Notice of Construction Application for Withdraw from Title V

June 2020

Ascensus Specialties, LLC

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Acronyms and Abbreviations

ASIL	acceptable source impact level
BACT	Best Available Control Technology
CAA	Clean Air Act
CFR	Code of Federal Regulations
DSBH	dry sodium borohydride
EPA	U.S. Environmental Protection Agency
EU	emission unit
GHG	greenhouse gas
gpm	gallon(s) per minute
HAP	hazardous air pollutant
IPA	isopropyl amine
KBH	potassium borohydride
lb	pound(s)
lb/hr	pound(s) per hour
LSBH	liquid sodium borohydride
MACT	maximum achievable control technology
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NOC	Notice of Construction
NSPS	New Source Performance Standards
ORCAA	Olympic Region Clean Air Agency
PTE	potential to emit
RICE	Reciprocating Internal Combustion Engine
SBH	sodium borohydride
SEPA	Washington State Environmental Policy Act
SOCMI	Synthetic Organic Chemicals Manufacturing Industry
SQER	small quantity emission rate

TAP	toxic air pollutant
TMB	trimethyl borate
tpy	tons per year
VOC	volatile organic compound
WAC	Washington Administrative Code

1. Project Description

1.1 Background

Ascensus Specialties LLC (Ascensus) currently produces liquid and dry sodium borohydride (LSBH and DSBH) at its facility located at 4800 State Route 12 in Elma, Washington, and operates the facility under Air Operating Permit No. 11AOP850 issued by the Olympic Region Clean Air Agency (ORCAA) in 2011. The location of the facility is shown on Figure 1-1 and the facility site plan is provided on Figure 1-2.

The primary products produced at the Elma plant include:

- LSBH products, which contain sodium borohydride, sodium hydroxide, and water (also referred to as "stabilized wet solution") including Borol, VenPure, and VenMet. Borol is used primarily by the pulp and paper industry to produce sodium hydrosulfite bleach that is used to bleach pulp in the production of paper. VenMet liquid is used to recover heavy metals from waste streams, while VenPure liquid is used to purify various products in the chemical industry and catalyze reductive chemistries in the pharmaceutical industry.
- Intermediate products of the LSBH process, 70 percent trimethyl borate (TMB) azeotrope, which is reacted with sodium hydride to form sodium borohydride and sodium methoxide
- TMB/methanol and pure TMB are packaged in bulk and mini-bulk quantities. These products are used primarily in the wood preservative industry.
- DSBH products include VenPure, which is in the form of powder, granules, and caplets. These products are used primarily in the pharmaceutical industry in synthesis and purification of pharmaceutical products as well as the chemical process industry.
- Sodium hydroxide, which is produced as a byproduct of the DSBH process, is used in a wide variety of applications.

A potassium borohydride (KBH) plant (EU8) has been shut down since 2011. Insignificant emission units associated with the KBH plant included liquid potassium hydroxide storage and handling (IEU9) and potassium borohydride mother liquor storage (IEU12). These units are also no longer in service.

Calculations had estimated the Elma facility's potential hazardous air pollutant (HAP) emissions at greater than 10 tons per year (tpy) methanol, which made the facility a major source. Section 501(2) of the federal Clean Air Act (CAA) provides that any source that is major under Section 112 will also be major under Title V.

