

United States Environmental Protection Agency  
Region 10, Office of Air, Waste and Toxic  
AWT-107  
1200 Sixth Avenue, Suite 900  
Seattle, Washington 98101

Permit Number: R10NT501100  
Issued: July 1, 2009  
AFS Plant I.D. Number: 16-777-00084

**Technical Support Document**  
**Non-Title V Air Quality Operating Permit**  
Permit Writers: Heather Valdez and Doug Hardesty

**Poe Asphalt Paving, Inc.**  
**Portable Asphalt Plant #1900**

**Purpose of Owner-Requested Non-Title V Operating Permit  
And Technical Support Document**

Title 40 Code of Federal Regulations Section 49.139 establishes a permitting program to provide for the establishment of Federally-enforceable requirements for air pollution sources located within Indian reservations in Idaho, Oregon and Washington. The owner or operator of an air pollution source who wishes to obtain a Federally-enforceable limitation on the source's actual emissions or potential to emit must submit an application to the Regional Administrator requesting such limitation. The United States Environmental Protection Agency (EPA) then develops the permit via a public process. The permit remains in effect until it is modified, revoked or terminated by EPA in writing.

This document, the technical support document, fulfils the requirement of 40 CFR § 49.139(c)(3) by describing the proposed limitation and its effect on the actual emissions and/or potential to emit of the air pollution source. Unlike the Operating Permit, this Technical Support Document is not legally enforceable. The permittee is obligated to follow the terms of the permit. Any errors or omissions in the summaries provided here do not excuse the permittee from the requirements of the permit.

# Table of Contents

## Cover Page

<b>1. EPA Authority to Issue Non-Title V Permits .....</b>	<b>3</b>
<b>2. Project Description .....</b>	<b>3</b>
2.1 Background .....	3
2.2 Request Description .....	3
<b>3. Facility Information.....</b>	<b>4</b>
3.1 Ownership & Location .....	4
3.2 Facility Description.....	4
3.3 Local Air Quality .....	5
<b>4. Regulatory Analysis and Permit Content.....</b>	<b>6</b>
4.1 Evaluation of Request .....	6
4.2 Other Federal Requirements.....	7
4.3 Permit Conditions.....	10
<b>5. Permit Procedures .....</b>	<b>13</b>
5.1 Permit Revisions, Termination and Reissuance .....	13
5.2 Public Notice and Comment .....	13
<b>6. Abbreviations and Acronyms .....</b>	<b>14</b>

## Appendix A - Emission Inventory

## Appendix B - Environmental Justice Maps

# **1. EPA Authority to Issue Non-Title V Permits**

On April 8, 2005 the United States Environmental Protection Agency (EPA) adopted regulations (70 FR 18074) codified at 40 CFR Parts 9 and 49, establishing Federal Implementation Plans under the Clean Air Act for Indian reservations in Idaho, Oregon and Washington. One Federal Implementation Plan, commonly referred to as the Federal Air Rules for Reservations (FARR), put in place basic air quality regulations to protect health and welfare on Indian reservations located in the Pacific Northwest. This permit has been developed pursuant to 40 CFR § 49.139 which creates a non-Title V permitting program for establishing Federally-enforceable requirements for air pollution sources on Indian reservations.

## **2. Project Description**

### **2.1 Background**

Three federal air quality programs exist that apply to primarily major sources of air pollution: Prevention of Significant Deterioration (PSD) construction permits; Title V operating permits; and Maximum Achievable Control Technology (MACT) standards. The definition of “major source” is slightly different in each program, but is generally based on the amount of pollutants emitted by a source. A source that would otherwise be major can avoid these programs by voluntarily limiting the regulated pollutants to less than the thresholds for applicability in each program. EPA’s non-Title V permit program, created in the FARR, can be used by sources to establish limits for avoiding PSD permitting, Title V permitting and MACT standards. Poe Asphalt Paving (Poe) has requested limits to avoid these three federal air quality programs.

### **2.2 Request Description**

On December 21, 2005, EPA Region 10 received an application from Poe Asphalt Paving (Poe) requesting emission limits be established that allow Poe to operate on several Indian reservations (listed in Appendix A) without being subject to PSD permitting, Title V permitting or MACT standards, provided Poe has equivalent limits in other jurisdictions they operate within. Additional information in support of the non-Title V application was submitted to EPA in letters dated February 10, 2006, and March 22, 2006, and through subsequent email and phone conversations. The final list of Indian reservations includes:

- Couer d’Alene Indian Reservation (Idaho);
- Kootenai Reservation (Idaho);
- Nez Perce Reservation (Idaho);
- Umatilla Indian Reservation (Oregon);
- Colville Indian Reservation (Washington);
- Kalispel Indian Reservation (Washington);
- Spokane Indian Reservation (Washington); and
- Yakama Indian Reservation (Washington).

As a source that normally operates seasonally and only 8 to 10 hours per day, Poe believes their actual emissions will be well below the thresholds for applicability in these three air quality programs. Poe stated that their actual production will be less than 300,000 tons of hot mix asphalt per year.

### **3. Facility Information**

#### **3.1 Ownership & Location**

Poe is a privately owned and operated portable hot mix asphalt plant. The plant is considered a portable source because the equipment can be easily dismantled, transported to different locations and reassembled for operation. As such, Poe must comply with the requirements of each jurisdiction in which it operates. Poe currently has a permit from the State of Idaho (Permit Number P050215 issued on April 28, 2006) that authorizes operation on State lands in Idaho. This non-Title V permit authorizes Poe to operate on 8 Indian reservations in Idaho, Oregon and Washington provided Poe complies with the permit conditions and receives approval from EPA for each specific location. Appendix A lists the reservations within which Poe anticipates operating and the tribal contact information for those reservations. At the time of initial permit issuance, only two specific locations have been approved - see Permit Condition 1.3. Poe cannot operate any other locations until they are approved in writing by EPA. Additional specific locations will be identified and approved through the mechanism described in the permit.

Contact information for Poe is listed on the front page of the permit. The main office address and the location where equipment is stored while not in operation at a job location is:

Poe Asphalt Paving, Inc.  
302 15<sup>th</sup> Street  
Clarkston, WA 99403

#### **3.2 Facility Description**

This facility is a portable asphalt plant facility which uses a mixture of size graded aggregate and liquid asphalt cement to make hot mix asphalt (HMA) paving material. Stockpiled aggregate, consisting of up to 50% recycled asphalt pavement (RAP), is transferred to feed bins. Aggregate is dispensed from the bins onto feeder conveyors, which transfer the aggregate to the drum mix dryer. Aggregate travels through the rotating drum dryer where it is heated and dried. The dryer is heated by burners fueled by #2 diesel or Grade 4 reprocessed fuel oil (RFO4) sometimes referred to as used oil or waste oil. A measured amount of heated asphalt cement is added and mixed with the hot aggregate and RAP to produce HMA. Asphalt cement is stored in an above-ground storage tank, kept in a liquid state using a tank heater that is fueled by #2 fuel oil (#2 diesel) or biofuel. The HMA is then conveyed to hot storage silos until it can be loaded into trucks for transport off site. All fuels are stored in above-ground tanks.

Electrical power is provided by a connection to the local grid (when available) or by a portable generator that is fueled by #2 fuel oil. The facility Standard Industrial Classification code is 2951, Asphalt Paving Mixtures and Blocks. The drum dryer emissions are controlled by a baghouse (fabric filter). Water may be applied to traffic areas to control fugitive dust.

Plant configurations from project to project can vary somewhat. Typically, the plant configuration will include the hot mix asphalt plant counter-flow drum dryer, a diesel generator, an asphalt tank and an asphalt tank heater, tanks to store the fuels, HMA storage silos, along with some combination of conveyors, trucks, and loaders. Poe's plant requires a 200' by 200' minimum area for operation and is typically located on the floor of an active quarry where aggregate is available. A typical project requires the plant to be at the same location for about one month, operating 8 to 10 hours per day. Table 1 lists and describes the emission units and emission controls that typically exist.

Poe does not mine, crush or screen rock to produce the aggregate that is used as a raw material. Note that if aggregate is crushed, screened or otherwise processed on-site in support of this asphalt plant, those operations may be considered part of the asphalt plant for program applicability purposes. EPA should be consulted for regulatory advice in that case.

**Table 1: Emission Units (EU)**

<b>EU #</b>	<b>Source Description</b>	<b>Emission Controls</b>
1	<b>Hot-mix Asphalt Drum Dryer:</b> Cedarapids/CMI brand, model 100-48 CF/PTD 400; manufactured 1993; portable, counter-flow design drum; 550 ton/hr rated capacity; up to 50% RAP capability; 97 mmbtu/hr burner fueled with #2 fuel oil, RFO4	CMI brand baghouse*, model CMI 318
2	<b>Generator:</b> Caterpillar brand, compression ignition, model 3412; purchased new in March 2003, fueled with #2 Fuel oil; 800 kW capacity (7.5 mmBtu/hr)	None
3	<b>Storage Tanks</b> (1) <b>Asphalt storage tank:</b> 25,000 gal capacity; heated (see tank heater) (2) <b>RFO4 storage tank:</b> 16,000 gal capacity portable tank trailer; RFO is used in the drum dryer (3) <b>#2 diesel storage tank:</b> 9,000 gal capacity portable tank trailer; supplies the loader used to feed the plant, and the generator (4) <b>#2 diesel or biofuel tank:</b> 500 gal capacity; for use by the asphalt tank heater	None
4	<b>Asphalt Tank Heater:</b> Astec/CEI brand, model CEI-1800; circulating hot oil heater with 2.115 mmbtu/hr power flame burner (indirect heat) fueled with #2 fuel oil or biofuel	None
5	<b>Aggregate Handling:</b> via trucks, loader and conveyors; to and from piles and to drum dryer; includes recycled asphalt pavement	None
6	<b>Silo Filling:</b> via conveyor from drum dryer	None
7	<b>Truck Loading and Fumes:</b> asphalt truck load-out from silos and fumes from loaded truck bed while in plant	None
8	<b>Traffic:</b> asphalt trucks and loader of aggregate and RAP	Water application
9	<b>Wind Erosion:</b> open areas and aggregate storage piles	None

\* All known emission controls are listed – required controls are noted with an asterisk

### 3.3 Local Air Quality

Poe has requested this permit to cover operations on 8 Indian reservations (see Section 2.2 above). The Spokane reservation is classified as a PSD Class I area; all other reservations are PSD Class II. Based on monitoring data, all of the reservations currently are unclassifiable or attain the national ambient air quality standards for all criteria pollutants [see Clean Air Act Section 107(d)(1)(A)]. An area is unclassifiable when there is insufficient monitoring data. Areas of the country where air pollution levels exceed the national ambient air quality standards may be designated "nonattainment." Note that PSD applies only in attainment or unclassifiable areas. Ambient air quality designations are presented in 40 CFR Part 81.

## 4. Regulatory Analysis and Permit Content

### 4.1 Evaluation of Request

The Clean Air Act requires all major sources to obtain a PSD permit to construct and a Title V permit to operate. Major sources of hazardous air pollutants (HAP) are also subject to the MACT program. The definition of “major” and the criteria for qualifying as a major source are slightly different for each of the three programs. Asphalt plants that have the potential to emit (PTE) 250 tons per year or more are subject to PSD. Sources that have the potential to emit 10 tons per year or more of any individual HAP or 25 tons per year or more of all HAPs emitted (including fugitive emissions) are subject to the MACT program. Sources that have the potential to emit 100 tons per year or more or that are major for PSD or MACT purposes, are subject to Title V. PTE is based on the source’s maximum capacity operating 8760 hours per year and only considers emission controls or limits that are enforceable (see the federal requirements discussions in Section 4.2). Sources categories subject to a New Source Performance Standard (NSPS) that was promulgated as of August 7, 1980, must count fugitive as well as non-fugitive criteria pollutants when determining major source status. NSPS Subpart I, originally promulgated in 1973, applies to asphalt plants, so fugitive emissions must be counted when determining major source status.

As shown in Table 2, Poe has the potential to emit more than 250 tpy of CO, NOx, PM and SO2 and more than 100 tpy of PM10 and VOC. Poe also has the potential to emit more than 25 tpy of all HAPs emitted. See Appendix A for emission inventory details. Without enforceable emission limits in all jurisdictions in which they operate, Poe is subject to PSD, Title V and MACT (although there currently is no MACT for asphalt plants).

Emission estimates considered each applicable emission limit paired with each fuel type that can be used by the equipment to determine the worst-case emissions that are allowed, assuming fulltime operation at full capacity, which would produce 4.8 million of tons per year of HMA. Note that individual HAP PTE estimates were based on the worst-case fuel for each individual HAP, while the emission unit HAP PTE was based on a summation of the worst-case fuel for the emission unit. Plantwide HAP PTE was a summation of the emission units’ HAP PTE. PTE was also limited by applicable NSPS and FARR emission limits when the limits resulted in lower emissions than available emission estimation techniques predicted. It is questionable whether the generator would be considered to be a stationary source or a non-road engine (see the generator discussion in the NSPS discussion in section 4.2). If it was a non-road engine it would not need to be included in the PTE however since we are considering worst-case scenarios it is included and even if it were left out NOx emissions would still be above major source levels.

**Table 2: Potential to Emit**

#	Emission Unit	Annual Potential Emissions (tons per year) <sup>1</sup>								
		CO	Pb	NOx	PM	PM10	SO2	VOC	HCOH	HAP
1	Drum dryer	313.2	0.04	132.5	38.8	56.1	443.3	77.1	7.47	25.71
2	Generator	31.2	0.0	144.9	10.2	10.2	17.0	11.5	0.04	0.13
3	Asphalt storage tank	0.02						0.6	0.05	1.16
4	Asphalt tank heater	0.3	0.0	1.5	0.7	0.2	4.7	0.01	0.004	0.005
5	Aggregate handling				27.4	12.9				
6	Silo filling	2.8	0.0	0.0	0.8	1.4	0.0	29.4	0.2	0.44
7	Truck loading/fumes	4.1			0.4	1.3		11.9	0.01	0.31
8	Traffic				485.1	133.7				

9	Wind erosion				1.0	0.5				
	<b>Total Emissions</b>	352	0.04	279	1134	405	465	130	7.47	27.7
	<b>New PTE Limits<sup>2</sup></b>	80	N/A	80	200	80	80	80	10	25

<sup>1</sup> Carbon monoxide; lead; nitrogen oxides; particulate matter; particulate matter less than 10 microns; sulfur dioxide; volatile organic compounds; formaldehyde (highest plant wide single HAP); total hazardous air pollutants.

<sup>2</sup> The PTE is capped by limits created in this non-Title V permit.

As explained in Section 2.2 above, to avoid being subject to PSD, Title V and MACT, Poe has requested emissions limits (called synthetic minor limits) be created in a non-Title V permit. Poe anticipates only seasonal operations of 8-10 hours per day, this would result in production of less than 6% (300,000 tpy) of the potential production (4.8 million tpy) used in the emission estimates. At the lower production rate, the highest emitted pollutants are expected to be PM and SO<sub>2</sub> (40 tpy); the total actual HAPs are expected to be less than 3 tpy. Poe is therefore confident that their actual emissions will be well below the emission limits requested.

Poe’s request is reasonable and approvable. The permit will limit emissions on a rolling 12-month basis to:

- Not more than 200 tpy for PM (avoids PSD)
- Not more than 80 tpy for CO, NO<sub>x</sub>, PM<sub>10</sub>, SO<sub>2</sub>, VOC (avoids PSD and Title V)
- Not more than 20 tpy for a combination of all HAPs (avoids MACT)
- Not more than 8 tpy for any individual HAP (avoids MACT)

## 4.2 Other Federal Requirements

**Endangered Species Act (ESA)** – EPA is obligated under ESA, Section 7, 16 U.S.C. §1531, to consider the impact that a federal project may have on listed species or critical habitats. EPA considers ESA issues in the context of permitting decisions on a case-by-case basis.

This permit creates emission limits that allow Poe to operate on 8 Indian reservations in Region 10 without being subject to PSD or Title V permitting or MACT standards, but only at the specific locations identified by the permit or subsequent letters of approval. To gain approval for a specific location, Poe must notify EPA 30 days prior to moving there and supply location-specific information. EPA will post a notice on EPA Region 10’s web site describing the new location and stating that EPA is assessing potential ESA impacts as a part of EPA’s approval of a Poe’s relocation. EPA will within 30 days assess the potential for effects on listed species and critical habitat. EPA may refer to the ESA decision in any storm water permits issued to Poe. If EPA determines, for that requested location, that there will be “no effect” regarding ESA impacts, EPA will send Poe a letter approving Poe’s move to and operation at the new location and post the decision on EPA Region 10’s web site. If EPA cannot conclude that there will be no effect, EPA will notify Poe of the need for consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service and proceed with that process. Consultation can be expected to delay Poe’s planned move.

Initially, the permit is being issued with only two specific locations identified and approved (see Permit Condition 1.3). To address aquatic ESA concerns, it is assumed Poe will have no discharges to waters of the United States or Poe will obtain a stormwater permit which addresses aquatic ESA concerns. By requiring the plant to locate within the previously disturbed area of an existing gravel pit, Poe will not disturb new soil or presumably any threatened plants. There are two endangered or threatened mammals, the gray wolf and Canada lynx, that could inhabit either of these areas of Idaho, but the operation of the plant is not expected to be a concern. Additionally, it is not likely that the air emissions from the plant will have an impact on any listed terrestrial species or critical habitat. For the purpose of this permit, EPA therefore concludes that there

will be no effect on listed species or critical habitat. The non-Title V permit serves as Poe's approval of the two proposed locations.

**Environmental Justice (EJ)** – Pursuant to Executive Order 12898 issued on February 11, 1994 and entitled, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” EPA is required to identify and address disproportionately high and adverse human health or environmental effects of regulatory programs, policies, and activities on minority populations and low-income populations. Consistent with a December 1, 2000, EPA memorandum entitled, “EPA Statutory and Regulatory Authorities under Which Environmental Justice Issues May Be Addressed in Permitting,” EPA considers environmental justice issues in the context of permitting decisions on a case-by-case basis.

This permit creates emission limits that allow Poe to operate on 8 Indian reservations in Region 10 without being subject to PSD or Title V permitting or MACT standards, but only at the specific locations identified by the permit. To gain approval for a specific location, Poe must notify EPA 30 days prior to moving there and supply location-specific information. EPA will post a notice on EPA Region 10's web site describing the new location and stating that EPA is assessing potential EJ issues as a part of EPA's approval of a Poe's relocation. EPA will within 30 days assess the potential for disproportionately high and adverse effects on an EJ community. If EPA determines, for the requested location, that there will be no disproportionate or adverse impacts regarding EJ, EPA will send Poe a letter approving Poe's move to and operation at the new location and post the decision on EPA Region 10's web site. If EPA concludes that there will be a disproportionate or adverse effect, EPA will notify Poe of the need for additional consideration and begin to address those concerns. If EJ issues are identified, Poe's planned relocation may be delayed.

Initially, the permit is being issued with only two specific locations identified and approved (see Permit Condition 1.3). Appendix B includes maps which reflect environmental justice indicators for poverty and people of color for each of the 8 proposed Indian reservations. Portable asphalt plants generally relocate frequently, often locating where there is access to available rock as close to current paving projects as possible. Both of Poe's specific locations have been used by portable equipment in the past and will likely be used again. For the initial permit, EPA is seeking input regarding possible EJ concerns and whether Poe's operation might cause a disproportionately high impact on an EJ community.

**National Historic Preservation Act (NHPA)** – Under Section 106 of NHPA (16 U.S.C. 470f), federal agencies are required to take into account the effect a permitted project may have on any sites that are listed or eligible for listing in the National Register of historic properties as well as sites that are considered tribal cultural resources.

This permit creates emission limits that allow Poe to operate on 8 Indian reservations in Region 10 without being subject to PSD or Title V permitting or MACT standards, but only at specific locations identified by the permit. To gain approval for a specific location, Poe must notify EPA 30 days prior to moving there and supply location-specific information. EPA will within 30 days assess the potential for effects on historic or cultural resources. EPA will contact the State and/or Tribal Historic Preservation Officer (SHPO/THPO) to confirm whether there is a concern about Poe's proposed new location. Based on that input, if EPA determines, for that specific location, that there are no concerns, EPA will send Poe a letter approving Poe's move to and operation at the new location. If historic or cultural issues are identified, EPA will work Poe and the preservation officer(s) to address the concerns before approving Poe's relocation.

Initially, the permit is being issued with only two specific locations identified and approved (see Permit Condition 1.3). On the Nez Perce and Coeur d'Alene Reservations, the THPO is the lead for the historical preservation program. EPA contacted those two THPOs for input on Poe's proposed locations. After reviewing the information available and the actual proposed sites, both THPOs have concurred that there will

not be any historical or cultural issues as long as Poe locates their equipment within the previously disturbed area of the gravel pit. The non-Title V permit serves as Poe's approval of the two proposed locations.

**National Environmental Policy Act (NEPA) Review** – Under Section 793(c) of the Energy Supply and Environmental Coordination Act of 1974, no action taken under the Clean Air Act shall be deemed a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969. This permit is an action taken under regulations implementing the Clean Air Act and is therefore exempt from NEPA.

