Air Quality Permitting
Statement of Basis

July 10, 2006

Permit to Construct No. P-050112

Idaho Energy Limited Partnership,
Energy Products of Idaho (EPI)
Coeur d'Alene , Idaho

Facility ID No. 055-00043

Prepared by:

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AIR QUALITY DIVISION

FINAL

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Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AP-42	Compilation of Air Pollutant Emissions Factors.
AQCR	Air Quality Control Region
CEMS	continuous emissions monitoring system
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
EPI	Idaho Energy Limited Partnership, Energy Product of Idaho
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
MMBtu/hr	million British thermal units per hour
NAAQS	National ambient air quality standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	Operations and Maintenance
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
RDF	refuse derived fuel
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
TAPs	Toxic air pollutants
TDF	tire derived fuel
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

EPI is a pilot research facility. It has a fluidized bed waste incinerator with a design capacity of 1,200 pounds fuels per hour, or 3.0 MMBtu per hour.

3. FACILITY / AREA CLASSIFICATION

EPI is classified as a synthetic minor (SM) facility because with the permit limits actual and potential emissions of regulated air pollutants are below major source thresholds. The Standard Industrial Classification (SIC) defining the facility is 3443. The Aerometric Information Retrieval System (AIRS) classification is "SM."

The facility is located within AQCR 62 and UTM zone 11. The facility is located in Kootenai County which is designated as attainment or unclassifiable for all criteria pollutants (PM_{10}, CO, NO_x, SO_2, lead, and ozone). The facility is not located in the PM_{10} nonattainment area of Kootenai County.

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant at EPI Coeur d'Alene facility. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

The applicant has requested to increase the operating hours of the fluidized bed waste incinerator from 240 hours per year to 600 hours per year, the ability to burn solid wastes that were not permitted in the previous permit, to keep the annual emissions limits for SO_2, NO_x, and CO the same as previously permitted, to remove the hourly emissions limits for NO_x and CO from the permit, and to remove the hourly and annual emissions limits for VOCs from the permit. These changes are included in the modified PTC.

The applicant has also proposed to remove the SO_2 hourly emissions limit and the PM emissions limit specified in IDAPA 58.01.01.786 (Rules for the Control of Incinerators), and increase the allowable PM_{10} hourly emissions limit. These requests cannot be granted. The reasons and more discussions can be found in Section 5 of this document.

4.1 Application Chronology

May 3, 2005	DEQ received the PTC application.
May 6, 2005	DEQ received additional information through email.
May 12, 2005	DEQ received additional information.
June 3, 2005	DEQ declared the PTC application incomplete.
July 7, 2005	DEQ received the PTC supplement information.
September 28, 2005	DEQ declared the PTC application complete.
October 4, 2005	DEQ received additional information through email.
October 6, 2005	DEQ provided an opportunity for public comment.

November 28, 2005	DEQ received information on building dimensions through email.
December 21, 2005	DEQ received EPI's comments on the facility draft permit
February 27, 2006	DEQ sent the second facility draft to EPI.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

The May 12, 2005 application included a letter that was submitted to DEQ on October 4, 1993 when the fluidized bed waste incinerator was first built. It was mentioned in that letter that:

"The fluidized bed waste incinerator is utilized for research and development to study various fuel characteristics in EPI's combustion process. The information is necessary for the development of full-scale combustion systems in determining pollution control, combustion, and material handling requirements."

"The fuels are typically industrial byproducts of non-toxic and non-hazardous types (wood waste, biomass, paper sludge, agricultural waste, etc). Due to the wide variety of potential waste products, it is difficult to predict the emissions types and rates."

The fluidized bed waste incinerator has the following specifications:

Manufacturer:	Energy Products, Inc.
Model:	EPI Pilot Combustor
Charging capacity:	1200 lb/hr
Auxiliary fuel:	Propane
Auxiliary fuel usage:	44.2 gal/hr
Rated heat input rate:	3 MMBtu/hr
Fluidized bed chamber minimum temperature:	1400 °F

Stack specifications:

Stack height:	61 feet 7 inch
Stack exit diameter:	2 feet ½ inch
Stack flow rate[a]:	2,150 acfm for refuse derived fuel (RDF) 2,320 acfm for tire derived fuel (TDF)

[a] The flowrate varies slightly with the type of fuel, but it is limited by the size of the baghouse.

5.2 Emissions Inventory

Due to the wide variety of materials allowed to be combusted, emissions and emissions rates are difficult to qualify and quantify. Therefore, testing, monitoring, and recordkeeping for different fuel types become very important to ensure that the incinerator complies with IDAPA 58.01.01.200.

In the submittal received on May 12, 2005, the applicant applied to burn solid fuels in the fluidized bed waste incinerator, including biomass, coal, refuse derived fuel (RDF), tire derived fuel (TDF), sludge and other to be determined non-hazardous fuels. Per the submittal received on July 6, 2005, RDF is comprised of mainly paper, wood waste and plastic, and TDF contains a combination of rubber and one of the following: steel wire, fiberglass, nylon, polyester, or Kevlar.

In the existing PTC issued November 9, 1994, the facility is only permitted to burn wood waste, paper, sludge, and agricultural wastes. The emissions increase due to this modification will be reviewed in accordance with IDAPA 58.01.01.200.

The applicant provided the hourly predicted criteria pollutants emissions rate, and hourly pilot testing TAP emissions rates for RDF, TDF, tobacco sludge, and waste coal. The information is included in the Appendix B of this statement of basis.

PM_{10}

The applicant has requested to increase the hourly PM/PM_{10} emissions limit. However, it cannot be granted. In fact, it is slightly reduced to be 2.4 pounds per hour in order to meet the emissions standard in IDAPA 58.01.01.786 at the incinerator's maximum capacity of 1,200 pounds per hour. The hourly limit is calculated by multiplying the standard 0.2 pound PM per 100 pounds of refuse burned by the incinerator's design capacity of 1,200 pounds refuse burned per hour. The annual PM/PM_{10} emissions limit of 0.72 tons per year was calculated by multiplying 2.4 lb/hr by 600 hr/yr (permitted in this PTC mortification) and by 2,000 lb/Ton.

