State of Idaho
Department of Environmental Quality
Air Quality Division

AIR QUALITY PERMIT
STATEMENT OF BASIS

Permit to Construct No. P-2009.0072

FINAL

Pacific Recycling

Mayfield, Idaho

Facility ID No. 039-00030

August 11, 2009

Mary Capiral MC

Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

Table of Contents

Acronyms, Units, and Chemical Nomenclature

AACC	Acceptable Ambient Concentration for a Carcinogen
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
HAP	hazardous air pollutants
hr/yr	hours per year
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
m	meters
MACT	Maximum Achievable Control Technology
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PCBs	Polychlorinated biphenyls
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/yr	tons per year
TAP	toxic air pollutant
UTM	Universal Transverse Mercator
VOC	volatile organic compounds

1. FACILITY INFORMATION

1.1 Facility Description

The Pacific Recycling facility in Mayfield, Idaho has a hammer mill which processes household appliances, scrap metal recovered from landfill excavations, and approximately 10% pre-crushed automobiles. The facility has a cyclone which does not serve as a pollution control device. Instead, the cyclone functions as a size classifier, which separates material by size and weight. The air exhaust duct from the cyclone is routed back through the hammer mill. The facility does not utilize any fuel-burning equipment or generators. There are no unpaved roads at the facility. Thus, the hammer mill is the only source of emissions.

2. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

2.1 Application Scope

This project is for the initial PTC for this facility.

2.2 Application Chronology

May 18, 2009	DEQ received PTC application.
May 19, 2009	DEQ received application fee of $1,000.
June 15, 2009	DEQ declared the PTC application complete.
June 22, 2009	DEQ requested via e-mail additional information from the facility (i.e. TAPs emissions inventory, cyclone emissions, PM test method used in reference document contained in application).
June 23, 2009	DEQ received from the facility documentation for emission factors for TAPs. The documentation was based on a study conducted on a hammer mill similar to that of Pacific Recycling.
June 30, 2009	The facility requested that modeling requirements be excused since the hammer mill cannot be modeled as a point source. DEQ asked that the hammer mill be modeled as a volume source instead.
July 17, 2009	DEQ received a rebuttal letter from the facility regarding emissions of PCBs from the hammer mill.
July 20, 2009	DEQ received from the facility documentation regarding chromium VI emissions from the hammer mill.
July 24, 2009	DEQ submitted permit draft to the facility for review.
July 25, 2009	The Facility ID for Pacific Recycling was changed from 001-00227 to 039-00030 to reflect its location in Elmore County.
July 31, 2009	DEQ received facility draft comments and $1,000 processing fee.
August 11, 2009	DEQ issued final PTC.

3. TECHNICAL ANALYSIS

3.1 Emission Unit and Control Device

Table 3.1 EMISSION UNIT AND CONTROL DEVICE INFORMATION

Emission Unit /ID No.	Emissions Unit Description	Control Device Description	Emissions Discharge Point ID No. and/or Description
Hammer mill	Mfr.: Metso Texas Model: 80 X 104 Max. Capacity: 90 tons feed per hour (90 T/hr) (Limited to 302,000 tons feed per any consecutive 12-month period) Year of Construction: 2008	Water injection system Mfr.: Metso Texas Model: 80 X 104 Year of installation: 2008	N/A

3.2 Emissions Inventory

Table 3.2 CONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM_{10}		SO_2		NOx		CO		VOC		LEAD
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	T/yr
Point Sources Affected by this Permitting Action											
Hammer mill	[redacted]	0.35	[redacted]	0.0	[redacted]	0.0	[redacted]	0.0	[redacted]	0.0	1.12E-03
Total, Point Sources	[redacted]	0.35	[redacted]	0.0	[redacted]	0.0	[redacted]	0.0	[redacted]	0.0	1.12E-03

Table 3.3 CONTROLLED TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

TAPs	24-hour Average[a]	Annual Average[a]	Annual PTE
	lb/hr	lb/hr	T/yr
Acetone (CAS No. 67-64-1)	1.20E-03	N/A	2.0E-03
Benzene (CAS No. 71-43-2)	N/A	1.4E-02	6.6E-02
2-Butanone (MEK) (CAS No. 78-93-3)	N/A	1.8E-04	8.0E-04
1,1 Dichloroethane (CAS No. 75-34-3)	N/A	4.6E-04	2.0E-03
Ethylbenzene (CAS No. 100-41-4)	6.0E-03	N/A	1.0E-02
Methylene Chloride (CAS No. 75-09-2)	N/A	2.1E-03	9.0E-03
Tetrachloroethene (CAS No. 127-18-4)	N/A	9.2E-05	4.0E-04
Trichloroethene (CAS No. 79-01-6)	N/A	2.3E-03	1.0E-02
Toluene (CAS No. 108-88-3)	3.0E-02	N/A	5.0E-02
Styrene (CAS No. 100-42-5)	1.2E-02	N/A	2.0E-03
O-Xylene (CAS No. 1330-20-7)	Total 1.8E-02	N/A	1.0E-02
M-/P-Xylene (CAS No. 1330-20-7)		N/A	2.0E-02
Cadmium (CAS No. 7440-43-9)	N/A	4.0E-05	1.75E-04
Chromium (Total) (CAS No. 7440-47-3)	N/A	N/A	N/A
Chromium (II, III) (CAS No. 7440-47-3)	9.1E-05	N/A	1.5E-04
Chromium (VI) (CAS No. 7440-47-3)	N/A	9.27E-06	4.1E-05
		Total	0.18

a. 24-hour average only applies to non-carcinogenic TAPs. Annual average only applies to carcinogenic TAPs.
b. N/A = not applicable.

3.3 Ambient Air Quality Impact Analysis

Assuming 24-hours per day operations with a maximum of 302,000 tons of feed per any consecutive 12-month period (302,000 T-feed/yr), estimated emissions of six toxic air pollutants (benzene, 1,1 dichloroethane, methylene chloride, trichloroethane, cadmium, and chromium VI) exceeded modeling thresholds. Therefore, modeling analysis for the six TAPs was required for this project.

The modeling analysis was based on the following operational conditions:

- Compliance with waste screening and acceptance practices that limit acceptance of any mercury- or PCB-containing/contaminated scrap to negligible amounts.
- Maximum hexavalent chromium content of feed processed through the hammer mill is equal to or less than 21% of total chromium.
- Maximum Feed Throughput: 2,160 tons per day (90 tons per hour x 24 hr/day), 302,000 tons per any consecutive 12-month period.

The maximum predicted concentrations of the six TAPs are listed in Table 3.4. The ambient air quality analysis demonstrated that facility-wide emissions will not cause violation of the regulatory AACC for benzene, 1,1 dichloroethane, methylene chloride, trichloroethane, cadmium, and chromium VI.

Table 3.4 FULL IMPACT ANALYSIS RESULTS FOR TAPS

Pollutant	Average Period	Maximum Concentration ($\mu g/m^3$)	Regulatory AAC/AACC ($\mu g/m^3$)	Percent of Limit
Benzene	Annual	1.20E-01	1.20E-01	99.86%
1,1 Dichloroethane		3.98E-03	3.80E-02	10.49%
Methylene Chloride		1.80E-02	2.80E-01	6.42%
Trichloroethane		2.00E-02	7.70E-01	2.60%
Cadmium		3.48E-4	5.60E-04	62.06%
Chromium VI		8.05E-05	8.30E-05	97.02%

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

Pacific Recycling's scrap and car shredding facility is located in eastern Elmore County, which is designated as an attainment or unclassifiable area for lead (Pb), nitrogen dioxide (NO_2), ozone, particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}) and 2.5 micrometers ($PM_{2.5}$), and sulfur oxides (SO_x). Reference 40 CFR 81.313.

4.2 Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 ..... Permit to Construct Requirement

The PTC rules under IDAPA 58.01.01.201 require that "No owner or operator may commence construction or modification of any stationary source, facility, major facility, or major modification without first obtaining a permit to construct from the Department which satisfies the requirements of Sections 200 through 228 unless the source is exempted in any of Sections 220 through 223."

IDAPA 58.01.01.220 ..... General Exemption Criteria for Permit to Construct Exemptions

In accordance with IDAPA 58.01.01.220.01.a, the maximum capacity of the source to emit an air pollutant under its physical and operational design without consideration of limitations on emissions such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored, or processed shall not equal or exceed 100 tons/yr for all regulated air pollutants. The proposed project results in controlled potential emissions of 0.35 T-PM_{10}/yr. Assuming that the control efficiency of the hammer mill's water injection system is 50 %, the uncontrolled potential emissions would be 0.7 T-PM_{10}/yr, which is less than 100 tons/yr for all regulated air pollutants (see Appendix B for calculations). The project meets the criteria set forth in Section 220. In addition, the criteria set forth in Section 221, 222, or 223 must be met to be exempt from PTC requirements.

