

Washington Coastal Atlas



Quarterly SMP Updaters Meeting
April 21, 2010
Kathy Taylor, Ph.D.



Coastal Atlas Team at Ecology

- Shorelands
 - Kathy Taylor
 - Deborah Purce
- GIS Unit
 - Dan Saul
 - Darby Veeck
 - Liz O’Dea

Tammy Pelletier

Dan Scavezze



Coastal Atlas Review

Address http://www.ecy.wa.gov/programs/sea/sma/atlas_home.html

DEPARTMENT OF ECOLOGY
State of Washington

A-Z Index | Contact Us

Home | WATER | AIR | WASTE | CLEANUP | TOXIC HAZARDS | GREEN | About Us | Jobs

Programs | Services | Publications | Databases | Laws & Rules | Calendar | Public Records

Washington Coastal Atlas

COASTAL ATLAS HOME
Start Mapping
Tips for Using Site
Useful Links



 **Start Mapping**
Use the Coastal Atlas to learn about Washington's marine shorelines and the land areas near Puget Sound, the outer coast, and the estuarine portion of the Columbia River. You can view aerial photographs of marine shorelines, locate different habitat types, physical features, see changes in land cover, and much more.

Tips for Using this Site
Learn how to navigate the Washington Coastal Atlas, view shoreline photos, use the mapping tools and create customized maps.

Useful Links
Links to coastal public access information, other coastal atlas sites and Department of Ecology partner web sites.

Coastal Atlas Partners



WASHINGTON STATE DEPARTMENT OF Natural Resources

NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

Access Washington
Official State Government Web Site

Copyright © Washington State Department of Ecology
Contact Us | Privacy Notice | Site Info

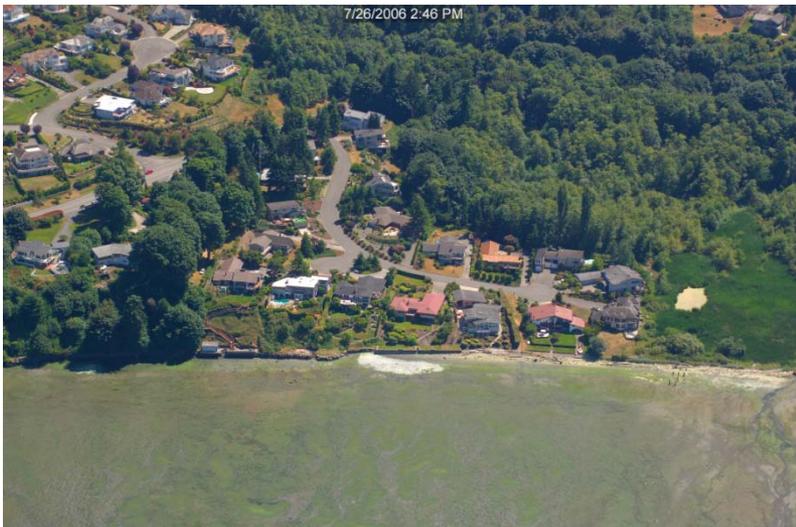
Information for Ecology staff

http://www.ecy.wa.gov/programs/sea/sma/atlas_home.html

Washington Coastal Atlas

Purpose

- *To make relevant information easily available for use in coastal and shoreline resource planning and management.*



Examples

- Provide information to update local Shoreline Master Programs
- View current or historic aerial photos of project sites
- Gather information prior to field work or site visits
- Quickly prepare maps to inform a variety of audiences on specific topics
- View changes over time in the marine shoreline or in upland land cover

Target Audience

Primary Targets

- Local governments implementing WA CZM through local Shoreline Master Programs
- State government agencies with authority to regulate or manage activities on the shorelines and tidelands of Washington

Other important users

- Tribal governments
- Federal agencies
- Non-governmental organizations
- Outdoor recreation groups
- Real estate professionals
- Private citizens



Data Available

● Biological/Habitat Features

- Wetlands
- Historic Estuary Maps
- Pocket Estuaries
- Dunegrass, Surfgrass
- Kelp, Eelgrass
- Salt Marsh
- Low Marsh

● Physical Features

- Drift Cells
- Slope Stability
- Water Bodies (100k)
- Water Courses (100k)

● Regulated Features

- Commercial Shellfish
- Flood Zone
- Drinking Water Wells
- Category Water (5, 4C, 4B, 4A, 2, 1)

● Modifications

- Piers and Docks
- Shore Modification

● Jurisdictional Delineations

- Watershed (WRIA) Boundaries
- Sub Basins
- Counties
- Cities
- Township/Range/Section

● Transportation Features

- Major Roads
- Streets
- Railroads

● Background Imagery

- USGS Topo Maps
- Aerial Imagery
- Hillshade
- Nautical Charts

● Satellite Imagery

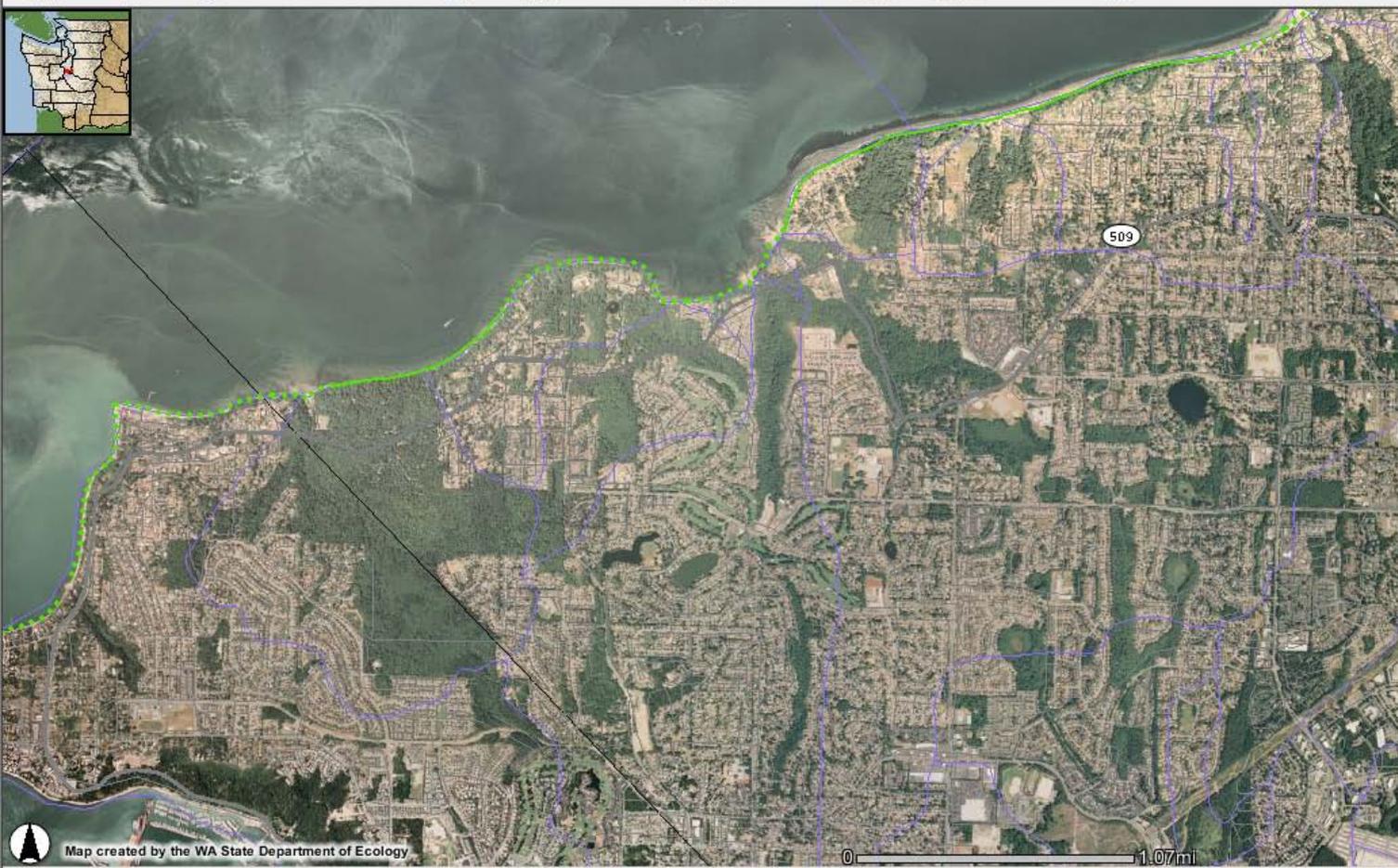
- Land Use/Land Cover 1991, 1996, 2001, 2006

● Other Imagery

- Oblique shoreline photos 1976-77, 1992-'97, 2000-02, 2006-7

 FULL STATE
  ZOOM IN
  ZOOM OUT
  PAN
  ZOOM TO
  ZOOM LAST
  VIEW PHOTO
  SELECT
  SELECT POLYGON
  BUFFER
  CLEAR SELECT
  LAND COVER
  MEASURE
  PRINT MAP

Refresh Map



Data Layers

- Biological/Habitat Features**
 - Wetlands**
 - Aquatic Bed
 - Emergent
 - Forested
 - Shrub/Scrub
 - Tidal Aquatic Bed
 - Tidal Emergent
 - Tidal Forested
 - Tidal Shrub/Scrub
 - Historic Estuary Maps**
 - Pocket Estuaries**
 - Dunegrass
 - Continuous
 - Patchy
 - Surfgrass
 - Continuous
 - Patchy
 - Kelp
 - Continuous
 - Patchy
 - Eelgrass Fringe**
 - Continuous
 - Patchy
 - Eelgrass Beds**
 - Salt Marsh Fringe**
 - Continuous
 - Patchy
 - Salt Marsh**
 - Continuous
 - Patchy
 - Low Marsh Fringe**
 - Continuous
 - Patchy
 - Low Marsh**
 - Continuous
 - Patchy
 - Physical Features**
 - Regulated Features**

