

An aerial photograph of a river estuary. The water is a deep blue, winding through a vast expanse of green, marshy land. The marshes are characterized by intricate, winding patterns of water and vegetation. In the background, there are dark, forested hills under a clear blue sky. The overall scene is a natural, undisturbed landscape.

# Salmon River Estuary Projects

Albemarle-Pamlico National  
Estuary Program

Science and Technical  
Advisory Committee

July 22, 2009

An aerial photograph of a river estuary. The river is a prominent blue-green color, winding through a lush green landscape. The river's path is highly meandering, creating several large, irregular islands and peninsulas. The surrounding land is covered in dense green vegetation, likely forest or scrubland. The overall scene is a natural, undisturbed landscape.

# Salmon River Estuary Projects


- o Background
- o Past Projects
- o Current and Future Projects

An aerial photograph of a river estuary. The river is a prominent blue-green feature, meandering through a lush green landscape. The surrounding area is densely forested, and the river's path is highly irregular, creating many small loops and dead ends. The overall scene is a natural, undisturbed environment.

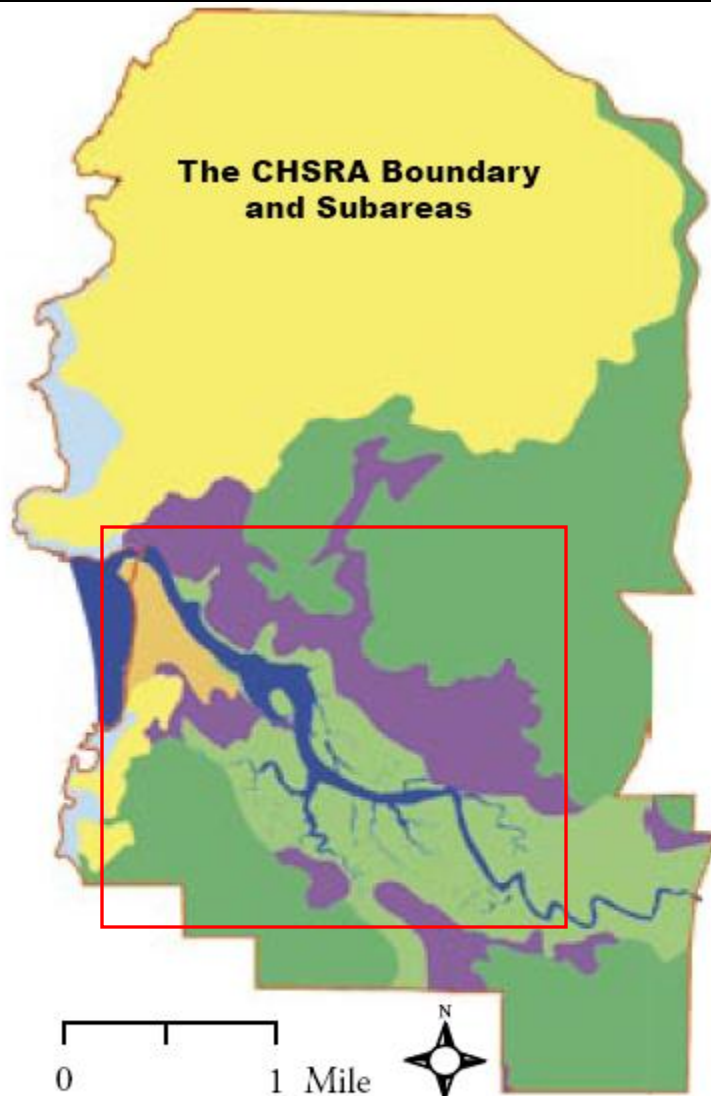
# Salmon River Estuary Projects

- o Background



- 
- o UN Biosphere Reserve
    - Cascade Head Experimental Forest
    - Cascade Head Scenic Research Area
  - o Cascade Head Preserve (TNC), Westwind Stewardship Group, Siuslaw National Forest

## The CHSRA Boundary and Subareas



# Estuary and Associated Wetlands

## Long-term Goal

Protect and perpetuate the fish, wildlife and scenic and research-education values while allowing dispersed recreation use and other uses compatible with the protection and perpetuation of the unique natural values of the area.

