUTANTS

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	194	kW
Caterpillar C9 Diesel Fuel Engine	260	hp
Max. Hours of Operation (8 hrs/day, 5 days/week, 40 weeks/year)	1600	hrs/year
Heating Value for diesel	19300	Btu/gal

E (hourly) = Emission Factor (lb/hp-hr) * Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) * Horse Power (hp) * Maximum Hours of Operation * 1 ton
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	8.0600	6.448
CO	AP42	0.00668	0.95	D	1.7368	1.389
SOx	AP42	0.00205	0.29	D	0.5330	0.426
PM/PM10	AP42	0.00220	0.31	D	0.5720	0.458
VOC	AP42	0.00247	0.35	D	0.6422	0.514

HAZARDOUS AIR POLLUTANTS

42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2
 45 CSR30 Table 45-30A Hazardous Air Pollutants

Caterpillar C9 Diesel Fuel Engine	260	hp		
Maximum Hours of Operation (5 hrs/day, 5 days/week, 20 weeks/year)			1600	hours/year
Maximum diesel usage, based on EPA WebFIRE/AP-42 3.4-1 assumptions on diesel			19300	Btu/lb
			7.1	lb/gal
	Heating Value for diesel		134900	BTU/US gal
	Maximum diesel usage at 1600 rpm		9	gal/hour (see specs)

E (hourly) = Emission Factor (lb/hp-hr) * Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) * Horse Power (hp) * Maximum Hours of Operation * 1 ton
 per 2000 lb

CAS NO.		Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
71-43-2	Benzene	0.000933	E	0.00113	0.000906
108-88-3	Toluene	0.000409	E	0.0005	0.000397
	Xylenes	0.000285	E	0.00035	0.000277
	1,3-Butadiene	0.0000391	E	4.7E-05	3.8E-05
50-00-0	Formaldehyde	0.00118	E	0.00143	0.001146
	Acetaldehyde	0.000767	E	0.00093	0.000745
	Acrolein	0.0000925	E	0.00011	8.98E-05
91-20-3	Naphthalene	0.0000848	E	0.0001	8.24E-05
	Burning diesel fuel:		Total HAPs	0.0046	0.003682
				lb/hour	TPY

ENGINE DATA SHEET

Source Identification Number ¹		E1					
Engine Manufacturer and Model		CatC9					
Manufacturer's Rated bhp/rpm		260/1600					
Source Status ²		A/F					
Date Installed/Modified/Removed (Month/Year) ³		November 2016					
Engine Manufactured/Reconstruction Date ⁴		2015					
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No) ⁵		YES					
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) ⁶		No					
Engine, Fuel and Combustion Data	Engine Type	4 Stroke					
	APCD Type ⁸	N/A					
	Fuel Type ⁹	Diesel					
	H ₂ S (gr/100 scf)	N/A					
	Operating bhp/rpm	260/1600					
	BSFC (Btu/bhp-hr)	N/A					
	Fuel throughput (ft ³ /hr)	9 GPH					
	Fuel throughput (MMft ³ /yr)	14400GPY					
	Operation (hrs/yr)	1600					
Reference ¹⁰	Potential Emissions ¹¹	lbs/hr	tons/yr				
	NO _x	8.06	6.448				
	CO	1.7368	1.389				
	VOC	0.6422	0.514				
	SO ₂	0.5330	0.426				
	PM ₁₀	0.5720	0.045				
	Formaldehyde	0.00221	0.000553				
SHOULD BE SOME EFFICIENCY CREDIT FOR scr SYSTEM? EMISSIONS REDUCTION?							

1. Enter the appropriate Source Identification Number for each reciprocating internal combustion compressor/generator engine located at the facility. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Emergency Generator engines should be designated EG-1, EG-2, EG-3 etc. If more than three (3) engines exist, please use additional sheets.

2. Enter the Source Status using the following codes:

NS Construction of New Source (installation) ES Existing Source

EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS

		Registration Number <u>6</u> G40-C											
		Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)						
Source ID No.		Benzene	Acetaldehyde	Toluene	Xylenes	n-Hexane	Formaldehyde	Benzene	Acetaldehyde	Toluene	Xylenes	n-Hexane	Formaldehyde
Transfer Points													
Crush/Screen													
Stockpiles													
Haulroads													
CAT C9		0.00113	0.00093	0.0005	0.00035		0.00143	0.000906	0.000745	0.000397	0.000277		0.001146
TOTAL		HAPS 0.0046 lb/hr 0.003682 TPY											

Powerscreen® Premiertrak 400 & R400 Jaw Crusher

SPECIFICATION - Rev 7. 01/01/2016



POWERSCREEN
CELEBRATING 50 YEARS
OF INNOVATION

50



Powerscreen® Premiertrak 400 & R400

Specification		Premiertrak 400
Total weight		Tier 3: 45,260kg (99,781lbs) including magnet & side conveyor Tier 4F: 46,000kg (101,412lbs) including side conveyor & magnet
Transport	Length	15.37m (49' 11")
	Width	2.8m (9' 2"), 4.3m (14' 1") including side conveyor
	Height	3.4m (11' 2")
Working	Length	14.9m (48' 9")
	Width	4.4m (14' 2") with side conveyor
	Height	4.1m (13' 6")
Crusher type:		Single toggle jaw, feed opening 1100mm x 700mm (44"x28")
Power unit:		Caterpillar C9 ACERT 194kW (260hp)/Scania DC9 080A 202kW (275hp)
Paint colour:		Blue RAL 5021, Grey RAL 7024, Black RAL 9005

Features & Benefits

The Powerscreen® Premiertrak 400 range of high performance primary jaw crushing plants are designed for medium scale operators in quarrying, demolition, recycling & mining applications.

The range includes the Premiertrak 400 with hydraulic adjust & the Premiertrak R400 with hydraulic release. User benefits include track mobility for a quick set-up time, hydraulic crusher setting adjustment for total control of product size & crusher overload protection to prevent damage by un-crushable objects.

- Output potential up to 400tph (440 US tph)
- Hydraulic folding feed hopper with wedge fixing system
- Heavy duty wear resistant feed hopper
- Stepped self-cleaning grizzly feeder with under feeder screen option
- Deep fines chute to reduce material blockages
- Aggressive crushing action with high swing jaw encouraging material entry into crushing chamber
- Hydraulic crusher setting adjustment
- Improved manganese liner retention, protects jaw supports on both swing & fixed jaws
- Excellent under crusher access for removal of wire with hydraulic raise lower product conveyor
- Angle adjustable product conveyor, 3.9m discharge height, lowers for transport
- Low fuel consumption due to highly efficient direct drive system
- Easy access power unit canopy
- PLC control system with auto start facility
- Remote control via umbilical
- Dust suppression system

Aggregate

- Sand & gravel
- Blasted rock
- River rock

Recycling

- C&D waste
- Overburden
- Foundry waste

Mining

- Processed ores
- Processed minerals

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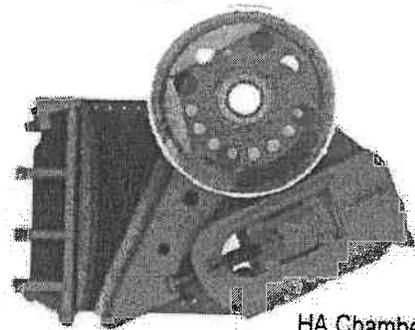
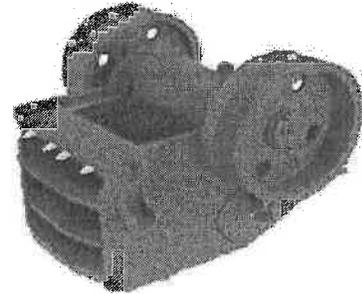
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Jaw Crusher