NO_x, and CO

The annual emissions limits for NO_x and CO are kept the same as requested by the applicant. The hourly emissions rates for NO_x and CO are removed from the permit as requested by the applicant. With the NO_x and CO annual emissions rates, the chance to cause or significantly contribute to a violation of any ambient air quality standard is extremely small.

SO_2

The annual SO_2 emissions limit is kept the same as requested by the applicant. The applicant has also requested to remove hourly SO_2 emissions limit. However, it cannot be granted because SO_2 has three-hour and 24-hour short term NAAQSs and compliance with the annual emissions limit cannot ensure compliance with the short term standards. In addition, the incinerator is allowed to burn a variety of materials, the hourly SO_2 emissions vary with the type of fuel. The hourly SO_2 emissions do not have a linear relationship with the annual emissions rate. A stand alone SO_2 hourly emissions rate needs to be kept. It is increased, though from 1.70 lb/hr to 41 lb/hr. At this rate, the SO_2 ambient impact from the incinerator is 50% of the 24-hour SO_2 NAAQS, and 30% of 3-hour SO_2 NAAQS.

VOC

The VOC emissions limits are removed as requested by the applicant. Based on information in AP-42 Section 2.1 (rev. 10/96) and 2.2 (rev. 1/95) and the operating limits in the permit, the annual VOC emissions rate will not exceed the major source threshold. Therefore, no VOC emissions limit is required in the permit.

Toxic Air Pollutants (TAPs)

Available data of the tested fuels indicated that the TAP emissions were either less than their respective emissions screen level or their respective acceptable ambient increments. These data is attached in the Appendix B of the statement of basis.

Due to the wide variety of potential waste products to be burned in the incinerator, it is difficult to predict the emissions types and rates. The permit requires TAP emissions be tested for different fuel types.

Table 5.1 provides a summary for PM_{10}, SO_2, NO_x, and CO emissions for the tested fuels. Table 5.2. provides the permitted emissions limits for the modified PTC.

Table 5.1 EMISSIONS RATES OF TESTED FUEL FROM THE INCINERATOR

Fuel Type	PM_{10}		SO_2		NO_x		CO	
	lb/hr	T/yr[a]	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Refuse derived fuel (RDF)	5.4	0.65	0.17	0.02	0.36	0.04	0.16	0.2
Tire derived fuel (TDF)	3.9	0.46	1.06	0.13	0.15	0.02	0.17	0.02
Turkey litter	22	2.64	< 0.3	< 0.04	< 1.02	< 0.12	< 0.23	< 0.03
Waste Coal	< 22	< 2.64	0.3	0.04	< 1.02	< 0.12	< 0.23	< 0.03
Feed corn	< 22	< 2.64	< 0.3	< 0.04	1.02	0.12	< 0.23	< 0.03
Processed wheat straw	< 22	< 2.64	< 0.3	< 0.04	< 1.02	< 0.12	0.23	0.03

Table. 5.2 THE INCINERATOR EMISSIONS LIMITS

Source Description	PM_{10}		SO_2		NO_X		CO	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
The incinerator	2.4	0.72	41	7.45	---	12.43	---	2.12

5.3 *Modeling*

The incinerator stack is the only point source in the facility per the applicant. Air dispersion model SCREEN3 was run at one pound per hour emissions rate for RDF and TDF. The model input for these two fuel types are the same except for stack flowrate, 2,150 acfm for RDF and 2,320 acfm for TDF. These flowrates were provided by the applicant. The flowrate is limited by the baghouse capacity. The building downwash is included in the modeling analysis. The higher ambient impact of 9.54 $(\mu g/m^3)/(lb/hr)$ from SCREEN3 is used in the ambient impact analysis. Table 5.3 provides the summary table of the modeling analysis and compliance with applicable NAAQS. The SCREEN3 files are included in the Appendix C of the statement basis.

Table 5.3 FULL IMPACT ANALYSIS RESULTS FOR PM_{10}, NO_2, SO_2, and CO

Pollutant	Averaging Period[d]	Facility Ambient Impact $(\mu g/m^3)$[a,b,c]	Background concentration $(\mu g/m^3)$	Total Ambient Concentration $(\mu g/m^3)$	NAAQS $(\mu g/m^3)$	Percent of NAAQS
PM_{10}	24-hour	20.60	66	86.60	150	58%
	Annual	0.13	19	19.13	50	38%
NO_2	Annual	2.16	17	19.16	100	19%
SO_2	3-hour	351.88	34	385.88	1300	30%
	24-hour	156.39	26	182.39	365	50%
	Annual	1.30	8	9.30	80	12%
CO	1-hour	67.39	3600	3667.39	40000	9%
	8-hour	47.17	2300	2347.17	10000	23%

[a] Facility ambient impact, except for annual averaging time period, is calculated by: 7.07 $(\mu g/m^3)/(lb/hr)$ x respective hourly emissions rate x respective persistent factor for different averaging period.

[b] Hourly emissions limits for NO_X and CO are calculated by: annual emissions limit (T/yr) in the modified PTC x 2,000 (lb/T) / 600 (hr/yr, permitted operating hours). Hourly emissions limits for PM_{10} and SO_2 are permitted rates in the modified PTC.

[c] Facility ambient impact for annual averaging period is calculated by: 7.07 $(\mu g/m^3)/(lb/hr)$ x annual emissions limit (T/yr) in the modified PTC x 2,000 (lb/T) /8,760 (hr/yr) x persistent factor of 0.08

[d] Persistent factor provided by DEQ's Almer C.: 0.9 (3-hr), 0.7 (8-hr), 0.4 (24-hr), 0.08 (annual), and 0.125 (annual for carcinogenic TAPs)

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201..... Permit to Construct Required

The applicant has requested to increase the operating hours of the fluidized bed waste incinerator from permitted 240 hours per year to 600 hours per year, and to be allowed to burn solid wastes that were not included in the November 9, 1994 permit. This change in the method of operation increases the emissions of regulated air pollutants, such as TAPs/HAPs. The change is a modification of the source and requires a PTC. The changes do not qualify for PTC exemption.

