DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N697469033

FACILITY: White Pine Production LLC - Beaver Creek DRZ		**SRN / ID:** N6974
LOCATION: NW 1/4 SE 1/4 Section 17, GRAYLING		**DISTRICT:** Gaylord
CITY: GRAYLING		**COUNTY:** CRAWFORD
CONTACT: Stacy Goodenough ,		**ACTIVITY DATE:** 08/03/2023
STAFF: Sharon LeBlanc	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: FY2023 Onsite inspection and data evaluation for former breitburn facility with new operator (white pine production). Reporting requirements have been discussed with Facility, as have annual wet stream gas sampling, etal. Corrective actions have been taken. sgl		
RESOLVED COMPLAINTS:		

NTRODUCTION

August 3, 2023, AQD District Staff conducted a, scheduled site inspection of the White Pine Production, LLC (AKA White Pine) Beaver Creek DRZ (N6974). The referenced facility is located in the NW ¼, SE ¼ of Section 17, Township 25 N, Range 4W, Beaver Creek Township, Crawford County, Grayling, Michigan.

The referenced facility is considered a synthetic minor opt-out and operates under Permit to Install (PTI) No.s 120-01D and 149-12. The last compliance inspection of record was conducted on August 21, 2018. At that time no compliance issues were noted, and the facility was determined in compliance with their permit.

The facility is a fenced and gated facility. Due to potential H2S hazards, this Facility is only visited in the company of White Pine Staff. In addition, Staff are required to wear Fire Resistant Clothing (FRC) and a H2S Monitor.

Records required to make a compliance determination for the facility were requested electronically on July 27, 2023. The data provided (August 28th, 2023) has been reviewed and incorporated into this document.

FACILITY

The Beaver Creek DRZ facility is an oil and gas production facility that treats sour gas from the Detroit River Zone (DRZ) prior to transfer to a pipeline. In addition, the Facility also extracts Natural Gas Liquids (NGLs) from the produced gas. NG from wells feeding the Facility is passed through field separators to remove hydrocarbon condensate and water. The NG is then processed in an amine sweetening plant to remove H2S and CO2. Process heaters and compressors are used to aid in recovery of the liquid hydrocarbons and gas pressure as necessary for further pipeline transport or fuel use. Acid gas coming off the plant is transported to injection wells for disposal. The Facility reports that the pumps and air compressor onsite are electric, and do not run on NG. A flare onsite handles emergency situations, when reinjection system fails.

The Facility is located southwest of Grayling, Michigan on an apx. 179-acre parcel immediately bounded to the N, S and W by State Land. The eastern boundary of the parcel consists of both state lands and an apx. 30 acre privately owned parcel. Facility staff reported that there are approximately 200 wells associated with the Facility, approximately 180 wells are producing.

To reach the site from the intersection of 4-Mile Road and I-75 (south of Grayling) travel west on 4-Mile Road apx. 3-miles to S. Military Road. At S. Military Road turn south (Left) and travel 3-miles to 7-Mile Road and turn right (west) on 7-Mile Road. Travel west apx. 2.4 miles to the intersection of 7-Mile Road and Tangelo Road. Travel north (right) on Tangelo Road approximately ¼ miles, the Facility is on the left.

A review of readily available aerials indicate that the Facility had not been constructed as of April 1999. The Facility represented in the August 2005 aerial appears to be consistent with the existing site footprint.

Operators associated with the Facility over time have included Quicksilver Resources, Breitburn Operating, Maverick, and White Pine Operating LLC (present operator). White Pine reports taking over operations for the site on August 29, 2022.

At the time of the August 3, 2023, site inspection, weather conditions included clear skies, with temps just above 65 degrees Fahrenheit. Little to no wind was noted. Though occasional gusts were noted from the NE. No emissions were noted from the stacks onsite. No odors were detectable.

EQUIPMENT

Both permitted and exempt equipment is of record for the Facility. A review of MAERS submittals indicated the presence of the following equipment onsite:

Emission Units	MAERS installation date	Description	Use (per PTI 120-01C eval form)
EUENGINE1	1/1/1998	1680 HP, 4-stroke rich burn (4SRB) with catalyst	Primary production and gas compression
EUENGINE2	1/1/1998	170 HP, 4SRB with catalyst	Compression for propane refrigeration unit
EUENGINE3	1/1/1998	170 HP, 4SRB, no catalyst	Compression for propane refrigeration unit
EUENGINE4	1/1/1998	348 HP, 4SRB, emergency engine, no catalyst	Emergency generator

EUENGINE5*	**12/2/2022**	**850 HP, 4SRB, no catalyst, Identified Rule 285(2)(g) exemption**	**Added in 2022 MAERS Submittal**
EUHEATERS	**1/1/1998**	**Total combined heat capacity of 20 MMBTU/Hr**	**5 NG fired heaters (boilers or process heaters) with ratings between 0.5 and 4.7 MMBTU/Hr and 7 NG fired heaters with ratings between 1.0-10.0 MMBTU/Hr. Total Capacity is 17.8 MMBTU/Hr.**
EUSWEETENING***	**1/1/1998**	**NG-Flare for Amine Plant**	
EUDEHY	**10/18/2013**	**Ethylene glycol dehydration plant for Richfield and Detroit River ****	
EUTANKS	**1/1/1998**	**Seven 30K gallon fixed roof ASTs**	

***EU-ENGINE5 is a replacement engine installed by White Pine for existing production engine referred to as Unit 852. The EU was added per instruction of ERAU Staff as an exempt engine until a determination on whether a permit was required for the activity.**

****Permit engineers eval form and permit application for PTI 149-12 indicates that the system is a triethylene glycol (TEG) dehydration system to replace an existing molecular sieve system onsite used to remove moisture from field gas.**

*****11/20/2001 PTI 120-01 eval form identified EU-SWEETENING as composed of a compressor engine, amine reboiler and emergency flare.**

A review of District files indicated that the dehydration system is controlled by a flash tank and off gasses sent to the reboiler burner (when reboiler is in operation) or catalytic igniter (during bypass) for combustion.