Map created by the WA State Department of Ecology

Pan Tool

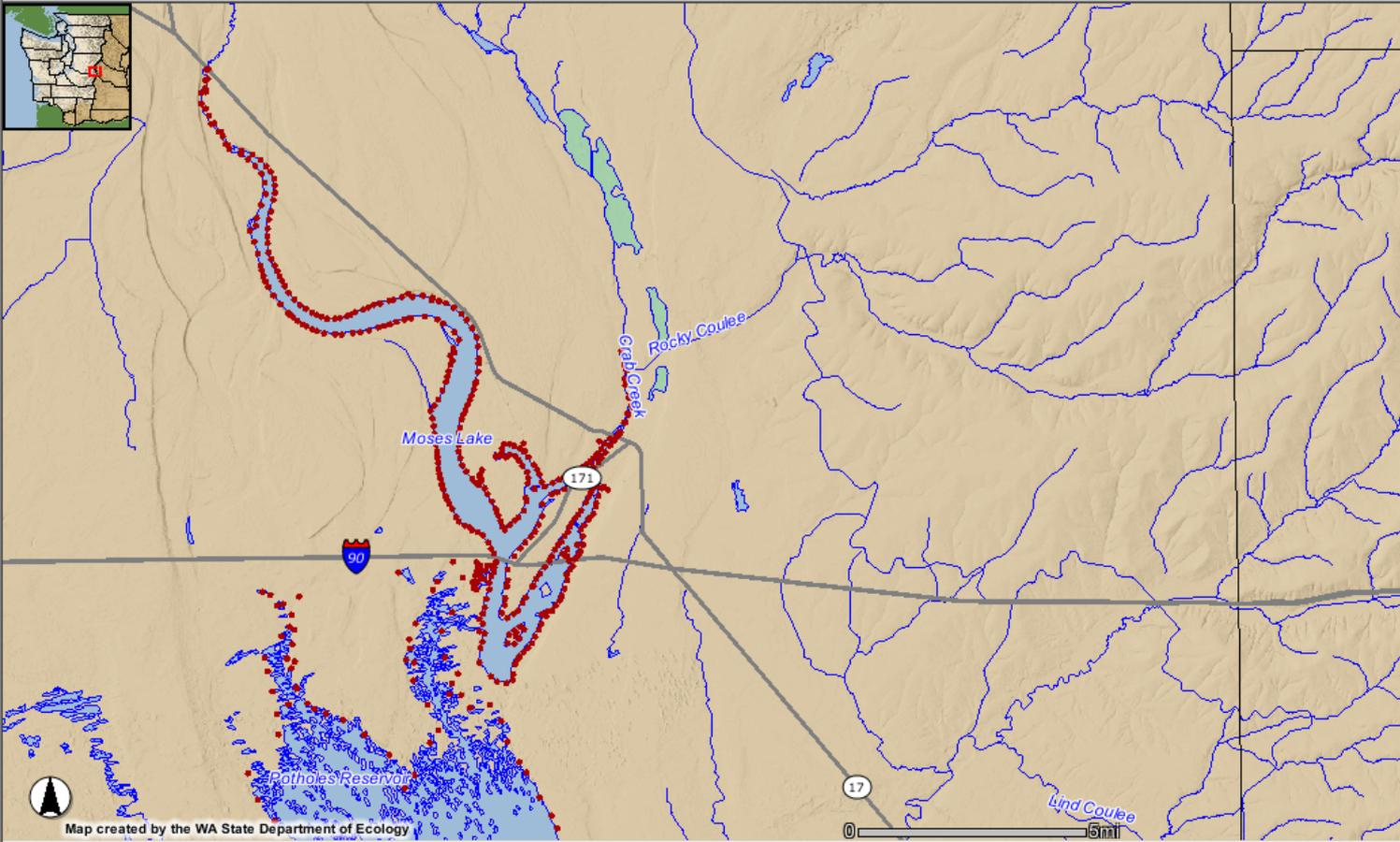
Allows the user to re-center or move around the map by **1**) Clicking on the Map and, while holding down the left mouse button, **2**) Dragging the Map View across the screen. Release the mouse button when the map is centered at the desired location.

Oblique Aerial Photos of Shoreline

- Downloadable
- High Resolution
- Available for Multiple Years
- Available for all WA Marine Shorelines And Some Freshwater Shorelines in Eastern And Western Washington

FULL STATE
 ZOOM IN
 ZOOM OUT
 PAN
 ZOOM TO
 ZOOM LAST
 VIEW PHOTO
 SELECT
 SELECT POLYGON
 BUFFER
 CLEAR SELECT
 LAND COVER
 MEASURE
 PRINT MAP

Refresh Map



- Data Layers**
- Biological/Habitat Features
 - Physical Features
 - Regulated Features
 - Modifications
 - Jurisdictional Delineations
 - Transportation Features
 - Background Imagery
 - Satellite Imagery

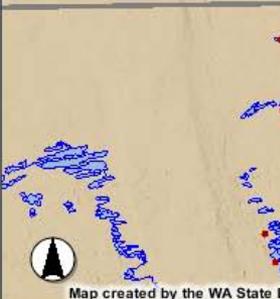
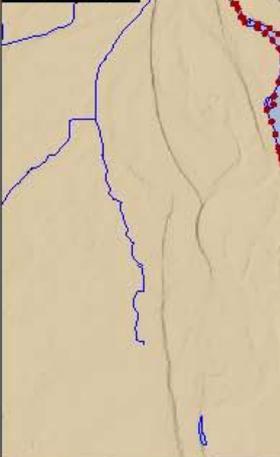
- Help:**
- A closed group, click to open.
 - An open group, click to close.
 - A hidden layer, click to make visible.
 - A visible layer, click to hide.
 - A visible layer, but not at this scale.

Zoom In Tool

Allows the user to zoom in by either **1)** Clicking on a Single Point on the map or **2)** Drawing a Rectangle on the map.
 When *clicking on a point* the map will be zoomed in to an extent determined by the current Zoom Factor: percent.

WASHINGTON STATE
Department of Ecology

FULL STATE ZOOM IN ZOOM OUT



WASHINGTON STATE
Department of Ecology
Coastal Atlas



Find on Map

Photo Reference: 070416_22105 Date: 4/16/2007 Area: Moses Lake, Rocky Ford Creek

Download links for this photo:

[Low Resolution \(800 x 531 pixels, 66Kb\)](#) [High Resolution \(4288 x 2848 pixels, 1376Kb\)](#)

Approx. 9 seconds for 56kbps modem; 1 seconds for Cable/DSL Approx. 3.3 minutes for 56kbps modem; 29 seconds for Cable/DSL

View photos of this area in other years: 1940s 1976-77 1992-97 2000-02



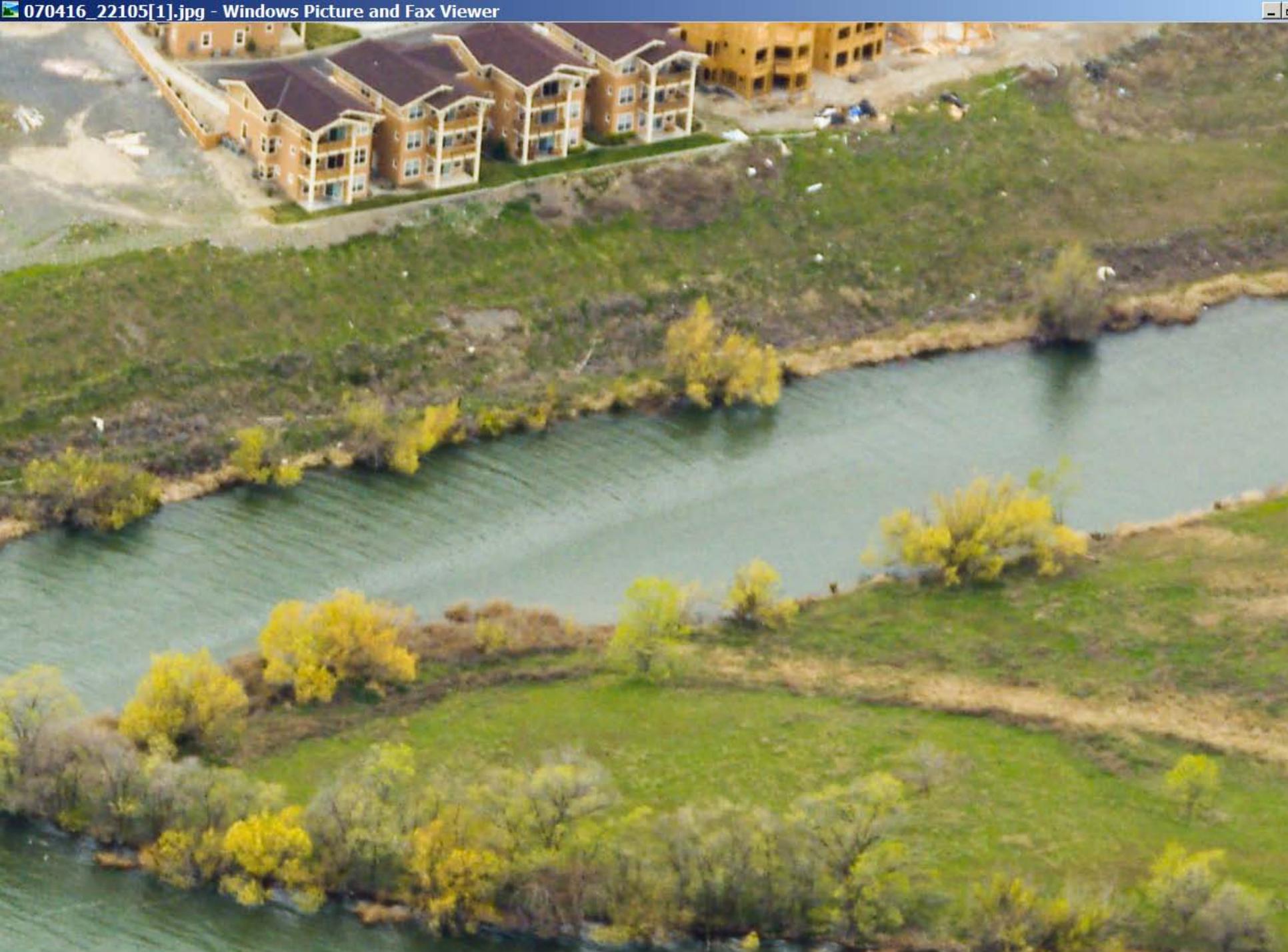
Refresh Map

- Data Layers
- Biological/Habitat Features
 - Physical Features
 - Regulated Features
 - Modifications
 - Jurisdictional Delineations
 - Transportation Features
 - Background Imagery
 - Satellite Imagery

- Help:
- A closed group, click to open.
 - An open group, click to close.
 - A hidden layer, click to make visible.
 - A visible layer, click to hide.
 - A visible layer, but not at this scale.

4/16/2007 1:11 PM







- FULL STATE
- ZOOM IN
- ZOOM OUT
- PAN
- ZOOM TO
- ZOOM LAST
- VIEW PHOTO
- SELECT
- SELECT POLYGON
- BUFFER
- CLEAR SELECT
- LAND COVER
- MEASURE
- PRINT MAP

Refresh Map

Data Layers

- Biological/Habitat Features
- Physical Features
- Regulated Features
- Modifications
- Jurisdictional Delineations
- Transportation Features
- Background Imagery
- Satellite Imagery

Help:

- A closed group, click to open.
- An open group, click to close.
- A hidden layer, click to make visible.
- A visible layer, click to hide.
- A visible layer, but not at this scale.



Map created by the WA State Department of Ecology

Zoom In Tool

Allows the user to zoom in by either 1) Clicking on a Single Point on the map or 2) Drawing a Rectangle on the map.

When clicking on a point the map will be zoomed in to an extent determined by the current Zoom Factor: 200 percent.



