

NATIONAL POLLUTANT DISCHARGE
ELIMINATION SYSTEM
DRAFT PERMIT MODIFICATION
FOR THE
GRAYS HARBOR ENERGY PROJECT

ENERGY FACILITY SITE EVALUATION COUNCIL (EFSEC)
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Agenda

- Background
- NPDES Permit Basics
- Proposed Modifications to Grays Harbor Energy Permit
- Summary

Purpose of This Presentation

To:

- Provide an overview of the NPDES Permit process to the Council and the public.
- Inform the Council and the public why the 2008 permit must be modified.
- Propose a path forward for GHE to demonstrate compliance with the applicable federal and state standards.

BACKGROUND

Background

National Pollutant Discharge Elimination System (NPDES) Permit No. WA-002496-1 is a federal permit issued by the Energy Facility Site Evaluation Council (EFSEC) that regulates the process wastewater and stormwater discharges of the Grays Harbor Energy Project (GHEP), formerly known as the Satsop Combustion Turbine Project.

Background

Federal and state statutes require a new facility to have a permit prior to beginning operation and discharge.

Current permit was issued in May 2008.

GHEP began commercial operation in July 2008.

2008 Permit

GHEP began exceeding the permit effluent limits for chloride, pH and iron soon after beginning operation.

On Nov. 13, 2008 EFSEC issued a Notice of Incident citing GHEP for the exceedances and a Request for Assurance of Compliance.

2008 Permit

On Dec. 11, 2008 GHEP responded that the pH neutralization system would be replaced.

After further investigation EFSEC determined:

- Chloride effluent limits should not be in the permit.
- The sample point for iron may be inappropriate.

Justification for Permit Modification

Permit mod will:

- Remove chloride effluent limits.
- Revise other permit effluent limits.
- Revise the monitoring schedule.
- Revise the stormwater requirements .
- Revise the existing Schedule of Compliance.

NPDES PERMIT BASICS

Regulatory Abbreviations

CFR means the Code of Federal Regulations.

WAC means the state of Washington
Administrative Code.

Compliance

Permittees must comply with 2 types of standards:

- Technology- based performance standards
(40 CFR 122.45(e); WAC 173-220-130(1)(a))
- Water quality-based standards
(40 CFR 122.44(d); WAC 173-220-130(1)(b)(i))

Technology-based standards Federal

- 40 CFR Part 423.15 - New Source Performance Standards for Steam Electric Power Steam Generator Facilities.
- Promulgated in 1982, never updated.

Technology-based standards State

- WAC 173-220-130(1)(a) - Application of “all known, available, and reasonable methods of prevention, control and treatment” (AKART).
- “AKART shall represent the *most current* methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge”.
Definition WAC 173-201A-020

Technology-based standards State

AKART:

- The effluent limitations shall not be less stringent than those based upon the treatment facility design efficiency contained in approved engineering plans and reports or approved revisions thereto. WAC 173-220-130(1)(a)

Water Quality-based Standards

Detailed in Chapter 173-201A WAC

Types of standards:

- Numeric criteria, e. g., pH must be between 6.5 and 8.5, ± 0.5 Standard Units.
- Narrative standards, e. g., antidegradation, whole effluent toxicity (WET), waterbody uses, compliance with approved Total Maximum Daily Load (TMDL) Studies.

Water Quality-based Standards

Numeric standard types:

- Set criteria, e. g., pH must be between 6.5 and 8.5, ± 0.5 Standard Units.
- Hardness-dependent criteria, e. g., copper are calculated with the hardness of the Chehalis River water. Hardness is the measure of the calcium and magnesium ions in the river.

Water Quality-based Standards

Narrative standards

- Antidegradation : The antidegradation policy helps prevent unnecessary lowering of water quality.
- Designated uses of the waterbody and upstream (background) concentrations of pollutants are evaluated to determine compliance with the policy. See WAC 173-201A-320 for more information on Tier II antidegradation.