IDAPA 58.01.01.203.02..... NAAQS

"*No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:....02. NAAQS....*"

The facility has demonstrated compliance, to DEQ's satisfaction, that this project will not cause or significantly contribute to a violation of any ambient air quality standards of PM_{10}, NO_2, SO_2, and CO. The summary of the modeling analysis is in Table 5.3.

IDAPA 58.01.01.203.03..... Toxic Air Pollutants

"*No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:....03. Toxic Air Pollutants 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.*"

The fluidized bed waste incinerator is utilized for research and development to study various fuel characteristics in EPI's combustion process. Because of the wide variety of potential waste products, it is difficult to predict the emissions types and rates. The applicant is required to conduct performance tests for fuel types, except for tobacco sludge, coal, refuse derived fuel (RDF), and tire derived fuel (TDF) that their respective testing data in the application have demonstrated compliance with IDAPA 58.01.01.161 and 203.03, and wood waste, paper sludge, and agricultural waste that were originally permitted on November 9, 1994, to demonstrate compliance with this regulation.

IDAPA 58.01.01.625..... Visible Emissions

This regulation states that any point of emission shall not have a discharge of any air pollutant for a period aggregating more than three minutes in any 60-minute period of greater than 20% opacity.

The incinerator stack is subject to this regulation.

IDAPA 58.01.01 786..... Rules for Control of Incinerators

EPI's incinerator is subject to this requirement. Calculations in the Appendix B of the Statement of Basis indicate as long as the emissions from the incinerator are controlled by the cyclone and the pulse-jet baghouse in series, the incinerator will meet this standard.

40 CFR 60 ..... New Source Performance Standards

EPI's incinerator is not subject to 40 CFR 60 Subpart E, and Subpart Ea because the capacity of the biomass combustor (1,200 lb/hr or 14.4 tons per day) is less than the capacity thresholds, 50 tons per day, and 250 tons per day established in these subparts, respectively. The fluidized bed waste incinerator is not subject to 40 CFR 60 Subpart O, because Permit Condition 2.9.2 limits the sewage sludge content in the to be burned wastes. It reads "the incinerator shall combust wastes containing no more than 10% sewage sludge (dry basis) produced by municipal sewage treatment plans".

40 CFR 61 and 63..... National Emission Standards for Hazardous Air Pollutants & MACT

EPI's incinerator is not subject to 40 CFR 63 Subpart EEE because the incinerator is not permitted to burn hazardous fuel per Permit Condition 2.9.8. *Hazardous waste* is defined in 40 CFR 261.3.

5.5 *Permit Conditions Review*

This section describes only those permit conditions that have been revised, modified or deleted as a result of this permit action. All other permit conditions remain unchanged.

5.5.1 Permit Conditions 1.1 (new) and 1.2 (new) describe the purpose for this PTC modification.

5.5.2 Permit Conditions 2.1 and 2.2 provide the description of the incinerator and its air pollution control equipment. The information is taken from former Permit Conditions 1.1 to 1.4, and from the applicant's submittals.

5.5.3 Permit Condition 2.3 (former Permit Condition 2.1.1) is the PM emissions standard for incinerators. Calculations in Appendix B indicate that as long as PM emissions are controlled by a cyclone and a pulse-jet baghouse in series as required in Permit Condition 2.8 (former Permit Condition 1.2), the permittee is in compliance with the PM emissions limit.

5.5.4 Permit Condition 2.4 (revised version of former Permit Condition 2.1.2) establishes emissions limits for PM_{10}, SO_2, NO_x, and CO.

- PM_{10} emissions limits

  Calculations in Appendix B of the Statement of Basis indicate as long as PM_{10} emissions are controlled by a cyclone and a pulse-jet baghouse in series as required in Permit Condition 2.10 (former Permit Condition 1.2), and as long as the incinerator's annual operating hours do not exceed 600 hours as requested by the applicant, the permittee is in compliance with PM_{10} emissions limits. Therefore, no source test is specifically required under Permit Condition 2.12 (revised version of former Permit Condition 3.2.)

- SO_2, NO_x, and CO emissions limits

  The permittee is required to conduct performance test in Permit Condition 2.12 (revised version of former Permit Condition 3.2) to demonstrate compliance with SO_2, NO_x, and CO emissions limits. Per information in the application, the permittee is currently required in the permit to use CEMs to monitor SO_2, NO_x, and CO emissions from the incinerator stack. CEMs monitoring is considered performance test to demonstrate compliance with SO_2, NO_x, and CO emissions limits. The permittee can also use alternatives to demonstrate compliance with SO_2, NO_x, and CO emissions limits so long as the alternatives in the performance test protocol are approved by DEQ.

5.5.5 Permit Condition 2.5 (new) establishes requirement for toxic air pollutants (TAPs). As discussed in Section 5.2 of this statement of basis, the challenge of this PTC is that a wide variety of potential wastes to be burned in the incinerator, consequently, it is difficult to predict the emissions types and rates. Therefore, testing, monitoring, and recordkeeping for different fuel types become very important to ensure that the incinerator complies with IDAPA 58.01.01.203.03. The permittee is required to conduct performance tests in accordance with Permit Condition 2.12 (revised version of former Permit Condition 3.2). The performance test can be calculations, CEM, stack testing, or methods approved by DEQ in a compliance test protocol. Based on available related regulations and information, the emissions of hydrogen chloride (HCl) and dioxin/furan need to be addressed in the performance test protocol.

5.5.6 Permit Condition 2.6 (former Permit Condition 2.1.3) establishes an opacity limit for the incinerator's stack. The permittee is required to conduct visible emissions performance tests as required in Permit Condition 2.13 (revised version of former Permit Condition 4.3.)

5.5.7 Permit Condition 2.7 (new) requires the permittee to develop an O&M manual for the incinerator and the air pollution control equipment. Permit Condition 2.10 and 2.11 requires the permittee to operate the incinerator and the air pollution control equipment in accordance with the O &M manual developed under Permit Condition 2.7 in order to meet the emissions limits in Permit Conditions from 2.3 to 2.6.