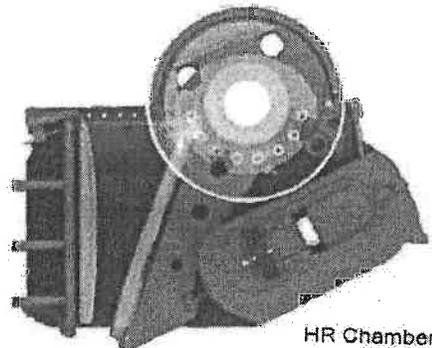
Crusher type:	Single toggle Jaw with hydraulic setting adjustment
Feed opening:	1100mm x 700mm (44" x 28")
Bearings:	Self aligning spherical roller
Lubrication:	Grease
Drive:	V belts with screw tension adjustment on engine
Pre-set:	75mm (3") closed side setting (CSS)
Minimum setting:	50mm (2") CSS recycling 75 mm (3") CSS quarry
	All setting measured from root to tip & subject to suitability of feed material. This plant has been designed for both quarry & recycling applications where appropriate For maximum material strength of 390kN 10% Fines, 240MPa Compressive Strength as per other M-Series Jaws If in doubt please contact your dealer or Powerscreen
Maximum setting:	150mm (6") CSS standard jaws
Hydraulic adjustment:	Hydraulically adjusted C.S.S set by placing equal small shims into each side of the crusher

Chamber Features

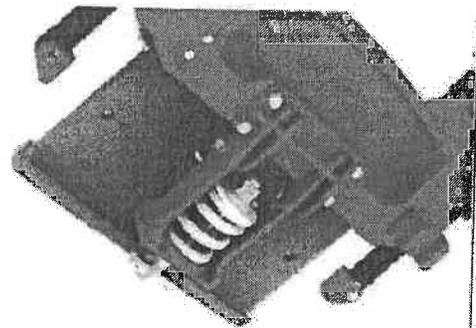
- Quick & easy setting adjustment
- Drawback rod adjustments not required during setting changes
- Jawstock supported on both sides, even stress distribution
- Strong frame construction, no welding in critical areas
- Cylinders mounted in line with side plates
- Cartridge type bearings
- Overlap jaw protects tip of jawstock / pitman
- One piece fixed jaw support
- Proven manganese liner retention



HA Chamber



HR Chamber



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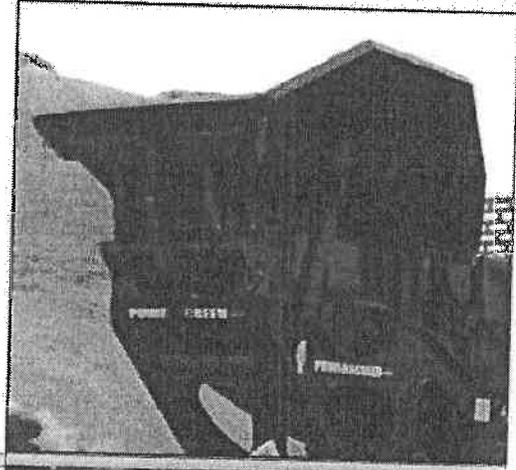
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SPECIFICATION Rev 7. 01/01/2016

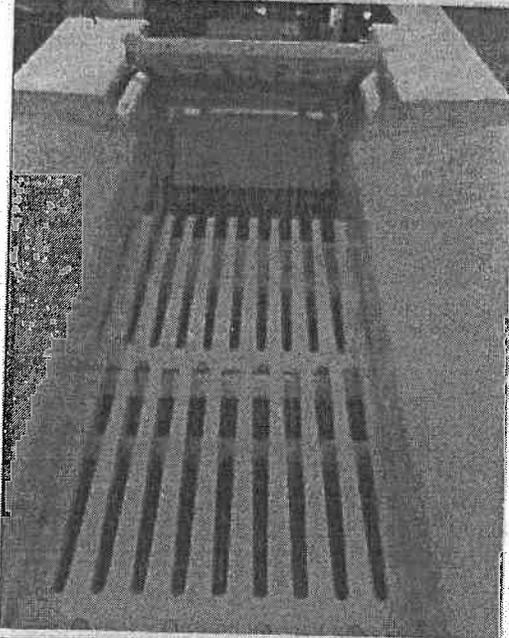
Hopper

Hopper type:	Boltless hydraulic folding hopper, over centre struts & wedge lock
Hopper length:	4.9m (16' 1")
Hopper width:	2.4m (7' 9")
Hopper capacity:	Standard: 10m ³ (13 cu. yd.) Optional: 11.03m ³ (14.4 cu. yd.)
Hopper body:	15mm thick wear resistant steel plate, mild steel reinforcing ribs
Control:	Variable speed control through a proportional flow control valve



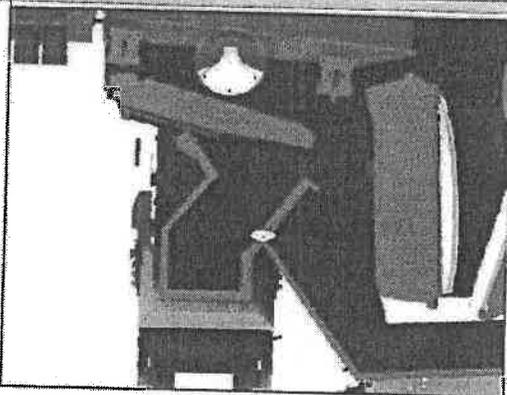
Vibrating Grizzly Feeder

Type:	Spring mounted vibrating pan & grizzly feeder
Vibrating Unit:	Twin heavy-duty cast eccentric shafts running in spherical roller bearings, gear coupled at drive end
Drive:	Flange mounted hydraulic motor
Feeder length:	4.08m (13' 5")
Feeder width:	1.06m (3' 6")
Grizzly:	2 replaceable 1.6m long stepped cartridge type grizzlies 50mm nominal aperture, self cleaning
Grizzly length:	2.12m (7')
Under-screen:	Rubber blanking mat fitted as standard. Can be substituted for optional wire meshes, use in conjunction with optional side conveyor.



Plant Chute-work

Crusher feed chute:	One piece fabrication with 12mm thick mild steel plate sides with 20mm thick bottom plate
Grizzly fines/ bypass chute:	2 Way dirt chute provided to discharge to product conveyor or optional side conveyor when fitted. Fabricated from 6mm mild steel, complete with hand operated flap door to direct grizzly fines to either



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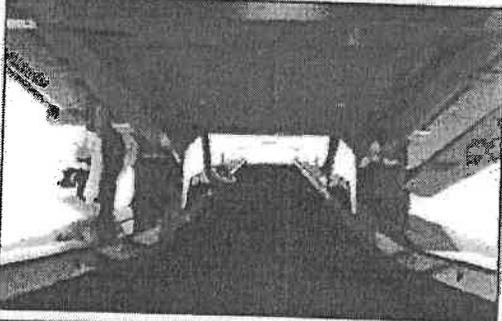
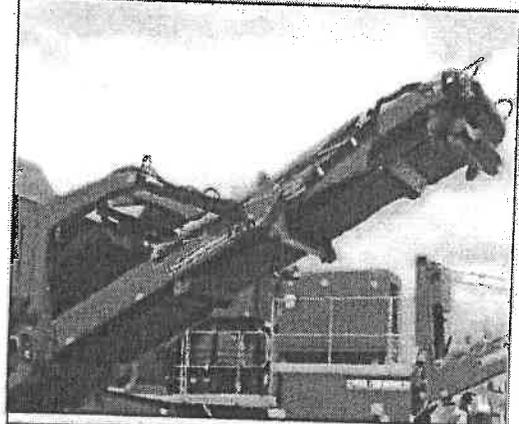
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Product Conveyor