IDAPA 58.01.01.221 ..... Category I Exemption Criteria

In accordance with IDAPA 58.01.01.221.01, the maximum capacity of a source to emit an air pollutant under its physical and operational design considering limitations on emissions such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed shall be less than ten percent (10%) of the significant emission rates set out in the definition of significant at Section 006. The potential PM_{10} emission rate of the proposed project is 0.35 T-PM_{10}/yr, which is below 10% of the significant emission rate of 1.5 T-PM_{10}/yr listed in IDAPA 58.01.01.006.101 (see Appendix B for calculations).

In accordance with IDAPA 58.01.01.221.02, the source shall have potential emissions that are less than one percent (1%) of the applicable radionuclides standard in 40 CFR Part 61, Subpart H. The proposed project does not result in emissions of radionuclides.

In accordance with IDAPA 58.01.01.221.03, the source shall comply with Section 223, Exemption Criteria and Reporting Requirements for Toxic Air Pollutant Emissions (TAPs).

IDAPA 58.01.01.223 ..... Exemption Criteria and Reporting Requirements for Toxic Air Pollutant Emissions (TAPs)

In accordance with IDAPA 58.01.01.223.01, the source qualifies for a Below Regulatory Concern Exemption if the uncontrolled emission rate for all toxic air pollutants (TAPs) emitted by the source is less than or equal to 10% of all applicable screening levels listed in Section 585 and 586. The controlled emission rate for several TAPs (benzene, 1,1 dichloroethane, methylene chloride, trichloroethene, cadmium, and chromium VI) exceed 100% of applicable screening levels listed in Section 585 and 586 (see Table 4.1). Since the controlled emission rate for several TAPs exceed 100% of applicable screening levels, the uncontrolled emission rate would exceed 100% of applicable screening levels. Thus, this project does not qualify for a BRC Exemption from PTC requirements.

Table 4.1 HOURLY TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

Toxic Air Pollutant (TAP)	PTE 24-hour Average[a] (lb/hr)	PTE Annual Average[a] (lb/hr)	Screening Level, EL (lb/hr)	% of EL
Acetone (CAS No. 67-64-1)	1.20E-03	N/A[b]	119	0.00 %
Benzene (CAS No. 71-43-2)	N/A	1.4E-02	8.0E-04	**1750 %**
2-Butanone (MEK) (CAS No. 78-93-3)	N/A	1.8E-04	39.3	0.00 %
1,1 Dichloroethane (CAS No. 75-34-3)	N/A	4.6E-04	2.5E-04	**184 %**
Ethylbenzene (CAS No. 100-41-4)	6.0E-03	N/A	29	0.02 %
Methylene Chloride (CAS No. 75-09-2)	N/A	2.1E-03	1.6E-03	**131.3 %**
Tetrachloroethene (CAS No. 127-18-4)	N/A	9.2E-05	1.3E-02	0.71 %
Trichloroethene (CAS No. 79-01-6)	N/A	2.3E-03	5.1E-04	**451.0 %**
Toluene (CAS No. 108-88-3)	3.0E-02	N/A	25	0.12 %
Styrene (CAS No. 100-42-5)	1.2E-02	N/A	6.67	0.18 %
O-Xylene (CAS No. 1330-20-7)	Total 1.8E-02	N/A	29	0.06 %
M-/P-Xylene (CAS No. 1330-20-7)		N/A		
Cadmium (CAS No. 7440-43-9)	N/A	4.0E-05	3.7E-06	**1081 %**
Chromium (Total) (CAS No. 7440-47-3)	N/A	N/A	N/A	N/A
Chromium (II, III) (CAS No. 7440-47-3)	9.1E-05	N/A	3.30E-02	0.28 %
Chromium (VI) (CAS No. 7440-47-3)	N/A	9.27E-06	5.60E-07	**1655 %**

a. 24-hour average only applies to non-carcinogenic TAPs. Annual average only applies to carcinogenic TAPs.
b. N/A = not applicable.

In accordance with IDAPA 58.01.01.223.02, the source qualifies for a Level I Exemption if:

a. The uncontrolled emission rate for all TAPs is less than or equal to all applicable screening levels listed in Section 585 and 586; or

b. The uncontrolled ambient concentration for all TAPs at the point of compliance is less than or equal to all applicable acceptable ambient concentrations listed in Sections 585 and 586 (AAC/AACC).

As previously mentioned, the uncontrolled emission rate for several TAPs exceed 100% of applicable screening levels. The controlled ambient concentration for six TAPs (benzene, 1,1 dichloroethane, methylene chloride, trichloroethane, cadmium, and chromium VI) exceeded modeling thresholds, and therefore modeling analysis was required for the six TAPs. The modeled controlled ambient concentration for benzene and chromium VI were 99.86% and 97.02% of the applicable AAC/AACC, respectively. Since the modeled controlled ambient concentrations are near applicable AAC/AACC, then the uncontrolled ambient concentrations would exceed applicable AAC/AACC. Thus, this project does not qualify for a Level I Exemption from PTC requirements.

In accordance with IDAPA 58.01.01.223.03, the source qualifies for a Level II Exemption if:

a. The uncontrolled ambient concentration at the point of compliance for all TAPs emitted by the source is less than or equal to all applicable AAC/AACC, and

b. The owner or operator installs and operates control equipment that is not otherwise required to qualify for an exemption and the controlled emission rate of the source for all TAPs is less than or equal to ten percent (10%) of all applicable screening emission levels listed in Sections 585.

As previously mentioned, the uncontrolled ambient concentration for several TAPs exceed applicable AAC/AACC. Thus, this project does not qualify for a Level II Exemption from PTC requirements.

In accordance with IDAPA 58.01.01.223.04, the source qualifies for a Level III Exemption if:

a. The uncontrolled ambient concentration at the point of compliance for all TAPs emitted by the source shall be less than or equal to all applicable AAC/AACC listed in Sections 585 and 586; and

b. The controlled emission rate for all TAPs emitted by the source shall be less than or equal to all applicable screening emission levels listed in Sections 585 and 586.

As previously mentioned, the uncontrolled ambient concentration for several TAPs exceed applicable AAC/AACC. Thus, this project does not qualify for a Level III Exemption from PTC requirements.

IDAPA 58.01.01.222..... Category II Exemption Criteria

In accordance with IDAPA 58.01.01.223.01, the source qualifies for a Category II Exemption if it is one of the sources listed in Section 223. The hammer mill is not listed as one of the exempted sources listed in Section 223. Therefore, this project does not qualify for a Category II Exemption from PTC requirements.

This project does not meet the criteria set forth in Sections 220 through 223. Therefore, a PTC is required.

4.3 Tier II Operating Permit (IDAPA 58.01.01.401)

The facility is not applying for a Tier II operating permit and is therefore not subject to the requirements of IDAPA 58.01.01.401.

4.4 Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

The facility is not classified as a Tier I source in accordance with IDAPA 58.01.01.006.113. Therefore, the requirements of IDAPA 58.01.01.301 do not apply, and the facility does not need a Tier I operating permit.

4.5 Particulate Matter – Process Weight Limitations (IDAPA 58.01.01.700)

IDAPA 58.01.01.700 ..... Particulate Matter – Process Weight Limitations

The process weight rule applies to the hammer mill because the kilns emit particulates and will commence operation after October 1, 1979. The emissions are limited according to the equation in the rule.

The total throughput limit is 302,000 tons of feed per any consecutive 12-month period (302,000 T-feed/yr).

The following calculations were used to determine the process weight and the corresponding PM emissions limitation for the hammer mill:

Process weight (PW) (lb/hr) = 90 T/hr = 180,000 lbs/hr

In accordance with IDAPA 58.01.01.702.b, if the PW is equal to or greater than 9,250 lb/hr, then the allowable emission (E) for the entire source is: $E\ (lb/hr) = 1.10(PW)^{0.25}$.

$$E\ (lb/hr) = 1.10(PW)^{0.25} = 1.10 \times (180{,}000\ lbs/hr)^{0.25} = 22.66\ lb/hr$$

Actual estimated hourly PM emissions = 0.21 lb/hr (see Appendix B for calculation)

The estimated hourly PM emissions are less than the calculated allowable PM emission limit. The proposed lumber drying kiln meets the process weight rate PM emission limit.

4.6 PSD Classification (40 CFR 52.21)

The facility is a not a major facility as defined by IDAPA 58.01.01.205; therefore, PSD permitting requirements do not apply.