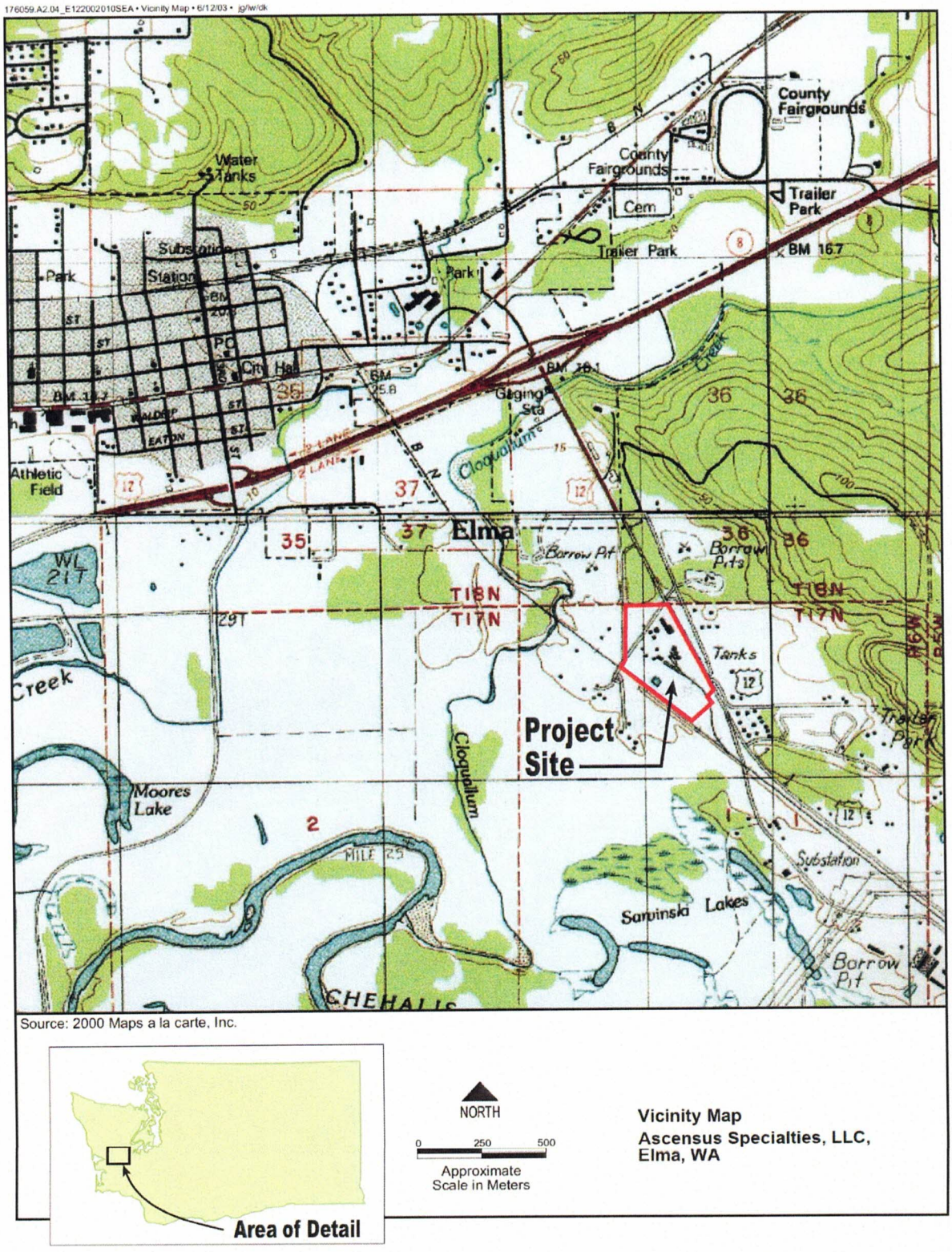


Figure 1-1. Site Location Map

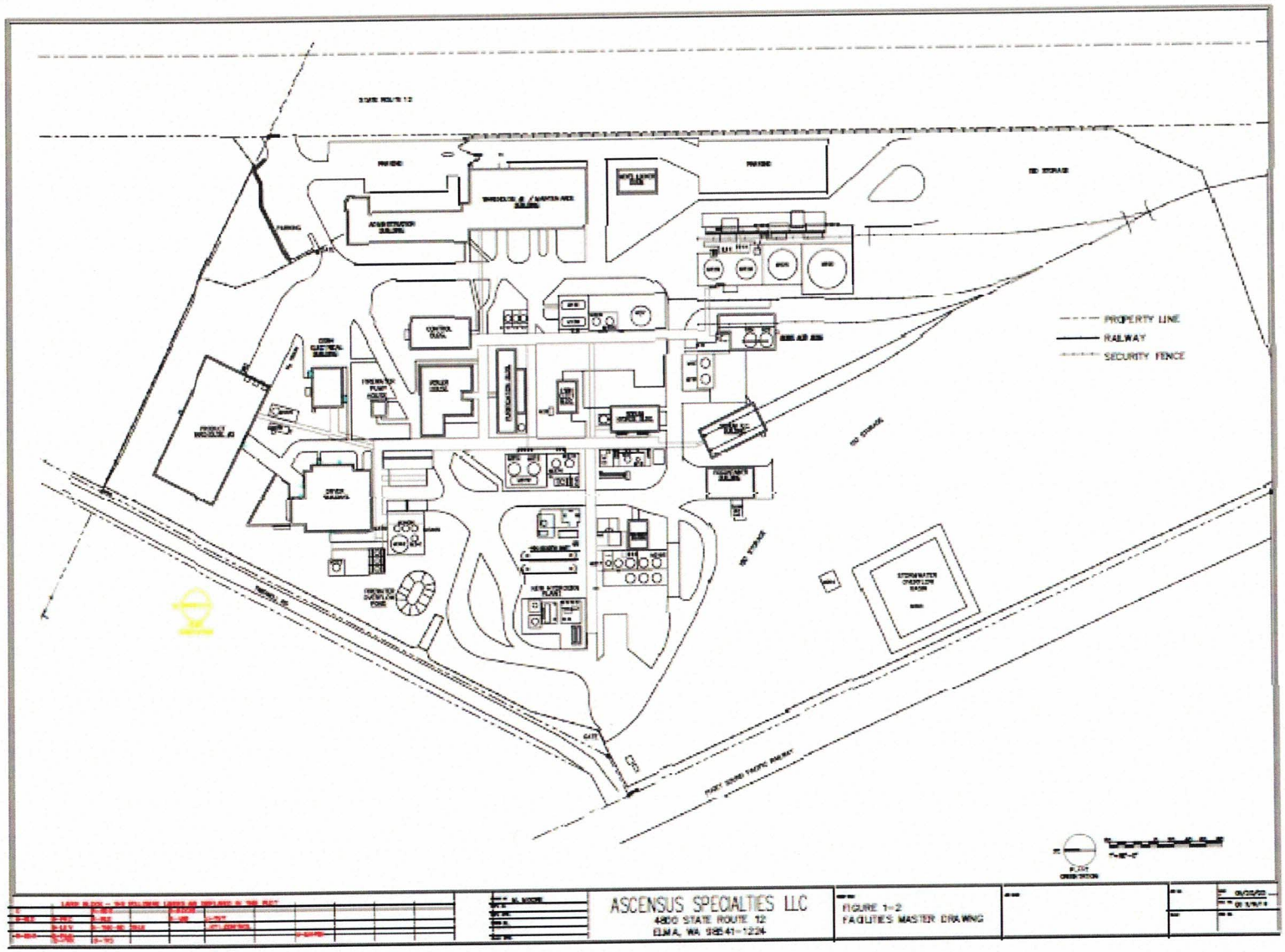


Figure 1-2. Site Plan

Therefore, the Elma facility was required to apply for and obtain a Title V Air Operating Permit. The Elma facility currently operates under Air Operating Permit No. 11AOP850, issued on December 1, 2011. On November 29, 2011, Rohm and Haas, now Ascensus, received a voluntary emission limit to limit its methanol emissions to less than 10 tpy. The new PTE will also be less than 10 tpy.

Since 1995, U.S. Environmental Protection Agency (EPA) guidance had stated a policy, known as the "once in, always in" policy, that stated that facilities that are major sources for HAP on the first compliance date of the standard are required to comply permanently with the standard. On June 25, 2018, EPA issued a guidance memorandum on the subject regarding major sources and maximum achievable control technology (MACT) standards under Section 112 of the CAA. The guidance allowed that a major source can be reclassified as an area source and thereby avoid being subject thereafter to major source MACT and other requirements applicable to major sources under CAA Section 112.

Therefore, Ascensus is requesting to set a PTE that will allow the Elma facility to continue to be classified as an area source and is requesting that ORCAA withdraw the facility from the Title V program. ORCAA's Notice of Construction Form 1 is included in Appendix A.

1.2 Liquid Sodium Borohydride Production

The LSBH plant is designated as Emission Unit 1 (EU1) and was part of the original plant that was approved unconditionally by ORCAA in 1974. Air pollutant emissions from EU1 include methanol, n-hexane, and toluene, which are volatile compounds and are listed as toxic air pollutants (TAPs) in the Washington State Air Toxics regulation (Washington Administrative Code [WAC] Chapter 173-460) and regulated as a HAP.

LSBH is produced as both a product and as a feedstock to the DSBH plant. LSBH production involves two parallel reaction processes that produce two intermediary compounds: TMB and sodium hydride. The TMB and sodium hydride are reacted together to form sodium borohydride and sodium methoxide. The reaction mix is hydrolyzed to convert the sodium methoxide to sodium hydroxide and methanol. The methanol is recovered from the resulting water-based stabilized liquid sodium borohydride/sodium hydroxide product. This solution is the final product of the LSBH plant. A block flow diagram of the LSBH process is provided in Appendix B.

Methanol emissions are generated throughout the LSBH plant whenever tanks and vessels containing solutions of methanol compounds vent gases and vapors. This can occur when the tank or vessel is cycled or at any time to relieve pressure. Since methanol is an intermediary compound in the production of LSBH, the facility captures most of the gases and effluent containing methanol compounds and reclaims the methanol by refining and recycling it back into the process. For this reason, all vent gases in the LSBH plant that contain methanol compounds except for the M46 tank are connected to one of two common vent systems that reclaim the methanol. After reclaiming residual methanol, vent gases are scrubbed in one of two methanol scrubbers, G53 or A12, prior to exhausting to the atmosphere.

Tank M46, the sodium hydride/Orex collection vessel, is the emission point associated with the sodium hydride and sodium borohydride reactors and associated storage vessels. Tank M46 vents to atmosphere and the vent is uncontrolled.

Scrubber G53 is a Keane Metal Fabricators 4-inch low-energy venturi scrubber and 36-gallon separator tank. There is a 13.5-gallon-per-minute (gpm) recirculating flow by a pump through the venturi, which creates a vacuum to collect the vent gases. Freshwater makeup is through a spray nozzle in the 3-inch exhaust stack, which provides a final scrub of the gas after it is contacted with the high-rate venturi flow. It also helps keep the flame arrestors from plugging with boric acid. The main compound scrubbed from this vent is trimethyl borate, which forms boric acid and methanol on contact with water.

The A12 scrubber is fed softened water via a spray nozzle counter-current to the gas flow. The water absorbs methanol as it falls through the packing. Non-condensables pass through a demister and flame-arrester before venting out the top of A12. The methanol-enriched water drains via a seal leg into tank M38.

