



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

TO: Interested Parties / Applicant

DATE: November 12, 2008

RE: Waterloo Recycling Center, LLC / 033-27056-00102

FROM: Matthew Stuckey, Branch Chief
Permits Branch
Office of Air Quality

Notice of Decision – Approval

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to 326 IAC 2, this approval was effective immediately upon submittal of the application.

If you wish to challenge this decision, IC 4-21.5-3-7 requires that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) calendar days from the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FNPER-AM.dot12/3/07



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REGISTRATION OFFICE OF AIR QUALITY

Waterloo Recycling Center, LLC
295 South Commerce Drive
Waterloo, Indiana 46793

Pursuant to 326 IAC 2-5.1 (Construction of New Sources: Registrations) and 326 IAC 2-5.5 (Registrations), (herein known as the Registrant) is hereby authorized to construct and operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this registration.

Registration No. 033-26687-00102	
Issued by: Alfred C. Dumauual, Ph. D., Section Chief Permits Branch Office of Air Quality	Issuance Date:

First Registration Notice-Only Change No. 033-27056-00102	
Issued by: Original signed by Alfred C. Dumauual, Ph. D., Section Chief Permits Branch Office of Air Quality	Issuance Date: November 12, 2008

SECTION A

SOURCE SUMMARY

This registration is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 and A.2 is descriptive information and does not constitute enforceable conditions. However, the Registrant should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Registrant to obtain additional permits pursuant to 326 IAC 2.

A.1 General Information

The Registrant owns and operates a stationary scrap metal shredding and separation facility.

Source Address:	295 South Commerce Drive, Waterloo, Indiana 46793
Mailing Address:	35980 Woodward Avenue, Suite 210, Bloomfield Hills, Michigan 48304
General Source Phone Number:	(248) 932-9600
SIC Code:	5093
County Location:	DeKalb County
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Registration

A.2 Emission Units and Pollution Control Equipment Summary

This stationary scrap metal shredding and separations facility consists of the following emission units and pollution control devices:

- (a) one (1) scrap metal shredder, approved for construction in 2008, with a maximum capacity of 80 tons per hour, using a water/foam spray system deemed an integral part of the shredding process for particulate matter control and fire/explosion prevention, and exhausting to the atmosphere. The scrap metal shredder will process scrap metal consisting of demolition structural steel, automobile bodies, and other types and forms of metals;
- (b) one (1) scrap metal separation line, approved for construction in 2008, with a maximum capacity of 80 tons per hour, and exhausting to the atmosphere. The line includes the following equipment:
 - (1) one (1) scrap metal feed hopper, with a maximum capacity of 80 tons per hour;
 - (2) one (1) oscillator, with a maximum capacity of 80 tons per hour of dry metal scrap; and
 - (3) one (1) water spray system for control of particulate matter emissions;
 - (4) four (4) conveyor transfer points, each with a maximum capacity of 60 tons per hour of wet metal scrap;
 - (5) three (3) conveyor transfer points, each with a maximum capacity of 20 tons per hour of wet metal scrap;
 - (6) three (3) conveyor transfer points, each with a maximum capacity of 7.2 tons per hour of wet metal scrap;
 - (7) two (2) oscillators, each with a maximum capacity of 7.2 tons per hour of wet metal scrap;
 - (8) two (2) conveyor transfer points, each with a maximum capacity of 12.8 tons per

hour of wet metal scrap;

- (9) one (1) Z-box separator, with a maximum capacity of 60 tons per hour of metal scrap, separating heavy materials from light materials using a counter-flow forced air stream cascade system, equipped with an integral cyclone particle separator with the cyclone exhaust recirculated internally within the Z-box separator and reused for the forced air stream cascade system. To minimize leakage of air from the Z-box separator, the input chamber is equipped with a hanging curtain and a material activated revolving gate, the heavy material outlet chute is equipped with a hanging curtain, and the cyclone particle collection hopper is equipped with a rotary air lock mechanism.
- (c) scrap metal and fluff storage piles, loading and unloading of scrap metal and fluff storage piles, and loading of trucks or railcars with processed scrap metal and fluff;
- (d) paved roads and parking lots with public access;

SECTION B

GENERAL CONDITIONS

B.1 Definitions [326 IAC 2-1.1-1]

Terms in this registration shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-1.1-1) shall prevail.

B.2 Effective Date of Registration [IC 13-15-5-3]

Pursuant to IC 13-15-5-3, this registration is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

B.3 Registration Revocation [326 IAC 2-1.1-9]

Pursuant to 326 IAC 2-1.1-9 (Revocation), this registration to operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this registration.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this registration.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this registration shall not require revocation of this registration.
- (d) For any cause which establishes in the judgment of IDEM, the fact that continuance of this registration is not consistent with purposes of this article.

B.4 Prior Permits Superseded [326 IAC 2-1.1-9.5]

- (a) All terms and conditions of permits established prior to Registration No. 033-26687-00102 and issued pursuant to permitting programs approved into the state implementation plan have been either:
 - (1) incorporated as originally stated,
 - (2) revised, or
 - (3) deleted.
- (b) All previous registrations and permits are superseded by this registration.

B.5 Annual Notification [326 IAC 2-5.1-2(f)(3)] [326 IAC 2-5.5-4(a)(3)]

Pursuant to 326 IAC 2-5.1-2(f)(3) and 326 IAC 2-5.5-4(a)(3):

- (a) An annual notification shall be submitted by an authorized individual to the Office of Air Quality stating whether or not the source is in operation and in compliance with the terms and conditions contained in this registration.
- (b) The annual notice shall be submitted in the format attached no later than March 1 of each year to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, IN 46204-2251

- (c) The notification shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

B.6 Source Modification Requirement [326 IAC 2-5.5-6(a)]

Pursuant to 326 IAC 2-5.5-6(a), an application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

B.7 Registrations [326 IAC 2-5.1-2(i)]

Pursuant to 326 IAC 2-5.1-2(i), this registration does not limit the source's potential to emit.

