



# 2014 Large Cruise Ship General Permit

Alaska Department of Environmental Conservation  
Division of Water  
Commercial Passenger Vessel Environmental Compliance Program  
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# Division of Water

## Mission Statement:

- Improve and protect water quality

## How?

- Establishes standards for water cleanliness
- **Regulates discharges to waters and wetlands**
- Provides financial assistance for water and wastewater facility construction and waterbody assessment and remediation
- Trains, certifies, and assists water and wastewater system operators
- Monitors and reports on water quality



# Commercial Passenger Vessel Environmental Compliance Program (Cruise Ship Program)

## Implementation of House Bill 80

- Passed legislature and signed into law in 2013
- Addresses cruise ship wastewater discharges
- Allows for mixing zones (underway & stationary)
- Draft general permit on public notice
- This is not the formal hearing

# Recap from Last Year

- Advanced wastewater treatment systems (AWTS) are required
- No untreated sewage discharged in Alaskan marine waters
- Copper chronic toxicity
  - Staff have attended recent symposiums summarizing current research
  - Existing marine water quality criteria are protective for potential effects on salmon's ability to smell (olfactory)

# This year, HB 80

## Draft Large Cruise Ship Permit

- “Large” means 250 or more overnight passengers
- Current 2010 general permit expires in December 2015
- Treats ships with AWTs as a class
- Defines two regulatory mixing zones for discharge (underway & stationary)



# How is the Draft Permit Protective?

- Untreated wastewater discharge is not allowed
- Requires treatment by AWTs or equivalent
- Effluent limits set to protect water quality
- Mixing zone based on available data
  - Past effluent results
  - Ambient (background) conditions
- Includes monitoring and reporting requirements

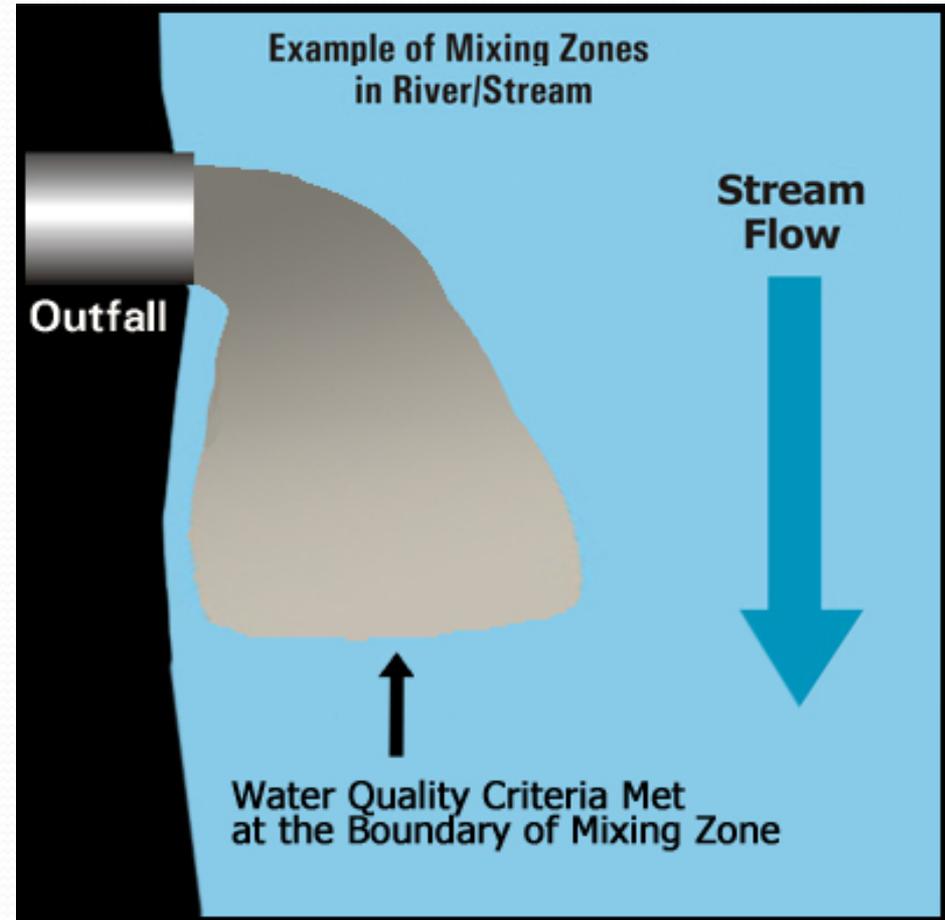
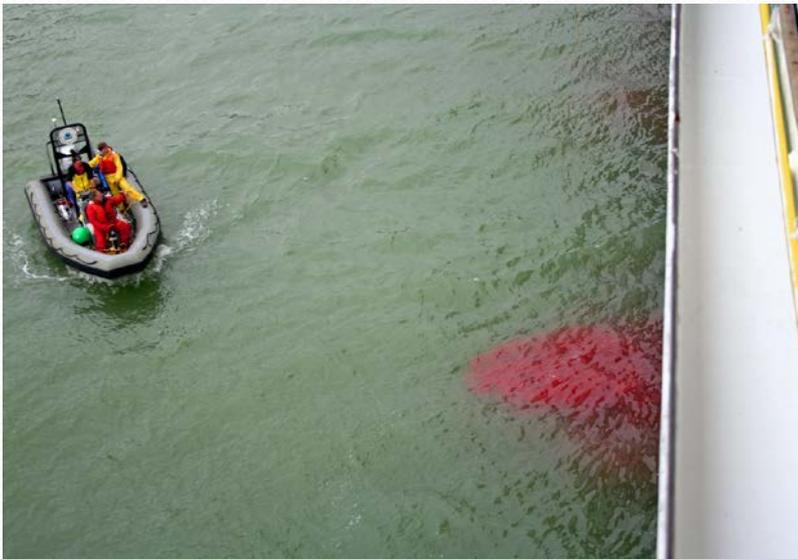
# Advanced Wastewater Treatment System (AWTS)