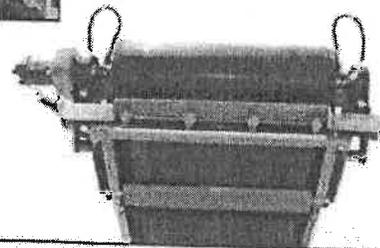
Conveyor type:	Troughed belt conveyor
Design:	Hydraulic raise & lower facility to aid rebar removal & transportation. Can be raised or lowered whilst crushing. Fully removable modular unit to aid access & maintenance
Belt type:	EP630/4 with 6mm top & 2mm bottom cover, vulcanised
Belt width:	1000mm (39")
Discharge height:	3.9m (12' 9")
Stockpile volume:	89m ³ (116 cu. yd.)
Max. clearance:	472mm (jaw to belt - lowered) 747mm (engine to belt - lowered)
Drive:	Direct drive hydraulic motor
Tunnel:	Conveyor fitted with tunnel & side covers to minimise rebar snagging
Feedboot:	Mild steel plate with abrasion resistant steel liners at feed point
Belt adjustment:	Screw adjusters at head drum
Belt covers:	Canvas type removable dust covers fitted to head section beyond magnet
Belt scraper:	SCS high performance scraper as standard
Lubrication:	Remote head drum grease points located under shedder plate
Skirting:	Wear resistant rubber skirts along



Dust Suppression System

Sprays bars with atomiser nozzles mounted over crusher mouth, product conveyor feed & discharge points. Piped to an inlet manifold for client's pressured water supply

Type:	Clean water multi atomising nozzles
Inlet:	Single filtered inlet point on chassis
Pressure:	2.8 bar (42 psi)
Frost protection:	Via system drain valves
Pump:	Optional extra



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Power unit

EU Stage IIIA / US Tier 3: Caterpillar C9 ACERT, 6 cylinder, direct injection 194kW (260hp) at 1600rpm *

Operating conditions: Ambient temp. +30°C & -5°C (86°F & 23°F) altitudes up to 1000m (3281ft) above sea level

Operating rpm range: 1600rpm

Plant drive: High quality pumps driven via belts

Fuel tank capacity: 410 L (108 US G) - sufficient for a 12 hour shift

Hydraulic tank capacity: 340 L (116 US G)

Tier 4F / Stage IV: Scania DC9 84A 5 cylinder, turbo, 202kW (275hp) at 1600rpm

Operating conditions: Ambient temperature +30°C & -5°C (86°F & 23°F) at altitudes up to 1000m (3281ft) above sea level #

Operating rpm range: 1600rpm

Emission control technique: Selective Catalytic Reduction (SCR)

Reductant tank size: 60 L (16 US G)

Plant drive: High quality pumps driven via engine PTO's

Fuel tank capacity: 450 L (119 US G) - sufficient for a 12 hour shift

Hydraulic tank capacity: 445 L (117 US G)

Clutch type: Highly efficient, self-adjusting HPTO 12 dry plate clutch with electro hydraulic operation

Crusher drive: Direct drive via wedge belts, Clutch pulley diameter 212mm (8.3") Crusher pulley diameter 1260mm (4' 2")

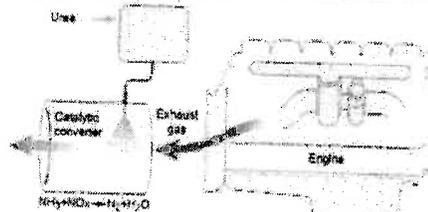
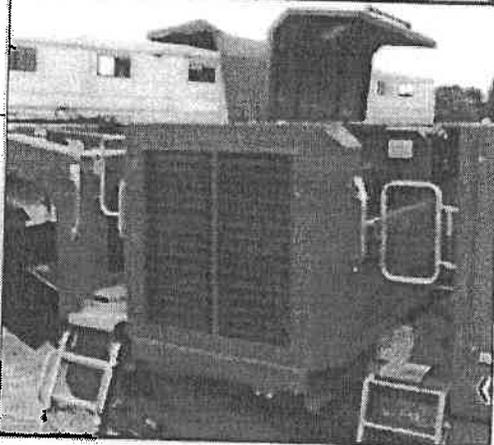
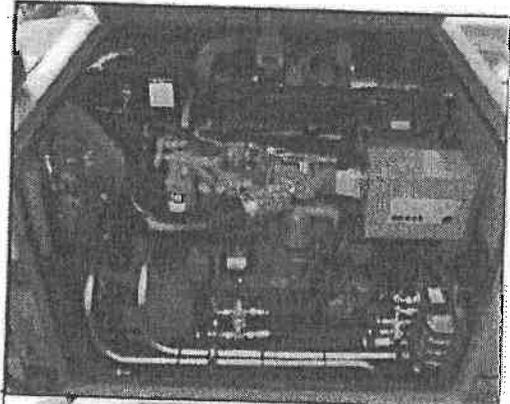
Drive tensioning: Manual screw tensioners located beside power unit

For applications outside this range please consult with Powerscreen as the plant performance / reliability may be affected

Scania Stage IV / Tier 4 Final Technology

Scania industrial engines meet the requirements of Stage IV and Tier 4 Final without the need for a particulate filter. With only EGR and SCR technology, the installation will be unaffected. Scania-developed systems for engine management and emission control ensure an attractive blend of performance and operating economy.

The function of the SCR system is based on the injection of a urea solution (AdBlue or DEF, Diesel Exhaust Fluid) into the after-treatment system. With EGR, a small amount of exhaust gases is returned to the intake of the engine, diluting the intake air and reducing the oxygen concentration. This will reduce the combustion temperature and further reduce emissions.



The principle for Scania SCR system

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Crawler Tracks

Type:	Heavy-duty tracks
Pitch:	190mm
Longitudinal centers:	3715mm
Track width:	500 mm
Climbing grade:	25° maximum
Speed:	0.9kph (0.56mph)
Drive:	Hydraulic motors
Tensioning:	Hydraulic adjuster, grease tensioner

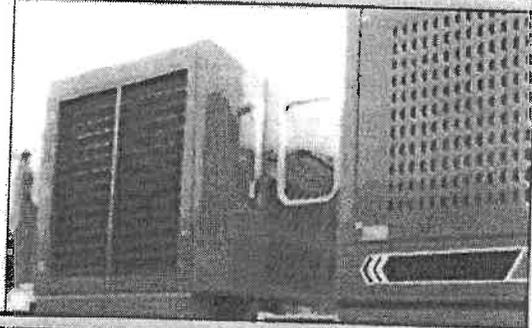


Guarding

Wire mesh or sheet metal guards are provided for all drives, flywheels, pulleys & couplings

The guards provided are designed & manufactured to meet CE & ANSI standards

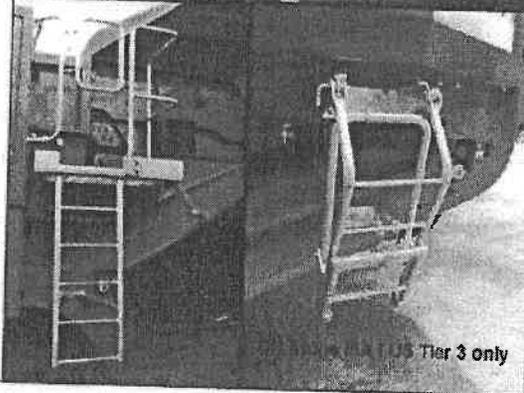
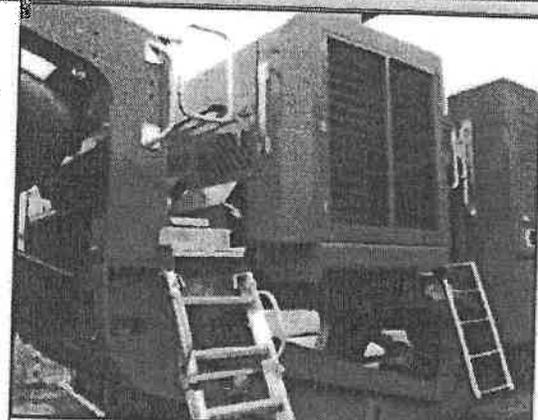
Hinged access guards are provided on the top, side & both ends of the engine



Platforms

A detachable access ladder is provided to gain access to each side of the power unit (Tier 4 variant only)

A maintenance platform is provided on one side of the feeder with double row handrails & access ladders. A platform is also included to gain access between the crusher & the power unit.