SECTION C

SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitations and Standards [326 IAC 2-5.1-2(g)] [326 IAC 2-5.5-4(b)]

C.1 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this registration:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.2 Fugitive Dust Emissions [326 IAC 6-4]

The Registrant shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

SECTION D.1

OPERATION CONDITIONS

Facility Description [326 IAC 2-5.1-2(f)(2)] [326 IAC 2-5.5-4(a)(2)]:

- (a) one (1) scrap metal shredder, approved for construction in 2008, with a maximum capacity of 80 tons per hour, using a water/foam spray system deemed an integral part of the shredding process for particulate matter control and fire/explosion prevention, and exhausting to the atmosphere. The scrap metal shredder will process scrap metal consisting of demolition structural steel, automobile bodies, and other types and forms of metals;
- (b) one (1) scrap metal separation line, approved for construction in 2008, with a maximum capacity of 80 tons per hour, and exhausting to the atmosphere. The line includes the following equipment:
 - (1) one (1) scrap metal feed hopper, with a maximum capacity of 80 tons per hour;
 - (2) one (1) oscillator, with a maximum capacity of 80 tons per hour of dry metal scrap; and
 - (3) one (1) water spray system for control of particulate matter emissions;
 - (4) four (4) conveyor transfer points, each with a maximum capacity of 60 tons per hour of wet metal scrap;
 - (5) three (3) conveyor transfer points, each with a maximum capacity of 20 tons per hour of wet metal scrap;
 - (6) three (3) conveyor transfer points, each with a maximum capacity of 7.2 tons per hour of wet metal scrap;
 - (7) two (2) oscillators, each with a maximum capacity of 7.2 tons per hour of wet metal scrap;
 - (8) two (2) conveyor transfer points, each with a maximum capacity of 12.8 tons per hour of wet metal scrap;
 - (9) one (1) Z-box separator, with a maximum capacity of 60 tons per hour of metal scrap, separating heavy materials from light materials using a counter-flow forced air stream cascade system, equipped with an integral cyclone particle separator with the cyclone exhaust recirculated internally within the Z-box separator and reused for the forced air stream cascade system. To minimize leakage of air from the Z-box separator, the input chamber is equipped with a hanging curtain and a material activated revolving gate, the heavy material outlet chute is equipped with a hanging curtain, and the cyclone particle collection hopper is equipped with a rotary air lock mechanism.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-5.1-2(f)(1)] [326 IAC 2-5.5-4(a)(1)]

D.1.1 Particulate [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), particulate emissions from the scrap metal shredder and scrap metal separation line shall not exceed 49.06 pounds per hour when operating at a process weight rate of 80 tons per hour.

The pounds per hour limitation was calculated with the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand

(60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

D.1.2 Particulate Control [326 IAC 2-5.1] [326 IAC 2-5.5]

Pursuant to 326 IAC 2-5.1 (Construction of New Sources: Registrations) and 326 IAC 2-5.5 (Registrations), the water/foam spray system shall be operated and control particulate emissions from the scrap metal shredder at all times that the scrap metal shredder is in operation, and the Permittee shall operate the water/foam spray system in accordance with manufacturer's specifications.

Compliance Monitoring Requirements [326 IAC 2-5.1-2(g)] [326 IAC 2-5.5-4(b)]

D.1.3 Water/Foam Spray System Failure Detection

In the event that water/foam spray system failure has been observed, the metal shredding process will be shut down immediately until the failed water/foam spray system has been repaired or replaced.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

**REGISTRATION
ANNUAL NOTIFICATION**

This form should be used to comply with the notification requirements under 326 IAC 2-5.1-2(f)(3) and 326 IAC 2-5.5-4(a)(3).

Company Name:	Waterloo Recycling Center, LLC
Address:	295 South Commerce Drive
City:	Waterloo, Indiana 46793
Phone Number:	(248) 932-9600
Registration No.:	033-26687-00102

I hereby certify that Waterloo Recycling Center, LLC is : still in operation.
 no longer in operation.

I hereby certify that Waterloo Recycling Center, LLC is : in compliance with the requirements of Registration No. 033-26687-00102.
 not in compliance with the requirements of Registration No. 033-26687-00102.

Authorized Individual (typed):
Title:
Signature:
Phone Number:
Date:

If there are any conditions or requirements for which the source is not in compliance, provide a narrative description of how the source did or will achieve compliance and the date compliance was, or will be achieved.

Noncompliance:

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Registration Notice-Only Change

Source Description and Location
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Source Name:	Waterloo Recycling Center, LLC
Source Location:	295 South Commerce Drive, Waterloo, Indiana 46793
County:	DeKalb
SIC Code:	5093
Registration No.:	033-26687-00102
Registration Issuance Date:	September 24, 2008
Registration Notice-Only Change No.:	033-27056-00102
Permit Reviewer:	Nathan Bell

On October 1, 2008, the Office of Air Quality (OAQ) received an application from Waterloo Recycling Center, LLC (formerly MCM Metals Corp.) related to a change in operation of the existing scrap metal shredding and separations facility.

County Attainment Status

The source is located in DeKalb County.