- FULL STATE
- ZOOM IN
- ZOOM OUT
- PAN
- ZOOM TO
- ZOOM LAST
- VIEW PHOTO
- SELECT
- SELECT POLYGON
- BUFFER
- CLEAR SELECT
- LAND COVER
- MEASURE
- PRINT MAP

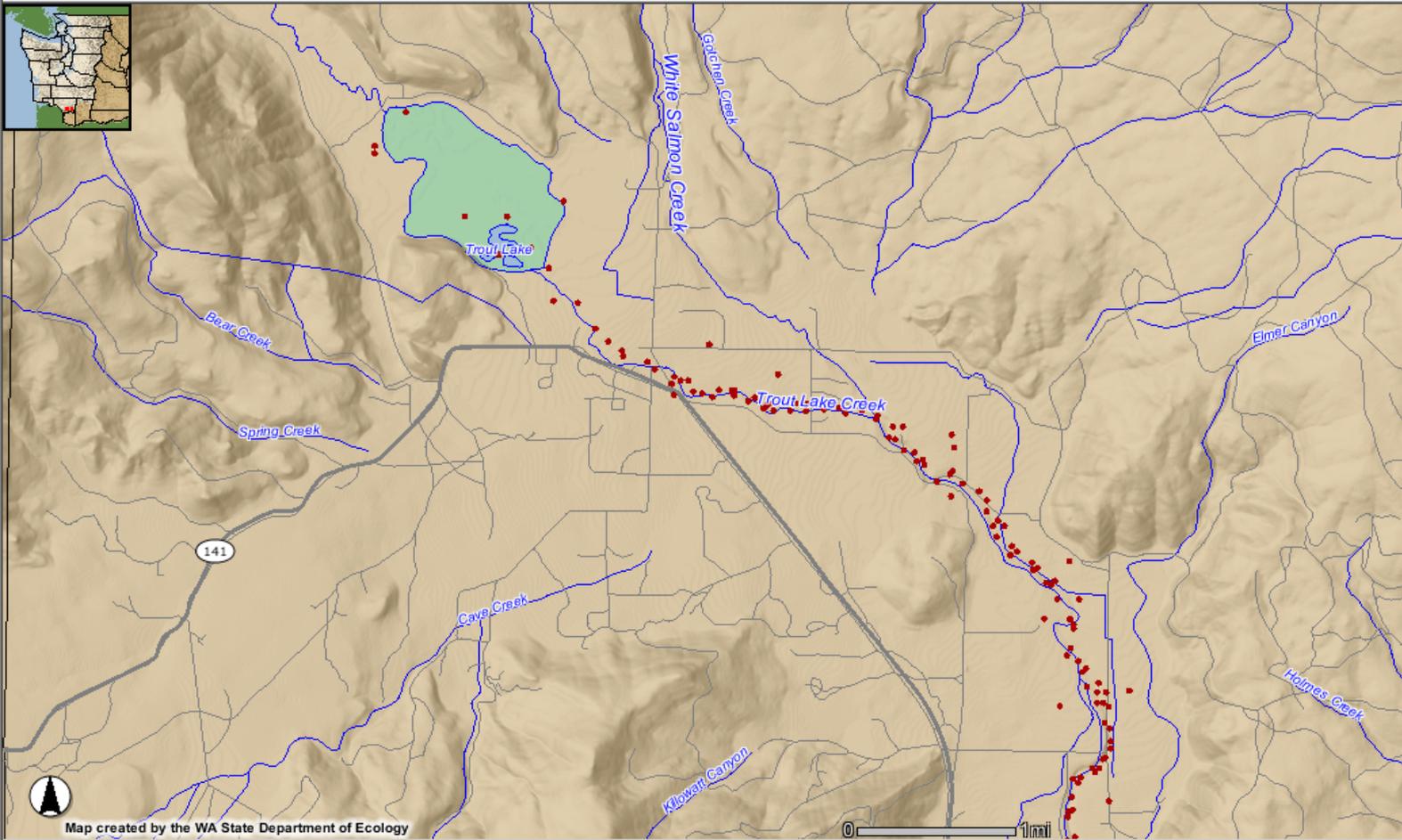
Refresh Map

Data Layers

- Biological/Habitat Features
- Physical Features
- Regulated Features
- Modifications
- Jurisdictional Delineations
- Transportation Features
- Background Imagery
- Satellite Imagery

Help:

- A closed group, click to open.
- An open group, click to close.
- A hidden layer, click to make visible.
- A visible layer, click to hide.
- A visible layer, but not at this scale.



Map created by the WA State Department of Ecology

Zoom In Tool

Allows the user to zoom in by either **1)** Clicking on a Single Point on the map or **2)** Drawing a Rectangle on the map.
 When *clicking on a point* the map will be zoomed in to an extent determined by the current Zoom Factor: percent.

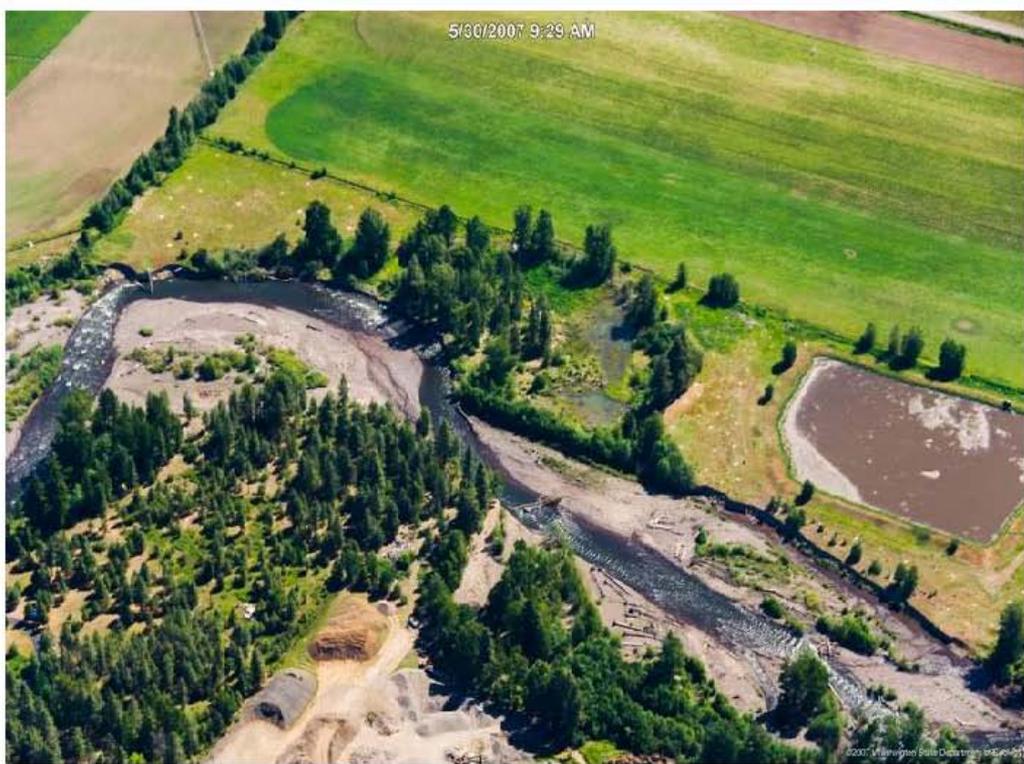
WASHINGTON STATE
Department of Ecology

FULL STATE ZOOM IN ZOOM OUT PA



Map created by the WA State Department of Ecology

WASHINGTON STATE
Department of Ecology
Coastal Atlas



 Find on Map

Photo Reference: 070530_34097 **Date:** 5/30/2007 **Area:** White Salmon River

Download links for this photo:

[Low Resolution \(800 x 531 pixels, 88Kb\)](#) [High Resolution \(4288 x 2848 pixels, 1757Kb\)](#)

Approx. 13 seconds for 56kbps modem; 2 seconds for Cable/DSL *Approx. 4.2 minutes for 56kbps modem; 37 seconds for Cable/DSL*

View photos of this area in other years: 1940s 1976-77 1992-97 2000-02

Refresh Map

Data Layers

- Biological/Habitat Features
- Physical Features
- Regulated Features
- Modifications
- Jurisdictional Delineations
- Transportation Features
- Background Imagery
- Satellite Imagery

Help:

- A closed group, click to open.
- An open group, click to close.
- A hidden layer, click to make visible.
- A visible layer, click to hide.
- A visible layer, but not at this scale.





Next ▲ Image



Next ▲ Image

Photo Reference: PIE0677_063

Date: on photo

Area: Ruston ASARCO Plant

Download links for this photo:

[Low Resolution \(700 x 702 pixels, 618Kb\)](#)

[High Resolution \(2092 x 2118 pixels, 1131Kb\)](#)



Next ▲ Image



Next ▼ Image

Photo Reference: PIE0102

Date: 5/16/1992

Area: Asarco Smelter

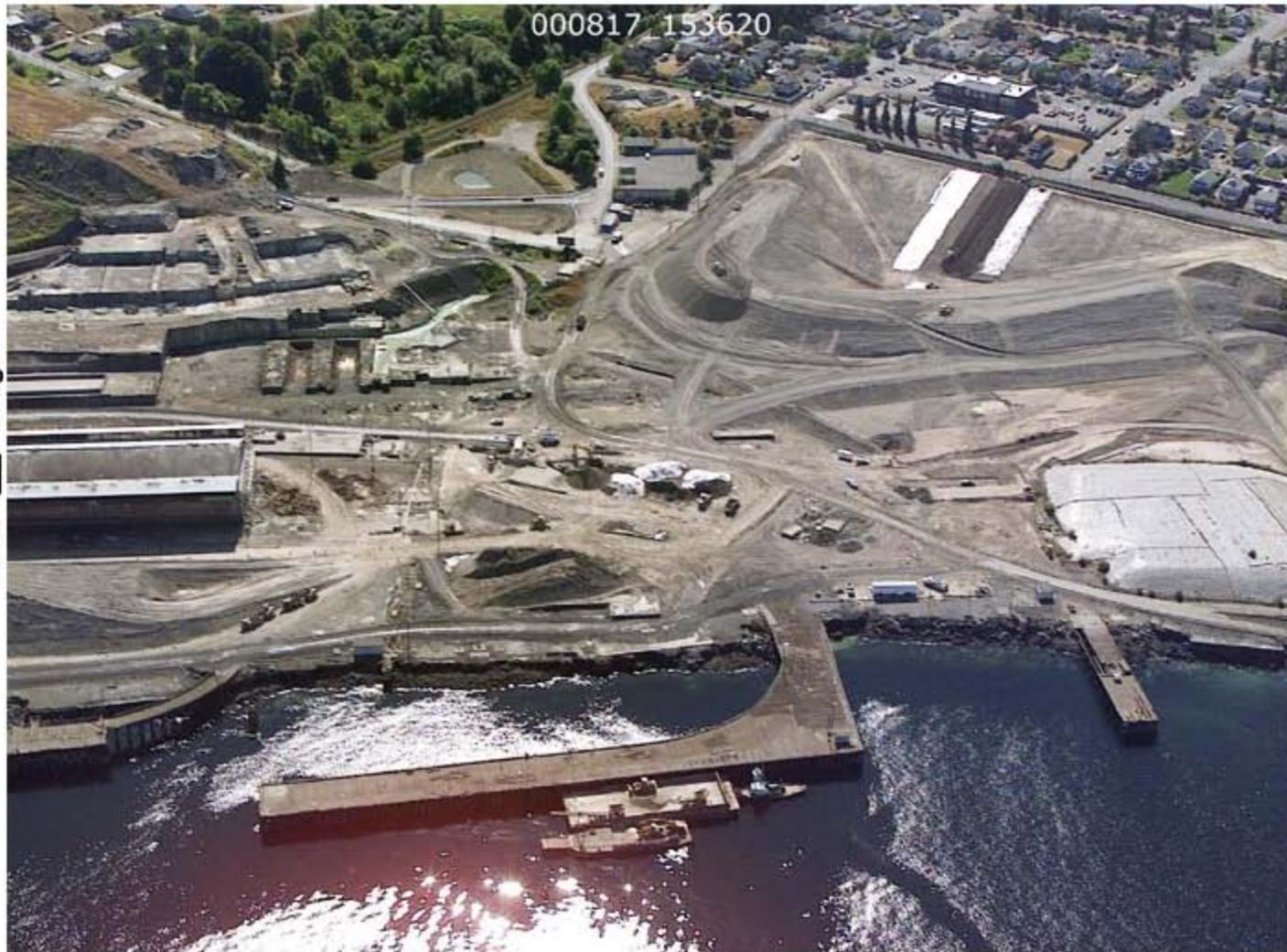
Download links for this photo:

[Low Resolution \(768 x 512 pixels, 92Kb\)](#)

*** High resolution image not available ***



000817_153620



Next  Image

Next  Image

Photo Reference: 000817_153620

Date: 8/17/2000

Download links for this photo:

[Low Resolution \(700 x 524 pixels, 185Kb\)](#)

[High Resolution \(2008 x 1504 pixels, 718Kb\)](#)



7/27/2006 1:40 PM



Next  Image

Next  Image

Photo Reference: 060727_10050

Date: 7/27/2006

Download links for this photo:

Land Cover Information

- NOAA Coastal Change Analysis Program Data
- Change in Forest Cover
- Change in Impervious Surface Cover

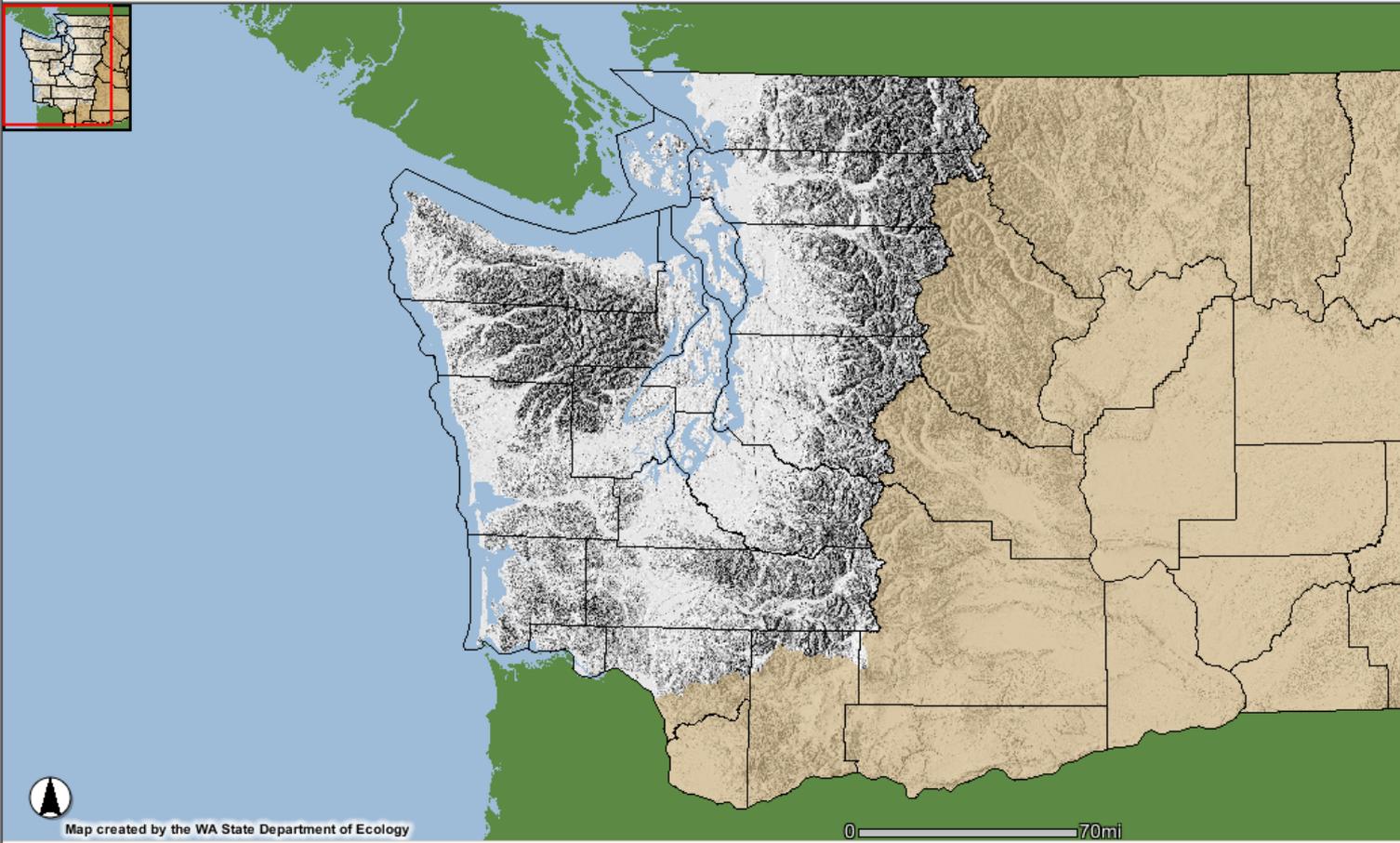
WASHINGTON STATE Department of Ecology Coastal Atlas

FULL STATE
 ZOOM IN
 ZOOM OUT
 PAN
 ZOOM TO
 ZOOM LAST
 VIEW PHOTO
 SELECT
 SELECT POLYGON
 BUFFER
 CLEAR SELECT
 LAND COVER
 MEASURE
 PRINT MAP

Refresh Map

Data Layers

- Biological/Habitat Features
- Physical Features
- Regulated Features
- Modifications
- Jurisdictional Delineations
- Transportation Features
- Background Imagery
- Satellite Imagery
 - Land Use/Land Cover 2006
 - Land Use/Land Cover 2001
 - Land Use/Land Cover 1996
 - Land Use/Land Cover 1991
 - Unclassified (Cloud, Shadow, e
 - High Intensity Developed
 - Low Intensity Developed
 - Cultivated Land
 - Grassland
 - Deciduous Forest
 - Evergreen Forest
 - Mixed Forest
 - Scrub/Shrub
 - Palustrine Wetland
 - Estuarine Wetland
 - Bare Land/Unconsolidated Sho
 - Water
 - Tundra
 - Snow/Ice



Map created by the WA State Department of Ecology

0 70mi

Introduction

1. Choose Data Layers to display from right hand menu and then click **Refresh Map**. If layer is not visible, until features are displayed.

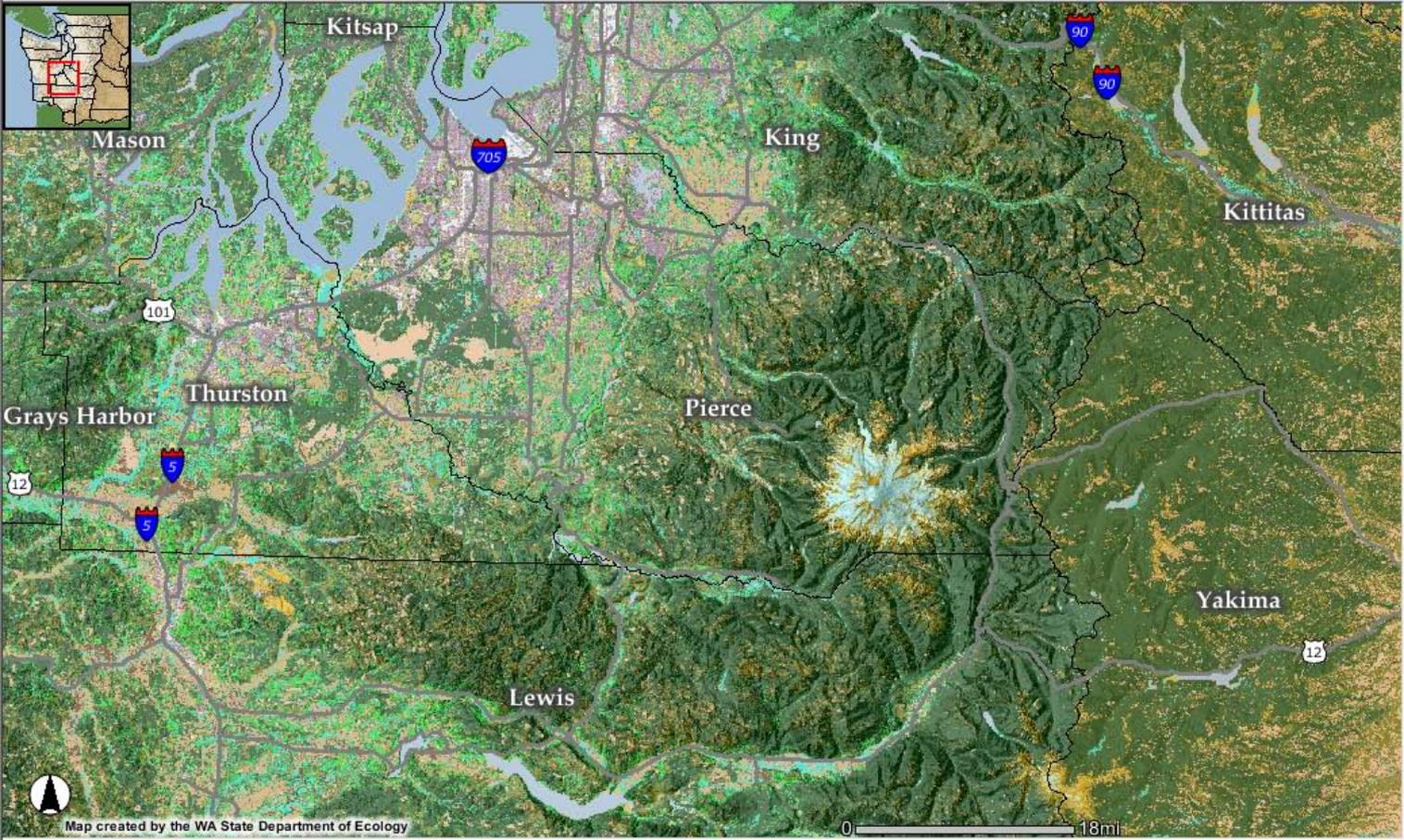
2. Click on tools such as , or for further instructions and information in this window.

Help:

- A closed group, click to open.
- An open group, click to close.

WASHINGTON STATE Department of Ecology Coastal Atlas

FULL STATE
 ZOOM IN
 ZOOM OUT
 PAN
 ZOOM TO
 ZOOM LAST
 VIEW PHOTO
 SELECT
 SELECT POLYGON
 BUFFER
 CLEAR SELECT
 LAND COVER
 MEASURE
 PRINT MAP



Refresh Map

Data Layers

- Biological/Habitat Features
- Physical Features
- Regulated Features
- Modifications
- Jurisdictional Delineations
- Transportation Features
- Background Imagery
- Satellite Imagery
 - Land Use/Land Cover 2006
 - Land Use/Land Cover 2001
 - Land Use/Land Cover 1996
 - Land Use/Land Cover 1991
 - Unclassified (Cloud, Shadow, etc)
 - High Intensity Developed
 - Low Intensity Developed
 - Cultivated Land
 - Grassland
 - Deciduous Forest
 - Evergreen Forest
 - Mixed Forest
 - Scrub/Shrub
 - Palustrine Wetland
 - Estuarine Wetland
 - Bare Land/Unconsolidated Shore
 - Water
 - Tundra
 - Snow/Ice



Map created by the WA State Department of Ecology

0 18mi

Introduction

1. Choose Data Layers to display from right hand menu and then click **Refresh Map**. If layer is not visible, until features are displayed.

