



Reissuance of General Permit AKG315200 – Oil and Gas Exploration, Development, and Production in Cook Inlet

Alaska Department of Environmental Conservation
Division of Water
Alaska Pollutant Discharge Elimination System
Gerry R. Brown

Basis of Authority



Statutes and Regulations

- Alaska Statute Title 46, Chapter 46.03 Environmental Conservation
- 18 AAC 70 – Water Quality Standards [Including Toxics Manual]
- 18 AAC 72 – Wastewater Disposal
- Clean Water Act Sections 402 NPDES Programs
- 18 AAC 83 – Alaska Pollutant Discharge Elimination System
- Adopted Effluent Limitation Guidelines [i.e. 40 CFR Part 435]

Environmental Conservation Statutory Authority



- Alaska Statute (AS) Title 46, Chapter 03, Section 10 (AS 46.03.10)

Declaration of policy

- (a) It is the policy of the state to conserve, improve, and protect its natural resources and environment and control water, land, and air pollution, in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well-being.
- (b) It is the policy of the state to improve and coordinate the environmental plans, functions, powers, and programs of the state, in cooperation with the federal government, regions, local governments, other public and private organizations, and concerned individuals, and to develop and manage the basic resources of water, land, and air to the end that the state may fulfill its responsibility as trustee of the environment for the present and future generations.

General Permit History



- 1986 General Permit
 - Pooled Multiple Individual Permits
 - No Effluent Limitation Guidelines (ELGs)
 - Used Technology-Based Effluent Limitations Developed using Best Professional Judgment (BPJ)
 - Established Secondary Treatment for Domestic Wastewater (Had to Meet Minimum Treatment)
 - Two Standardized Mixing Zones: One for Over 1 Million Gallons and One for Below
 - Established 1,000-meter Exclusions
 - Environmental Monitoring Program (EMP) Study required if within 1,500 meters

General Permit History



- 1999 General Permit
 - 1996 Promulgated ELGs (40 CFR 435)
 - Permittees had to submit Mixing Zone Applications After the First Year of Discharging Produced Water using the Data
 - Determined that not all Domestic Wastewater Systems could meet Secondary Treatment
 - Established Perceived Attainable Limits Using BPJ
 - Established Limits for Total Residual Chlorine (TRC) of 19 mg/L and 9 mg/L
 - Waiver to Minimum Treatment (Secondary Treatment) issued to Anna, Baker, Bruce, and Dillon Platforms
 - No Waivers Granted for Discharges of Graywater
 - Maintained the 1,000 meter Exclusions
 - EMP Studies within 4,000 meters

General Permit History



- 2007 General Permit
 - All Produced Water Mixing Zones were Facility/Discharge-specific
 - Retained Domestic Limits but made TRC Limits Facility/Discharge-specific (no greater than 9 mg/L)
 - Established Standardized 100 meter Mixing Zones for Miscellaneous Discharges
 - Required Chronic Whole Effluent Toxicity (WET) for Discharges > 10,000 Gallons if Chemicals Used
 - Triggers Established Based on Acute Toxicity but Applied to the Chronic Mixing Zone
 - Dilution Series Based on High Trigger Values
 - Batch Chemical Dosing not Captured in WET Tests

General Permit History



- 2007 General Permit Continued
 - Expanded to 4,000 meter Exclusions
 - No EMP Studies Had Been Conducted
 - Basis was for Better Protection to Critical Habitat in Federal Waters, Extended Reach Drilling Could be Used, or an Individual Permit (IP) Issued
 - Required EMP Studies for Any Exploration Drilling
 - To Date, EMP Studies have not Provided Useful Data (No Sediment at Locations)

General Permit History



- 2007 General Permit Continued
 - Required Industry to Conduct Produced Water Study in Conjunction with the Integrated Cook Inlet Environmental Monitoring and Assessment Program (ICIEMAP)
 - Collaborative Study:
 - National Oceanic and Atmospheric Administration (NOAA)
 - Cook Inlet Regional Citizens Advisory Council
 - DEC – Environmental Monitoring and Assessment Program
 - Evaluated Most Industrialized Locations (Trading Bay, East Forelands, and Granite Point Tank Farm)
 - Provided Comparison Between Water and Sediment Quality Near Discharges to Background
 - Concluded No Significant Difference Between Background and Produced Water Discharge Locations

