Achieving No Net Loss of Ecological Functions Related to Residential Docks:

An Illustrative example

Department of Ecology Spring 2009 Workshop

John Owen
MAKERS architecture + urban design

DEPARTMENT OF ECOLOGY State of Washington
Joe Burcar
Shoreline Planner

Presentation Purpose

Reduce mystery, anxiety, trepidation, etc re:

No Net Loss (NNL)

Just when you thought you would never get a definition of NNL – we are going to give you the answer…

"Wow, that really fits" - Peter Skowlund

"I can defend that" - Tom Young

Always preface any definition of NNL with:

“It Depends…”

Things to keep in mind

NNL strategy depends on situation such as:

- Existing conditions: urban vs. rural
- Landscape: processes/functions
- *unpredictable* vs. *predictable* impacts
- *incremental* vs. *large scale projects*
- SMP-update obligation: *maintain ecological functions* - offset (new) anticipated impacts from allowed SMP uses.

Things to keep in mind

NNL must be addressed at two scales:

- Emphasis on the jurisdiction-wide scale (inform SMP-planning), and
- The site specific scale (implementation) *Mitigation Sequencing.*

What WAC 173-26-186(8) says about NNL of ecological functions

- Master programs shall include regulations and mitigation standards ensuring that each permitted development will not cause a net loss of ecological functions of the shoreline
- Local master programs shall evaluate and consider cumulative impacts of reasonably foreseeable future development. To ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts among development opportunities

Therefore:

NNL requirement applies to both site and jurisdictional scales, *BUT*

Note: the WAC doesn't say that all development must not impact any functions, only that:

- Master programs shall include regulations and mitigation standards ensuring that each permitted development will not cause a net loss of ecological functions

Therefore:

Local governments can use a comprehensive approach to ensure that site specific improvements meet NNL requirements

AND,

They may count *the beneficial effects of other regulatory standards and "reasonably foreseeable" development (including restoration projects) as part of the NNL calculation*

WAC 173-26-186(9) *some* flexibility

"…local governments have reasonable discretion to balance the various policy goals of this chapter, … and to modify master programs to reflect changing circumstances."

- *"It depends…"* if ecological functions adequately protected jurisdiction may focus on *water-dependent use* or *public access, etc.*
- *"It depends…"* many elements to be considered through a SMP update

However…..

- The WAC does contain specific standards that set priorities and requirements for many elements.
- No net loss requirement ensures that the SMP provisions as a whole – along other actions – provides a stable level of ecological functions *(i.e. has to stand on its own).*

Docks are a good case study of achieving NNL because

- They are a preferred use
- It appears that they negatively affect ecological functions
- Little opportunity for on-site mitigation
- Can’t readily be mitigated out of kind
- They require maintenance/replacement
- They can be quantified

What is a reasonably foreseeable restoration activity?

The WAC says

It is recognized that methods of determining reasonably foreseeable future development may vary according to local circumstances, including demographic and economic characteristics and the nature and extent of local shorelines.

What are reasonably foreseeable restoration activity?

- I'd argue that a future restoration activity is reasonably foreseeable if it:
- Is required by an adopted regulation

Or

a. Is clearly identified , along with specified ecological benefits, and

b. Included in a plan, such as an SMP restoration plan or Shared Strategy action, and

c. Includes an implementation strategy with potential funding sources or programs identified

Note:

This means you can count all sort of potential activities such as:

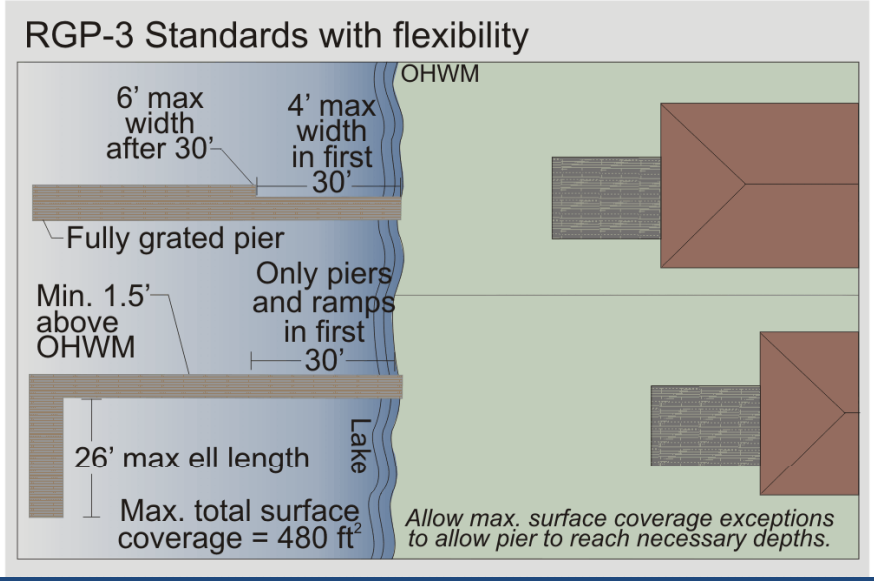
- Improvements to storm water resulting from redeveloping or upgrading parking lots.
- Tree planting programs
- Benefits of green infrastructure improvements and LID standards

So how do you achieve NNL and allow new residential docks?

First:

Restrict new docks to a reasonable minimum. (E.g. the Corps RGP-3)

New Pier/Dock Options (2)



Calculating NNL for residential docks

Second:

Limit size and configuration of replacement docks as much as you dare.

- Require elevated approach piers and grating for sure
- Reduce size when replaced if existing docks are bigger than they need to be

Justification: When development is replaced – it must be brought up to code

Example of dock replacement regulation options

III. Piers and Docks
Existing Residential Docks (Repair/ Replace)

Current Regulation for New Piers

Length and width of new piers/docks is regulated in the existing SMP:

Length: Maximum 100 feet, but in cases where water depth is less than 10 feet from the mean low water, length may extend up to 150 feet or to the point where water depth is 10 feet at mean low water, whichever is less.

Width: Maximum 8 feet; does not apply to boat ramps, lift stations, or floating platforms

A1. Restrict the Size of Replacement Dock

When fully replacing a dock, restrict the size to the U.S. Army Corp of Engineers RGP-3 optional standard.

A2. Add Repair Threshold

Add "repair" thresholds such as:
- If repairing less than 50% of the piles or decking, the action will be considered a repair.
- If repairing more than 50% of the piles or decking, the action will be considered a replacement. This means that the "repair" must conform to standards for replacement.

B1. Require a Reduction of Size

Require a reduction in size compared to existing structure when replaced. For example, all new replacement docks shall be 10% smaller than the existing dock, up to the size standards for new docks.