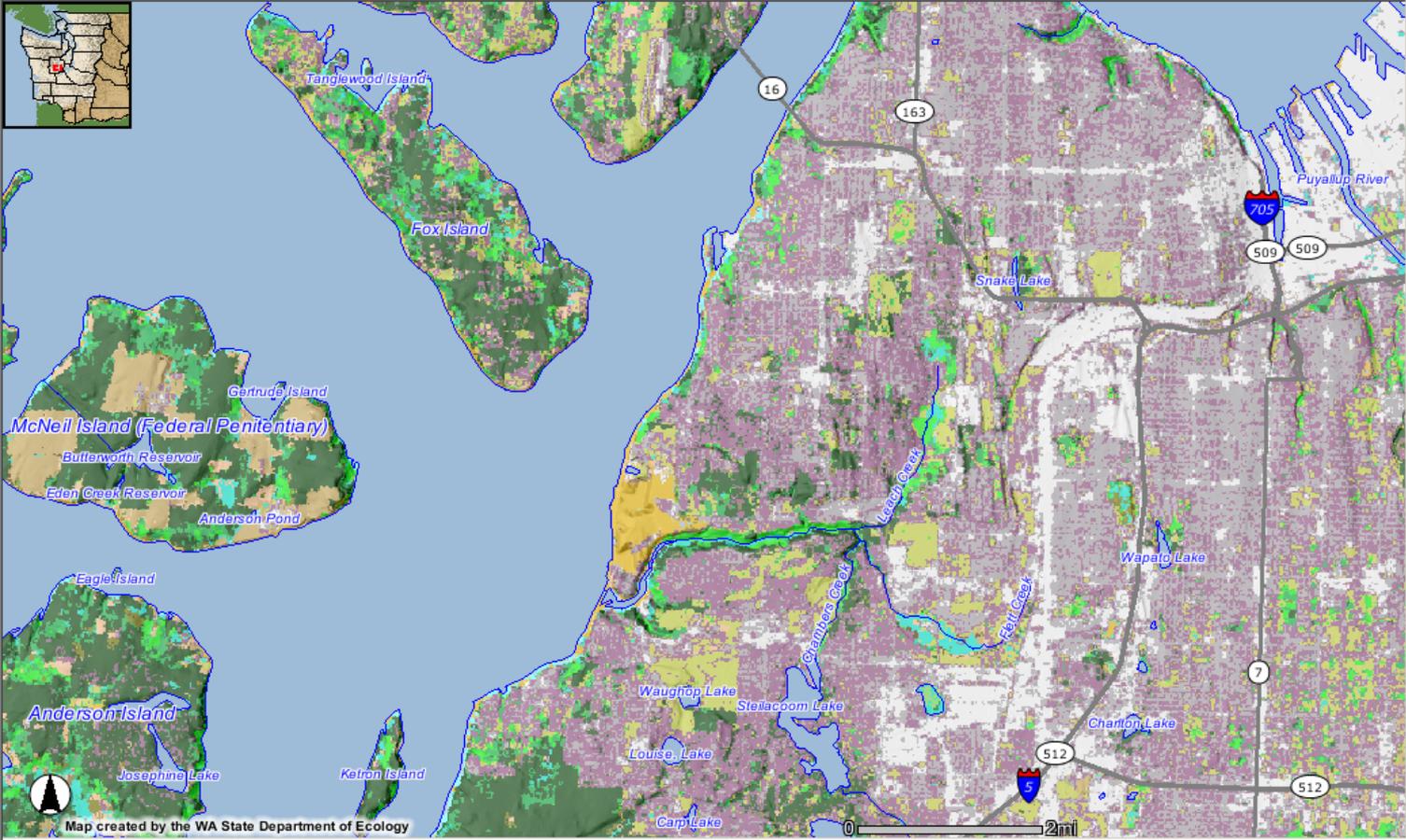
2. Click on tools such as or for further instructions and information in this window.

Help:

- A closed group, click to open.
- An open group, click to close.

WASHINGTON STATE Department of Ecology Coastal Atlas

FULL STATE
 ZOOM IN
 ZOOM OUT
 PAN
 ZOOM TO
 ZOOM LAST
 VIEW PHOTO
 SELECT
 SELECT POLYGON
 BUFFER
 CLEAR SELECT
 LAND COVER
 MEASURE
 PRINT MAP



Refresh Map

Data Layers

- Biological/Habitat Features
 - Physical Features
 - Regulated Features
 - Modifications
 - Jurisdictional Delineations
 - Transportation Features
 - Background Imagery
 - Satellite Imagery
 - Land Use/Land Cover 2006
 - Land Use/Land Cover 2001
 - Land Use/Land Cover 1996
 - Land Use/Land Cover 1991
- Unclassified (Cloud, Shadow, e
 High Intensity Developed
 Low Intensity Developed
 Cultivated Land
 Grassland
 Deciduous Forest
 Evergreen Forest
 Mixed Forest
 Scrub/Shrub
 Palustrine Wetland
 Estuarine Wetland
 Bare Land/Unconsolidated Sho
 Water
 Tundra
 Snow/Ice

Introduction

1. Choose Data Layers to display from right hand menu and then click **Refresh Map** . If layer is not visible, until features are displayed.
2. Click on tools such as , or for further instructions and information in this window.

Help:

- A closed group, click to open.
- An open group, click to close.

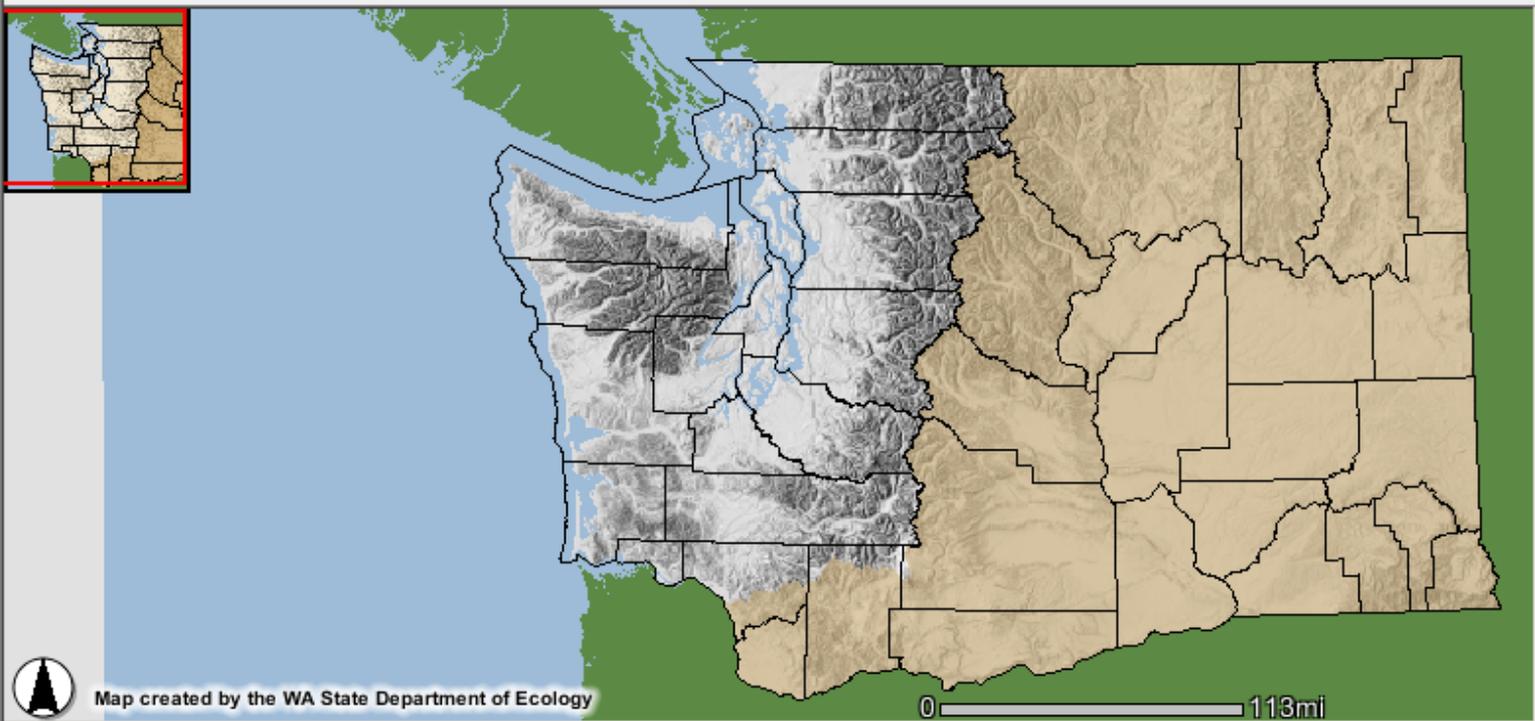
Refresh Map

Data Layers

- Biological/Habitat Features
- Physical Features
- Regulated Features
- Modifications
- Jurisdictional Delineations
- Transportation Features
- Background Imagery
- Satellite Imagery

Help:

- A closed group, click to open.
- An open group, click to close.
- A hidden layer, click to make visible.
- A visible layer, click to hide.
- A visible layer, but not at this scale.