5.5.8 Permit Condition 2.8 (new) requires that the permittee install, calibrate, maintain and operate a pressure drop monitoring device to measure the pressure drop across the air pollution control equipment, which is a surrogate parameter to ensure compliance with the PM_{10} emissions limit.

5.5.9 Permit Condition 2.9 (new) requires that the permittee install, calibrate, maintain and operate a temperature monitoring device to continuously measure the temperature in the afterburner combustion zone. This ensures that the afterburner temperature is maintained at or above 1400°F to destroy toxic and hazardous air pollutants.

5.5.10 Permit Condition 2.11 (revised version of former Permit Condition 3.1) establishes the incinerator's operating requirements. Operating requirements ensure that the incinerator complies with the emissions limits in Permit Conditions from 2.3 to 2.6.

5.5.11 Permit Condition 2.14 (revised version of former Permit Conditions 4.1 and 4.2) establishes the monitoring requirement for the incinerator. This monitoring requirement ensures that the incinerator complies with the emissions limits in Permit Conditions from 2.3 to 2.6.

5.5.12 Permit Condition 2.15 (new) establishes operating requirements for continuous emissions monitoring systems (CEMS).

6. PERMIT FEES

EPI submitted a $1,000 PTC application fee on May 16, 2005, in accordance with IDAPA 58.01.01.224. Due to the wide variety of potential waste products to be burned in the incinerator, it is difficult to predict the emissions types and rates. Based on current available data, it is conservatively estimated that EPI's TAP emissions increase is between 1 to 10 tons range. In accordance with IDAPA 58.01.01.225, the PTC processing fee is $2,500. DEQ received the $2,500 on January 10, 2006.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM_{10}	0.0	0	0
VOC	0.0	0	0
TAPS/HAPS	< 10	0	< 10
Total:	< 10	0	< 10
Fee Due	$ 2,500.00		

7. PERMIT REVIEW

7.1 Regional Review of Draft Permit

The draft permit was made available for Coeur d'Alene Regional Office review on November 15, 2005. The comments were received on November 22, 2005. They are incorporated in the permit.

7.2 Facility Review of Draft Permit

The draft permit was provided for facility review on December 2, 2005. The comments were received on December 21, 2005. They are incorporated in the permit. The second facility review was sent out on February 27, 2006, because the permit for EPI underwent some changes since the last review. No comments were provided by EPI.

7.3 Public Comment

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

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that EPI be issued final PTC No. P-050112 for its fluidized bed waste incinerator. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

SYC/bf Permit No. P-050112

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Appendix A

AIRS Information

P-050112

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Idaho Energy Limited Partnership, Energy Products of Idaho (EPI)
Facility Location: Coeur d'Alene , Idaho
AIRS Number: 055-00043

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B						B	U
NO_x	B						B	U
CO	B						B	U
PM_{10}	SM						SM	U
PT (Particulate)	SM						SM	
VOC	B						B	U
THAP (Total HAPs)	B						B	
			APPLICABLE SUBPART					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Emissions Inventory

P-050112

HEADQUARTERS
4009 Industrial Avenue
Coeur d'Alene, ID 83815-8926

EPI
ENERGY PRODUCTS OF IDAHO

Phone (208) 765-1611
Fax (208) 765-0909
E-Mail: epi@energyproducts.com
http://www.energyproducts.com

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DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE A.Q. PROGRAM

June 30th, 2005

Bill Rogers
Permit Program Coordinator
Department of Environmental Quality
1410 North Hilton
Boise, ID 83706-1255

EPI Ref: Facility ID Number 055-00043, Energy Products of Idaho (EPI), Coeur d' Alene
Subject: Response to the Permit to Construct Application Incompleteness.

Dear Mr. Rogers:

On June 8th EPI received the Department of Environmental Quality (DEQ) response to our request for modifications to the existing permit to construct. The DEQ determined that the application was incomplete. The following information is included to try and complete the application process:

Emissions Inventory

1. Predicted Criteria Pollutants of Refuse Derived Fuel (RDF) and Tire Derived Fuel (TDF).

	CO (lbs/hr)	NO_x (lbs/hr)	SO_x (lbs/hr)	TSP gr/SDCFM	PM-10 (35% of total particulate lb/hr)
RDF	0.16	0.36	0.17	1.52	5.4
TDF	0.17	0.15	1.06	0.98	3.9

The toxic air pollutants for RDF and TDF combustion during a pilot testing in the 1980's are listed in the table on the following pages.

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Section 585. Toxic Air Pollutants Non-carcinogenic Increments	EL (lb/hr)	RDF (lb/hr)	TDF (lb/hr)
Acetone	119	ND	
Aluminum	0.667		1.21E-04
Antimony & compounds	0.033		2.40E-07
Barium	0.033		1.20E-05
Bromine	0.047		4.10E-06
Bromoform	0.333	ND	
Carbon disulfide	2	ND	
Chlorobenzene	23.3	ND	
Chloroethane or Ethyl Chloride	176	ND	
Chloromethane or Methyl Chloride	6.867	ND	
Chromium (including metal, II, III)	0.033	2.47E-04	3.80E-06
Copper fume	0.013		2.90E-05
Dichlorobenzene	30		ND
Ethyl benzene	29	ND	
Fluorine	0.133	ND	
2-Hexanone or Methyl n-butyl ketone	1.33	ND	
Hydrogen chloride	0.05	2.22	9.04E-04
Mercury (vapors except Alkyl)	0.003	5.60E-04	3.50E-05
Methyl ethyl ketone (MEK) or 2-Butanone	39.3	ND	
Molybdenum	0.333		ND
Naphthalene	3.33	1.25E-04	ND
Pentachlorophenol	0.033		ND
Propylene dichloride or 1,2-Dichloropropane	23.133	ND	
Selenium	0.013		3.60E-06
Silver (Metal)	0.007		9.90E-09
Styrene monomer (ID)	6.67	ND	
Tin (oxide & inorganic compounds)	0.133		4.20E-05
Toluene	25	ND	
Trichlorophenol	2.47		ND
Vanadium (dust & fume)	0.003		1.70E-06
Vinyl acetate (ID)		ND	
Xylene (o-, m -, p-isomers)	29	ND	
Zinc (oxide fume)	0.333		2.48E-04
Section 586. Toxic Air Pollutants Carcinogenic Increments			
Arocior (PCB)	6.6E-05	ND	
Arsenic	1.50E-06	ND	ND
Benzene	8.00E-04	ND	
Benzo(a)pyrene	2.00E-06	ND	ND
Beryllium	2.80E-05	ND	1.70E-06
Cadmium	3.70E-06	ND	3.01E-04