**New Source Performance Standards (NSPS)** – Applicable NSPS requirements, found in 40 CFR 60, can be considered in determining a source's PTE because they are enforceable limits on emissions. Five NSPS subparts may apply to portable asphalt plants: 40 CFR 60, subparts I (asphalt plants), K (tanks), Ka (tanks), Kb (tanks) and IIII (internal combustion engines).

Subpart I (Hot Mix Asphalt Plants) applies to Poe because the asphalt plant was constructed in 1993, well after the June 11, 1973, cutoff for applicability. The standard includes a particulate matter emission limit of 0.04 grains per dry standard cubic foot of exhaust and an opacity limit of 20% or greater. The standard also requires a source test upon startup. Poe accomplished that testing several years ago. The NSPS requirements are not included in the permit; however, the permittee is still subject to the standard and responsible for complying with the limit. The particulate matter emission limit was also used to establish worst-case "allowable" potential to emit estimates in the emission inventory.

Poe has four liquid storage tanks. Three NSPS subparts may apply to the fuel storage tanks: 40 CFR 60, Subparts K (Storage Vessels "Commenced" from 6/12/73 to 5/18/78), Ka (Storage Vessels "Commenced" from 5/19/78 to 7/22/84) and Kb (Storage Vessels "Commenced" after 7/23/84). Subparts K and Ka apply to tanks larger than 40,000 gallons and subpart Kb applies to tanks larger than 75 cubic meters (20,000 gallons). Poe's tank capacities are as follows: Tank #1 - 25,000 gallon heated asphalt storage tank; Tank #2 - 16,000 gallon RFO4 storage tank; Tank #3 - 9,000 gallon #2 diesel storage tank; and Tank #4 - 500 gallon #2 diesel or biofuel tank. Only Poe's Tank #1 is larger than 20,000, so tanks #2, #3 and #4 are not subject to NSPS. Storage tanks that are permanently attached to mobile vehicles are exempt from subpart Kb [see 60.110b(d)(3)], so Tank #1 is also not subject to an NSPS.

Subpart IIII (Stationary Compression Ignition Internal Combustion Engines) applies to generators manufactured, modified or reconstructed after July 11, 2005. Poe's generator was purchased new in March 2003, so Poe is not subject to this NSPS. Note also that if Poe's generator never operates in the same location for more than 12 months, or a shorter period of time for an engine located at a seasonal source, it is considered a non-road engine, not a stationary source. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This subpart does not apply to non-road engines. Poe should maintain records to document construction, as well as any modification or reconstruction, of the generator.

**National Emission Standards for Hazardous Air Pollutants (NESHAP)** – Applicable NESHAP requirements, found in 40 CFR 61 and 63 can be considered in determining a source's PTE because they are enforceable limits on emissions. There are no NESHAP requirements in 40 CFR part 61 that apply to asphalt plants. The limits in this permit make Poe a synthetic minor source of hazardous air pollutants; as such, Poe will not be subject to any "major source" MACT standards in 40 CFR part 63, as long as Poe has equivalent limits in all jurisdictions in which it operates. One "area source" MACT standard could apply to portable asphalt plants: 40 CFR 63, subpart ZZZZ (internal combustion engines).

Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines) applies to both stationary compression ignition and spark ignition engines including generators constructed after June 12, 2006. Generators constructed before that date and located at a non-major source are considered existing area sources and are exempted from subpart ZZZZ in 63.6590(b)(3). When this subpart was promulgated, it was announced that standards for existing sources would be promulgated at a later date. Poe should be aware that there may be further requirements for the generator under 40 CFR Part 63 at a later date. Similar to the NSPS section above, this subpart does not apply to non-road engines. Poe should maintain records to document construction, as well as any modification or reconstruction, of the generator.

**Federal Air Rules for Reservations (FARR)** – Applicable FARR requirements can be considered in determining a source’s PTE. There are five FARR requirements that apply to portable asphalt plants and that could contain enforceable limits PTE purposes: 49.124 (visible emissions); 49.125 (particulate matter emissions); 49.126 (fugitive particulate matter emissions); 49.129 (sulfur dioxide emissions); and 49.130 (sulfur in fuels). The PTE emissions inventory in Appendix A considered these requirements when estimating emissions.

### 4.3 Permit Conditions

The permit establishes PTE limits as well as monitoring, recordkeeping and reporting requirements necessary to assure compliance with the limits. The permit is organized into 4 sections as follow:

1. General Conditions
2. Emission Limits and Work Practice Requirements
3. Monitoring and Recordkeeping Requirements
4. Reporting Requirements

An explanation of each condition in the permit follows.

#### Permit Section 1, General Conditions

Permit Condition 1.1 clarifies that the permitted source is the hot-mix asphalt drum dryer (# 1900) and any combination of equipment for handling the raw materials and product.

Permit Condition 1.2 requires Poe to comply with the conditions in the permit and any conditions that are created when EPA approves new locations. Those new conditions will be communicated in the letter approval referred to in Permit Condition 1.3.3.

Permit Condition 1.3 states that compliance with the permit (and site-specific conditions) allows Poe to operate at the two approved locations listed in this condition as well as any additional future locations approved in writing by EPA. Permit Conditions 1.3.1 and 1.3.2 list the two locations already approved and include the requirement to locate the plant in the previously disturbed portion of the gravel pit. This helps assure that historical or cultural areas will not be disturbed. Permit Condition 1.3.3 allows EPA to approve new locations on any of the 8 Indian reservations listed. To gain approval for new locations on Indian reservations, Poe is required in Permit Section 4 to notify EPA of their plans to relocate and to supply EPA with information about the new location. Before approving a new location, EPA will verify that there will be no effect on listed species or critical habitat (per ESA), no disproportionate impacts upon minority populations and low-income populations (per EPA’s EJ policy), and no adverse effects on historic properties (per NHPA). EPA will also confirm that Poe is still in compliance with the limits that allow them to avoid PSD, Title V and MACT. If EPA believes that adverse effects may occur, additional analysis and approval steps (e.g. biological assessments, consultations and etc) may be necessary before a final approval decision can be reached. Approval letters will be posted on EPA’s web site and the permit may be periodically revised

to incorporate any approved locations to this condition. Compliance with the permit means that Poe will not be subject to PSD or Title V permits or MACT standards.

Permit Condition 1.4 states that the permit does not relieve the permittee from complying with any other federal, tribal, state, or local law or requirements that apply. This permit only creates owner requested limits for the purposes explained above. The permit does not contain other Clean Air Act requirements to which the Poe facility is or may be subject, such as the FARR; New Source Performance Standards, 40 CFR Part 60; and National Emissions Standards for Hazardous Air Pollutants, 40 CFR Part 61, and 63. If in the future, Poe chooses to relax the limits in Section 2 such that the facility becomes a major source, permitting and MACT requirements may apply. Poe must also comply with any applicable siting requirements that a Tribe has.

### **Permit Section 2, Emission Limits and Work Practice Standards**

Permit Conditions 2.1 to 2.7 limit the PTE of the facility to 80% of the major source thresholds for PSD (PM) Title V (CO, NO<sub>x</sub>, PM<sub>10</sub>, SO<sub>2</sub> and VOC) and MACT (HAP). The thresholds for each program are 250 tpy (PSD), 100 tpy (Title V) and 25 tpy total and 10 tpy individual (MACT). The Title V limits effectively limit emissions for PSD purposes with the exception of PM which is no longer considered a regulated pollutant for Title V applicability purposes (which is the reason the limit is 200 tpy). These synthetic minor limits allow Poe to be treated as a minor source for permitting and MACT purposes. Each limit is written as a rolling 12-month total where each month, actual emissions must be totaled for the last 12 months to determine compliance with the ton per year limit. Emission factors are relied upon for calculating actual emissions.

Permit Condition 2.8 requires good operation of the fuel burning equipment (drum dryer, tank heater and generators) and the drum dryer baghouse. Good operating condition generally implies proper operation and good maintenance of equipment - burner tuning and baghouse bag inspection and replacement as needed. This permit condition requires the baghouse be operated at all times the drum dryer is operated to assure good emission control at all times. This permit condition also requires an annual internal inspection of the baghouse to check for wear, corrosion and bag degradation, blinding or channeling that could impair the performance of the unit.

Permit Condition 2.9 requires the permittee to limit fugitive emissions and fugitive dust by taking all reasonable precautions. The FARR requires the permittee to develop a fugitive dust plan and lists a number of techniques that EPA believes is reasonable.

### **Permit Section 3, Monitoring and Recordkeeping Requirements**

Permit Conditions 3.1 to 3.5 Visible Emission Monitoring and Recordkeeping - These conditions require a daily survey (a plant walkthrough) for visible emissions, from the drum dryer baghouse stack and from road traffic areas, as well as specific follow-up steps (investigation, corrective action, RM9 observation and additional recordkeeping and reporting) if visible emissions are observed. If observed visible emissions can not be eliminated within 24 hours, a RM9 opacity observation must be performed. Records of all surveys and observations are required to be kept. The permit does not require emission testing of the drum dryer stack. Baghouse control devices can easily meet the NSPS limit of 0.04 gr/dscf when they are operated properly; recent past testing (0.0063 gr/dscf in 2006) documented particulate matter emissions well below the NSPS limit. The daily visible emission observations should ensure continued good operation of the baghouse.

Permit Condition 3.6 Operations and Production Records - The permittee must track and record the operations and production of the plant such that facility-wide emissions can be reliably calculated on a monthly and 12-month basis. Records shall include all information necessary to perform emissions calculations as required by Permit Condition 3.8. Emission estimation techniques, and the data needed, are described in detail in Appendix A to this TSD. Most of the data (production, fuel usage, baghouse pressure drop and fugitive dust

controls) must be recorded each day. Other data, such as fuel sulfur and ash content, must be documented for each fuel load or through actual measurements to represent what is being burned at any time.

Permit Condition 3.7 Equipment Installation – Some monitoring requirements will require Poe to have equipment to indicate the operational parameters that must be recorded. Poe can also automate some recordkeeping systems to assure data is recorded. For instance, baghouse pressure drop requires pressure reading instrumentation and can be linked to recording equipment. Some combustion devices can also be equipped with fuel usage measurement and recording instrumentation. All records can be manually recorded by plant personnel using the technique (or “system”) Poe determines is appropriate to comply with the permit. If monitoring equipment will be installed and used, this condition requires it to be appropriately calibrated and maintained before the source operates in Indian Country.

Permit Condition 3.8 Emissions Calculations – Compliance with the emission limits in the permit is accomplished by applying emissions factors to operational and production data (required to be recorded in Permit Condition 3.6) at least monthly. Each monthly emission calculation forms the basis for the annual emission report in Permit Condition 4.3. Calculations should be performed as they are described in Appendix A; however, assumptions in Appendix A should be verified as needed. Techniques used for the monthly calculations, including any new assumptions, must be clearly documented and acceptable to EPA.

Permit Condition 3.9 Records Retention – This requirement, to keep all of the required records on site for a period of five years, makes the permit consistent with other recordkeeping requirements.

#### **Permit Section 4, Reporting Requirements**

Permit Condition 4.1 Notification before Relocation – Poe must be able to anticipate relocations well enough to be able to provide EPA information about the new location and their plans for operation at least 30 days before moving. Location information helps EPA determine agency permitting jurisdictions. Information about Poe’s plans to operate will allow EPA to anticipate possible changes to Poe’s emissions when at the new location. If co-located with other operations, EPA can assess whether the operations should be aggregated for program applicability purposes. Other information allows EPA to assess possible impacts under ESA, EJ and NHPA before approving the new location. If ESA assessments or approvals (even through other permitting programs) or past archeological surveys are available, the permittee should submit them to facilitate EPA’s review. Emissions data allows EPA to confirm past compliance with the limits that allow the permittee to avoid PSD, Title V and MACT. Poe cannot operate any new locations until they are approved in writing by EPA.

Permit Condition 4.2 Notification after Relocation – When notifying EPA of the actual date of relocation, the permittee can make adjustments to what was previously reported under Permit Condition 4.1 prior to relocation.

Permit Condition 4.3 Annual Report – If Poe operated on an Indian reservation during a given calendar year, Poe must submit an annual report either within 45 days after last operating on a reservation (in that year) or within 45 days after the end of the year. If Poe operates on multiple reservations in a given year, they can submit a report after leaving each reservation or submit a report covering their operation at all reservations at the end of the calendar year.

Permit Condition 4.4 Reporting Address – Note that this is a new address for EPA Region 10 as of late 2007. Copies of all notifications and reports must be sent to the appropriate Tribal Environmental contact listed in Appendix A to the permit. For instance, the permittee must send a copy of the “Notification before Relocation” to the Tribal contact for the reservation Poe is moving to. If Poe operates on two reservations during the year and submits annual reports for each reservation separately, a copy of the first report must be

sent to the Tribal contact for the first reservation and a copy of the second report must be sent to the Tribal contact for the second reservation. If a single report is submitted for the entire year, a copy of the report must be sent to the Tribal contacts at each of the two reservations.

## **5. Permit Procedures**

### **5.1 Permit Revisions, Termination and Reissuance**

The permittee may request EPA to revise the conditions of this permit by submitting an application that contains the information specified in 40 C.F.R. 49.139(d). EPA will revise the permit using the same procedures that apply to initial permit issuance.

If the permittee wishes to terminate the permit, a written request must be submitted to EPA explaining the reasons for the request and, if necessary for continued operation, submitting applications for any Clean Air Act permits or approvals that the permittee avoided by establishment of the limits contained in this permit.

This permit may be terminated, revised, or revoked and reissued by EPA for cause. Cause exists to terminate, revise, or revoke and reissue this permit under the following circumstances:

1. This permit contains a material mistake;
2. Inaccurate statements were made in establishing the terms or conditions of this permit;
3. The permittee fails to comply with any condition of this permit; or
4. This permit must be terminated, revised, or reopened and reissued to assure compliance with Clean Air Act requirements.

EPA will use the same proceedings to terminate, revise, or revoke and reissue a permit for cause as for initial permit issuance. Before initiating proceedings to terminate, revise, or revoke and reissue a permit, EPA will provide the permittee at least 30 days' advance written notice of EPA's intent to terminate, revise, or revoke and reissue the permit, except that EPA may provide a shorter notice period in the case of an emergency.

### **5.2 Public Notice and Comment**

As required under 40 CFR § 49.139(c), the draft operating permit was publicly noticed and made available for public comment as follows:

1. Made available for public inspection a copy of the draft operating permit prepared by EPA, the technical support document for the draft permit, the application, and all supporting materials in eleven locations (see the public notice in the administrative record for a list) including at least one location on each of the eight reservations (see 40 CFR 49.139(c)(5)(i));
2. Published the public notice for this draft permit of the availability of the draft permit and supporting materials and of the opportunity to comment in five newspapers of general circulation in each reservation: Coeur d'Alene Press, Spokesman Review, Lewiston Tribune, East Oregonian and Yakima Herald (see 40 CFR 49.139(c)(5)(ii));
3. Provided copies of the notice to the owner or operator of the air pollution source and each Tribal governing body and Tribal environmental organizations for each of the eight reservations as well as the following air pollution regulatory agencies: IDEQ, ODEQ, WDOE, SWCAA, SRCAA, YRCAA and BCAA (see 40 CFR 49.139(c)(5)(iii)); and
4. Provided for a 30-day period for submittal of public comments, starting upon the date of publication of the notice - note that no public hearing or public comment period extension were requested or held (see 40 CFR 49.139(c)(5)(iv)).

The public comment period for this permit ran from May 21, 2009, to June 22, 2009. EPA received comments from two organizations: Spokane Tribal Department of Natural Resources (via email from Monty Ford, Assistant Director) and the Idaho Department of Environmental Quality (via email from Bill Rogers, Stationary Source Program Coordinator). As required in 40 CFR § 49.139(c)(5)(iv) and (c)(6), EPA has considered the comments in preparing a final permit and technical support document and has documented a response to each comments below explaining whether any changes to the permit resulted and the reason the change was or was not made. As required in 40 CFR 49.139(c)(7), EPA will send the final permit and technical support document to each person who provided comments on the draft permit to operate and EPA will make available the final permit and technical support document at all of the locations where the draft permit was made available.

### **Responses to Comments from Spokane Tribal DNR:**

Concern Regarding Harmful Health Effect - There are several concerns I'd like to address in regards to the proposed permit issued to Poe Asphalt Paving, Inc. First of all the exterior boundaries of the Spokane Tribe is listed as a "class one" air shed through the EPA. The emissions produced from this plant could have severe negative impacts to many of our residents living on or adjacent to the Spokane Indian Reservation. Many of our tribal elders have lung related health problems and many other residents have asthmatic conditions. Due to the potential harm this plant could cause our residents, we are in need of assurances that there will be no harmful affects to them, caused by Poe Asphalt's project on our reservation. We understand that future projects on reservations require a 30-day notice to affected tribes prior to EPA approving the permit. At which time the tribes have the right to uphold the permit if they foresee health hazards exceeding the limits to our community.

EPA Response - The commenter is correct that the Spokane Indian Reservation is classified as a Class I area for PSD purposes. That fact helps to describe the local air quality for this permitting action; Section 3.3 of this TSD has been revised to explain that. The emissions from Poe asphalt plant will obviously increase the emissions and ambient air quality concentrations of air pollutants in any area that they locate on the Spokane Indian Reservation. EPA has authority under 40 C.F.R. § 49.139 to impose additional requirements on Poe if EPA determines that additional requirements are necessary to assure the attainment and maintenance of any national ambient air quality standards or PSD increments. The permit requires Poe to notify EPA and each impacted Tribe 30 days before moving to a new location. At that time, the Tribe can determine if it has authority under its Tribal laws to prohibit Poe from locating at a site on its Reservation or impose additional restrictions on Poe's operations based on additional air quality or other concerns. In fact, this permit, in Permit Condition 1.4, makes it very clear that the permit does not relieve Poe from complying with Tribal or local law or regulation including site-approval regulations. EPA will work with the Tribes impacted to ensure they have an opportunity to evaluate future locations and make siting decisions as provided by tribal law that protect their communities.

### **Responses to Comments from IDEQ:**

Co-location - The draft permit does not exclude co-location with another source. Co-location with another source may trigger the aggregation of emissions, which may subsequently trigger Title V operating permit requirements. Why does the permit not expressly exclude co-location?

EPA Response - The permit does not expressly exclude co-location because not all co-located sources are required to be aggregated (emissions are totaled together) for program applicability purposes. The need to aggregate must be determined on a case-by-case basis using three criteria (collocation, ownership/control, and SIC code) and EPA's policy and precedent. Permit Condition 4.1.4.4 requires Poe to notify EPA if they plan to collocate with another source; such that, EPA can evaluate the specific facts and make an aggregation decision. If EPA determines that the aggregated potential emissions from Poe and another collocated source will exceed the applicability thresholds for Title V, MACT or PSD, Poe will not be allowed to collocate with that source without additional permit

restrictions. If EPA discovers Poe has already collocated with another source that must be aggregated and actual emissions have exceeded the applicability thresholds, Poe may be in violation.

Performance Testing - The draft permit does not require that Poe conduct an additional performance test to demonstrate compliance with the NSPS particulate matter standard. The Technical Supporting Document (TSD) states that performance testing was accomplished several years ago, that the NSPS standard is not included in the permit, but that Poe is still subject to the standard and is responsible for complying with it. Without additional testing, how can EPA be assured that Poe is in compliance with the NSPS particulate matter standard?

EPA Response - This is a good question because compliance is determined using production data and emissions factors and the emission factors are reliable only if Poe complies with the emission limits and assumptions upon which the emission factors are based. EPA normally requires performance testing to verify compliance and emission factors if there is reason to be concerned. In this case, the most recent testing was performed in 2006. Measured emissions were 0.0063 gr/dscf or about 15% of the NSPS standard of 0.04 gr/dscf. Baghouses normally control emissions well below the NSPS emission limit when operated corrected. The periodic opacity observations which require investigation and corrective action if emissions are above 0%, should assure that the baghouse continues to operate correctly. If the baghouse has opacity or other operational issues, EPA can also require a test using our authority found in Section 114 of the Clean Air Act. It is, however, appropriate for the TSD to explain our reason for not requiring testing. Section 4.2 of this TSD will be revised to add this explanation.

Emission Factors - The draft permit requires that Poe calculate monthly and rolling annual emissions (criteria and HAP) using actual operation/production data and “the appropriate emission factor” to demonstrate compliance with allowable emissions limits. It seems that this approach leaves the use of any emission factor at the discretion of Poe. Why doesn't the permit require that the same emission factor that was used for the emission inventory be used for the monthly and annual emissions calculations?

EPA Response - This is a good permit-writing philosophy question. There are trade-offs with specifying emission factors in the permit. On the positive side, it clarifies one element of the compliance determination technique such that there should not be any arguments regarding the correct factors to use. On the negative side, it limits the source's and EPA's ability to easily use better, more accurate data when it becomes available. For instance, it is not uncommon for new emission factors and test data to become available over the life of a permit (recall that these permits do not expire). Assuming the new data are more accurate, it may indicate that the source is actually emitting more or less than previously believed which can work for or against the source. The use of more accurate, reliable data results in no predictable advantage to EPA or the source. When the permit restricts the emission factors that can be used, the new data or techniques can not be used until the permit is revised. Permit revisions generally take some time, including an additional 30-day public notice period. Permit revisions also compete for EPA's permit writing resources which at the current time are stretched thin. For these reasons, EPA currently prefers to refer to the emission factors (in the TSD) it plans to use, but not specifically require their use in the permit. To date this approach has provided needed flexibility when issuing permits and has not resulted in any enforcement limitations. No change will be made to the permit or TSD.