Land Use Statistics Tool

1. Choose a layer to select from:

2. With the left mouse button, click on the map to select an area to select desired features.

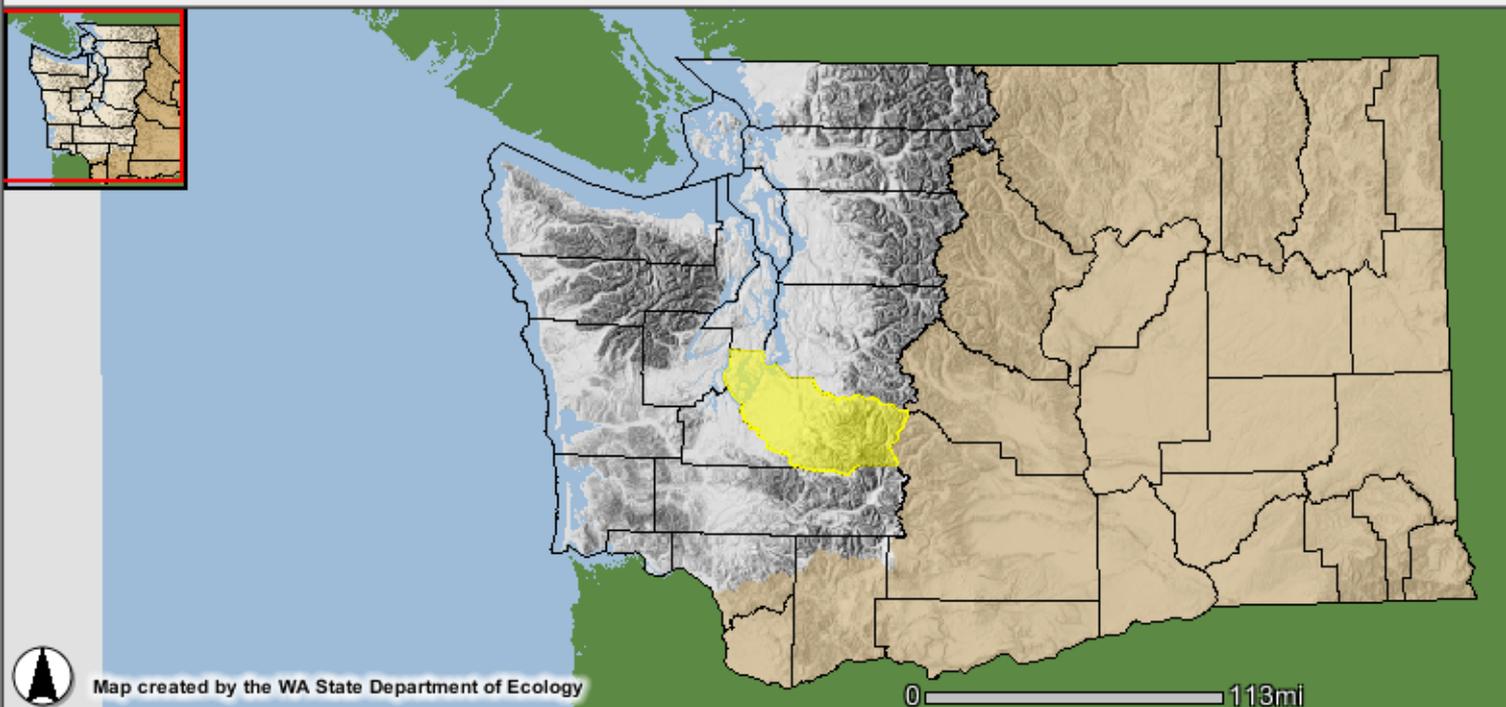
3. Once feature(s) are selected, a report of two land use metrics.

Cursor location is approximately:

If the layer is not visible at the current scale, zoom in until the features are displayed.

 FULL STATE
  ZOOM IN
  ZOOM OUT
  PAN
  ZOOM TO
  ZOOM LAST
  VIEW PHOTO
  SELECT
  SELECT POLYGON
  BUFFER
  CLEAR SELECT
  LAND COVER
  MEASUR

Refresh Map



- Data Layers**
- Biological/Habitat Features
 - Physical Features
 - Regulated Features
 - Modifications
 - Jurisdictional Delineations
 - Transportation Features
 - Background Imagery
 - Satellite Imagery

Help:

- A closed group, click to open.
- An open group, click to close.
- A hidden layer, click to make visible.
- A visible layer, click to hide.
- A visible layer, but not at this scale.

County [Return to Select Options](#)

Rec	County Name	County Code
1	Pierce	27

WASHINGTON STATE Department of Ecology

FULL STATE ZOOM IN ZOOM OUT



Map created by the W

Report on Percent Cover of Forest Canopy

Impervious Surface Report

The percentage of forest canopy is a measure of the amount of area covered by woody vegetation greater than 6 meters (20 ft) in height. This includes:

- evergreen forest (e.g. Douglas fir, western red-cedar, western hemlock),
- deciduous forest (e.g. red alder, oak, big-leaf maple),
- mixed forest (e.g. evergreens and deciduous), and
- forested wetlands (e.g. sitka spruce).

The values reported reflect an average forest canopy across the area of land selected (sub-basin, county, or watershed (WRIA), because the amount of forest canopy cover is reported as a percentage of the total area.

The change in the percentage of forest canopy cover over time indicates how much forest was converted into other land cover types (reductions in percent forest cover) or the amount of reforestation of previously non-forested area (increases in forest percent forest cover).

The data used in this analysis have an overall accuracy of 85 percent. While this information is useful in identifying regional landscape patterns, it is not intended to be used to make specific land use decisions at a fine scale of individual parcels.

County Name	% Forest Canopy Cover 1991	% Forest Canopy Cover 1996	% Forest Canopy Cover 2001	% Change in Forest Canopy 1991-1996	% Change in Forest Canopy 1996-2001	% Change in Forest Canopy 1991-2001
Pierce	56.0	55.0	53.0	-2.0	-4.0	-5.0

Technical Information:



Report on Percent Impervious Surface Forest Canopy Report

The percentage of impervious surface is a measure of the amount land covered by constructed materials. This includes roofing, metal, concrete, and asphalt. Areas covered by vegetation (either natural or cultivated) or other cover such as water, bare land, or snow, were not counted as impervious surface.

Areas with greater percentages of impervious surface may include heavily built-up urban centers as well as large constructed surfaces in suburban and rural areas. Some of the structures contributing to high impervious surface values include high density residential dwellings, shopping centers, factories, industrial complexes, highways, and airport runways.

Areas with lower percentages may have fewer urban centers and large buildings and more area covered by vegetation or other cover types.

The values reported reflect an average amount of impervious surface across the area of land selected (sub basin, county or watershed (WRIA). The amount of impervious surface is reported as a percentage of the total area.

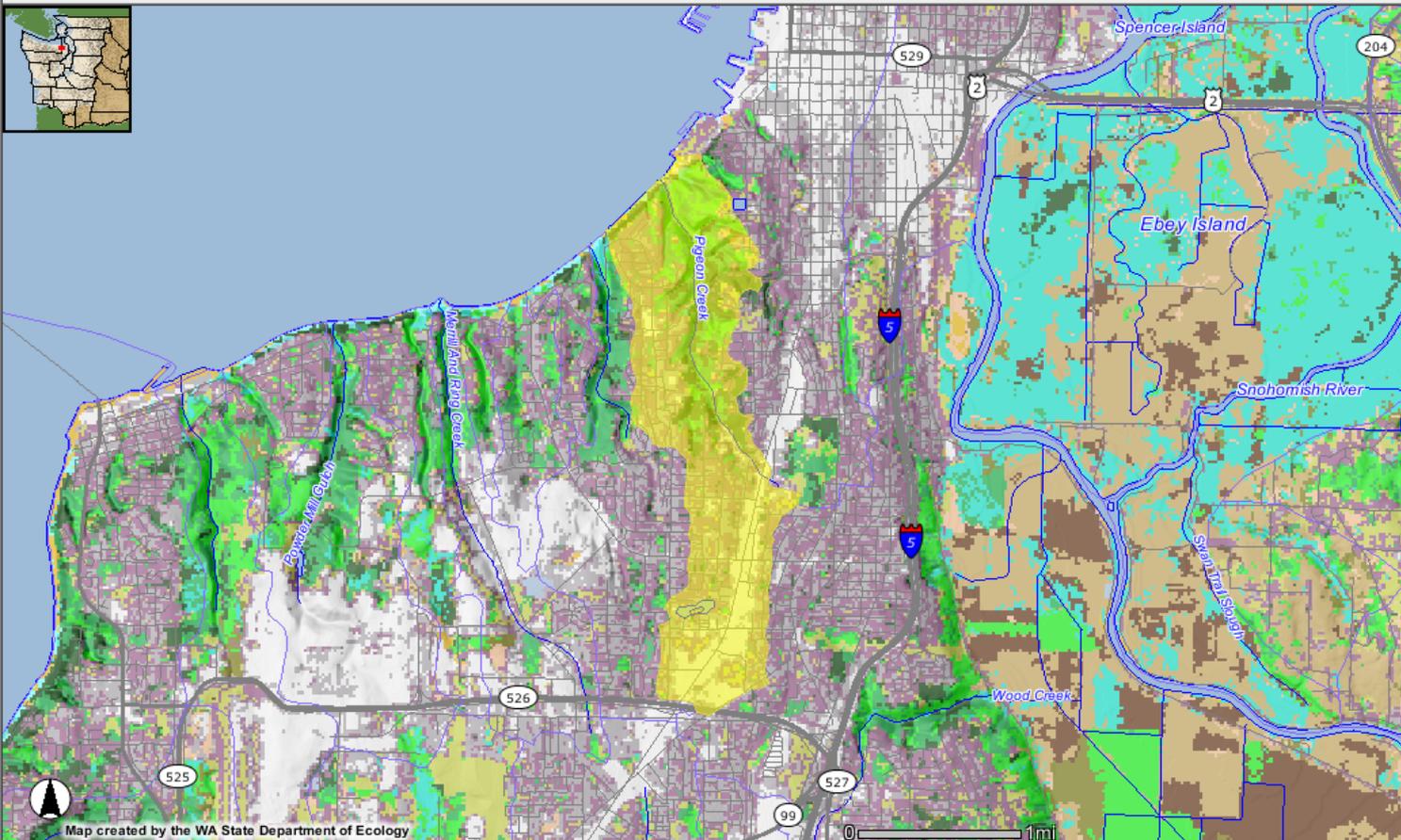
The change in the percentage of impervious surface over time indicates how much of the other land cover types were converted into impervious surface.

While this information is useful in identifying regional landscape patterns, it is not intended to be used to make specific land use decisions at a fine scale of individual parcels.

County Name	% Impervious Surface 1991	% Impervious Surface 1996	% Impervious Surface 2001	% Change in Impervious Surface 1991-1996	% Change in Impervious Surface 1996-2001	% Change in Impervious Surface 1991-2001
Pierce	4.8	5.1	5.4	6.2	5.8	12.5

WASHINGTON STATE Department of Ecology
 Coastal Atlas

Refresh Map



- Data Layers**
- Biological/Habitat Features
 - Physical Features
 - Regulated Features
 - Modifications
 - Jurisdictional Delineations
 - Transportation Features
 - Background Imagery
 - Satellite Imagery
 - Land Use/Land Cover 2006
 - Land Use/Land Cover 2001
 - Land Use/Land Cover 1996
 - Land Use/Land Cover 1991
 - Unclassified (Cloud, Shadow, e
 - High Intensity Developed
 - Low Intensity Developed
 - Cultivated Land
 - Grassland
 - Deciduous Forest
 - Evergreen Forest
 - Mixed Forest
 - Scrub/Shrub
 - Palustrine Wetland
 - Estuarine Wetland
 - Bare Land/Unconsolidated Sho
 - Water
 - Tundra
 - Snow/Ice

Map created by the WA State Department of Ecology

Sub Basins [Return to Select Options](#)

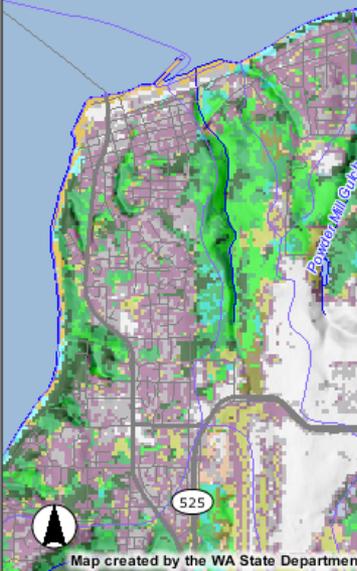
Rec	Basin Name	% Impervious 2001	% Impervious 1996	% Impervious 1991	% Canopy 2001	% Canopy 1996	% Canopy 1991	Sub Basin ID
1	Everett West	34	34	33	32	33	33	1101

Help:

- A closed group, click to open.
- An open group, click to close.