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Plant Controls

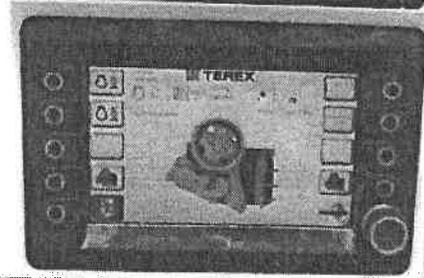
Full PLC control panel

Full system diagnostics

Controls fitted to the plant include:

Sequential start up

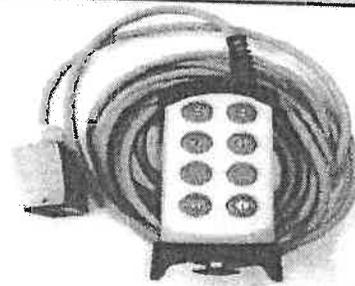
- Engine (start/stop/speed)
- Crusher (start/stop)
- Optional side conveyor (start/stop)
- Product conveyor (start/stop & raise/lower)
- Feeder (start/stop/speed) controls, located on the side of the plant



Umbilical Control

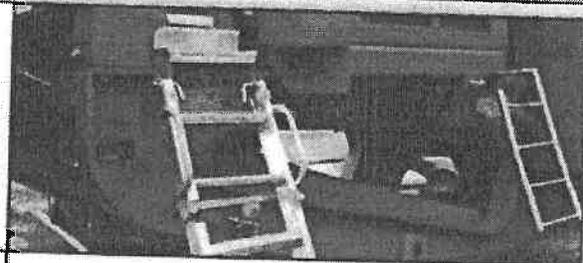
An umbilical control unit is also supplied as standard with the plant

Controls tracking function & has a stop button for the plant.



Chassis

Heavy duty I-section welded construction, provides maximum strength & accessibility



Optional Extras

- Extended hopper
- Wire mesh for underscreen
- Super tooth or multi tooth jaw plates
- Deflector plate under crusher
- Side conveyor
- Magnet prepared
- Single pole overband magnetic separator
- Twin pole overband magnetic separator
- Belt weigher
- Electric refuelling pump
- Hydraulic water pump
- Radio remote control
- Powerscreen Pulse

(For pricing please refer to your local dealer)

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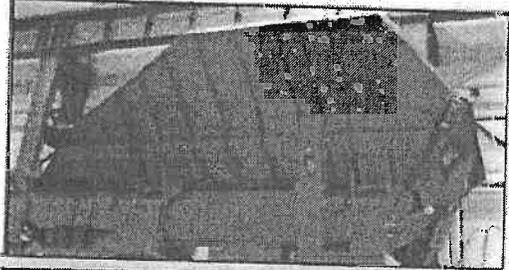
Hopper Extensions

Hopper type: Hydraulic folding extended hopper with over centre struts & wedge-lock system

Hopper length: 4915mm (16' 1")

Hopper width: 3815mm (12' 6")

Hopper body: 15mm wear resistant plate, steel ribs

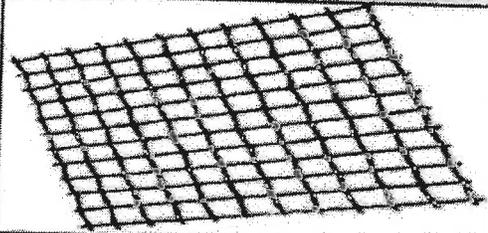


Feeder Underscreen Mesh

Position: Removable wire meshes fitted in lieu of the standard rubber blanking mat, use in conjunction with optional side conveyor

Width: 1075mm (3' 6")

Length: 1250mm (4' 1")



Jaw Profiles

A choice of jaw profiles are available to maximise performance across all applications. All jaw profiles supplied in 18% Manganese as standard. This is the proven material for quarry & recycling applications with an initial hardness of around 230BHN (Brinell Hardness)

Premium Jaws (Standard offering)

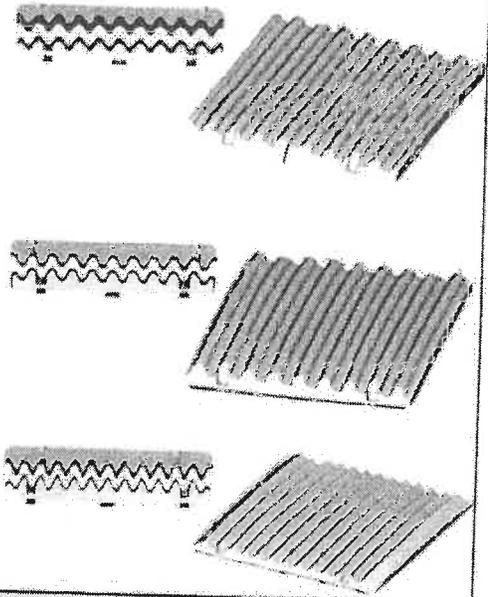
Premium jaws are fitted as standard in all Premiertrak 400 and R400 jaw crushers. They are suitable for most quarry & recycling applications & give an excellent cost per tonne crusher

Super Tooth Jaws

For extended life across most quarrying applications. Super tooth has a significantly increased wear life using a deeper profile without comprising strength or product shape

Multi Tooth Jaws

The industry choice for many recycling applications. The "sharper" profile makes the Multi-tooth ideal for most recycling applications, particularly those involving concrete. It is also more tolerant when recycling asphalt. Wear life will be reduced on abrasive applications



Under Crusher Deflector Plate

A hydraulic adjustable deflector plate, increases belt protection on recycling applications. Situated immediately below the crusher outlet point & is fitted with a 15mm thick wear resistant plate. Deflector plate working angle can be adjusted from the PLC control system



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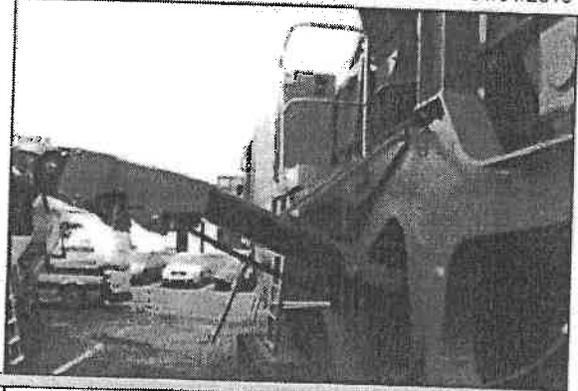
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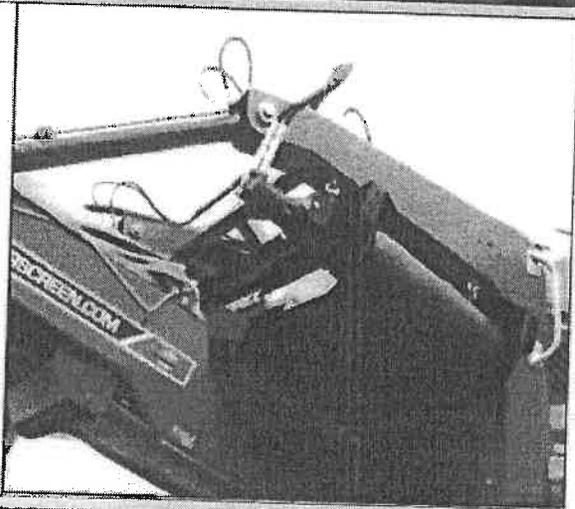
Side Conveyor