4.7 NSPS Applicability (40 CFR 60)

This proposed project does not have any affected emission units that are regulated by NSPS standards.

4.8 NESHAP Applicability (40 CFR 61)

40 CFR 61, Subpart M..... National Emission Standards for Asbestos

In accordance with 40 CFR 61, Subpart M, the permittee shall not process any asbestos tailing or waste materials containing asbestos in the hammer mill. The facility submitted its "Material Acceptance Policy Management Plan" to DEQ, which asserts that no asbestos-containing materials are accepted at the facility. Thus, a permit condition regarding the receiving of asbestos-containing materials was not added to the permit.

4.9 MACT Applicability (40 CFR 63)

This proposed project does not have any affected emission units that are regulated by MACT standards.

4.10 CAM Applicability (40 CFR 64)

The requirements of 40 CFR 64 do not apply to this facility because the facility is not a major source.

4.11 Permit Conditions Review

This section describes the permit conditions for this initial permit.

Initial Permit Condition 2.3 requires that PM_{10} emissions from the hammer mill stack shall not exceed 0.21 lb/hr (0.21 lb-PM_{10}/hr) or 0.35 tons per any consecutive 12-calendar month period (0.35 T-PM_{10}/yr). Compliance with this emissions rate limit is demonstrated by complying with the Throughput Limit, Water Injection System Requirement, Water Injection System Operating Log, and General Provision 7.

Initial Permit Condition 2.4 requires that emissions from the hammer mill stack, or any other stack, vent, or functionally equivalent opening associated with the hammer mill, shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.01.01.625.

Initial Permit Condition 2.5 requires that the feed throughput through the hammer mill shall not exceed 90 tons per hour (90 T-feed/hr) or 302,000 tons per any consecutive 12-month period (302,000 T-feed/yr). Compliance with this permit condition is demonstrated by complying with the Annual Operating Hours Monitoring Requirement.

Initial Permit Condition 2.6 requires that the permittee shall not accept any mercury- or PCB-containing/contaminated materials to be processed through the hammer mill. Compliance with this permit condition is demonstrated by complying with the Material Receipts Permit Condition. The facility submitted a "Material Acceptance Policy Management Plan" to DEQ to show that emissions from the hammer mill do not contain emissions of mercury or PCBs.

Initial Permit Condition 2.7 requires that the hammer mill shall not be operated without the water injection system installed and operating. Compliance with this permit condition is demonstrated by complying with the Monitoring of Water Injection System Permit Condition and the Water Injection System Operating Log Permit Condition.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The facility is subject to a processing fee of $1,000 because its permitted emissions are less than one ton per year (IDAPA 58.01.01.225). Refer to the chronology for fee receipt dates.

Table 5.1 PROCESSING FEE TABLE

Pollutant	Annual Emissions (T/yr)
NO_X	0.0
SO_2	0.0
CO	0.0
PM_{10}	0.35
VOC	0.0
LEAD	1.12E-03
HAPS	0.18
Total:	**0.53**
Fee Due	**$ 1,000.00**

6. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided from June 3, 2009, to June 19, 2009, in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and there were no requests for a public comment period on DEQ's proposed action.

Appendix A – AIRS Information

AIRS/AFS Facility-wide Classification – Data Form

Facility Name: Pacific Recycling

Facility Location: 19100 NW Waste Dr. Mayfield, ID 83716

Facility ID: 039-00030 **Date:** July 22, 2009

Project/Permit No.: P-2009.0072 **Completed By:** Mary Capiral

☐ Check if there are no changes to the facility-wide classification resulting from this action. (compare to form with last permit)
Comments:

☐ Yes, this facility is an SM80 source.

Identify the facility's area classification as A (attainment), N (nonattainment), or U (unclassified) for the following pollutants:

	SO2	PM10	VOC
Area Classification:	A	A	A

DO NOT LEAVE ANY BLANK

Check one of the following:

☒ **SIP** [0] - Yes, this facility is subject to SIP requirements. (do not use if facility is Title V)

OR

☐ **Title V** [V] - Yes, this facility is subject to Title V requirements. (If yes, do not also use SIP listed above.)

For SIP or TV, identify the classification (A, SM, B, C, or ND) for the pollutants listed below. Leave box blank if pollutant is not applicable to facility.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:				B	B		B

☐ **PSD** [6] - Yes, this facility has a PSD permit.

If yes, identify the pollutant(s) listed below that apply to PSD. Leave box blank if pollutant does not apply to PSD.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☐	☐	☐	☐	☐	☐	☐

☐ **NSR - NAA** [7] - Yes, this facility is subject to NSR nonattainment area (IDAPA 58.01.01.204) requirements.

Note: As of 9/12/08, Idaho has no facility in this category.

If yes, identify the pollutant(s) listed below that apply to NSR-NAA. Leave box blank if pollutant does not apply to NSR - NAA.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☐	☐	☐	☐	☐	☐	☐

☒ **NESHAP** [8] - Yes, this facility is subject to NESHAP (Part 61) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable? M

☐ **NSPS** [9] - Yes, this facility is subject to NSPS (Part 60) requirements.

If yes, what CFR Subpart(s) is applicable?

If yes, identify the pollutant(s) regulated by the subpart(s) listed above. Leave box blank if pollutant does not apply to the NSPS.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	☐	☐	☐	☐	☐	☐	☐

☐ **MACT** [M] - Yes, this facility is subject to MACT (Part 63) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable?

Appendix B – Emissions Inventory

B.1 Criteria Pollutants Potential to Emit (PTE)

Assumptions

Maximum Feed Throughput = 90 tons of feed per hour (90 T-feed/hr), 302,000 tons of feed per any consecutive 12-month period (302,000 T-feed/yr)

Maximum Hours of Operation = 24 hr/day

Average Feed Throughput = [(302,000 T-feed/yr) ÷ (8,760 hours/yr)] = 34.47 T-feed/hr

PM_{10}

Potential PM_{10} emissions were based on emissions tests performed on a hammer mill that Pacific Recycling claims to be identical to the hammer mill used at their facility (see Appendix C). To be conservative, although the emissions tests reported emission rates of PM, all PM were assumed to be PM_{10}.

At a throughput rate of 67.5 tons per hour (67.5 T/hr), the average PM_{10} emission rate was 0.16 pounds per hour (0.16 lb/hr). Pacific Recycling's maximum production rate is 90 T-feed/hr.

Extrapolating: [(0.16 lb-PM_{10}/hr) ÷ (67.5 T/hr)] = x ÷ 90 T/hr; x = 0.21 lb-PM_{10}/hr at 90 T-feed/hr

PM_{10} Emission Factor (lb-PM_{10}/T-feed) = (0.21 lb-PM_{10}/hr) ÷ (90 T-feed/hr) = 2.33E-03 lb-PM_{10}/T-feed

Controlled PM_{10} Potential to Emit (PTE) = [(PM_{10} Emission Factor, 2.33E-03 lb-PM_{10}/T-feed) x (Maximum annual feed throughput, 302,000 T-feed/yr) x (1 T/2,000 lb)] = 703.7 lb-PM_{10}/yr = 0.35 T-PM_{10}/yr

Assuming 50% capture efficiency of the hammer mill's water injection system:

Uncontrolled PM_{10} Potential to Emit (PTE) = [(Controlled PM_{10} PTE, 0.35 T-PM_{10}/yr) ÷ (1-.5)] = 0.7

Lead

Potential emissions of lead were based on a study performed on a hammer mill that is similar to the one used by the facility (see Appendix D).

Controlled Lead Potential to Emit (PTE) = [(Emission Factor for Lead, 7.89E-06 lb/T-feed) x (Maximum annual feed throughput, 302,000 T-feed/yr) x (1 T/2,000 lb)] = 1.2E-03 T-Lead/yr

B.2 Toxic Air Pollutants (TAPs) Potential to Emit (PTE)

Emission factors for TAPs were based on a on a study performed on a hammer mill that is similar to the one used by the facility (see Appendix D).