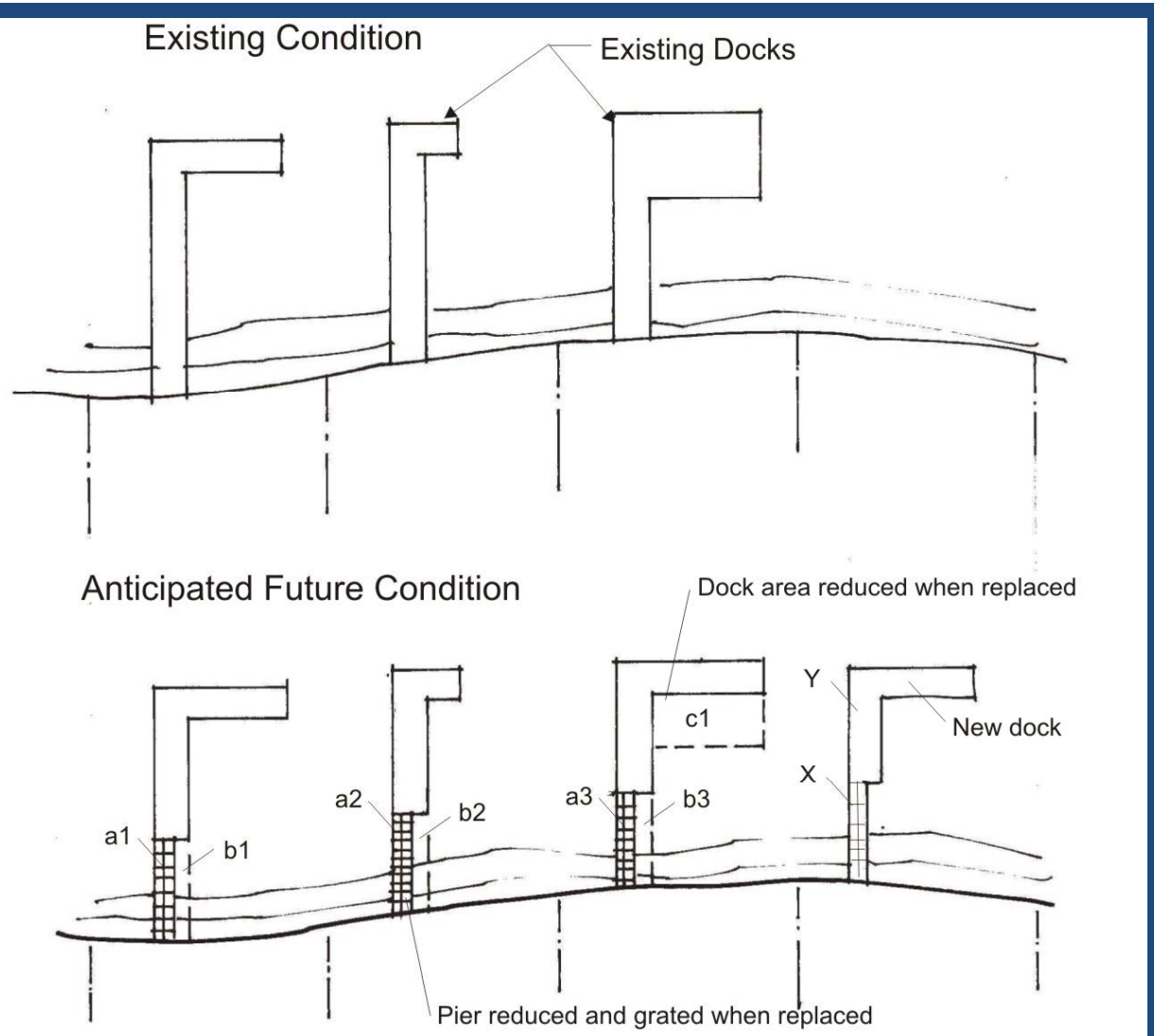
B2. Provide 2 Permit Track Options

Provide two permit track options: 1) a fast track permit process if the pier/dock is within specified size and construction standards or; 2) allow larger piers/docks or piers/docks that deviate from the specific standards if the applicant can demonstrate, through scientific analysis,

C1. Allow Same-size Replacement with New Standards

Allow replacements at the same size with new standards (grating, fewer pilings, etc).

Then gain/loss of ecological functions



Total nearshore dock removed = a1+a2+a3 + 50%(b1+b2+b3) = AB (total removed)

Total deep water dock removed = c1 = C (total removed)

Does AB (total removed) exceed X?
and
Does c1 exceed Y (or does the combination result in a net functional improvement?

Issues and problems with the calculation

- How much eco-benefit do you count for grating and elevating piers?
- Need to analyze existing conditions
- Remember: Over-water coverage is only a proxy for ecological function impairment
- Limiting the size of replacement docks will be controversial
- THIS METHOD ONLY WORKS FOR DEVELOPED SHORELINES

What about the nonconformance issue?

NO PROBLEM:

- SMP's can define how nonconforming structures are treated. (See WAC 173-27-080)
- Even the WAC says that nonconforming structures may be rebuilt to existing conditions *unless the SMP states otherwise*

A Suggestion: Performance Std.

What about allowing residents to build a new or replacement dock however they want if they can demonstrate that the eco-impact is less than the SMP standard?

- Reduces consistency for the State
- Would need criteria for ecological evaluation – kind of like a BA but for all functions
- Would be a pain for the homeowner and the reviewer

A Suggestion: Performance Std.

On the other hand:

- Allows residents flexibility – which may make the new regulations more palatable.
- Is more true to science than dimensional standards
- Allows SMP's to incorporate new science and mitigation techniques without an update.

Note

- Achieving NNL is easier to achieve in developed areas.
- Because of better standards redevelopment will often be a net gain in eco-functions
- You can use other regulations for NNL calcs., but remember the WAC contains specific standards. (NNL is only part of the picture)

Final Question:

What if we did NNL calculations for a specific area considering all regulatory and restoration programs?