An aerial photograph of a river delta and associated wetlands. The river flows from the top right towards the bottom left, branching into several smaller channels. The surrounding land is a mix of green and brown, indicating different types of vegetation and wetland areas. The sky is a clear, pale blue.

# Estuary and Associated Wetlands

## Management Direction

Revitalization and restoration of estuary and associated wetlands to a functioning estuarine system free from the influences of man



# Landscape Changes



1945 Aerial Photograph



An aerial photograph of a river estuary. The river is a prominent blue feature, meandering through a green, forested landscape. The river flows from the upper right towards the lower left, eventually emptying into a larger body of water at the top of the frame. The surrounding hills are covered in dense green forest. The overall scene is a natural, undisturbed landscape.

# Salmon River Estuary Projects

- o Past Projects



Mitchell Marsh  
Restored 1976

Y Marsh Restored 1987

Salmon River

Salmon Creek Marsh  
Restored 1996

Salmon Creek

Tamara Quays

Highway 101

Pixieland

Otis

An aerial photograph of a river estuary. The river is a prominent blue line winding through a lush green landscape. The river flows from the upper right towards the lower left, where it branches into several smaller channels. The surrounding land is covered in dense green vegetation, likely forest or wetlands. The sky is a clear, pale blue. The overall scene is a natural, scenic view of a water body in a forested area.

# Salmon River Estuary Projects

- o Current and Future Projects

# Lower Salmon River Project

June 19, 2006 – August 11, 2006



## *Project Team*

Greer Anderson  
Fish & Wetland Ecologist

Mary Bushman  
Botanist

Corrina C. Chase  
Marine Affairs

Grant Morehead  
Urban & Regional Planning

Sarah Schrock  
Landscape Architecture

*Project Managers:*  
Karen Bennett & Katie Brehm

*Continuing a Vision for a Treasured Landscape*

# Salmon River Estuary Projects

- o Gnos Dike
  - Repair dike (2008)
- o Crowley Creek
  - Riparian planting (2007)
  - Remove dike across from Knight Park (2008)
- o Tamara Quays
  - Restore hydrology and native vegetation (2008)
- o Pixieland
  - Asphalt and noxious weed removal (2007)
  - Restore hydrology and native vegetation (2008)
- o Highway 101 – Salmon & Fraser Creeks
  - Restore stream and tidal flows