WASHINGTON STATE
Department of Ecology

FULL STATE ZOOM IN ZOOM OUT PAN



Report on Percent Cover of Forest Canopy

Impervious Surface Report

The percentage of forest canopy is a measure of the amount of area covered by woody vegetation greater than 6 meters (20 ft) in height. This includes:

- evergreen forest (e.g. Douglas fir, western red-cedar, western hemlock),
- deciduous forest (e.g. red alder, oak, big-leaf maple),
- mixed forest (e.g. evergreens and deciduous), and
- forested wetlands (e.g. sitka spruce).

The values reported reflect an average forest canopy across the area of land selected (sub-basin, county, or watershed (WRIA), because the amount of forest canopy cover is reported as a percentage of the total area.

The change in the percentage of forest canopy cover over time indicates how much forest was converted into other land cover types (reductions in percent forest cover) or the amount of reforestation of previously non-forested area (increases in forest percent forest cover).

The data used in this analysis have an overall accuracy of 85 percent. While this information is useful in identifying regional landscape patterns, it is not intended to be used to make specific land use decisions at a fine scale of individual parcels.

SubBasin ID	% Forest Canopy Cover 1991	% Forest Canopy Cover 1996	% Forest Canopy Cover 2001	% Change in Forest Canopy 1991-1996	% Change in Forest Canopy 1996-2001	% Change in Forest Canopy 1991-2001
1101	59	57	56	-3	-2	-5

Technical Information:



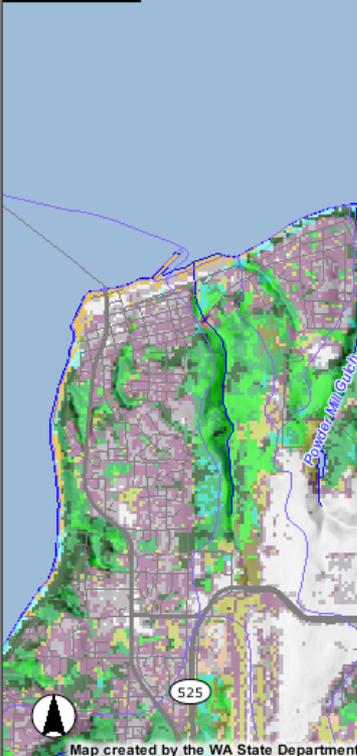
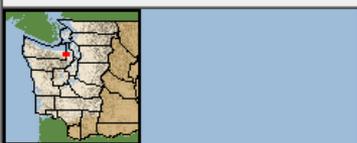
Refresh Map

Data Layers

- Biological/Habitat Features
- Physical Features
- Regulated Features
- Modifications
- Jurisdictional Delineations
- Transportation Features
- Background Imagery
- Satellite Imagery
 - Land Use/Land Cover 2006
 - Land Use/Land Cover 2001
 - Land Use/Land Cover 1996
 - Land Use/Land Cover 1991
 - Unclassified (Cloud, Shadow, e
 - High Intensity Developed
 - Low Intensity Developed
 - Cultivated Land
 - Grassland
 - Deciduous Forest
 - Evergreen Forest
 - Mixed Forest
 - Scrub/Shrub
 - Palustrine Wetland
 - Estuarine Wetland
 - Bare Land/Unconsolidated Sho
 - Water
 - Tundra
 - Snow/Ice

WASHINGTON STATE
Department of Ecology

FULL STATE ZOOM IN ZOOM OUT PAN



Rec	Basin Name
1	Everett West



Report on Percent Impervious Surface

Forest Canopy Report

The percentage of impervious surface is a measure of the amount land covered by constructed materials. This includes roofing, metal, concrete, and asphalt. Areas covered by vegetation (either natural or cultivated) or other cover such as water, bare land, or snow, were not counted as impervious surface.

Areas with greater percentages of impervious surface may include heavily built-up urban centers as well as large constructed surfaces in suburban and rural areas. Some of the structures contributing to high impervious surface values include high density residential dwellings, shopping centers, factories, industrial complexes, highways, and airport runways.

Areas with lower percentages may have fewer urban centers and large buildings and more area covered by vegetation or other cover types.

The values reported reflect an average amount of impervious surface across the area of land selected (sub basin, county or watershed (WRIA). The amount of impervious surface is reported as a percentage of the total area.

The change in the percentage of impervious surface over time indicates how much of the other land cover types were converted into impervious surface.

While this information is useful in identifying regional landscape patterns, it is not intended to be used to make specific land use decisions at a fine scale of individual parcels.

SubBasin ID	% Impervious Surface 1991	% Impervious Surface 1996	% Impervious Surface 2001	% Change in Impervious Surface 1991-1996	% Change in Impervious Surface 1996-2001	% Change in Impervious Surface 1991-2001
1101	6	6	6	0	0	0

Technical Information:

The percent of impervious surface was based on the National Oceanic and Atmospheric Administration's Coastal Change Analysis Program (<http://www.noaa.gov/coastalchange>) and modified by the Seaborn Mapping Solutions for



Refresh Map

Data Layers

- Biological/Habitat Features
- Physical Features
- Regulated Features
- Modifications
- Jurisdictional Delineations
- Transportation Features
- Background Imagery
- Satellite Imagery
 - Land Use/Land Cover 2006
 - Land Use/Land Cover 2001
 - Land Use/Land Cover 1996
 - Land Use/Land Cover 1991
- Unclassified (Cloud, Shadow, e
- High Intensity Developed
- Low Intensity Developed
- Cultivated Land
- Grassland
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Scrub/Shrub
- Palustrine Wetland
- Estuarine Wetland
- Bare Land/Unconsolidated Sho
- Water
- Tundra
- Snow/Ice

Help:

- A closed group, click to open.
- An open group, click to close.

Location

Shorelands and Environmental Assistance Program Home - WA Dept. of Ecology - Windows I

http://www.ecy.wa.gov/programs/sea/shorelan.html

File Edit View Favorites Tools Help

Shorelands and Environmental Assistance Pr...

DEPARTMENT OF ECOLOGY State of Washington

A-Z Index | Contact Us

Home | WATER | AIR | WASTE | CLEANUP | TOXIC HAZARDS | GREEN | About Us | Jobs

Programs Services Publications Databases Laws & Rules Public Calendar Public Records

Shorelands & Environmental Assistance

SEA PROGRAM

- Environmental Programs
- Regulatory Assistance
- Education & Training
- Grants
- What's New

Laws & Rules
Publications
Forms
Databases
Contacts

Healthy shorelands and watersheds provide viable habitat for fish, plants and animals, and support economic growth in communities.

The Shorelands and Environmental Assistance Program helps communities manage shorelands and wetlands. Our primary focus is on state and local responsibilities for administering Washington state and federally-delegated laws.

ENVIRONMENTAL PROGRAMS

- [Coastal Zone Management](#) | [Floods and Floodplain Management](#) | [Ocean Resources](#) | [Padilla Bay Reserve](#) | [Shoreline Management](#) | [SW Washington Coastal Erosion Study](#) | [Washington Conservation Corps \(WCC\)](#) | [Watershed Planning](#) | [Wetlands](#) | [More](#)

REGULATORY ASSISTANCE

- [Environmental Permitting Services](#) | [Federal Permitting](#) | [Joint Aquatic Resource Permits Application \(JARPA\)](#) | [State Environmental Policy Act \(SEPA\)](#) | [Transportation Liaison Team](#)

EDUCATION & TRAINING

- [Coastal Training Program](#) | [Property Owner Guides](#) | [Teacher Resources](#)

GRANTS

- [Flood Control Assistance Account \(FCAAP\)](#) | [Shoreline Master Program \(SMP\)](#) | [Watershed Planning](#)

WHAT'S NEW

- [Coastal Wetland Grant Awards](#) | [Geoduck Aquaculture Information](#) | [Green River Flood Information](#) | [Frequently Asked Questions for SMPs](#) | [Supreme Court Futurewise v. Anacortes decision](#) | [WCC Forms Energy Corps](#)

ENVIRONMENTAL PERMITTING SERVICES

- [Permitting assistance for citizens, businesses, and project applicants.](#)

Washington Coastal Atlas

Updated Version!
[Interactive mapping for Washington's coast](#)

Shoreline Aerial Photos

[Images of Washington's marine shorelines](#)

Puget Sound Shorelines

[Explore, enjoy our Puget Sound shorelines](#)

http://www.ecy.wa.gov/programs/sea/sma/atlas_home.html

Quick review of 3 other existing applications on Ecology's website

- Shoreline Aerial Photos
- Puget Sound Shorelines
- Washington's Coast



- Home
- Site Info
- Search
- Sights
- Links
- Shorelands
- Ecology



- Site Info
 - About this site
- Search
 - Find a location
- Sights
 - Featured places

Welcome to Department of Ecology's aerial photos of Washington's marine shorelines.
[More about the photos...](#)

For more recent shoreline aerial photos, see Ecology's [Digital Coastal Atlas](#).

How To Use ▲

- Click on the green shoreline above.
- Zoom in until red dots appear along the shoreline. Click on a red dot.
- Three photos will appear. Click on any of them to see a full size photo.
- Click on arrows on either side of the photo to view the next image.

Quick Guide ▲

- Viewing the photos
- About the photos
- Search for a location

<http://apps.ecy.wa.gov/shorephotos/>

Department of Ecology
Puget Sound Shorelines

Home Exploring Living Site Map

Exploring



Living



Explore, enjoy, and help preserve our Puget Sound shorelines...

Department of Ecology Shorelands Program
& The Puget Sound Water Quality Action Team

next ▶

Home - Tour - Beaches - Bluffs & Spits - Species
Buying Property - Building - Homeowner Tips - Laws & Permits
Site Map - Links - Credits - Shorelands Home - Ecology Home

<http://www.ecy.wa.gov/programs/sea/pugetsound/index.html>

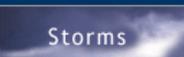
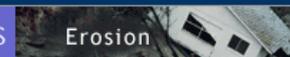


