



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

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

TO: Interested Parties / Applicant

DATE: April 11, 2012

RE: Former Hoosier Penn Oil / 097 - 31538 - 00688

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

Notice of Decision – Approval

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

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

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

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

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

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

Enclosures
FNPER-AM.dot12/3/07



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David Samberg
Former Hoosier Penn Oil
1427 W. 86th Street P.O. Box 182
Indianapolis, IN 46260

April 11, 2012

Re: Exempt Construction and Operation Status,
E097-31538-00688

Dear David Samberg:

The application from Former Hoosier Penn Oil, received on February 23, 2012, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following stationary high vacuum dual phase extraction facility for the remediation of petroleum hydrocarbon impacted soil and groundwater located at 850 South Keystone Avenue, Indianapolis, IN 46203 is classified as exempt from air pollution permit requirements:

- (a) One (1) High Vacuum Dual Phase Extraction System, identified as DPE-1, with a maximum groundwater pump-and-treat flow rate of 15 gallons per minute (gpm) and a combined exhaust air flow rate of 375 standard cubic feet per minute (scfm), using an air stripper and granular activated carbon to remove contaminants from groundwater, and exhausting to stack DPE-1.
- (b) Paved roads.

The following conditions shall be applicable:

1. 326 IAC 5-1 (Opacity Limitations)
Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:
 - (1) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute non-overlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.
2. 326 IAC 6-4 (Fugitive Dust Emissions Limitations)
Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.

This exemption is the first air approval issued to this source.

A copy of the Exemption is available on the Internet at: <http://www.in.gov/ai/appfiles/idem-caats/>. For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source. If you have any questions on this matter, please contact Susann Brown, OAQ, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana, 46204-2251, at 317-234-5176 or at 1-800-451-6027 (ext 45176).

Sincerely,



Nathan C. Bell, Section Chief
Permits Branch
Office of Air Quality

NCB/sb

cc: File - Marion County
Marion County Health Department
Compliance and Enforcement Branch
Billing, Licensing and Training Section

**Indiana Department of Environmental Management
Office of Air Quality**

Technical Support Document (TSD) for an Exemption

Source Description and Location
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Source Name:	Former Hoosier Penn Oil
Source Location:	850 South Keystone Avenue, Indianapolis, IN 46203
County:	Marion
SIC Code:	4959 (Sanitary Services, Not Elsewhere Classified) 5171 (Petroleum Bulk Stations and Terminals)
Exemption No.:	E097-31538-00688
Permit Reviewer:	Susann Brown

On February 23, 2012, the Office of Air Quality (OAQ) received an application from Former Hoosier Penn Oil related to the construction and operation of a new high vacuum dual phase extraction facility for the remediation of petroleum hydrocarbon impacted soil and groundwater.

Existing Approvals

There have been no previous approvals issued to this source.

County Attainment Status

The source is located in Marion County.

Pollutant	Designation
SO ₂	Better than national standards.
CO	Attainment effective February 18, 2000, for the part of the city of Indianapolis bounded by 11 th Street on the north; Capitol Avenue on the west; Georgia Street on the south; and Delaware Street on the east. Unclassifiable or attainment effective November 15, 1990, for the remainder of Indianapolis and Marion County.
O ₃	Attainment effective November 8, 2007, for the 8-hour ozone standard. ¹
PM ₁₀	Unclassifiable effective November 15, 1990.
NO ₂	Cannot be classified or better than national standards.
Pb	Attainment effective July 10, 2000, for the part of Franklin Township bounded by Thompson Road on the south; Emerson Avenue on the west; Five Points Road on the east; and Troy Avenue on the north. Attainment effective July 10, 2000, for the part of Wayne Township bounded by Rockville Road on the north; Girls School Road on the east; Washington Street on the south; and Bridgeport Road on the west. The remainder of the county is not designated.

¹Attainment effective October 18, 2000, for the 1-hour ozone standard for the Indianapolis area, including Marion County, and is a maintenance area for the 1-hour ozone National Ambient Air Quality Standards (NAAQS) for purposes of 40 CFR 51, Subpart X*. The 1-hour designation was revoked effective June 15, 2005.