TAP Potential to Emit (PTE) (24-hour average, lb/hr) = [Maximum hourly feed throughput (90 T/hr) x Emission Factor (lb-pollutant/T-feed)]

TAP Potential to Emit (PTE) (Annual Average, lb/hr) = [Average feed throughput (34.47 T/hr) x Emission Factor (lb-pollutant/T-feed)]

Annual TAP Potential to Emit (PTE) (T/yr) = [Maximum annual feed throughput (302,000 T/yr) x Emission Factor (lb-pollutant/T-feed) x (1 T/2,000 lb)]

Table B.1 HOURLY TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

Toxic Air Pollutant (TAP)	Emission Factor (lb/T feed)	PTE 24-hour Average[a] (lb/hr)	PTE Annual Average[a] (lb/hr)	Screening Level, EL (lb/hr)	Exceeds EL? (YES/NO)	% of EL
Acetone (CAS No. 67-64-1)	1.33E-05	1.20E-03	N/A[b]	119	NO	0.00 %
Benzene (CAS No. 71-43-2)	4.0E-04	N/A	1.4E-02	8.0E-04	**YES**	1750 %
2-Butanone (MEK) (CAS No. 78-93-3)	5.33E-06	N/A	1.8E-04	39.3	NO	0.00 %
1,1 Dichloroethane (CAS No. 75-34-3)	1.33E-05	N/A	4.6E-04	2.5E-04	**YES**	184 %
Ethylbenzene (CAS No. 100-41-4)	6.67E-05	6.0E-03	N/A	29	NO	0.02 %
Methylene Chloride (CAS No. 75-09-2)	6.0E-05	N/A	2.1E-03	1.6E-03	**YES**	131.3 %
Tetrachloroethene (CAS No. 127-18-4)	2.67E-06	N/A	9.2E-05	1.3E-02	NO	0.71 %
Trichloroethene (CAS No. 79-01-6)	6.67E-05	N/A	2.3E-03	5.1E-04	**YES**	451.0 %
Toluene (CAS No. 108-88-3)	3.33E-04	3.0E-02	N/A	25	NO	0.12 %
Styrene (CAS No. 100-42-5)	1.33E-05	1.2E-02	N/A	6.67	NO	0.18 %
O-Xylene (CAS No. 1330-20-7)	6.67E-05	Total 1.8E-02	N/A	29	NO	0.06 %
M-/P-Xylene (CAS No. 1330-20-7)	1.33E-04		N/A			
Cadmium (CAS No. 7440-43-9)	1.16E-06	N/A	4.0E-05	3.7E-06	**YES**	1081 %
Chromium (Total) (CAS No. 7440-47-3)	1.28E-06	N/A	N/A	N/A	N/A	N/A
Chromium (II, III) (CAS No. 7440-47-3)	79% of total 1.01E-06	9.1E-05	N/A	3.30E-02	NO	0.28 %
Chromium (VI) (CAS No. 7440-47-3)	21% of total 2.69E-07	N/A	9.27E-06	5.60E-07	**YES**	1655 %

a. 24-hour average only applies to non-carcinogenic TAPs. Annual average only applies to carcinogenic TAPs.
b. N/A = not applicable.

Table B.2 ANNUAL TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

Toxic Air Pollutant (TAP)	Emission Factor (lb/T feed)	PTE (T/yr)
Acetone (CAS No. 67-64-1)	1.33E-05	2.0E-03
Benzene (CAS No. 71-43-2)	4.0E-04	6.6E-02
2-Butanone (MEK) (CAS No. 78-93-3)	5.33E-06	8.0E-04
1,1 Dichloroethane (CAS No. 75-34-3)	1.33E-05	2.0E-03
Ethylbenzene (CAS No. 100-41-4)	6.67E-05	1.0E-02
Methylene Chloride (CAS No. 75-09-2)	6.0E-05	9.0E-03
Tetrachloroethene (CAS No. 127-18-4)	2.67E-06	4.0E-04
Trichloroethene (CAS No. 79-01-6)	6.67E-05	1.0E-02
Toluene (CAS No. 108-88-3)	3.33E-04	5.0E-02
Styrene (CAS No. 100-42-5)	1.33E-05	2.0E-03
O-Xylene (CAS No. 1330-20-7)	6.67E-05	1.0E-02
M-/P-Xylene (CAS No. 1330-20-7)	1.33E-04	2.0E-02
Cadmium (CAS No. 7440-43-9)	1.16E-06	1.75E-04
Chromium (Total) (CAS No. 7440-47-3)	1.28E-06	N/A
Chromium (II, III) (CAS No. 7440-47-3)	79% of total 1.01E-06	1.5E-04
Chromium (VI) (CAS No. 7440-47-3)	21% of total 2.69E-07	4.1E-05
	Total	0.18

Appendix C – Reference for PM Emission Factor

Versar INC.

Title V Applicability

Workbook

Prepared for:

INSTITUTE OF SCRAP RECYCLING INDUSTRIES, INC.
1325 G Street, NW
Washington, DC 20005-3104
(202) 737-1770

Institute of Scrap Recycling Industries, Inc.
THE ORIGINAL RECYCLERS®

Prepared by:

Versar, Inc.
200 West 22nd Street, Suite 250
Lombard, IL 60148

Second Printing, 1998

Table 1 Summary of Particulate Matter Emissions for Shredder

Run #	Production Rate (tph)[a]	Concentration (gr/dscf)[b]	(lb/dscf)[c]	Emission Rate (lb/hr)[d]
1	67.9	0.004	5.97E-07	0.12
2	69.2	0.006	8.71E-07	0.18
3	65.5	0.007	1.03E-06	0.20
Average	**67.5**	**0.006**	**8.33E-07**	**0.16**

[a] Production rate in tons per hour

[b] Concentration in grains per dry standard cubic foot

[c] Concentration in pounds per dry standard cubic foot

[d] Emission rate in pounds per hour

Table 2 Summary of Stack Gas Conditions for Shredder

Run #	Date/Time	Vs (fps)[a]	Flow Rate (acfm)[b]	(dscfm)[c]	T_S °F	H_2O %	O_2 %	CO_2 %
1	2/08/2005 1117-1240	26.2	3,494	3,226	85	2.9	21.0	0.0
2	2/08/2005 1301-1516	27.6	3,679	3,360	85	3.9	21.0	0.0
3	2/08/2005 1536-1705	26.0	3,472	3,182	83	3.9	21.0	0.0
Average		**26.6**	**3,548**	**3,256**	**84**	**3.6**	**21.0**	**0.0**

[a] Velocity in feet per second

[b] Actual cubic feet per minute

[c] Dry standard cubic feet per minute

(7)

INDIANAPOLIS OFFICE OF ENVIRONMENTAL SERVICES
STACK TEST SUMMARY REPORT

date(s) of stack test: 2/8/2005

Source Information:
company name: Capitol City Metals - Shredder
address: 311 S. Shelby St.
person to contact: Mark Imel
phone number: 634-7175

Tester Information:
company name: Almega Environmental
address: 9305 Snider Road
Mason, OH 45040
person to contact: David Wetmore (513)398-1880

Reason for Stack Test:
issued notice of violation/order: _____ installation permit requirement _____ requested by agency X

Process Information:
process description: Hammermill portion of Shredding Operation (D.1.b) with a maximum capacity of 66 tons/hr of metal
type of control equipment: Water Injection.

Stack Information:
diameter at sample site: 21" X 15"
approx. gas flow rate: 3,251 dscfm
approx. moisture: 3.7 % by volume
stack height: 18'
approx. gas temp.: 84 degF
average % isokinetic: 101.40%

Test Information:

pollutant/method	test #	emissions grains/dscf	emissions lb/hr	stack flow dscfm	throughput during testing	VE from Hammermill	Hammermill Water Injection Rate
PM / RM 5	1	0.004025	0.1113	3,225	67.9 ton/hr	No VE from hammermill	.154 - .275 gal/sec
	2	0.005866	0.1691	3,362	69.2 ton/hr	No VE from hammermill	.174 - .270 gal/sec
	3	0.006976	0.1894	3,167	66.5 ton/hr	No VE from hammermill	.237 - .275 gal/sec

Test Results:

point tested	emissions grains/dscf	allowable emissions grains/dscf	throughput during testing	permitted capacity
PM / RM 5	0.0056	0.03	67.9 ton/hr	66 ton/hr

Test Comments: No deficiencies were noted

Compliance Comments: Source demonstrated compliance with applicable permit limits.