NSPS Requirements - The TSD states that Poe's hot-mix asphalt plant is an affected facility and is therefore subject to 40 CFR 60, Subpart I. The draft permit does not contain the NSPS standard or testing requirement. Why does the draft permit not list these requirements as applicable permit conditions?

EPA Response - Unlike Title V operating permits that are designed to house all of the applicable requirements that apply to a source, EPA's non-Title V operating permit program has a much narrower focus; namely, to create enforceable potential to emit limits. While the TSD discusses NSPS applicability (see TSD Section 4.2) to conclude whether NSPS is an enforceable limit on the source's

PTE, the NSPS requirements, and any other applicable requirements, have not been added to the permit. No change will be made to the permit or TSD.

Baghouse Monitoring - The draft permit requires that Poe monitor and record the pressure drop across the baghouse once per day when the hot-mix asphalt plant is operating. The sole use of pressure drop as a compliance measure is questionable. Perhaps the permit condition can be augmented to include an inspection and maintenance schedule for the baghouse, including a visual observation of the bags; daily visible emissions observations of the baghouse stack with a corrective action requirement if visible emissions are seen; etc.

EPA Response - EPA agrees that pressure drop is not a good short-term or real-time indicator of baghouse performance. In fact, we use opacity as the surrogate for direct particulate matter monitoring and require periodic visible emission observations in Permit Condition 3.1, because we believe that opacity is a reasonably good indicator of performance. Pressure drop instrumentation is commonly installed on baghouses and pressure drop can be an indicator of long term maintenance issues and trends, so we also require that pressure drop be monitored and recorded in Permit Condition 3.3.6. No change will be made to the permit or TSD regarding pressure drop or opacity monitoring; however, EPA also agrees that good maintenance is important to ensure good baghouse operation and performance. To help ensure good operation, Permit Condition 2.8 has been revised to require an inspection of the internals of the baghouse for excessive wear and other problems. Section 4.3 of this TSD has also been revised to explain Permit Condition 2.8.

Expiration - The draft permit is an operating permit. Why is there not an expiration date?

EPA Response - Unlike operating permits issued under the Title V program, by rule, non-Title V permits issued by EPA do not expire. No change will be made to the permit or TSD.

## 6. Abbreviations and Acronyms

AFS	Aerometric Information Retrieval System Facility Subset
CFR	Code of Federal Regulations
CO	Carbon monoxide
EJ	Environmental Justice
EPA	United States Environmental Protection Agency (also U.S. EPA)
ESA	Endangered Species Act
FARR	Federal Air Rules for Reservations
FR	Federal Register
HAP	Hazardous air pollutant (plural: HAPs)
HMA	Hot mix asphalt
MACT	Maximum Achievable Control Technology (Title 40 CFR Part 63)
NESHAP	National Emission Standards for Hazardous Air Pollutants (Title 40 CFR Parts 61 and 63)
NHPA	National Historical Preservation Act
NO <sub>x</sub>	Nitrogen oxides
NSPS	New Source Performance Standards (40 CFR Part 60)
PM	Particulate matter
PM <sub>10</sub>	Fine particulate matter ( $\leq 10$ microns)
PSD	Prevention of Significant Deterioration (40 CFR Part 52)
PTE	Potential to emit
RAP	Recycled asphalt pavement
SO <sub>2</sub>	Sulfur dioxide
Title V	Title V of the Clean Air Act
TPY	Tons per year
VOC	Volatile organic compound

# **Appendix A**

## **Emission Inventory**

**POE Asphalt Paving, Inc.  
Portable Asphalt Plant #1900**

**Technical Support Document  
Non-Title V Air Quality Operating Permit  
R10NT501100**

**Emission Inventory**  
**Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant**

**Summary of Facility Potential Criteria Air Pollutant Emissions**

Potential to Emit, (tons per year)

**Point Sources**

	EU 1	EU 2	EU 3	EU 4	EU 5	EU 6	EU 7	EU 8	EU 9	Point Source Subtotals
	Drum Dryer	Diesel Generator	Storage Tanks	Asphalt Tank Heater	Aggregate Handling	Silo Filling	Truck Loading & Fumes	Traffic	Wind Erosion	
Carbon Monoxide (CO)	313.17	31.21	0.02	0.33		2.84				347.56
Lead (Pb)	0.0361	0.00	0.00	0.00		0.00				0.0364
Nitrogen Oxides (Nox)	132.50	144.87	0.00	1.52		0.00				278.88
Particulates (PM)	38.80	10.18	0.00	0.71		0.80				50.50
Fine Particulates (PM10)	9.40	10.18	0.00	0.09		1.41				21.08
Sulfur Dioxide (SO2)	443.26	17.02	0.00	4.70		0.00				464.97
Volatile Organic Compounds (VOC)	77.09	11.50	0.62	0.01		29.36				118.58

**Fugitive Sources**

	EU 1	EU 2	EU 3	EU 4	EU 5	EU 6	EU 7	EU 8	EU 9	Fugitive Source Subtotals
	Drum Dryer	Diesel Generator	Storage Tanks	Asphalt Tank Heater	Aggregate Handling	Silo Filling	Truck Loading & Fumes	Traffic	Wind Erosion	
Carbon Monoxide (CO)					0.00		4.10	0.00	0.00	4.10
Lead (Pb)					0.00		0.00	0.00	0.00	0.0000
Nitrogen Oxides (Nox)					0.00		0.00	0.00	0.00	0.00
Particulates (PM)					27.37		0.44	379.22	0.98	408.01
Fine Particulates (PM10)					12.95		1.26	97.55	0.46	112.21
Sulfur Dioxide (SO2)					0.00		0.00	0.00	0.00	0.00
Volatile Organic Compounds (VOC)					0.00		11.91	0.00	0.00	11.91

**All Sources**

	EU 1	EU 2	EU 3	EU 4	EU 5	EU 6	EU 7	EU 8	EU 9	Plantwide Totals
	Drum Dryer	Diesel Generator	Storage Tanks	Asphalt Tank Heater	Aggregate Handling	Silo Filling	Truck Loading & Fumes	Traffic	Wind Erosion	
Carbon Monoxide (CO)	313.17	31.21	0.02	0.33	0.00	2.84	4.10	0.00	0.00	351.66
Lead (Pb)	0.0361	0.0003	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.0364
Nitrogen Oxides (Nox)	132.50	144.87	0.00	1.52	0.00	0.00	0.00	0.00	0.00	278.88
Particulates (PM)	38.80	10.18	0.00	0.71	27.37	0.80	0.44	379.22	0.98	458.51
Fine Particulates (PM10)	9.40	10.18	0.00	0.09	12.95	1.41	1.26	97.55	0.46	133.29
Sulfur Dioxide (SO2)	443.26	17.02	0.00	4.70	0.00	0.00	0.00	0.00	0.00	464.97
Volatile Organic Compounds (VOC)	77.09	11.50	0.62	0.01	0.00	29.36	11.91	0.00	0.00	130.49

**Plantwide PTE Limits**

Carbon Monoxide (CO)	80	tpy, based on emission limit in FARR Non-Title V permit
Lead (Pb)	N/A	
Nitrogen Oxides (Nox)	80	tpy, based on emission limit in FARR Non-Title V permit
Particulates (PM)	200	tpy, based on emission limit in FARR Non-Title V permit
Fine Particulates (PM10)	80	tpy, based on emission limit in FARR Non-Title V permit
Sulfur Dioxide (SO2)	80	tpy, based on emission limit in FARR Non-Title V permit
Volatile Organic Compounds (VOC)	80	tpy, based on emission limit in FARR Non-Title V permit

**Notes:**

1. The "All Sources" table sums the values in the "Point Sources" and "Fugitive Sources" tables above
2. PM2.5 is assumed to be 0-100% of PM10; because this project is limiting emissions below PSD and Title V applicability thresholds, PM2.5 emission have not been estimated
3. Condensable particulate matter has not been included in PM10 emissions based on EPA's transition period for PM2.5 - see 73FR28321

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Summary of Facility Potential Hazardous Air Pollutant (HAP) Emissions

#### Potential to Emit, (tons per year)

	EU 1	EU 2	EU 3	EU 4	EU 6	EU 7	Single HAP Plantwide Totals (tpy)
	Drum Dryer	Diesel Generator	Storage Tanks	Asphalt Tank Heater	Silo Filling	Truck Loading & Fumes	
<b>Inorganics</b>							
Antimony Compounds	4.34E-04	0.00E+00		0.00E+00			4.34E-04
Arsenic Compounds (incl arsine)	1.35E-03	1.31E-04		3.71E-05			1.35E-03
Beryllium Compounds	0.00E+00	9.86E-05		2.78E-05			9.86E-05
Cadmium Compounds	9.88E-04	9.86E-05		2.78E-05			9.88E-04
Chromium Compounds (incl hexavalent)	1.32E-02	9.86E-05		2.78E-05			1.32E-02
Cobalt Compounds	6.26E-05	0.00E+00		0.00E+00			6.26E-05
Lead Compounds (not elemental lead)	3.61E-02	2.96E-04		8.34E-05			3.61E-02
Manganese Compounds	1.85E-02	1.97E-04		5.56E-05			1.85E-02
Mercury Compounds	6.26E-03	9.86E-05		2.78E-05			6.26E-03
Nickel Compounds	1.52E-01	9.86E-05		2.78E-05			1.52E-01
Phosphorus Compounds	6.75E-02	0.00E+00		0.00E+00			6.75E-02
Selenium Compounds	8.43E-04	4.93E-04		1.39E-04			8.43E-04
<b>Organics</b>							
Acetaldehyde	3.13E+00	2.52E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.13E+00
Acrolein	6.26E-02	3.04E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.26E-02
Benzene	9.40E-01	3.06E-02	2.15E-03	0.00E+00	9.39E-03	6.59E-03	9.40E-01
Bromomethane (methyl bromide)	0.00E+00	0.00E+00	3.30E-04	0.00E+00	1.44E-03	1.22E-03	1.44E-03
1,3-Butadiene	0.00E+00	1.28E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E-03
Carbon Disulfide	0.00E+00	0.00E+00	1.08E-03	0.00E+00	4.70E-03	1.65E-03	4.70E-03
Chloroethane (ethyl chloride)	0.00E+00	0.00E+00	2.69E-04	0.00E+00	1.17E-03	2.66E-05	1.17E-03
Chloromethane (methyl chloride)	0.00E+00	0.00E+00	1.55E-03	0.00E+00	6.75E-03	1.90E-03	6.75E-03
Cumene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dichlorobenzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-02	1.39E-02
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)	5.06E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.06E-10
Ethyl Benzene	5.78E-01	0.00E+00	2.56E-03	0.00E+00	1.12E-02	3.55E-02	5.78E-01
Formaldehyde	7.47E+00	3.88E-02	4.64E-02	4.04E-03	2.03E-01	1.11E-02	7.47E+00
Furans (all PCDF)	9.64E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.64E-08
Hexane (incl n-Hexane)	2.22E+00	0.00E+00	6.73E-03	0.00E+00	2.94E-02	1.90E-02	2.22E+00
Hydrogen Chloride	5.06E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.06E-01
Isooctane (2,2,4-trimethylpentane)	9.64E-02	0.00E+00	2.09E-05	0.00E+00	9.10E-05	2.28E-04	9.64E-02
Methyl Chloride (chloromethane)	0.00E+00	0.00E+00	1.82E-05	0.00E+00	7.93E-05	0.00E+00	7.93E-05
Methyl Chloroform (1,1,1-trichloroethane)	1.16E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E-01
Methyl tert-Butyl Ether (MTBE)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene <sup>1</sup> (also a POM)	1.57E+00	2.79E-03	0.00E+00	0.00E+00	1.11E-02	4.34E-02	1.57E+00
Phenol	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.22E-03	4.10E-02	4.10E-02
Polycyclic Organic Matter* (incl naphthalene)	2.13E+00	5.52E-03	0.00E+00	2.18E-04	6.98E-02	8.19E-02	2.13E+00
Propionaldehyde	3.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.13E-01
Quinone	3.85E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.85E-01
Styrene	0.00E+00	0.00E+00	3.63E-04	0.00E+00	1.59E-03	9.27E-04	1.59E-03
Tetrachloroethane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.75E-04	9.75E-04
Toluene	6.99E+00	1.34E-02	4.17E-03	0.00E+00	1.82E-02	2.66E-02	6.99E+00
Xylene (incl isomers and mixtures)	4.82E+00	9.36E-03	1.73E-02	0.00E+00	7.54E-02	6.21E-02	4.82E+00

Emission Unit HAP Totals	EU 1	EU 2	EU 3	EU 4	EU 6	EU 7
	Drum Dryer	Diesel Generator	Storage Tanks	Asphalt Tank Heater	Silo Filling	Truck Loading & Fumes
	25.709	0.129	0.083	0.005	0.439	0.305

<b>Plantwide HAP Total</b>	26.669	tons per year
<b>Highest Plantwide Single HAP</b>	7.468	tons per year (formaldehyde)

<b>Plantwide HAP PTE</b>	20	tpy, based on emission limit in FARR Non-Title V permit
<b>Highest Plantwide Single HAP PTE</b>	8	tpy, based on emission limit in FARR Non-Title V permit

#### Notes:

- Emission-Unit HAP Totals will not equal the sum of individual pollutants
- Emission-Unit and Plantwide Totals do not include the individual value for naphthalene because it is part of the POM value
- Isomers of xylene (m-, p-, o-) are grouped as Xylenes for applicability even though the individual isomers are each listed HAPs in the Clean Air Act

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

#### Emission Unit: #1 Drum Dryer

Description: Hot Mix Asphalt Plant Drum Dryer - counterflow drum mix design, Cedarapids, model CMI Drum PTD 400

Control: Model 318 CMI Baghouse, 99.9% efficient

Fuel: RF04 oil or #2 diesel (RF04 oil is referred to as waste oil by AP-42)

Capacity: 550 tph hot mix asphalt (from application)

Operation: 8760 hours/year

#### Potential to Emit, (tons per year)

	RF04 oil		#2 fuel oil		Max PTE TPY
	EF	PTE TPY	EF	PTE TPY	
CO	0.13	313.2	0.13	313.2	313.2
Lead	1.5E-05	0.036	1.5E-05	0.036	0.036
NOx	0.055	132.5	0.055	132.5	132.5
PM	0.016	38.8	0.016	38.8	38.8
PM10	0.004	9.4	0.004	9.4	9.4
SO2	0.184	443.3	0.046	110.8	443.3
VOC	0.032	77.1	0.032	77.1	77.1

#### Estimation Explanations

Emission factor (EF) units are lb/ton HMA product

Worst-case PTE is the higher emitting of the fuel options taking into consideration the most stringent emission limits that exist

CO factor: AP-42 3/04, Hot Mix Asphalt Plants, Table 11.1-7 - RF04 oil and fuel oil, uncontrolled

Lead factor: AP-42 3/04, Table 11.1-12 -- RF04 oil and fuel oil, fabric filter controlled (note: assumes fabric filter is necessary to meet NSPS PM limit)

NOx factor: AP-42 3/04, Table 11.1-7 RF04 oil and fuel oil, uncontrolled

PM factor: Option 1: EF based on NSPS limit (40 CFR 60.92, Subpart I) and actual test data as follows (RF04 oil and fuel oil):

$$EF = (\text{gr/dscf}) / (7000 \text{ gr/lb}) * (\text{dscf/min}) * (60 \text{ min/hr}) / (\text{tph HMA})$$

NSPS PM Limit = 0.04 gr/dscf  
 stack flow during test = 20201 dscf/min measured during 2002 test  
 production during test = 430 ton/hr HMA measured during 2002 test  
 NSPS-based emission factor = 0.016 lb/ton HMA

Note: NSPS limit is more strict than FARR PM limit of 0.1 gr/dscf, so NSPS will be used for PTE

Option 2: EF Based on AP42, 3/04, Table 11.1-3, PM=0.014 lb/ton for RF04 oil and fuel oil

Note: NSPS based factor is very close to controlled EF from AP-42, so will assume fabric filter is necessary to meet NSPS for all particulates

PM10 factor: AP-42 3/04, Table 11.1-3 -- fabric filter controlled filterable PM10 for RF04 oil and fuel oil (does not include condensable particulate)

$$\text{filterable} = 0.0039 \quad \text{organic} = 0.0074 \quad \text{inorganic} = 0.012 \quad \text{PM10 EF} = 0.004$$

Note: assumes fabric filter control is required for NSPS, so will use controlled factors for PM10

SO2 factor: Option 1: EF based on FARR combustion stack SO2 limit (40 CFR 49.129(d)(1)) = 500 ppm (dry volume basis at 7% O2) for RF04 oil and fuel oil

$$EF = (\text{ppm}) * (1.66\text{E-}7 \text{ lb/dscf} / \text{ppm}) * (\text{dscf/min}) * (60 \text{ min/hr}) * (21\text{-O}_2\text{test}) / (21\text{-O}_2\text{limit}) / (\text{tph HMA})$$

SO2 limit = 500 ppm @ 7%O2  
 measured flow rate = 20201 dscf/min  
 O2 during test = 8.9 %  
 FARR limit O2 = 7 %  
 production during test = 430 ton/hr HMA  
 emission factor = 0.202 lb/ton HMA

Note: FARR process SO2 500 ppm limit is not corrected for O2, so in this case is less strict than the combustion limit

Note: AP-42 3/04, Table 11.1-7 RF04 oil factor results in lower emissions, but fuel S content is not listed, so cannot be compared

Option 2: EF based on FARR fuel % sulfur limit (40 CFR 49.130(d)(4)) for used oil = 2% by weight; for #2 fuel oil = 0.5% by weight

$$EF = (\%S\text{limit} / 100) * (\text{max mmBTU/hr}) / (19170 \text{ Btu/lb fuel}) * (2 \text{ lb SO}_2 \text{ per lb S}) / (\text{max tph HMA}) * (\text{SO}_2 \text{ fraction not in HMA})$$

used oil S limit = 2 % by weight  
 max burner firing rate = 9.70E+07 BTU/hr  
 max HMA production rate = 550 ton/hr HMA  
 SO2 fraction not staying in HMA = 0.5 (per AP-42 3/2004, Table 11.1-7)  
 used oil emission factor = 0.184 lb/ton HMA  
 fuel oil S limit = 0.5 % by weight  
 max burner firing rate = 9.70E+07 BTU/hr  
 max HMA production rate = 550 ton/hr HMA  
 SO2 fraction not staying in HMA = 0.5 (per AP-42 3/2004, Table 11.1-7)  
 fuel oil emission factor = 0.046 lb/ton HMA

SO2 PTE EF will be based on FARR used oil sulfur limit because it is more strict than FARR stack SO2 limit and RF04 oil has a higher PTE than fuel oil

VOC factor: AP-42 3/04, Table 11.1-8, RF04 oil and fuel oil, uncontrolled

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

**Emission Unit: #2 Diesel Generator**

Description: Caterpillar brand, compression ignition, model 3412; purchased new in March 2003

Control: none

Fuel: #2 fuel oil

Capacity: 7.5 mmbtu/hr, (800 kW)

Operation: 8760 hours/year

**Potential to Emit, (tons per year)**

	#2 fuel oil	
	EF	PTE TPY
CO	0.95	31.2
Lead	9.0E-06	3.0E-04
NOx	4.41	144.9
PM	0.310	10.2
PM10	0.310	10.2
SO2	0.518	17.0
VOC	0.35	11.5

**Estimation Explanations**

Note that EU#2 PTE only counts in PSD and Title V applicability if the plant stays in one location for more than one year; otherwise it is considered a non-roa

Emission factor (EF) units are lb/mmbtu of fuel fired

CO factor: AP-42 10/96, Table 3.3-1 Diesel fuel

Lead factor: AP-42 9/98, Table 1.3-10 - this assumes the lead emissions from internal and external combustion will be similar

NOx factor: AP-42 10/96, Table 3.3-1 Diesel fuel

PM factor: All PM assumed to be PM10

PM10 factor AP-42 10/96, Table 3.3-1 Diesel fuel

SO2 factor: Option 1: EF based on FARR fuel % sulfur limit

$$EF = S / 100 / (\text{heat content}) \times (1 \times 10^6) \times (2 \text{ lb SO}_2) / (1 \text{ lb S})$$

fuel oil heat content = 19,300 btu/lb, AP-42 10/96, Table 3.3-1, footnote c

$$S = 0.5 \% \text{ sulfur from FARR 40 CFR 49.130(d)(4)}$$

$$EF = 0.518 \text{ lb/mmBTU fuel oil}$$

Option 2: EF based on FARR 500 ppm stack limit

$$EF = (\text{ppm}) \times (1.66 \times 10^{-7} \text{ lb/dscf} / \text{ppm}) \times (\text{dscf/mmbtu}) \times (21 - \text{O}_2\text{RM20}) / (21 - \text{O}_2\text{limit})$$

SO2 limit = 500 ppm @ 7%O2 from FARR 40 CFR 49.129(d)(1)

fuel oil f-factor from RM20 = 9190.0 dscf/mmbtu from 40 CFR 60, RM20

O2 assumed in RM20 = 0 %

FARR limit O2 = 7 %

$$EF = 1.14 \text{ lb/mmBTU fuel oil}$$

SO2 EF will be based on the FARR fuel sulfur limit because it is more strict than FARR stack SO2 limit