Basic nonattainment designation effective federally April 5, 2005, for PM2.5.

- (a) **Ozone Standards**
Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to ozone. Marion County has been designated as

attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

- (b) **PM_{2.5}**
Marion County has been classified as nonattainment for PM_{2.5} in 70 FR 943 dated January 5, 2005. On May 8, 2008, U.S. EPA promulgated specific New Source Review rules for PM_{2.5} emissions. These rules became effective on July 15, 2008. Therefore, direct PM_{2.5} and SO₂ emissions were reviewed pursuant to the requirements of Nonattainment New Source Review, 326 IAC 2-1.1-5. See the State Rule Applicability – Entire Source section.
- (c) **Other Criteria Pollutants**
Marion County has been classified as attainment or unclassifiable in Indiana for SO₂, CO, PM₁₀, and NO₂. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

Fugitive Emissions

The fugitive emissions of criteria pollutants, hazardous air pollutants, and greenhouse gases are counted toward the determination of 326 IAC 2-1.1-3 (Exemptions) applicability.

Background and Description of Emission Units and Pollution Control Equipment

The Office of Air Quality (OAQ) has reviewed an application, submitted by Former Hoosier Penn Oil on February 23, 2012, relating to construction and operation of a new high vacuum dual phase extraction facility for the remediation of petroleum hydrocarbon impacted soil and groundwater.

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

- (a) One (1) High Vacuum Dual Phase Extraction System, identified as DPE-1, with a maximum groundwater pump-and-treat flow rate of 15 gallons per minute (gpm) and a combined exhaust air flow rate of 375 standard cubic feet per minute (scfm), using an air stripper and granular activated carbon to remove contaminants from groundwater, and exhausting to stack DPE-1.
- (b) Paved roads.

Enforcement Issues

There are no pending enforcement actions related to this source.

Emission Calculations

See Appendix A of this TSD for detailed emission calculations.

Permit Level Determination – Exemption

The following table reflects the unlimited potential to emit (PTE) of the entire source before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Process/ Emission Unit	Potential To Emit of the Entire Source (tons/year)									
	PM	PM10*	PM2.5	SO ₂	NOx	VOC	CO	GHGs as CO ₂ e**	Total HAP s	Worst Single HAP
High Vacuum Dual Phase Extraction System (DPE-1)	-	-	-	-	-	9.76	-	-	9.67	5.85 (toluene)
Paved Roads (fugitive)	3.7E-03	7.2E-04	2.4E-05	-	-	-	-	-	-	-
Total PTE of Entire Source	3.7E-03	7.2E-04	2.4E-05	-	-	9.76	-	-	9.67	5.85 (toluene)
Exemptions Levels**	5	5	5	10	10	10	25	100,000	25	10
Registration Levels**	25	25	25	25	25	25	100	100,000	25	10
*Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant". **The 100,000 CO ₂ e threshold represents the Title V and PSD subject to regulation thresholds for GHGs in order to determine whether a source's emissions are a regulated NSR pollutant under Title V and PSD.										

- (a) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1) of all regulated criteria pollutants are less than the levels listed in 326 IAC 2-1.1-3(e)(1). Therefore, the source is subject to the provisions of 326 IAC 2-1.1-3 (Exemptions).
- (b) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1) of any single HAP is less than ten (10) tons per year and the PTE of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-7.
- (c) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1) greenhouse gases (GHGs) is less than the Title V subject to regulation threshold of one hundred thousand (100,000) tons of CO₂ equivalent emissions (CO₂e) per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.

Federal Rule Applicability Determination

New Source Performance Standards (NSPS)

- (a) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) included in the permit.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

- (b) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Site Remediation, 40 CFR 63, Subpart GGGGG (63.7880 through 63.7957) (326 IAC 20-87),

are not included in the permit, since the source does not have the potential to emit 10 tons per year or more of any hazardous air pollutant or 25 tons per year of any combination of hazardous air pollutants and since the remediation is conducted at a gasoline service station in order to clean up remediation material from a leaking underground storage tank (40 CFR 63.7881(b)(4)).

