



"Our oil used to be your oil"

American Petroleum Environmental Services  
113535 N. Force Ave  
Portland, OR 97217

September 29, 2016

Louis Bivens  
Air Quality Permit Engineer  
Oregon Department of Environmental Quality  
700 Multnomah Street, Suite 600  
Portland, OR 97232-4100

RE: Type-2 Notice of Intent to Construct Submittal  
American Petroleum Environmental Services  
File No. 26-3021-ST-01  
Multnomah County

Dear Mr. Bivens:

American Petroleum Environmental Services (APES) is presently submitting our Type-2 Notice of Intent to Construct (NOC) in compliance with the TACT Analysis report issued on 1 September 2016. This letter will outline and detail the proposed process covered in the NOC.

Per AQ104\_1, "Instructions for Completing Notice of Intent to Construct," a Type 2 change must meet requirements a, b, d, and e for Type I change, and not increase emissions by more than or equal to the SER. Since the requirements of a Type 2 change are met, and the change includes the construction of an air pollution control device, APES is submitting a Type 2 NOC. Additionally, ODEQ specifically requested a Type 2 NOC during conversations on the subject.

### **Proposed Process**

The Typically Achievable Control Technology (TACT) for controlling VOCs intended to be implemented is as follows:

- 1) Retrofit both front and back plant oil heaters with new AutoFlame Mini MK8 burner management systems to increase fuel burning efficiency within the heaters.
- 2) Re-pipe the cook tank condenser effluent through a pressurization blower and into the front plant oil heater's combustion chamber.
- 3) Purchase and install two new natural gas thermal oxidizers from EPCON Industrial Systems LP, a respected, established, and reputable manufacturer of thermal oxidizers. One (TO-02) will be installed at the front plant to control VOC emissions in the combined effluent of the cook tank condenser and existing Oil Heater #4 (HTR-4). The second oxidizer (TO-01) will be installed at the back plant to control VOC emissions in the combined effluent of the PESCO oil refinery and existing Oil Heater #3 (HTR-3).
- 4) Both thermal oxidizers are designed for >97% Destruction Removal Efficiency (DRE) for total volatile organic compounds (VOC). The thermal oxidizers are designed to operate at >1500°F with a total residence time of ~1.4s at full operating capacity (1500 SCFM).
- 5) Each thermal oxidizer is designed with excess operating capacity for future equipment installation. The back plant (TO-01) is designed for a future Oil Polishing System (OPS), while the front plant is designed for a future Oil Sulfonation System.



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The combination of these steps will reduce VOC emissions per DEQ's TACT determination. All emission points will be routed through one of two thermal oxidizers. The proposed solution will function as a two-stage thermal oxidation process. Preliminary VOC destruction will occur in both the front and back plant oil heaters. Once the streams are combined, a final thermal oxidation step based on natural gas heating will ensure that the TACT required VOC DRE of 97% is achieved. However, for design purposes neither HTR-3 nor HTR-4 were considered as thermal oxidizers (i.e. a reduction efficiency was not assumed for either unit), ensuring that TO-01 and TO-02 are sized to handle the full capacity of the facility. This will ensure that if HTR-3 or HTR-4 go offline, the TO-01 and TO-02 will have the necessary BTU capacity to thermally oxidize the cold effluent stream. VOC emissions therefore will always have an operating control device.

#### Clarifications

Included within the NOC submittal is a city map showing a 1-mile radius circle from the APES facility. A detailed search did not reveal any hospitals, schools, or faith centers within that radius. However, the residential neighborhoods on Hayden Island/Jantzen Beach were within the 1-mile radius.

The NOC and all supporting documentation provided are complete. The only exclusion is the Land Use Compatibility Statement, which ODEQ stated APES was not required to submit as the existing Statement allows for the use and operation of Thermal Oxidizers.

#### Corrections to TACT Analysis Letter

Within the TACT Analysis Letter, expected post modification PTE was outlined. It should be noted that the levels for SO<sub>2</sub> and NO<sub>x</sub> reflected an assumption of 97% DRE for those components. Thermal Oxidation does not affect SO<sub>2</sub> or NO<sub>x</sub>, therefore the PTE (based on 8760 operating hours) in the letter is inaccurate.