VOC factor: AP-42 10/96, Table 3.3-1 Diesel fuel as TOC

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

#### Emission Unit: #3 Storage Tanks

Description: Four tanks are used to store petroleum liquids; tank 4 can store either #2 diesel or biofuel

(Tank 1) Storage of Asphalt

(Tank 2) Storage of RFO fuel in a portable tank trailer, RFO is used in the drum dryer

(Tank 3) Storage of #2 diesel in portable tank trailer which supplies the loader used to feed the plant and the generator

(Tank 4) Storage of #2 diesel in tank, for use by the asphalt tank heater

(Tank 4) Storage of biofuel in tank, for use by the asphalt tank heater

Parameter	Tank 1	Tank 2	Tank 3	Tank 4	Tank 4	Units
Liquid:	Asphalt	RFO4	#2 Diesel	#2 Diesel	Biofuel	
Control:	none	none	none	none	none	
Capacity:	25,000	16,000	9,000	500	500	gallons
Operation:	12.84					gallons asphalt per ton hot mix asphalt (gal/ton)
		1.5		0.07	0.07	gal/ton
			0.15			gal/ton for generator
			0.07			gal/ton for loader
	550	550	550	550	550	tph hot mix asphalt (from application)
	8760	8760	8760	8760	8760	hours/year
	4818000	4818000	4818000	4818000	4818000	tons per year hot mix asphalt
	61,841,307	7,227,000	1,059,960	337,260	337,260	gallons per year throughput
TOC Emissions	134.58	1.37	24.47	7.55	381.06	lbs/yr TOC - calculated with Tanks Program 4.0.9d

#### Potential to Emit, (tons per year)

	Tank 1 - Asphalt		Tank 2 - RFO4		Tank 3 - #2 diesel		Tank 4 - #2 diesel		Tank 4 - Biofuel		Tank 4 Max	Total
	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	PTE TPY	PTE TPY
CO	0.097	1.5E-02										0.015
Lead												
NOx												
PM												
PM10												
SO2												
VOC	1	1.5E-01	1	1.6E-03	1	2.8E-02	1	8.7E-03	1	4.4E-01	4.4E-01	0.623

#### Estimation Explanations

Emission factors (EF) units are fraction (%/100) of Total Organic Compound (TOC) emissions

Emission factors (EF) from AP-42, 3/04, Table 11.1-16

Asphalt is assumed to be 5.5% wt of final HMA product and 8.57 lb/gal; gallons/ton of asphalt =  $(5.5/100)/(8.57 \text{ lb/gal}) * 2000 \text{ lb/ton} = 12.84 \text{ gal/ton}$

CO factor: AP-42, 3/04, Page 11.1-9; multiply factor by TOC emissions

TOC Emissions: Tanks Computer Program (see AP-42, 7.1 (11/06)), lbs/yr

Actual computer program run assumed 26,499,000 gal/year asphalt tank throughput, so emissions have been multiplied by 2.3 to account for max throughput

Throughput multiplier =  $61,841,307/26,499,000 = 2.3$

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

#### Emission Unit: #4 Asphalt Storage Tank Heater

Description Asphalt heater, CEI Enterprises brand, model 1800

Control: none

Fuel: #2 fuel oil or Biofuel

Capacity: 2.115 MMBtu/hr

Operation: 8760 hours/year

#### Potential to Emit, (tons per year)

	#2 fuel oil		Bio-fuel		Max PTE TPY
	EF (lb/1000gal)	PTE TPY	EF (lb/1000gal)	PTE TPY	
CO	5	0.33	4.62	0.3	0.33
Lead	9.00E-06	5.96E-07			5.96E-07
NOx	20	1.32	22.96	1.5	1.52
PM	7.815	0.52	10.78	0.7	0.71
PM10	1.0	0.07	1.38	0.09	0.09
SO2	71	4.70	17.36	1.1	4.70
VOC	0.2	0.013			0.013

#### Estimation Explanations

Emission factor (EF) units are lb/1000 gallon fuel oil

Worst-case PTE is the higher emitting of the fuel options taking into consideration the most stringent emission limits that exist

Fuel conversion factor = 140 mmBTU/1000 gal from AP42, App A

CO factor: For fuel oil: AP-42, 9/98, Table 1.3-1, boilers <100mmbtu

For biofuel: cook oil<sup>1</sup>

$$EF = \frac{0.033}{140} \text{ lb/MMBtu}$$

$$EF = \frac{4.62}{1000} \text{ lb/1000gal fuel oil}$$

Lead factor: For fuel oil: AP-42, 9/98, Table 1.3-10, distillate oil fired boilers <100mmbtu

NOx factor: For fuel oil: AP-42, 9/98, Table 1.3-1, boilers <100mmbtu

For biofuel: cook oil<sup>1</sup>

$$EF = \frac{0.164}{140} \text{ lb/MMBtu}$$

$$EF = \frac{22.96}{1000} \text{ lb/1000gal fuel oil}$$

PM factor: For fuel oil: AP-42, 9/98, Table 1.3-1, boilers <100mmbtu

$$EF = 9.19(S)+3.22$$

$$S = 0.5 \text{ \% sulfur from FARR 40 CFR 49.130(d)(4)}$$

$$EF = \frac{7.815}{1000} \text{ lb/1000gal}$$

For biofuel: cook oil<sup>1</sup>

$$EF = \frac{0.077}{140} \text{ lb/MMBtu}$$

$$EF = \frac{10.78}{1000} \text{ lb/1000gal fuel oil}$$

PM10 factor: For fuel oil: AP-42, 9/98, Table 1.3-2 #2 fuel oil combustion

EF= PM10 = filterable PM10 (does not include condensable particulate matter)

$$CPM = \frac{1.3}{140} \text{ lb/1000gal fuel oil}$$

$$PM10 = \frac{1}{1000} \text{ lb/1000gal fuel oil}$$

$$EF = \frac{1}{1000} \text{ lb/1000gal fuel oil}$$

For biofuel: cook oil, assume same PM10:PM ratio as for fuel oil combustion

$$EF = \frac{1.38}{1000} \text{ lb/1000gal fuel oil (10.78x(2.3/7.815))}$$

SO2 factor: Option 1 for fuel oil: EF based on FARR fuel % sulfur limit and AP-42

$$EF = \frac{142S}{140} \text{ AP-42 10/96, Table 1.3-1, boilers <100mmbtu}$$

$$S = 0.5 \text{ \% sulfur from FARR 40 CFR 49.130(d)(4)}$$

$$EF = \frac{71}{1000} \text{ lb/1000 gal fuel oil}$$

Option 2 for fuel oil: EF based on FARR 500 ppm stack SO2 limit

$$EF = (\text{ppm}) * (1.66E-7 \text{ lb/dscf} / \text{ppm}) * (\text{dscf/mmbtu}) * (21-O2RM20) / (21-O2limit) * 140 \text{ mmBTU/1000gal}$$

$$\text{SO2 limit} = 500 \text{ ppm @ 7\%O2 from FARR 40 CFR 49.129(d)(1)}$$

$$\text{fuel oil f-factor from RM20} = 9190.0 \text{ dscf/mmbtu from 40 CFR 60, RM20}$$

$$\text{O2 assumed in RM20} = 0 \text{ \%}$$

$$\text{FARR limit O2} = 7 \text{ \%}$$

$$EF = 160.18 \text{ lb/1000gal fuel oil}$$

For fuel oil: SO2 EF will be based on AP-42 and FARR fuel sulfur limit because it is more strict than FARR stack SO2 limit

For biofuel: cook oil<sup>1</sup>

$$EF = \frac{0.124}{140} \text{ lb/MMBtu}$$

$$EF = \frac{17.36}{1000} \text{ lb/1000gal fuel oil}$$

VOC factor: For fuel oil: AP-42, 9/98, Table 1.3-3, industrial boilers, NMTOC

For biofuel: no available factor

<sup>1</sup> Biofuel emission factors are from EPA Memo dated March 21, 2003, Assessment of Emissions Data and State Permit Information Available for Burning Biofuels, Appendix 2, Table 8 - Summary of Emissions by Fuel

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

Emission Unit: **#5 Aggregate Handling**

Description: Four transfers of aggregate material from storage pile to drum dryer

- a. Aggregate transfer to storage piles
- b. Aggregate transfer from piles to storage bins
- c. Aggregate transfer from storage bins to conveyor belt
- d. Aggregate transfer from conveyor belt to drum dryer

Control: none  
 Capacity: 550 tons/hour HMA  
 Operation: 8760 hours/year

**Potential to Emit, (tons per year)**

	4 transfers	
	EF	PTE TPY
CO		
Lead		
NOx		
PM	0.0028	27.4
PM10	0.0013	12.9
SO2		
VOC		

**Estimation Explanations**

Emission factor (EF) units are lb/ton of aggregate handled

PM factor: AP-42, 11/06, Section 13.2.4, Equation 1 for each drop operation

$$\text{Emission factor} = k(0.0032)(U/5)^{1.3}/(M/2)^{1.4}$$

U, mean wind speed: 8.9 mph, NOAA data for Spokane found at <http://www.ncdc.noaa.gov/oa/climate/online/ccd/wndspd.txt>

M, material moisture content: 3 %, Emission Inventory Improvement Program, Vol II, Chapter 3, page 3.2-3, July 1996 (range = 3-7%)

k, particle size multiplier: 0.74 for <30 microns particle size

PM10 factor: Same as for PM emission factor, except that  
 k, particle size multiplier: 0.35 for <10 microns particle size

Emissions are multiplied by four to account for all four transfers

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

**Emission Unit: #6 Silo Filling**

Description: Loading of hot-mix asphalt mix (HMA mix) into Silo  
 Control: none  
 Capacity: 550 tons/hour HMA  
 Operation: 8760 hours/year

**Potential to Emit, (tons per year)**

	Silo filling	
	EF	PTE TPY
CO	1.18E-03	2.84
Lead		0
NOx		0
PM	3.32E-04	0.8
PM10	5.86E-04	1.41
SO2		0
VOC	1.22E-02	29.36

**Estimation Explanations**

Emission factor (EF) units are lb/ton of HMA handled

Predictive Emission Equations used to calculate Emission Factors from AP-42 3/04, Table 11.1-14

CO factor:  $CO\ EF = 0.00488(-V)e^{((0.0251)(T+460)-20.43)}$

PM factor:  $PM\ EF = 0.000332\ lb/ton\ HMA$  (assumes only fraction captured by RM5 counts as PM)

PM10 factor:  $PM10\ EF = 0.000332 + 0.00105(-V)e^{((0.0251)(T+460)-20.43)}$  (assumes all of Total PM is PM10)

VOC factor:  $VOC\ EF = 0.0504(-V)e^{((0.0251)(T+460)-20.43)}$  (100% of TOC measured as propane, per AP42, Table 11.1-16)

V = asphalt volatility = -0.5 AP-42 default value  
 T = HMA mix temperature = 325 °F, AP-42 default value

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

Emission Unit: **#7 Truck Loading & Fumes**

Description: a Load-out of hot-mix asphalt mix (HMA mix) from silo to asphalt trucks  
 b Fumes from HMA in loaded asphalt trucks while in plant

Control: none  
 Capacity: 550 tons/hour HMA  
 Operation: 8760 hours/year

**Potential to Emit, (tons per year)**

	Silo loadout		Truck fumes		Total PTE TPY
	EF	PTE TPY	EF	PTE TPY	
CO	1.35E-03	3.25	3.52E-04	0.85	4.10
Lead					
NOx					
PM	1.81E-04	0.44			0.44
PM10	5.22E-04	1.26			1.26
SO2					
VOC	3.91E-03	9.42	1.03E-03	2.49	11.91

**Estimation Explanations**

Emission factor (EF) units are lb/ton of HMA handled

a Silo Loadout

Predictive Emission Equations used to calculate Emission Factors from AP-42 3/04, Table 11.1-14

CO factor:  $0.00558(-V)e^{((0.0251)(T+460)-20.43)}$

PM factor: (assumes only fraction captured by RM5 counts as PM)

PM10 factor:  $0.000181+0.00141(-V)e^{((0.0251)(T+460)-20.43)}$  (assumes all of PM is PM10)

VOC factor:  $0.94[0.0172(-V)e^{((0.0251)(T+460)-20.43)}]$  (94% of TOC measured as propane, per AP42, Table 11.1-16)

$TOC = 0.0172(-V)e^{((0.0251)(T+460)-20.43)}$  AP42, Table 11.1-16

V = asphalt volatility = -0.5 AP-42 default value

T = HMA mix temperature = 325 °F, AP-42 default value

b Truck-load emissions (while in plant for approximately 8 minutes)

Emission factors from AP42, 11.1.2.5

TOC = 0.0011 lb/ton

CO factor: (32% of TOC measured as propane)

VOC factor: (94% of TOC measured as propane per AP42, Table 11.1-16)

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

Emission Unit: **#8 Vehicle Traffic**

Description: Road dust caused by vehicle traffic

- a. Truck for loading and delivery of HMA product:
- b. Loader for delivering aggregate and RAP to drum dryer loading bins:
- c. Truck for delivering gravel and RAP to plant
- d. Asphalt truck delivering asphalt to plant

Control: none  
 Capacity: 550 tons per hour HMA (plant)  
 Operation: 8760 hours/year

**Potential to Emit, (tons per year)**

	HMA Truck PTE TPY	Loaders PTE TPY	Gravel/RAP Truck PTE TPY	Asphalt Truck PTE TPY	Total PTE TPY
CO					
Lead					
NOx					
PM	165.43	43.25	165.43	5.09	379.2
PM10	42.16	11.92	42.16	1.30	97.5
SO2					
VOC					

**Estimation Explanations**

Emission factor (EF) units are lb/vehicle mile traveled

Assumes that 100% of trip distance is on unpaved surface for all vehicles

Asphalt delivery truck trips based on max asphalt usage (61,841,307 gal/yr) and asphalt delivery truck size (8168 gal): 61,841,307/8168 = 7571 trips/yr

Spokane data from: <http://www.nrcc.cornell.edu/ccd/prge0198.html>

Predictive Emission Equations used to calculate Emission Factors from AP-42 12/03, Section 13.2.2, Equation 1a and 2

$$E = EF \times VMT / 2000$$

PM EF:  $k \cdot (s/12)^a \cdot (W/3)^b \cdot (1-P/N)$ , from 11/06 AP-42 13.2.2, Equation 1a and 2, see below for parameters

PM10 factor: Same equation as for PM emission factor except some different parameters, see below

**Road Data:**

	PM	PM10	
empirical constant (k) =	4.9	1.5	PM data for particles <30 microns
material handling silt content (s), % =	7.1	7.1	silt from AP-42 Table 13.2.2-1 (sand and gravel)
road surface silt content (s), % =	4.8	4.8	silt from AP-42 Table 13.2.2-1 (sand and gravel)
empirical constant (a) =	0.7	0.9	PM data for particles <30 microns
empirical constant (b) =	0.45	0.45	PM data for particles <30 microns

**Vehicle Data:** (from company except asphalt delivery truck wt from EPA experience)

	HMA Truck	Loader	Gravel/RAP Truck	Asphalt Truck
empty weight, tons =	20.00	15	20	18
loaded weight, tons =	38.00	20.5	38	52
mean vehicle weight (W), tons =	29.00	17.75	29.00	35.00
tons per trip, tons =	18.00	5.50	18.00	34.00
trips per day =	733.33	2400.00	733.33	20.74
round trip distance, miles =	0.25	0.019	0.25	0.25
unpaved VMT, miles/year =	66917	16591	66917	1893

**Weather Data:**

# of days with > 0.01 inch of precipitation (P) =	113	For Spokane, WA: <a href="http://www.nrcc.cornell.edu/ccd/prge0198.html">http://www.nrcc.cornell.edu/ccd/prge0198.html</a>
# of days in averaging period (N) =	365	based on need for annual PTE

**Emission factors:**

	HMA Truck	Loader	Gravel/RAP Truck	Asphalt Truck
PM EF, lb/VMT =	4.94	5.21	4.94	5.38
PM10 EF, lb/VMT =	1.26	1.44	1.26	1.37

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Criteria Air Pollutant Emission Inventory

**Emission Unit: #9 Wind Erosion**

Description: Wind erosion of all exposed areas including piles

Control: none  
 Capacity: 550 tons/hour HMA  
 Operation: 8760 hours/year  
 4818000 tons/yr (tons/hr x hours/yr)  
 92653.8462 tons/pile (assumes a 1 week supply is available on site so divide total yearly amount by 52)  
 1764835.16 Materials, page 393)  
 ft3 per pile, assumes aggregate density is 105 lb/cu ft (Weights of  
 Materials, page 393)  
 Pile height: 50 feet  
 Pile width: 200 feet  
 Pile length: 176.5 feet  
 Pile Footprint: 35,297 ft2  
 0.81 acres, assumes 43560 ft2/acre  
 Open Area: 2.00 acres, assumed conservative sized site - unvegetated area

**Potential to Emit, (tons per year)**

	Pile Wind Erosion		Open Area Wind Erosion		Total PTE TPY
	EF	PTE TPY	EF	PTE TPY	
CO					
Lead					
NOx					
PM	0.35	0.28	0.35	0.70	0.98
PM10	0.16	0.13	0.16	0.33	0.46
SO2					
VOC					

**Estimation Explanations**

Emission factor (EF) units are tons/acre per year

Stockpile size calculated based on maximum capacity, operating 8760 hr/yr

PM factor: AP-42, 10/98, Section 11.9, Table 11.9-4 for wind erosion of exposed areas

PM10 factor: Engineering estimate - 47% of PM factor from ratio of transfer particle size multipliers (0.35/0.74) in AP-42 1/95 13.2.4

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Hazardous Air Pollutant Emission Inventory

Emission Unit: **#1 Drum Dryer**

Description: Hot Mix Asphalt Plant Drum Dryer - counterflow drum mix design, Cedarapids, model CMI Drum PTD 400

Control: Model 318 CMI Baghouse, 99.9% efficient

Fuel: RF04 oil or #2 diesel

Capacity: 550 tph hot mix asphalt (from application)

Operation: 8,760 hours/year

#### Potential to Emit, (tons per year)

Inorganics	RF04 oil		#2 fuel oil		Total
	EF	PTE TPY	EF	PTE TPY	PTE TPY
Antimony Compounds	1.80E-07	4.34E-04	1.80E-07	4.34E-04	4.34E-04
Arsenic Compounds (incl arsine)	5.60E-07	1.35E-03	5.60E-07	1.35E-03	1.35E-03
Beryllium Compounds	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium Compounds	4.10E-07	9.88E-04	4.10E-07	9.88E-04	9.88E-04
Chromium Compounds (incl hexavalent)	5.50E-06	1.32E-02	5.50E-06	1.32E-02	1.32E-02
Cobalt Compounds	2.60E-08	6.26E-05	2.60E-08	6.26E-05	6.26E-05
Lead Compounds (not elemental lead)	1.50E-05	3.61E-02	1.50E-05	3.61E-02	3.61E-02
Manganese Compounds	7.70E-06	1.85E-02	7.70E-06	1.85E-02	1.85E-02
Mercury Compounds	2.60E-06	6.26E-03	2.60E-06	6.26E-03	6.26E-03
Nickel Compounds	6.30E-05	1.52E-01	6.30E-05	1.52E-01	1.52E-01
Phosphorus Compounds	2.80E-05	6.75E-02	2.80E-05	6.75E-02	6.75E-02
Selenium Compounds	3.50E-07	8.43E-04	3.50E-07	8.43E-04	8.43E-04
<b>Organics</b>					
Acetaldehyde	1.30E-03	3.13E+00	-	-	3.13E+00
Acrolein	2.60E-05	6.26E-02	-	-	6.26E-02
Benzene	3.90E-04	9.40E-01	3.90E-04	9.40E-01	9.40E-01
Bromomethane (methyl bromide)	-	-	-	-	-
1,3-Butadiene	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-
Chloroethane (ethyl chloride)	-	-	-	-	-
Chloromethane (methyl chloride)	-	-	-	-	-
Dichlorobenzene	-	-	-	-	-
Cumene	-	-	-	-	-
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)	2.10E-13	5.06E-10	2.10E-13	5.06E-10	5.06E-10
Ethyl Benzene	2.40E-04	5.78E-01	2.40E-04	5.78E-01	5.78E-01
Formaldehyde	3.10E-03	7.47E+00	3.10E-03	7.47E+00	7.47E+00
Furans (all PCDF)	4.00E-11	9.64E-08	4.00E-11	9.64E-08	9.64E-08
Hexane (includes n-Hexane)	9.20E-04	2.22E+00	9.20E-04	2.22E+00	2.22E+00
Hydrochloric Acid (hydrogen chloride)	2.10E-04	5.06E-01	-	-	5.06E-01
Isocotane (2,2,4-trimethylpentane)	4.00E-05	9.64E-02	4.00E-05	9.64E-02	9.64E-02
Methyl Chloride (chloromethane)	-	-	-	-	-
Methyl Chloroform (1,1,1-trichloroethane)	4.80E-05	1.16E-01	4.80E-05	1.16E-01	1.16E-01
Methyl tert-Butyl Ether (MTBE)	-	-	-	-	-
Naphthalene (also a POM)	6.50E-04	1.57E+00	8.80E-09	2.12E-05	1.57E+00
Phenol	-	-	-	-	-
Polycyclic Organic Matter* (incl naphthalene)	8.85E-04	2.13E+00	8.85E-04	2.13E+00	2.13E+00
Propionaldehyde	1.30E-04	3.13E-01	-	-	3.13E-01
Quinone	1.60E-04	3.85E-01	-	-	3.85E-01
Styrene	-	-	-	-	-
Tetrachloroethane	-	-	-	-	-
Toluene	2.90E-03	6.99E+00	2.90E-03	6.99E+00	6.99E+00
Xylenes (incl isomers and mixtures)	2.00E-04	4.82E-01	2.00E-03	4.82E+00	4.82E+00
<b>HAP Total</b>		2.57E+01		2.56E+01	2.57E+01

