

Technical Support Document
 Notice of Construction Approval Order No. DE07NWP-003, Revision 2
 United States Department of Energy (DOE)

Hanford Site north of Richland, WA

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1. Project Summary

The Hanford Site (the source) is a historical nuclear research, development, and production site classified as a major source for the Title V and Prevention of Significant Deterioration (PSD) programs with numerous emission units. This review is for modifications to the existing Effluent Treatment Facility (ETF) associated with the Liquid Effluent Retention Facility (LERF). LERF has three lined 7.8 million-gallon basins for storage of site wastewater, with a fourth under construction. ETF provides treatment options for this wastewater, to ensure it meets discharge standards before authorized land disposal.

DOE identified that wastewater generated by the Waste Treatment Plant (WTP), once it is operational, will contain acetonitrile in excess of discharge standards. Acetonitrile is difficult to destroy and the existing organic treatment at ETF, ultraviolet oxidation, would require an unreasonable contact time to ensure discharge standards are met.

DOE has proposed changes that include a steam stripper and condenser to remove acetonitrile through distillation. Storage and loadout facilities will be added to transport the steam stripper distillate off-site for disposal. Additionally, DOE is proposing loadout facilities for brine from the existing evaporator. Brine loadout will provide an alternative to completing liquid evaporation using the existing Thin Film Dryer. DOE has provided the following updated process flow diagram for ETF:

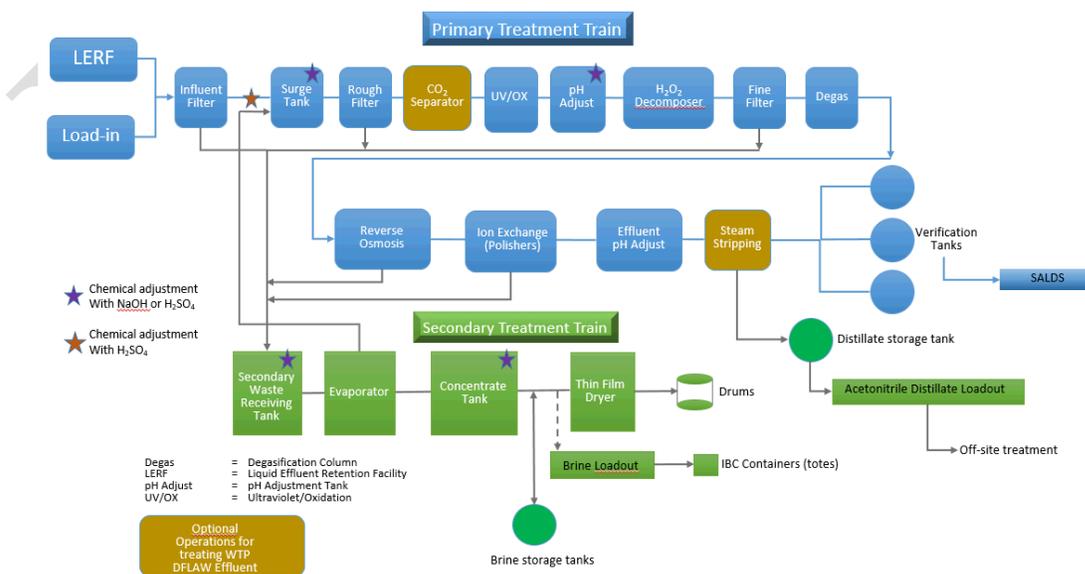


Figure 1: Updated ETF Process Flow Diagram

These updates are necessary to support the Direct-Feed Low-Activity Waste (DFLAW) configuration at WTP. WTP is authorized separately under Approval Order DE02NWP-002, Revision 3, and Prevention of Significant Deterioration permit PSD-02-01, Amendment 3. Currently LERF and ETF are operating to treat other site wastewaters.