- Designed to meet 2000 Murkowski Law (500 or more passengers) for biological oxygen demand, total suspended solids, pH, fecal coliform, and total residual chlorine
- Designed to treat sewage and graywater
- Generally include some type of filtration, biological treatment, and a final disinfection step using ultraviolet light or ozone.



# Mixing zones

- Portion of a waterbody where initial dilution occurs
- Water quality criteria must be met at the boundaries



# Mixing Zones - Regulatory

How are they protective?

- Meet technology requirements
- Maintain & protect waterbody uses and biological integrity
- Must be as small as practicable



# Small as practicable

“Practicable” means

available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes

18 AAC 70.990 (48)

# Mixing Zones - Cannot

Mixing zone **cannot**:

- Result in toxicity outside the boundaries
- Create a public health hazard
- Reduce fish/shellfish populations
- Form a barrier to fish passage
- Adversely affect listed species

# Draft Large Cruise Ship Permit

Defines two regulatory mixing zones for discharge:

- **6 knots or greater**



- **Under 6 knots or stationary**



# Mixing Zone modeling

- HB 80 allows mixing zones for cruise ships
  - Not allowed before
- Ships have different configurations and these affect the way mixing occurs when moving at under 6 knots
  - Discharge port size
  - Discharge velocity
- Address during application and authorization process

# Draft Large Cruise Ship Permit

- **6 knots or greater**
  - Compliance with ammonia chronic criteria limits the size
  - 63 meters long by 5 meters wide and up to 7.5 meters deep
    - Parallel to the ship
    - “Moving mixing zone”
  - Takes 21 seconds to meet water quality criteria at 6 knots

Note – one meter is slightly larger than one yard

# Draft Large Cruise Ship Permit

- **Under 6 knots or stationary**
  - Compliance with ammonia or copper chronic criteria limits the size
  - Radius of 83 meters wide and up to 7.5 meters deep
  - Further reduced to radius of 15 meters in Skagway to avoid overlap at Broadway and Ore Docks

# Limitations and Monitoring

## **6 Knots or Greater**

- Reduced frequency due to lack of reasonable potential to exceed water quality criteria
- Compliance with effluent limits

## **Under 6 Knots or Stationary:**

- Compliance with effluent limits
- Verify our modeling and gather data for next permit
  - Receiving water sampling
  - Whole effluent toxicity testing

# Limitations and Monitoring

## **All Discharges**

- Full suite of potential contaminants in third year of permit (minimum)
- Operation and maintenance plan

**Ocean Rangers** - compliance assistance and perform inspections

# How will the Draft Permit work?

- Applicants submit a Notice of Intent (NOI)
- Department reviews NOI for accuracy and verifies mixing zone modeling
  - Ship-specific evaluation to determine whether the requested mixing zone can be authorized under the general permit
  - If all mixing zone requirements are met, DEC will authorize
- Authorizations may include additional terms and conditions

# Conclusion

- Advanced wastewater treatment or comparable treatment is required
- Mixing zones are allowed
  - Only if certain conditions are met
- Cruise ship permit is protective of Alaska's water quality

# How to participate?

- Public comment on the draft permit
  - Public hearing in Juneau on April 30 from 5:00 to 8:00 pm at Centennial Hall
  - Submit comments to [DEC.WQ.Cruise@alaska.gov](mailto:DEC.WQ.Cruise@alaska.gov) or by mail

Alaska Department of Environmental Conservation  
Attn. Commercial Passenger Vessel Environmental Compliance Program  
410 Willoughby Avenue, Suite 303  
P.O. Box 111800  
Juneau, Alaska 99811-1800

- Comment period closes on May 23, 2014 at 5 pm



Questions?  
Thank you for your time!