Conveyor type:	Troughed belt conveyor, folds hydraulically for transport
Width:	600mm (23.6")
Discharge height:	2.2m (7'2")
Stockpile volume:	17m ³ (22.2 cu. yd.)
Drive:	Direct drive hydraulic motor
Position:	Discharge on RHS of plant



Magnet

Options:	Magnet prepared Terex CP020—100 single pole (S.P.) Terex TP020—100 twin pole (T.P.)
Belt width:	750mm (30")
Centres:	1700mm (67")
Drive / Control:	Direct drive hydraulic motor, pre-set variable speed
Discharge:	LHS via stainless sheddor plate
Weight:	S.P. 1000kg (2204lbs) T.P. 1500kg (3306lbs)

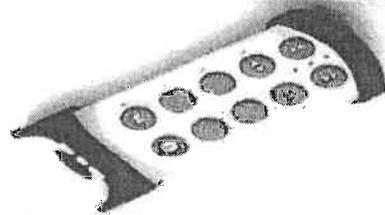


Radio Remote Control

Complete with integrated tracking functions & plant stop button. NB - Only available in certain countries where type approval has been obtained

Remote can also be used to:

- Feeder (start/stop)



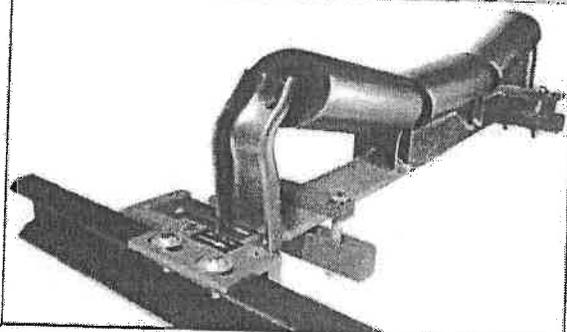
Belt Weigher

Type: Modular scale with stainless load cells,
single idler speed wheel & display unit

Accuracy: $\pm 1.0 + 0.5\%$

Load cells: 2 temperature compensated
parallelogram-style, stainless steel

Display: Separate read out near control panel



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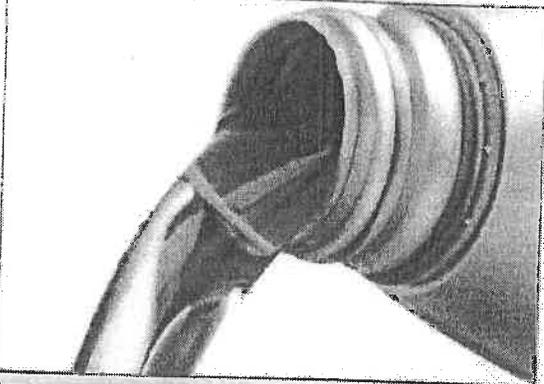
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Hot/Cold Climate Oils

Cold climate oils - (Recommended for ambient temperatures between -20 to +30°C)

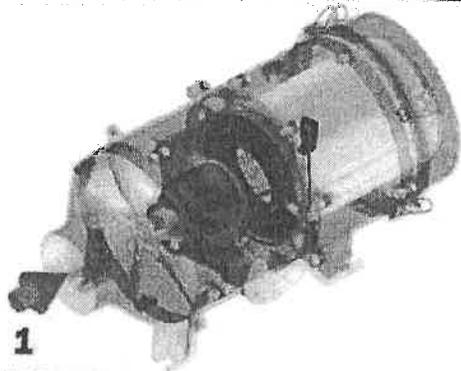
Hot climate oils - (Recommended for ambient temperatures between +15 to +50°C)



Control Panel Positive Pressurisation

An additional unit designed to reduce dust particles within the Control Panel.

A continuous flow of clean air is passed through the cabinet whilst the unit simultaneously filters out any particulate laden air.



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Powerscreen Pulse

Powerscreen Pulse is a system which allows the machine to relay performance and production data via phone networks, or by satellite when there's no cellular signal, to any device with a web browser, such as a PC, tablet or Smartphone.

POWERSCREEN PULSE



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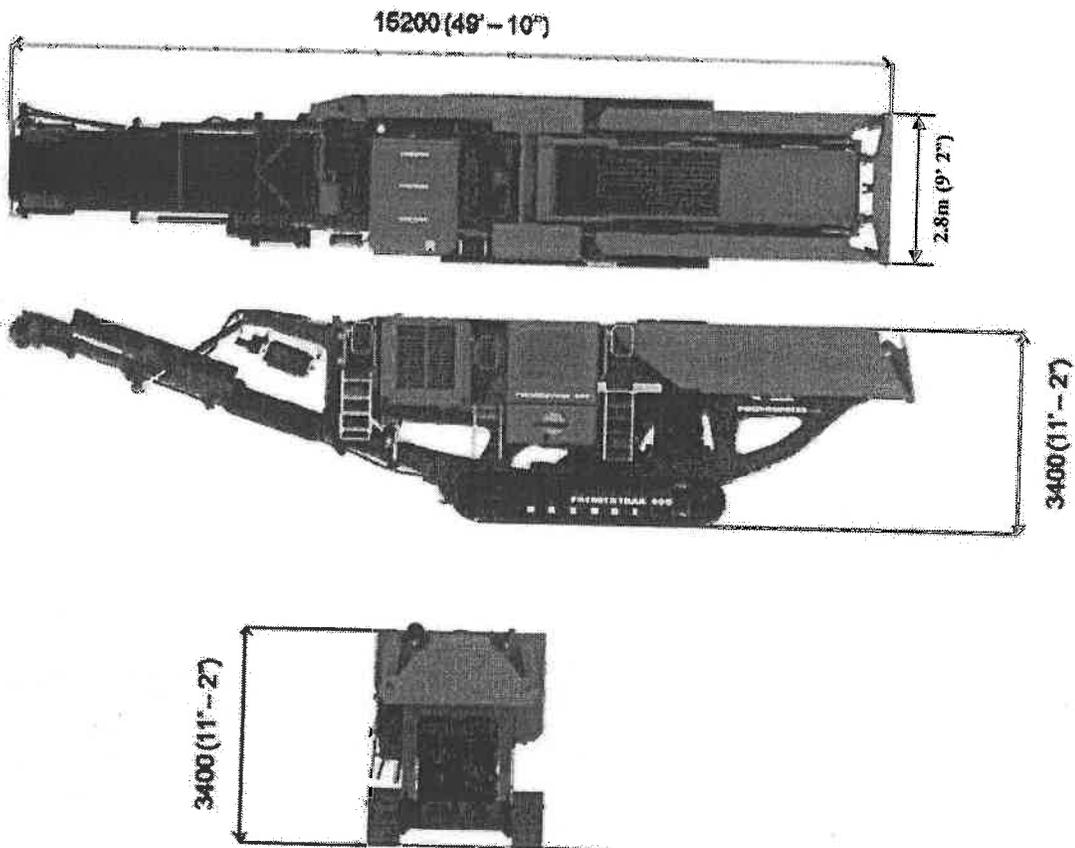
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Approximate Plant Weight & Dimensions