- Identify the gaps?
- Identify the combined impacts?
- Find out what redevelopment can do?

Integrated regulatory system anyone?

Relationships to other SMP Components – Integration

- Shoreline Inventory/Characterization analysis and conclusions

- Shoreline Use Analysis
  –projecting trends & future demand
  –impacts at full build out

- Efficiencies– treasure & political pain (grant $$ and decision makers)

Preliminary Cumulative Impacts Analysis Components

State SMP Guideline Requirements

- WAC 173-26-201 3(d) (iii) Addressing Cumulative Impacts in Developing Master Programs
- WAC 173-26-186 (8) (d) Governing Principles of the Guidelines (CIA components)

Analysis Needs to Include:

- both permitted and exempt activities
- Future platting & subdividing
- Redevelopment

Analysis Needs to describe:

- Current shoreline conditions
- Summary of ecological functions at risk
- Beneficial effects of established programs
- Reasonable foreseeable future development

Cumulative Impacts Analysis Table

- Specify ecological functions at risk and how the draft SMP will address no net loss of these functions.

- Local examples of completed CIA's

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Shoreline Master Program Update

Cumulative Impact Analysis

Cathy Beam, AICP
Project Manager

City of Redmond
WASHINGTON

Cumulative Impact Analysis

- Context
- Analysis Methodology
- CIA Table

Shoreline Context

- Size and Population
- Lake Sammamish
- Sammamish River
- Bear Creek
- Evans Creek
- Foreseeable Development

Analysis Methodology

- No Net Loss
- Evaluating Cumulative Impacts
  - Loss of riparian vegetation
  - Stormwater/wastewater inputs
  - Shoreline armoring
  - Over-water structures
- Issues and Needs Assessment

CIA Table

- Shoreline Process and Function
- Resource at Risk
- Shoreline Alterations Impacting Processes and Functions
- Proposed Restoration/Protection Measures and Draft SMP Language
- Non-Regulatory Measures

Shoreline Processes

- Surface and Groundwater Movement and Storage
- Flow Energy Flux
- Sediment Flux
- Nutrient and Pollutant Flux
- Moderation of Water Temperature
- Production and Delivery of LWD and Other Organic Matter

Shoreline Functions

- Reduce downstream flooding and erosion
- Aquifer recharge and storage
- Hyporheic flow
- Water quality
- Enhancing summer base flows for streams
- Increased sedimentation
- Stream flow diversity
- Habitat diversity
- Habitat formation and maintenance
- Shoreline protection
- Nutrient delivery
- Beach replenishment
- Flow and channel modification

Example from CIA Table

Shoreline Process and Function	Resource at Risk	Shoreline Alterations Impacting Processes and Functions	Proposed Restoration/ Protection Measures and Draft SMP Language	Non-Regulatory Measures
Process: Surface and Groundwater Movement and Storage Function: reduce downstream flooding and erosion, aquifer recharge and storage, hyporheic flow, water quality, enhancing summer base flow	Lake Sammamish and large wetland complex at north end of lake. Bear/Evans Creek Valley and associated floodplain and extensive wetland network. Sammamish River Valley and broad floodplain.	Disconnection of streams from floodplains. Draining and filling riverine and depressional wetlands. Increasing impervious areas. Water supply management. Development in floodplains.	Require compensatory floodplain storage. Preserve wetlands to achieve no net loss of functions. Retain aquifer recharge capacity. Limit impervious surfaces. Open space retention.	Capital projects to restore wetlands and degraded floodplains. Encourage utilization of LID. Incentives to developers for restoration. Educate businesses and residents on groundwater protection.