*Polycyclic Organic Matter	RF04 oil		#2 fuel oil	
	EF	PTE TPY	EF	PTE TPY
Acenaphthene	1.40E-06	3.37E-03	1.40E-06	3.37E-03
Acenaphthylene	2.20E-05	5.30E-02	2.20E-05	5.30E-02
Anthracene	3.10E-06	7.47E-03	3.10E-06	7.47E-03
Benzo(a)anthracene	2.10E-07	5.06E-04	2.10E-07	5.06E-04
Benzo(b)fluoranthene	1.00E-07	2.41E-04	1.00E-07	2.41E-04
Benzo(k)fluoranthene	4.10E-08	9.88E-05	4.10E-08	9.88E-05
Benzo(g,h,i)perylene	4.00E-08	9.64E-05	4.00E-08	9.64E-05
Benzo(a)pyrene	9.80E-09	2.36E-05	9.80E-09	2.36E-05
Benzo(e)pyrene	1.10E-07	2.65E-04	1.10E-07	2.65E-04
Chrysene	1.80E-07	4.34E-04	1.80E-07	4.34E-04
Dioxins (Total PCDD; incl 2,3,7,8 TCDD)	7.90E-11	1.90E-07	2.10E-13	5.06E-10
Fluoranthene	6.10E-07	1.47E-03	6.10E-07	1.47E-03
Fluorene	1.10E-05	2.65E-02	1.10E-05	2.65E-02
Furans (all PCDF)	4.00E-11	9.64E-08	4.00E-11	9.64E-08
Indeno(1,2,3-cd)pyrene	7.00E-09	1.69E-05	7.00E-09	1.69E-05
2-Methylnaphthalene	1.70E-04	4.10E-01	1.70E-04	4.10E-01
Naphthalene (also individual HAP)	6.50E-04	1.57E+00	6.50E-04	1.57E+00
Perylene	8.80E-09	2.12E-05	8.80E-09	2.12E-05
Phenanthrene	2.30E-05	5.54E-02	2.30E-05	5.54E-02
Pyrene	3.00E-06	7.23E-03	3.00E-06	7.23E-03
<b>POM Subtotal</b>	8.85E-04	2.13E+00	8.85E-04	2.13E+00

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Estimation Explanations

Emission factor (EF) units are lb/ton HMA

Worst-case PTE is the higher emitting of the fuel options taking into consideration the most stringent emission limits that exist

To avoid double-counting, "HAP Total" does not count naphthalene, dioxin (HAP) or furans separately because they are accounted for in "POM Subtotal"

Chromium EF: Chromium EF is assumed to included separately reported hexavalent chromium EF in AP-42

Hydrogen chloride EF: AP-42, Table 11.1-8 for RF04 oil

All other inorganics EF: AP-42, 3/04, Table 11.1-12 for fuel oil and RF04 oil with fabric filter

Dioxin EF: AP-42, 3/04, Table 11.1-10 for fuel oil & RF04 oil with fabric filter - all dioxins are POM; only 2,3,7,8 TCDD is a HAP

Furans EF: AP-42, 3/04, Table 11.1-10 for fuel oil & RF04 oil with fabric filter - total of all furans (is a HAP & POM)

Naphthalene EF: AP-42, 3/04, Table 11.1-10 for fuel oil & RF04 oil with fabric filter (is a HAP & POM)

POM EF: AP-42, 3/04, Table 11.1-10 for fuel oil & RF04 oil with fabric filter (includes naphthalene, dioxin & furans)

All other organics EF: AP-42, 3/04, Table 11.1-10 for fuel oil & RF04 oil with fabric filter

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Hazardous Air Pollutant Emission Inventory

Emission Unit: **#2 Diesel Generator**  
 Description: Fuel oil fired generator, Caterpillar, model 3412  
 Control: none  
 Fuel: #2 fuel oil  
 Capacity: 7.5 mmBtu/hr (800 kW)  
 Operation: 8,760 hours/yr

#### Potential to Emit, (tons per year)

Inorganics	#2 Fuel Oil	
	EF	PTE TPY
Antimony Compounds		
Arsenic Compounds (incl arsine)	4.00E-06	1.31E-04
Beryllium Compounds	3.00E-06	9.86E-05
Cadmium Compounds	3.00E-06	9.86E-05
Chromium Compounds (incl hexavalent)	3.00E-06	9.86E-05
Cobalt Compounds		
Lead Compounds (not elemental lead)	9.00E-06	2.96E-04
Manganese Compounds	6.00E-06	1.97E-04
Mercury Compounds	3.00E-06	9.86E-05
Nickel Compounds	3.00E-06	9.86E-05
Phosphorus Compounds		
Selenium Compounds	1.50E-05	4.93E-04
<b>Organics</b>		
Acetaldehyde	7.67E-04	2.52E-02
Acrolein	9.25E-05	3.04E-03
Benzene	9.33E-04	3.06E-02
Bromomethane (methyl bromide)		
1,3-Butadiene	3.91E-05	1.28E-03
Carbon Disulfide		
Chloroethane (ethyl chloride)		
Chloromethane (methyl chloride)		
Dichlorobenzene		
Cumene		
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)		
Ethyl Benzene		
Formaldehyde	1.18E-03	3.88E-02
Furans (all PCDF)		
Hexane (incl n-Hexane)		
Hydrochloric Acid (hydrogen chloride)		
Isooctane (2,2,4-trimethylpentane)		
Methyl Chloride (chloromethane)		
Methyl Chloroform (1,1,1-trichloroethane)		
Methyl tert-Butyl Ether (MTBE)		
Naphthalene <sup>1</sup> (also a POM)	8.48E-05	2.79E-03
Phenol		
Polycyclic Organic Matter* (incl naphthalene)	1.68E-04	5.52E-03
Propionaldehyde		
Quinone		
Styrene		
Tetrachloroethane		
Toluene	4.09E-04	1.34E-02
Xylene (incl isomers and mixtures)	2.85E-04	9.36E-03
<b>HAP Total</b>		1.29E-01

*Polycyclic Organic Matter	EF	PTE TPY
Acenaphthylene	5.06E-06	1.66E-04
Acenaphthene	1.42E-06	4.66E-05
Anthracene	1.87E-06	6.14E-05
Benzo(a)anthracene	1.68E-06	5.52E-05
Benzo(b)fluoranthene	9.91E-08	3.26E-06
Benzo(k)fluoranthene	1.55E-07	5.09E-06
Benzo(g,h,i)perylene	4.89E-07	1.61E-05
Benzo(a)pyrene	1.88E-07	6.18E-06
Chrysene	3.53E-07	1.16E-05
Dibenz(a,h)anthracene	5.83E-07	1.92E-05
Fluoranthene	7.61E-06	2.50E-04
Fluorene	2.92E-05	9.59E-04
Indeno(1,2,3-cd)pyrene	3.75E-07	1.23E-05
Naphthalene (also individual HAP)	8.48E-05	2.79E-03
Phenanthrene	2.94E-05	9.66E-04
Pyrene	4.78E-06	1.57E-04
<b>POM Subtotal</b>	1.68E-04	5.52E-03

#### Estimation Explanations

Note that EU#2 PTE only counts in MACT applicability if the plant stays in one location for more than one year; otherwise it is considered a non-road engine

Emission factor (EF) units are lb/mmbtu

To avoid double-counting, "HAP Total" does not count naphthalene separately because naphthalene is accounted for in "POM Subtotal"

Inorganic EF: AP-42 9/98, Table 1.3-10 - this assumes that metal emissions from internal and external combustion are similar

Emission Inventory  
Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

Organics EF: AP42, 10/96, Tbl 3.3-2 EF for Organic Compounds from Uncontrolled Diesel Engines

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Hazardous Air Pollutant Emission Inventory

**Emission Unit: #3 Storage Tanks**

Description: Four tanks are used to store petroleum liquids; tank 4 can store either #2 diesel or biofuel  
 (Tank 1) Storage of Asphalt  
 (Tank 2) Storage of RFO fuel in a portable tank trailer, RFO is used in the drum dryer  
 (Tank 3) Storage of #2 diesel in portable tank trailer which supplies the loader used to feed the plant and the generator  
 (Tank 4) Storage of #2 diesel in tank, for use by the asphalt tank heater

Parameter	Tank 1	Tank 2	Tank 3	Tank 4	Tank 4	Units
Liquid:	Asphalt	RFO4	#2 Diesel	#2 Diesel	Biofuel	
Control:	none	none	none	none	none	
Capacity:	25,000	16,000	9,000	500	500	gallons
Operation:	12.84					gallons asphalt per ton hot mix asphalt (gal/ton)
		1.5		0.07	0.07	gal/ton
			0.15			gal/ton for generator
			0.07			gal/ton for loader
	550	550	550	550	550	tph hot mix asphalt (from application)
	8760	8760	8760	8760	8760	hours/year
	4818000	4818000	4818000	4818000	4818000	tons per year hot mix asphalt
	61,841,307	7,227,000	1,059,960	337,260	337,260	gallons per year throughput
TOC Emissions	134.58	1.37	24.47	7.55	381.06	lbs/yr TOC - calculated with Tanks Program 4.0.9d

**Potential to Emit, (tons per year)**

Organics	(Tank 1) Asphalt		(Tank 2) RFO4		(Tank 3) #2 diesel		(Tank 4) 2 diesel		(Tank 4) Biofuel		(Tank 4) Max	Total
	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	PTE TPY	PTE TPY
Acetaldehyde												
Acrolein												
Benzene	0.032	2.15E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	2.15E-03
Bromomethane (methyl bromide)	0.0049	3.30E-04		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	3.30E-04
1,3-Butadiene												
Carbon Disulfide	0.016	1.08E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	1.08E-03
Chloroethane (ethyl chloride)	0.004	2.69E-04		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	2.69E-04
Chloromethane (methyl chloride)	0.023	1.55E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	1.55E-03
Cumene												
Dichlorobenzene												
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)												
Ethyl Benzene	0.038	2.56E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	2.56E-03
Formaldehyde	0.69	4.64E-02		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	4.64E-02
Furans (all PCDF)												
Hexane (incl n-Hexane)	0.1	6.73E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	6.73E-03
Hydrochloric Acid (hydrogen chloride)												
Isooctane (2,2,4-trimethylpentane)	0.00031	2.09E-05		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	2.09E-05
Methyl Chloride (chloromethane)	0.00027	1.82E-05		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	1.82E-05
Methyl Chloroform (1,1,1-trichloroethane)												
Methyl tert-Butyl Ether (MTBE)												
Naphthalene <sup>1</sup> (also a POM)												
Phenol												
Polycyclic Organic Matter* (incl naphthalene)												
Propionaldehyde												
Quinone												
Styrene	0.0054	3.63E-04		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	3.63E-04
Tetrachloroethane												
Toluene	0.062	4.17E-03		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	4.17E-03
Xylene (incl isomers and mixtures)	0.257	1.73E-02		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	1.73E-02
<b>HAP Total</b>		0.08		0.00E+00		0.00E+00		0.00E+00		0.00E+00	0.00E+00	8.30E-02

## Emission Inventory

### Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

#### Estimation Explanations

Emission factor (EF) units are % of organic PM for POM and phenol and % of TOC for all other organics

To avoid double-counting, "HAP Total" does not count naphthalene separately because naphthalene is accounted for in "POM Subtotal"

Xylenes EF: m-, o- and p- isomers are individually listed as HAPs but for applicability purposes, are grouped as Xylenes

All other organics EF: AP-42, 3/04, Table 11.1-16 - (TOC) organic volatile-based speciation percentages

TOC = VOC/100% (AP-42, 3/04, Table 11.1-16)

For, diesel, RF04 and biofuel, HAP data is not available, but HAP emissions are expected to mbe very low

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Hazardous Air Pollutant Emission Inventory

Emission Unit: **#4 Asphalt Tank Heater**  
 Description: Asphalt tank heater, CEI Enterprises, model 1800  
 Control: none  
 Fuel: #2 fuel oil or Biofuel  
 Capacity: 2.115 MMBtu/hr (from applicant)  
 Operation: 8,760 hours/yr

#### Potential to Emit, (tons per year)

Inorganics	#2 Fuel Oil	
	EF	PTE TPY
Antimony Compounds		
Arsenic Compounds (incl arsine)	4.00E-06	3.71E-05
Beryllium Compounds	3.00E-06	2.78E-05
Cadmium Compounds	3.00E-06	2.78E-05
Chromium Compounds (incl hexavalent)	3.00E-06	2.78E-05
Cobalt Compounds		
Lead Compounds (not elemental lead)	9.00E-06	8.34E-05
Manganese Compounds	6.00E-06	5.56E-05
Mercury Compounds	3.00E-06	2.78E-05
Nickel Compounds	3.00E-06	2.78E-05
Phosphorus Compounds		
Selenium Compounds	1.50E-05	1.39E-04
<b>Organics</b>		
Acetaldehyde		
Acrolein		
Benzene		
Bromomethane (methyl bromide)		
1,3-Butadiene		
Carbon Disulfide		
Chloroethane (ethyl chloride)		
Chloromethane (methyl chloride)		
Cumene		
Dichlorobenzene		
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)		
Ethyl Benzene		
Formaldehyde	6.10E-02	4.04E-03
Furans (all PCDF)		
Hexane (incl n-Hexane)		
Hydrochloric Acid (hydrogen chloride)		
Isooctane (2,2,4-trimethylpentane)		
Methyl Chloride (chloromethane)		
Methyl Chloroform (1,1,1-trichloroethane)		
Methyl tert-Butyl Ether (MTBE)		
Naphthalene (also a POM)		
Phenol		
Polycyclic Organic Matter* (incl naphthalene)	3.30E-03	2.18E-04
Propionaldehyde		
Quinone		
Styrene		
Tetrachloroethane		
Toluene		
Xylene (incl isomers and mixtures)		
<b>HAP Total</b>		<b>4.71E-03</b>

#### Estimation Explanations

Biofuel use would result in a reduction of HAP emissions as compared to #2 Fuel oil, Because Max PTE is desired and HAP emission factors are not readily available, HAP estimates for biofuel are not made

Emission factor (EF) units vary for fuels and pollutants; for EF not in lb/mmbtu units, the following conversions to lb/mmbtu were used:  
 for fuel oil: 140 mmbtu/mgal

Inorganics EF: AP-42 9/98, Table 1.3-10 for fuel oil, lb/mmbtu  
 Organics and POM: AP-42 9/98, Table 1.3-8 for fuel oil, lb/mgal

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Hazardous Air Pollutant Emission Inventory

Emission Unit: **#6 Silo Filling**

Description: Loading of hot-mix asphalt mix (HMA mix) into silo

Control: none  
 Capacity: 550 tons/hr HMA (from applicant)  
 Operation: 8,760 hours/yr

#### Potential to Emit, (tons per year)

Organics	EF	PTE TPY
Acetaldehyde		
Acrolein		
Benzene	0.032	9.39E-03
Bromomethane (methyl bromide)	0.0049	1.44E-03
1,3-Butadiene		
Carbon Disulfide	0.016	4.70E-03
Chloroethane (ethyl chloride)	0.004	1.17E-03
Chloromethane (methyl chloride)	0.023	6.75E-03
Cumene		
Dichlorobenzene		
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)		
Ethyl Benzene	0.038	1.12E-02
Formaldehyde	0.69	2.03E-01
Furans (all PCDF)		
Hexane (incl n-Hexane)	0.1	2.94E-02
Hydrochloric Acid (hydrogen chloride)		
Isooctane (2,2,4-trimethylpentane)	0.00031	9.10E-05
Methyl Chloride (chloromethane)	0.00027	7.93E-05
Methyl Chloroform (1,1,1-trichloroethane)		
Methyl tert-Butyl Ether (MTBE)		
Naphthalene <sup>1</sup> (also a POM)	1.82	1.11E-02
Phenol	1.18	7.22E-03
Polycyclic Organic Matter* (incl naphthalene)	11.41	6.98E-02
Propionaldehyde		
Quinone		
Styrene	0.0054	1.59E-03
Tetrachloroethane		
Toluene	0.062	1.82E-02
Xylene (incl isomers and mixtures)	0.257	7.54E-02
<b>HAP Total</b>		<b>4.39E-01</b>

*Polycyclic Organic Matter	EF	PTE TPY
Acenaphthene	0.47	2.87E-03
Acenaphthylene	0.014	8.56E-05
Anthracene	0.13	7.95E-04
Benzo(a)anthracene	0.056	3.43E-04
Benzo(e)pyrene	0.0095	5.81E-05
Chrysene	0.21	1.28E-03
Fluoranthene	0.15	9.17E-04
Fluorene	1.01	6.18E-03
2-Methylnaphthalene	5.27	3.22E-02
Naphthalene (also individual HAP)	1.82	1.11E-02
Perylene	0.03	1.83E-04
Phenanthrene	1.8	1.10E-02
Pyrene	0.44	2.69E-03
<b>POM Subtotal</b>	<b>11.41</b>	<b>6.98E-02</b>

#### Estimation Explanations

Emission factor (EF) units are % of organic PM for POM and phenol and % of TOC for all other organics

To avoid double-counting, "HAP Total" does not count naphthalene separately because naphthalene is accounted for in "POM Subtotal"

Predictive emission factors from AP-42 Tbl 11.1-14 for silo filling

Xylenes EF: m-, o- and p- isomers are individually listed as HAPs but for applicability purposes, are grouped as Xylenes

POM, naphthalene and phenol EF: AP-42, 3/04, Table 11.1-15 - organic particulate-based speciation percentages (%/100 x PM)

All other organics EF: AP-42, 3/04, Table 11.1-16 - (TOC) organic volatile-based speciation percentages (%/100 x TOC)

$$\text{TOC EF: } 0.0504(-V)e^{((0.0251)(T+460)-20.43)} \text{ lb/ton HMA loaded into silo}$$

$$\text{Organic PM EF: } 0.00105(-V)e^{((0.0251)(T+460)-20.43)} \text{ lb/ton HMA loaded into silo}$$

V = asphalt volatility =	-0.5	AP-42 default value
T = HMA mix temperature =	325	<sup>0</sup> F, AP-42 default value
TOC EF =	1.22E-02	lb/ton
TOC emissions =	2.94E+01	tons/year (TOC EF x annual capacity)
Organic PM EF =	2.54E-04	lb/ton
Organic PM emissions =	6.12E-01	tons/year (Organic PM EF x annual capacity)

# Emission Inventory

## Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

### Hazardous Air Pollutant Emission Inventory

Emission Unit: **#7 Truck Loading & Fumes**

Description: a Load-out of hot-mix asphalt mix (HMA mix) from silo to asphalt trucks  
 b Fumes from loaded asphalt trucks while in plant

Control: none  
 Capacity: 550 tons/hr HMA (from applicant)  
 Operation: 8,760 hours/yr

#### Potential to Emit, (tons per year)

Organics	Truck loading		Truck-load fumes		Total
	EF	PTE TPY	EF	PTE TPY	PTE TPY
Acetaldehyde					
Acrolein					
Benzene	0.052	5.21E-03	0.052	1.38E-03	0.007
Bromomethane (methyl bromide)	0.0096	9.62E-04	0.0096	2.54E-04	0.001
1,3-Butadiene					
Carbon Disulfide	0.013	1.30E-03	0.013	3.44E-04	0.002
Chloroethane (ethyl chloride)	0.00021	2.10E-05	0.00021	5.56E-06	0.000
Chloromethane (methyl chloride)	0.015	1.50E-03	0.015	3.97E-04	0.002
Dichlorobenzene					
Cumene	0.11	1.10E-02	0.11	2.91E-03	0.014
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)					
Ethyl Benzene	0.28	2.81E-02	0.28	7.42E-03	0.035
Formaldehyde	0.088	8.82E-03	0.088	2.33E-03	0.011
Furans (all PCDF)					
Hexane (incl n-Hexane)	0.15	1.50E-02	0.15	3.97E-03	0.019
Hydrochloric Acid (hydrogen chloride)					
Isooctane (2,2,4-trimethylpentane)	0.0018	1.80E-04	0.0018	4.77E-05	0.000
Methyl Chloride (chloromethane)					
Methyl Chloroform (1,1,1-trichloroethane)					
Methyl tert-Butyl Ether (MTBE)					
Naphthalene <sup>1</sup> (also a POM)	1.25	1.03E-02	1.25	3.31E-02	0.043
Phenol	1.18	9.69E-03	1.18	3.13E-02	0.041
Polycyclic Organic Matter* (incl naphthalene)	5.93	4.87E-02	1.25	3.31E-02	0.082
Propionaldehyde					
Quinone					
Styrene	0.00732	7.33E-04	0.00732	1.94E-04	0.001
Tetrachloroethane	0.0077	7.71E-04	0.0077	2.04E-04	0.001
Toluene	0.21	2.10E-02	0.21	5.56E-03	0.027
Xylene (incl isomers and mixtures)	0.49	4.91E-02	0.49	1.30E-02	0.062
<b>HAP Total</b>		2.02E-01		1.02E-01	3.05E-01