Crowley Creek



Gnos Dike



Highway 101

Salmon Creek Berm



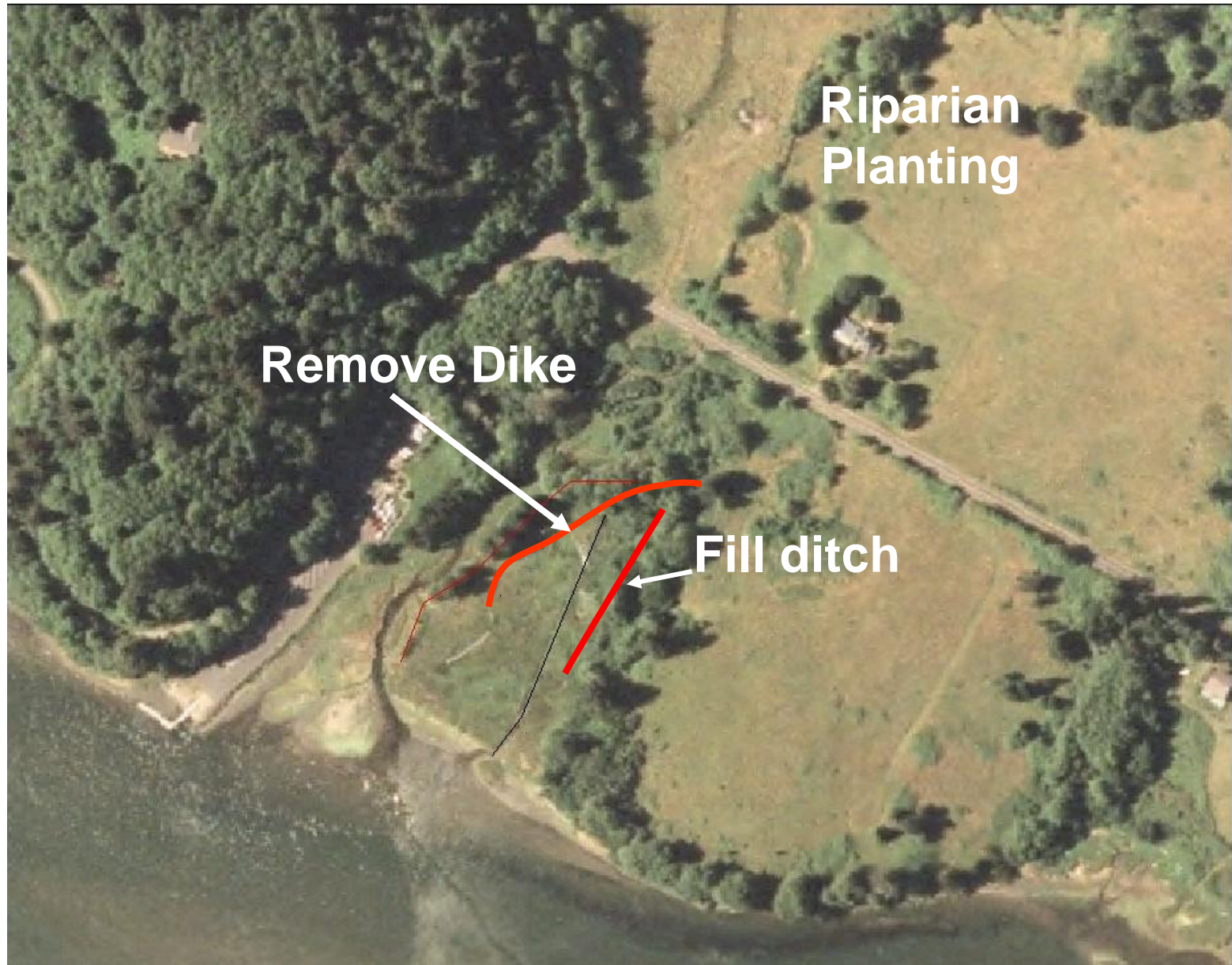
Tamara Quays



Pixieland

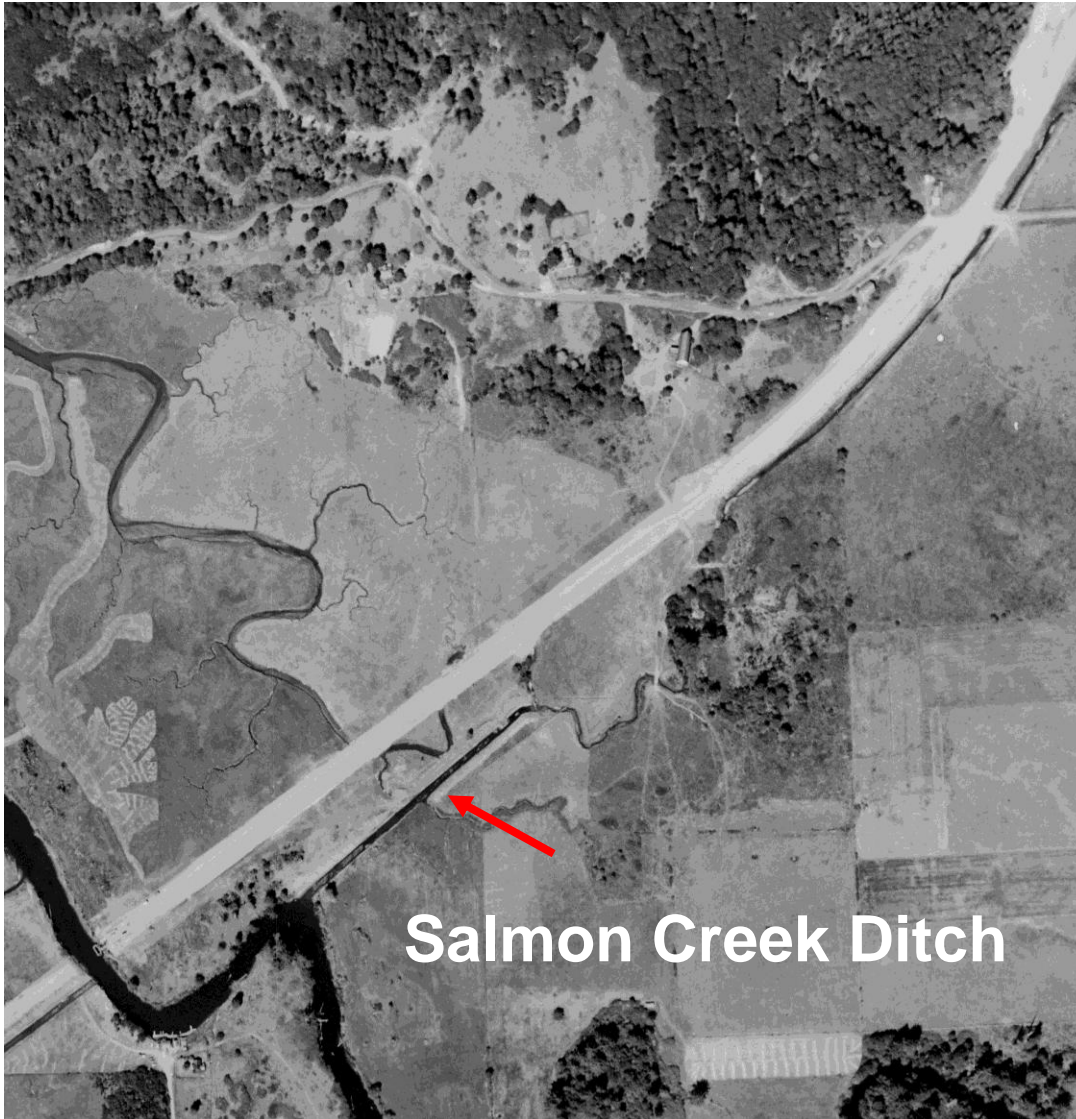