Other Related Permits



- 2015 Mobile Exploration General Permit
 - Issued to Support Ongoing Oil and Gas Exploration
 - Collaborative with EPA:
 - EPA Issued Similar General Permit for Federal Waters
 - DEC Chose to Conduct Ocean Discharge Criteria Evaluation to be Consistent with EPA
 - EPA-DEC Conducted Joint Activities (Tribal Outreach and Public Notices and Hearings)
 - Each Entity Issued Separately After Public Notice Period
 - Maintained “Status Quo” of Conditions from 2007 GP
 - Minor Modifications to EMP Requirements (No Data to Date)
 - Emphasized Requirements for Domestic Wastewater per 18 AAC 72 – Domestic Wastewater (i.e., Plan Reviews and Minimum Treatment Requirements) and Lowered TRC to 1.0 mg/L (Adopted in Reissued Permit)

Other Related Permits



- 2018 Sabre Exploration IP
 - Issued to Cook Inlet Energy for Trading Bay State Game Refuge Location
 - Location Within the 4,000 meter Exclusion
 - Horizontal Direction Drilling (HDD) May Not Work
 - Transitional Environment (Sandy Sediment)
 - No Reported Biological Resources
 - Good Location for EMP Study to Evaluate Fate and Transport of Drilling Fluids
 - EMP Study Required (Potentially First Meaningful Study)

Other Related Permits



- 2014 Furie Kitchen Lights Gas Production IP
 - Included Gas Production Platform and HDD for Pipeline Construction
 - Discharges of Drilling Fluids and Drill Cuttings
 - Short-term Discharges with Large Mixing Zones
 - Requires Daily Observations for Inadvertent Releases
 - End of Project Report
 - Most Discharges from Platform are Sent to Shore via Pipeline
 - Mobile Offshore Drilling Unit (MODU) does development Drilling Periodically (Part of Permit)
 - Domestic Wastewater Treatment System Meets Minimum Secondary Treatment Requirements

Other Related Permits



- 2015 ExxonMobil AK LNG Geotech Survey IP
 - Needed to Evaluate Seafloor Soils for Project
 - Discharges of Drilling Fluids and Drill Cuttings
 - Drilling Fluids Circulated Topside and Reused
 - Discharges Only When Lifting the Casing
 - Multiple Locations on East and West Side of Cook Inlet
 - Two Different Sized Mixing Zones (East or West)
 - Deep Boreholes Encountered Artesian Aquifer
 - Plugging and Abandoning with Cement

Other Related Permits



- 2009 Osprey Platform IP
 - Initially Under 1999 GP for Exploration
 - Needed IP because 1999 GP Did Not Included the Osprey Location
 - Initially, Wastewater Disposed in Underground Injection Control (UIC) Wells
 - Cook Inlet Energy Now Requesting Coverage to Discharge Because the UIC Wells are No Longer Adequate for the Wastewater Needs (Over-pressurization)
 - Current Age of the Facility Similar to Others When Effluent Limitation Guidelines Developed

Stakeholder Kickoff



- 2014 Workshops Held in Anchorage and Homer
 - Open to Public, Agencies, Industry, Native Groups, Non-Government Organizations
 - Morning Focused on Permitting Process Afternoon Focused on Range of Concerns
 - Workshop Summary and Postcard Updates Provided to Participants
 - DEC Evaluated Concerns and Selected Ones that Could be Result in Incremental Improvements
 - DEC Set Aside Concerns that Were Not Within Authority
 - Fish Consumption and Human Health Criteria
 - “Zero Discharge”
 - Third-Party Enforcement