*Polycyclic Organic Matter	EF	PTE TPY	EF	PTE TPY
Acenaphthene	0.26	2.14E-03		
Acenaphthylene	0.028	2.30E-04		
Anthracene	0.07	5.75E-04		
Benzo(a)anthracene	0.019	1.56E-04		
Benzo(b)fluoranthene	0.0076	6.24E-05		
Benzo(k)fluoranthene	0.0022	1.81E-05		
Benzo(g,h,i)perylene	0.0019	1.56E-05		
Benzo(a)pyrene	0.0023	1.89E-05		
Benzo(e)pyrene	0.0078	6.41E-05		
Chrysene	0.103	8.46E-04		
Dibenzo(a,h)anthracene	0.00037	3.04E-06		
Fluoranthene	0.05	4.11E-04		
Fluorene	0.77	6.32E-03		
Indeno(1,2,3-cd)pyrene	0.00047	3.86E-06		
2-Methylnaphthalene	2.38	1.95E-02		
Naphthalene (also individual HAP)	1.25	1.03E-02	1.25	3.31E-02
Perylene	0.022	1.81E-04		
Phenanthrene	0.81	6.65E-03		
Pyrene	0.15	1.23E-03		
<b>POM Subtotal</b>	5.93	4.87E-02	1.25	3.31E-02

#### Estimation Explanations

Emission factor (EF) units are % of organic PM for POM and phenol and % of TOC for all other organics

To avoid double-counting, "HAP Total" does not count naphthalene separately because naphthalene is accounted for in "POM Subtotal"

POM, naphthalene and phenol EF: AP-42, 3/04, Table 11.1-15 - organic particulate-based speciation percentages

All other organics EF: AP-42, 3/04, Table 11.1-16 - (TOC) organic volatile-based speciation percentages

Xylenes EF: m-, o- and p- isomers are individually listed as HAPs but for applicability purposes, are grouped as Xylenes

a. Truck loading predictive emission factors from AP-42 Tbl 11.1-14

$$\text{TOC EF: } 0.0172(-V)e^{((0.0251)(T+460)-20.43)} \text{ lb/ton HMA loaded out}$$

$$\text{Organic PM EF: } 0.00141(-V)e^{((0.0251)(T+460)-20.43)} \text{ lb/ton HMA loaded out}$$

V = asphalt volatility = -0.5 AP-42 default value  
 T = HMA mix temperature = 325 °F, AP-42 default value  
 TOC EF = 4.16E-03 lb/ton  
 TOC emissions = 1.00E+01 tons/year (TOC EF x annual capacity)

Emission Inventory  
Poe Asphalt Paving, Inc. #1900 Portable Asphalt Plant

Organic PM EF = 3.41E-04 lb/ton  
Organic PM emissions = 8.21E-01 tons/year (Organic PM EF x annual capacity)

b. Truck-load emission factors from AP42, 11.1.2.5

TOC EF: 1.10E-03 lb/ton HMA hauled by trucks  
TOC emissions = 2.65 tons/year (TOC EF x annual capacity)

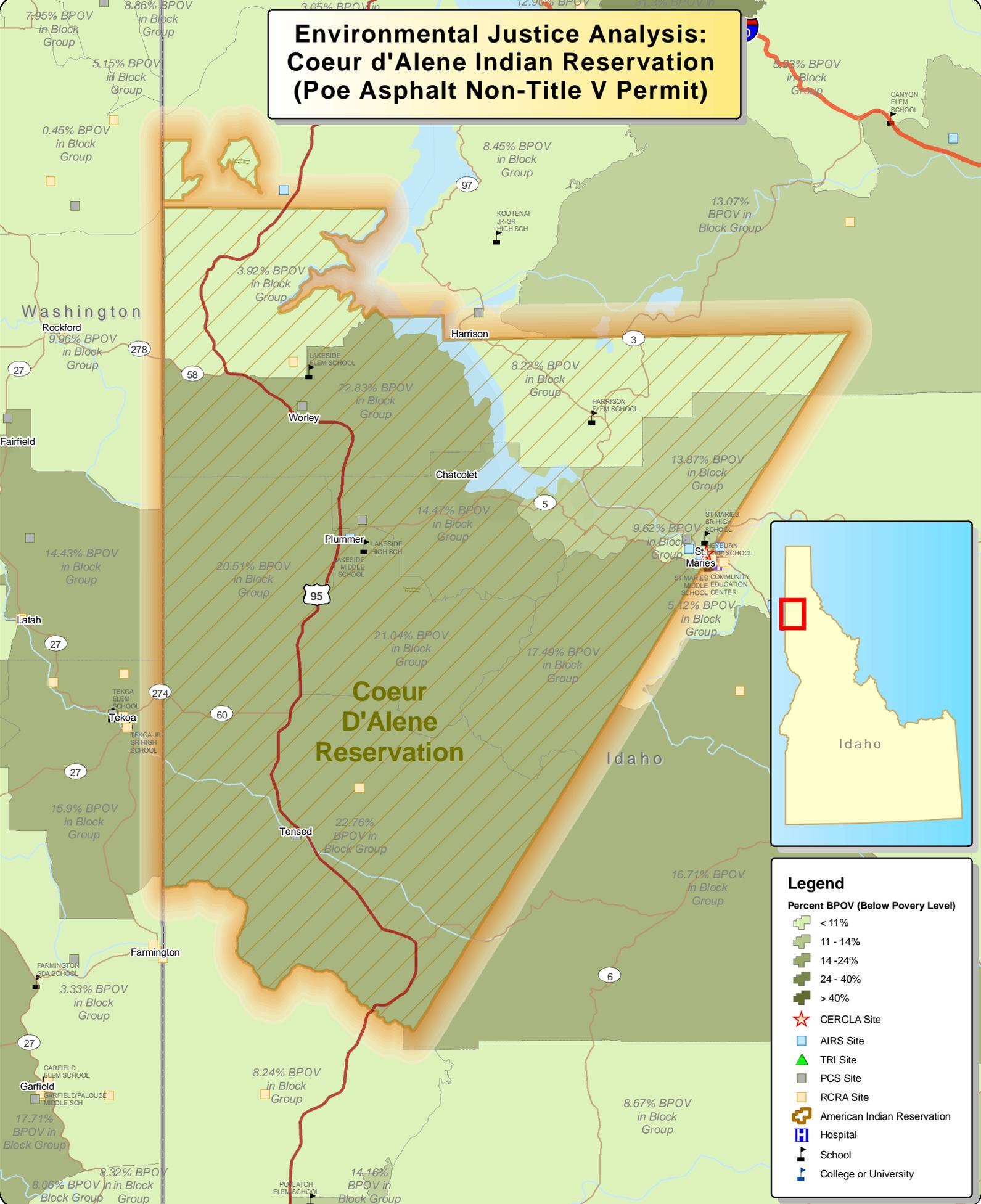
# **Appendix B**

## **Environmental Maps**

**Poe Asphalt Paving, Inc  
Portable Plant #1900**

**Non-Title V Operating Permit  
R10NT501100**

# Environmental Justice Analysis: Coeur d'Alene Indian Reservation (Poe Asphalt Non-Title V Permit)



### Legend

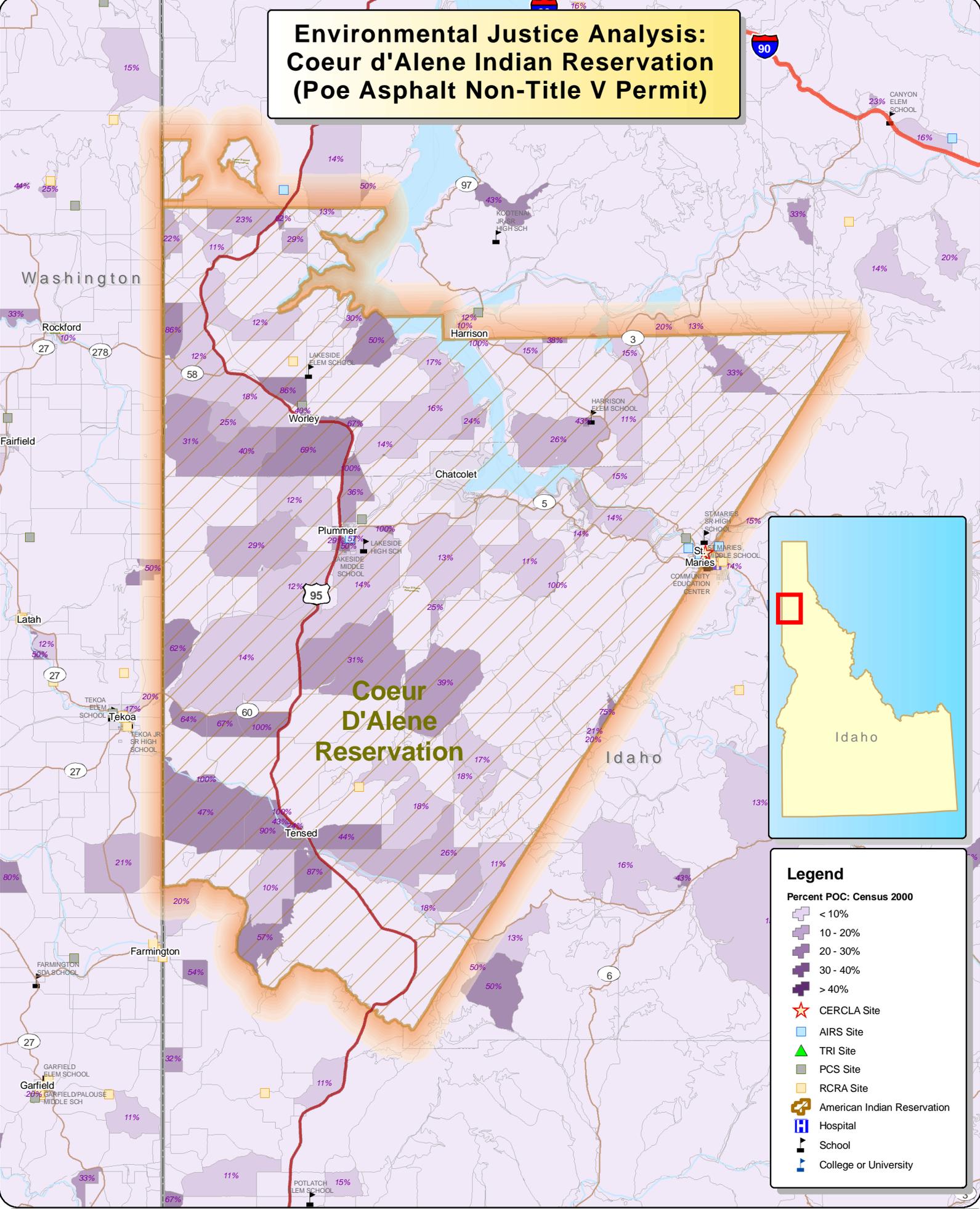
**Percent BPOV (Below Poverty Level)**

- < 11%
- 11 - 14%
- 14 - 24%
- 24 - 40%
- > 40%

- CERCLA Site
- AIRS Site
- TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- Hospital
- School
- College or University

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

# Environmental Justice Analysis: Coeur d'Alene Indian Reservation (Poe Asphalt Non-Title V Permit)



### Legend

**Percent POC: Census 2000**

- < 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- > 40%
- ★ CERCLA Site
- AIRS Site
- ▲ TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- H Hospital
- S School
- U College or University

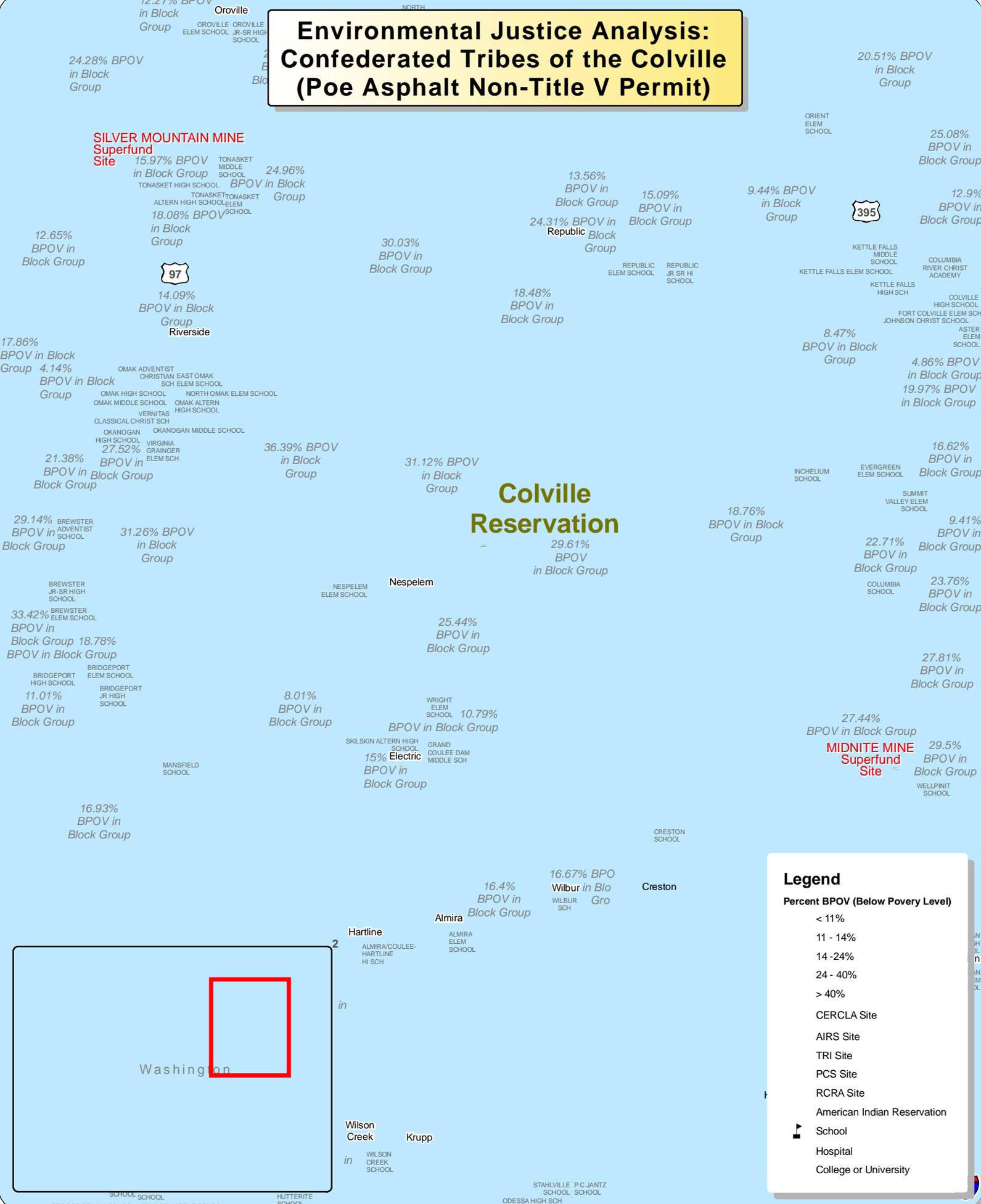
The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

**Percentage of People of Color (POC)  
Census 2000 Data**

XX % = Percentage of People of Color in block  
(Only greater than 10% shown)



# Environmental Justice Analysis: Confederated Tribes of the Colville (Poe Asphalt Non-Title V Permit)



### Legend

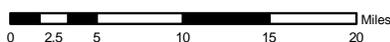
**Percent BPOV (Below Poverty Level)**

- < 11%
- 11 - 14%
- 14 - 24%
- 24 - 40%
- > 40%

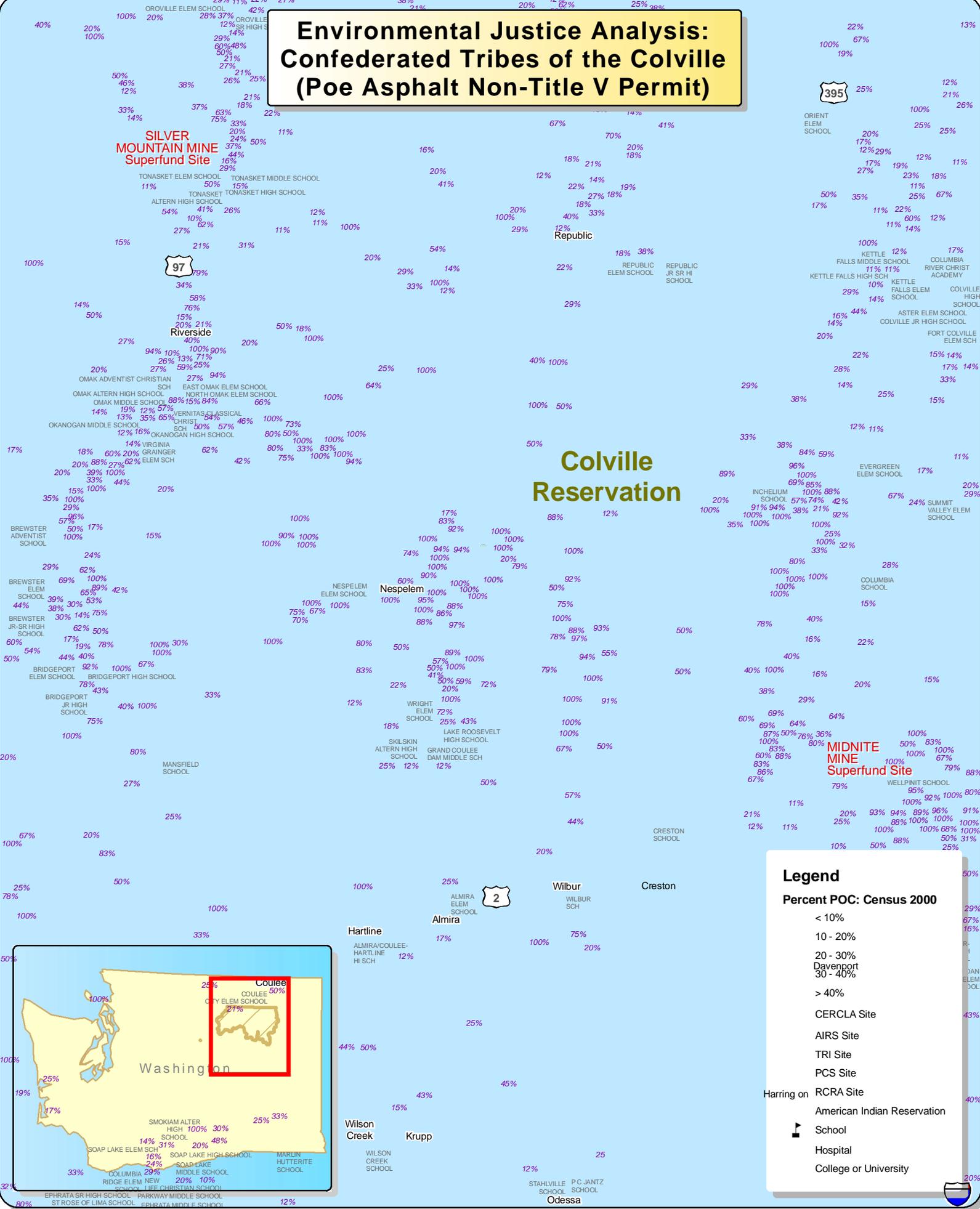
- CERCLA Site
- AIRS Site
- TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- School
- Hospital
- College or University

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

## Percentage of People Below Poverty Level Census 2000 Data



# Environmental Justice Analysis: Confederated Tribes of the Colville (Poe Asphalt Non-Title V Permit)



### Legend

**Percent POC: Census 2000**

- < 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- > 40%

■ CERCLA Site  
■ AIRS Site  
■ TRI Site  
■ PCS Site  
■ RCRA Site  
■ American Indian Reservation  
■ School  
■ Hospital  
■ College or University