#### Submittal

It is APES' belief that the above solution presents the most efficient path forward for both the resolution of VOC emission at our facility.

Sincerely,

Michael P. Mazza  
President, American Petroleum Environmental Services

Cc: Michael Orman, DEQ, NWR AQ Manager  
Office of Compliance and Enforcement, DEQ Headquarters

Attachments (10): AQ104NWR.pdf, AQ230 HTR-3.pdf, AQ230 HTR-4.pdf, AQ306.pdf, City Map 1.pdf, City Map 2.pdf, Effluent PFD.pdf, Residence Time Calculations.pdf, Sample GA Drawing.pdf, TACT Compliance Schedule.pdf



**NOTICE OF INTENT TO CONSTRUCT**

**FORM AQ104  
ANSWER SHEET**

FOR DEQ USE ONLY	
Permit Number:	Regional Office:
Application No:	Date Received :

1. Source Number: 26-3021-ST-01	
2. Company	3. Facility Location
Legal Name: American Petroleum Environmental Services, Inc.	Name: American Petroleum Environmental Services, Inc.
Ownership type: Corporation	Plant start date: 11/28/1983
Mailing Address:	Street Address:
401 East Alexander Ave. Bldg 326	11535 N. Force Ave
City, State, Zip Code:	City, County, Zip Code:
Tacoma, WA, 98421	Portland, Multnomah, 97217
4. Number of Employees (corporate): 41	Number of Employees (plant site): 13

5. Facility Contact Person	6. Industrial Classification Code(s)
Name: Kristi Hunti	SIC: 5093
Title: Operations Manager	NAICS:423930
Phone number: (503) 445-7780	7. Type of construction/change: (see instructions)  Type 2
Fax number: (253) 238-3454	
e-mail address: khunt@apes-inc.com	

8. Signature	
<i>I certify that the information contained in this notice, including any schedules and exhibits attached to the notice, are true and correct to the best of my knowledge and belief.</i>	
Name of official (Printed or Typed)	Title of official and phone number
Signature of official	Date



**DEQ**

Construction Information

State of Oregon  
Department of  
Environmental  
Quality

9. Description of proposed construction:

Purchase and install two (2) new standalone direct fired natural gas thermal oxidizers to be installed for the oxidation of VOCs in all effluent streams. Both thermal oxidizers will be designed to exceed required 97% VOC DRE.

One will be dedicated to the thermal oxidation of effluent gasses from the PESCO Oil Recycling System (Refinery), and the #3 Oil Heater ([HTR-3] back plant). The thermal oxidizer is designed with excess capacity for a future clay LPS system and storage tank vents. The thermal oxidizer will be located near the #3 Oil Heater.

One will be dedicated to the thermal oxidation of effluent gasses from the Cook Tank Condensers and #4 Oil Heater ([HTR-4] front plant). The thermal oxidizer is designed with excess capacity for future sulfonation plant effluent. The thermal oxidizer will be located near to the #4 Oil Heater.

Both the #3 and #4 Oil Heaters will be retrofit with new AutoFlame Mini MK8 Burner Control Systems to optimize fuel burning efficiency.

10. Will the construction increase the capacity of the facility?  If yes, how much?
11. Will the construction increase pollutant emissions?  If yes, how much (see question 19)?  
See Table 20.
12. Will the construction cause new pollutant emissions?  If yes, which pollutants and how much?
13. Estimated timing of construction.
- |                     |          |
|---------------------|----------|
| a. Commence date:   | 10/14/16 |
| b. Begin date:      | 11/28/16 |
| c. Completion date: | 3/28/17  |
14. Will tax credits be requested once construction is completed?
15. Attach relevant forms from Form Series AQ200, Device/Process Forms.
16. Attach relevant forms from Form Series AQ300, Control Device Description Forms, if applicable.
17. Attach process flow diagram.
18. Attach a city map or drawing showing the facility location.
19. If applicable, attach a Land Use Compatibility Statement.