In addition to acetonitrile treatment and brine loadout, DOE has requested to redesign the Vessel Off-Gas (VOG) System that collects emissions from ETF and provides initial control of emissions. Currently the VOG System is permitted as a single exhaust train with a prefilter, High Efficiency Particulate Air (HEPA) filter, granulated activated carbon (GAC), and a second HEPA filter. The second HEPA filter removes entrained GAC before the VOG exhaust is combined with exhaust from the 2025 Building comfort ventilation system. Once combined, exhaust is passed through a third HEPA filter serving the entire 2025 Building before exiting the ETF stack.

DOE has proposed to switch to a redundant dual-train VOG System. Each exhaust train will be equipped with a metal mesh demister and the 2025 Building HEPA filter will provide primary particulate removal for the ETF treatment systems. DOE will switch between the two trains, allowing maintenance and repairs to be conducted while the facility continues to operate. This is expected to increase uptime, which will be necessary to handle the new DFLAW waste stream.

An initial Notice of Construction (NOC) application dated May 13, 2021, was submitted by DOE for the ETF project. DOE requested that this application be held on November 2, 2021, to incorporate additional information. An updated NOC application was submitted on April 4, 2022. The Washington State Department of Ecology (Ecology) reviewed the updated application and found it complete per WAC 173-400-111 on April 28, 2022.

2. Application Processing

a. Public Notice

Due to anticipated public interest, Ecology scheduled a 30-day comment period July 25 through August 24, 2022. If comments are received: Ecology will publish the comments, Ecology responses, and any revisions between the draft and final versions of Approval Order DE07NWP-003, Revision 2, as a separate Response to Comments document issued with the final Approval Order.

b. State Environmental Policy Act

The Tank Closure & Waste Management Environmental Impact Statement (TC&WM EIS) <https://www.hanford.gov/page.cfm/FinalTCWMEIS> evaluated the potential impacts of infrastructure projects on Air Quality, Land/Visual Resources, Geology and Soils, Water Resources, Ecological Resources, Cultural Resources, and Waste Management. Ecology previously adopted the Air Quality analysis in the TC&WM EIS on January 24, 2016 (SEPA #201600371).

For impacts of this project which were not fully considered in the TC&WM EIS, the permittee conducted supplemental reviews which were adopted by Ecology on June 27, 2022 (SEPA #202203225). For more information see <https://apps.ecology.wa.gov/separ/Main/SEPA/Search.aspx>.

3. **Applicable Regulations**

a. State Regulations

i. Minor New Source Review Applicability

Per WAC 173-400-110, a NOC application and an order of approval must be issued by the permitting authority prior to the establishment of a new source or modification. A “modification” means any physical change in, or change in the method of operation of, a stationary source that increases the amount of any air contaminant emitted by such source or that results in the emissions of any air contaminant not previously emitted. The term modification must be construed consistent with the definition of modification in 42 U.S.C. 7411, and with the rules implementing that section.

As stated in the NOC application and consistent with Ecology’s review, the LERF and ETF systems are being modified for this project and therefore are subject to minor new source review (NSR).

A. Exempt Equipment

No exempt equipment is specifically identified as part of this project. Construction of LERF Basin 41 has been identified as a separate project to complete existing facility design. Emissions for a pugmill for Basin 41 construction are authorized by Approval Order DE21NWP-002.

B. Potential to Emit (Potential Emissions)

The potential emissions increases from the project are greater than the exemption levels listed under WAC 173-400-110(5). Only toxic air pollutants (TAPs), such as acetonitrile, exceed the exemption levels. Conservatively, Tables 1 and 2 present total emissions for LERF and ETF, rather than the project increase. NSR applicability for modifications is based upon the project increase only.

Table 1. Potential emissions for pollutants listed under WAC 173-400-110(5), NSR Exemption Levels

Pollutant	Unabated Total LERF & ETF Emissions¹ (pounds/year)	Minor NSR Exemption (pounds/year)
Lead (Pb)	1.49E-06	10
PM ₁₀ ²	2.76E-01 ²	1,500
PM _{2.5} ²	2.76E-01 ²	1,000
Total Suspended Particulates (TSP)	2.76E-01 ²	2,500
Volatile Organic Compounds, total (VOC)	1,926	4,000
Ozone Depleting Substances, total	2.76E-01	2,000
TAPs	See Table 2	De minimis emission rate specified in WAC 173-460-150

¹Minor NSR exemptions apply to project increase. DOE has demonstrated that total facility emissions, without credit for controls, remain less than the exemption thresholds for all non-TAP pollutants. Therefore, the project increase must also be less.