Pollutant	Designation
SO ₂	Better than national standards.
CO	Unclassifiable or attainment effective November 15, 1990.
O ₃	Unclassifiable or attainment effective June 15, 2004, for the 8-hour ozone standard. ¹
PM ₁₀	Unclassifiable effective November 15, 1990.
NO ₂	Cannot be classified or better than national standards.
Pb	Not designated.
¹ Unclassifiable or attainment effective October 18, 2000, for the 1-hour ozone standard which was revoked effective June 15, 2005. Unclassifiable or attainment effective April 5, 2005, for PM2.5	

- (a) **Ozone Standards**
 Volatile organic compounds (VOC) and Nitrogen Oxides (NO_x) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to ozone. DeKalb County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.
- (b) **PM2.5**
 DeKalb County has been classified as attainment for PM2.5. On May 8, 2008 U.S. EPA promulgated the requirements for Prevention of Significant Deterioration (PSD) for PM2.5 emissions, and the effective date of these rules was July 15th, 2008. Indiana has three years from the publication of these rule revise its PSD rules, 326 IAC 2-2, to include those requirements. The May 8, 2008 rule revisions require IDEM to regulate PM10 emissions as a surrogate for PM2.5 emissions until 326 IAC 2-2 is revised.
- (c) **Other Criteria Pollutants**
 DeKalb County has been classified as attainment or unclassifiable in Indiana for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention

of Significant Deterioration (PSD), 326 IAC 2-2.

Fugitive Emissions

The fugitive emissions of criteria pollutants and hazardous air pollutants are counted toward the determination of 326 IAC 2-5.1-2 (Registrations) and 326 IAC 2-5.5 (Registrations) applicability.

Description of Permitted Emission Units and Pollution Control Equipment
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This stationary scrap metal shredding and separations facility consists of the following permitted emission units and pollution control devices:

- (a) one (1) scrap metal shredder, approved for construction in 2008, with a maximum capacity of 80 tons per hour, using water spray for particulate matter control, and exhausting to the atmosphere. The scrap metal shredder will process scrap metal consisting of demolition structural steel and will have minimal amounts of particulate emissions;
- (b) one (1) scrap metal separation line, approved for construction in 2008, with a maximum capacity of 80 tons per hour, and exhausting to the atmosphere. The line includes the following equipment:
 - (1) one (1) scrap metal feed hopper, with a maximum capacity of 80 tons per hour;
 - (2) one (1) oscillator, with a maximum capacity of 80 tons per hour of dry metal scrap; and
 - (3) one (1) water spray system for control of particulate matter emissions;
 - (4) four (4) conveyor transfer points, each with a maximum capacity of 60 tons per hour of wet metal scrap;
 - (5) three (3) conveyor transfer points, each with a maximum capacity of 20 tons per hour of wet metal scrap;
 - (6) three (3) conveyor transfer points, each with a maximum capacity of 7.2 tons per hour of wet metal scrap;
 - (7) two (2) oscillators, each with a maximum capacity of 7.2 tons per hour of wet metal scrap;
 - (8) two (2) conveyor transfer points, each with a maximum capacity of 12.8 tons per hour of wet metal scrap;
 - (9) one (1) Z-box separator, with a maximum capacity of 60 tons per hour of metal scrap, separating heavy materials from light materials using a counter-flow forced air stream cascade system, equipped with an integral cyclone particle separator with the cyclone exhaust recirculated internally within the Z-box separator and reused for the forced air stream cascade system. To minimize leakage of air from the Z-box separator, the input chamber is equipped with a hanging curtain and a material activated revolving gate, the heavy material outlet chute is equipped with a hanging curtain, and the cyclone particle collection hopper is equipped with a rotary air lock mechanism.
- (c) scrap metal storage piles, loading and unloading of scrap metal storage piles, and loading of trucks with processed scrap metal;
- (d) paved roads and parking lots with public access;

Status of the Existing Source

The table below summarizes the potential to emit of the entire source, prior to the proposed revision, after consideration of all enforceable limits established in the effective permits:

Process/ Emission Unit	Potential To Emit of the Entire Source (Before Revision) (tons/year)								
	PM	PM10*	PM2.5	SO ₂	NO _x	VOC	CO	Total HAPs	Worst Single HAP
Scrap Metal Shredder	0.90	0.90	0.90	0	0	0	0	0	0
Scrap Metal Separation Line	8.69	3.91	3.91	0	0	0	0	0	0
Scrap metal storage piles, and loading/unloading of storage piles and trucks	negl.	negl.	Negl.	0	0	0	0	0	0
Paved Roads	3.69	0.72	0.11	0	0	0	0	0	0
Total PTE of Entire Source	13.29	4.81	4.20	0	0	0	0	0	0
Exemptions Levels	5	5	5	10	10	5 or 10	25	25	10
Registration Levels	25	25	25	25	25	25	100	25	10
negl. = negligible * Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant".									

Description of Proposed Revision

The Office of Air Quality (OAQ) has reviewed an application, submitted by Waterloo Recycling Center, LLC (formerly MCM Metals Corp.) on October 1, 2008, relating to a change in operation of the scrap metal shredding and separations facility. The source will now process all types of scrap metal, including, but not limited to, demolition structural steel, automobile bodies, and other types of metals that might be brought into the facility from companies and the public that are external to Waterloo Recycling Center, LLC. In addition, the storage piles description is revised to include fluff (i.e., shredded plastic, foam, rubber, wood, paper, fabric, glass, sand, dirt, tar, and/or other non-metallic materials) storage piles, loading and unloading of fluff storage piles, and loading of trucks or railcars with fluff. Finally, the source requested that the company name be revised to Waterloo Recycling Center, LLC.