**NOTICE OF INTENT TO CONSTRUCT**

**Emissions Data**

**20. Pre-and Post-Construction emissions summary data**

a. Emissions Point	b. Pollutant	c. Pre-Construction Emissions		d. Post-Construction Emissions	
		short-term (specify unit)	Annual (tons/year)	short-term (specify unit)	Annual (tons/year)
HTR-3	CO	0.251 lb/hr	1.10	0.257 lb/hr	1.125
(incl. refinery)	NOx	0.805 lb/hr	3.52	1.003 lb/hr	4.39
Post-Const.	PM	0.122 lb/hr	0.536	0.806 lb/hr	3.53
routed to	PM10	0.085 lb/hr	0.374	0.256 lb/hr	1.12
proposed TO-01	PM2.5	0.000 lb/hr	0.000	0.171 lb/hr	0.749
	SO2	2.634 lb/hr	11.54	2.74 lb/hr	12.00
	VOC	0.057 lb/hr	0.248	0.002 lb/hr	0.007
HTR-4	CO	0.046 lb/hr	0.203	0.011 lb/hr	0.05
Post-Const.	NOx	0.186 lb/hr	0.814	0.283 lb/hr	1.24
routed to	PM	0.031 lb/hr	0.134	0.715 lb/hr	3.13
proposed TO-02	PM10	0.021 lb/hr	0.094	0.192 lb/hr	0.843
	PM2.5	0.000 lb/hr	0.000	0.171 lb/hr	0.749
	SO2	0.659 lb/hr	2.888	0.767 lb/hr	3.36
	VOC	0.009 lb/hr	0.041	0.043 lb/hr	0.188*
Cook Tanks	VOC	1.422 lb/hr	6.229	Will be routed to proposed TO-02	Will be routed to proposed TO-02
Post-Const.					
routed to					
proposed TO-02					
					*Post construction VOC includes addition of Cook Tank VOC

**SUBMIT TWO COPIES OF THE COMPLETED NOTICE OF INTENT TO CONSTRUCT TO THE DEPARTMENT REGIONAL OFFICE SHOWN BELOW:**

Oregon Department of Environmental Quality  
 Northwest Region  
 700 NE Multnomah Street, Suite 600  
 Portland, OR 97232



MISCELLANEOUS PROCESS OR DEVICE

FORM AQ230  
ANSWER SHEET

Facility Name: **American Petroleum Environmental Services, Inc** Permit Number: **26-3021-ST-01**

**Process Information**

1. ID Number	HTR-3
2. Descriptive name	Back Plant Oil Heater #3
3. Existing or future?	Existing
4. Date commenced	October 1, 2016
5. Date installed/completed	December 31, 2016

6. Description of process:  
 A direct fired oil heater burns #2 distillate to heat thermal oil. A combustion fan adds air to the unit to promote combustion.  
  
 Change made is: Heater #3 will be retrofit with a new Burner Management System (BMS), Mini MK8 with new control system for increased fuel efficiency. The total effluent will be sent to TO-01 for further treatment.

**Operating Schedule**

7. Seasonal or year-round?	Year-round
8. Batch or continuous operation?	Continuous
9. Projected maximum hours/day	24
10. Projected maximum hours/year	8760

11. Process/device capacity: Raw materials	Short term capacity		Annual usage	
	Amount	Units	Amount	Units
Refinery Effluent Gas	1000	SCFM	8,760,000	SCFM
Thermal Oil (cold)	1.5	MMBTU/hr	13,140	MMBTU

Products				
Effluent Gas	1163	SCFM	10,187,880	SCFM
Thermal Oil (hot)	1.5	MMBTU/hr	13,140	MMBTU

12. Control devices(s) (yes/no) **Yes**  
 If yes, provide the ID number and complete and attached the applicable series AQ300 form(s).  
**TO-01**



MISCELLANEOUS PROCESS OR DEVICE

FORM AQ230  
ANSWER SHEET

Facility Name: **American Petroleum Environmental Services, Inc**

Permit Number: **26-3021-ST-01**

**Process Information**

1. ID Number	HTR-4
2. Descriptive name	Front Plant Oil Heater #4
3. Existing or future?	Existing
4. Date commenced	October 1, 2016
5. Date installed/completed	December 31, 2016

6. Description of process:  
 A direct fired oil heater burns #2 distillate to heat thermal oil. A combustion fan adds air to the unit to promote combustion.  
 Changes made: Heater #4 will be retrofit with a new Burner Management System (BMS), Mini MK8 with new control system for increased fuel efficiency. Additionally, the unit will be retrofit with a new effluent gas nozzle to receive effluent from the future Sulfonation Plant, and the cook tank condenser effluent gasses. The total effluent will be sent to TO-02 for further treatment.