²Particulate matter (PM) with an aerodynamic diameter less than or equal to 10 microns (PM₁₀) or 2.5 microns (PM_{2.5}) are conservatively assumed to be equal to TSP. Emission rates are uncontrolled and do not take credit for demister and HEPA filters.

Table 2. Potential facility-wide emissions for TAPs exceeding de minimis emission values

Pollutant	CAS	Total LERF & ETF Emissions¹ (pounds per averaging period)	De Minimis Emission Value (pounds)	Averaging Period
n-Nitrosomethylethylamine	10595-95-6	8.87E-01	1.3E-03	year
1,2-Dichloroethane	107-06-2	8.04E-01	3.1E-01	year
Acrylonitrile	107-13-1	1.98E+01	2.8E-02	year
bis(2-Chloroethyl)ether	111-44-4	6.55E+00	1.1E-02	year
Hexachlorobenzene	118-74-1	1.08E-01	1.8E-02	year
2,4-Dinitrotoluene	121-14-2	2.17E-01	9.1E-02	year
1,1,2,2-Tetrachloroethene	127-18-4	5.34E+01	1.3E+00	year
Polychlorinated biphenyls	1336-36-3	7.26E-01	1.4E-02	year

Table 2. Potential facility-wide emissions for TAPs exceeding de minimis emission values

Pollutant	CAS	Total LERF & ETF Emissions¹ (pounds per averaging period)	De Minimis Emission Value (pounds)	Averaging Period
Dibenzo[a,i]pyrene	189-55-9	4.47E-05	4.5E-04	year
Dibenzo[a,h]pyrene	189-64-0	4.47E-05	4.5E-04	year
Dibenzo(a,l)pyrene	191-30-0	4.47E-05	4.5E-04	year
Dibenzo[a,e]pyrene	192-65-4	4.47E-05	4.5E-03	year
Benzo(k)fluoranthene	207-08-9	1.73E+00	4.5E-02	year
Chrysene	218-01-9	4.17E+00	4.5E-01	year
5-Methylchrysene	3697-24-3	1.06E+00	4.5E-03	year
Benzo(a)pyrene	50-32-8	1.29E-04	8.2E-03	year
3-Methylcholanthrene	56-49-5	1.04E+00	7.8E-04	year
Benzo(a)anthracene	56-55-3	2.84E+00	4.5E-02	year
N-Nitrosomorpholine	59-89-2	9.16E-02	4.3E-03	year
5-Nitroacenaphthene	602-87-9	3.97E-01	1.3E-01	year
N-Nitroso-di-n-propylamine	621-64-7	2.43E+00	4.1E-03	year
N-Nitroso-N,N-dimethylamine	62-75-9	3.46E-02	1.1E-03	year
Chloroform	67-66-3	1.54E+01	3.5E-01	year
Dichlorodiphenyldichloroethylene (DDE)	72-55-9	3.38E+00	8.4E-02	year
Acetonitrile	75-05-8	8.56E+00	2.2E-01	24-hr
Acetaldehyde	75-07-0	3.53E+00	3.0E+00	year
Ethylene oxide (Oxirane)	75-21-8	5.16E-03	1.6E-03	year
Ammonia/Ammonium	7664-41-7	9.49E+00	1.9E+00	24-hr
2,4,6-Trichlorophenol	88-06-2	3.11E+00	2.6E+00	year
Naphthalene	91-20-3	1.82E+02	2.4E-01	year
Nitrobenzene	98-95-3	6.80E+00	2.0E-01	year

¹De minimis emission rates apply to project increase. DOE has conservatively provided total LERF and ETF emissions, rather than project increase, for this NOC application. No control credit is applied for these TAPs; unabated emissions are equal to abated/allowable emissions.