- (c) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) included in the permit.

Compliance Assurance Monitoring (CAM)

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

State Rule Applicability Determination

The following state rules are applicable to the source:

- (a) 326 IAC 2-1.1-3 (Exemptions)
Exemption applicability is discussed under the Permit Level Determination – Exemption section above.
- (b) 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))
The potential to emit of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-4.1.
- (c) 326 IAC 2-6 (Emission Reporting)
Pursuant to 326 IAC 2-6-1, this source is not subject to this rule, because it is not required to have an operating permit under 326 IAC 2-7 (Part 70), it is not located in Lake, Porter, or LaPorte County, and it does not emit lead into the ambient air at levels equal to or greater than 5 tons per year. Therefore, 326 IAC 2-6 does not apply.
- (d) 326 IAC 5-1 (Opacity Limitations)
Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:
- (1) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.
- (e) 326 IAC 6-4 (Fugitive Dust Emissions Limitations)
Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.
- (f) 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)
The source is not subject to the requirements of 326 IAC 6-5, because the source does not have potential fugitive particulate emissions greater than 25 tons per year. Therefore, 326 IAC 6-5 does not apply.

- (g) 326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Facilities)
Each of the emission units at this source is not subject to the requirements of 326 IAC 8-1-6, since the unlimited VOC potential emissions from each emission unit is less than twenty-five (25) tons per year.

Conclusion and Recommendation

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant. An application for the purposes of this review was received on February 23, 2012.

The construction and operation of this source shall be subject to the conditions of the attached proposed Exemption No. E097-31538-00688. The staff recommends to the Commissioner that this Exemption be approved.

IDEM Contact

- (a) Questions regarding this proposed permit can be directed to Susann Brown at the Indiana Department Environmental Management, Office of Air Quality, Permits Branch, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana 46204-2251 or by telephone at (317) 234-5176 or toll free at 1-800-451-6027 extension 45176.
- (b) A copy of the findings is available on the Internet at: <http://www.in.gov/ai/appfiles/idem-caats/>
- (c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.in.gov/idem

**Appendix A: Emissions Calculations
Emission Summary**

Company Name: Former Hoosier Penn Oil
Source Address: 850 South Keystone Avenue, Indianapolis, IN 46203
Exemption No.: E097-31538-00688
Reviewer: Susann Brown

Process Description	Unlimited Potential to Emit (PTE) (tons/year)									
	PM	PM10	PM2.5	SO2	NOx	VOC	CO	GHGs as CO ₂ e	Total HAPs	Worst Single HAP
Dual Phase Extraction (DPE-1)	-	-	-	-	-	9.76	-	-	9.67	5.85 (toluene)
Paved Roads (fugitive)	3.7E-03	7.2E-04	2.4E-05	-	-	-	-	-	-	-
Total PTE	3.7E-03	7.2E-04	2.4E-05	-	-	9.76	-	-	9.67	5.85 (toluene)

Methodology

The PTE of VOC and HAPs is calculated assuming 67% removal of toluene, ethylbenzene, and xylenes and 100% removal of all other VOC/HAP compounds.

The proposed remediation system will operate until the adsorbed phase toluene, ethylbenzene, & xylene concentrations have been reduced by 67%.

Once this goal is reached (within one year), the system will be deactivated.