District Files indicated the following engines associated with the site:

Emission Unit	Make/Model S/N	Installation Date	Removal Date	Comment
EUENGINE1 Unit 852	Waukesha 7042GSI 1475 HP low emission	unk	unk	March 7, 2001 120-01 application
	Waukesha 7044 1590 HP	unk	unk	120-01B application
	Waukesha 7044	unk	June 2008	Written notification
	Waukesha L-7044 GSI, 1680 HP with 3 way catalytic converter and AFRC	unk	12/10/2022	120-01D application
	CAT G3512 LE No Controls Mfg 1994	12/10/2022	NA	
EUENGINE2 #769	CAT 3406TA 260 HP	unk	unk	
	CAT 3306 TA	unk	June 2012	Written notification
	CAT 3306 SN 07Y01521	UNK	July 2017	Last overhaul date 7/30/2012
	CAT 3306 TA SN 07Y04958	July 2017	UNK	Manufacture date 8/9/1994
	CAT 3306 TAA 140 HP Rich burn SN	March 2023	NA	Onsite 8/13/2023 Mfg 1992

	07Y01467 Catalyst & AFRC			
EUENGINE3 #768	CAT 3306TA 150 HP	Unk	May 2012	Written notification
	CAT 3306 TA	May 2012	UNK	
	CAT 3306 TA SN 07Y08645		July 2017	Overhauled 6/6/2012
	CAT G3306 TAA 4SRB 203 HP SN 07Y01467 non -certified	July 2017	Unk	Manufacture date 6/12/2006 overhaul since 6/12/2006 did not trigger NSPS JJJJ
	CAT 3306 TAA Rich burn 150 HP No Control Mfg 1992	UNK	NA	
EUENGINE4*	Waukesha H2476	UNK	UNK	120-01D application - produces 200 KW power
	Waukesha H-2475 Rich burn No Controls SN 52080 Mfg 1963	UNK	NA	

***Prior to PTI 120-01D 5 engines were identified with the site, EUENGINE5 was the emergency generator. For the purposes of this report the previous "EUENGINE4" is not documented in this table.**

ACD ID	WPP Unit Number	Type of Control	AFRC (yes/no)	Engine Model		Rich/Lean Burn	Mfg Date
EU-ENGINE1	852	N/A	No	Caterpillar	3512 LE	LB	1994
EU-ENGINE3	768	N/A	No	Caterpillar	3306 TA	RB	1992
EU-ENGINE2	769	CC	Yes	Caterpillar	3306 TA	RB	1992
EU-ENGINE4	Generator	N/A	No	Waukesha	H-2475	RB	1963

PERMITTING

Permits of record for the Facility include the following:

Permit No.	Approval Date	Void Date	Company Issued to
120-01*	December 7, 2001	January 27, 2003	Quicksilver Resources Inc.
120-01A	January 27, 2003	April 30, 2004	Quicksilver Resources Inc.
120-01B	April 30, 2004	August 19, 2005	Quicksilver Resources Inc.
120-01C	August 19, 2005	February 1, 2008	Quicksilver Resources Inc.
120-01D	February 1, 2008	NA	Quicksilver Resources Inc.
120-01E	Application Voided	NA	Breitburn Operating LP
149-12	December 12, 2012	NA	Breitburn Operating LP

***August 7, 2001, Quicksilver Resources submits construction waiver request. Construction waiver approved on August 17, 2001.**

Of interest in District Files was correspondence from Davy Consulting Inc. (June 6, 2001) that indicated the Facility would be processing sweet crude and gas from the Richfield Formation and sour crude and gas from the Detroit River Zone.

REGULATORY

The Beaver Creek DRZ unlike many O&G Facilities in northern Michigan does process or store petroleum liquids onsite and therefore may be subject to one or more of the following 40 CFR Part 60 (New Source Performance Standards AKA NSPS) Subparts;

- K, Ka or Kb (Storage vessels for Petroleum Liquids);
- KKK (Equipment Leaks of VOC from onshore NG Processing Plants);
- VV (Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry);

40 CFR Part 60 Subpart K, Ka or Kb are date-based standards of Performance for Storage Vessels for Petroleum Liquids for which construction, reconstruction or modification commenced:

- After June 11, 1973, and Prior to May 19, 1978 (Subpart K)
- After May 18, 1978, and Prior to July 23, 1984 (Subpart Ka)
- After July 23, 1984, (Subpart Kb)

With a post July 1984 construction date, the affected facility with regards to Subpart Kb, per 60.110b(a) are any Volatile Organic Liquid (VOL) storage tanks of greater than or equal to 75 cubic meters (19,812.9 gallons) in capacity though some exemptions do exist. Including but not limited to vessels with a design capacity less than or equal to 1,589.874 m 3 (420,000 gallons) used for petroleum or condensate stored, processed, or treated prior to custody transfer. Tanks associated with the facility are believed to be within the exemption, and have not been evaluated.

40 CFR Part 60 Subpart KKK Standards of Performance for equipment Leaks of VOC from onshore NG Processing plants for which construction, reconstruction, or modification commenced after January 20, 1984, and on or before August 23, 2011. § 60.630 identifies those affected facility for onshore NG processing plant. The PTI 120-01C eval form states that the Facility is subject to NSPS KKK.

The eval form for PTI 120-01 indicated that the Applicants NSPS plan for the referenced subpart was satisfactory and addressed all requirements. Subpart KKK plans found in the district files consist of the following:

Submittal Date	Submitted by

November 7, 2001	**Quicksilver**
November 10, 2005	**Quicksilver**
June 29, 2006	**Quicksilver**
August 7, 2006	**Quicksilver***
August 28, 2023	**White Pine Production***

***documents indicate that the Facility as operated was a non-fractionating plant that does not have the design capacity to process 283,200 standard cubic meters per day (10million standard cubic feet per day) or more of field gas, based on the design of the production compressor which has a daily capacity of 5.8 MM standard cubic feet. The most recent 2006 and 2023 document (s) indicated that the following requirements under the Subpart are applicable:**

- Pumps in light liquid service shall be checked by visual inspection each calendar week for indications of liquid drips from the pump seal
- Closed vent system piping (hard piping) and is subject to an initial inspection as well as annual visual inspections for visible, audible or olfactory indications of leaks.