C. Proposed Emissions (Allowable Emissions)

The allowable emissions from LERF and ETF, considering all emission and operational limits contained in the approval order, are shown below in Table 3. Allowable emissions for the TAPs identified in Table 2 are identical to unabated emissions. Particulate TAPs, primarily metals, have allowable emission rates which are less than unabated emissions. However, these TAPs did not exceed de minimis and are not included in Table 2.

Table 3. Allowable emissions for pollutants listed under WAC 173-400-110(5), and Significant Emission Rate (SER)

Pollutant	Abated Total LERF & ETF Emissions (pounds/year)	SER¹ (pounds/year)
Lead (Pb)	1.21E-06	1,200
PM ₁₀	3.45E-02	30,000
PM _{2.5}	3.45E-02	20,000
Total Suspended Particulates (TSP)	3.45E-02	N/A
Volatile Organic Compounds, total (VOC)	1,750.3	80,000
Ozone Depleting Substances, total	1.98	N/A
Greenhouse Gases (GHG)	Not Calculated ²	150 Million (as CO ₂ equivalent)

¹SER is based upon the project and netting of contemporaneous changes. DOE has demonstrated that total facility emissions would be less than SER, see Section 3.b.ii below for further discussion.

²Ecology does not expect this project to be a significant GHG source. Therefore, no emission estimate has been requested or calculated.

ii. Prevention of Significant Deterioration (PSD)

The Hanford Site is major for PSD and has a major source permit for WTP. DOE did not review PSD applicability in the NOC Application for this project. Total emissions for LERF and ETF are much less than the WAC 173-400-810(27) PSD SERs. For GHG, there is no fuel combustion or other emission source that would reasonably cause an exceedance of the SER.

Netting for the SERs is based upon contemporaneous changes only. Therefore, the project would only exceed the SERs if there were significant additional increases in emissions that must be included in PSD netting but not minor NSR. Ecology is not aware of any additional emission increases and the use of total facility emissions is conservative. Based upon these factors, Ecology did not request or issue a PSD Applicability Determination for this project.

iii. Maintenance

WAC 173-400-030(29) defines “emission standard,” “emission limitation” and “emission limit” to include “any requirement relating to the operation or maintenance of a source to assure continuous emission reduction.”

Typically, Ecology requires an Operation and Maintenance (O&M) manual which is reviewed at least annually. This allows Ecology to verify that maintenance is conducted to ensure actual emissions remain less than Approval Order limits and emission estimates in the associated NOC. In most cases, electronic maintenance tracking and assignment systems are considered equivalent to paper manuals.

At certain facilities at the Hanford Site, equipment is heavily customized and interconnected. When a worker is assigned a maintenance task, they may be provided a document with the specific procedures, personal protective equipment requirements, exposure limitations, and other critical information retrieved from multiple systems. This provides the most up-to-date information regarding the specific actions to take and the potential hazards in the work area. It also limits what workers are allowed to access to ensure that overall facility operations are not negatively impacted.

In certain cases, the Permittee has requested that an annual frequency for review of O&M manuals not be specified in the Approval Order because there is not a clear way to calculate this frequency. Maintenance schedules and procedures may be regularly reviewed on an individual basis, but they aren’t reviewed as a whole by a single individual or group.

For LERF, Ecology is accepting that it might not be necessary to specifically review every schedule and potential maintenance procedure on an annual basis. Much of the maintenance conducted isn’t directly related to air emissions. However, the failure of any component could potentially lead to air emissions under certain circumstances.

Therefore, Approval Condition 4.a requires periodic review of procedures schedules which is equivalent to annual review for the primary sources of air emissions. This is intentionally vague to allow the Permittee flexibility in how and when they conduct these reviews.

iv. Other Applicable Requirements

In accordance with WAC 173-400-113, the proposed new and modified sources must comply with all applicable emission standards adopted under Chapter 70A.15 RCW. The following applicable emission standards are associated with the proposed project:

A. [WAC 173-400-040](#)

This chapter sets general standards that apply statewide to all sources, unless a specific emission standard is applicable to an emission unit for that pollutant. WAC 173-400-040(8) also prohibits DOE from concealing or masking emissions of an air contaminant which would otherwise violate any provision of Chapter 173-400 WAC.