The A12 scrubber was designed by Cellcote/Air Pollution Control to have a maximum capacity of 127 standard cubic feet per minute and water flow of 3.5 gpm; the pressure drop was 1.5 inches of water gauge. Water flow is typically 2.5 gpm and gas flow 35 dry standard cubic feet per minute. At these conditions, using the generalized pressure drop correlation available from Verantis (1) for this packing, the scrubber is currently operating substantially below flooding and has excess capacity to allow increased flow rates.

Methanol emissions are also generated when liquid and volatiles escape through pumps, flanges, connections, and other similar routes. Such emissions are referred to as fugitive emissions.

1.3 Dry Sodium Borohydride Production

The DSBH plant further refines LSBH into DSBH product. Refining DSBH is accomplished in a continuous process involving extraction, evaporation, and crystallization followed by batch drying.

The DSBH process relies upon the compound isopropyl amine (IPA) to further concentrate the LSBH solution. IPA is used to extract caustic and water from the sodium borohydride in the LSBH solution. The resulting solution from the extraction column contains IPA, sodium borohydride (SBH), and water. The IPA is separated from the SBH and water and reused while the SBH is further concentrated, crystallized, and dried to produce the final DSBH.

Air pollutant emissions from the DSBH plant include only IPA, which was previously listed as a TAP in Chapter 173-460 WAC but was removed in a 2009 revision. A concentrated solution of IPA is used in the extraction column, which is the first step in the DSBH plant. The majority of this solution is later reclaimed.

Although most of the IPA/water solution is removed from the product stream, vapors present in subsequent units of the DSBH plant also contain limited concentrations of IPA. For this reason, all equipment in the DSBH plant except the vacuum dryers are vented to the same vent system, which is served by the condensate chiller and ultimately exhausts through the IPA vent scrubber (A-309). The vacuum dryers directly vent to the IPA scrubber, thus bypassing the condensate chiller.

The IPA scrubber currently has an annual IPA emission limit of 0.10 tpy. Ascensus believes that a 10 percent increase in production will not affect its ability to meet this emission limit. Therefore, the DSBH process's potential emissions will not change due to the production increase. The existing monitoring requirements will also continue to apply to the scrubber.

1.4 Combustion Units

The Ascensus facility has boilers, a hydrogen reformer, emergency generators, and a fire pump. The units are listed in Tables 1-1 and 1-2. The boilers and reformer are currently permitted at their full rating for 8,760 hours per year. The generators and fire pump are for emergency use only.

Table 1-2. Boilers and Hydrogen Reformer

Emission Unit ID #	Description	MMBtu/hr
EU2	G23M boiler	26.1
EU3	G23E boiler	26.1
EU4	G27 boiler	8.4
EU5	Hydrogen reformer	10.5
EU6	G23W boiler	24.2

MMBtu/hr = million British thermal units

Table 1-2. Emergency Generation and Fire Water

Emission Unit ID #	Description	Horsepower
EU9	G49S emergency generator	375
EU9	G49N emergency generator	350
EU9	G49E emergency generator	415
EU9	P80 fire water pump	85

2. Emissions Estimates

The 2018 emissions of volatile organic compounds (VOCs) and HAPs were calculated for the LSBH and DSBH processes using actual operating hours and liquid throughput for 2018. The facility's current potential emissions of criteria, hazardous and toxic air pollutants were calculated for the entire Ascensus facility. The emissions include the LSBH and DSBH processes and combustion units. All emissions were calculated using ORCAA-approved emission factors from the facility's 2018 HAP emissions inventory unless otherwise noted. The detailed emission estimates are included in Appendix C.

2.1 Liquid Sodium Borohydride

Actual emissions for 2018 from the G53 and A12 scrubbers are calculated based on the number of hours the process was operated and a pound-per-hour (lb/hr) emission rate determined by the latest source test.

2.1.1 G53 Scrubber

The G53 scrubber was tested on April 30, 2015. The methanol emission rate was 0.0015 lb/hr and the scrubber had a removal efficiency of 99.97 percent. The scrubber is required by the existing permit to achieve a removal efficiency or 98 percent or better. Actual methanol emissions from the scrubber are based on the 0.0015 lb/hr emission rate. Current potential emissions were calculated by adjusting the methanol emission factor from 99.97 percent removal to the permit-required 98 percent removal rate. Potential emissions were also based on the process operating 8,760 hours per year.

2.1.2 A12 Scrubber

The A12 scrubber was tested on March 20, 2014. The methanol emission rate was 0.011 lb/hr and the scrubber had a removal efficiency of 99.97 percent. The scrubber is required by the existing permit to achieve a removal efficiency or 98 percent or better. Actual methanol emissions from the scrubber are based on the 0.011 lb/hr emission rate. Current potential emissions were calculated by adjusting the methanol emission factor from 99.97 percent removal to the permit-required 98 percent removal rate. Potential emissions were also based on the process operating 8,760 hours per year.

2.1.3 M46 Vent

The M46 vent was tested on March 18, 2014. The methanol emission rate was 0.751 lb/hr. Actual current potential methanol emissions from the vent are based on the 0.751 lb/hr emission rate. Potential emissions were also based on the process operating 8,760 hours per year.

2.1.4 Tanks

For the emission calculations, all tanks except for the those listed in Table 2-1 were assumed to operate at their maximum capacity. For the tanks in Table 2-1

Table 2-1. LSBH Process Tanks

Tank Identification	Throughput	Units
M40N - Oil Water Tank	526	1,000 gallons
M219S - Used Oil Tank	126	1,000 gallons
M220N - Used Oil Tank	104	1,000 gallons
Used Oil Tote Filling	27.5	1,000 gallons
High Methanol Content Tote Filling	17.5	1,000 gallons

TMB Drum Loading	2400	drums

1.1 Dry Sodium Borohydride

The IPA scrubber currently has an annual IPA emission limit of 0.10 tpy. The existing monitoring requirements will also continue to apply to the scrubber.

1.2 Combustion Units

The boilers and reformer are permitted at their full rating for 8,760 hours per year. The emergency generators and fire pump are for emergency use only and are assumed to be operated a maximum of 100 hours per year based on 40 CFR 63 Subpart ZZZZ §63.6640(f)(4):

> Emergency stationary RICE located at area sources of HAP may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. Except as provided in paragraphs (f)(4)(i) and (ii) of this section, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

2.2 Facility-wide Potential to Emit

The facility's potential emissions of criteria, hazardous and toxic air pollutants were calculated for the entire Ascensus facility. Greenhouse Gas (GHG) emissions were estimated. The detailed emission estimates are included in Appendix C.

Table 2-2 shows the methanol and total HAP actual emissions in 2018, the methanol PTE submitted for the Title V Renewal application and current operation PTE. The difference between the Title V renewal methanol emissions and the current methanol emissions is due to the facility using the actual methanol emission rate from the latest source test instead of adjusting the emission rate for the removal efficiency required by the permit. This is discussed above in Section 2.1, Liquid Sodium Borohydride. Even with the reduction in control efficiency to 98 percent, the emissions are below the major source thresholds of 10 tpy for a single HAP and 25 tpy for total HAPs.

Table 2-2. Comparison of HAP values

Pollutant	2018 Actual	Title V Renewal PTE	Current PTE	Major Source Threshold
Methanol	3.75	4.5	8.1	10
Total HAPs	ND	ND	9.3	25

ND = no data

3. Regulatory Applicability

This section discusses permitting requirements for the proposed project, and federal and state regulations applicable to individual emission units.