Semiannual reporting under the KKK subpart appears to be inconsistent based on district files. A discussion with the present operator indicates that semiannual reporting will be implemented.

40 CFR Part 60, Subpart VV Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006. Further review of this subpart identifies synthetic organic chemicals listed under 40 CFR 60.489. The Beaver Creek DRZ does separate out Natural Gas Liquids (NGLs). NGLs consist of ethane, propane, butane, isobutane, pentane and pentane-plus compounds. None of which were identified in the referenced list of synthetic organic chemicals. Therefore it does not appear that the subpart is applicable to this Facility.

40 CFR Part 60 Subpart OOOO (Standards of Performance for Crude Oil an NG Production, Transmission and Distribution) and Subpart OOOOa would apply to onshore affected facilities that are constructed, modified or reconstructed after August 23, 2011, and September 18, 2015, respectively. Based on available information it appears that the referenced subpart with a 1998 or 2001 construction date is not applicable at this time but that future changes may be subject to the referenced subpart. No compliance determination has been made with reference to the subparts.

40 CFR Part 60 (NSPS) Subpart JJJJ for Spark Ignition (SI) Reciprocating Internal Combustion Engines (RICE) may apply in the future. However, at the time of the 2008 permitting, the engineer evaluation reported that the existing RICE were not subject to the referenced subpart based on manufacture dates before July 1, 2007. No compliance determination has been made with reference to the subpart.

40 CFR Part 60 (NSPS) Subpart LLL - Standards of Performance for SO2 Emissions from Onshore Natural Gas Processing for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011. With respect to Subpart LLL, the eval form for PTI 120-01 indicated that as the sweetening facility reinjects the acid gas, and that the referenced subpart is not applicable.

In addition to the NSPS Standards referenced above, the following 40 CFR Part 63 (Maximum Achievable Control Technology Standards A.K.A. MACT) Subparts may apply:

- Subpart HH (HAPS from Oil and NG Production Facilities)
- Subpart ZZZZ (Reciprocating Internal Combustion Engine aka RICE)
- Subpart JJJJJJ (Industrial, Commercial and Institutional Boilers and Process Heaters)

With respect to Subpart HH, the applicable emission unit is the dehydration system. PTI 149-12 application indicated that the facility would be subject to the referenced subpart. It further stated that though the expected natural gas flow rate through the proposed system would be less than NG threshold of actual annual NG flow rate of less than 3 million standard cubic feet per day (MMcf/d) or 85,000 cubic meters/day) but went on to indicate that the uncontrolled benzene emission rate was anticipated to be greater than 0.9 megagrams per year (or approximately 1 TPY) threshold. Exceedance of the uncontrolled benzene emission rate would make the facility subject to the NESHAP Subpart HH for area sources. PTI 149-12 includes both a high- level citation (SC III.1) and notification and reporting requirements (SC VII.1). Evaluation of data provided by White Pine indicates that the Facility is below thresholds and is not subject to the subpart. This data is summarized below:

Calendar Year	Benzene Emissions (TPY)	Actual Average Flowrate (M3/day)
2013	NR	14.23
2014	NR	49.67
2017	0.0081	NR
2018	0.0002	NR
2022	< 0.013	45.97

Thresholds	1	85,000

Average flow rates of 1,622.74 MCF/day were reported for the 2022 calendar year, below the 3 MMSCF/day threshold. A compliance determination has not been made with respect to this subpart, and at the time of report preparation AQD does not have authority to enforce the subpart.

With respect to Subpart ZZZZ (RICE MACT), the facility engines are reported by the facility to be subject to the referenced subpart. Initial notification of applicability dated December 20, 2010, was found in the District files. At the time of report preparation, AQD has been delegated authority to implement and enforce the subpart. However, at this time compliance determinations for Federal requirements under Subpart ZZZZ for Area Sources have not been made. Based on a review of the PM/MAP for the facility it appears that requirements under the subpart have been incorporated into the PM/MAP. Compliance with the PM/MAP may indicate compliance with the referenced subpart.

Maintenance records supplied by the Facility for the referenced engines indicated that the RICE engines are on a monthly and quarterly maintenance schedule. The only engine change information available is for swings after August 29, 2022. They include replacement of the Waukesha for EUENGINE1 with a CAT 3512 (December 2022) and a like for like swing of EUENGINE2 in March 2023.

NESHAP subparts JJJJJJ pertain to Industrial, Commercial and Institutional Boilers and Process Heaters for Area source of HAPS, respectively. At the time of the site inspection, it appears that the reboiler of the glycol dehydration process would not be subject to the subpart, as a process heater is not subject for area sources. No compliance determination has been made with reference to the subpart.

Preventative Maintenance/Malfunction Abatement Plan (PM/MAP)

PM/MAP are required under existing permits for EUs located onsite. PM/MAP submittals of record in District Files include the following:

Submittal Date/Date Recv'd	Approval Date	Operator
Feb 1, 2007	Feb/ 6, 2007	Quicksilver
April 26, 2007	May 29, 2007	Quicksilver
August 2, 2007	August 6, 2007	Quicksilver
August 23, 2023	September 5, 2023	White Pine

Reports Received

Subpart KKK semiannual reporting is required under 40 CFR 60.487, District Files fail to contain hard copies after 2016. A review of the AQD electronic database indicates submittals have been irregular. Communications with the present operator regarding semiannual reporting indicated their intent to initiate the required reporting with the present semi-annual reporting period.

COMPLIANCE

Since the August 21, 2018, site inspection there have been no complaints, violation notices or consent orders identified for the Facility.