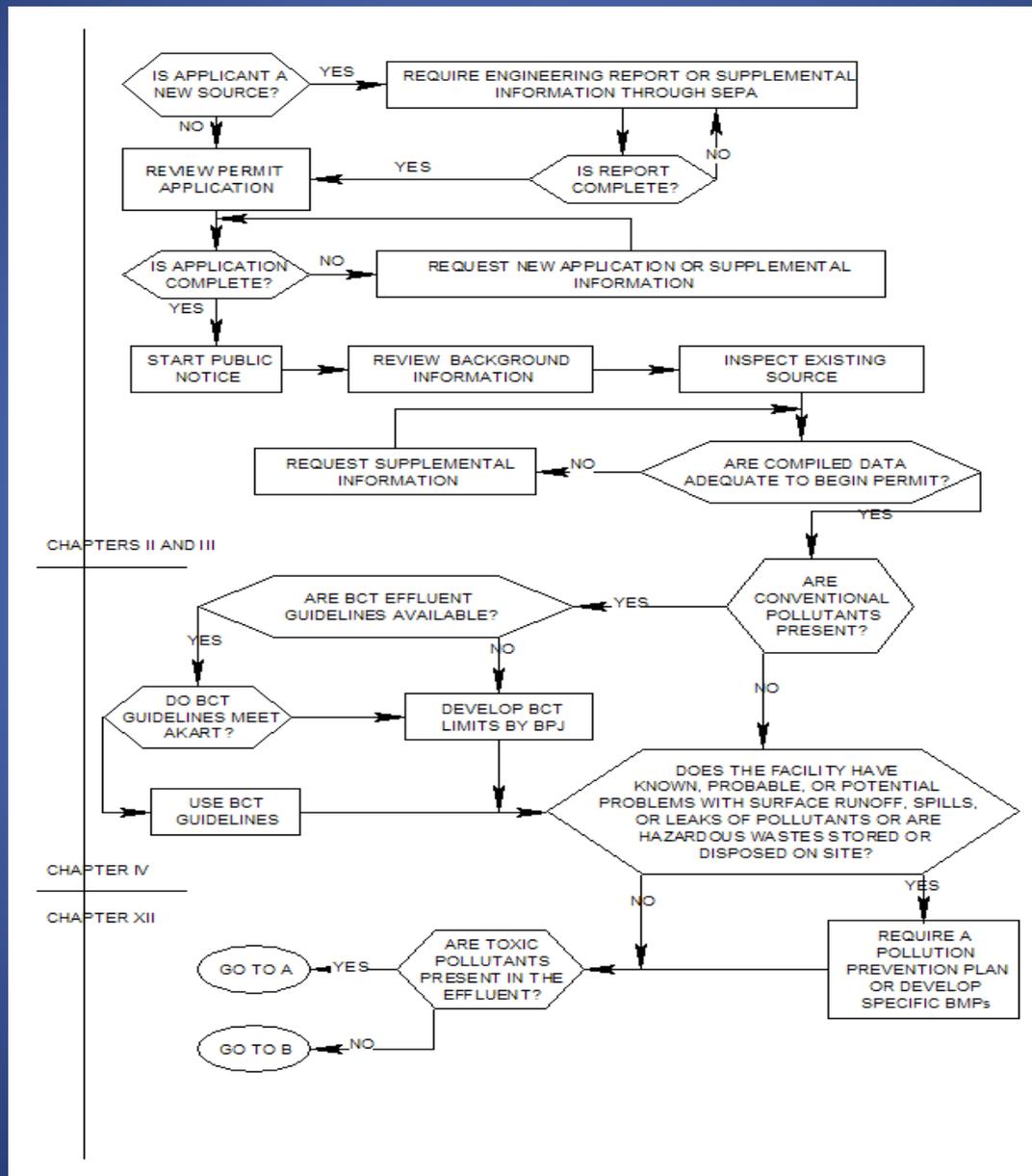
Water Quality-based Standards

Mixing Zones

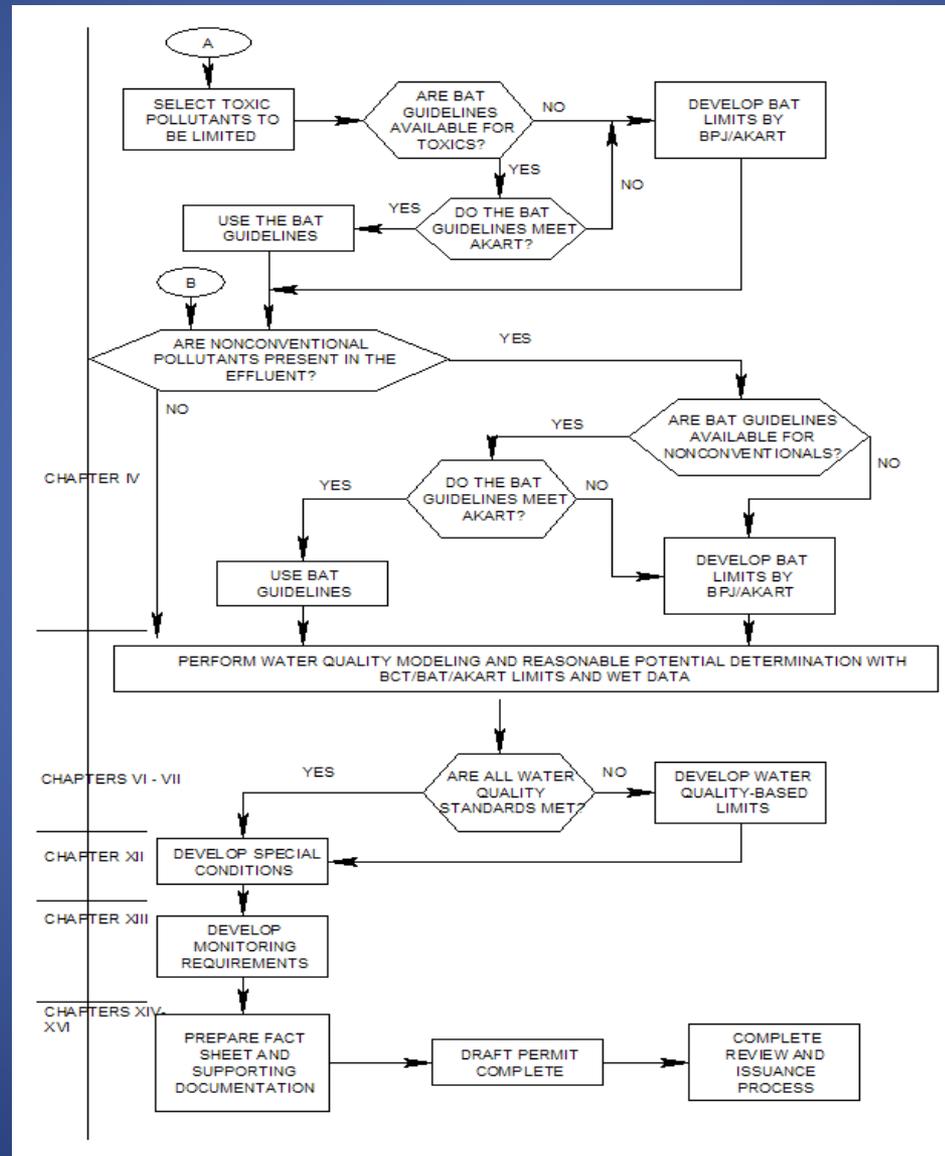
- "Mixing zone" means that portion of a water body adjacent to an effluent outfall where mixing results in the dilution of the effluent with the receiving water. Definition, WAC 173-201A-020
- A discharger shall be required to fully apply AKART *prior to* being authorized a mixing zone. WAC 173-201A-400(2)