Stakeholder Implementation



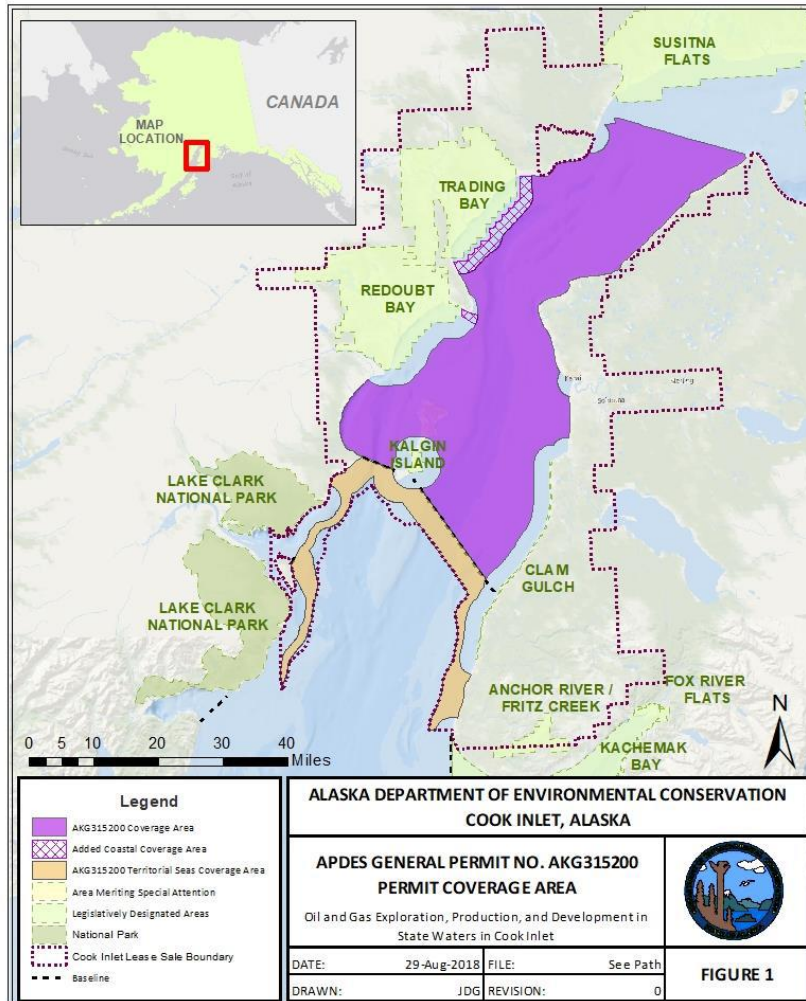
- Workshop Concerns and Incremental Improvements
 - Implementable Concerns Included:
 - Incorporation of Lesson Learned in Other Permits
 - Improved Mixing Zone Evaluations Using New Information
 - Better Understanding of Chemical Usage
 - Critical Review of EMP Study Objectives
 - Pollution Reduction Strategies
 - Revised Application and Additional Submittal Requirements
 - Mixing Zones
 - Alternative Analysis to Support Antidegradation
 - Details on Chemical Used, How, When, etc.
 - Discussing Pollution Reduction Incentives



Incremental Improvements

Area of Coverage

1. Reduced to Match Lease Boundary
2. Expanded to Include Sabre Project Site
3. Overlap Beluga Critical Habitat Type II
4. EMP Studies Only in Trading Bay SGR



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Incremental Improvements



- New Authorized Discharges
 - HDD and Geotechnical Drilling Fluids and Drill Cuttings
 - Simple (Clay-based Fluid) to Complex (Multiple Additives Possible Including Barite)
 - Requires Submittal of Mixing Zone Analysis for HDD but Not Geotech
 - No Anticipated Hydrocarbons
 - Short-Term Zone of Deposit
 - Hydrostatic Test Water
 - Previously in Definition of Produced Water
 - Can Commingle and Treat with Produced Water
 - Includes Discharges from Potable Water Systems