This project will not change DOE's ability to comply with these requirements. Liquid processes at LERF do not produce significant particulate matter emissions and a demister and HEPA filter will be used to control ETF processes.

B. [WAC 173-400-060](#)

This chapter sets a particulate matter standard for any emission unit meeting the definition of a general process unit in WAC 173-400-030(42). Such units are present at LERF, but the liquid processes at LERF do not produce significant particulate matter emissions and a demister and HEPA filter will be used to control ETF processes.

C. [WAC 173-400-107](#)

As discussed above in Section 3.a.iii, Ecology is allowing the Permittee some flexibility in annual review of O&M manuals. If excess emissions are produced, Ecology would consider whether lax review practices contributed to excess emissions for any argument made under WAC 173-400-107(5) or (6).

D. [WAC 173-400-114](#)

DOE could potentially have sought authorization of the VOG System changes separately under WAC 173-400-114. This chapter requires submittal of a NOC Application for changes to control systems, but provides streamlined processing for any application that does not result in an increase in emissions of any air contaminant. This would have required more detailed analysis of the change in emissions for the VOG System and likely a determination that the change was not related to DFLAW.

Based upon the fact that the VOG System change is expected to increase uptime for DFLAW, Ecology determined it was appropriate for DOE to submit a single NOC Application covering both WAC 173-400-110 and 173-400-114 requirements.

E. [Chapter 173-480 WAC](#)

LERF is subject to requirements for radionuclide emissions under Chapter 173-480 WAC. In accordance with WAC 173-480-070(1) and WAC 246-247-002, the Washington Department of Health (Health) is the agency responsible for administration of these regulations. These requirements are covered by Radioactive Air Emissions License FF-01, issued separately and incorporated into the Hanford Site Air Operating Permit.

b. Federal Regulations

In accordance with WAC 173-400-113, the proposed modified sources must comply with all applicable new source performance standards (NSPS) included in 40 C.F.R. Part 60, national emission standards for hazardous air pollutants (NESHAPs) included in 40 C.F.R. Part 61, and NESHAPs for source categories included in

40 C.F.R. Part 63. Ecology has not identified any NSPS or NESHAPs that would potentially apply to LERF and ETF.

c. Emission Factors/Calculations

LERF and ETF process multiple wastewater streams with relatively small concentrations of TAPs. The exact water chemistry of a particular stream is often complex and somewhat variable. LERF uses waste acceptance criteria for each stream to ensure that the water received can be safely and effectively treated to discharge standards.

DOE has primarily calculated emissions using available Henry's Law coefficients and airflow rates for equipment and processes. These calculations assume a volatile contaminant will reach equilibrium between the liquid waste and the process headspace. The ventilation rate for that headspace is then used to determine the worst-case emission rate for that TAP. For solids, DOE has used a solids entrainment fraction from Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities, DOE-HDBK-3010-94.

For more details of these calculations, please see Section 6 of TOC-ENV-NOC-5303, Revision 1, submitted as part of this NOC Application. Several important assumptions and limitations are discussed below.

WTP Effluent Management Facility (EMF) vs. Non-EMF Waste: DOE developed emissions calculations by reviewing the composition of the new waste stream from WTP, which will be processed through the WTP EMF prior to transfer to LERF. The new EMF waste was compared to the existing waste streams, which are grouped together as non-EMF waste. For each TAP, short-term emission rates were developed for both EMF and non-EMF operation.

Acetonitrile emissions are only expected from EMF treatment campaigns. However, non-EMF campaigns are still the worst-case for certain TAPs. Other TAPs may be emitted in both EMF and non-EMF operation. For TAPs with annual averaging periods, the overall balance between waste streams determines potential emissions.

Once operational, the amount of EMF waste received will be directly limited by the design of WTP. DOE estimated a worst-case volume of 10.8 million gallons of EMF waste per year. Rather than assume non-EMF waste uses all remaining capacity, DOE estimating a maximum volume of 59.3 million gallons of non-EMF waste per year for flexibility. Ecology is placing annual limits on both waste streams to ensure TAP emissions will remain less than emissions estimates and modeling.