The following is a list of the modified emission unit(s) and pollution control device(s):

- (a) one (1) scrap metal shredder, approved for construction in 2008, with a maximum capacity of 80 tons per hour, using a water/foam spray system deemed an integral part of the shredding process for particulate matter control and fire/explosion prevention, and exhausting to the atmosphere. The scrap metal shredder will process scrap metal consisting of demolition structural steel, automobile bodies, and other types and forms of metals;
- (b) scrap metal and fluff storage piles, loading and unloading of scrap metal and fluff storage piles, and loading of trucks or railcars with processed scrap metal and fluff;

“Integral Part of the Process” Determination

Waterloo Recycling Center, LLC, has submitted the following justifications for considering the water/foam spray system on the scrap metal shredder and the Z-box separator cyclone as an integral part of the metal shredding process and metal separation process, respectively:

- (a) The materials input to the scrap metal shredder consist of demolition structural steel, automobile bodies, and other types of metals. Automobile bodies typically contain residual flammable liquids and flammable solids (i.e., dashboards, upholstery, carpeting, etc.). The high speed shearing action of the shredder's rotary hammermill creates high instantaneous temperatures and sparks in the shredder. The simultaneous presence of flammable materials and ignition sources may result in fires and explosions within in shredder. In order to prevent fires and explosions, water/foam sprays will be directed at the shredder's material input chute and rotary hammermills to thoroughly wet the material before and during shredding. This wetting process both prevents explosions within the shredder and extinguishes any materials that ignite.

The water/foam spray system is integral to the process because:

1. The water/foam spray system serves a primary purpose other than pollution control. The water/foam spray system is necessary to prevent fires and explosions within the shredder and is designed with an interlock to operate at all times the shredder is in operation. Any fire or explosion within the shredder would cause equipment damage it and, therefore, must be prevented. Also, any solid materials that caught fire would be transported via the automatic conveyor system to downline processes, with the possibility of damaging other equipment. Because of the interlock, the shredder will automatically shutdown if the water/foam spray system were to fail.
 2. The water/foam spray system has an overall positive net economic effect. The constant operation of the water/foam spray system while the shredder is in operation prevents explosions and fires which could result in damage to the shredding and conveying equipment and unplanned shutdowns of the process. Damage to the machinery would result in repair and replacement costs. Process shutdowns would result in loss of revenue. Either of these results would have substantial negative financial impacts on the company.
- (b) The Z-box system separates the heavier metals from the lighter fluff (i.e., shredded plastic, foam, rubber, wood, paper, fabric, glass, sand, dirt, tar, and/or other non-metallic materials) materials using a counter-flow forced air stream cascade system and a cyclone. The cyclone within the Z-box system separates the fluff from the air stream. By design, the cyclone is integral part of the Z-box separator, because the cyclone exhaust air stream is recirculated internally within the Z-box and is reused in the forced air stream cascade system. The forced air stream cascade system and cyclone enable high quality sorting of the input materials in a one pass through operation. Without the forced air stream cascade system and cyclone, the metal and the fluff would not be separated and sorted, and Waterloo Recycling Center, LLC, would lose revenue due to a poorer-quality and lesser-valued shredded metal product. Therefore, the cyclone is integral to the metal separation process because it serves a primary purpose other than pollution control and has an overall positive net economic effect.

IDEM, OAQ have evaluated the justifications and agree that the water/foam spray system for the scrap metal shredder and the Z-box separator cyclone will each be considered as an integral part of the metal shredding process and metal separation process, respectively. For the scrap metal shredder, the potential to emit will be determined after the use of the water/foam spray system. The Z-box separator cyclone does not have emissions, since the cyclone exhaust is recirculated internally. Operating conditions in the registration will specify that water/foam spray system shall be operated and control particulate emissions from the scrap metal shredder at all times that the scrap metal shredder is in operation, and the Permittee

shall operate the water/foam spray system in accordance with manufacturer's specifications.

Enforcement Issues

There are no pending enforcement actions related to this source.

Emission Calculations

- (a) See Appendix A of this TSD for detailed emission calculations.
- (b) Based on information provided by Waterloo Recycling Center, LLC, the scrap metal shredder will process all types of scrap metal, including, but not limited to, demolition structural steel, automobile bodies, and other types of metals that might be brought into the facility from companies and the public that are external to Waterloo Recycling Center, LLC. Waterloo Recycling Center, LLC, has indicated that the water/foam spray system is necessary to prevent fires and explosions within the shredder and is designed with an interlock to operate at all times the shredder is in operation. IDEM, OAQ has agreed that the water/foam spray system for the scrap metal shredder is considered as an integral part of the metal shredding process (see "Integral Part of the Process" Determination section above). For the scrap metal shredder, the potential to emit will be determined after the use of the water/foam spray system.

For the scrap metal shredder, the potential to emit (after water/foam spray) is estimated using an emission factor of 0.012 lbs PM/ton (after water/foam spray), which was taken from the Institute of Scrap Recycling Industries, Inc. (ISRI) "Title V Applicability Workbook" (Appendix D, Table D-10.A).

In addition, based on the above information provided by the source, it is assumed that scrap metal and fluff storage piles, loading and unloading of scrap metal and fluff storage piles, and loading of trucks or railcars with processed scrap metal and fluff will have negligible particulate emissions.

- (c) Based on information provided by the source, truck entering and leaving the site will travel at speeds less than 10 miles per hour. As discussed in AP-42, Chapter 13.2.1, Paved Roads (12/2003), Equation 1 was developed from regression analysis of emission test data for vehicles travelling between 10 and 55 miles per hour. To account for the lower vehicle speed, potential particulate emissions from paved roads were calculated using AP-42, Chapter 13.2.1 Equation 1, assuming a road surface silt loading of 1.1 grams per square meter (g/m²) (minimum silt loading for paved roads at a municipal solid waste landfill, AP-42 Table 13.2.1-4).

Permit Level Determination – Registration Notice-Only Change

The following table is used to determine the appropriate permit level under 326 IAC 2-5.5-6. This table reflects the PTE before controls of the proposed revision.