3.1 ORCAA

ORCAA is the air permitting authority for the Ascensus facility. ORCAA's air permitting requirements are codified in its Regulation 6. They incorporate the federal program requirements listed in 40 CFR Parts 50-99 and state requirements listed in Chapter 173-400 WAC. They establish permit review procedures for all facilities that can emit pollutants to the ambient air.

Under Rule 6.1, an owner or operator that proposes to modify a source must file a Notice of Construction (NOC) application prior to beginning construction; this process is also called new source review. Therefore, Ascensus is requesting to revise the existing voluntary limit on emissions of hazardous air pollutants (HAPs) per WAC 173-400-091 in order to characterize the facility as an area source with respect to all National Emission Standards for Hazardous Air Pollutants. submitting this NOC permit application.

3.2 Washington State Regulations

The state of Washington air permitting requirements are codified under WAC 173-400-110, 173-400-700, and 173-401. These regulations incorporate federal permitting program requirements and establish permit review procedures for all facilities that can emit regulated pollutants to the ambient air.

3.2.1 WAC 173-401 Operating Permit Regulation

Ascensus currently has a Title V permit and is also a synthetic minor source.

On November 29, 2011, Rohm and Haas, now Ascensus, received a voluntary limit on methanol emissions to less than 10 tpy (11MOD860). Because previous calculations had estimated the Elma facility's potential emissions at greater than 10 tpy methanol, the Elma facility was subject to a MACT standard under Section 112 of the CAA (40 CFR Part 63, Subpart FFFF, or the MON rule). In addition, Section 501(2) of the CAA provides that any source that is major under Section 112 will also be major under Title V. Therefore, the Elma facility was required to apply for and obtain an Air Operating Permit. The Elma facility currently operates under Air Operating Permit No. 11AOP850, issued on December 1, 2011.

Since 1995, EPA guidance had stated a policy, known as the "once in, always in" policy, that stated that facilities that are major sources for HAP on the first compliance date of the standard are required to comply permanently with the MACT standard. On June 25, 2018, EPA issued a guidance memorandum on the subject regarding major sources and MACT standards under Section 112 of the CAA. The guidance allowed that a major source can be reclassified as an area source, and thereby avoid being subject thereafter to major source MACT and other requirements applicable to major sources under CAA Section 112. Ascensus is no longer a major source and has become an area source by taking an enforceable limit on its potential to emit hazardous air pollutants below the major source thresholds, and would like to withdraw from the Title V program.

3.2.2 Washington State Greenhouse Gas Reporting Rule

According to WAC 173-441-030(1), the state Greenhouse Gas (GHG) Reporting Rule applies to industrial facilities that emit at least 10,000 metric tpy of GHG in terms of carbon dioxide equivalents, including

carbon dioxide from biofuels. Because Ascensus can potentially emit this quantity of GHG, the State GHG Reporting Rule applies.

3.3 Federal Standards

40 CFR Parts 61 and 63 are the federal emission standards that have been developed to address certain individual HAPs and HAP emissions from a variety of source categories. The individual HAP rules are found in 40 CFR Part 61 and are typically referred to as the National Emission Standards for Hazardous Air Pollutants (NESHAPs).

The source category NESHAPs (40 CFR Part 63) typically apply to sources that are classified as major sources of HAPs and operate affected equipment as listed in each standard. However, several of these source category NESHAPs also apply to affected equipment at area sources of HAPs. A source is a major source of HAPs if it has the PTE of any individual HAP in excess of 10 tpy or a combination of HAPs in excess of 25 tpy. A source is an area source of HAPs if its potential HAP emissions are below the major source threshold.

By limiting its potential emissions, Ascensus has been recategorized as an area source instead of a major source.

3.3.1 New Source Performance Standards (NSPS)

3.3.1.1 40 CFR Part 60, Subpart Db: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

Subpart Db applies to steam generating units with a heat input capacity greater than 100 MMBtu/hr. The boilers (EU2, EU3, EU4, EU6) and reformer (EU5) all have a heat input capacity of less than 100 MMBtu/hr. Therefore, Subpart Db does not apply.

3.3.1.2 40 CFR Part 60, Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Subpart Dc applies to steam generating units with a heat input capacity between 10 and 100 MMBtu/hr which commenced construction, modification, or reconstruction after June 9, 1989. EU2 and EU3 (boilers G23M and G23E) were constructed prior to the effective date of this regulation and have not been modified since being constructed except for minor repairs, replacements, and alterations. EU4 (boiler G27) and EU5 (reformer) both have a heat input capacity less than the threshold size for this regulation. Therefore, EU2, EU3, EU4, and EU5 are not required to comply with Subpart Dc.

EU6 (boiler G23W) has a heat input capacity of 24.2 MMBtu/hr and was constructed after June 9, 1989. Therefore, it is required to comply with Subpart Dc. EU6 primarily combusts natural gas but uses diesel fuel during periods of gas curtailment.

3.3.1.3 40 CFR Part 60, Subpart VV: Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI)

Subpart VV applies to a portion of the purification process in EU1. However, for any equipment, emission stream, or wastewater stream subject to the provisions of 40 CFR Part 63 Subpart FFFF, another rule, §63.2535, allows the facility to elect to comply only with the provisions of Subpart FFFF. Per §63.2535(k), the Elma facility elected to demonstrate compliance with Subpart FFFF; therefore, Subpart VV did not apply. Ascensus plans to continue to comply with the provisions of Subpart FFFF even though it is no longer a major source.

3.3.1.4 40 CFR Part 60, Subpart NNN: Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations

Subpart NNN applies to distillation operations constructed, modified, or reconstructed after December 30, 1983. The A2 West Distillation column in EU1 is the only column constructed after this date. However, the A2 West distillation unit meets the low flow exemption provided in §60.660(c)(6). This exempts the unit from all requirements of this subpart except for the test method and procedure and the recordkeeping and reporting requirements in §60.664(g) and paragraphs (i), (l)(5), and (o) of §60.665. Therefore, Subpart NNN applies.

3.3.2 National Emission Standards for Hazardous Air Pollutants

3.3.2.1 40 CFR Part 63, Subpart UU: National Emission Standards for Equipment Leaks – Control Level 2 Standards

40 CFR Part 63 Subpart UU applies to the control of air emissions from equipment leaks for which another subpart references this subpart. 40 CFR part 63 Subpart FFFF requires compliance with either Subpart UU, Subpart H, or Subpart F (§63.2480) for equipment leaks. The permittee chooses to comply with 40 CFR part 63 Subpart UU; therefore, Subpart UU applies to EU1.

3.3.2.2 40 CFR Part 63, Subpart EEEE: National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline) (OLD)

Subpart EEEE applies to organic liquids distribution practices at major sources of HAPs. At the first compliance date of this MACT standard, the Elma facility was a major source of HAPs. Subpart EEEE affects all storage tanks storing organic liquids, all transfer racks at which organic liquids are loaded into or unloaded out of transport vehicles and/or containers, and all equipment leaks associated with these storage tanks and transfer racks (including transfer pipes, etc.).

All EU1 storage tanks, transfer racks, transport vehicles, containers, and equipment leak components are part of an affected source under 40 CFR Part 63 Subpart FFFF, and therefore Subpart EEEE does not apply to EU1 (§63.2338(c)(1)).

EU7 does not include any storage tanks or transfer tanks that contain any organic liquids as defined in Subpart EEEE. Therefore, Subpart EEEE does not apply to EU7.