PERMIT DEVELOPMENT FLOW DIAGRAM

Permit Development – Part 1



Permitting Flow Diagram – Part 2



PROPOSED MODIFICATIONS
TO
GRAYS HARBOR ENERGY PERMIT

Modified Sections

- S1.B – Interim Effluent Limits
- S1.C – Mixing Zone Authorization
- S2.A – Interim Monitoring Schedule
- S2.C – Stormwater Benchmarks, Prohibitions, and Monitoring Requirements
- S5 – Schedule of Compliance

S1.B – Interim Effluent Limits Chloride

Chloride effluent limits removed.

Explanation:

The dissolved chloride water quality criteria are:

Acute	Chronic
860 mg/L	230 mg/L

S1.B – Interim Effluent Limits Chloride

Chloride (cont'd)

860 mg/L = 0.860 g/L; however, 860 mg/L was entered into the spreadsheet as 0.000860 g/L, or 1,000 times lower (more stringent) than the WQ criterion.

The highest concentration of chloride discharged by GHEP was 181 mg/L, or approx. 21% of the WQ criterion. Result: no need for an effluent limit.

S1.B – Interim Effluent Limits Ammonia, Chromium

The 2008 ammonia and chromium effluent limits were reduced (made more stringent) in the proposed permit mod, based on discharge data submitted by GHE. Ammonia and chromium can impact adversely aquatic life in the Chehalis River.

Parameter	Units	2008 Daily Maximum	2008 Monthly Average	Proposed Daily Maximum	Proposed Monthly Average
Ammonia	mg/L	321	160	2.64	0.92
Chromium	µg/L	200	200	32.96	15.25

S1.B – Interim Effluent Limits Copper, Zinc

EFSEC proposes new copper and zinc effluent limits in the permit mod. The limits were calculated from data submitted by GHE in 2009. Copper and zinc can impact adversely aquatic life in the Chehalis River.

Parameter	Units	Proposed Daily Maximum	Proposed Monthly Average
Copper	µg/L	22.5	11.2
Zinc	µg/L	88.2	43.9

S1.C – Mixing Zone Authorization

EFSEC proposes that the proposed interim dilution factors be minimized, as required by WAC 173-201A-400(6).

Mixing Zone	2008 Dilution Factor	Proposed Dilution Factor
Chronic	182	8
Acute	21	6

Interim Mixing Zone Authorization and Compliance with the WQ Standards

EFSEC does not have sufficient discharge or receiving water data to definitively determine whether GHE's discharge complies with the water quality standards.

The proposed interim mixing zones are calculated to ensure provisional compliance with the water quality standards during the Schedule of Compliance. Condition S5 of the proposed permit requires GHE to provide verification of compliance with the water quality standards by the end date of the Schedule of Compliance. EFSEC will establish final mixing zones based on the approved water quality study and engineering report.

S2.A – Interim Monitoring Schedule

EFSEC proposes that chloride be removed from the monitoring schedule.

Based on characterization data submitted by GHE in 2009, EFSEC proposes that the following parameters be added to the monitoring schedule:

Dissolved Oxygen	Dissolved Solids, Total
Alkalinity	Copper, Total
Nitrate/Nitrite	Zinc, Total
Ortho-Phosphate	Residual Chlorine, Total
Total Phosphorus	Turbidity
Sulfide	

S2.A – Interim Monitoring Schedule (cont'd)

EFSEC will use discharge data collected during the remainder of this permit cycle to revise effluent limits and other permit conditions at the next permit reissuance.

S2.C – Stormwater Requirements

EFSEC proposes to modify the stormwater requirements in the 2008 GHE permit to be consistent with requirements in the Industrial Stormwater General Permit issued by Ecology in October 2009.