Process/ Emission Unit	Potential To Emit of the Proposed Revision (tons/year)								
	PM	PM10*	PM2.5	SO ₂	NO _x	VOC	CO	Total HAPs	Worst Single HAP
Total PTE of Entire Source (Before Revision)	13.29	4.81	4.20	0	0	0	0	0	0
Total PTE of Entire Source (After Revision)	9.31	5.43	4.73	0	0	0.44	0	0.51	0.14

This Registration is being revised through a Registration Notice-Only Change pursuant to 326 IAC 2-

5.5.6(g), because the revision involves a change in operation of the scrap metal shredding and separations facility, where the change in the potential to emit (PTE) for all criteria pollutants is less than the thresholds in 326 IAC 2-5.5.6(d)(10) and 326 IAC 2-5.5.6(d)(12). The uncontrolled/unlimited potential to emit of the entire source will continue to be within the Registration threshold levels specified in 326 IAC 2-5.5-1(b)(1).

PTE of the Entire Source After Issuance of the Registration Notice-Only Change

The table below summarizes the potential to emit of the entire source after issuance of this Registration Notice-Only Change, reflecting all limits, of the emission units.

Process/ Emission Unit	Potential To Emit of the Entire Source (tons/year)								
	PM	PM10*	PM2.5	SO ₂	NO _x	VOC	CO	Total HAPs	Worst Single HAP
Scrap Metal Shredder	4.20	4.20	4.20	0	0	0.44	0	0.51	0.14
Scrap Metal Separation Line	1.41	0.50	0.42	0	0	0	0	0	0
Scrap metal storage piles, and loading/unloading of storage piles and trucks	negl.	negl.	negl.	0	0	0	0	0	0
Paved Roads	3.69	0.72	0.11	0	0	0	0	0	0
Total PTE of Entire Source	9.31	5.43	4.73	0	0	0.44	0	0.51	0.14
Exemptions Levels	5	5	5	10	10	5 or 10	25	25	10
Registration Levels	25	25	25	25	25	25	100	25	10
negl. = negligible * Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant".									

- (a) This revision will not change the registration status of the source, because the uncontrolled/unlimited potential to emit of PM from the entire source will still be within the ranges listed in 326 IAC 2-5.5-1(b)(1) and the PTE of all other regulated criteria pollutants will still be less than the ranges listed in 326 IAC 2-5.5-1(b)(1). Therefore, the source will still be subject to the provisions of 326 IAC 2-5.5 (Registrations).
- (b) This revision will not change the minor status of the source, because the uncontrolled/unlimited potential to emit of any single HAP will still be less than ten (10) tons per year and the PTE of a combination of HAPs will still be less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-7.

Federal Rule Applicability Determination

The federal rule applicability for the source is as follows:

- (a) There are no New Source Performance Standards (NSPS)(40 CFR Part 60) included in the registration.
- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14,

326 IAC 20 and 40 CFR Part 63) included in the registration.

- (c) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is not included in the registration, because the unlimited potential to emit of the source is less than the Title V major source thresholds and the source is not required to obtain a Part 70 or Part 71 permit.

State Rule Applicability Determination

The following state rules are applicable to the source:

- (a) 326 IAC 2-5.5 (Registrations)
This revision will not change the registration status of the source, because the uncontrolled/unlimited potential to emit of PM from the entire source will still be within the ranges listed in 326 IAC 2-5.5-1(b)(1) and the PTE of all other regulated criteria pollutants will still be less than the ranges listed in 326 IAC 2-5.5-1(b)(1). Therefore, the source will still be subject to the provisions of 326 IAC 2-5.5 (Registrations).
- (b) 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))
The potential to emit of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-4.1.
- (c) 326 IAC 2-6 (Emission Reporting)
Pursuant to 326 IAC 2-6-1, this source is not subject to this rule, because it is not required to have an operating permit under 326 IAC 2-7 (Part 70), it is not located in Lake, Porter, or LaPorte County, and it does not emit lead into the ambient air at levels equal to or greater than 5 tons per year. Therefore, 326 IAC 2-6 does not apply.
- (d) 326 IAC 5-1 (Opacity Limitations)
Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:
- (1) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.
- (e) 326 IAC 6-4 (Fugitive Dust Emissions Limitations)
Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.
- (f) 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)
The source is not subject to the requirements of 326 IAC 6-5, because the source does not have potential fugitive particulate emissions greater than 25 tons per year. Therefore, 326 IAC 6-5 does not apply.
- (g) 326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Facilities)
Each of the emission units at this source is not subject to the requirements of 326 IAC 8-1-6, since the unlimited VOC potential emissions from each emission unit is less than twenty-five (25) tons

per year.

Scrap Metal Shredder and Scrap Metal Separation Line

- (h) 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), particulate emissions from the scrap metal shredder and scrap metal separation line shall not exceed 49.06 pounds per hour when operating at a process weight rate of 80 tons per hour.

The pounds per hour limitation was calculated with the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

For the scrap metal shredder and scrap metal separation line, the total potential to emit particulate matter (PM) is 1.28 lbs/hr, which is less than the 326 IAC 6-3-2 allowable particulate emission rate. Therefore, scrap metal shredder and scrap metal separation line is able to comply with 326 IAC 6-3-2.

Since IDEM, OAQ has agreed that the water/foam spray system for the scrap metal shredder is considered as an integral part of the metal shredding process (see "Integral Part of the Process" Determination section above) and is necessary to comply with the requirements of 326 IAC 6-3-2, the water/foam spray system shall be operated and control particulate emissions from the scrap metal shredder at all times that the scrap metal shredder is in operation, and the Permittee shall operate the water/foam spray system in accordance with manufacturer's specifications.

- (i) 326 IAC 12 (New Source Performance Standards)
See Federal Rule Applicability Section of this TSD.
- (j) 326 IAC 20 (Hazardous Air Pollutants)
See Federal Rule Applicability Section of this TSD.

Proposed Changes

Due to this Registration Notice-Only Change, the registration has been revised as follows, with deleted language as ~~strikethrough~~ text and new language as **bold** text:

Company Name: ~~MCM Metals Corp. — Waterloo Recycle Transfer Station~~
Waterloo Recycling Center, LLC

...