# Crowley Creek Restoration





# Salmon Creek Berm



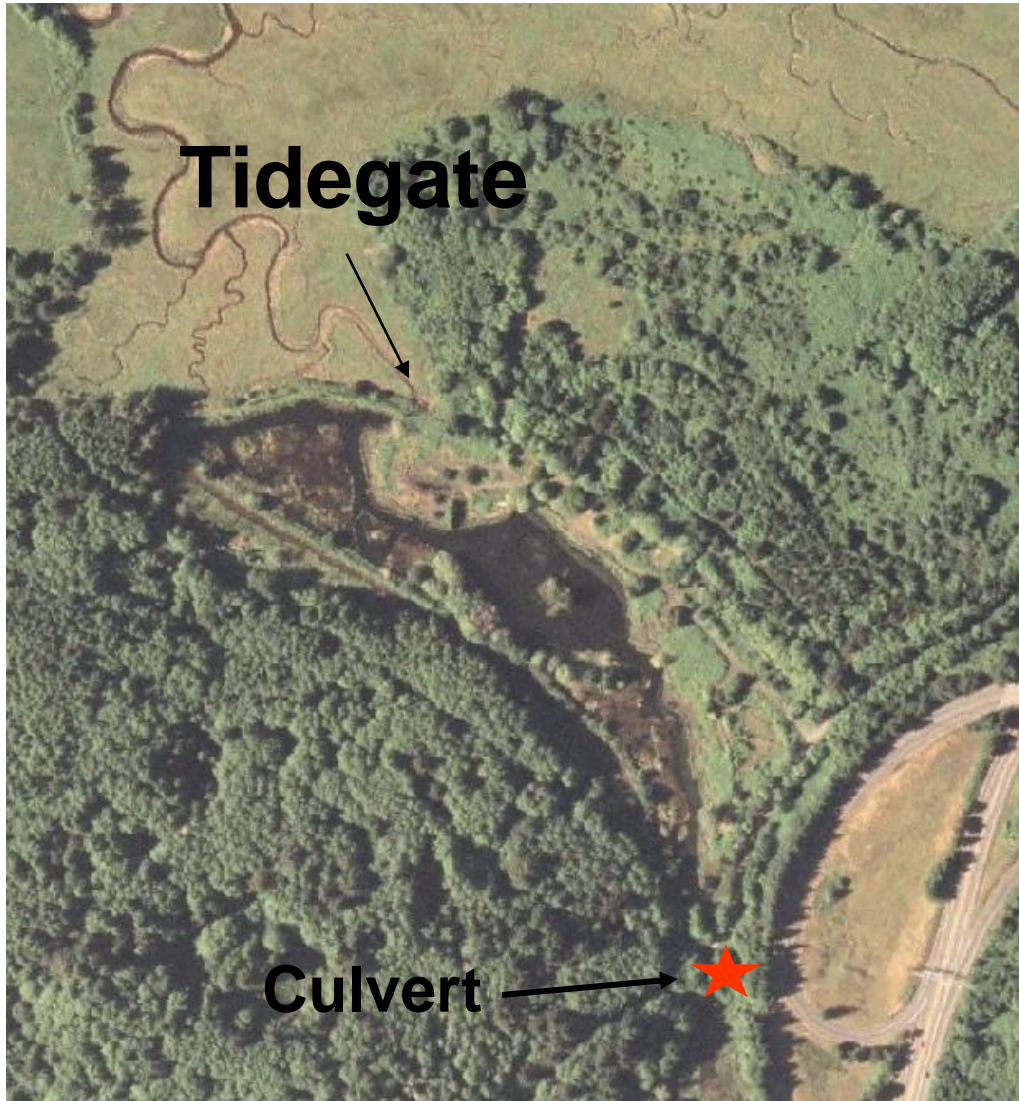
Short-term repair to prevent juvenile Coho fatalities in pastures.