EU8's operation does include transfer of organic liquids to storage containers. Therefore, Subpart EEEE does apply to EU8.

3.3.2.3 40 CFR Part 63, Subpart FFFF: National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing (MON)

Subpart FFFF applies to miscellaneous organic chemical manufacturing process units located at a major stationary source of HAP emissions. The Elma facility's liquid sodium borohydride plant (EU1) produces methanol as an isolated intermediate (listed in 1987 Standard Industrial Code 286), and at the first compliance date of this MACT standard, the facility was a major source of HAPs. Therefore, EU1 was subject to this MACT standard. Ascensus is currently a synthetic minor source but has agreed to continue to comply with the provisions of Subpart FFFF.

The Elma facility's DSBH operation (EU7) produces only inorganic chemicals under NAICS 325188 and are exempted from Subpart FFFF per 63.2435(c)(5). No organic intermediates are produced in EU7.

3.3.2.4 40 CFR Part 63, Subpart ZZZZ: National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources for HAP emissions. The Elma facility was issued a voluntary limit on HAP emissions on November 29, 2011, and is considered an area source with respect to this standard. The Elma facility has four existing stationary RICE. These units are all subject to the requirements in Subpart ZZZZ that apply to existing emergency compression ignition stationary RICE. The initial compliance date is May 3, 2013.

3.3.2.5 40 CFR Part 63, Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

According to §63.7485, facilities that are major sources of HAPs and operate boilers or process heaters will be subject to this subpart. The Elma facility was issued a voluntary limit on emissions on November 29, 2011, so that it is no longer a major source of HAPs with respect to this specific subpart. Therefore, Subpart DDDDD does not apply.

3.3.2.6 40 CFR Part 63, Subpart JJJJJJ: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

Subpart JJJJJJ applies to boilers that combust coal, biomass, or oil located at area sources of HAPs. Ascensus operates four boilers and a reformer at its facility, which is an area source of hazardous air pollutants as a result of a voluntary limit on emissions.

EU3 (G23E boiler) and EU5 (reformer) are only capable of burning natural gas and are therefore not subject to the requirements of Subpart JJJJJJ per §63.11195(e).

EU2 (G23M boiler), EU4 (G27 boiler), and EU6 (G23W) are capable of burning both natural gas and diesel fuels. However, the definition of gas-fired boiler in this subpart includes boiler that "burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel." Ascensus has stated that it will only burn natural gas in these boilers unless the gas supply is curtailed. Therefore, the units are also exempt under §63.11195(e).

3.4 Prevention of Significant Deterioration

Federal and state regulations that are intended to prevent significant deterioration of existing air quality apply to certain new or modified air pollution sources that have the potential to be a major source of pollutants and emit more than 100 tpy of specific pollutants, or 250 tpy depending on the source category.

Ascensus is not a major source by this definition and the emissions are well below the thresholds for prevention of significant deterioration and is hence not subject to Prevention of Significant Deterioration review.

4. Proposed Permit Changes

Ascensus would like to withdraw from the Title V program and have its Title V permit rescinded. Ascensus will continue to comply with the requirements of 40 CFR Part 63 Subparts UU, EEEE, and FFFF as they apply to major sources.

Since all of the Elma facility's NOCs and permit modifications have been incorporated into the Title V permit. Instead of returning to operating under the existing separate NOCs and modifications, Ascensus would like to either modify its Synthetic Minor Order #11MOD860 or receive a new Order of Approval that incorporates all of their applicable requirements into one permit.

Ascensus would also like to remove all the provisions that are associated with the potassium borohydride (KBH) plant. That process has been removed from the facility.

Appendix A
ORCAA Forms

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

FORM 1- NOTICE OF CONSTRUCTION

TO CONSTRUCT - INSTALL - ESTABLISH OR MODIFY AN AIR CONTAMINANT SOURCE

Form 1 Instructions:

1. Please complete all the fields below. **This NOC application is considered incomplete until signed.**
2. If the application contains any confidential business information, please complete a Request of Confidentiality of Records (www.orcaa.org/forms).
3. Duty to Correction Application: An applicant has the duty to supplement or correct an application. Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application must, upon becoming aware of such failure or incorrect submittal, promptly submit supplementary factors or corrected information.

Business Name:
Ascensus Specialties LLC

Mailing Address:
4800 State Route 12 Elma, WA 98541

Physical Address of Project or New Source:
4800 State Route 12 Elma, WA 98541

Billing Address:
4800 State Route 12 Elma, WA 98541

For ORCAA use only

File No: 463
County No: 27
Source No: 59
Application No: 19NOC1411

Date Received:
Received
JUL 10 2020
ORCAA

Project or Equipment to be installed/established:

Revision to Synthetic Minor Order

Anticipated startup date: ___ / ___ / ____ Is facility currently registered with ORCAA? Yes ☑ No ☐

This project must meet the requirements of the State Environmental Policy Act (SEPA) before ORCAA can issue final approval. Indicate the SEPA compliance option:

☐ SEPA was satisfied by _____ (government agency) on ___/___/___ (date) - Include a copy of the SEPA determination

☐ SEPA threshold determination by _____ (government agency) is pending - Include a copy of the environmental checklist

☐ ORCAA is the only government agency requiring a permit - Include ORCAA Environmental Checklist

☑ This project is exempt from SEPA per WAC 197-11-800(19)(a) (WAC citation).

Name of Owner of Business:
Ascensus Specialties LLC

Title:

Email: | Phone:

Authorized Representative for Application (if different than owner):
Dion Baratti

Title: EH&S Manager

Email: dbaratti@ascensusspecialties.com | Phone: 360-482-8820

I hereby certify that the information contained in this application is, to the best of my knowledge, complete and correct.

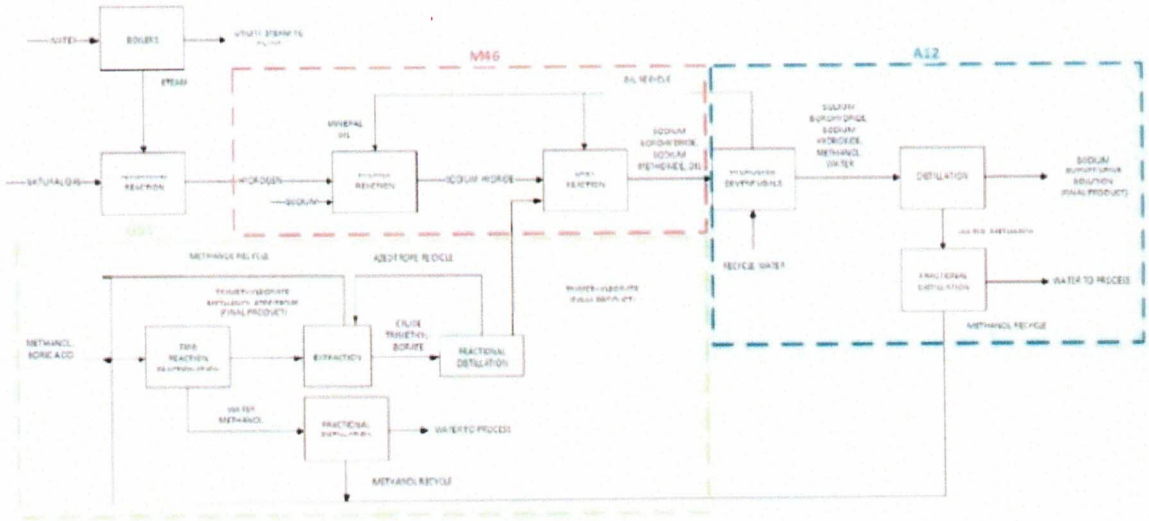
Signature of Owner or Authorized Representative: (sign in Blue Ink)

Date: 7/1/2020

IMPORTANT: Do not send via email or other electronic means. ORCAA must receive Original, hardcopy, signed application and payment prior to processing application.