Incremental Improvements

- Mixing Zone Evaluations
 - New Data from NOAA Buoy Deployments
 - Focus on Full Tidal Cycle and Possible Re-entrainment (No Re-entrainment Determined)
 - Verification that Model Selection is Appropriate (CORMIX is Appropriate)
 - Site-Specific Salinity Profiles from ICIEMAP Data
 - Background Receiving Water Concentrations for Metals
 - Better Estimates of the Actual Size and Shape of the Mixing Zones
 - Site-Specific Mixing Zones for:
 - Produced Water Discharges
 - Certain Domestic Wastewater and Miscellaneous Discharges
 - HDD Discharges
 - Site-Specific Mixing Zones for:
 - Validated Standardized 100 Meter Mixing Zones for:
 - Drilling Fluids and Drill Cuttings
 - Miscellaneous Discharges Over 10,000 gallons with Chemicals

Incremental Improvements



- Incentivized Pollution Reduction (PR) Strategies
 - Better Estimates of Mixing Zone Dilution and Potential Chronic Toxicity from Chemicals
 - Pollution Reduction Best Management Practices (BMPs)
 - By the End of the Permit Term, All Miscellaneous Discharges Must Demonstrate Meet Chronic Toxicity at the Boundary of the Mixing Zone
 - Permittees Must Evaluate Chemical Dosing Practices and Update Quality Assurance Project Plans (QAPPs) for Sampling
 - If the PR Action Levels Exceeded, Permittee Must Continue to Implement BMPs Sequentially Until Below Action Levels
 - Once Demonstration that QAPP is Adequate and BMPs are Effective in Lowering Toxicity, a Reduction in Monitoring Frequency is Available
 - Permittees Must Update Line Drawings for the Miscellaneous Discharge and Submit with Next Application for Reissuance

Incremental Improvements



- Domestic Wastewater Characterization and Report
 - All Existing Discharges Remain Authorized the Same
 - During the Permit Term, Permittees Must Conduct a Characterization Study and Submit a Report With the Next Application for Reissuance
 - Focus in on Graywater Discharges and Practicable Implementation Strategies to Comply with 18 AAC 72
 - Similar to Miscellaneous Discharges, Updated Line Diagrams Needed in Next Application

Incremental Improvements



- Produced Water in Reissued General Permit
 - All Limits are More Stringent or the Same
 - Any New Discharger of Produced Water Must Submit an Individual Permit Application for DEC Consideration
 - Expanded the Ability to Commingle Other Waste With Similar Characteristics (e.g., Petroleum Hydrocarbons)
 - Excavation Dewatering Containing Petroleum Hydrocarbons
 - Incidental Spills
 - Completion, Treatment, Workover, and Test Fluids
 - Hydrostatic Test Water (Allowed in the 2007 GP)
 - Lowered Chronic WET Action Levels
 - Based on Historic Data Rather Than Chronic Dilution
 - Must Notify DEC, Make Modifications if Needed, and Retest

Incremental Improvements



- Chronic WET Testing in Reissued General Permit
 - Standardized Test Species
 - Eliminated Vertebrate Species for Miscellaneous Discharges
 - Adjusted Dilution Series to Capture Account for New Action Levels and Characterizing Actual Toxicity
 - Kept 30-day Retest but Removed Toxicity Reduction Evaluation (TRE) and Toxicity Identification Evaluation (TIE)
 - DEC Retains Authority to Require TRE/TIE Through Regulation
 - Chronic WET Frequencies Initially Unchanged but After Demonstration of Toxicity Below Action Levels Permittees May Request Frequency Reduction for Produced Water and Miscellaneous Discharges



Incremental Improvements

- New Antidegradation Analysis Requirements
 - New Regulations Became Effective in April 2018
 - 18 AAC 70.016 Establishes Implementation Methods
 - Restricted to “New or Expanded” Discharges
 - For New or Expanded Discharges, the Applicant Must Submit an Alternative Analysis that Relates Cost of Alternative to Environmental Protection Level (Not a Cost-Benefit Analysis)
 - For the Permit, Only the Produced Water Discharge from the Osprey Platform is Considered “New or Expanded.”
 - The Alternative Analysis Submitted by the Applicant Identifies a Level of Treatment Necessary to Meet the ELGs and Construction of a Multiport Diffuser for the Outfall
 - DEC Accepts the Applicant’s Alternative Analysis and Meeting the Findings Required Under 18 AAC 70.015



Questions?
Thank you for your time!

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