Long-term goal to work with landowner on stream restoration.

Salmon Creek Ditch

1961 photo

# Tamara Quays Restoration



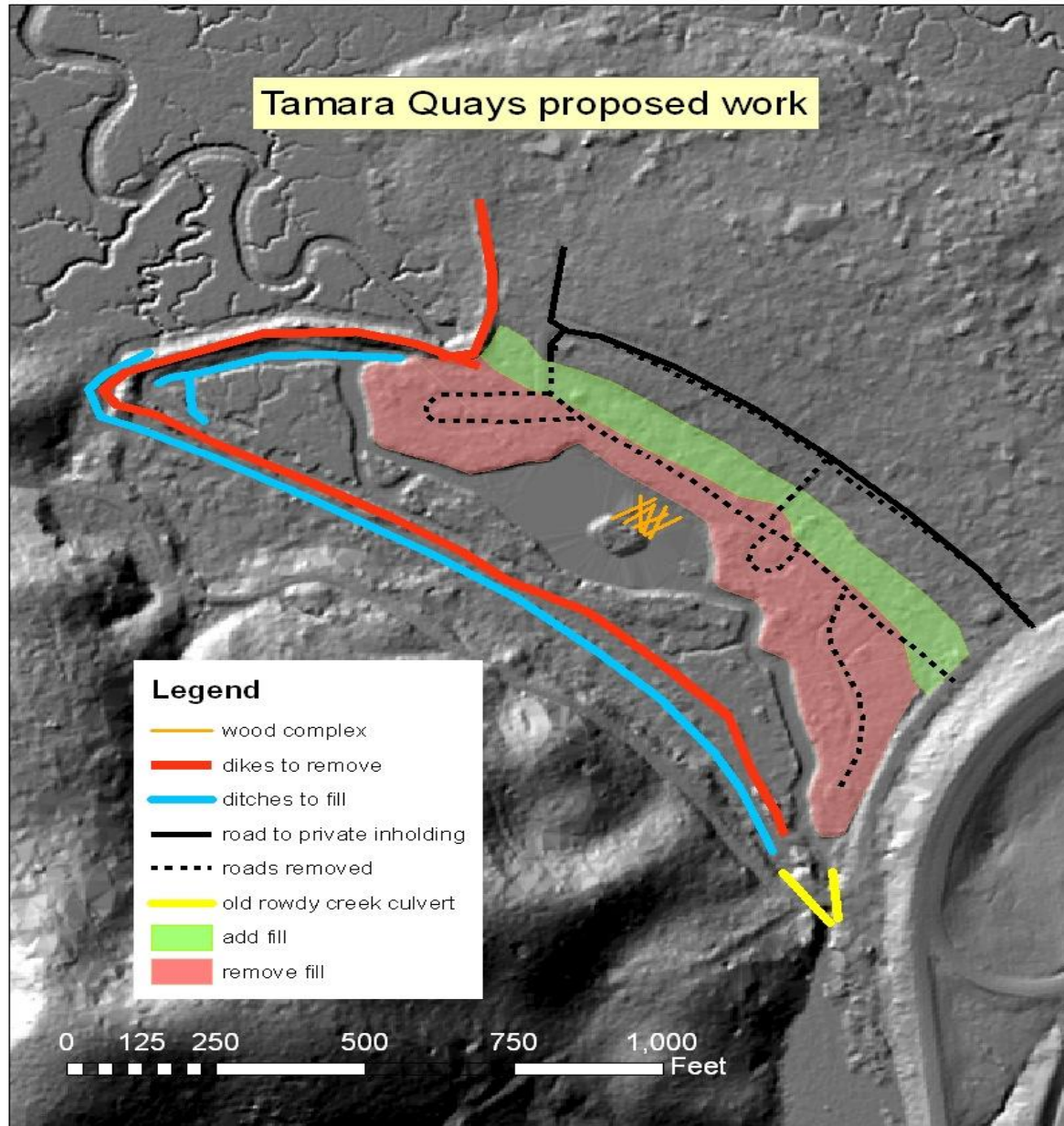
Remove dikes, tidegates,  
and Kingfisher Lake.