**Operating Schedule**

7. Seasonal or year-round?	Year-round
8. Batch or continuous operation?	Continuous
9. Projected maximum hours/day	24
10. Projected maximum hours/year	8760

11. Process/device capacity:	Short term capacity		Annual usage	
	Amount	Units	Amount	Units
Raw materials				
Cook Tank Condenser Effluent	100	SCFM	876,000	SCFM
Thermal Oil (hot)	1.5	MMBTU/hr	13,140	MMBTU

Products				
Total Effluent Gas	342	SCFM	2,995,920	SCFM
Thermal Oil (cold)	1.5	MMBTU/hr	13,140	MMBTU

12. Control devices(s) (yes/no) Yes

If yes, provide the ID number and complete and attached the applicable series AQ300 form(s).

TO-02



**FUME INCINERATOR  
CONTROL DEVICE INFORMATION**

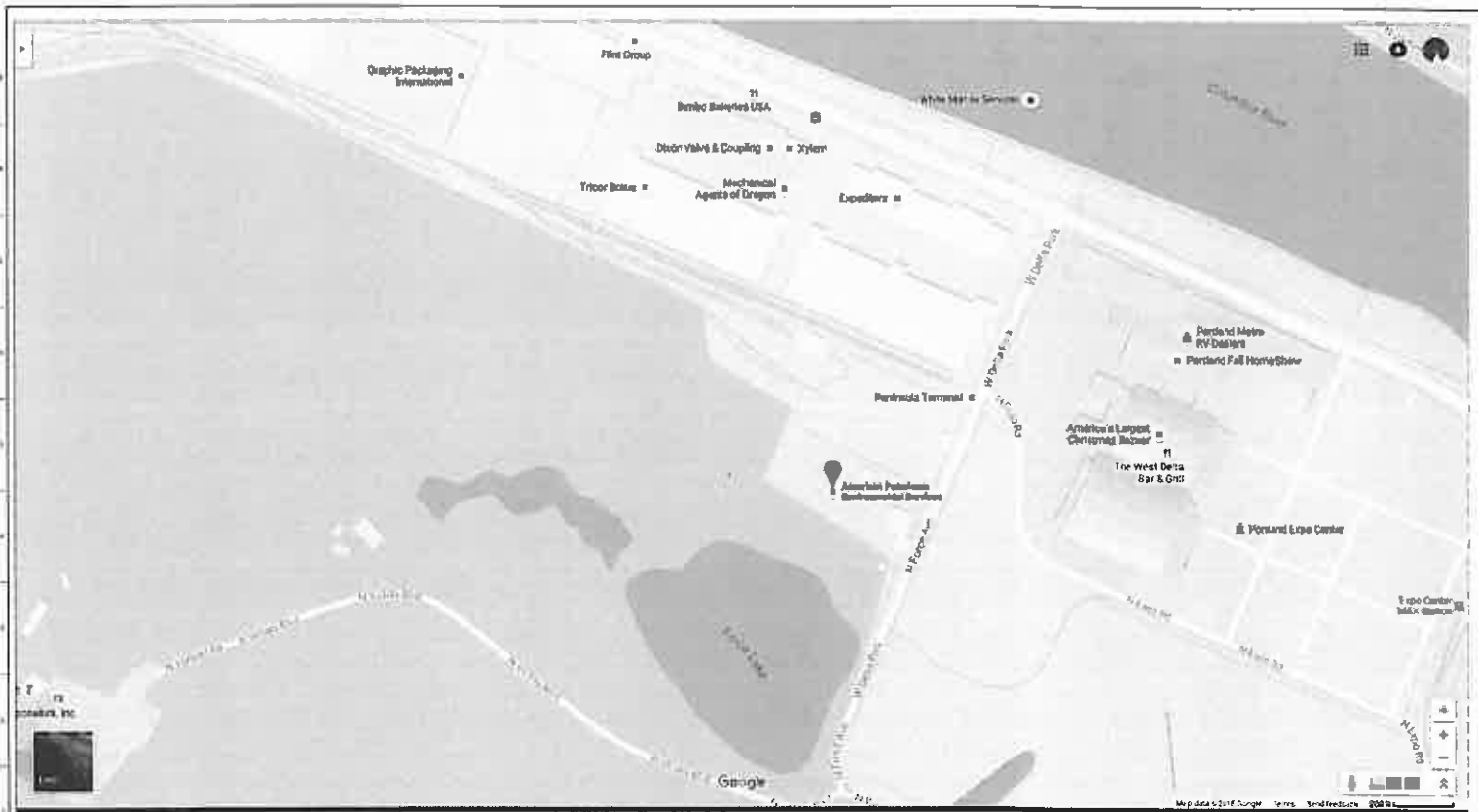
**FORM AQ306  
ANSWER SHEET**

State of Oregon  
Department of  
Environmental  
Quality

Facility Name: **American Petroleum Environmental Services, Inc.** Permit Number: **26-3021-ST-01**

1.	Control Device ID	TO-01	TO-02	
2.	Process/Device(s) Controlled	HTR-3, PESCO Oil Recycling System, OPS#1 (Future)	HTR-4, Cook Tank Condenser, Sulfonation Plant (Future)	
3.	Year installed	2017	2017	
4.	Manufacturer/Model No.	EPCON Direct Fired Thermal Oxidizer	EPCON Direct Fired Thermal Oxidizer	
5.	Control Efficiency (%)	> 97% VOCs > 97% CO	> 97% VOCs > 97% CO	
6.	Type of incinerator	Direct Fired Natural Gas Thermal Oxidizer	Direct Fired Natural Gas Thermal Oxidizer	
7.	Design temperature (°F)	1600°F	1600°F	