**Appendix A: Emissions Calculations
Emission Summary**

Company Name: Former Hoosier Penn Oil
Source Address: 850 South Keystone Avenue, Indianapolis, IN 46203
Exemption No.: E097-31538-00688
Reviewer: Susann Brown

Adsorbed VOC Contaminant Mass (adsorbed to soil above and below the water table)

Adsorbed Phase VOCs			
Constants			
Soil Mineral Density (Quartz)		165.4	lbs/ft ³
Input			
Treated Area	Thickness	Soil Porosity	Average Contaminant Conc.
(ft ²)	(ft)		(ppm)
10,602.90	14	0.3	1,652.09
	TISV	148,440.60	ft ³
	SMV	103,908.42	ft ³
	SMM	17,186,452.67	lbs
	AHM-VOCs	28,393.57	lbs
	AHM-VOCs	14.20	tons
	Remediation Goal Adsorbed Phase Mass Removal-VOCs	9.55	tons

Assumptions:

- Treated Area values are based on the extent of the radius of influence (ROI) of the high vacuum dual phase extraction system (15 wells @ 15 feet ROI).
 - The contamination thickness was estimated by summing the total thickness of all available soil sampling intervals exhibiting soil vapor concentrations greater than 100 parts per million vapor (ppmv) as measured by a photoionization detector (PID) or flame ionization detector (FID). For calculation purposes, the impacted soil thickness value used is the average thickness seen in all borings within the remediation system ROI (MW-3, PZ-6 through PZ-9, & EW-1 through EW-16).
 - A typical soil porosity of 30% (0.30) is utilized.
 - The contaminant concentration is the average of the adsorbed VOC concentrations as measured in MW-3, PZ-6 through PZ-9, EW-1, and EW-3 through EW-16.
 - The proposed remediation system will operate until the adsorbed phase toluene, ethylbenzene, & xylene concentrations have been reduced by 67%. Once this goal is reached, the system will be deactivated.
- Extraction wells EW-1 and EW-3 through EW-16 will be utilized by the proposed high vacuum dual phase extraction system.

Calculation Explanation:

TISV (Total Impacted Soil Volume) (ft³) = Plume Area (ft²) * Thickness (ft)

SMV (Soil Mineral Volume) (ft³) = TISV (ft³) * (1 - Soil Porosity)

SMM (lbs) = SMV (ft³) * Solid Mineral Density (lbs/ft³)

AHM - VOCs (lbs) = (Contaminant Concentration (ppm)/10⁶)* SMM (lbs)

AHM - VOCs (tons) = AHM-VOCs (lbs)/2000

Remediation Goal Adsorbed Phase Mass Removal - VOCs = 67% removal of toluene, ethylbenzene, and xylenes, and 100% removal for remaining VOCs

**Appendix A: Emissions Calculations
Emission Summary**

Company Name: Former Hoosier Penn Oil
Source Address: 850 South Keystone Avenue, Indianapolis, IN 46203
Exemption No.: E097-31538-00688
Reviewer: Susann Brown

Adsorbed HAPs Contaminant Mass (adsorbed to soil above and below the water table)

Adsorbed Phase HAPs			
Constants			
Soil Mineral Density (Quartz)		165.4	lbs/ft ³
Input			
Treated Area (ft ²)	Thickness (ft)	Soil Porosity	Average Contaminant Conc. (ppm)
10,602.90	14	0.3	1,641.93
	TISV	148,440.60	ft ³
	SMV	103,908.42	ft ³
	SMM	17,186,452.67	lbs
	AHM-HAPs	28,218.95	lbs
	AHM-HAPs	14.11	tons
	Remediation Goal Adsorbed Phase Mass Removal-HAPs	9.50	tons

Assumptions:

- Treated Area values are based on the extent of the radius of influence (ROI) of the high vacuum dual phase extraction system (15 wells @ 15 feet ROI).
 - The contamination thickness was estimated by summing the total thickness of all available soil sampling intervals exhibiting soil vapor concentrations greater than 100 parts per million vapor (ppmv) as measured by a photoionization detector (PID) or flame ionization detector (FID). For calculation purposes, the impacted soil thickness value used is the average thickness seen in all borings within the remediation system ROI (MW-3, PZ-6 through PZ-9, & EW-1 through EW-16).
 - A typical soil porosity of 30% (0.30) is utilized.
 - The contaminant concentration is the average of the adsorbed HAP concentrations as measured in MW-3, PZ-6 through PZ-9, EW-1, and EW-3 through EW-16.
 - The proposed remediation system will operate until the adsorbed phase toluene, ethylbenzene, & xylene concentrations have been reduced by 67%. Once this goal is reached, the system will be deactivated.
- Extraction wells EW-1 and EW-3 through EW-16 will be utilized by the proposed high vacuum dual phase extraction system.