Fill ditches and replace  
culvert with fish-passage  
culvert.

Restore native vegetation.

2005 photo-Tamara Quays, Kingfisher Lake and dikes

# Tamara Quays Restoration



# Pixieland



Restore Fraser Creek.

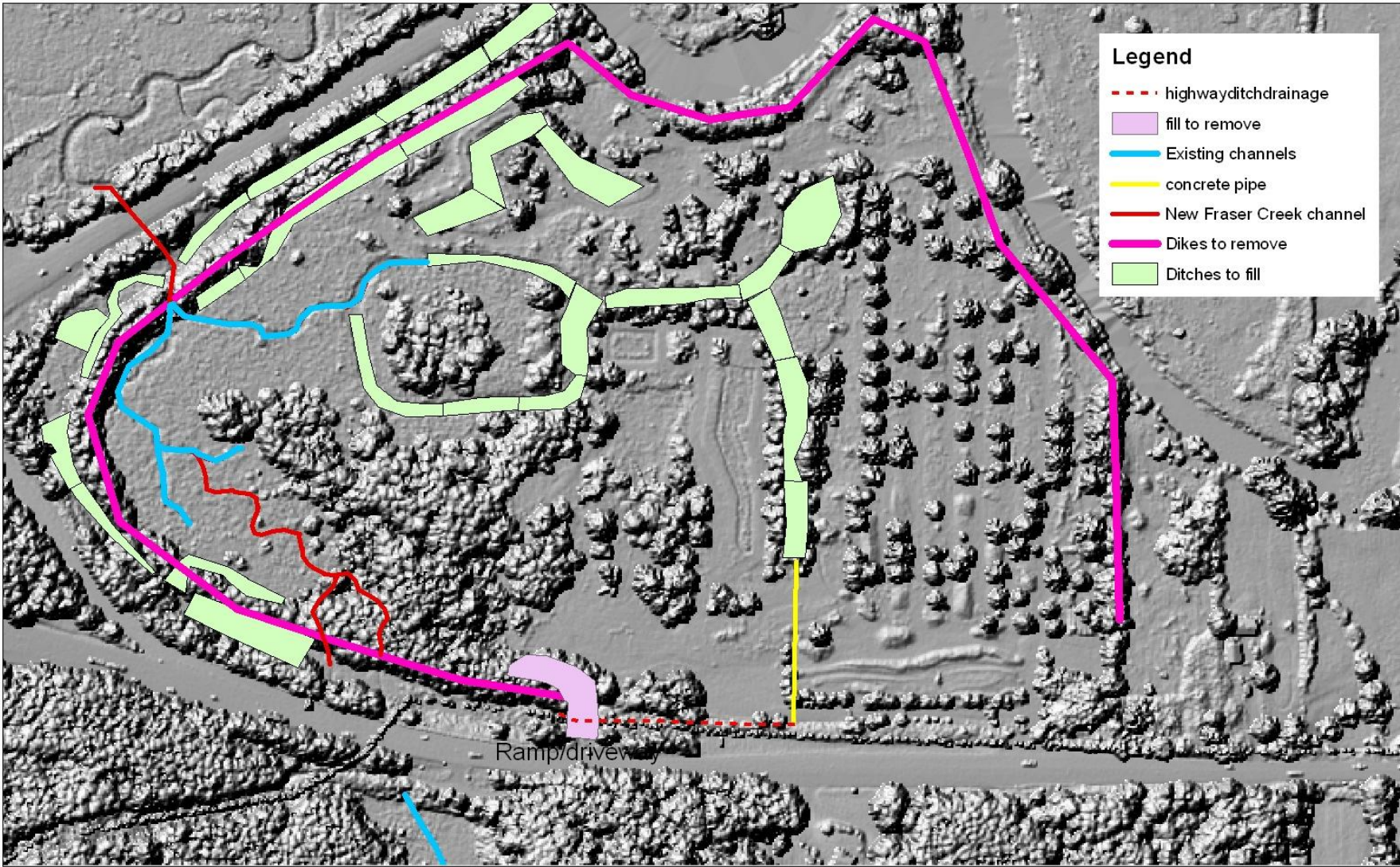
Remove dike, concrete and asphalt.