Transport length: 15.2m (49' 10")
Transport width: 2.8m (9' 2")
Transport height: 3.4m (11' 2")

Total plant weight: Tier 3: 45,260kg (99,781lbs) including magnet & side conveyor
Tier 4F: 46,000kg (101,412lbs) including magnet & side conveyor

Premiertrak 400 & R400 Transport Dimensions



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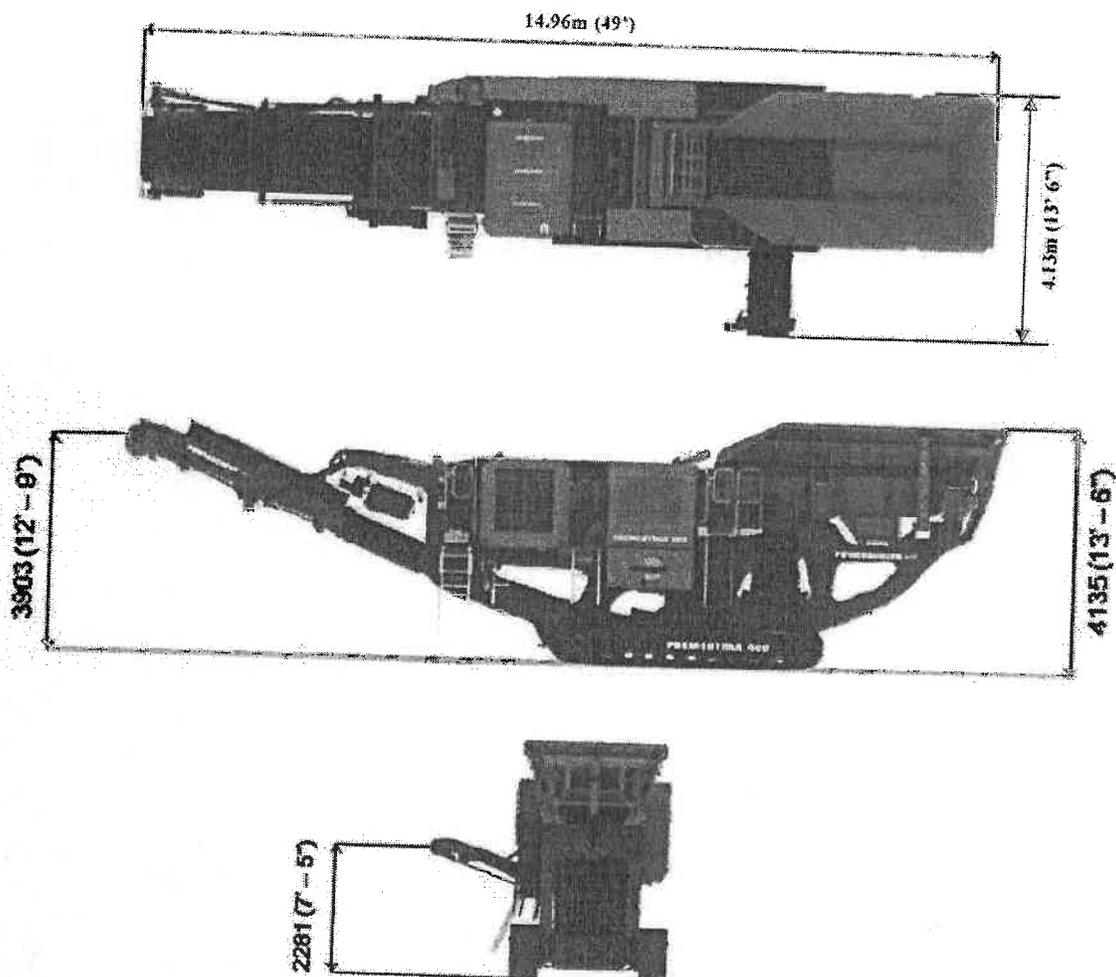
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Approximate Plant Weight & Dimensions

Working length:	14.96m	(49' 0")
Working height:	4.13m	(13' 6")
Working width:	2.8m	(9' 2")
	4.3m	(14' 1") including side conveyor

Premiertrak 400 & R400 Working Dimensions



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COLLECTING S3 - CARS
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Powerscreen equipment complies with CE requirements.

Please consult Powerscreen if you have any other specific requirements in respect of guarding, noise or vibration levels, dust emissions, or any other factors relevant to health and safety measures or environmental protection needs. On receipt of specific requests, we will endeavour to ascertain the need for additional equipment and, if appropriate, quote extra to contract prices.

All reasonable steps have been taken to ensure the accuracy of this publication, however due to a policy of continual product development we reserve the right to change specifications without notice.

It is the importers' responsibility to check that all equipment supplied complies with local legislation regulatory requirements.

Plant performance figures given in this brochure are for illustration purposes only and will vary depending upon various factors, including feed material gradings and characteristics. Information relating to capacity or performance contained within this publication is not intended to be, nor will be, legally binding.

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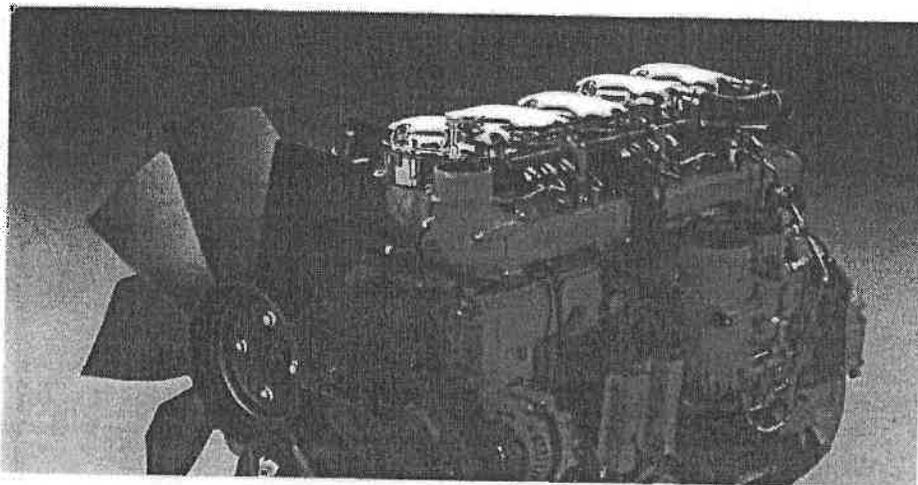
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DC09 070A. 202 kW (275 hp)

US Tier 4i, EU Stage IIIB



The industrial engines from Scania are based on a robust design with a strength optimised cylinder block containing wet cylinder liners that can easily be exchanged. Individual cylinder heads with 4 valves per cylinder promotes reparability and fuel economy.

The engine is equipped with a Scania developed Engine Management System, EMS, in order to ensure the control of all aspects related to engine performance. The injection system is Scania's XPI (Extra High Pressure Injection), a common rail system that in combination with SCR (Selective Catalytic Reduction) gives low exhaust emissions with good fuel economy and a high torque. The engine can be fitted with many accessories such as air cleaners, silencers, PTO:s and flywheels in order to suit a variety of installations.