Calculation Explanation:

TISV (Total Impacted Soil Volume) (ft³) = Plume Area (ft²) * Thickness (ft)
 SMV (Soil Mineral Volume) (ft³) = TISV (ft³) * (1 - Soil Porosity)
 SMM (lbs) = SMV (ft³) * Solid Mineral Density (lbs/ft³)
 AHM - HAPs (lbs) = (Contaminant Concentration (ppm)/106)* SMM (lbs)
 AHM - HAPs (tons) = AHM-HAPs (lbs)/2000

Remediation Goal Adsorbed Phase Mass Removal - HAPs = 67% removal of toluene, ethylbenzene, and xylenes, and 100% removal for remaining HAPs
 = Estimated HAPs Mass Removal (tons)

**Appendix A: Emissions Calculations
Emission Summary**

Company Name: Former Hoosier Penn Oil
Source Address: 850 South Keystone Avenue, Indianapolis, IN 46203
Exemption No.: E097-31538-00688
Reviewer: Susann Brown

Adsorbed Toluene Contaminant Mass (adsorbed to soil above and below the water table)

Adsorbed Phase Toluene (HAP only)			
<i>Constants</i>			
Soil Mineral Density (Quartz)		165.4	lbs/ft ³
<i>Input</i>			
Treated Area (ft ²)	Thickness (ft)	Soil Porosity	Average Contaminant Conc. (ppm)
10,602.90	14	0.3	990.91
		TISV	148,440.60 ft ³
		SMV	103,908.42 ft ³
		SMM	17,186,452.67 lbs
		AHM-Toluene	17,030.23 lbs
		AHM-Toluene	8.52 tons
		Remediation Goal Adsorbed Phase Mass Removal-Toluene	5.71 tons

Assumptions:

- Treated Area values are based on the extent of the radius of influence (ROI) of the high vacuum dual phase extraction system (15 wells @ 15 feet ROI).
 - The contamination thickness was estimated by summing the total thickness of all available soil sampling intervals exhibiting soil vapor concentrations greater than 100 parts per million vapor (ppmv) as measured by a photoionization detector (PID) or flame ionization detector (FID). For calculation purposes, the impacted soil thickness value used is the average thickness seen in all borings within the remediation system ROI (MW-3, PZ-6 through PZ-9, & EW-1 through EW-16).
 - A typical soil porosity of 30% (0.30) is utilized.
 - The contaminant concentration is the average of the adsorbed Toluene concentrations as measured in MW-3, PZ-6 through PZ-9, EW-1 and EW-3 through EW-16.
 - Toluene has the highest adsorbed concentration and represents the highest potential to emit for a single HAP compound.
 - The proposed remediation system will operate until the adsorbed phase toluene, ethylbenzene, & xylene concentrations have been reduced by 67%. Once this goal is reached, the system will be deactivated.
- Extraction wells EW-1 and EW-3 through EW-16 will be utilized by the proposed high vacuum dual phase extraction system.

Calculation Explanation:

TISV (Total Impacted Soil Volume) (ft³) = Plume Area (ft²) * Thickness (ft)
 SMV (Soil Mineral Volume) (ft³) = TISV (ft³) * (1 - Soil Porosity)
 SMM (lbs) = SMV (ft³) * Solid Mineral Density (lbs/ft³)
 AHM - Toluene (lbs) = (Contaminant Concentrations (ppm)/106) * SMM (lbs)
 AHM - Toluene (tons) = AHM-Toluene (lbs)/2000
 Remediation Goal Adsorbed Phase Mass Removal-Toluene = AHM-Toluene * 0.67

**Appendix A: Emissions Calculations
Emission Summary**

Company Name: Former Hoosier Penn Oil
Source Address: 850 South Keystone Avenue, Indianapolis, IN 46203
Exemption No.: E097-31538-00688
Reviewer: Susann Brown