Reviewer Information:
name: Jeffrey S. Hege title: Senior EnvironmentalScientist

signature _____ date _____

1.0 Executive Summary

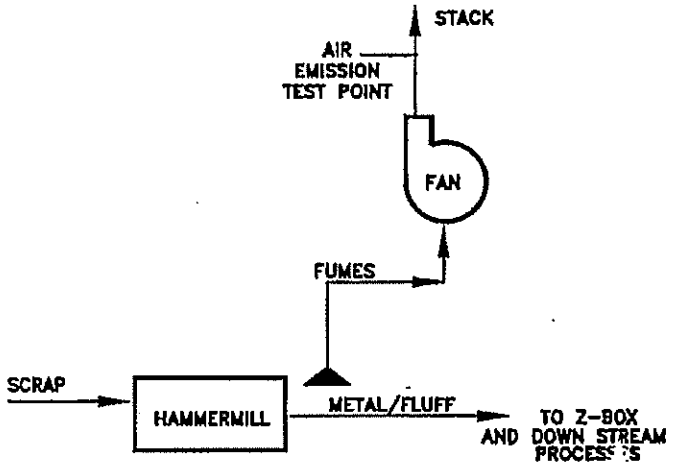
Compliance emission tests were performed on February 8, 2005 to measure the filterable particulate matter (PM) emissions from the Hammermill at the Capitol City Metals, LLC facility in Indianapolis, Indiana. This testing was required to demonstrate that the alternative emission control system for the Hammermill proposed in FESOP application #097-17949-00111 will operate in compliance with the applicable PM emission limit. This permit limits particulate emissions to 0.03 grains per dry standard cubic foot (gr/dscf). The results of the testing are summarized below.

Test Repetition #	1	2	3	**Average**
Particulate (gr/dscf)	0.004	0.006	0.007	**0.006**
Opacity	0%	0%	0%	0%

Submitted and Approved by:
Almega Environmental, Inc.

David K. Wetmore
President

Appendix D – Reference for TAPs Emission Factors



VOC's	HAP?	Emission Rate (lb/hr)	Emission Factor (lb/ton feed)
Methylene Chloride	Yes	0.009	0.00006
Acetone (1)	No	0.002	0.0000133
1,1-Dichloroethene	No	0.002	0.0000133
2-Butanone (MEK)	Yes	0.0008	0.00000533
1,1,1-Trichloroethane	Yes	0.03	0.0002
Benzene	Yes	0.06	0.0004
Tetrachloroethene	Yes	0.0004	0.00000267
Trichloroethene	Yes	0.01	0.0000667
Toluene	Yes	0.05	0.000333
Ethylbenzene	Yes	0.01	0.0000667
Styrene	Yes	0.002	0.0000133
O-Xylene	Yes	0.01	0.0000667
M-/P-Xylene	Yes	0.02	0.000133
Total VOC		0.2042	0.00136
Total PCB's	Yes	0.0131	0.0000873
Metals			
Cadmium	Yes	0.000174	0.00000116
Chromium	Yes	0.000192	0.00000128
Lead	Yes	0.00118	0.00000789
Total Metals		0.001546	0.0014456

Total HAPs (VOC, PCB, Metals)	0.214846	0.00143

3 Run Average Total Hydrocarbon (THC) = 7.53 lb/hr

(1) = DELISTED AS A VOC PER USEPA GUIDANCE

% of THC that is VOC = 2.71%

% of THC that is HAP = 2.85%

FEED MIX - 75% AUTO BODIES, 25% MIXED SCRAP AND WHITE GOODS.
ALL AUTO BODIES HAVE BATTERIES, GAS TANKS, TIRES, RADIATORS, AND TRANSMISSIONS REMOVED. ABOUT 50% OF AUTO BODIES HAVE ENGINES REMOVED. 75% OF AUTOS FULLY DRAINED, OTHER 25% OF AUTOS AT LEAST 60% DRAINED. TEMPORARY HOOD, FAN, AND STACK CONSTRUCTED FOR TEST.
NOTE: SCRAP THROUGHPUT OF SHREDDER = 150 TONS/HR

TABLE D-11.F
ORGANICS AND METALS
EMISSION TEST FOR:
MILL DEFUMER W/NO CONTROLS.

CAD FILE: G:_____\300710.DWG

Appendix E – Ambient Air Quality Impact Analysis

MEMORANDUM

DATE: July 22, 2009

TO: Mary Capiral, EIT, Permit Engineer, Air Quality Division

FROM: Cheryl Robinson, P.E., Air Quality Engineer/Modeling Analyst, Air Quality Division

PROJECT NUMBER: P-2009.0072

SUBJECT: **Modeling Analysis for Pacific Recycling, Mayfield, Facility ID 039-00030**
Project: Initial PTC for existing Scrap Metal and Car Shredding Facility

1.0 Summary

Pacific Steel & Recycling, Inc., (Pacific Recycling) submitted an application for an initial Permit to Construct (PTC) for this existing scrap metal and car shredding facility located near Mayfield, Idaho. After the application had been declared complete, DEQ determined that modeling was required to demonstrate compliance with state-regulated toxic air pollutants (TAPs). Envirosure, LLC conducted SCREEN3 modeling on behalf of Pacific, which indicated that more refined modeling would be needed. The consultant was unfamiliar with modeling, so DEQ conducted the air dispersion analyses for this single-source facility to expedite this permitting action. Air quality analyses involving atmospheric dispersion modeling of emissions associated with the facility were performed to demonstrate the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 [Idaho Air Rules Section 203.02]) or Toxic Air Pollutant (TAP) increment (Idaho Air Rules Section 203.03).

A technical review of the submitted emission inventory and facility data was conducted by DEQ. The submitted information, combined with DEQ's verification analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the facility were below significant contribution levels (SCLs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all locations outside of the facility's property boundary. Key assumptions and results that should be considered in the development of the permit are shown in Table 1.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
Throughput Limit Annual feed to the shredder should be limited to 302,000 tons per year.	At this annual production level, benzene ambient impacts were predicted to be 99.86% of the AACC. A daily limit on feed rate would not be needed to ensure compliance, because: - Compliance with noncarcinogenic TAPs ELs was demonstrated based on operating 24 hr/day at the maximum capacity 90 tons per hour feed rate. - Demonstration that PM_{10} emissions were below DEQ 24-hr modeling thresholds was based on operating operating 24 hr/day at the maximum capacity 90 tons per hour feed rate.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance for this facility located at 19100 NW Waste Site Drive near Mayfield. Approximate UTM coordinates at the center of this parcel are 586.4 km Easting and 4,791.8 km Northing, in UTM Zone 11 (Datum WGS84).

2.1.1 Area Classification

Pacific Recycling's scrap and car shredding facility is located in eastern Elmore County, which is designated as an attainment or unclassifiable area for lead (Pb), nitrogen dioxide (NO_2), ozone, particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}) and 2.5 micrometers ($PM_{2.5}$), and sulfur oxides (SO_x). There are no Class I areas within 10 kilometers of this location.

2.1.2 Significant and Cumulative NAAQS Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the proposed new facility exceed the significant contribution levels (SCLs) of Section 006.102 of IDAPA 58.01.01, Rules for the Control of Air Pollution in Idaho (Idaho Air Rules), then a cumulative impact analysis is necessary to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby co-contributing sources, to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. The SCLs and the modeled value that must be used for comparison to the NAAQS are also listed in Table 2.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual[f]	1.0	50[g]	Maximum 1st highest[h]
	24-hour	5.0	150[i]	Maximum 6th highest[j]
$PM_{2.5}$[k]	Annual	Not established	15	Use PM_{10} as surrogate
	24-hour	Not established	35	Use PM_{10} as surrogate
Carbon monoxide (CO)	8-hour	500	10,000[i]	Maximum 2nd highest[h]
	1-hour	2,000	40,000[i]	Maximum 2nd highest[h]
Sulfur Dioxides (SO_x)	Annual	1.0	80[g]	Maximum 1st highest[h]
	24-hour	5	365[i]	Maximum 2nd highest[h]
	3-hour	25	1,300[i]	Maximum 2nd highest[h]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[g]	Maximum 1st highest[h]
Lead (Pb)	Quarterly	NA	0.15[i]	Maximum 1st highest[h]

[a] Idaho Air Rules Section 006.102

[b] Micrograms per cubic meter

[c] Idaho Air Rules Section 577 for criteria pollutants

[d] The maximum 1st highest modeled value is always used for significant impact analysis

[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

[f] The annual PM_{10} standard was revoked in 2006. The standard is still listed because compliance with the annual $PM_{2.5}$ standard is demonstrated by a PM_{10} analysis that demonstrates compliance with the revoked PM_{10} standard.

[g] Never expected to be exceeded in any calendar year

[h] Concentration at any modeled receptor

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]

[i] Never expected to be exceeded more than once in any calendar year

[j] Concentration at any modeled receptor when using five years of meteorological data

[k] Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers

[l] Not to be exceeded more than once per year

New source review requirements for assuring compliance with $PM_{2.5}$ standards have not yet been completed and promulgated into regulation. EPA has asserted through a policy memorandum that compliance with $PM_{2.5}$ standards will be assured through an air quality analysis for the corresponding PM_{10} standard. Although the PM_{10} annual standard was revoked in 2006, compliance with the revoked PM_{10} annual standard must be demonstrated as a surrogate to the annual $PM_{2.5}$ standard.

2.1.3 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permit requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

2.2 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled.