ETF is not able to process the combined 70.1 million gallon volume in any given year, even with 100% uptime. But in a year with reduced EMF waste, DOE will be able to use more capacity on non-EMF waste.

Specifically-Authorized Waste Streams: Approval Order DE07NWP-003, Revision 1, listed intended waste streams in Findings 2 and 3. These streams are now generally grouped as non-EMF waste discussed above.

When developing Revision 2, Ecology determined that it was best to continue to address operation through the waste identification and designation process used on-site. These designations provide a simple way to track water chemistry for each treatment campaign and demonstrate compliance with permit limits.

However, the Approval Order addresses air emissions under the authority of Chapter 173-400 WAC. The process of designating waste for Dangerous Waste regulations or meeting water discharge standards is outside the direct authority of this Chapter. Additionally, there is the potential that a change at a generating facility could inadvertently create a permit violation at LERF if limits are strictly based upon waste identification.

Approval Condition 2.b.iii provides a formal method for DOE to demonstrate that receipt of a new wastewater stream would not be a modification for WAC 173-400-110, and therefore does not require a new Approval Order. It also protects overall facility processing limits. To use this option, DOE must demonstrate that there would be no increase in TAP emissions or emissions of a TAP which was not evaluated for this Approval Order. DOE would also need to track all water received, including the new stream.

ETF Processing Rate: ETF is designed for normal operation up to 150 gallons per minute (gpm), which was identified in Finding 2.b of Approval Order DE07NWP-003, Revision 1. Exceeding this design rate would clearly have the potential to increase short-term emission rates and would potentially be damaging for equipment.

DOE has also reviewed the impact of reducing the ETF operating rate. In certain cases, reducing flow rate might increase emissions for specific TAPs, due to increased treatment time. To account for this, DOE has provided emissions estimates and modeling which account for operating as slow as 50 gpm.

Ecology is placing an upper limit of 150 gpm to ensure ETF is operated properly. However, Ecology determined that there were two potential issues with a minimum operating rate. First, there are waste streams which could be treated at a slower rate without exceeding emissions estimates. Second, if there were the need to pause a treatment campaign it might reduce the average treatment rate to less than the limit. This could push the Permittee to operate in a less safe or environmentally protective manner to avoid a permit violation.

Instead, Ecology is requiring that DOE use operating settings at ETF which will maintain an operating rate of 50 gpm or more, unless they can demonstrate to Ecology that processing a specific campaign at a slower rate would not exceed emission estimates. Ecology must approve intentional slower operation.

If malfunction or power loss unintentionally reduces the processing rate for a campaign to less than 50 gpm, DOE must determine whether excess emissions were produced and potentially report them under WAC 173-400-107. The circumstances of such an event could still potentially be a violation for failure to properly operate or maintain equipment.

d. Best Available Control Technology (BACT) | Best Available Control Technology for Toxics (tBACT)

Steam Stripper: For the steam stripper system, Ecology is requiring temperature and pressure monitoring in the Steam Stripper Column, Large Condenser Skid, Small Condenser Skid, and Concentrator Column. This monitoring is primarily designed to prevent an acute release due to exceedance of design parameters. However, this data may also be useful to detect smaller leaks or configuration errors, if they don't trigger the liquid leak detection systems required for compliance with Washington Dangerous Waste Regulations, Chapter 173-303 WAC.

Acetonitrile Distillate Loadout Operations (ADLO) Building: For the ADLO Building, Ecology has determined that DOE's proposal to fill acetonitrile totes inside Fume Booths with a filling lance meets tBACT requirements. Using a lance and controlled filling rates is a common and cost-effective industrial practice to minimize splashing, which reduces potential emissions of both particulates and volatile chemicals from the filling process.

Vessel Off-Gas (VOG) System: DOE demonstrated that the updated design of the VOG System meets current BACT and tBACT requirements. For this determination, Ecology considered whether removal of GAC and two stages of HEPA filtration was acceptable. ETF particulate emissions are significantly less than the WAC 173-400-110(5) exemption levels and not subject to BACT. Even if they were, Ecology commonly requires one stage of HEPA filtration for BACT, even for industries with significant particulate emissions.