Dissolved Phase Contaminant VOC Mass

Dissolved Phase VOCs			
Constants			
Volume Conversion		7.48	gal per ft ³
Water Density		8.35	lbs per gal
Input			
Treated Area	Thickness	Soil Porosity	Average Contaminant Conc.
(ft ²)	(ft)		(ppb)
10,602.90	8.46	0.3	241,345.45
	TPV:	89,700.53	ft ³
	IGWV:	26,910.16	ft ³
	IGWV:	201,288.00	gal
	IGWM:	1,680,754.79	lbs
	DPHM (VOCs):	405.64	lbs
	DPHM (VOCs):	0.20	tons

Assumptions:

- Treated Area values are based on the extent of the radius of influence (ROI) of the high vacuum dual phase extraction system (15 wells @ 15 feet ROI).
- Thickness of groundwater contamination is estimated conservatively at 8.46 feet based on the fact that the average water column within the extraction wells was determined to be 11.28 feet. Since the majority of the VOCs detected have specific gravities less than one (1) and will therefore tend to float on the groundwater surface instead of distributing evenly within the entire water column, it was assumed that the thickness would be 75% of 11.28 feet, which equals 8.46 feet.
- A typical soil porosity of 30% (0.30) is utilized.
- The contaminant concentration is the average of the dissolved VOC concentrations as measured in extraction wells EW-1 and EW-3 through EW-16 on January 18, 2012. All of these extraction wells will be utilized by the proposed high vacuum dual phase extraction system.

Calculation Explanation:

TPV (Total Plume Volume) (ft³) = Plume Area (ft²) * Thickness (ft)
 IGWV (Impacted Groundwater Volume) (ft³) = TPV (ft³) * Soil Porosity
 IGWV (gallons) = IGWV (ft³) * 7.48 (gal/ft³)
 IGWM (Impacted Groundwater Mass) (lbs) = IGWV (gal) * Water Density (lbs/gal)
 DPHM (Dissolved Phase VOC Mass) (lbs) = (Contaminant Concentrations (ppb)/10⁹)* IGWM (lbs)
 DPHM (Dissolved Phase VOC Mass) (tons) = DPHM (Dissolved Phase VOC Mass) (lbs)/2000

**Appendix A: Emissions Calculations
Emission Summary**

Company Name: Former Hoosier Penn Oil
Source Address: 850 South Keystone Avenue, Indianapolis, IN 46203
Exemption No.: E097-31538-00688
Reviewer: Susann Brown

Dissolved Phase HAPs Contaminant Mass

Dissolved Phase HAPs			
Constants			
Volume Conversion		7.48	gal per ft ³
Water Density		8.35	lbs per gal
Input			
Treated Area	Thickness	Soil Porosity	Average Contaminant Conc.
(ft ²)	(ft)		(ppb)
10,602.90	8.46	0.3	205,828.43
	TPV:	89,700.53	ft ³
	IGWV:	26,910.16	ft ³
	IGWV:	201,288.00	gal
	IGWM:	1,680,754.79	lbs
	DPHM (HAPs):	345.95	lbs
	DPHM (HAPs):	0.17	tons

Assumptions:

- Treated Area values are based on the extent of the radius of influence (ROI) of the high vacuum dual phase extraction system (15 wells @ 15 feet ROI).
- Thickness of groundwater contamination is estimated conservatively at 8.46 feet based on the fact that the average water column within the extraction wells was determined to be 11.28 feet. Since the majority of the VOCs detected have specific gravities less than one (1) and will therefore tend to float on the groundwater surface instead of distributing evenly within the entire water column, it was assumed that the thickness would be 75% of 11.28 feet, which equals 8.46 feet.
- A typical soil porosity of 30% (0.30) is utilized.
- The contaminant concentration is the average of the dissolved HAP concentrations as measured in extraction wells EW-1 and EW-3 through EW-16 on January 18, 2012. All of these extraction wells will be utilized by the proposed high vacuum dual phase extraction system.