A.2 Emission Units and Pollution Control Equipment Summary

This stationary scrap metal shredding and separations facility consists of the following emission units and pollution control devices:

- (a) one (1) scrap metal shredder, approved for construction in 2008, with a maximum capacity of 80 tons per hour, using **a water/foam spray system deemed an integral part of the shredding process** for particulate matter control **and fire/explosion prevention**, and exhausting to the atmosphere. The scrap metal shredder will process scrap metal consisting of demolition structural steel, **automobile bodies, and other types and forms of metals** ~~and will have minimal amounts of particulate emissions;~~
- (b) one (1) scrap metal separation line, approved for construction in 2008, with a maximum

capacity of 80 tons per hour, and exhausting to the atmosphere. The line includes the following equipment:

...

(9) one (1) Z-box separator, with a maximum capacity of 60 tons per hour of metal scrap, separating heavy materials from light materials using a counter-flow forced air stream cascade system, equipped with an **integral** cyclone particle separator with the cyclone exhaust recirculated internally within the Z-box separator and reused for the forced air stream cascade system. To minimize leakage of air from the Z-box separator, the input chamber is equipped with a hanging curtain and a material activated revolving gate, the heavy material outlet chute is equipped with a hanging curtain, and the cyclone particle collection hopper is equipped with a rotary air lock mechanism.

(c) scrap metal **and fluff** storage piles, loading and unloading of scrap metal **and fluff** storage piles, and loading of trucks **or railcars** with processed scrap metal **and fluff**;

...

SECTION D.1 OPERATION CONDITIONS

Facility Description [326 IAC 2-5.1-2(f)(2)] [326 IAC 2-5.5-4(a)(2)]:

(a) one (1) scrap metal shredder, approved for construction in 2008, with a maximum capacity of 80 tons per hour, using a water/foam spray **system deemed an integral part of the shredding process** for particulate matter control **and fire/explosion prevention**, and exhausting to the atmosphere. The scrap metal shredder will process scrap metal consisting of demolition structural steel, **automobile bodies, and other types and forms of metals** and will have minimal amounts of particulate emissions;

(b) one (1) scrap metal separation line, approved for construction in 2008, with a maximum capacity of 80 tons per hour, and exhausting to the atmosphere. The line includes the following equipment:

...

(9) one (1) Z-box separator, with a maximum capacity of 60 tons per hour of metal scrap, separating heavy materials from light materials using a counter-flow forced air stream cascade system, equipped with an **integral** cyclone particle separator with the cyclone exhaust recirculated internally within the Z-box separator and reused for the forced air stream cascade system. To minimize leakage of air from the Z-box separator, the input chamber is equipped with a hanging curtain and a material activated revolving gate, the heavy material outlet chute is equipped with a hanging curtain, and the cyclone particle collection hopper is equipped with a rotary air lock mechanism.

...

Emission Limitations and Standards [326 IAC 2-5.1-2(f)(1)] [326 IAC 2-5.5-4(a)(1)]

D.1.1 PM and PM10 [326 IAC 2-5.1] [326 IAC 2-5.5]

~~PM and PM10 emissions from the scrap metal shredder shall not exceed 0.00257 pounds per ton of metal shredded.~~

~~Compliance with this condition, combined with the potential to emit PM and PM10 from all other emission units at this source, will ensure that the source-wide total potential to emit PM and PM10 will not exceed 25 tons per 12 consecutive month period, each, and will ensure that the source maintains a registered status under the provisions of 326 IAC 2-5.1 (Construction of New Sources: Registrations) and 326 IAC 2-5.5 (Registrations).~~

D.1.12 Particulate [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), particulate emissions from the scrap metal shredder and scrap metal separation line shall not

exceed 49.06 pounds per hour when operating at a process weight rate of 80 tons per hour.

The pounds per hour limitation was calculated with the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

D.1.2 Particulate Control [326 IAC 2-5.1] [326 IAC 2-5.5]

Pursuant to 326 IAC 2-5.1 (Construction of New Sources: Registrations) and 326 IAC 2-5.5 (Registrations), the water/foam spray system shall be operated and control particulate emissions from the scrap metal shredder at all times that the scrap metal shredder is in operation, and the Permittee shall operate the water/foam spray system in accordance with manufacturer's specifications.

Compliance Monitoring Requirements [326 IAC 2-5.1-2(g)] [326 IAC 2-5.5-4(b)]

D.1.3 Water/Foam spray System Failure Detection

In the event that water/foam spray system failure has been observed, the metal shredding process will be shut down immediately until the failed water/foam spray system has been repaired or replaced.

Conclusion and Recommendation

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant. An application for the purposes of this review was received on October 1, 2008. Additional information was submitted by the source on October 21, 2008, October 22, 2008, and October 29, 2008.

The construction and operation of this proposed revision shall be subject to the conditions of the attached proposed Registration Notice-Only Change No. 033-27056-00102. The staff recommends to the Commissioner that this Registration Notice-Only Change be approved.

IDEM Contact

- (a) Questions regarding this proposed permit can be directed to Nathan Bell at the Indiana Department Environmental Management, Office of Air Quality, Permits Branch, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana 46204-2251 or by telephone at (317) 233-5670 or toll free at 1-800-451-6027 extension (3-5670).
- (b) A copy of the findings is available on the Internet at: <http://www.in.gov/ai/appfiles/idem-caats/>
- (c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov

**Appendix A: Emissions Calculations
Emission Summary**

Company Name: Waterloo Recycling Center, LLC
Address: 295 South Commerce Drive, Waterloo, IN 46793
Permit Number: 033-27056-00102
Plt ID: 033-00102
Reviewer: Nathan Bell
Date: 10/27/2008

Category	Potential To Emit (After Integral Controls) (tons/year)				
	Pollutant	Scrap Metal Shredder	Scrap Metal Separation Line	Paved Roads	TOTAL
Criteria Pollutants	PM	4.20	1.41	3.69	9.31
	PM10	4.20	0.50	0.72	5.43
	PM2.5	4.20	0.42	0.11	4.73
	SO2				0
	NOx				0
	VOC	0.44			0.44
	CO				0
Hazardous Air Pollutants	Totals	0.51	0	0	0.51
				Worse Case HAP	0.14

Total emissions based on rated capacity at 8,760 hours/year.