Cumulative Impacts Assessment: Auburn

Kelly McLain Aardal
Environmental Protection Manager
City of Auburn
&
Kent Hale, AICP
ESA Adolfson

AUBURN ★ MORE THAN YOU IMAGINED

Auburn and It's Shorelines

- Resources Protected
- City and Shoreline Demographics
- Auburn's Focus and Development Picture

Context

- Purpose and intent of analysis

- Program vs. Project NNL & CIA

- County vs. City

Key Considerations

- Level of Effort

- Timing and Timelines

- Organization...tables tables tables

- Shoreline Use vs. Shoreline Function

CIA Addendum

TABLE 2: WHITE RIVER ASSESSMENT OF SHORELINE FUNCTIONS:

Ecological Functions WAC173-26-201(3)(d)(i)(C)	**Current Performance** *Characterization Report* - ESA/Adolfson, 2007	**Recommendation:** Protection (**P**) or Restoration (**R**) **P** = SMP general description (section or regulation) **R** = Restoration Plan Policy	**Future Performance** *Cumulative Impact Assessment* – ESA/Adolfson, 2009
Hydrology: Flow Regime	Low	**P:** In-stream structures that divert water must return flow to the river in as short a distance as possible (SMP 4.7.5, Reg. #3) **R:** Continue to work with the State, King County, Pierce County, Watershed Resource Inventory Area (WRIA) 9 and 10 Steering Committees, the Muckleshoot Tribe, and other governmental and non-governmental organizations to explore how local governments can contribute to the preservation of ecological processes and shoreline functions.	**No Change** *Since flow regime is mainly influenced by climate, the White River Hydroelectric Project that diverted flows to Lake Tapps, and Mud Mountain Dam, the City has limited opportunities to affect or improve performance.*
Hydrology: Channel - Floodplain Interaction	Moderate to Low	**P:** Only existing levees that are being replaced or rehabilitated are allowed in the shoreline buffer (SMP 4.4.2, Reg. #2 and 4.4.7, Reg. #2, 3). Only water-dependent uses are allowed in the floodway (SMP 4.4.7, Reg. #1), New flood control structures allowed only when necessary to protect existing development, non-structural measures are not feasible, mitigation is included, and located landward of the floodway and associated wetlands (SMP 4.4.7, Reg. #4, 6, 7) **R:** Continue to work with King County, Pierce County, Green River Flood Control Zone District, and the Inter-County River Improvement Agency to identify and implement flood management strategies that protect	**No Change or Potential Improvement** *Most existing structures will remain unless part of a restoration project. As a result of restrictive SMP regulations, few new flood control structures might be built. Restoration along the meandering portion of the White River has high potential for restoring floodplain connection. If implemented, ecological function would improve.*

Discussion – Jefferson Co.