Calculation Explanation:

TPV (Total Plume Volume) (ft³) = Plume Area (ft²) * Thickness (ft)
 IGWV (Impacted Groundwater Volume) (ft³) = TPV (ft³) * Soil Porosity
 IGWV (gallons) = IGWV (ft³) * 7.48 (gal/ft³)
 IGWM (Impacted Groundwater Mass) (lbs) = IGWV (gal) * Water Density (lbs/gal)
 DPHM (HAPs) (lbs) = (Contaminant Concentrations (ppb)/10⁹)* IGWM (lbs)
 DPHM (HAPs) (tons) = DPHM (HAPs) (lbs)/2000

**Appendix A: Emissions Calculations
Emission Summary**

Company Name: Former Hoosier Penn Oil
Source Address: 850 South Keystone Avenue, Indianapolis, IN 46203
Exemption No.: E097-31538-00688
Reviewer: Susann Brown

Dissolved Phase Toluene Contaminant Mass (HAP only)

Dissolved Phase Toluene (HAP only)			
<i>Constants</i>			
Volume Conversion		7.48	gal per ft ³
Water Density		8.35	lbs per gal
<i>Input</i>			
Treated Area	Thickness	Soil Porosity	Average Contaminant Conc.
(ft ²)	(ft)		(ppb)
10,602.90	8.46	0.3	176,020.00
		TPV:	89,700.53 ft ³
		IGWV:	26,910.16 ft ³
		IGWV:	201,288.00 gal
		IGWM:	1,680,754.79 lbs
		DPHM (Toluene):	295.85 lbs
		DPHM (Toluene):	0.15 tons

Assumptions:

- Treated Area values are based on the extent of the radius of influence (ROI) of the high vacuum dual phase extraction system (15 wells @ 15 feet ROI).
 - Thickness of groundwater contamination is estimated conservatively at 8.46 feet based on the fact that the average water column within the extraction wells was determined to be 11.28 feet. Toluene has a specific gravity less than one (1) and will therefore tend to float on the groundwater surface instead of distributing evenly within the entire water column, it was assumed that the thickness would be 75% of 11.28 feet, which equals 8.46 feet.
 - A typical soil porosity of 30% (0.30) is utilized.
 - The contaminant concentration is the average of the dissolved Toluene concentrations as measured in extraction wells EW-1 and EW-3 through EW-16 on January 18, 2012.
- All of these extraction wells will be utilized by the proposed high vacuum dual phase extraction system.

Calculation Explanation:

TPV (Total Plume Volume) (ft³) = Plume Area (ft²) * Thickness (ft)
 IGWV (Impacted Groundwater Volume) (ft³) = TPV (ft³) * Soil Porosity
 IGWV (gallons) = IGWV (ft³) * 7.48 (gal/ft³)
 IGWM (Impacted Groundwater Mass) (lbs) = IGWV (gal) * Water Density (lbs/gal)
 DPHM (Toluene) (lbs) = (Contaminant Concentrations (ppb)/10⁹)* IGWM (lbs)
 DPHM (Toluene) (tons) = DPHM (Toluene) (lbs)/2000

Appendix A: Emissions Calculations
Emission Summary

Company Name: Former Hoosier Penn Oil
Source Address: 850 South Keystone Avenue, Indianapolis, IN 46203
Exemption No.: E097-31538-00688
Reviewer: Susann Brown

Paved Roads at Industrial Site

The following calculations determine the amount of emissions created by paved roads, based on 8,760 hours of use and AP-42, Ch 13.2.1 (1/2011).