Carbon Tetrachloride	4.40E-04	ND	
Chloroform	2.80E-04	ND	
1,1-Dichloroethane	2.50E-04	ND	
1,2-Dichloroethane	2.50E-04	ND	
1,3-Dichloropropene	1.90E-07	ND	
Dioxin and Furan (2,3,7,8-TCDD)	1.50E-10	5.29E-10	
Formaldehyde	5.10E-04	ND	
Hexachlorobenzene	1.30E-05		ND
Methylene Chloride	1.60E-03	ND	
Nickel	2.70E-05	1.31E-04	5.70E-06
1,1,2,2-Tetrachloroethane	1.10E-05	ND	
1,1,2-Trichloroethane	4.20E-04	ND	
Vinyl chloride	9.40E-04	ND	ND

ND = Non detectible levels, or at levels below the practical quantization limit

RDF is comprised of mainly paper, wood waste and plastic. TDF contains a combination of rubber and one of the following: steel wire, fiberglass, nylon, polyester, kevlar.

The table below is a typical fuel analysis from the EPI data base for both RDF and TDF.

	RDF	TDF
High Heating Value, HHV (Btu/lb)	7900	14630
Moisture Content (%)	13.14	0.32
Carbon (% Dry Basis)	48.16	78.39
Hydrogen (% Dry Basis)	6.54	5.84
Nitrogen (% Dry Basis)	0.87	0.18
Sulfur (% Dry Basis)	0.48	1.35
Ash (% Dry Basis)	12.39	10.01
Oxygen (% Dry Basis)	31.56	4.04
Chlorine (% Dry Basis)	0.34	0.02

2. PM_{10} emissions are estimated by assuming that 35% of the total particulate emissions are PM_{10}. This assumption is based on years of experience with fluidized bed combustors.

Section 586. Toxic Air Pollutants Non-carcinogenic Increments

Compound	EL (lb/hr)	Tobacco Sludge 1020 (lb/hr)	Coal 1424 (lb/hr)
Acetone	119	4.50E-04	0.00037
Ammonia	1.2	1.65E-01	NA
Antimony & Compounds	0.033	7.10E-06	NA
Bromoform	0.333	ND	ND
Carbon disulfide	2	7.60E-06	7.38E-06
Chlorobenzene	23.3	1.70E-06	ND
Chloroethane or Ethyl Chloride	176	ND	NA
Chloromethane or Methyl Chloride	6.667	2.40E-06	NA
B-chloropene	2.4	NA	ND
2-Chlorophenol (and all isomers)	0.033	ND	NA
Chromium (including metal, II, III)	0.033	2.60E-03	NA
Copper fume	0.013	3.30E-03	NA
Cyclohexane	70	NA	ND
Dibutylphosphate	0.573	2.90E-04	NA
1,4-Dichlorbenzene	30	ND	ND
Dichloroethane	27	NA	ND
1,2-Dichloroethylene	52.7	NA	ND
Dichlorofluoromethane	2.67	NA	ND
Diethylphthalate	0.333	ND	NA
Dimethylphthalate	0.333	ND	NA
Ethyl acetate	93.3	NA	ND
Ethyl alcohol or Ethanol	125	NA	ND
Ethyl benzene	29	6.00E-05	ND
Fluorine	0.133	ND	NA
Heptane (n-Heptane)	108	NA	ND
Hexachlorocyclopentadiene	0.007	ND	NA
Hexane (n-Hexane)	12	NA	ND
2-Hexanone or Methyl n-butyl ketone	1.33	ND	ND
Hydrogen chloride	0.05	4.30E-02	ND
Isophorone	1.667	ND	NA
Isopropyl alcohol	65.3	NA	ND
Mercury (vapors except Alkyl)	0.003	1.10E-05	4.12E-06
Methyl ethyl ketone (MEK) or 2-Butanone	39.3	2.30E-05	ND
Naphthalene	3.33	ND	NA
Nitrobenzene	0.333	ND	NA
Pentachlorophenol	0.033	ND	NA
Phenol	1.27	ND	NA
Propylene dichloride or 1,2-Dichloropropane	23.133	NA	ND
Selenium	0.013	3.20E-04	NA
Styrene monomer (ID)	6.67	3.20E-06	ND
Tetrahydrofuran	30.3	NA	ND
Toluene	25	3.50E-04	ND
1,2,4-Trichlorobenzene (CL)	2.47	ND	ND
2,4,5-Trichlorophenol		ND	NA
Trimethyl benzene (mixed & individual isomers)	8.2	NA	ND
2,2,4-Trimethyl-pentane	23.3	NA	ND
Vinyl acetate (ID)		ND	ND
Xylene (o-, m -, p-isomers)	29	3.40E-04	ND
Zinc metal (ID)	0.667	8.60E-03	NA

ND = Non detectible levels, or at levels below the practical quantitation limit
NA = Not Available