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

# Environmental Justice Analysis: Kalispel Tribe of Indians (Poe Asphalt Non-Title V Permit)

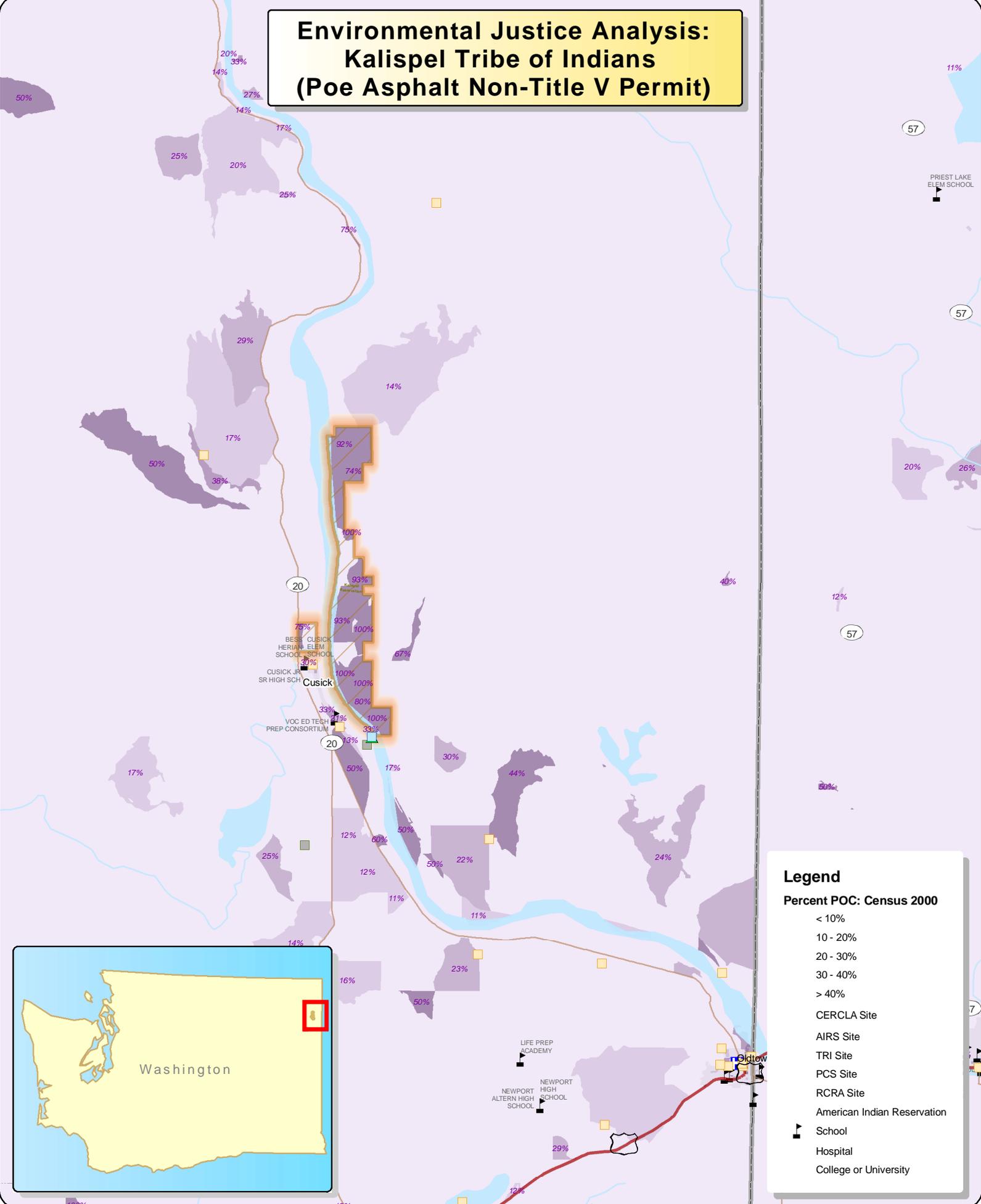


The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

**Percentage of People Below Poverty Level  
Census 2000 Data**



# Environmental Justice Analysis: Kalispel Tribe of Indians (Poe Asphalt Non-Title V Permit)



**Legend**

**Percent POC: Census 2000**

- < 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- > 40%

- CERCLA Site
- AIRS Site
- TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- School
- Hospital
- College or University



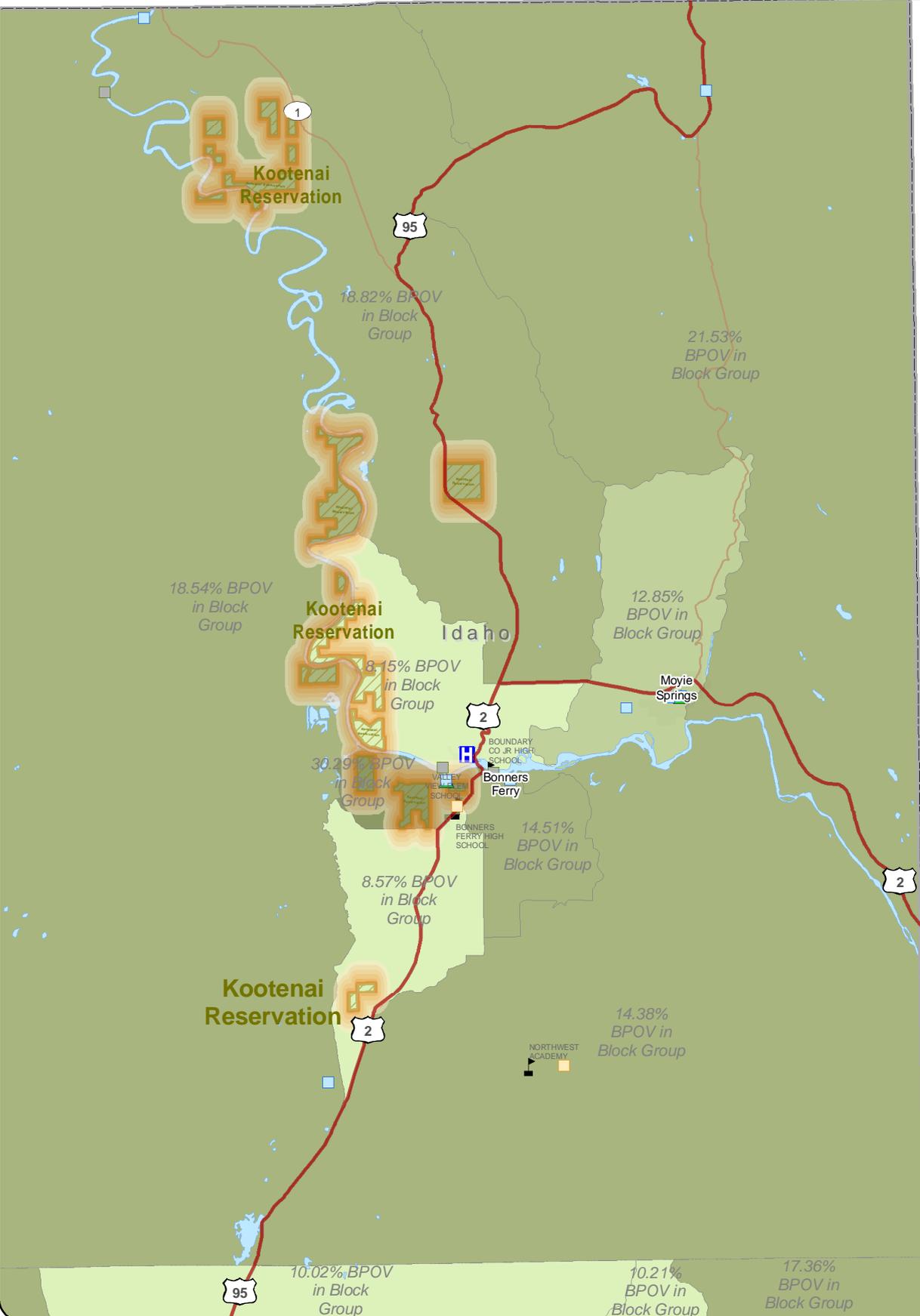
The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

## Percentage of People of Color (POC) Census 2000 Data

XX % = Percentage of People of Color in block  
(Only greater than 10% shown)



# Environmental Justice Analysis: Kootenai Indian Reservation (Poe Asphalt Non-Title V Permit)



### Legend

**Percent BPOV (Below Poverty Level)**

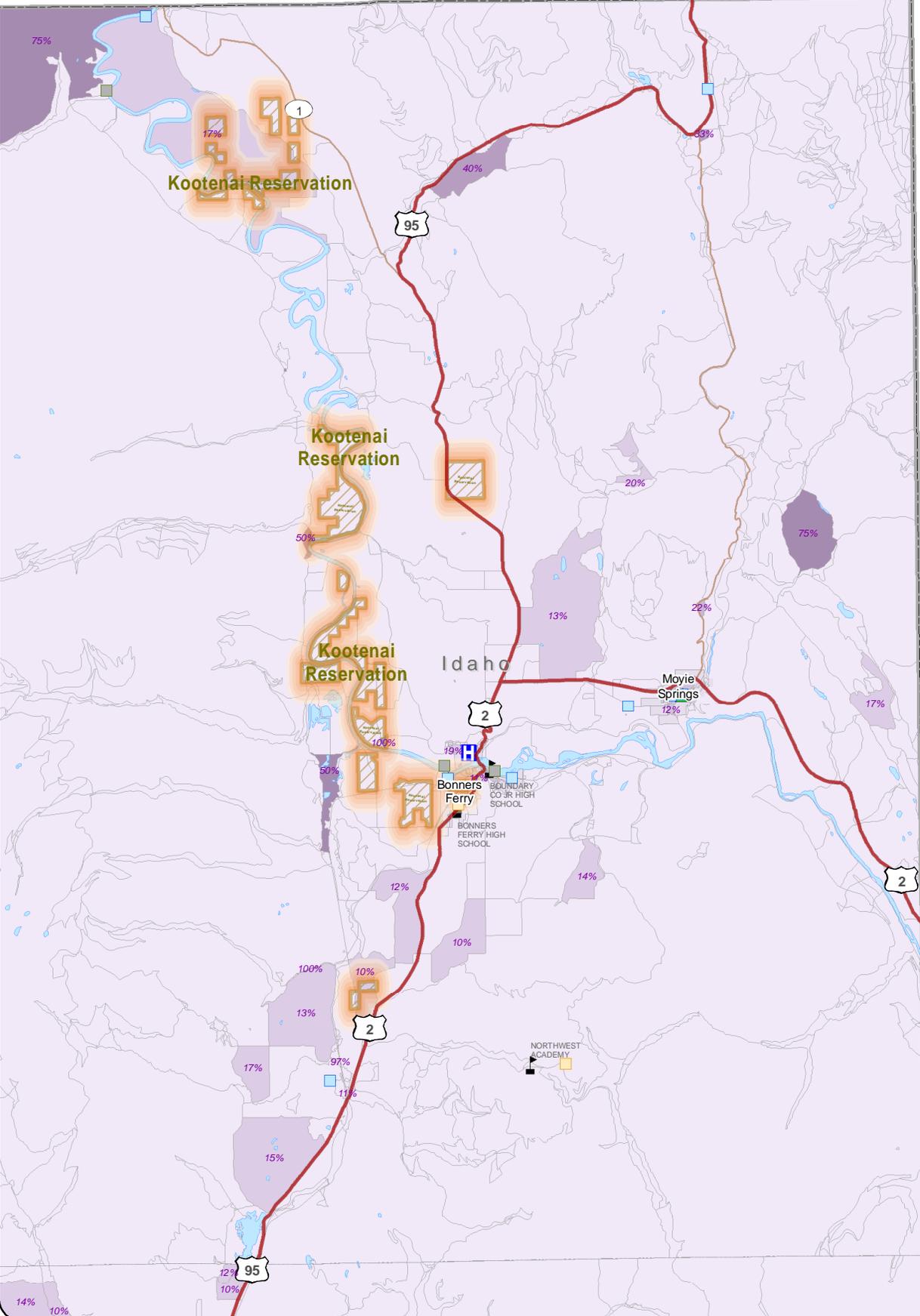
- < 11%
- 11 - 14%
- 14 - 24%
- 24 - 40%
- > 40%

- ★ CERCLA Site
- AIRS Site
- ▲ TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- H Hospital
- School
- College or University

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

**Percentage of People Below Poverty Level  
Census 2000 Data**

# Environmental Justice Analysis: Kootenai Indian Reservation (Poe Asphalt Non-Title V Permit)



**Legend**

**Percent POC: Census 2000**

- < 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- > 40%

- ★ CERCLA Site
- AIRS Site
- ▲ TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- H Hospital
- School
- College or University

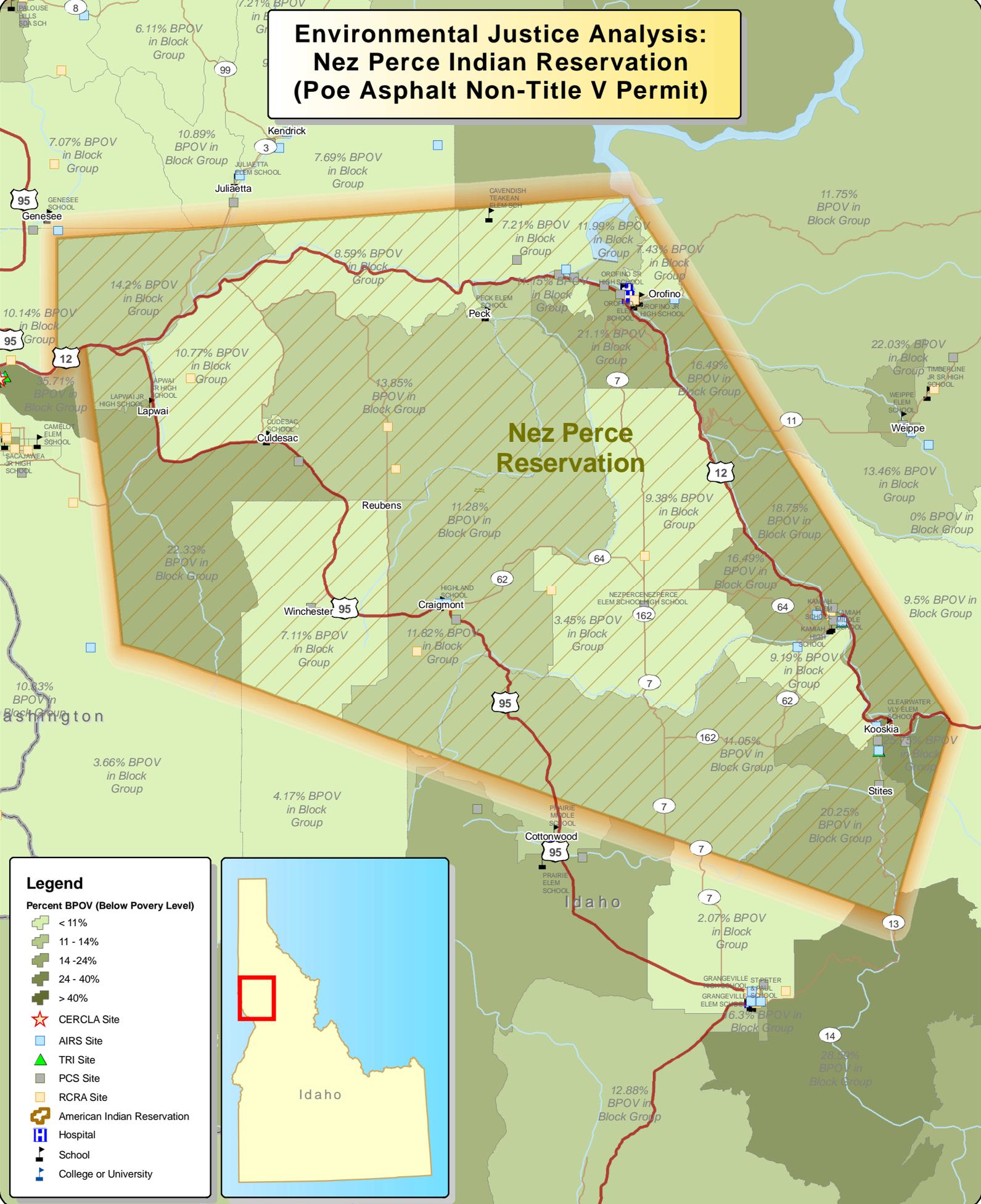
The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

**Percentage of People of Color (POC)  
Census 2000 Data**

*XX % = Percentage of People of Color in block  
(Only greater than 10% shown)*



# Environmental Justice Analysis: Nez Perce Indian Reservation (Poe Asphalt Non-Title V Permit)



**Legend**

**Percent BPOV (Below Poverty Level)**

- < 11%
- 11 - 14%
- 14 - 24%
- 24 - 40%
- > 40%

- CERCLA Site
- AIRS Site
- TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- Hospital
- School
- College or University

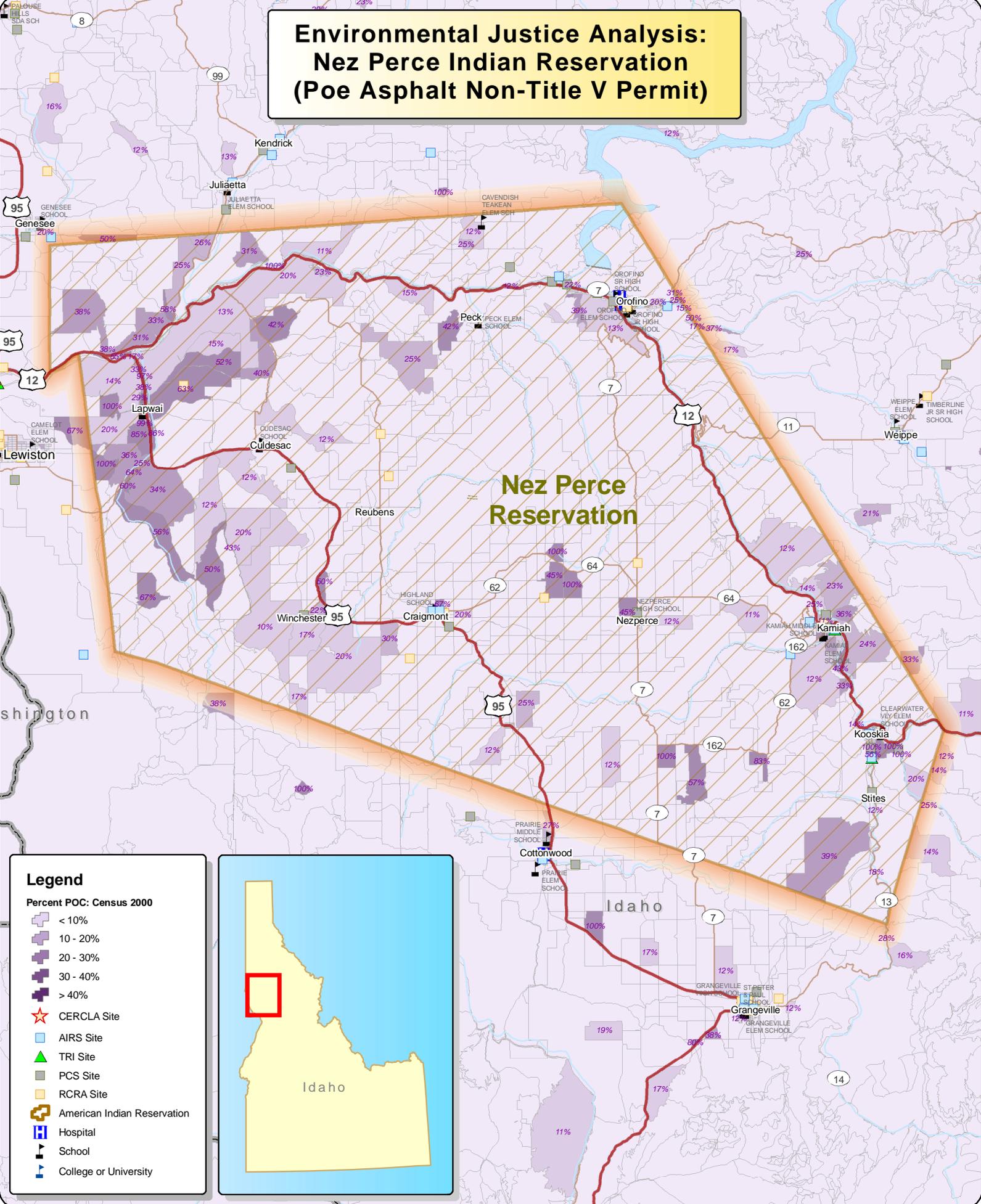


## Percentage of People Below Poverty Level Census 2000 Data

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.