Vehicle Information (provided by source)

Type	Maximum number of vehicles per day	Number of one-way trips per day per vehicle	Maximum trips per day (trip/day)	Maximum Weight Loaded (tons/trip)	Total Weight driven per day (ton/day)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/day)	Maximum one-way miles (miles/yr)
Vehicle (entering plant) (one-way trip)	0.3	1.0	0.3	1.0	0.3	300	0.057	0.017	6.2
Vehicle (leaving plant) (one-way trip)	0.3	1.0	0.3	1.0	0.3	300	0.057	0.017	6.2
Total			0.6		0.6			0.034	12.4

Average Vehicle Weight Per Trip = 1.0 tons/trip
 Average Miles Per Trip = 0.06 miles/trip

Unmitigated Emission Factor, Ef = $[k * (sL)^{0.91} * (W)^{1.02}]$ (Equation 1 from AP-42 13.2.1)

	PM	PM10	PM2.5	
where k =	0.082	0.016	0.00054	lb/VMT = particle size multiplier (AP-42 Table 13.2.1-1)
W =	1.0	1.0	1.0	tons = average vehicle weight (provided by source)
sL =	9.7	9.7	9.7	g/m ² = silt loading value for paved roads at iron and steel production facilities - Table 13.2.1-3)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, Eext = $E * [1 - (p/4N)]$ (Equation 2 from AP-42 13.2.1)

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

	PM	PM10	PM2.5	
Unmitigated Emission Factor, Ef =	0.648	0.126	0.004	lb/mile
Mitigated Emission Factor, Eext =	0.593	0.116	0.004	lb/mile

Process	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)
Vehicle (entering plant) (one-way trip)	2.0E-03	3.9E-04	1.3E-05	1.8E-03	3.6E-04	1.2E-05
Vehicle (leaving plant) (one-way trip)	2.0E-03	3.9E-04	1.3E-05	1.8E-03	3.6E-04	1.2E-05
	4.0E-03	7.9E-04	2.7E-05	3.7E-03	7.2E-04	2.4E-05

Methodology

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

Abbreviations

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



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

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

SENT VIA U.S. MAIL: CONFIRMED DELIVERY AND SIGNATURE REQUESTED

TO: David Samberg
Former Hoosier Penn Oil
1427 W 86th St, PO Box 182
Indianapolis, IN 46260

DATE: April 11, 2012

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

SUBJECT: Final Decision
Exemption
097 - 31538 - 00688

Enclosed is the final decision and supporting materials for the air permit application referenced above. Please note that this packet contains the original, signed, permit documents.

The final decision is being sent to you because our records indicate that you are the contact person for this application. However, if you are not the appropriate person within your company to receive this document, please forward it to the correct person.

A copy of the final decision and supporting materials has also been sent via standard mail to:
OAQ Permits Branch Interested Parties List

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178, or toll-free at 1-800-451-6027 (ext. 3-0178), and ask to speak to the permit reviewer who prepared the permit. If you think you have received this document in error, please contact Joanne Smiddie-Brush of my staff at 1-800-451-6027 (ext 3-0185), or via e-mail at jbrush@idem.IN.gov.

Final Applicant Cover letter.dot 11/30/07

Mail Code 61-53

IDEM Staff	LPOGOST 4/11/2012 Former Hoosier Penn Oil 097 - 31538 - 00688 final)		Type of Mail: CERTIFICATE OF MAILING ONLY	AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING
Name and address of Sender		Indiana Department of Environmental Management Office of Air Quality – Permits Branch 100 N. Senate Indianapolis, IN 46204		

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1		David Samberg Former Hoosier Penn Oil 1427 W 86th St, PO Box 182 Indianapolis IN 46260 (Source CAATS) Via confirmed delivery										
2		Marion County Health Department 3838 N, Rural St Indianapolis IN 46205-2930 (Health Department)										
3		Indianapolis City Council and Mayors Office 200 East Washington Street, Room E Indianapolis IN 46204 (Local Official)										
4		Marion County Commissioners 200 E. Washington St. City County Bldg., Suite 801 Indianapolis IN 46204 (Local Official)										
5		Mr. David Hatchett Hatchett & Hauck 111 Monument Circle Suite 301 Indianapolis IN 46204 (Attorney)										
6		Matt Mosier Office of Sustainability 1200 S Madison Ave #200 Indianapolis IN 46225 (Local Official)										
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