In the previous system, the initial HEPA filter protected the GAC bed from contamination and the secondary HEPA filter controlled particulate emissions produced by the GAC. The initial two stages were, at least in part, installed because GAC was in use. Therefore, removal of GAC was the primary concern.

DE07NWP-003, Revision 1, addressed GAC in Findings of Fact 4. This Finding discusses Approval Order 96NW-1-301, issued October 16, 1996. It states that there was no change in tBACT, but GAC was credited with VOC emissions control. This appears to be consistent with Section 2.2 of Approval Order 96NW-1-301. In their application, DOE stated that GAC was added specifically for groundwater containing carbon tetrachloride, which has not been processed since 2013 and is no longer an authorized waste stream.

There are TAPs associated with this project that might be controlled by GAC. DOE demonstrated that installation of new control devices, with the exception of demisters in the dual-train VOG System, would not be cost effective for LERF and ETF. However,

an existing GAC system would likely be more cost effective than installing something new.

Ecology determined that the environmental protection provided by a dual train exhauster outweighs the benefit of continuing to operate a single exhauster with existing GAC. Even if the existing system could be refurbished for no cost, installation of a second system would not be cost effective.

One primary consideration for Ecology was the fact that emissions at ETF would not stop instantly if the VOG System failed. Equipment such as the steam stripper would continue to hold waste as the facility shut down. A significant failure of the exhauster system could potentially lead excess emissions and ground-level releases, which have become more of a concern with acetonitrile treatment.

4. Ambient Air Quality Standards

As specified in WAC 173-400-113, the proposed new or modified source(s) must not cause or contribute to a violation of any ambient air quality standard. This includes the ambient air quality standards for both criteria and toxic air pollutants.

a. Pollutants Listed Under WAC 173-400-110 (Except TAPs)

Because allowable emissions of the project, as limited by the NOC Approval Order, are below each of the Table 110(5) exemption levels listed under WAC 173-400-110, modeling was not required for criteria pollutants. This is in keeping with prior practice within this section, where it is assumed that the exemption levels were based on concentrations, which would not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS) or Washington Ambient Air Quality Standards (WAAQS).

b. Toxic Air Pollutants

In accordance with WAC 173-460-040, new and modified TAP sources must meet the requirements of Chapter 173-460 WAC, unless they are exempt by WAC 173-400-110(5). As shown in Table 2, minor NSR is required for LERF and ETF. As such, the new and modified units must comply with WAC 173-460-070 (Ambient impact requirement). DOE may demonstrate compliance with the ambient impact requirement by either showing that the emissions increase is less than the small quantity emissions rates (SQER) or through dispersion modeling. Table 6 includes the estimated emissions increases associated with the project/source and the applicable SQER.