Section 568. Toxic Air Pollutants Carcinogenic Increments

Compound	EL (lb/hr)	1028 (lb/hr)	1424 (lb/hr)
Acylonitrile	9.80E-05	NA	ND
Benzene	8.00E-04	7.50E-04	ND
Benzo(a)pyrene	2.00E-06	ND	NA
1,3-Butadiene	2.40E-05	NA	ND
Carbon Tetrachloride	4.40E-04	NA	ND
Chloroform	2.80E-04	ND	ND
1,1-Dichloroethane	2.50E-04	ND	NA
1,2-Dichloroethane	2.50E-04	ND	ND
1,1-Dichloroethylene	1.30E-04	NA	ND
Dichloromethane or Methylene chloride	1.60E-03	3.20E-06	NA
1,3-Dichloropropene	1.90E-07	ND	ND
1,4-Dioxane	4.80E-03	NA	ND
Dioxin and Furan (2,3,7,8-TCDD)	1.50E-10	5.46E-11	NA
Hexachlorobenzene	1.30E-05	ND	NA
Hexachlorobutadiene	3.30E-04	ND	ND
Hexachloroethane	1.70E-03	ND	NA
Methylene Chloride	1.60E-03	NA	ND
1,1,2,2-Tetrachloroethane	1.10E-05	NA	ND
Tetrachloroethylene	1.30E-02	NA	ND
1,1,2-Trichloroethane	4.20E-04	NA	ND
Vinyl chloride	9.40E-04	ND	ND

ND = Non detectible levels, or at levels below the practical quantitation limit
NA = Not Available

Combustion Evaluation

Fuel Data (% by weight)

S	0.42	Fuel burned (lb/hr)	327.6
N_2	0.70	Excess air (%)[a]	100
C	41.83	Stk temp (°F)[a]	333
H_2	5.00	Stk press (atm)	1.00
H_2O	13.14		
O_2	27.41		
ash	10.76		

Combustion Air Required	O_2 lbmole	N_2 lbmole	Flue Products	lbmole	lb/hr
S	0.01	0.16	SO_2	0.00	0.00
N_2	0.00	0	N_2	100.22	2806.10
C	11.42	42.98	CO_2	11.42	502.40
H_2	4.05	17.88	H_2O(comb)	9.30	167.40
O_2	-3.01	-10.88	O_2	13.31	425.80
			H_2O(fuel)	2.39	43.05
	12.51	50.07			
			dry	124.95	
			wet	136.65	

stoic. comb air = 73.27121284 lbmole/hr

stoic. dry comb air = 61.40 lbmole/hr

Volume of flue gas (acfm)[a] 2100 10/4/05 email from the applicant

PM emissions calculation

Baghouse control efficiency[a]		99.9%
Cyclone control efficiency[a]		80%
Ash left in the incinerator[a]		0%
Fraction (%) of the flue gas stream from cyclone pulled to the baghouse		100%
PM emissions lb/hr[b]	0.02	
Pounds of PM per pound of refuse burned:	0.0001	
IDAPA 58.01.01.786 standard:	0.2 pounds of PM per 100 pounds of refuse burned OR	
	0.002 lb PM/lb of refuse burned	
The facility is in compliance with IDAPA 58.01.01.786		

[a] Data provided by the applicant

[b] fuel feed rate lb/hr x % ash x (1-0%, ash left in the incinerator)(1- cyclone control eff %) (1- partial to baghouse%)+fuel feed rate lb/hr x % ash x (1-0%, ash left in the incinerator)(1- cyclone control eff %) (1- baghouse control eff %)*partial to baghouse%

RDF fuel Analysis[a]

	dry basis %	wet basis %
S	0.48	0.42
N_2	0.87	0.70
C	48.16	41.83
H_2	5.64	5.00
H_2O	0	13.14
O_2	31.86	27.41
Cl_2	0.34	0.30
ash	12.30	10.76
	100.24	100.30
100 lb dry=	115.13	100 lb wet

11/15/05 RDF Appendix B G:\Air Quality\Stationary Source\SS Ltd\PTC\Energy Prod of Idaho\combustion-final.xls

Appendix C

Modeling Files

P-050112

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

EPI - 2150 acfm - RDF

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE             =        POINT
   EMISSION RATE (G/S)     =     0.126000
   STACK HEIGHT (M)        =      18.7696
   STK INSIDE DIAM (M)     =       0.6218
   STK EXIT VELOCITY (M/S)=       4.9672
   STK GAS EXIT TEMP (K)   =     718.0000
   AMBIENT AIR TEMP (K)    =     293.1500
   RECEPTOR HEIGHT (M)     =       0.0000
   URBAN/RURAL OPTION      =        RURAL
   BUILDING HEIGHT (M)     =       9.1440
   MIN HORIZ BLDG DIM (M) =      24.1402
   MAX HORIZ BLDG DIM (M) =      25.3898