8.	Design residence time (sec.)	1.48s	1.48s	
9.	Design inlet gas flow rate (acfm)	5,567 ACFM	5,567 ACFM	
10.	Inlet gas pretreatment? (yes/no) If yes, list control device ID and complete a separate control device form	No.	No.	
11.	Fuel type	Natural Gas	Natural Gas	
12.	Design maximum hourly amount of fuel (specify units)	0.60 MMBTU/hr	0.60 MMBTU/hr	
13.	Projected maximum annual amount of fuel (specify units)	5,256 MMBTU/year	5,256 MMBTU/year	





<p><b>Ecolume Recovery</b>          A Chem-Dek Company          40 LAKE BELLEVUE DRIVE          SUITE 100          BELLEVUE, WA 98008          USA</p>		<p>DATE: 01/15/2015          TIME: 10:00 AM          OPERATOR: J. SMITH          INSTRUMENT: 1000          LOCATION: 40 LAKE BELLEVUE DRIVE SUITE 100 BELLEVUE, WA 98008</p>		<p>Flow: _____          Date: _____          Time: _____          Operator: _____          Instrument: _____          Location: _____</p>	
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MAILING ADDRESS  
P.O. Box 7060  
The Woodlands, Texas 77387  
Phone: (936) 273-3300



**EPCON INDUSTRIAL SYSTEMS, INC.**  
**EPCON INDUSTRIAL SYSTEMS LP**

PLANT ADDRESS  
17777 I-45 South  
Conroe, Texas 77385  
Fax: (936) 273-4600

September 20, 2016

**ECOLUBE RECOVERY**  
40 Lake Bellevue Dr.  
Bellevue, WA 98005

Ph.: 425-599-9035  
Email: [colin.gregg@ecoluberecovery.com](mailto:colin.gregg@ecoluberecovery.com)