Agency Use Only

Appendix B
Block Flow Diagram



Etnu Facility
Block Flow Diagram
Liquid Sodium Borohydride

Appendix C
Emission Calculations

LSBH Plant Actual Emission Calculations

HAP and TAP Emissions_Current Operation

			Emission Factors[2]						Emissions (tons/year)					
Sources	Throughput[1]	Annual Units	VOCs	Dimethyl Ether	Methanol	Hexane	Toluene	Units	VOCs	Dimethyl Ether	Methanol	Hexane	Toluene	HAPs
G53 - Scrubber	8257	hours	-	0.00017	0.0015	-	-	lb/hr	0.007	0.001	0.006	-	-	0.006
A12 - Scrubber	8299	hours	0.12	-	0.011	0.017	0.00011	lb/hr	0.493	-	0.046	0.069	0.0005	0.115
Uncontrolled Process Vents Tank M46	8299	hours	2.04	-	0.751	0.084	0.00025	lb/hr	8.451	-	3.1	0.347	0.001	3.464
Tanks														
M62M - Product Shipping Tank	2414	1000 gallons	-	-	0.0057	-	-	lb/1000 gallons	0.007	-	0.007	-	-	0.007
M62S - Product Shipping Tank	3243	1000 gallons	-	-	0.0052	-	-	lb/1000 gallons	0.014	-	0.014	-	-	0.014
M62D - Product Shipping Tank	2414	1000 gallons	-	-	0.0042	-	-	lb/1000 gallons	0.005	-	0.005	-	-	0.005
LSBH - Tote Filling	4742	totes	-	-	0.0002	-	-	lb/tote	0.000	-	0.0005	-	-	0.000
M218 - Process Feed Water Tank	1793	1000 gallons	-	-	0.0128	-	-	lb/1000 gallons	0.011	-	0.011	-	-	0.011
M40N - Oil Water Tank	298	1000 gallons	-	-	0.0032	-	-	lb/1000 gallons	0.000	-	0.000	-	-	0.000
M219S - Used Oil Tank	128	1000 gallons	-	-	0.022	-	-	lb/1000 gallons	0.001	-	0.001	-	-	0.001
M220N - Used Oil Tank	61	1000 gallons	-	-	0.022	-	-	lb/1000 gallons	0.001	-	0.001	-	-	0.001
M220M - Wastewater Tank	11733	1000 gallons	-	-	0.0002	-	-	lb/1000 gallons	0.001	-	0.001	-	-	0.001
M54-Surge Control Tank	7656.80	1000 gallons	-	-	0.01	-	-	lb/1000 gallons	0.038	-	0.038	-	-	0.038
M32-Surge Control Tank	7656.80	1000 gallons	-	-	0.01	-	-	lb/1000 gallons	0.038	-	0.038	-	-	0.038
Transfers														
Wastewater Discharge System	11733	1000 gallons	-	-	0.019	-	-	lb/1000 gallons	0.111	-	0.111	-	-	0.111
Used Oil Tote Filling	24	1000 gallons	-	-	0.017	-	-	lb/1000 gallons	0.000	-	0.0002	-	-	0.0002
High MeOH Content Tote Filling	43.25	1000 gallons	-	-	1.88	-	-	lb/1000 gallons	0.041	-	0.041	-	-	0.041
TMB Drum Loading	314	drums	-	-	0.38	-	-	lb/drum	0.060	-	0.060	-	-	0.060
Fugitives														
Fugitives - Light Liquid Valves	8299	hours	-	-	0.011	-	-	lb/hr	0.047	-	0.047	-	-	0.047
Fugitives - Gas Service Valves	8299	hours	-	-	0.002	-	-	lb/hr	0.008	-	0.008	-	-	0.008
Fugitives - Pumps	8299	hours	-	-	0.037	-	-	lb/hr	0.155	-	0.155	-	-	0.155
Fugitives - Compressor Seals	8299	hours	-	-	0.000	-	-	lb/hr	0.000	-	0.000	-	-	0.000
Fugitives - PRVs	8299	hours	-	-	0.010	-	-	lb/hr	0.041	-	0.041	-	-	0.041
								Total	**9.5**	**0.001**	**3.7**	**0.4**	**0.001**	**4.2**

[1] Throughputs from renewal application

[2] Emission factors from HAP INVENTORY RY2018_FINAL workbook

LSBH Plant PTE Calculations

HAP and TAP Emissions_Current Operation

			Emission Factors[2]						Emissions (tons/year)					
Sources	Throughput[1]	Annual Units	VOCs	Dimethyl Ether	Methanol	Hexane	Toluene	Units	VOCs	Dimethyl Ether	Methanol	Hexane	Toluene	HAPs
G53 - Scrubber	8760	hours	-	0.00017	0.10	-	-	lb/hr	0.439	0.0007	0.438	-	-	0.438
A12 - Scrubber	8760	hours	0.12	-	0.73	0.017	0.00011	lb/hr	0.520	-	3.212	0.073	0.0005	3.285
Uncontrolled Process Vents Tank M46	8760	hours	2.04	-	0.751	0.084	0.00025	lb/hr	8.920	-	3.3	0.366	0.0011	3.657
Total			2.16	0.0002	1.58	0.10	0.00036	lb/hr	9.88	0.0007	6.94	0.44	0.0016	7.38
Tanks														
M62M - Product Shipping Tank	8879	1000 gallons	-	-	0.0057	-	-	lb/1000 gallons	0.025	-	0.025	-	-	0.025
M62S - Product Shipping Tank	8879	1000 gallons	-	-	0.0052	-	-	lb/1000 gallons	0.023	-	0.023	-	-	0.023
M62D - Product Shipping Tank	8879	1000 gallons	-	-	0.0042	-	-	lb/1000 gallons	0.019	-	0.019	-	-	0.019
LSBH - Tote Filling	34985	totes	-	-	0.0002	-	-	lb/tote	0.003	-	0.0035	-	-	0.003
M218 - Process Feed Water Tank	8689	1000 gallons	-	-	0.0128	-	-	lb/1000 gallons	0.056	-	0.056	-	-	0.056
M40N - Oil Water Tank	526	1000 gallons	-	-	0.0032	-	-	lb/1000 gallons	0.001	-	0.001	-	-	0.001
M219S - Used Oil Tank	126	1000 gallons	-	-	0.022	-	-	lb/1000 gallons	0.001	-	0.001	-	-	0.001
M220N - Used Oil Tank	104	1000 gallons	-	-	0.022	-	-	lb/1000 gallons	0.001	-	0.001	-	-	0.001
M220M - Wastewater Tank	16080	1000 gallons	-	-	0.0002	-	-	lb/1000 gallons	0.002	-	0.002	-	-	0.002
M54-Surge Control Tank	8879	1000 gallons	-	-	0.01	-	-	lb/1000 gallons	0.044	-	0.044	-	-	0.044
M32-Surge Control Tank	8879	1000 gallons	-	-	0.01	-	-	lb/1000 gallons	0.044	-	0.044	-	-	0.044
Transfers														
Wastewater Discharge System	16080	1000 gallons	-	-	0.019	-	-	lb/1000 gallons	0.153	-	0.153	-	-	0.153
Used Oil Tote Filling	27.5	1000 gallons	-	-	0.017	-	-	lb/1000 gallons	0.000	-	0.0002	-	-	0.0002
High MeOH Content Tote Filling	80	1000 gallons	-	-	1.88	-	-	lb/1000 gallons	0.075	-	0.075	-	-	0.075
TMB Drum Loading	2400	drums	-	-	0.38	-	-	lb/drum	0.456	-	0.456	-	-	0.456
Fugitives														
Fugitives - Light Liquid Valves	8760	hours	-	-	0.011	-	-	lb/hr	0.049	-	0.049	-	-	0.049
Fugitives - Gas Service Valves	8760	hours	-	-	0.002	-	-	lb/hr	0.009	-	0.009	-	-	0.009
Fugitives - Pumps	8760	hours	-	-	0.037	-	-	lb/hr	0.164	-	0.164	-	-	0.164
Fugitives - Compressor Seals	8760	hours	-	-	0.000	-	-	lb/hr	0.000	-	0.000	-	-	0.000
Fugitives - PRVs	8760	hours	-	-	0.010	-	-	lb/hr	0.043	-	0.043	-	-	0.043
								Total	**11.0**	**0.0007**	**8.11**	**0.44**	**0.0016**	**8.5**