Annual emissions are reported for the Facility as part of the MAERS reporting system. Annual submittals have historically been received in a timely manner. It should be noted that with the property transfer between Maverick and White Pine Production that late submittal of emissions estimates by White Pine occurred. At the time of preparation of this report, the emission estimates for the 2022 calendar year have been submitted and contact information updated for the MAERS program.

Compliance status for the facility had been based on information obtained during the August 3, 2023, site inspection, as well as on supplemental data and reports submitted upon request or to meet permit requirements identified under PTI 120-01D and 149-12. District Staff noted that in most cases 5 years worth of data was available, despite White Pine only operating the Facility since August 2022. For purposes of compliance, District Staff have determined compliance based on data available since White Pine took over operations.

PTI 120-01D – Permit Conditions

Emission units covered by the above referenced PTI included EUENGINE1-EUENGINE4, FGWEETENING, FGHEATERS and FGFACILITY. Records under the referenced permit are required to be maintained for a period of 5 years. However, based on new operator, records prior to August 29, 2022, are no longer available. Other permit conditions for each of the referenced EUs are summarized below:

EUENGINE4 – This emergency engine consists of a NG-fired Waukesha RICE without pollution control. Facility staff report that the unit operates for approximately 15-minutes every Tuesday. It was not operating at the time of the August 3, 2023, site inspection. Permit conditions are limited to the following:

- Operation not to exceed 500 hours per 12-month rolling time period, as determined monthly (SC 1.1) and
- Maintain a written or electronic log of the monthly hours of operation for EUENGINE4 (SC 1.2)

As previously reported, Facility staff report that the emergency generator is operated 15 minutes every Tuesday for maintenance activities. The hour meter on the engine appeared to indicate 737.6 (or 757.6) hours of operation. Records provided by the Facility indicate that 12-month rolling hours of operation (determined monthly) for EUENGINE4 for the fiscal year 2022 ranged from 64 – 103 hours per 12-month rolling time period. Well below the limit.

The stack height is reported to be 11 ft above ground surface and 6-inches in diameter. No stack construction requirements are contained in PTI 120-01D.

EUENGINE3 – This engine (Unit 768) consists of a 203 HP, NG-fired CAT G3306 TAA 4SRB (SN 07Y04958) without control device. Operating parameters at the time of the August 3, 2023, site inspection are presented below:

Engine	Unit 768 – CAT 3306TA
Hours	55707
RPM	1042
Oil pressure	52 psi

Permit conditions for EUENGINE3 include the following:

- Preparation and submittal of a malfunction abatement/ preventative maintenance plan (PM/MAP) incorporating procedures recommended by the equipment manufacturer as well as incorporating standard industry practices (SC 2.1)

As previously noted a PM/MAP for the Facility, which included EUENGINE3 was submitted by White Pine electronically on August 28, 2023. The document appeared to meet all requirements and was approved in correspondence dated September 5, 2023.

- Verification of NOx and CO emission rates by testing at the owner's expense upon the request of the District Supervisor (SC 2.2).

No request for verification testing was found in District Files, therefore SC 2.2 is not applicable at this point in time.

- Continuous monitoring of NG usage for EUENGINE3 (SC2.3)
- Maintenance of monthly fuel use records for EUENGINE3 (SC 2.5)

Fuel Usage records are maintained by the Facility for EUENGINE3. Records provided by White Pine appear to be consistent and in general compliance with permit conditions. Information provided is summarized below.

12-month rolling time period Ending	NG fuel usage rate in MSCF/month	NG fuel usage rate in MSCF/12-month
December 2022	212- 366	3,540
July 2023	247 - 353	3,678
Limits	NA	NA

- Maintenance of a log of all significant maintenance activities and all repairs made to EUENGINE3 and any associated air pollution control devices (SC 2.4)

EUENGINE3 (AKA Unit 768) is a CAT 3306 TA, without catalyst. Maintenance records for the EU indicate that the Facility conducts monthly scheduled service activities in addition to servicing the unit approximately every 3 months. Service activities include changing oil and oil filters, adjusting valves, checking compression, belts, greasing bearings, checked timing, etal. No major repairs were noted in the logs for the period of September 9, 2022, through June 26, 2023.

- If EUENGINE3 is replaced with an equivalent emitting or less emitting engine, the permittee shall notify the AQD District Supervisor of such change-out and submit acceptable emissions data to show that the alternate engine is equivalent emitting or less emitting (SC 2.4)

A review of District Files identified engine changeout notifications submitted by former operators onsite. This data has been incorporated in the engine historical table presented earlier in this document. Information provided by the present operator indicates that no change out for EUENGINE3 has occurred since August 2022 therefore SC 2.4 is not applicable at this time.

- Stack SVENGINE3 is limited to a diameter of not to exceed 16-inches, and a minimum height above land surface of 25 ft (SC 2.6)

Facility records indicate that the stack for EUENGINE3 is a diameter of 6-inches and a total height of 40 -feet above land surface. Stack eight verification activities were conducted with a Nikon Range Finder during the August 3, 2023, site inspection. Stack heights measured at the time of the inspection ranged from 43.5 – 49 ft abls.

<u>EUENGINE1 and EUENGINE2</u> – The two referenced engines at the time of permitting consist of one NG-fired, 1680 HP Waukesha 7404 (EUENGINE1) and one NG-fired, 170 HP CAT 3306TA (EUENGINE2) RICE. The two engines are used for primary production and gas compression (EUENGINE1) and compression for the propane refrigeration unit (EUENGINE2). Both units at the time of permitting had pollution control devices.

As previously mentioned, the Waukesha for EUENGINE1 was replaced with a CAT 3512 lean burn in December 2022. Per communications dated September 15, 2023, the replacement engine is exempt from Rule 201 permitting under R 285(2)(g). It is therefore exempt from permit conditions. Facility staff indicated that no change in stack height occurred.

EUENGINE1 (AKA Unit 852) is located on the production compressor. EUENGINE2 and EUENGINE3 are located in the NGL plant.