# Environmental Justice Analysis: Nez Perce Indian Reservation (Poe Asphalt Non-Title V Permit)



**Legend**

**Percent POC: Census 2000**

- < 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- > 40%

- ★ CERCLA Site
- AIRS Site
- ▲ TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- H Hospital
- ▲ School
- U College or University



**Percentage of People of Color (POC)  
Census 2000 Data**

XX % = Percentage of People of Color in black  
(Only greater than 10% shown)



The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

# Environmental Justice Analysis: Spokane Tribe of Indians (Poe Asphalt Non-Title V Permit)



### Legend

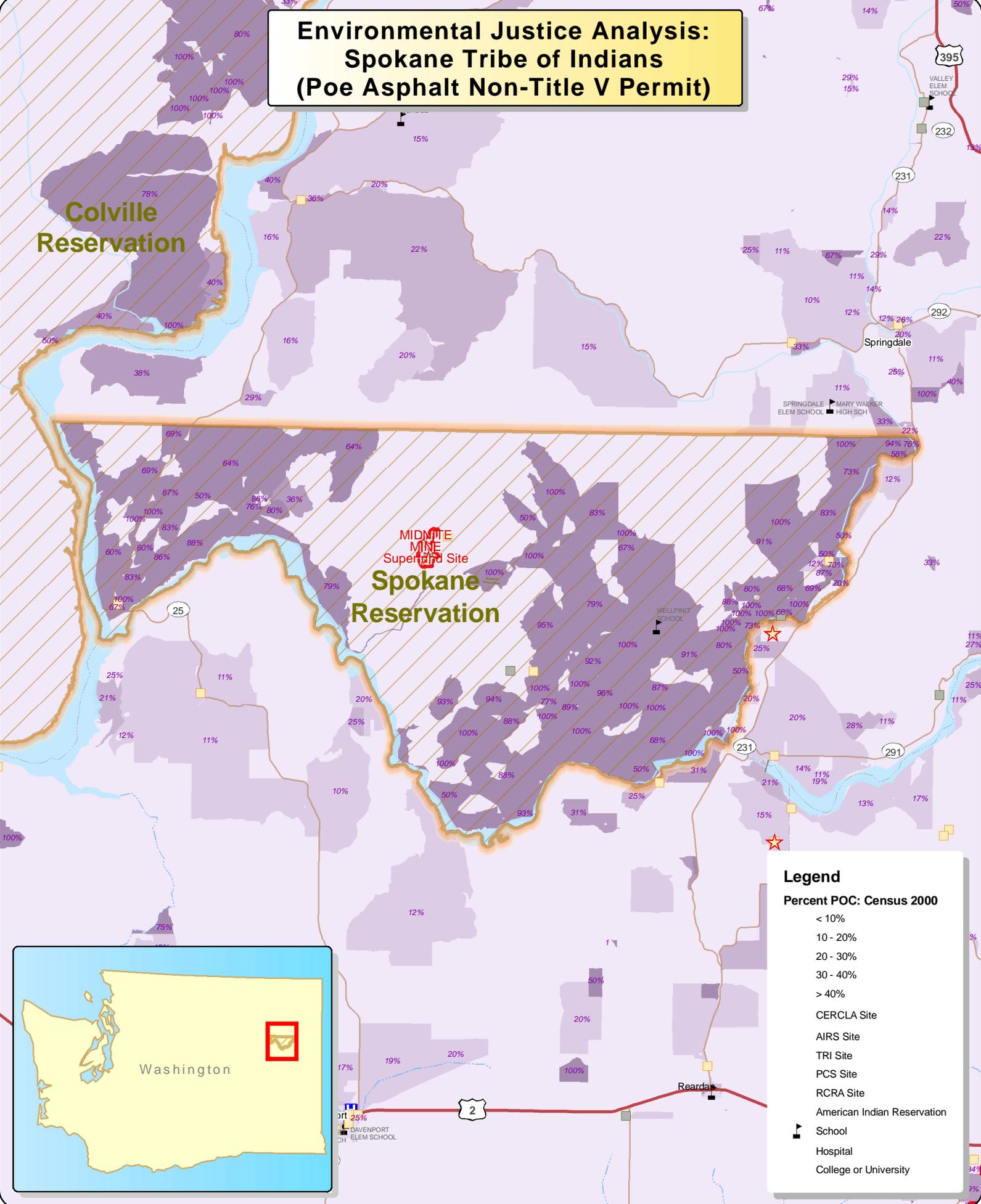
**Percent BPOV (Below Poverty Level)**

- < 11%
- 11 - 14%
- 14 - 24%
- 24 - 40%
- > 40%

- CERCLA Site
- AIRS Site
- TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- School
- Hospital
- College or University

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

# Environmental Justice Analysis: Spokane Tribe of Indians (Poe Asphalt Non-Title V Permit)

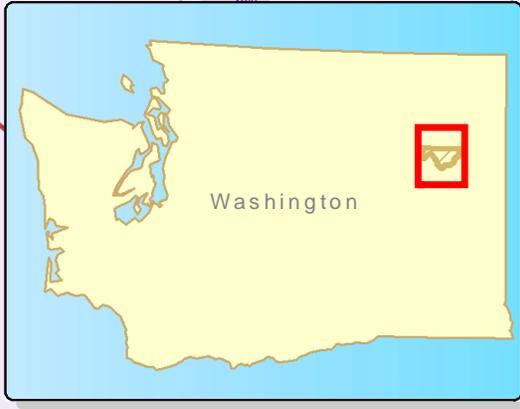


**Legend**

**Percent POC: Census 2000**

- < 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- > 40%

CERCLA Site  
 AIRS Site  
 TRI Site  
 PCS Site  
 RCRA Site  
 American Indian Reservation  
 School  
 Hospital  
 College or University

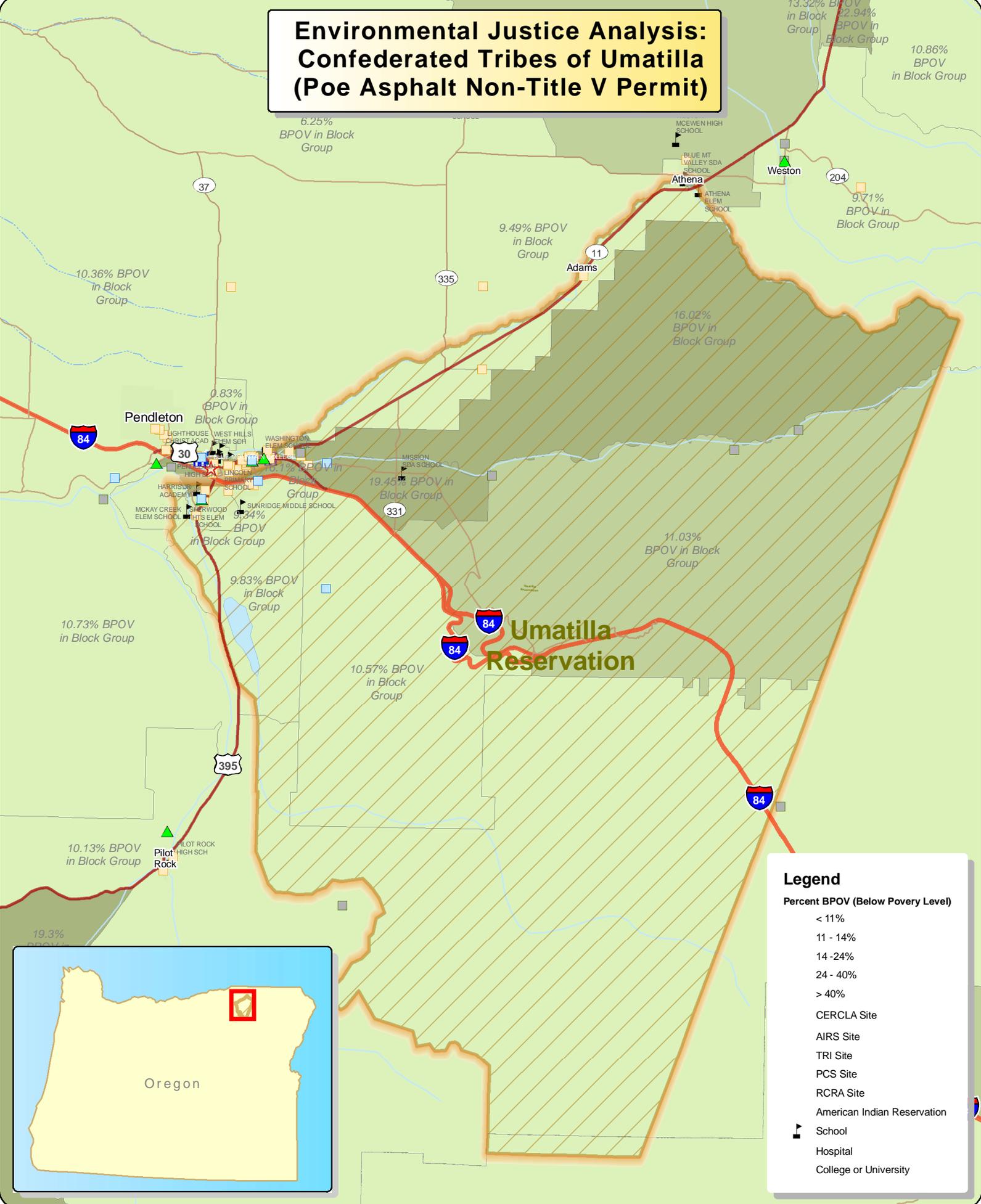


The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

XX % = Percentage of People of Color in block  
(Only greater than 10% shown)



# Environmental Justice Analysis: Confederated Tribes of Umatilla (Poe Asphalt Non-Title V Permit)

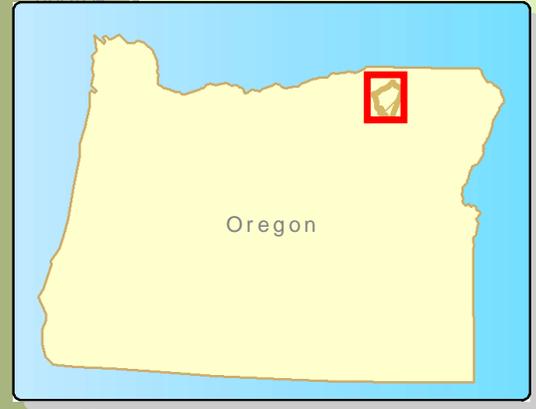


**Legend**

**Percent BPOV (Below Poverty Level)**

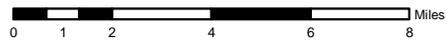
- < 11%
- 11 - 14%
- 14 - 24%
- 24 - 40%
- > 40%

- CERCLA Site
- AIRS Site
- TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- School
- Hospital
- College or University

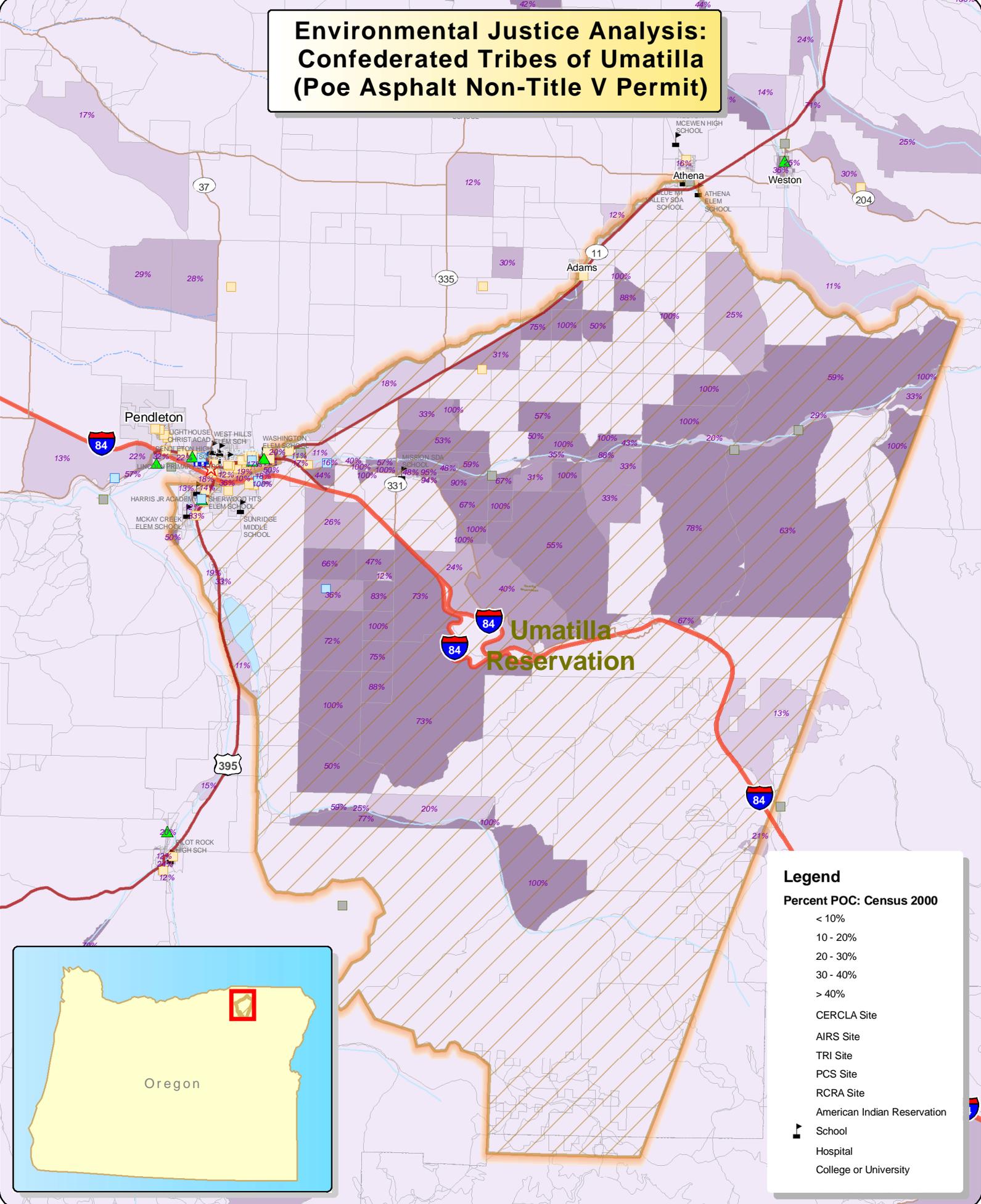


## Percentage of People Below Poverty Level Census 2000 Data

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.



# Environmental Justice Analysis: Confederated Tribes of Umatilla (Poe Asphalt Non-Title V Permit)



**Legend**

**Percent POC: Census 2000**

- < 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- > 40%

- CERCLA Site
- AIRS Site
- TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- School
- Hospital
- College or University

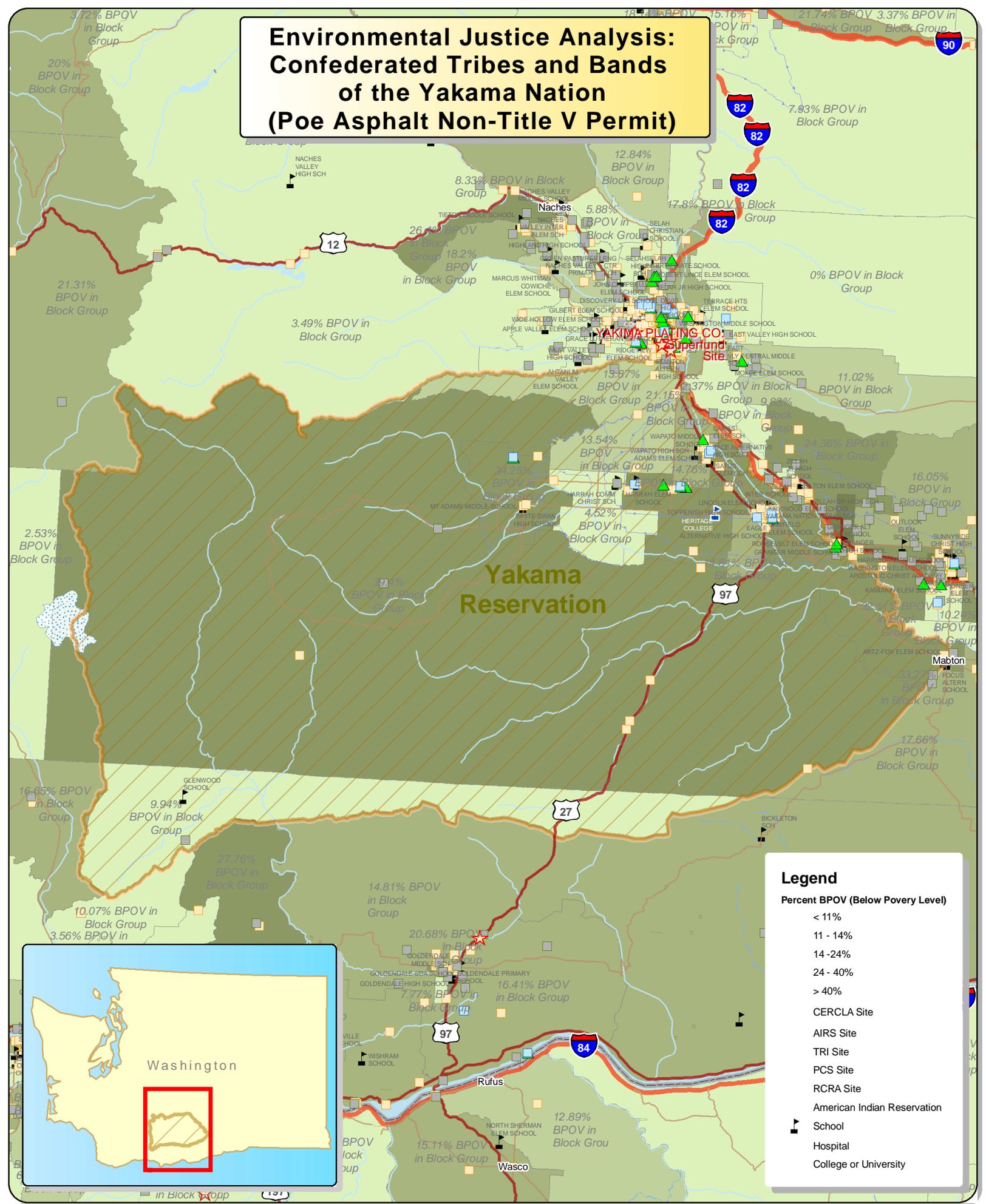
## Percentage of People of Color (POC) Census 2000 Data

XX % = Percentage of People of Color in block  
(Only greater than 10% shown)

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.



# Environmental Justice Analysis: Confederated Tribes and Bands of the Yakama Nation (Poe Asphalt Non-Title V Permit)

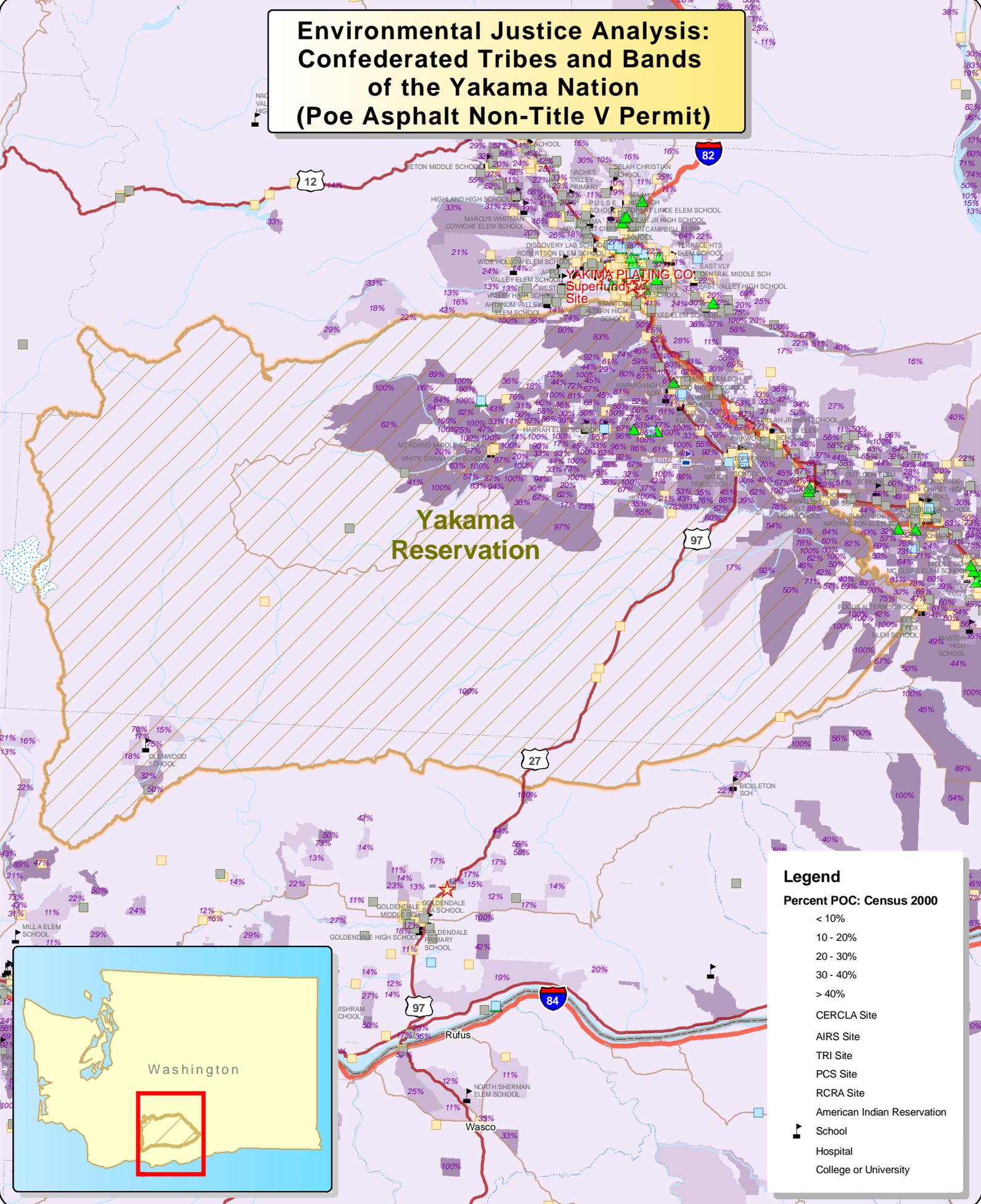


The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

**Percentage of People Below Poverty Level  
Census 2000 Data**



# Environmental Justice Analysis: Confederated Tribes and Bands of the Yakama Nation (Poe Asphalt Non-Title V Permit)



**Legend**

**Percent POC: Census 2000**

- < 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- > 40%

- CERCLA Site
- AIRS Site
- TRI Site
- PCS Site
- RCRA Site
- American Indian Reservation
- School
- Hospital
- College or University

**Percentage of People of Color (POC)  
Census 2000 Data**

*XX % = Percentage of People of Color in block  
(Only greater than 10% shown)*

The U.S. Environmental Protection Agency (EPA) has compiled this computer representation from data or information sources that may not have been verified by the EPA. This data is offered here as a general representation only, and is not to be re-used without verification by an independent professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.