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Criteria pollutant modeling for this

[1] Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

project was not required, because emissions of criteria pollutants were below DEQ modeling thresholds (see Table 4).

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

This section describes the modeling methods used by DEQ to demonstrate compliance with applicable air quality standards.

3.1.1 Overview of Analyses

DEQ performed the air quality analyses in support of the submitted permit application. DEQ confirmed that emissions of criteria pollutant were below modeling thresholds and confirmed which TAPs exceeded the applicable screening emission level (EL). All of the TAPs for which modeling was required are carcinogens subject to an annual standard. The DEQ Verification analyses used a unit emissions rate of 1 pound per hour.

A brief description of parameters used in the modeling analyses is provided in Table 3.

Table 3. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description[a]
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 07026
Meteorological data	Boise: 1988-1992	National Weather Service surface data and upper air data from the Boise airport. Data processed through AERMET (version 06341) was used, with the Boise met data input as a concatenated five year meteorological data file.
Terrain	Considered	Terrain elevations were assigned to buildings, emission sources, and receptors using terrain data downloaded from the National Map Seamless Server (http://seamless.usgs.gov/index.php). 1-arc-second terrain data (resolution ~30 meters) was downloaded in native format (NAD83) as a GeoTiff file. Conversion of the NAD83 terrain coordinate system to match receptor locations (WGS84) was done within AERMAP (version 09040).
Building downwash	Considered	Building heights on the property were estimated by DEQ based on site photgraphs provided by the applicant. Building downwash parameters were calculated using the BPIP PRIME algorithm (version 04274).
Receptor Grid	Receptors	Receptor locations were defined in UTM coordinates (WGS84).
	Fenceline Grid	10-meter spacing along the property boundary.
	Grid 1	20-meter spacing out to 250 meters in all directions from the approximate center of the facility.
	Grid 2	50-meter spacing between 250 meters and 500 meters from the "center" of the facility.
	Grid 3	100-meter spacing between 500 meters and 1,000 meters from the "center" of the facility.

3.1.2 Modeling Protocol and Methodology

A modeling protocol was not to submitted to DEQ for this project.

3.1.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. EPA provided a one-year transition period during which either ISCST3 or AERMOD could be used at the discretion of the permitting agency. AERMOD must be used for all air impact analyses, performed in support of air quality permitting, conducted after November 2006.

AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD offers the following improvements over ISCST3:

- Improved dispersion in the convective boundary layer and the stable boundary layer.
- Improved plume rise and buoyancy calculations.
- Improved treatment of terrain affects on dispersion.
- New vertical profiles of wind, turbulence, and temperature.

AERMOD was used for the submitted analyses and the DEQ verification analyses for this project.

3.1.4 Meteorological Data

The Pacific Recycling shredding facility is located about 24.4 miles southwest of the National Weather Service station at the Boise airport. DEQ determined that the National Weather Service surface and upper air meteorological data collected from 1988 through 1992 at the Boise airport were the best representative data available at this time. These meteorological data were previously processed through AERMET—the meteorological data preprocessor for AERMOD—by DEQ using AERMET version 06341. Surface characteristics were analyzed manually (AERSURFACE had not yet been issued when this data was processed).

3.1.5 Terrain Effects

Terrain effects on dispersion were considered in these site-specific analyses. The facility location is shown in the area map in Figure 3-1.

DEQ used AERMAP (version 09040) to determine the actual elevation of each receptor and the controlling hill height elevation, emission source, and building elevations using data extracted from a United States Geological Survey (USGS) 1 arc-second national elevation dataset (NED) file for the area surrounding the facility. The data was downloaded in native format (NAD83) in geotiff format. Conversion of the NAD83 terrain coordinate system to match receptor locations (WGS84) was done within AERMAP. DEQ detemined that the domain used for this modeling project was appropriate, based on a review of the AERMAP output. No error, warning, or information messages were noted in the AERMAP runs. The domain selected for downloading is shown in Figure 3-2.

3.1.6 Facility Layout

The facility layout is shown in Figure 3-3. DEQ used this scaled plot plan, supplemented by the facility photos shown in the figure, to develop building, emission source, and fenceline locations for input to the model.

Figure 3-1. PACIFIC RECYCLING SCRAP AND CAR SHREDDER FACILITY LOCATION

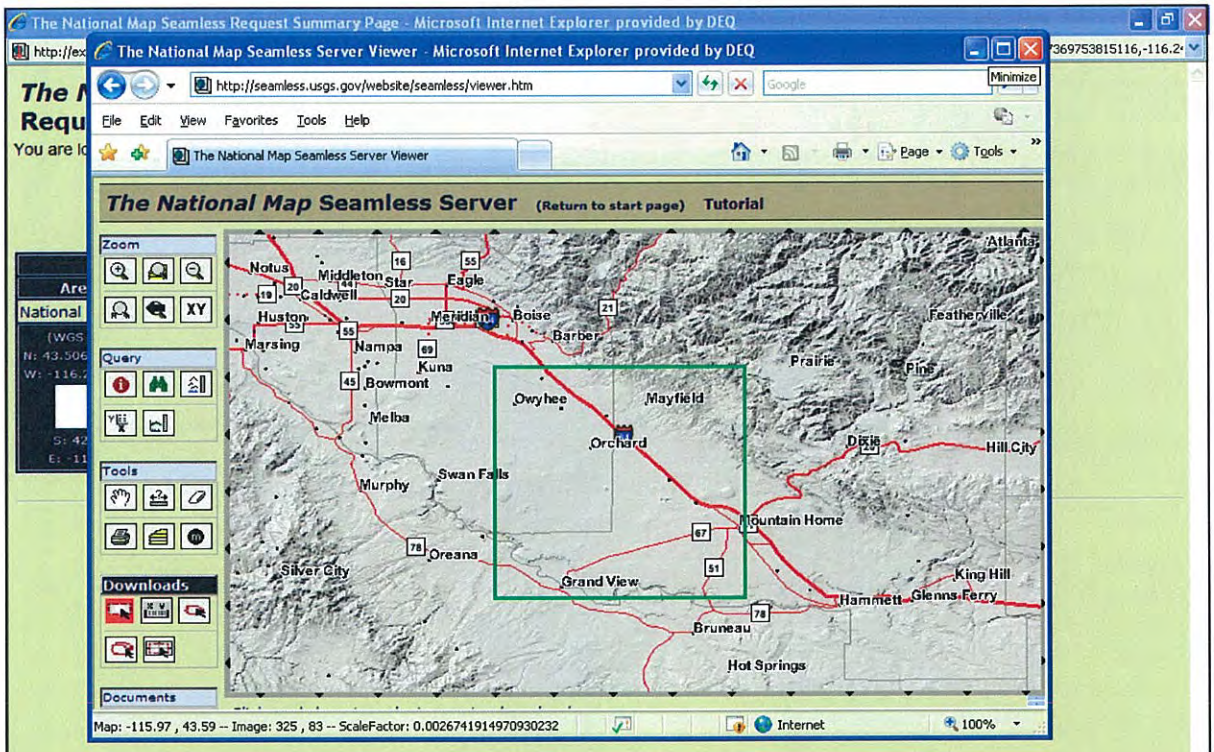


Figure 3-2. SELECTED DOMAIN USED FOR TERRAIN ANALYSIS

3.1.7 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the submitted modeling analyses. The Building Profile Input Program with Plume RIse Model Enhancements (BPIP-PRIME) was used to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emission release parameters for input to AERMOD.

3.1.8 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." For area sources, the ambient air boundary is typically defined as the property boundary. The active facility boundary is described in the plot plan as surrounded by a 6-foot fence with gated entrances. The fenceline was used to define the ambient air boundary for the dispersion modeling.

3.1.9 Receptor Network

The receptor grids used for the DEQ modeling analyses are summarized in Table 3. Emissions from the shredder occur at the top of the shredder box, typically at an elevated temperature. The DEQ modeling analses presumed that the emissions from the shredder occur at ambient temperature. The lack of thermal buoyancy for these sources increases the likelihood that the maximum ambient impacts will occur relatively close to the facility. The results of the modeling analyses confirmed that the ambient impacts decrease quickly with increased distance from the fenceline, which confirmed that this receptor grid should be sufficient to ensure that the model output captured the maximum values for these impacts. The facility layout drawing and 3D model layout are shown in Figure 3-3.