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =    2.786 M**4/S**3;  MOM. FLUX =    0.974 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	62.98	0.74	0.64	NO
100.	8.428	6	4.0	5.7	10000.0	26.57	4.75	11.33	HS
200.	6.237	4	5.0	5.5	1600.0	26.44	15.75	14.68	HS
300.	6.057	4	4.0	4.4	1280.0	28.82	22.81	17.80	HS
400.	5.750	4	3.5	3.8	1120.0	30.52	29.65	20.77	HS
500.	5.505	4	2.5	2.7	800.0	35.58	36.46	23.82	HS
600.	5.237	4	2.0	2.2	640.0	39.79	43.14	26.77	HS
700.	5.014	4	2.0	2.2	640.0	39.79	49.55	29.41	HS
800.	4.719	4	1.5	1.6	480.0	46.79	56.15	32.44	HS
900.	4.325	4	1.5	1.6	480.0	46.79	62.40	33.01	HS
1000.	4.146	4	1.5	1.6	480.0	46.79	68.60	35.00	HS
1100.	3.949	4	1.5	1.6	480.0	46.79	74.74	36.92	HS
1200.	3.748	4	1.5	1.6	480.0	46.79	80.84	38.79	HS
1300.	3.550	4	1.5	1.6	480.0	46.79	86.89	40.61	HS
1400.	3.359	4	1.5	1.6	480.0	46.79	92.90	42.39	HS
1500.	3.178	4	1.5	1.6	480.0	46.79	98.87	44.13	HS
1600.	3.098	4	1.0	1.1	320.0	60.81	105.18	45.07	NO
1700.	3.016	4	1.0	1.1	320.0	60.81	111.06	46.74	NO
1800.	2.929	4	1.0	1.1	320.0	60.81	116.90	48.38	NO
1900.	2.839	4	1.0	1.1	320.0	60.81	122.72	49.99	NO
2000.	2.748	4	1.0	1.1	320.0	60.81	128.51	51.57	NO
2100.	2.720	6	1.0	1.4	10000.0	49.70	67.14	26.39	HS

```
  2200.    2.731         6      1.0     1.4 10000.0   49.70    69.98    26.88     HS
  2300.    2.737         6      1.0     1.4 10000.0   49.70    72.82    27.37     HS
  2400.    2.739         6      1.0     1.4 10000.0   49.70    75.64    27.84     HS
  2500.    2.737         6      1.0     1.4 10000.0   49.70    78.45    28.31     HS
  2600.    2.604         6      1.0     1.4 10000.0   49.70    81.25    28.11     HS
  2700.    2.599         6      1.0     1.4 10000.0   49.70    84.04    28.55     HS
  2800.    2.585         6      1.0     1.4 10000.0   49.70    86.82    28.94     HS
  2900.    2.569         6      1.0     1.4 10000.0   49.70    89.59    29.33     HS
  3000.    2.552         6      1.0     1.4 10000.0   49.70    92.35    29.71     HS
  3500.    2.450         6      1.0     1.4 10000.0   49.70   106.02    31.53     HS
  4000.    2.335         6      1.0     1.4 10000.0   49.70   119.50    33.23     HS
  4500.    2.217         6      1.0     1.4 10000.0   49.70   132.80    34.84     HS
  5000.    2.101         6      1.0     1.4 10000.0   49.70   145.94    36.37     HS
  5500.    1.990         6      1.0     1.4 10000.0   49.70   158.94    37.82     HS
  6000.    1.886         6      1.0     1.4 10000.0   49.70   171.81    39.21     HS
  6500.    1.789         6      1.0     1.4 10000.0   49.70   184.55    40.55     HS
  7000.    1.692         6      1.0     1.4 10000.0   49.70   197.19    41.47     HS
  7500.    1.608         6      1.0     1.4 10000.0   49.70   209.72    42.58     HS
  8000.    1.530         6      1.0     1.4 10000.0   49.70   222.16    43.66     HS
  8500.    1.459         6      1.0     1.4 10000.0   49.70   234.51    44.70     HS
  9000.    1.393         6      1.0     1.4 10000.0   49.70   246.77    45.71     HS
  9500.    1.332         6      1.0     1.4 10000.0   49.70   258.94    46.68     HS
 10000.    1.275         6      1.0     1.4 10000.0   49.70   271.05    47.63     HS
 15000.   0.8807         6      1.0     1.4 10000.0   49.70   388.53    55.61     HS
 20000.   0.6662         6      1.0     1.4 10000.0   49.70   501.03    60.96     HS
 25000.   0.5327         6      1.0     1.4 10000.0   49.70   609.81    65.47     HS
 30000.   0.4420         6      1.0     1.4 10000.0   49.70   715.64    69.40     HS
 40000.   0.3300         6      1.0     1.4 10000.0   49.70   920.27    75.01     HS
 50000.   0.2623         6      1.0     1.4 10000.0   49.70  1117.46    79.68     HS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
    92.    9.536         6      4.0     5.7 10000.0   26.17     4.46    11.23     HS

 DWASH=   MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*****************************************
     *** REGULATORY (Default) ***
    PERFORMING CAVITY CALCULATIONS
  WITH ORIGINAL SCREEN CAVITY MODEL
          (BRODE, 1988)
*****************************************


 *** CAVITY CALCULATION - 1 ***       *** CAVITY CALCULATION - 2 ***
  CONC (UG/M**3)      =    0.000        CONC (UG/M**3)      =    0.000
  CRIT WS @10M (M/S)  =    99.99        CRIT WS @10M (M/S)  =    99.99
  CRIT WS @ HS (M/S)  =    99.99        CRIT WS @ HS (M/S)  =    99.99
  DILUTION WS (M/S)   =    99.99        DILUTION WS (M/S)   =    99.99
  CAVITY HT (M)       =     9.62        CAVITY HT (M)       =     9.54
  CAVITY LENGTH (M)   =    26.23        CAVITY LENGTH (M)   =    25.45
  ALONGWIND DIM (M)   =    24.14        ALONGWIND DIM (M)   =    25.39

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S.  CONC SET = 0.0

*****************************************
      END OF CAVITY CALCULATIONS
*****************************************
```

```
 *** INVERSION BREAK-UP FUMIGATION CALC. ***
  CONC (UG/M**3)    =     0.000
  DIST TO MAX (M)   =  1040.76

DIST TO MAX IS < 2000. M.  CONC SET = 0.0

     ****************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ****************************************

 CALCULATION         MAX CONC     DIST TO    TERRAIN
  PROCEDURE         (UG/M**3)     MAX (M)     HT (M)
--------------     -----------   -------   -------
SIMPLE TERRAIN       9.536           92.         0.
```

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

EPI -TDF - 2320 ACFM

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =        POINT
   EMISSION RATE (G/S)    =     0.126000
   STACK HEIGHT (M)       =      18.7696
   STK INSIDE DIAM (M)    =       0.6218
   STK EXIT VELOCITY (M/S)=       5.3602
   STK GAS EXIT TEMP (K)  =     718.0000
   AMBIENT AIR TEMP (K)   =     293.1500
   RECEPTOR HEIGHT (M)    =       0.0000
   URBAN/RURAL OPTION     =        RURAL
   BUILDING HEIGHT (M)    =       9.1440
   MIN HORIZ BLDG DIM (M) =      24.1402
   MAX HORIZ BLDG DIM (M) =      25.3898