Operating parameters noted at the time of the site inspection included:

EUENGINE1 (Unit 852)

Engine	Unit 852 CAT 3512
Hours	124542
RPM	1150
Oil Pressure	55 psi

EUENGINE2 (Unit 769)

Engine	Unit 769 CAT 3306 TA with Catalyst
Hours	NR
RPM	1088
Oil Pressure	54
Pre-Catalyst temp	796
Post-Catayst temp	811
AFRC	0.884

Permit conditions for engines EUENGINE1 and EUENGINE2 are summarized below:

- Preparation and submittal of a PM/MAP (SC 3.1)

As previously noted a PM/MAP for the Facility, which included EUENGINE1 and EUENGINE2 was submitted by White Pine electronically on August 28, 2023. The document appeared to meet all requirements and was approved in correspondence dated September 5, 2023.

- Operation of each engine without an air/fuel ratio controller and 3-way catalyst for more than 200 hours per engine per year consistent with the PM/MAP (SC 3.2)
- Maintain monthly and 12-month rolling records of hours that EUENGINE1 and EUENGINE2 operated without an air/fuel ratio controller or e-way catalyst. (SC 3.7)
- EUENGINE1 and EUENGINE2 shall not operate unless the air/fuel ration controller and 3-way catalyst is installed, maintained and operated except as specified in SC 3.2. (SC 3.3)

At the time of the August 3,2023, site inspection, it was indicated that EUENGINE1 had been replaced and was operating without a catalyst. As noted in the engine summary table, EUENGINE1 mounted on Unit 852 consists of a CAT 3512. This resulted in only EUENGINE2 operating with a pollution control device. There for the above referenced restrictions only

applies to EUENGINE2 at this time. The Facility reported at the time of the August 3, 2023, site inspection that EUENGINE2 had not operated without it control devices.

- Change outs of one or more of these engines with an equivalent emission rates or lower emission rates, without add on control equipment are allowed with reporting (SC 3.3 and 3.6)

As previously indicated, the Facility has made a change out of EUENGINE1, the effective date was reported to be December 10, 2022. A comparison of emission factors between the two engines follows.

Engine	Waukesha* (post catalyst)	Waukesha L7044GSI (post catalyst) **	CAT 3512 LE
NOx EF (g/bhp-hr)	15 (1.5)	15 (1.5)	2
CO EF (g/bhp-hr)	14 (2.8)	13 (2.6)	1.97
NMHC (g/bhp-hr)	unk	0.20 (0.10)	unk
THC (g/bhp-hr)	unk	1.0 (0.50)	unk
VOC EF (g/bhp-hr)	0.25 (0.125)	unk	0.29

***source is 2020 maers emission spreadsheet.**

****source is Breitburn like-for-like swap notification dated June 2008.**

A review of maintenance logs for EUENGINE2 indicates that White Pine conducted a like for like engine swing occurred on March 16, 2023. No notifications for either the replacement of EUENGINE1 or EUENGINE2 were received by the district office as required by permit. In addition, based on NOx emissions from manufacturer specs, it appears that NOx EFs for the CAT 3512 LE exceed the Waukesha with Catalyst, the company was notified that a permit modification may be required for EUENGINE1. Correspondence prepared by White Pine indicated that they believed the engine to be exempt stating the following:

As stated in Rule 285(2)(g), a permit to install does not apply to internal combustion engines that have less than 10,000,000 Btu/hr maximum heat input. Based on the specifications for natural gas fired EU-Engine1 (Caterpillar G3512LE), we calculate the maximum heat input to be 6,370,000 Btu/hr, thus exempting this engine.

- Verification of NOx and CO emission rates from EUENGINE1 and EUENGINE2 by testing at owners expense per the request of the District Supervisor (SC 3.4)

District files do not contain any requests for verification testing, nor verification testing results. Therefore, it would appear the above referenced condition is not applicable at this time.

- The permittee shall monitor NG usage from EUENGINE1 and EUENGINE2 on a continuous basis. (SC 3.5)
- Maintain records of monthly fuel use for EUENGINE1 and EUENGINE2 as required by SC 3.5 (SC 3.8)

Records provided by the Facility, were noted to be complete and in compliance with permit conditions. Note that at the time of report preparations and information request the exempt status of EUENGINE1 was not known, and data was provided and reviewed. The data is summarized below:

Engine – 12-month rolling time period ending	Monthly Fuel Usage (MMcf/month)	12-month rolling total Fuel Usage (MMcf)
EUENGINE1-Dec. 2022	2.40 – 4.83	51.68
EUENGINE1-July 2023	2.40 – 4.80	41.40
EUENGINE2-Dec. 2022	0.33 – 0.40	4.217
EUENGINE2-July 2023	0.29 – 0.39	4.074

- Maintain a log of all significant maintenance activities conducted and all repairs made to EUENGINE1 and EUENGINE2 and any associated air pollution control device. (SC 3.6)

Maintenance records for the EUs indicate that the Facility conducts monthly scheduled service activities. In addition, approximately every 3 months service activities including changing oil and oil filters, adjusting valves, checking compression, belts, greasing bearings, checked timing, etal. No major repairs were noted in the logs for the period of September 9, 2022, through June 26, 2023.

As previously indicated the Waukeha for EUENGINE1 was replaced in December 2022. The present engine is exempt from Rule 201 permitting, and existing permit conditions. Maintenance logs for EUENGINE2 indicate that a like for like swing for EUENGINE2 occurred in March 2023.

- Stack SVENGINE1 is limited to a diameter of not to exceed 16-inches, and a minimum height requirement of 20 feet above land surface (SC 3.9a)
- Stack SVENGINE2 is limited to a diameter of not to exceed 16-inches, and a minimum height of 25 feet above land surface (SC 3.9b)

Records provided by the facility report SVENGINE1 and SVENGINE2 as 6-inch diameter, 40-foot stacks. Stack height verification activities conducted in conjunction with the August 3, 2023, site visit indicated stack heights of apx. 40 and 43 feet for SVENGINE1 and SVENGINE2, respectively.