Fill ditches and pond.

Restore native vegetation.

Possible fishing access site.

# Pixieland



# Highway 101 Project



Hwy 101 is the last major dike on estuary.

Reconstruct Hwy 101 from Three Rocks Rd to Hwy 18.

# Highway 101 Project

## *Recommendations*

(Artistic rendition)

### *Restoration of Tidal Marsh*

- Continue to work with the Gnos family towards restoration of the marsh upstream of the highway.
- Wetland mitigation banking and other funds are available to compensate for the change.

### *Viaduct*

- Optimally, the viaduct will stretch from the reconstructed Gnos dike to Tamara Quays.
- The Viaduct should be elegant, blend with the landscape, and allow for maximum sheet flow beneath.
- Construction should be sturdy and tall enough to withstand seismic activity, a tsunami, or predicted sea-level rise.
- The road should include a wide bike and pedestrian pathway.
- Some form of access to the Salmon River should be allowed, either in the form of stairs or a path from the side.
- In the interim, blackberries should be mowed to allow viewing of the estuary

### *Salmon Creek Channel*

- Salmon Creek will be reconnected to its historical channel downstream of the highway.
- Sinuosity and depth should be restored in the channel upstream of the highway.
- The ditch currently routing salmon creek should be disconnected from Salmon Creek or filled entirely.
- Fraser Creek will also be allowed to return to its historic sinuous channel

### *Reconstruct the Gnos Dike and Culvert*

- To protecting a portion of the Gnos land from tidal flooding should be reconstructed soundly.

### *Passive Recovery of the '96 Marsh*

- Restoring flow with the viaduct will greatly aid the recovery of the '96 Marsh.



# Highway 101 Project

## Restore ecological function of Salmon River Estuary

- o Reconnect Salmon Creek
- o Reconnect Fraser Creek
- o Restore tidal flows
- o Restore marshes
- o Restore aquatic habitat & life