Attn: Colin Gregg

**Document No. 16V-070-RT-01**

Sub: TOX Residence Time Calculations

Dear Mr. Gregg,

**1. RESIDENCE TIME (t):**

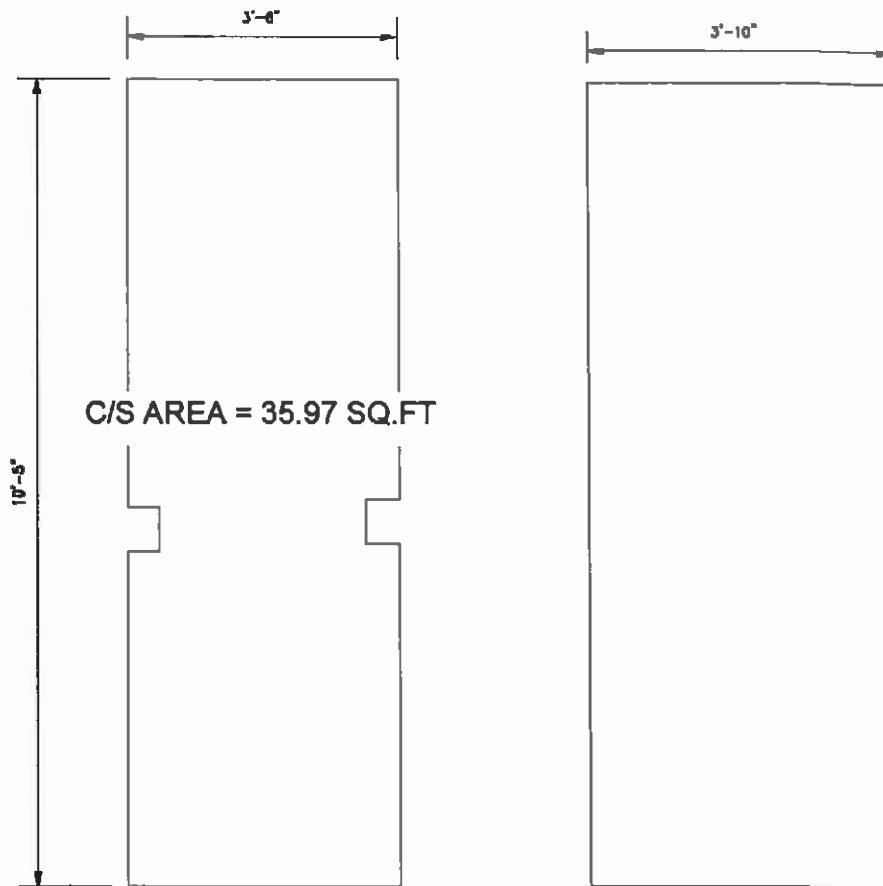
1. Operating Temperature: 1500°F
2. Total Design Process Flow: 1,500 SCFM
3. Total (Process + Dilution Air) Flow to TOX: 1,500 SCFM
4. Total Flow to TOX at 1500°F: 1,500 SCFM @ 1500°F

$$\begin{aligned} \text{ACFM} &= [1,500 \text{ SCFM} \times (1500+460)^{\circ}\text{R}] / 529^{\circ}\text{R} \\ &= 5,557.65 \text{ ACFM} \end{aligned}$$

$$\begin{aligned} \text{Volume/Second} &= 5,557.65 \text{ ACFM} / 60 \text{ Seconds} \\ &= 92.627 \text{ FT}^3/\text{Second} \end{aligned}$$



5. Total Available Combustion Chamber Volume (V):



$$\begin{aligned} \text{Total Available Volume (V)} &= \text{C/S Area} \times \text{Width} \\ &= 35.97 \text{ sq. ft} \times 3.833 \text{ ft} \\ &= 137.873 \text{ Ft}^3 \end{aligned}$$

6. Residence Time (t) = Total Available Volume (V) / Volumetric Flow per Second

$$\text{Residence Time (t)} = 137.873 \text{ FT}^3 / 92.627 \text{ FT}^3/\text{Second}$$

$$\text{Residence Time (t)} = 1.488 \text{ Seconds}$$