<u>FGHEATERS</u> – This FG consists of all NG-fired process heaters and boilers located at the Facility; total capacity of less than 20 MMBTU/hr. Permit conditions associated with FGHEATERS is limited to the following:

- Maintain monthly NG usage records for FGHEATERS (SC 4.1)

12-month rolling period ending	Monthy NG Fuel Usage (MMcf)	12-month rolling total NG Fuel Usage (MMcf)
December 2022	4.8 – 5.3	62.7
July 2023	4.8 – 5.3	62.2

As can be seen above, the Facility maintains monthly fuel records for FGHEATERS in compliance with permit conditions.

FGSWEETENING – This FG consists of all process equipment used at the Facility for the sweetening of NG. Permit conditions for FGWEETENING referred to as "Acid Gas" or Detroit River Zone (DRZ) gas. Acid gas is a classification of natural gas, which contains impurities in significantly large quantities to make the gas acidic. Acid gas contains large quantities of hydrogen sulfide (H2S) and carbon dioxide (CO2). This gas can damage pipelines via corrosion, which ultimately leads to leaks in the pipeline.

Permit conditions associated with FGSWEETENING include:

- SO2 emissions for FGSWEETENING shall not exceed 88.1 tpy as determined monthly for a 12-month rolling time period. (SC 5.1a and 5.11)
- SO2 daily average SO2 emission limits of 6076 lb/day (SC 5.1b and 5.12)

Procedures for calculating SO2 emissions are summarized in Appendix B of PTI 120-01D. SO2 emissions are summarized below and show compliance with permit limits.

12-month Rolling Time Period Ending	SO2 Monthly Emissions (lb/day)	12-month Rolling Total SO2 Emissions (TPY)
December 2022	1 - 2176	30.83
July 2023	2 -2176	22.99
Limits	6076	88.1

- Preparation and submittal of a PM/MAP to be implemented for FGSWEETENING (SC 5.4)

As previously noted a PM/MAP for the Facility, which included FGSWEETENING was submitted by White Pine electronically on August 28, 2023. The document appeared to meet all requirements and was approved in correspondence dated September 5, 2023.

- The permittee shall not operate FGSWEETENING unless the hydrogen sulfide removed from wellhead gas is controlled by either being reinjected into the ground (normal conditions) or

burned in SVFLARE (only during facility startup, shutdown, malfunction, maintenance or emergency).(SC 5.2)

Onsite staff report that H2S from FGSWEETENING is routed offsite to reinjection wells for disposal, the flare is only used when conditions require. The compressor used has an electric motor.

- The permittee shall install a continuous H2S monitoring system for any building enclosing any portion of FGSWEETENING. A visual alarm will occur when the H2S is more than 50 ppmv. (SC 5.3 and 5.6)
- If any building housing any portion FGSWEETENING has detected H2S concentrations of more than 100 ppmv, then an automatic, safe and orderly shutdown of all process inflow streams to FGSWEETENING shall occur. Full operation of FGSWEETENING may resume only after successful corrective measures have been applied (SC 5.3)

Hydrogen sulfide monitors are in place for buildings enclosing components of FGSWEETENING. Visual alarms are in place. White Pine has provided in electronic correspondence dated September 11, 2023, third party verification that the above mentioned monitor conditions are met, if not exceeded. Note that the visual alarm for H2S will occur at concentrations of 10 ppmv, and that auto shut down of all process inflow streams to FGWEETENING occurs at 50 ppmv.

- The Permittee shall measure the H2S concentration of gases being burned by SVFLARE using a stain-tube (i.e. draeger tube) or equivalent method. (SC 5.7)

Draeger tube data provided by the Facility indicated that non Acid/Non DRZ gas stream is presently being monitored monthly. H2S concentrations reported for the 2023 calendar year to date range from 10,000 – 14,000 ppm. Gases routed to the flair for 2023 have varied, with daily SO2 emissions ranging from 2 lb– 2176 lb SO2/day for the 12-month period ending July 2023.

- For each occurrence of acid gas and DRZ gas being burned in SVFLARE (as required in SC 5.7) or other non-acid gas or DRZ gas being burned by SVFLARE the appropriate records of H2S concentration will be kept on file for a period of 5-years. (SC 5.10)

Records provided by the Facility indicate that acid gas/DRZ gas or other non-acid gas that goes to the flare are monitored by concentration and gas volume on a daily basis. Records were noted to be complete and appear to be in general compliance with permit conditions.

- The permittee shall use a value of 0.50 mole-percent H2S for calculating SO2 emissions from the natural gas being flared that is not DRZ gas or acid gas, unless a higher H2S concentration is detected in any subsequent NG analysis. (SC 5.8)

In addition to the above referenced permit conditions, the Facility performs gas analysis of non-acid gases for H2S concentrations. Frequency of sampling and analysis is determined by concentrations reported. H2S thresholds used to determine sample frequency are 0.50 mole percent and 0.70 mole percent and can be summarized as follows (SC 5.8):

- H2S concentrations of 0.70 mole percent or higher:
  - Monthly sampling/monitoring until the H2S concentration drops to 0.50 mole percent.
- H2S concentrations do not exceed 0.50 mole percent:
  - Monthly H2S sampling/monitoring until 6 consecutive months of analyses report concentrations not exceeding 0.50 mole percent H2S, then sampling may be conducted quarterly.
  - Upon 4 consecutive calendar quarters of analyses reporting H2S concentrations not exceeding 0.50 mole percent, then sampling activities may occur once per calendar year.
  - Should a gas analysis show that the concentration of H2S exceed 0.50 mole percent, but is less than 0.70 mole percent the frequency of analysis shall return to monthly.

A review of data provided by the Facility reports a H2S concentration of acid gas of 67.68 mole% for monthly samples collected for 2022, and 42.97 to 59.42 mole% concentrations of H2S for 2023. Based on the concentrations reported continuing monthly monitoring appears to be appropriate.