	Rating	Engine speed (rpm)			
		1200	1500	1800	2100
Gross power (kW)	ICFN	195	202	202	202
Gross power (hp)	ICFN	265	275	275	275
Gross torque (Nm)	ICFN	1552	1286	1072	919
Spec fuel consumption, Full load (g/kWh)		193	194	204	223
Spec fuel consumption, 3/4 load (g/kWh)		193	197	209	234
Spec fuel consumption, 1/2 load (g/kWh)		198	206	223	257
Reductant consumption, Full load (g/kWh)		31	25	21	12
Heat rejection to cooling water (kW)		85	81	87	98

ICFN – Continuous service: Rated output available 1/1 h.
Unlimited h/year service time at a load factor of 100%

Standard equipment

- Scania Engine Management System, EMS
- Extra high pressure fuel injection system, XPI
- Turbo charger
- Fuel filter and extra pre-filter with water separator
- Fuel heater
- Oil filter, full flow
- Centrifugal oil cleaner
- Oil cooler, integrated in block
- Oil filler, in valve cover
- Deep front oil sump
- Oil dipstick, in block
- Magnetic drain plug for oil draining
- Starter, 1-pole 5.5 kW
- Alternator, 1-pole 100A
- Flywheel, for use with friction clutch
- Silumin flywheel housing, SAE 1 flange
- Front mounted engine brackets
- SCR system
- Open crankcase ventilation
- Operator's manual

Optional equipment

- Cooling package
- Puller and pusher fans
- Fan ring with sealing
- Hydraulic pump
- Air compressor
- AC compressor
- Side mounted PTO
- Front mounted PTO
- Exhaust connections
- Electrical base system
- Control and instrument panels
- Accelerator position sensor
- Engine heater
- Flywheels: SAE11.5", SAE14", DANA15/16", DANA17" flexplate, ZF WG260
- Stiff rubber engine suspension
- Air cleaner
- Closed crankcase ventilation
- Studs in flywheel housing
- External thermostat for extra oil cooler
- Low coolant level reaction
- Variable idle speed setting
- Low oil sump
- Oil level sensor



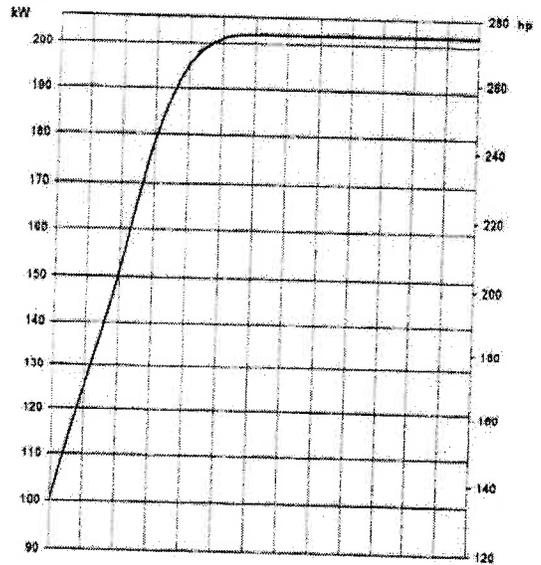
DC09 070A. 202 kW (275 hp)

US Tier 4i, EU Stage IIIB

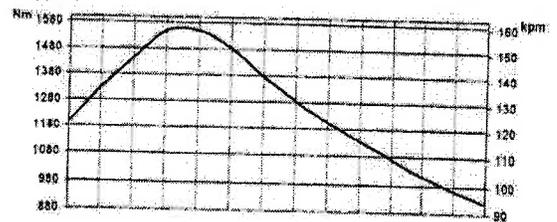
Engine description

No of cylinders	5 in-line
Working principle	4-stroke
Firing order	1 - 2 - 4 - 5 - 3
Displacement	9.3 litres
Bore x stroke	130 x 140 mm
Compression ratio	16:1
Weight	950 kg (excl oil and coolant)
Piston speed at 1500 rpm	7.0 m/s
Piston speed at 1800 rpm	8.4 m/s
Camshaft	High position alloy steel
Pistons	Aluminium pistons
Connection rods	I-section press forgings of alloy steel
Crankshaft	Alloy steel with hardened and polished bearing surfaces
Oil capacity	32-38 dm ³
Electrical system	1-pole 24V

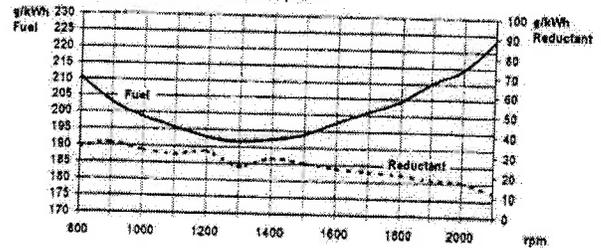
Output



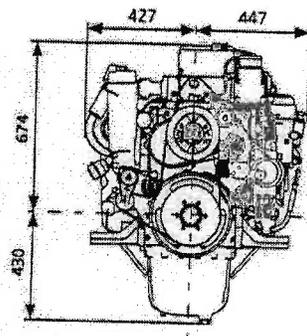
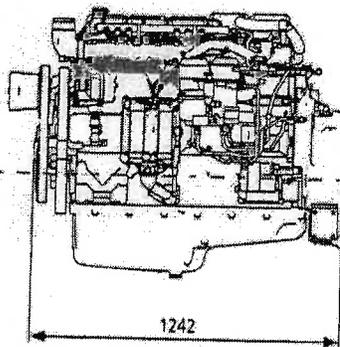
Torque



Spec fuel and reductant consumption



Test conditions Air temperature -25°C. Barometric pressure 100 kPa (750 mmHg). Humidity 30%. Diesel fuel acc. to ECE # 24 Annex 6. Density of fuel 3.840 kg/dm³. Viscosity of fuel 3.0 cSt at 40°C. Energy value 42700 kJ/kg. Power test code ISO 3044. Power and fuel values +/- 3%.

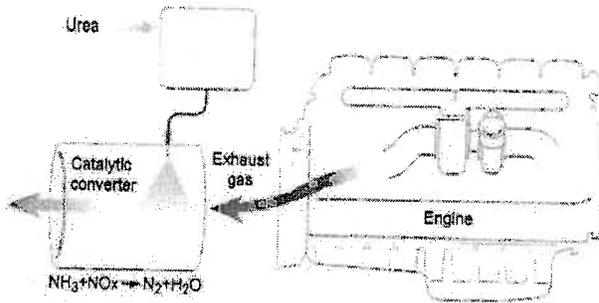


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SCR system

US Tier 4i, EU Stage IIIB

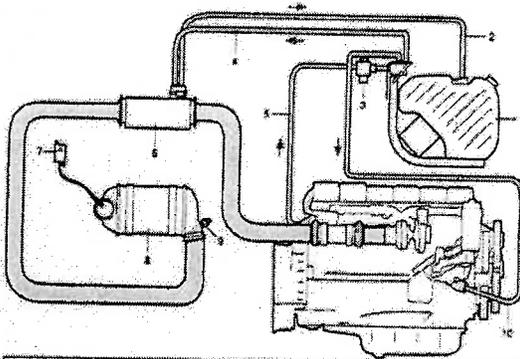


The principle for Scania SCR system

SCR (Selective Catalytic Reduction) technology is used on Scania's engines for Stage IIIB and Tier 4i to reduce the NO_x content in the exhaust gases. A chemical process is started by injecting reductant, a urea and water mixture, into the exhaust gas stream. During injection the water evaporates and the urea breaks down to form ammonia. The ammonia then reacts with the nitrogen gases in the catalytic converter and forms harmless products such as nitrogen gas and water. Through the use of SCR the exhaust gases are purged of poisonous levels of NO_x in the best possible way. Scania is making use of a system that is carefully developed and tested in our own laboratory.