EFSEC proposes:

- Reduction of copper benchmark from 117 $\mu\text{g}/\text{L}$ to 14 $\mu\text{g}/\text{L}$.
- Submittal of quarterly Discharge Monitoring Reports.

S5 – Schedule of Compliance

Regulatory Basis

Federal and state regulations allow EFSEC to establish a Schedule of Compliance to allow GHE an opportunity to evaluate compliance with the technology-based and water quality-based requirements. (See 40 CFR 122.47 and WAC 173-220-140) EFSEC has determined that the proposed Schedule of Compliance complies with these regulations.

S5 – Schedule of Compliance

The proposed Schedule of Compliance contains 2 primary components:

- Water Quality Evaluation that analyzes the discharge and the Chehalis River to evaluate compliance with the WQ Standards.
- Engineering Report that will propose AKART.

S5 – Schedule of Compliance

Water Quality Evaluation components include:

- Characterize the discharge.
- Characterize the receiving water.
- Determine WQ criteria, as necessary.
- Evaluate compliance with state WQ standards, including numeric/narrative criteria, antidegradation, and whole effluent toxicity (WET), human health, National Toxics Rule, etc.
- Evaluate compliance with existing TMDLs.
- Reconcile tech-based parameters with WQ-based parameters, e. g., TSS/Turbidity

S5 – Schedule of Compliance

Engineering Report components include:

- Propose AKART, which requires consideration of "all known, available, and reasonable methods of prevention, control, and treatment."
- AKART requires consideration of *most current* methods, unlike federal requirements.
- GHE must consider implementation of BMPs, pollution prevention (P2) measures, operational adjustments, and treatment.
- The "R" in AKART requires a cost-benefit analysis.

S5 – Schedule of Compliance

Nitrogen and Phosphorus (N&P)

- The 2009 characterization data revealed forms of N&P in GHE's discharge.
- Chapter 173-201A WAC does not contain numeric freshwater stream criteria for N or P.
- Environmental effects of N&P manifests as eutrophication and low dissolved oxygen (DO) concentrations.
- Ecology addresses DO impaired streams through Total Maximum Daily Load Studies.

S5 – Schedule of Compliance

P&N (Cont'd)

Environmental effects of P&N on rivers influenced by such factors as:

- Seasons
- Location
- Amount of sunlight
- Tidal influences
- Chemical/physical/biological reactions occurring in the stream.

S5 – Schedule of Compliance

P&N (cont'd)

P&N can environmentally influence a stream miles away from a discharge outfall. Typically, P&N particles will become entrained in stream sediments and contribute to eutrophication days, weeks, or months later.

Due to the factors on the previous slide, the delayed impacts of P&N on a stream are very difficult to address in NPDES Permits, as permit writers have computer models that address impacts of a pollutant to the immediate vicinity of the outfall only.

S5 – Schedule of Compliance

P&N (Cont'd)

S5 requires GHE to:

- Analyze the environmental fate of N&P in the discharge to the receiving water.
- Evaluate N&P in the discharge for compliance with Ecology's DO and ammonia TMDLs.
- Evaluate N&P in the discharge for compliance with all applicable water quality standards.

OR

- GHE can propose substituting cooling water P&N-free additives.

S5 – Schedule of Compliance

P&N (Cont'd)

- If GHE chooses to continue using additives with P&N, it has a menu of options to reduce/eliminate P&N in the discharge, such as treatment, going to zero discharge, etc.

S5 – Schedule of Compliance

The goals of the Schedule of Compliance are to:

- Definitively verify GHE's compliance with all applicable federal and state technology-based and water quality-based standards.
- Propose final effluent limits, a final monitoring schedule, and other measures that will assure ongoing compliance with the federal and state technology-based and water quality-based standards for the operational life of the facility.

SUMMARY

EFSEC has determined that the proposed permit modification substantively complies with all applicable federal and state regulations.