Table 6. TAP Analysis

TAP	CAS	Total LERF & ETF Emissions¹ (pounds per averaging period)	SQER¹ (pounds/averaging period)	Modeling Required?
n-Nitrosomethylethylamine	10595-95-6	8.87E-01	2.60E-02	Yes
1,2-Dichloroethane	107-06-2	8.04E-01	6.20E+00	No
Acrylonitrile	107-13-1	1.98E+01	5.60E-01	Yes
bis(2-Chloroethyl)ether	111-44-4	6.55E+00	2.30E-01	Yes
Hexachlorobenzene	118-74-1	1.08E-01	3.50E-01	No
2,4-Dinitrotoluene	121-14-2	2.17E-01	1.80E+00	No
1,1,2,2-Tetrachloroethene	127-18-4	5.34E+01	2.70E+01	Yes
Polychlorinated biphenyls	1336-36-3	7.26E-01	2.80E-01	Yes
Dibenzo[a,i]pyrene	189-55-9	4.47E-05	8.90E-03	No
Dibenzo[a,h]pyrene	189-64-0	4.47E-05	8.90E-03	No
Dibenzo(a,l)pyrene	191-30-0	4.47E-05	8.90E-03	No
Dibenzo[a,e]pyrene	192-65-4	4.47E-05	8.90E-02	No
Benzo(k)fluoranthene	207-08-9	1.73E+00	8.90E-01	Yes
Chrysene	218-01-9	4.17E+00	8.90E+00	No
5-Methylchrysene	3697-24-3	1.06E+00	8.90E-02	Yes
Benzo(a)pyrene	50-32-8	1.29E-04	1.60E-01	No
3-Methylcholanthrene	56-49-5	1.04E+00	1.60E-02	Yes
Benzo(a)anthracene	56-55-3	2.84E+00	8.90E-01	Yes
N-Nitrosomorpholine	59-89-2	9.16E-02	8.50E-02	Yes
5-Nitroacenaphthene	602-87-9	3.97E-01	2.60E+00	No
N-Nitroso-di-n-propylamine	621-64-7	2.43E+00	8.10E-02	Yes
N-Nitroso-N,N-dimethylamine	62-75-9	3.46E-02	2.10E-02	Yes
Chloroform	67-66-3	1.54E+01	7.10E+00	Yes
DDE	72-55-9	3.38E+00	1.70E+00	Yes
Acetonitrile	75-05-8	8.56E+00	4.40E+00	Yes
Acetaldehyde	75-07-0	3.53E+00	6.00E+01	No
Ethylene oxide (Oxirane)	75-21-8	5.16E-03	3.30E-02	No
Ammonia/Ammonium	7664-41-7	9.49E+00	3.70E+01	Yes
2,4,6-Trichlorophenol	88-06-2	3.11E+00	5.20E+01	No

Table 6. TAP Analysis

TAP	CAS	Total LERF & ETF Emissions¹ (pounds per averaging period)	SQER¹ (pounds/averaging period)	Modeling Required?
Naphthalene	91-20-3	1.82E+02	4.80E+00	Yes
Nitrobenzene	98-95-3	6.80E+00	4.10E+00	Yes

¹SQER applies to project increase. DOE has conservatively used total ETF and LERF emissions, rather than project increase this NOC application. No control credit is applied for these TAPs; unabated emissions are equal to abated/allowable emissions.

For TAPs that require modeling, modeling was performed to satisfy the requirements of Washington’s state toxics rule in Chapter 173-460 WAC. The modeling demonstrates that the emissions increases as a result of the project will not exceed the acceptable source impact level (ASIL) screening thresholds. The modeling results are included in Table 7.

Ecology did have several concerns with the initial TAP modeling provided with the NOC Application and required updated modeling from DOE. This increased concentrations of 24-hour TAPs by 32.3% and annual TAPs by 0.3%. The values in Table 7 are updated with this increase. Even with the updated modeling, all TAPs are less than 1% of their respective ASIL and would not cause or contribute to an exceedance.

Ecology allowed DOE to model only the ETF main stack to demonstrate compliance with ASILs. TAP emissions from other sources at LERF and ETF are significantly less than those for the main stack and would not increase modeled concentrations enough to lead to a potential exceedance of an ASIL.

Table 7. ETF Main Stack TAP Modeling Results.

TAP	Averaging Period	Maximum Modeled Concentration (µg/m³)	ASIL (µg/m³)	Percent of ASIL
N-Nitroso-di-n-propylamine	Annual	2.45E-06	5.0E-04	0.49%
N-Nitroso-N,N-dimethylamine	Annual	3.52E-08	1.3E-04	0.03%
Chloroform	Annual	7.05E-06	4.3E-02	0.02%
DDE	Annual	3.41E-06	1.0E-02	0.03%
Acetonitrile	24-hour	5.24E-02	6.0E+01	0.09%
Ammonia/Ammonium	24-hour	4.91E-02	5.0E+02	0.01%

Table 7. ETF Main Stack TAP Modeling Results.

TAP	Averaging Period	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)	ASIL ($\mu\text{g}/\text{m}^3$)	Percent of ASIL
Naphthalene	Annual	1.65E-04	2.9E-02	0.57%
Nitrobenzene	Annual	6.92E-06	2.5E-02	0.03%

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