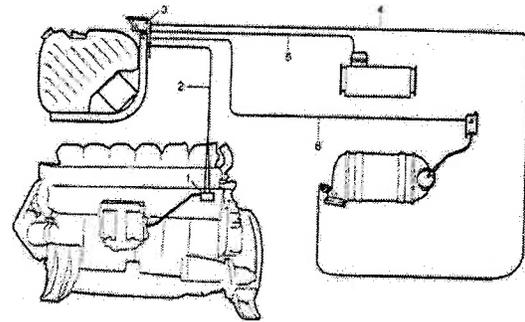
The reductant tank holds 38 or 60 litres and is heated by the engine's cooling system in order to avoid freezing of the urea solution, urea freezes at -11°C . The reductant tank and a pump module are delivered as a unit which is fitted to brackets for an easy installation. The Scania system contains all mechanical and electrical parts needed except from the exhaust piping which is to be adapted according to the customers installation.

Mechanical system



Mechanical system		Standard	Optional
1	Reductant tank and pump module	38 l	60 l
2	Reductant fluid return line	2 m	3.5 m
3	Coolant valve	✓	-
4	Reductant pressure line	2 m	3.5 m
5	Coolant hose for tank and pump heating	-	-
6	Hydrolysis catalyst with reductant doser	✓	-
7	NO_x sensor with control unit	✓	-
8	SCR catalyst	✓	-
9	Temperature sensor	✓	-
10	Coolant hose, return from tank and pump heating	-	-

Electric system

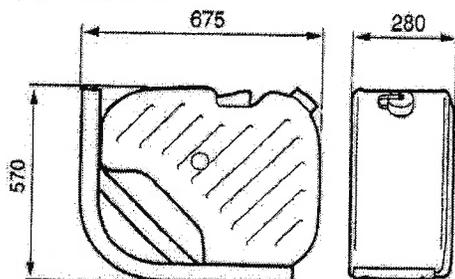


Electric system		Standard	Optional
1	Customer interface, SCR system	✓	-
2	Pipe network between engine and SCR control unit	3 m	6 m
3	Electrical interface, SCR system	✓	-
4	Temperature sensor electrical cable	3 m	6 m
5	Reductant doser electrical cable	3 m	6 m
6	NO_x sensor electrical cable	3 m	6 m

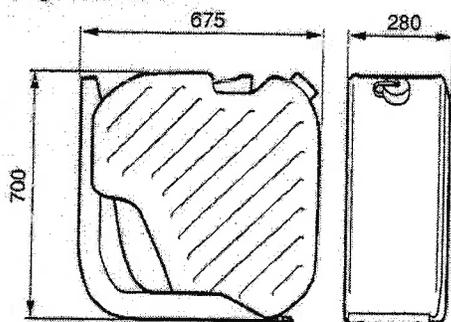
SCR system

US Tier 4i, EU Stage IIIB

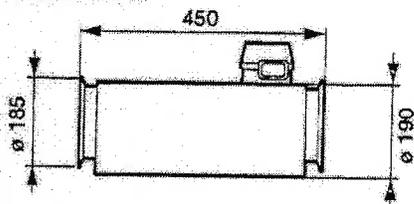
Reductant tank - 38 litres
Total volume: 50 litres
Filling volume: 38 litres



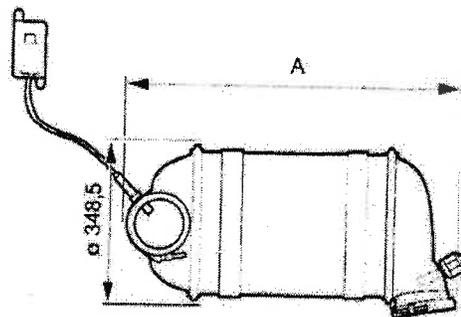
Reductant tank - 60 litres
Total volume: 70 litres
Filling volume: 60 litres



Hydrolysis catalyst
with reductant doser

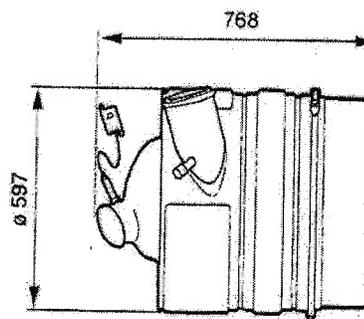


SCR catalyst



Engine	Power (kw)	Volume (litres)	Measure A (mm)
DC09	202-294	24	765
DC13	257-405	33	857
DC16	405-515	48	1060

SCR catalyst with silencer

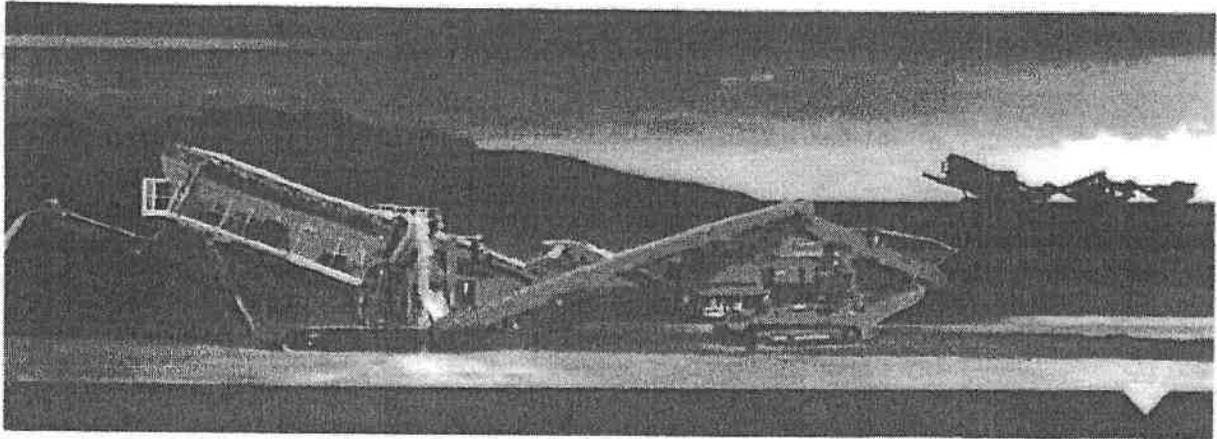


Engine	Power (kw)	Volume (litres)
DC09	202-294	33
DC13	257-405	33
DC16	Not available	



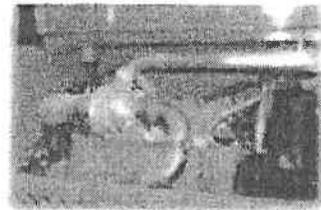
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Tier 4i Scania DC9 & DC13

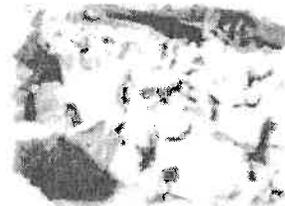
**Powerscreen Jaw & Impact Crusher
Average Fuel Consumption
Comparisons**



1.5 inches
+
gallons

XA400S - Scania DC9 Tier 4i 202kW
 Medium Hard Limestone Site, Gloucester, UK
 Serial # PIDXA40SCOMA40017
 3.5" — CSS: 90mm
 24" — Feed Material: -600mm Conglomerate (See page 4 for details)
 5" — End Product: -120mm
 Production: 180 TPH (Average)
 Engine Load: 64% (Average)
 4.4gph — Diesel consumption: 16.65 Litres Per Hour Average (LPH Av.)
 0.4gph — Urea consumption: 1.6 LPH Av.

XA400S - Tier 3 CAT powered in a similar application
 CSS: 90mm
 Feed Material: -600mm Conglomerate (See page 4 for details)
 End Product: -120mm
 Production: 180 TPH (Average)
 Engine Load: 64% (Average)
 Diesel consumption: 22 LPH Av.



Conclusion:
Average Fuel Savings = 25%

*
 5.8gph —
 fuel consumption