Data provided by the Facility indicated that the following records are maintained:

- Volumetric flow rates to the flare (Mscf/day),
- The number of acid gas blowdowns per day,
- Amount of acid gas flared (Mscf/day),
- H2S concentration of acid gas,
- Amount of non-DRZ/Non-Acid gas flared (Mscf/day)
- H2S concentration of non-DRZ/Non-Acid gas (ppmv)(draeger tube)
- SO2 Emission Rate (lb/day)

Above data is summarized in FGFACILITY.

FGFACILITY – This FG consists of all process equipment at the Facility including equipment covered by other permits, grandfathered equipment and exempt equipment. SVFLARE is associated with this FG. At the time of the August 3, 2023, site inspection the flare was

operating, and an opacity of <5% was noted. Permit conditions associated with FGFACILITY include:

- 12-month rolling total NOx, CO and SO2 emissions (determined monthly) of not to exceed 89 TPY. (SC 6.1a -6.c, SC 6.9 and 6.9)

Emissions were readily available and appear to be based on appropriate EFs and methods of determination. Emissions reported for FGFACCILITY are summarized below and are in compliance with appropriate limits. Information reported is summarized below.

12-Month Rolling Time Period Ending	NOx (TPY)	CO (TPY)	SO2 (TPY)
December 2022	23	22	31
July 2023	22	19	20
Limits	89 (SC 6.1a)	89 (SC 6.1b)	89 (SC 6.1c)

- Amount of gas to SVFLARE shall not exceed 100 million standard cubic feet per 12-month rolling time period (determined monthly). (SC 6.3) Daily records are maintained by the Facility, 12-month rolling totals are summarized below:

12-Month Rolling Time Period Ending	Total Flow to SVFLARE (MMscf)
December 2022	23.972
July 2023	18.547
LIMITS	100 MMscf (SC 6.3)

- The permittee shall calculate and record the daily volumetric flow rate of gas burned in SVFLARE on a daily basis. (SC 6.10)

Total daily flow rate to SVFLARE are presented below. Note that the Facility records not only total daily flows, but also both acid and non-acid gas totals. Records appear to be in compliance with permit conditions.

12-Month Rolling Time Period Ending	Daily volumetric flow rate gas burned in SVFLARE (scF/day)
December 2022	1.19 – 1076.5
July 2023	1.04 – 1076.5

- With the exception of SVFLARE, the permittee shall only burn sweet NG. (SC 6.3)

NG-fired equipment onsite are reported by Facility staff to use only sweetened NG. Fuel gas is post FGSWEETENING. Total NG usage for the Facility is summarized below.

12-Month Rolling Time Period Ending	FGFACILITY NG Usage (MMscf/month)
December 2022	8.3 - 14.2
July 2023	8.3 – 12.1

- SVFLARE shall not be operated unless a flame is present (determined by a thermocouple or equivalent). (SC 6.4)
- SVFLARE must be equipped with a flame out alarm and electronic stop system to prevent blowdown to SVFLARE during malfunction conditions when sour gas may be flowing to the flare. (SC 6.5)

White Pine electronic correspondence dated September 11, 2023, indicates that the flare is equipped with a 2-part verification. In addition to the required thermocouple (or equivalent) the flare is also equipped with an IR camera. The flame out alarm and electronic stop consists of a valve that closes upon "flare flame out" conditions.

- SVFLARE shall have a maximum diameter of 6-inches and minimum height of 50 feet above land surface. (SC 6.11)

Stack verification activities were conducted using a Nikon Range Finder. SVFLARE was noted to be approximately 67 feet above land surface.

- The permittee must comply with all provisions of 40 CFR Part 60, Subpart KKK. (SC 6.6)

As previously noted, the Facility is subject to limited requirements of Subpart KKK. Semiannual reporting will be initiated by the present operator with the present semi-annual period.

PTI 149-12 – Permit Conditions

The referenced permit was issued to Breitburn Operating Company, LP for EUDEHY. A glycol dehydration system processing gas from the Richfield and Detroit River Zones; and contains a 0.075 MMBTU/HR NG-fired burner. Pollution control devices associated with EUDEHY include a Flash tank and a reboiler or catalytic igniter. Permit conditions associated with EUDEHY include the following:

- The Permittee shall not operate EUDEHY unless the flash tank is installed, maintained and operated such that the flash tank exhaust gas flows to the condenser and reboiler or catalytic igniter for destruction. (SC IV.1)
- The permittee shall not operated EUDEHY unless the condenser is installed, maintained and operated such that the condenser exhaust gas is routed to the glycol reboiler burner or catalytic igniter for destruction. (SC V.2)

EUDEHY is reported to be in compliance with the above referenced permit conditions. It should be noted that no catalytic igniter is part of EUDEHY.

- Not to exceed VOC emissions of 4.0 T per 12-month rolling time period, determined at the end of each calendar month. (SC I.1) VOC emissions reported are in compliance with SC I.1.

12-Month Rolling Time Period ending	VOC Emissions for 12-Month Rolling Time Period (TPY)
December 2022	0.13
July 2023	0.23
Limits	4.0 (SC I.1)

- The permittee shall not use stripping gas in EUDEHY. (SC II.1)

No stripping gas is used onsite.

- The permittee shall comply with all provisions of 40 CFR Part 63 Subpart HH (SC III.1) and submit all applicable reporting. (SC VII.1)

As previously indicated, total VOC (benzene being a VOC) emissions of less than 1 tpy (benzene threshold for exemption from Subpart HH) and average flow rates of 1,622.74 MCF/day were reported for the 2022 calendar year, below the 3 MMSCF/day threshold has exempted EUDEHY from requirements of Subpart HH, making the above referenced permit condition not applicable.