[1] Throughputs from renewal application

[2] Emission factors from HAP INVENTORY RY2018_FINAL workbook

2018 Actual Emissions from LSBH and DSBH Plants

				Potential to Emit (tpy)						
Emission Unit ID #	Description	Fuel Used	Control Equipment	VOC	Dimethyl Ether	Methanol	Hexane	Toluene	HAPs	IPA
EU1	LSBH Plant	N/A	G53, A12	9.531549	0.001	3.75	0.42	0.001	4.17	N/A
EU7	DSBH Plant	N/A	A-309		N/A	N/A	N/A	N/A	N/A	0.10
			Totals		**0.001**	**3.75**	**0.42**	**0.001**	**4.17**	**0.10**

N/A - not applicable

PTE Calculations_Current Operation

				Potential to Emit (tpy)												
Emission Unit ID #	Description	Fuel Used	Control Equipment	PM (total)	SO_2	NO_x	VOC	CO	Lead	Dimethyl Ether	Methanol	Hexane	Toluene	IPA	HAPs	CO_2eq	CO_2eq (MT/yr)
EU1	LSBH Plant	N/A	G53, A12	N/A	N/A	N/A	11.01	N/A	N/A	0.001	8.075	0.439	0.002	N/A	8.516	987	895
EU2	G23M Boiler	Natural gas w/diesel back up	none	0.85	0.07	11.21	0.62	9.41	5.60E-05	N/A	N/A	8.41E-03	3.81E-04	N/A	0.22	13529	12274
EU3	G23E Boiler	Natural gas	none	0.85	0.07	11.21	0.62	9.41	5.60E-05	N/A	N/A	8.41E-03	3.81E-04	N/A	0.22	13529	12274
EU4	G27 Boiler	Natural gas w/diesel back up	none	0.27	0.02	3.61	0.20	3.03	1.80E-05	N/A	N/A	2.71E-03	1.23E-04	N/A	0.07	4354	3950
EU5	Hydrogen Reformer	Natural gas	none	0.34	0.14	4.60	0.25	3.79	2.25E-05	N/A	N/A	3.38E-03	1.53E-04	N/A	0.09	5443	4938
EU6	G23W Boiler	Natural gas w/diesel back up	none	0.79	0.06	3.33	0.57	8.73	5.20E-05	N/A	N/A	7.79E-03	3.53E-04	N/A	0.21	12496	11336
EU7	DSBH Plant	N/A	A-309	N/A	N/A	N/A	0.10	N/A	N/A	N/A	N/A	N/A	N/A	0.00	N/A	N/A	NA
EU9	Emergency Generation Units	Diesel	none	0.13	0.13	1.90	0.15	0.41	N/A	N/A	N/A	N/A	1.75E-04	0.10	0.00	43748	39688
			Totals	**3.24**	**0.48**	**35.85**	**13.52**	**34.78**	**2.05E-04**	**7.45E-04**	**8.08E+00**	**4.70E-01**	**3.13E-03**	**0.10**	**9.34**	**94086**	**85354**

N/A - not applicable

DSBH Plant PTE Calculations

PTE is set by the permit limit of 0.10 tons per year of IPA.

Boiler and Hydrogen Reformer PTE Calculations

				Criteria Pollutants											
		Fuel Rating		Emission Factor[1] (lb/MMscf)						Emissions (tons/yr)					
Emission Unit ID #	Description	MMBtu/hr	MMscf/hr	PM (total)	SO_2	NO_x	VOC	CO	Lead	PM (total)	SO_2	NO_x	VOC	CO	Lead
EU2	G23M Boiler	26.1	0.026	7.6	0.6	100	5.5	84	0.0005	0.85	0.07	11.21	0.62	9.41	5.60E-05
EU3	G23E Boiler	26.1	0.026	7.6	0.6	100	5.5	84	0.0005	0.85	0.07	11.21	0.62	9.41	5.60E-05
EU4	G27 Boiler	8.4	0.0082	7.6	0.6	100	5.5	84	0.0005	0.27	0.02	3.61	0.20	3.03	1.80E-05
EU5	Hydrogen Reformer	10.5	0.010	7.6	3.06	102	5.5	84	0.0005	0.34	0.14	4.60	0.25	3.79	2.25E-05
EU6	G23W Boiler	24.2	0.024	7.6	0.6	32	5.5	84	0.0005	0.79	0.06	3.33	0.57	8.73	5.20E-05

		Fuel Rating		Emission Factor[1] (lb/MMscf)			Emissions (tons/yr)			
Emission Unit ID #	Description	MMBtu/hr	MMscf/hr	CO_2	N_2O	Methane	CO_2	N_2O	Methane	CO_2eq
EU2	G23M Boiler	26.1	0.026	120,000	2.2	2.3	13449.18	0.25	0.26	13529
EU3	G23E Boiler	26.1	0.026	120,000	2.2	2.3	13449.18	0.25	0.26	13529
EU4	G27 Boiler	8.4	0.0082	120,000	2.2	2.3	4328.47	0.08	0.08	4354
EU5	Hydrogen Reformer	10.5	0.010	120,000	2.2	2.3	5410.59	0.10	0.10	5443
EU6	G23W Boiler	24.2	0.024	120,000	0.64	2.3	12470.12	0.07	0.24	12496

[1] All emission factors from AP-42 Chapter 1.4, except cells highlighted in yellow which are from the 2015 Title V renewal.