# Highway 101 Project

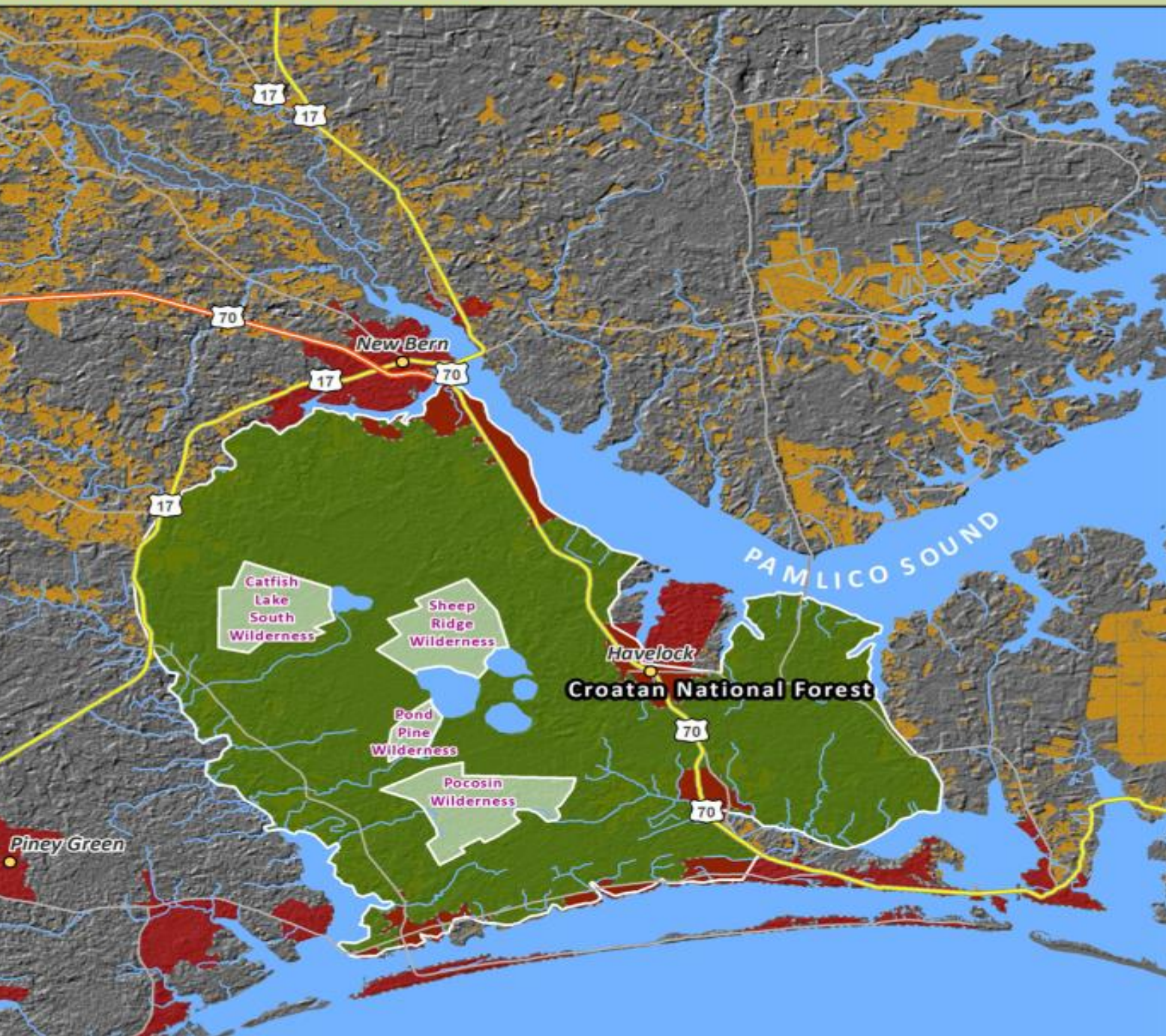
Addresses following issues:

- o Ecological viability of river
- o Transportation safety
- o Fish & Wildlife passage
- o Recreation
- o Research & Interpretation
- o Links to long-term goals  
and management direction

An aerial photograph of a river system winding through a lush, green forested landscape. The river flows from the upper right towards the lower left, with several meanders and smaller tributaries. The surrounding terrain is densely wooded, and the overall scene is captured in a slightly desaturated, naturalistic color palette.

# Questions & Discussion

Application to Albemarle Pamlico  
Sounds and Croatan National Forest



**INTERFACE AND CONFLUENCE:**  
CROATAN NATIONAL FOREST AND ALBEMARLE AND PAMLICO SOUNDS

**LEGEND**

- CITIES
- NATIONAL FOREST
- WILDERNESS
- RIVERS
- WATER BODIES
- URBAN AREAS
- LIMITED ACCESS
- HIGHWAY
- MAJOR ROAD
- CULTIVATED CROPS