- The glycol recirculation rate for EUDEHY shall not exceed a maximum of 0.8 gallons per minute. (SC III.2)
- The permittee shall monitor the glycol recirculation rate of EUDEHY on a daily basis. (SC VI.2) and maintain the records (SC VI.5)

12-Month Rolling Time Period ending	Glycol Recirculation rate (gpm)*	Glycol Recirculation Rate (gallon/day)
December 2022	0.09 – 0.71	42 - 727
July 2023	0.09 – 0.71	42 - 727

Limits	**0.8 (SC III.2)**	**NA**

***A review of data provided, indicated a total of 4 exceedances of the glycol recirculation limit of SC III.2. Most notable occurred on September 12, 2022, when an isolated glycol recirculation rate of 4.45 gpm was reported. Other exceedances included 0.98 gpm on October 14, 2022, 2.55 gpm on February 15, 2023, and 1.18 gpm on April 13, 2023.**

Records noted onsite at the time of the August 3, 2023, site inspection indicated that EUDEHY processes approximately 500 gallons/24 hours, with the volume recorded on the operators log on a daily basis. Facility staff further indicated that the speed control is set for recirculation speed of approximately 0.3 gallons per minute. Glycol recirculation rates reported for 2023 are in general consistent with the set speed. Data provided by the Facility is summarized above.

- EUDEHY shall not be operated unless the condenser exhaust gas is 140 degrees F or less (SC III.3)
- The permittee shall install , calibrate maintain and operate in a satisfactory manner a device to monitor the exhaust gas temperature of the EUDEHY condenser on a daily basis, while processing NG. (SC VI.3) Records to be maintained on file (SC VI.7)

Data provided by the Facility operator confirmed daily documentation of condenser exhaust gas temperature. Data for the 12-month rolling time period ending on July 2023, identified a daily high of 133 degrees on August 23, 2023. The next highest daily temperature was reported to be 116 degrees on February 24, 2023.

- At least once per calendar year the permittee shall obtain, by sampling and analysis of the wet gas stream. The analysis shall include nitrogen, CO2, H2S, C1-C6 series hydrocarbons, benzene, toluene, xylene, ethylbenzene, and heptanes plus. A change in sampling frequency must be submitted to the AQD District Supervisor for review and approval. (SC V.1) records must be maintained on file (SC VI.6)

The initial wet gas stream submittal provided (2022 sampling) was found to be incomplete of the BTEX constituents. The Facility at the time of this document has scheduled a wet gas stream sampling to be conducted on September 27, 2023. Review of the document will be conducted independent of this report.

- SVDEHY is restricted to a maximum exhaust diameter of 6-inches and minimum height above land surface of 16 feet (SC VIII.1)

It was noted that there were two stacks onsite, both the condenser and the reboiler. Stack heights were not verified at the time of the August 3, 2023, as clarification as to which stack SVDEHY was. However, both stacks appeared to meet the construction requirements.

SUMMARY

August 3, 2023, AQD District Staff conducted a, scheduled site inspection of the White Pine Production, LLC (AKA White Pine) Beaver Creek DRZ (N6974). The referenced facility is located in the NW ¼, SE ¼ of Section 17, Township 25 N, Range 4W, Beaver Creek Township, Crawford County, Grayling, Michigan.

The referenced facility is considered a synthetic minor opt-out and operates under Permit to Install (PTI) No.s 120-01D and 149-12. The last compliance inspection of record was conducted on August 21, 2018. At that time no compliance issues were noted, and the facility was determined in compliance with their permit.

The facility is a fenced and gated facility. Due to potential H2S hazards, this Facility is only visited in the company of White Pine Staff. In addition, Staff are required to wear Fire Resistant Clothing (FRC) and a H2S Monitor.

Records required to make a compliance determination for the facility were requested electronically on July 27, 2023. The data provided (August 28th, 2023) has been reviewed and incorporated into this document.

The Beaver Creek DRZ facility is an oil and gas production facility that treats sour gas from the Detroit River Zone (DRZ) prior to transfer to a pipeline. In addition, the Facility also extracts Natural Gas Liquids (NGLs) from the produced gas. NG from wells feeding the Facility is passed through field separators to remove hydrocarbon condensate and water. The NG is then processed in an amine sweetening plant to remove H2S and CO2. Process heaters and compressors are used to aid in recovery of the liquid hydrocarbons and gas pressure as necessary for further pipeline transport or fuel use. Acid gas coming off the plant is transported to injection wells for disposal. The Facility reports that the pumps and air compressor onsite are electric, and do not run on NG. A flare onsite handles emergency situations, when the reinjection system fails.

The Facility is located southwest of Grayling, Michigan on an apx. 179-acre parcel immediately bounded to the N, S and W by State Land. The eastern boundary of the parcel consists of both state lands and an apx. 30 acre privately owned parcel. Facility staff reported that there are approximately 200 wells associated with the Facility, approximately 180 wells are producing.

The purpose of the site visit was verification of compliance with the referenced permit. Based on observations made and information provided by White Pine, the Facility appears to be operating in general compliance with permit conditions. Areas of non-compliance noted as part of file and data review included:

- Exceedances of EUDEHY glycol recirculation limits of 0.8 gpm (SC III.2). These appear to be isolated instances, with rates for the past 6 months are consistent with the set rates of approximately 0.3 gpm.
- Installation of replacement engine for EUENGINE1 and swing for EUENGINE2 without notification. Communications with White Pine have indicated that the replacement engine for EUENGINE1 is exempt under R 285(2)(g), and will complete the proper notifications for any future engine changeouts.
- Failure to report, 2022 MAERS reporting was received after the March 15, 2023, due date. The annual emissions report has since been received and approved by District Staff.
- Annual wet stream gas analysis for 2023 is presently scheduled for September 27, 2023. Review of the analysis will be completed independent of this document/report.
- Federal reporting, Facility will complete and submit future NSPS semi-annual KKK Leak detection reporting.

No violation notice is being issued at this time. Compliance issues have been brought to the attention of the operator who has committed to corrections, and has addressed each during the report preparation period.

NAME Marion G LeBlanc DATE 11-20-23 SUPERVISOR Shane Nixon