Global Warming Potential (GWP) for Selected GHG - 40 CFR 98 Subpart A, Table A-1

GWP CO_2 = 1 GWP CH_4 = 25 GWP N_2O = 298

Boiler and Hydrogen Reformer PTE Calculations

Organics						
		Emissions (tons/yr)				
Hazardous Air Pollutant	Emission Factor[1] (lbs/10^6scf)	G23M Boiler	G23E Boiler	G27 Boiler	Hydrogen Reformer	G23W Boiler
2-Methylnaphthalene	2.40E-05	2.69E-06	2.69E-06	8.66E-07	1.08E-06	2.49E-06
3-Methylchloranthrene	1.80E-06	2.02E-07	2.02E-07	6.49E-08	8.12E-08	1.87E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.79E-06	1.79E-06	5.77E-07	7.21E-07	1.66E-06
Acenaphthylene	1.80E-06	2.02E-07	2.02E-07	6.49E-08	8.12E-08	1.87E-07
Anthracene	2.40E-06	2.69E-07	2.69E-07	8.66E-08	1.08E-07	2.49E-07
Benz(a)anthracene	1.80E-06	2.02E-07	2.02E-07	6.49E-08	8.12E-08	1.87E-07
Benzene	2.10E-03	2.35E-04	2.35E-04	7.57E-05	9.47E-05	2.18E-04
Benzo(a)pyrene	1.20E-06	1.34E-07	1.34E-07	4.33E-08	5.41E-08	1.25E-07
Benzo(b)fluoranthene	1.80E-06	2.02E-07	2.02E-07	6.49E-08	8.12E-08	1.87E-07
Benzo(g,h,i)perylene	1.20E-06	1.34E-07	1.34E-07	4.33E-08	5.41E-08	1.25E-07
Benzo(k)fluoranthene	1.80E-06	2.02E-07	2.02E-07	6.49E-08	8.12E-08	1.87E-07
Chrysene	1.80E-06	2.02E-07	2.02E-07	6.49E-08	8.12E-08	1.87E-07
Dibenzo(a,h)anthracene	1.20E-06	1.34E-07	1.34E-07	4.33E-08	5.41E-08	1.25E-07
Dichlorobenzene	1.20E-03	1.34E-04	1.34E-04	4.33E-05	5.41E-05	1.25E-04
Fluoranthene	3.00E-06	3.36E-07	3.36E-07	1.08E-07	1.35E-07	3.12E-07
Fluorene	2.80E-06	3.14E-07	3.14E-07	1.01E-07	1.26E-07	2.91E-07
Formaldehyde	7.50E-02	8.41E-03	8.41E-03	2.71E-03	3.38E-03	7.79E-03
Hexane	1.80E+00	2.02E-01	2.02E-01	6.49E-02	8.12E-02	1.87E-01
Indeno(1,2,3-cd)pyrene	1.80E+00	2.02E-01	2.02E-01	6.49E-02	8.12E-02	1.87E-01
Naphthalene	6.10E-04	6.84E-05	6.84E-05	2.20E-05	2.75E-05	6.34E-05
Phenanthrene	1.70E-05	1.91E-06	1.91E-06	6.13E-07	7.67E-07	1.77E-06
Pyrene	5.00E-06	5.60E-07	5.60E-07	1.80E-07	2.25E-07	5.20E-07
Toluene	3.40E-03	3.81E-04	3.81E-04	1.23E-04	1.53E-04	3.53E-04
Trace Elements						
		Emissions (tons/yr)				
Hazardous Air Pollutant	Emission Factor (lbs/10^6scf)	G23M Boiler	G23E Boiler	G27 Boiler	Hydrogen Reformer	G23W Boiler
Arsenic	2.0 E-04	2.24E-05	2.24E-05	7.21E-06	9.02E-06	2.08E-05
Barium	4.4 E-03	4.93E-04	4.93E-04	1.59E-04	1.98E-04	4.57E-04
Beryllium	1.2 E-05	1.34E-06	1.34E-06	4.33E-07	5.41E-07	1.25E-06
Cadmium	1.1 E-03	1.23E-04	1.23E-04	3.97E-05	4.96E-05	1.14E-04
Chromium	1.4 E-03	1.57E-04	1.57E-04	5.05E-05	6.31E-05	1.45E-04
Cobalt	8.4 E-05	9.41E-06	9.41E-06	3.03E-06	3.79E-06	8.73E-06
Copper	8.5 E-04	9.53E-05	9.53E-05	3.07E-05	3.83E-05	8.83E-05
Manganese	3.8 E-04	4.26E-05	4.26E-05	1.37E-05	1.71E-05	3.95E-05
Mercury	2.6 E-04	2.91E-05	2.91E-05	9.38E-06	1.17E-05	2.70E-05
Molybdenum	1.1 E-03	1.23E-04	1.23E-04	3.97E-05	4.96E-05	1.14E-04
Nickel	2.1 E-03	2.35E-04	2.35E-04	7.57E-05	9.47E-05	2.18E-04
Selenium	2.4 E-05	2.69E-06	2.69E-06	8.66E-07	1.08E-06	2.49E-06
Vanadium	2.3 E-03	2.58E-04	2.58E-04	8.30E-05	1.04E-04	2.39E-04
Zinc	2.9 E-02	3.25E-03	3.25E-03	1.05E-03	1.31E-03	3.01E-03
	Total of All HAPS	**4.18E-01**	**4.18E-01**	**1.34E-01**	**1.68E-01**	**3.87E-01**

Emergency Generator PTE Calculations

				Emission Factor[1] (lb/hp-hr)					Emissions (tons/yr)				
Emission Unit ID #	Description	Horsepower	Operating Hours	PM (total)	SO_2	NO_x	VOC	CO	PM (total)	SO_2	NO_x	VOC	CO
EU9	G49S Emergency Generator	375	100	0.0022	0.00205	0.031	0.002514	0.00668	0.04	0.04	0.58	0.05	0.13
EU9	G49N Emergency Generator	350	100	0.0022	0.00205	0.031	0.002514	0.00668	0.04	0.04	0.54	0.04	0.12
EU9	G49E Emergency Generator	415	100	0.0022	0.00205	0.031	0.002514	0.00668	0.05	0.04	0.64	0.05	0.14
EU9	P80 Fire Water Pump	85	100	0.0022	0.00205	0.031	0.002514	0.00668	0.01	0.01	0.13	0.01	0.03
								Total	**0.13**	**0.13**	**1.90**	**0.15**	**0.41**

				Emission Factor[1] (lb/hp-hr)			Emissions (tons/yr)			
Emission Unit ID #	Description	Horsepower	Operating Hours	CO_2	N_2O	Methane	CO_2	N_2O	Methane	CO_2eq
EU9	G49S Emergency Generator	375	100	1.15	2.2	2.3	22	41	43	13392
EU9	G49N Emergency Generator	350	100	1.15	2.2	2.3	20	39	40	12499
EU9	G49E Emergency Generator	415	100	1.15	2.2	2.3	24	46	48	14821
EU9	P80 Fire Water Pump	85	100	1.15	2.2	2.3	5	9	10	3036
						Total	70	135	141	43748

[1] All emission factors from AP-42 Chapter 1.4.

Global Warming Potential (GWP) for Selected GHG - 40 CFR 98 Subpart A, Table A-1

GWP CO_2 = 1 GWP CH_4 = 25 GWP N_2O 298

BSFC 7000 Btu/hp-hr

Organics		
		Emissions (tons/yr)
Hazardous Air Pollutant	Emission Factor[1] (lbs/MMBtu)	All generators
Benzene	9.33E-04	4.00E-04
Toluene	4.09E-04	1.75E-04
Xylene	2.85E-04	1.22E-04
1,3 Butadiene	3.91E-05	1.68E-05
Formaldehyde	1.18E-03	5.06E-04
Acetaldehyde	7.67E-04	3.29E-04
Acrolein	9.25E-05	3.97E-05
Naphthalene	8.48E-05	3.64E-05
Total PAHs	1.68E-04	7.20E-05
Total of All HAPS		**1.70E-03**

[1] Emission factors from AP-42 Chapter 3.3