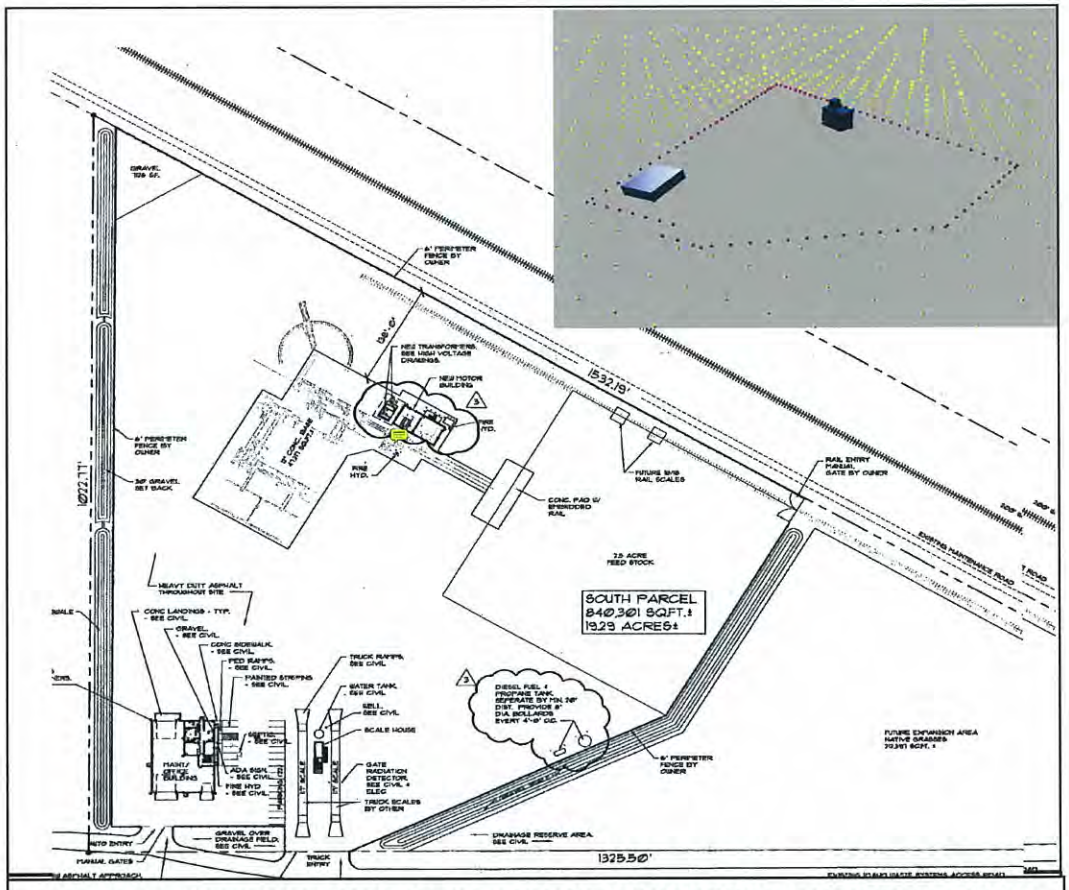


Figure 3-3. PACIFIC RECYCLING SCRAP/AUTO SHREDDER FACILITY LAYOUT

3.2 Emission Release Parameters, Emission Rates, and TAPs Impact Analysis

Emissions estimates were based on a maximum capacity of 90 tons per hour for the shredder. Emissions from the shredder were modeled as a volume source using the following parameters:

Release height: 7.62 meters

Initial Horizontal Dimension σ_{yo} = Longest side of annulus (2.64 m) / 4.3 = 0.6139 meters

Initial Vertical Dimension σ_{zo} = Adjacent building height (10 m) / 2.15 = 4.65 meters

As shown in Table 4, emissions of PM_{10} and lead did not exceed DEQ modeling thresholds. For 24-hour per day operations with a maximum feed of 302,000 tons per year to the shredder, modeling was required for six TAPs, each of which is a carcinogen subject to an annual standard. The facility demonstrated using their waste acceptance procedures that PCBs are not expected to be emitted. The maximum annual ambient impact predicted by the model for a 1 pound-per-hour emission rate (8.69 $\mu g/m^3$ per pound per hour) was used to predict the maximum annual ambient impacts for each carcinogenic TAP, as shown in Table 4. The highest impacts (compared to the applicable standard) were for benzene. The maximum annual impacts for benzene in $\mu g/m^3$ are shown in Figure 3-4.

Figure 3-4. PACIFIC RECYCLING ANNUAL AMBIENT IMPACTS - BENZENE

Table 4. EMISSIONS AND MODELING RESULTS : 24-HR/DAY AND MAXIMUM 302,000 TPY FEED

PACIFIC STEEL & RECYCLING - SHREDDER EI AND MODELING DETERMINATION - 24 hr/day operations, and [INPUT] Tons per Year

DEQcar 7/20/2009

Maximum Feed Rate:		90	T/hr			
Operations: 24 hr/day, INPUT TPY		24	hr/day	x 90 T/hr =	2,160	T/day
		625.71	hr/mo			
		7508.57	hr/yr	6 days/wk =	675,771	T/year

ANNUAL AVG EMISSIONS	
302,000	Tons per year (FEED)
34.47	T/hr, Annual hourly average

CRITERIA POLLUTANTS	Emission Factor	Emission Rate			DEQ Modeling Thresholds		Modeling Required?	
	(lb/T feed)	lb/hr 1-hr Avg	Units as noted	Ton/yr			Short-Term	Annual
PM10[a]	2.37E-03	2.13E-01	0.2 lb/hr (24-hr)	0.80	0.2 lb/hr (24-hr)	1 T/yr	No[b]	No
Lead	7.89E-06	7.10E-04	0.44 lb/mo	2.67E-03	10 lb/mo	0.06 T/yr	No	No

[a] Emission Test: Method 5 does not include condensibles. All PM presumed to be PM10, 0.16 lb per 67.5 T/hr

b Case-by-case modeling threshold is 0.9 lb/hr. There are no other significant industrial sources of PM10 emissions located nearby. DEQ determined that modeling is not required.

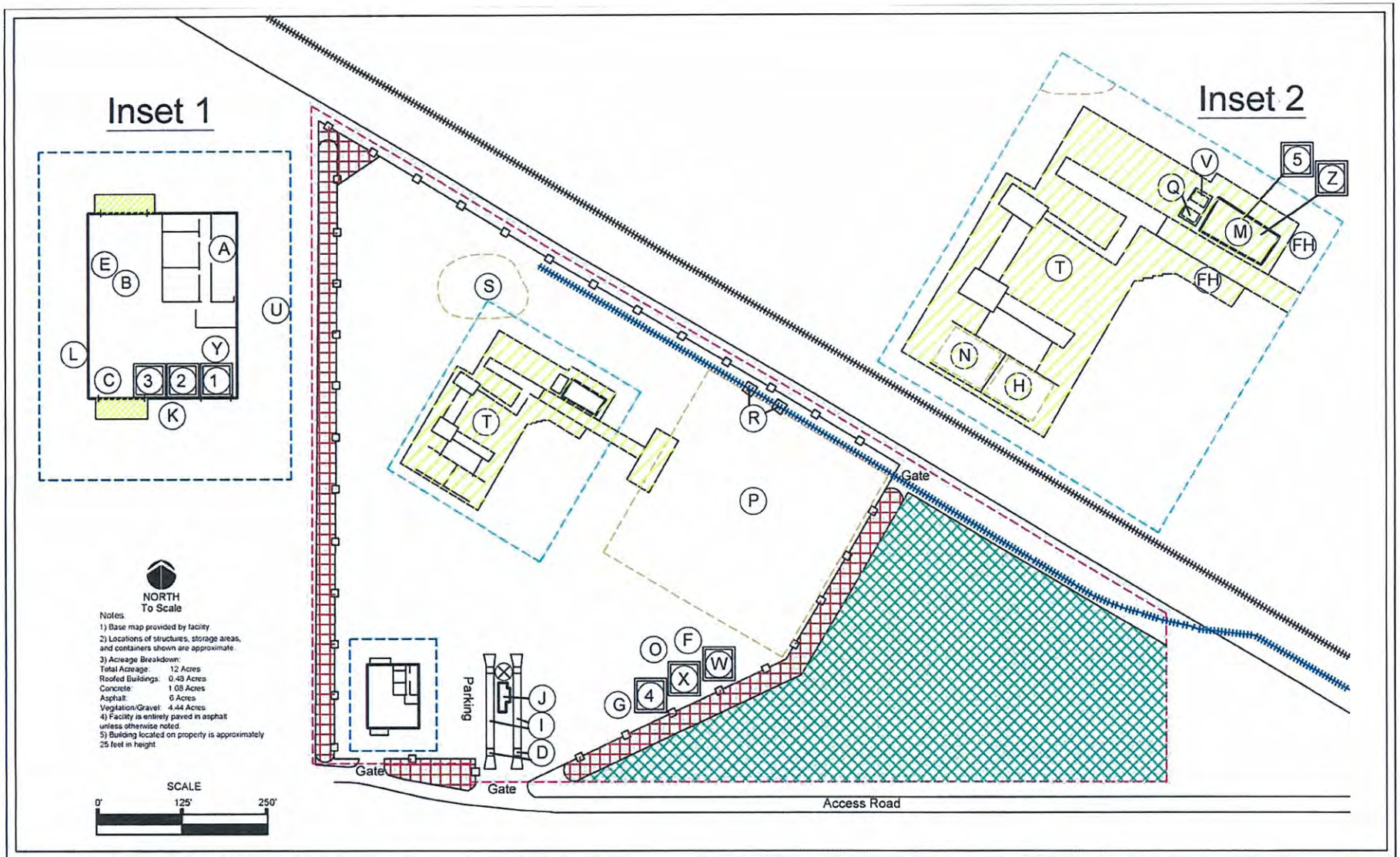
DEQ AERMOD ANALYSIS: 1 lb/hr, operations 8760 hr/yr --> DISPERSION FACTOR = 8.6899 ug/m3 per lb/hr