Jefferson County SMP Update
Cumulative Impacts Analysis

Development or Activity	Current Circumstances	Relevant Shoreline Processes Affected	Foreseeable Use and Development	Foreseeable Impacts / Effects	SMP Provisions	Other Regulatory Programs
Flood Control Structures	Dikes and levees are noted in the delta and estuary of the Big and Little Quilcene River, and in the Hoh River valley. Diking is also noted in the lower Dosewallips River watershed and around Ludlow Lagoon.	Levees and dikes isolate rivers from their floodplains, restricting channel migration. Dams can interrupt the passage of sediment from freshwater to marine systems, affecting sediment supply and thereby altering habitat functions.	The construction of additional dikes and levees is highly unlikely in the near future due to the current regulatory framework. As with shoreline stabilization measures, the construction of flood control infrastructure may be necessary in the long term as a result of increased flooding associated with climate change.	Flood control structures such as dikes and levees can cause significant damage to aquatic habitats. The construction of new flood control structures is, however, unlikely in the near future. Long-term flood control improvements as a result of climate change could significantly alter processes and functions of freshwater aquatic systems.	Residential development shall not be approved where flood control will be required to create residential lots or site area. Other provisions are made for transportation infrastructure, which should not create the need for new flood control devices. Structural flood control is only allowed as part of an agency-sponsored flood control project.	HPA permitting process; Army Corps of Engineers 404 and/or Section 10 permits; Department of Ecology Dam Construction and/or Reservoir permit; NEPA; SEPA and potential for mitigation. County critical areas requirements.
Moorage (docks, piers, buoys, marinas and boat launches)	See discussion above for docks. Marinas and boat launches are present throughout most of Hood Canal and eastern Jefferson County.	See discussion above for docks. Marinas and boat launches both affect longshore transport of sediment and can contribute to degradation of upper intertidal habitat. Marinas can be focal points for the introduction of pollutants into marine waters, negatively impacting water quality.	See discussion above for docks. Demand for expansion of existing marinas or construction of new marinas and boat launches can be expected to accompany population growth at the county and regional level.	See discussion above for docks. SMP regulations require new marinas and boat launches to be sited away from ecologically sensitive areas, and for mitigation to accompany any disruption of shoreline processes. Cumulative impacts are unlikely if activities are in accordance with the SMP.	See discussion above for docks. Expansion of existing marinas preferred over addition of new marinas; provisions for launch ramps that do not affect sediment transport or tidal processes; restricts construction of marinas and launches to less ecologically sensitive areas.	See discussion above for docks.
Shoreline Uses						
Aquaculture	Commercial aquaculture operations are identified in Scow Bay, Discovery Bay, and Quilcene Bay. There is high potential for aquaculture throughout much of the marine shorelines.	Aquaculture activities can have positive effects on marine water quality. Infrastructure associated with aquaculture operations can affect longshore transport of sediment. If not properly located, aquaculture operations can also impact submerged aquatic vegetation such as eelgrass.	Aquaculture is a water-dependent use, and when consistent with control of pollution and avoidance of adverse impacts to the environment and preservation of habitat for resident native species, is a preferred use of the shoreline under the SMP. Current operations are dependent on water quality, and a future expansion of aquaculture would only occur if water quality was maintained and improved, where necessary.	If undertaken in accordance with the SMP and other regulatory provisions, expansion of aquaculture operations is unlikely to result in negative impacts to shoreline processes or functions.	Most aquaculture use/development requires a CUP. SMP limits the proximity of aquaculture operations, impacts of overwater structures, potential to interrupt sediment transport, and other potentially detrimental cumulative effects of operation.	Recommended Interim Guidelines for the Management of Salmon Net Pen Culture in Puget Sound; WDFW Aquaculture Registration and Transfer Permit; Department of Health Aquatic Farm Registration and Shellfish Operation License; Department of Natural Resources Aquatic Use Authorization; NPDES permits for waste discharge.
Commercial Use	Commercial use and development is noted at the Snow/Salmon Creek estuary, within the middle Chimacum Creek watershed, in Port Townsend, Port Hadlock, and Port Ludlow, and within the lower reaches of the Duckabush and Dosewallips rivers.	Impervious surfaces associated with commercial development can increase the rate of runoff to freshwater and marine aquatic environments, affecting water quality and quantity downstream. Waterfront commercial development can include docks and other structures that impact sediment transport and tidal processes.	Jefferson County's Comprehensive Plan identifies commercially zoned lands available for future development; most commercial centers contain undeveloped land that could be built out in the future. Due to mandates of the GMA, extensive conversion of lands zoned for other uses to commercial purposes is unlikely.	The Comprehensive Plan identifies the need to protect ecological functions in sensitive areas with some level of commercial development, such as the estuary of Snow/Salmon Creek. Impacts to shoreline functions and processes are unlikely within the current regulatory structure and if development is carried out according to the SMP.	Establishes policy basis for prioritizing water-dependent commercial uses of the shoreline when securing locations for commercial use; requires restoration of impaired shoreline ecological functions and processes as part of commercial development.	Department of Community Development building permits; NPDES Construction Stormwater General Permit and Coverage; NPDES Individual Permit for wastewater discharge to surface waters. County critical areas requirements.
Industrial/Port Development	Industrial zoning and development is mostly concentrated around population centers, including Port Townsend, Port Hadlock, Port Ludlow, and Quilcene.	Port development can include structures that impact sediment and tidal processes, and eliminate habitat functions associated with eelgrass.	The GMA contains provisions for siting industrial lands outside of urban growth areas under specific circumstances, and for qualified counties to designate two Industrial Land Banks (outside of UGAs) before December 31, 2007 for specific purposes of siting Major	Possible impacts from new industrial development are difficult to foresee without the knowledge of where this development might be located. If activities within or near the shoreline jurisdiction are undertaken according	Shoreline industrial development shall result in no net loss of shoreline ecological functions and processes; water-dependent shoreline industrial use is prioritized over water-related and water-enjoyment	Department of Community Development building permits; NPDES Individual Permit for wastewater discharge to surface waters; HPA permitting process and Army Corps Section 10 permit for

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