**Appendix A: Emission Calculations
Scrap Metal Shredder and Scrap Metal Separation Line
PM, PM10, and PM2.5**

Company Name: Waterloo Recycling Center, LLC
Address: 295 South Commerce Drive, Waterloo, IN 46793
Permit Number: 033-27056-00102
Plt ID: 033-00102
Reviewer: Nathan Bell
Date: 10/27/2008

Potential to Emit PM, PM10 and PM2.5

The following calculations determine the amount of emissions created by the Scrap Metal Shredder and Scrap Metal Separation Line, based on 8,760 hours of operation. IDEM, OAQ have evaluated the justifications and agree that the water/foam spray system for the scrap metal shredder and the Z-box separator cyclone will each be considered as an integral part of the metal shredding process and metal separation process, respectively. For the scrap metal shredder, the potential to emit will be determined after the use of the water/foam spray system. The Z-box separator cyclone does not have emissions, since the cyclone exhaust is recirculated internally.

Process Description	Control	Number of Emission Points	Maximum Capacity (tons/hr)	PM Emission Factor (lbs/ton)	PTE of PM (tons/year)	PM10 Emission Factor (lbs/ton)	PTE of PM10 (tons/year)	PM2.5 Emission Factor (lbs/ton)	PTE of PM2.5 (tons/year)
Scrap Metal Shedder ^{1,3}	Water/Foam Sprays (integral)	1	80	0.012	4.20	0.012	4.20	0.012	4.20
Scrap Metal Shredder Totals					4.20		4.20		4.20
Scrap Metal Sparation Line									
Transfer Point #1 - dry ^{2,3}	uncontrolled (dry)	1	80	3.00E-03	1.05	1.10E-03	0.39	1.10E-03	0.39
Oscillator - wet ^{2,3}	controlled (wet)	1	80	1.40E-04	0.049	4.60E-05	0.016	1.30E-05	0.0046
Transfer Point #2 - wet ^{2,3}	controlled (wet)	1	80	1.40E-04	0.049	4.60E-05	0.016	1.30E-05	0.0046
Transfer Point #18, #19, #20, #21 - wet ^{2,3}	controlled (wet)	4	60	1.40E-04	0.147	4.60E-05	0.048	1.30E-05	0.0137
Transfer Point #5, #6, #7, #8, #9 - wet ^{2,3}	controlled (wet)	3	20	1.40E-04	0.037	4.60E-05	0.012	1.30E-05	0.0034
wet ^{2,3}	controlled (wet)	3	7.2	1.40E-04	0.013	4.60E-05	0.0044	1.30E-05	0.0012
Oscillator - wet ^{2,3}	controlled (wet)	2	7.2	1.40E-04	0.0088	4.60E-05	0.0029	1.30E-05	0.0008
Transfer Point #12 and #17 - wet ^{2,3}	controlled (wet)	2	12.8	1.40E-04	0.016	4.60E-05	0.0052	1.30E-05	0.0015
Z-box separator ^{2,3}	Cyclone (integral, no exhaust)	1	60	1.40E-04	0.037	4.60E-05	0.012	1.30E-05	0.0034
Scrap Metal Sparation Line Totals					1.41		0.50		0.42
Totals					5.61		4.71		4.62

326 IAC 6-3-2 Determination

Process Description	Maximum Capacity (tons/hr)	PTE of PM (lbs/hr)	326 IAC 6-3-2 Allowable PM Emission Rate (lbs/hr)
Scrap Metal Shredder and Scrap Metal Separation Line	80	1.28	49.06

Methodology

¹ For the scrap metal shredder, the emission factor of 0.012 lbs PM/ton (after water spray control) was taken from the Institute of Scrap Recycling Industries, Inc. (ISRI) "Title V Applicability Workbook" (Appendix D, Table D-10.A). Assume PM10 emissions = PM emissions.

² To estimate potential PM/PM10/PM2.5 emissions from scrap metal transfer points, oscillator, and the Z-box separator AP-42 emission factors for Crushed Stone Processing Operations, Section 11.19.2 Table 11.19.2-2 (dated 8/04) are utilized.

³ PTE of PM/PM10/PM2.5 (tons/year) = Number of Emission Points x Maximum Capacity (tons/hour) x Emission Factor (lbs/ton) x 8760 (hrs/year) x 1 ton/2000 lbs

Abbreviations

PM = Particulate Matter
PM10 = Particulate Matter (<10 um)
PM2.5 = Particulate Matter (<2.5 um)
PTE = Potential to Emit

Appendix A: Emission Calculations
Scrap Metal Shredder and Scrap Metal Separation Line
Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs)

Company Name: Waterloo Recycling Center, LLC
Address: 295 South Commerce Drive, Waterloo, IN 46793
Permit Number: 033-27056-00102
Pit ID: 033-00102
Reviewer: Nathan Bell
Date: 10/27/2008