TOXIC AIR POLLUTANTS (TAPs)	Emission Factor (lb/T feed)	Emission Rate (lb/hr) 1-hr Avg	24-hr Avg	Annual Avg.	Screening Level, EL (lb/hr)	Exceeds EL? (Y/N)	Maximum Ambient Impact (ug/m3)	AACC (ug/m3)	Percent of AACC	Demonstrates Compliance? (Y/N)
VOLATILE ORGANIC COMPOUNDS										
Acetone (CAS No. 67-64-1)	1.33E-05	1.20E-03	1.20E-03		119	N				
Benzene (CAS No. 71-43-2)	4.00E-04	3.60E-02		1.38E-02	8.00E-04	YES	1.20E-01	1.20E-01	99.86%	Yes
2-Butanone (MEK) (CAS No. 78-93-3)	5.33E-06	4.80E-04		1.84E-04	39.3	N				
1,1 Dichloroethane (CAS No. 75-34-3)	1.33E-05	1.20E-03		4.59E-04	2.50E-04	YES	3.98E-03	3.80E-02	10.49%	Yes
Ethyl Benzene (CAS No. 100-41-4)	6.67E-05	6.00E-03	6.00E-03		29	N				
Methylene Chloride (CAS No. 75-09-2)	6.00E-05	5.40E-03		2.07E-03	1.60E-03	YES	1.80E-02	2.80E-01	6.42%	Yes
Tetrachloroethene (CAS No. 127-18-4)	2.67E-06	2.40E-04		9.20E-05	1.30E-02	N				
Trichloroethene (CAS No. 79-01-6)	6.67E-05	6.00E-03		2.30E-03	5.10E-04	YES	2.00E-02	7.70E-01	2.60%	Yes
Toluene (CAS No. 108-88-3)	3.33E-04	3.00E-02	3.00E-02		25	N				
Styrene (CAS No. 100-42-5)	1.33E-05	1.20E-03	1.20E-03		6.67	N				
O-Xylene (CAS No. 1330-20-7)	6.67E-05	6.00E-03	(Total) 1.80E-02							
M-/P-Xylene (CAS No. 1330-20-7)	1.33E-04	1.20E-02			29	N				
METALS										
Cadmium (CAS No. 7440-43-9)	1.16E-06	1.04E-04		4.00E-05	3.70E-06	YES	3.48E-04	5.60E-04	62.06%	Yes
Chromium (Total) (CAS No. 7440-47-3)	1.28E-06									
Chromium II, III (CAS No. 7440-47-3)	79.00% 1.01E-06	9.10E-05	9.10E-05		3.30E-02	N				
Chromium VI (CAS No. 7440-47-3)	21.00% 2.69E-07	2.42E-05		9.27E-06	5.60E-07	YES	8.05E-05	8.30E-05	97.02%	Yes
PCBs										
Total PCBs * (CAS No. 1336-36-3) *Presume Aroclor (PCB dielectric fluid) EL & AACC apply	8.73E-05	7.86E-03		3.01E-03	6.60E-05	YES	2.62E-02	1.00E-02	261.54%	NO

4.0 Conclusions

The submitted information, combined with DEQ's analyses, demonstrated to DEQ's satisfaction that emissions from the facility will not cause or significantly contribute to a violation of any air quality standard.

Appendix F – Facility Layout



KEY

- (A) Office
- (B) Maintenance Shop Area (55-Gallon Drum Storage)
- (C) Chemical Storage
- (D) Radiation Detector
- (E) Oil Storage
- (F) Fuel Storage
- (G) Propane Storage
- (H) Automobile Shredder Residue Storage
- (I) Truck Scale
- (J) Scale House
- (K) Compressed Gas Storage
- (L) Non-Hazardous Waste Storage (55-Gallon Drum Storage)
- (M) Shredder Building (55-Gallon Drum Storage)
- (N) Zorba Storage
- (O) Oil Loading Area
- (P) Metal Feed Stack
- (Q) Pad-Mounted Transformer (936-Gallon Capacity)
- (R) Proposed Rail Scale
- (S) Shred
- (T) Shredder (One 55-Gallon and three 250-Gallon Hydraulic Reservoirs)
- (U) Septic Tank
- (V) Pad-Mounted Transformer (319-Gallon Capacity)
- (W) 1,500-Gallon Diesel AST
- (X) 200-Gallon Gasoline AST
- (Y) 598-Gallon Hydraulic Oil AST
- (Z) 120-Gallon Tellus T Oil AST
- (1) 260-Gallon Gear Oil AST
- (2) 598-Gallon 15W-40 AST
- (3) 260-Gallon 5W-30 AST
- (4) 1,000-Gallon Propane AST
- (5) 120-Gallon Morlina Oil AST
- (FH) Fire Hydrant
- Well
- Approximate Site Boundary (Chainlink Fence)
- Approximate Area Boundary
- Inset Area 1
- Inset Area 2
- Railroad Tracks
- Proposed Rail Spur
- Gravel
- Concrete
- Vegetation
- Secondary Containment

envirosure SOLUTIONS, LLC

FACILITY LAYOUT

Company - Pacific Steel & Recycling	
Address - 19100 NW Waste Site Drive	
City - Mayfield	State - Idaho
County - Elmore	Date - 11/08

Appendix G – Facility Comments

The following comments were received on July 31, 2009:

Throughput Monitoring Permit Condition (PC): The permittee shall monitor and record daily operating hours of the hammer mill. The permittee shall assume maximum production (90 tons per hour) and the operational hours of the hammer mill to determine compliance with permitted production rates. Records shall show that no more than 302,000 tons of feed are processed per any consecutive 12-month period (302,000 T-feed/yr).

Facility Comment: The PC states that Pacific Recycling monitors and records the total amount of feed (including house hold appliances, scrap metal and pre-crushed automobiles) processed for any 12 month period." Because input is not measured, and for ease of recordkeeping, we request that feed rate be calculated by multiplying number of hours of operation by 90 tons per hour, which is the maximum capacity of the operation.

DEQ Response: The Throughput Monitoring PC will be changed to an Annual Operating Hours Monitoring PC.

Maximum hours per year = [Maximum throughput (302,000 T/yr) ÷ Maximum capacity of hammer mill (90 T/hr)] = 3355.56 hrs/yr

Since the hammer mill will not be continously operated at maximum capacity, it is appropriate to round up to 3,356 hrs per any consecutive 12-month period.

Revised Permit Condition: The permittee shall monitor and record daily operating hours of the hammer mill. Records shall show that operation of the hammer mill does not exceed 3,356 hours per any consecutive 12-month period (3,356 hrs/yr).

Material Receipts PC: The permittee shall maintain documentation of all material sales transactions and require a "Motor Vehicle, Appliance, & Material Supplier Contractual Certification" of all material suppliers who supply scrap metals to the facility. Records shall show that materials received to be processed through the hammer mill are not contaminated with mercury or PCBs.

Facility Comment: The Material Receipts Permit Condition requires that Pacific Recycling maintain records of all sales transactions. Pacific Recycling does keep all sale transaction records, but request that these documents are not required as a permit condition, which might render sensitive financial data to become public documents.

DEQ Response: The suggested change will be made to the PTC.

Revised Permit Condition: The permittee shall require a "Motor Vehicle, Appliance, & Material Supplier Contractual Certification" of all material suppliers who supply scrap metals to the facility. Records shall show that materials received to be processed through the hammer mill are not contaminated with mercury or PCBs.