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# Permit Limits: Secondary Standards

Parameter	MSD II <sup>1</sup>	Title XIV 2000 US Coast Guard continuous	2010 GP	Draft Permit
Fecal Coliform monthly geometric mean and daily maximum	200	20/40	14/43	<b>14/40</b>
Total Suspended Solids (mg/L) monthly average and daily maximum	150	150	150	<b>30/150</b>
pH daily minimum and maximum		6.0-9.0	6.5-8.5	<b>6.5-8.5</b>
Chlorine (µg/L)		10	10	<b>10 (7.5)</b>
Biochemical Oxygen Demand (BOD <sub>5</sub> mg/L) monthly average and daily maximum		30/45	30/60	<b>30/60</b>

<sup>1</sup> MSD II standards, also federal limits for more than 1nm and 6 knots speed  
Not more than 10% can exceed 40 FC/100 ml

# Permit Limits: Historical Parameters of Concern

Parameter	2010 GP underway	2010 GP continuous	Draft Permit under 6 knots	Draft Permit 6 knots or over
Ammonia (mg/L)	12 to 143	12 to 28	78	160
Dissolved Copper (µg/L)	10 to 133	10 to 87	77	No RP
Dissolved Nickel (µg/L)	10 to 63	10 to 63	No RP	No RP
Dissolved Zinc (µg/L)	112 to 395	112 to 395	No RP	No RP

RP = reasonable potential to cause or contribute to an exceedance of water quality standards at the boundaries of an approved mixing zone

# Sampling Frequency

Parameter	Minimum Frequency		
	2010 GP	Draft Permit Under 6 Knots	Draft Permit 6 Knots or Over
<b>Total Flow</b>	Daily	Daily	Daily
<b>Field tests: Temperature, pH, Chlorine</b> <sup>1</sup>	Twice per month	Twice per month	Twice per year
<b>Specific Conductance</b>	Twice per year	Twice per month	Twice per year
<b>Total Suspended Solids</b>	Twice per month	Twice per month	Twice per month
<b>Biochemical Oxygen Demand (5-day)</b>	Twice per month	Twice per month	Twice per year
<b>Fecal Coliform Bacteria</b>	Twice per month	Twice per month	Twice per month
<b>Ammonia</b>	Twice per month	Twice per month	Twice per year <sup>4</sup>
<b>Dissolved Copper</b>	Twice per month	Twice per month	Twice in Year 3 <sup>2</sup>
<b>Hardness</b>	Not listed	Twice per month	Twice per year

# Sampling Frequency (continued)

Parameter	Minimum Frequency		
	2010 GP	Draft Permit Under 6 Knots	Draft Permit 6 knots or over
<b>Alkalinity</b>	Twice per year	Twice in Year 3 <sup>2</sup>	Twice in Year 3 <sup>2</sup>
<b>Chemical Oxygen Demand</b>	Twice per year		
<b>Nitrate-Nitrite, Phosphorus, TOC, TKN</b>	Twice per year		
<b>Oil and Grease</b>	Not listed		
<b>Settleable Solids</b>	Twice per year		
<b>Base-Neutral Acid Extractables (BNA)</b>	Twice per year		
<b>Other Dissolved and Total Recoverable Metals and Total Mercury</b>	Twice per year		
<b>Volatile Organic Compounds (VOCs)</b>	Twice per year	Twice per year	None
<b>Receiving Waters</b>	None		
<b>WET Testing</b>	None	Once per month in Year 3 <sup>3</sup>	None

<sup>1</sup> Total residual chlorine and free chlorine monitoring and reporting are only if chlorine is used as a disinfectant.

<sup>2</sup> For ships authorized to discharge under the 2010 General Permit, twice in the third year of Permit term. For all other ships, twice in first year of operation under Permit term and twice in the third year of Permit term.

<sup>3</sup> Sampling is required in the third year of the Permit term or the first year of operation thereafter.

<sup>4</sup> For ships authorized with a mixing zone.