Potential to Emit (PTE) of VOCs and HAPs

Maximum Capacity (tons/hour) =

HAP	VOC ?	Emission Factor* (lbs/ton)	PTE of HAP (tons/yr)	PTE of VOC (tons/yr)
Methylene Chloride	Yes	6.00E-05	2.10E-02	2.10E-02
1,1 Dichloroethene	No	1.33E-05	4.66E-03	4.66E-03
2-Butanone (MEK)	Yes	5.33E-06	1.87E-03	1.87E-03
1,1,1 Trichloroethane	NO (exempted)	2.00E-04	7.01E-02	NA
Benzene	Yes	4.00E-04	0.14	0.14
Tetrachloroethene	NO (exempted)	2.67E-06	9.36E-04	NA
Trichloroethene	Yes	6.67E-05	2.34E-02	2.34E-02
Toluene	Yes	3.33E-04	0.12	0.12
Ethylbenzene	Yes	6.67E-05	2.34E-02	2.34E-02
Styrene	Yes	1.33E-05	4.66E-03	4.66E-03
o-xylene	Yes	6.67E-05	2.34E-02	2.34E-02
m, p, - xylene	Yes	1.33E-04	4.66E-02	4.66E-02
Total PCB	Yes	8.73E-05	3.06E-02	3.06E-02
Cadmium	NO (metal)	1.16E-06	4.06E-04	NA
Chromium	NO (metal)	1.28E-06	4.49E-04	NA
Lead	NO (metal)	7.89E-06	2.76E-03	NA
Totals			0.51	0.44

Notes:

*Emission factors from Table D-11.F "Title V Applicability Workbook" Institute of Scrap Recycling Industries, Inc. (Jan 1996)

Methodology:

PTE of HAP/VOC (tons/year) = Maximum Capacity (tons/hour) x Emission Factor (lbs/ton) x 8760 (hrs/year) x 1 ton/2000 lbs

**Appendix A: Emission Calculations
Fugitive Dust Emissions - Paved Roads**

Company Name: Waterloo Recycling Center, LLC
Address: 295 South Commerce Drive, Waterloo, IN 46793
Permit Number: 033-27056-00102
Pit ID: 033-00102
Reviewer: Nathan Bell
Date: 10/27/2008

Paved Roads at Industrial Site

The following calculations determine the amount of emissions created by paved roads, based on 8,760 hours of use and AP-42, Chapter 13.2.1 (12/2003). Based on information provided by the source, truck entering and leaving the site will travel at speeds less than 10 miles per hour. As discussed in AP-42, Chapter 13.2.1, Paved Roads (12/2003), Equation 1 was developed from regression analysis of emission test data for vehicles travelling between 10 and 55 miles per hour. To account for the lower vehicle speed, potential particulate emissions from paved roads were calculated using AP-42, Chapter 13.2.1 Equation 1, assuming a road surface silt loading of 1.1 grams per square meter (g/m²) (minimum silt loading for paved roads at a municipal solid waste landfill, AP-42 Table 13.2.1-4).

Vehicle Information (provided by source)

Type	Maximum trips per day (trip/day)	Maximum Weight Loaded (tons/trip)	Total Weight driven per day (ton/day)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/day)	Maximum one-way miles (miles/yr)
Trucks (entering plant) (one-way trip)	85.30	22.5	1919.3	600	0.114	9.7	3538.0
Trucks (leaving plant) (one-way trip)	85.30	22.5	1919.3	600	0.114	9.7	3538.0
Total	170.6		3838.5			19.4	7076.0

Average Vehicle Weight Per Trip = $\frac{22.5}{0.11}$ tons/trip
 Average Miles Per Trip = $\frac{9.7}{0.11}$ miles/trip

Unmitigated Emission Factor, $E_f = [k * (sL/2)^{0.65} * (W/3)^{1.5} - C]$ (Equation 1 from AP-42 13.2.1)

	PM	PM10	PM2.5	
where k =	0.082	0.016	0.0024	lb/mi = particle size multiplier (AP-42 Table 13.2.1-1)
W =	22.5	22.5	22.5	tons = average vehicle weight (provided by source)
C =	0.00047	0.00047	0.00036	lb/mi = emission factor for vehicle exhaust, brake wear, and tire wear (AP-42 Table 13.2.1-2)
sL =	1.1	1.1	1.1	g/m ² = road surface silt loading of paved roads (Table 13.2.1-4, assuming municipal solid waste)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, $E_{ext} = E * [1 - (p/4N)]$

Mitigated Emission Factor, $E_{ext} = E_f * [1 - (p/4N)]$
 where p = $\frac{125}{365}$ days of rain greater than or equal to 0.01 inches (see Fig. 13.2.1-2)
 N = $\frac{365}{365}$ days per year

	PM	PM10	PM2.5	
Unmitigated Emission Factor, $E_f =$	1.14	0.22	0.03	lb/mile
Mitigated Emission Factor, $E_{ext} =$	1.04	0.20	0.03	lb/mile

Process	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)
Trucks (entering plant) (one-way trip)	2.02	0.39	0.06	1.85	0.36	0.05
Trucks (leaving plant) (one-way trip)	2.02	0.39	0.06	1.85	0.36	0.05
Total	4.04	0.79	0.12	3.69	0.72	0.11

Methodology

Total Weight driven per day (ton/day) = [Maximum Weight Loaded (tons/trip)] * [Maximum trips per day (trip/day)]
 Maximum one-way distance (mi/trip) = [Maximum one-way distance (feet/trip)] / [5280 ft/mile]
 Maximum one-way miles (miles/day) = [Maximum trips per year (trip/day)] * [Maximum one-way distance (mi/trip)]
 Average Vehicle Weight Per Trip (ton/trip) = SUM[Total Weight driven per day (ton/day)] / SUM[Maximum trips per day (trip/day)]
 Average Miles Per Trip (miles/trip) = SUM[Maximum one-way miles (miles/day)] / SUM[Maximum trips per year (trip/day)]
 Unmitigated PTE (tons/yr) = [Maximum one-way miles (miles/yr)] * [Unmitigated Emission Factor (lb/mile)] * (ton/2000 lbs)
 Mitigated PTE (tons/yr) = [Maximum one-way miles (miles/yr)] * [Mitigated Emission Factor (lb/mile)] * (ton/2000 lbs)

Abbreviations

PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 PM2.5 = Particulate Matter (<2.5 um)
 PTE = Potential to Emit