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =    3.006 M**4/S**3;  MOM. FLUX =    1.134 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	65.58	0.76	0.66	NO
100.	7.896	6	4.0	5.7	10000.0	26.88	4.78	11.35	HS
200.	5.816	4	5.0	5.5	1600.0	27.02	15.77	14.70	HS
300.	5.713	4	4.5	4.9	1440.0	28.14	22.79	17.77	HS
400.	5.424	4	3.5	3.8	1120.0	31.35	29.68	20.80	HS
500.	5.182	4	2.5	2.7	800.0	36.57	36.50	23.87	HS
600.	4.954	4	2.5	2.7	800.0	36.57	43.02	26.58	HS
700.	4.740	4	2.0	2.2	640.0	41.02	49.60	29.49	HS
800.	4.488	4	2.0	2.2	640.0	41.02	55.94	32.07	HS
900.	4.080	4	2.0	2.2	640.0	41.02	62.21	32.65	HS
1000.	3.897	4	1.5	1.6	480.0	48.44	68.65	35.11	HS
1100.	3.733	4	1.5	1.6	480.0	48.44	74.79	37.03	HS
1200.	3.560	4	1.5	1.6	480.0	48.44	80.88	38.89	HS
1300.	3.387	4	1.5	1.6	480.0	48.44	86.93	40.70	HS
1400.	3.216	4	1.5	1.6	480.0	48.44	92.94	42.48	HS
1500.	3.053	4	1.5	1.6	480.0	48.44	98.91	44.21	HS
1600.	2.897	4	1.5	1.6	480.0	48.44	104.84	45.91	HS
1700.	2.819	4	1.0	1.1	320.0	63.28	111.14	46.92	NO
1800.	2.748	4	1.0	1.1	320.0	63.28	116.98	48.56	NO
1900.	2.674	4	1.0	1.1	320.0	63.28	122.79	50.16	NO
2000.	2.597	4	1.0	1.1	320.0	63.28	128.57	51.74	NO
2100.	2.519	4	1.0	1.1	320.0	63.28	134.33	53.29	NO

2200.	2.441	4	1.0	1.1	320.0	63.28	140.06	54.82	NO
2300.	2.365	4	1.0	1.1	320.0	63.28	145.77	56.33	NO
2400.	2.338	5	1.0	1.2	10000.0	58.64	113.46	38.87	NO
2500.	2.314	5	1.0	1.2	10000.0	58.64	117.69	39.71	NO
2600.	2.287	5	1.0	1.2	10000.0	58.64	121.90	40.54	NO
2700.	2.258	5	1.0	1.2	10000.0	58.64	126.10	41.35	NO
2800.	2.227	5	1.0	1.2	10000.0	58.64	130.28	42.16	NO
2900.	2.223	6	1.0	1.4	10000.0	50.49	89.61	27.99	NO
3000.	2.236	6	1.0	1.4	10000.0	50.49	92.37	28.46	NO
3500.	2.211	6	1.0	1.4	10000.0	50.49	106.04	30.36	NO
4000.	2.150	6	1.0	1.4	10000.0	50.49	119.51	32.14	NO
4500.	2.071	6	1.0	1.4	10000.0	50.49	132.81	33.81	NO
5000.	1.985	6	1.0	1.4	10000.0	50.49	145.95	35.39	NO
5500.	1.896	6	1.0	1.4	10000.0	50.49	158.95	36.89	NO
6000.	1.809	6	1.0	1.4	10000.0	50.49	171.82	38.32	NO
6500.	1.724	6	1.0	1.4	10000.0	50.49	184.56	39.69	NO
7000.	1.644	6	1.0	1.4	10000.0	50.49	197.20	41.02	NO
7500.	1.566	6	1.0	1.4	10000.0	50.49	209.73	42.15	NO
8000.	1.493	6	1.0	1.4	10000.0	50.49	222.17	43.24	NO
8500.	1.426	6	1.0	1.4	10000.0	50.49	234.51	44.30	NO
9000.	1.364	6	1.0	1.4	10000.0	50.49	246.77	45.31	NO
9500.	1.306	6	1.0	1.4	10000.0	50.49	258.95	46.30	NO
10000.	1.251	6	1.0	1.4	10000.0	50.49	271.05	47.26	NO
15000.	0.8694	6	1.0	1.4	10000.0	50.49	388.53	55.63	NO
20000.	0.6590	6	1.0	1.4	10000.0	50.49	501.03	60.97	NO
25000.	0.5277	6	1.0	1.4	10000.0	50.49	609.82	65.49	NO
30000.	0.4383	6	1.0	1.4	10000.0	50.49	715.65	69.43	NO
40000.	0.3276	6	1.0	1.4	10000.0	50.49	920.27	75.04	NO
50000.	0.2606	6	1.0	1.4	10000.0	50.49	1117.46	79.71	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

92.	8.948	6	4.0	5.7	10000.0	26.46	4.50	11.25	HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)
****

*** CAVITY CALCULATION - 1 ***			*** CAVITY CALCULATION - 2 ***		
CONC (UG/M**3)	=	0.000	CONC (UG/M**3)	=	0.000
CRIT WS @10M (M/S)	=	99.99	CRIT WS @10M (M/S)	=	99.99
CRIT WS @ HS (M/S)	=	99.99	CRIT WS @ HS (M/S)	=	99.99
DILUTION WS (M/S)	=	99.99	DILUTION WS (M/S)	=	99.99
CAVITY HT (M)	=	9.62	CAVITY HT (M)	=	9.54
CAVITY LENGTH (M)	=	26.23	CAVITY LENGTH (M)	=	25.45
ALONGWIND DIM (M)	=	24.14	ALONGWIND DIM (M)	=	25.39

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

****
END OF CAVITY CALCULATIONS
****

```
 *** INVERSION BREAK-UP FUMIGATION CALC. ***
  CONC (UG/M**3)    =     0.000
  DIST TO MAX (M)   =  1084.64

DIST TO MAX IS < 2000. M.  CONC SET = 0.0

     ****************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ****************************************

 CALCULATION          MAX CONC     DIST TO    TERRAIN
  PROCEDURE          (UG/M**3)     MAX (M)     HT (M)
--------------      -----------    -------    -------
SIMPLE TERRAIN        8.948            92.         0.
```