Washington State Department of Ecology

SIGHTS



HAZARDS



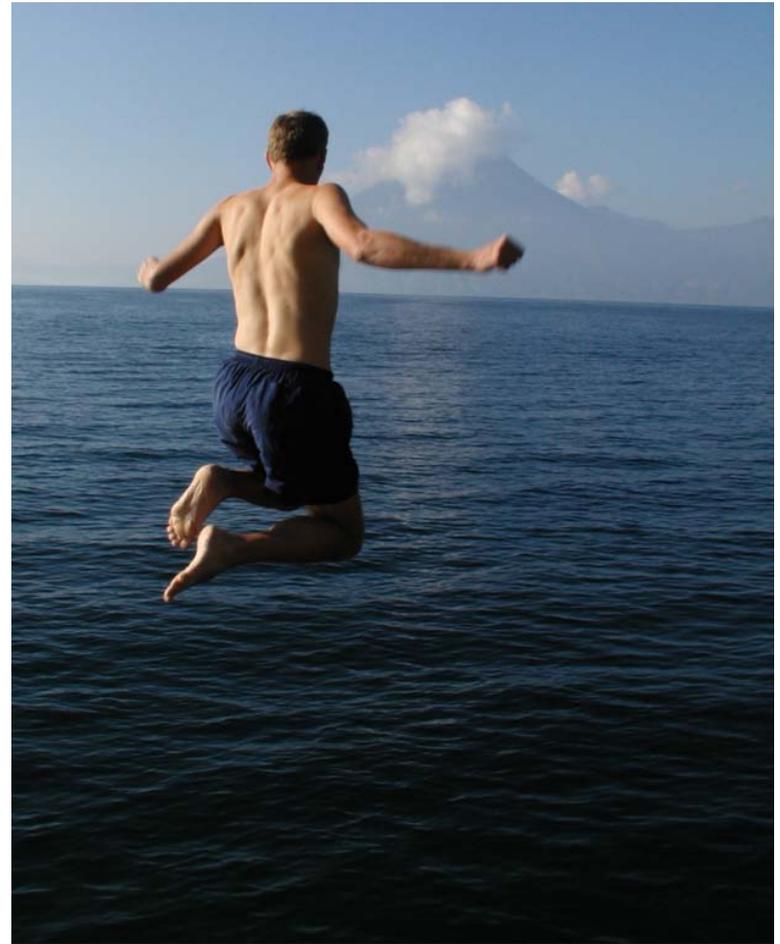
Welcome to Washington's outer coast

Home | Sights | Hazards | SEA Program home | Ecology home

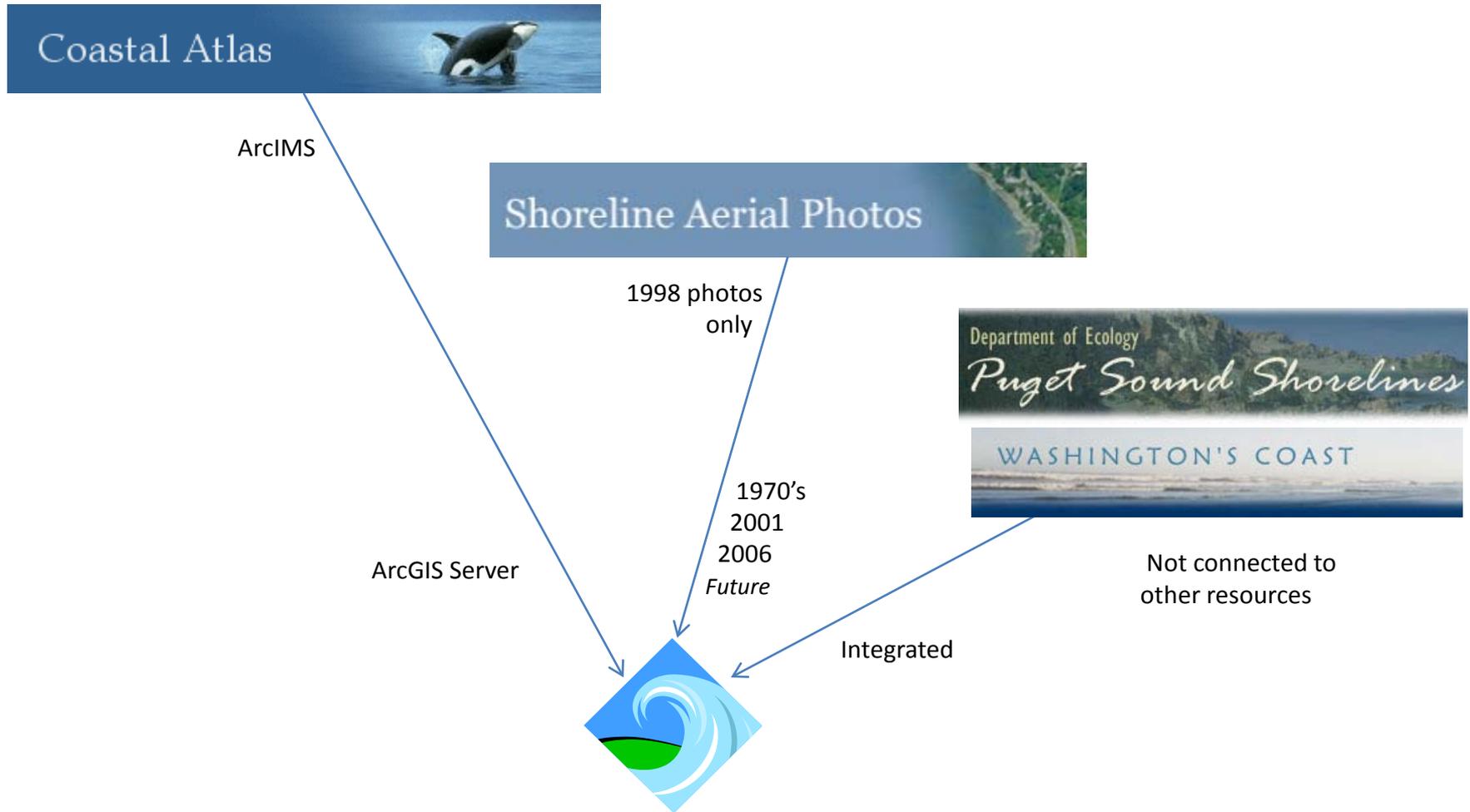
<http://www.ecy.wa.gov/programs/sea/coast/index.html>

Working towards a great leap forward!

We will launch
significant new
developments in
September 2010



Application integration and migration



And add:

- Information about where citizens can access Washington's marine shorelines
- Better user interface for shoreline aerial photos
- Land cover change over time – including 2006 data
- Beach closures, advisories, and water quality information
- FEMA flood maps (digital Flood Insurance Rate Maps)

Actively incorporating what we know about Coastal Atlas users

- current knowledge of target user groups
- professional design expertise
- user testing

to create an improved user interface:



DEPARTMENT OF
ECOLOGY
State of Washington

Washington State Coastal Atlas

[Home](#) [Photos](#) [Maps](#) [Explorer](#)

Atlas Tools

- [View shoreline photos](#)
- [Find public access](#)
- [Check beach safety](#)

Maps

- [Map layers](#)
- [Getting started](#)
- [Printable maps](#)
- [Interactive maps](#)
- [Downloads & metadata](#)

Atlas Explorer

- [Puget Sound](#)
- [Washington's coast](#)
- [Educator's corner](#)
- [Homeowner tips](#)

View shoreline aerial photos



Cape Flattery CAL483 [Go to big photos >](#)

Find a photo location

Sights



Maps

Coastal Atlas layers

- Aerial vertical photography**
 - 1940s of limited areas
 - 1991-97 - all western Washington
- Coastal aerial oblique photos**
 - 1976-77
 - 1992-97
 - 2000-02
- Features**
 - Wetlands
 - Drift cells
 - Slope stability
 - Flood maps
 - Watershed characterization
 - Regulated areas
- Background**
 - Nautical charts
 - USGS topographic maps
 - Historic estuary maps

- [Getting started](#)
- [Printable maps](#)
- [Interactive maps](#)
- [Downloads & metadata](#)



Map Aerial Hybrid
Neah Bay Bayview Ave 112
[Go to big map >](#)



[Find public access](#)

Public access to Washington beaches and shorelines



[Check beach safety](#)

Swimming and shellfish harvest safety



[Flood maps](#)

Areas prone to flooding



[Educator's corner](#)

Learning about the Sound and sea



[Puget Sound](#)

Washington's inland sea



[Washington's Coast](#)

Big waves, sand, and rock



[Homeowner Tips](#)

Streamside and shoreline living

Shoreline Photos

Search by place

Example: Cline Spit

Find

[Compare older photos](#)

[Thumbnail view](#)

[Download photo](#)



[Home](#) > [Shoreline aerial photos](#)



NE 1 ◀

NE 10 ◀



▶ SE 1

▶ SE 10

Image 200905740 Cape Flattery

Thu Oct 1 4:27:00 2006



Image 200905737



Flood maps

Search by address

Street

City

State ZIP Code
Select

Find

Search by county

Lewis County

Find

Search by community

Centralia

Find

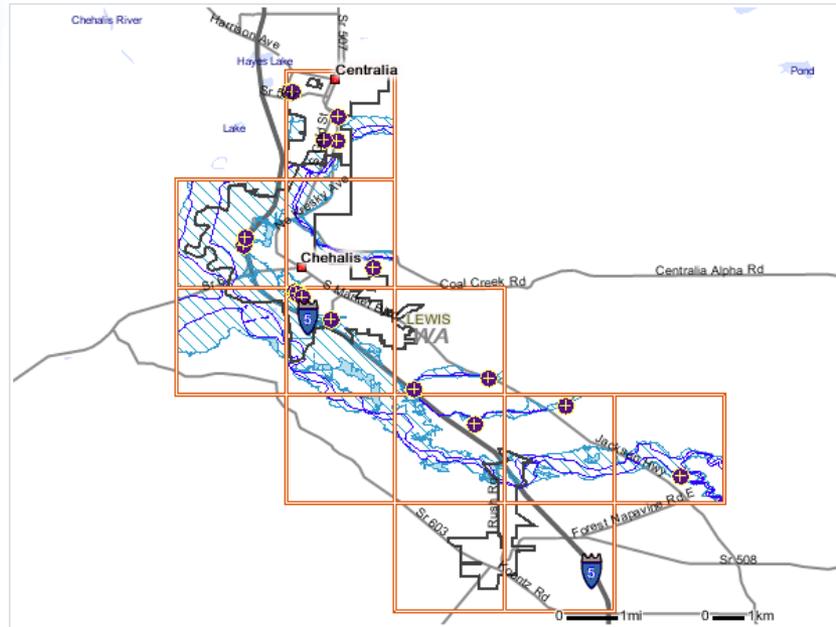
Search by community panel number

Example: 5301910031B

Find

[Home](#) > [Flood maps](#)

Find flood maps



Community panel number	FEMA Flood Insurance Rate Maps	Download all	22.1 Mb
5301910001B	Flood Insurance Rate Map (FIRM) View Download		1.1 Mb
5301910002B	Flood Insurance Rate Map (FIRM) View Download		2.1 Mb
5301910003B	Flood Insurance Rate Map (FIRM) View Download		1.9 Mb
5301910004B	Flood Insurance Rate Map (FIRM) View Download		3.1 Mb
5301910005B	Flood Insurance Rate Map (FIRM) View Download		1.5 Mb
5301910006B	Flood Insurance Rate Map (FIRM) View Download		2.1 Mb
5301910007B	Flood Insurance Rate Map (FIRM) View Download		1.7 Mb

Refresh Map

Legend **Identify**

- Floodways
- Flood Hazard Zone Boundaries
- Flood Hazard Zones
 - Zone A
 - Zone AE
 - Zone AH
 - Zone AO
 - Zone AR
 - Zone A99
 - Zone V
 - Zone VE
 - Zone D
 - 0.2% Annual Chance Flood Hazard Zone

FEMA Flood Insurance Rate Maps (FIRMs) are maps of floodplains.

Properties located in floodplains may be required to carry **flood insurance**.

[Federal Emergency Management Agency \(FEMA\) Flood Maps and FIRMs](#)

[National Flood Insurance Program](#)

Beach Closures



Place

Example: Birch Bay

Find

Search by county

Search by city

Search by beach

Find

[Show all beaches with advisories >](#)

[Home](#) > [Beach closures](#)

Find beach closures



Ala Spit

City: Oak Harbor

County: Island County

Beach status: **+** Closed to swimming

General Beach Info

Date	Ecoli	Entero	Fecal
8/31/2009		16	
8/25/2009		24	
8/20/2009		16	
8/17/2009		433	
8/13/2009		84	
8/11/2009		43	

Latest Monitoring Results

station	2005	2006	2007	2008	2009
WHA009A		9	6	13	12
WHA009B	5	6	8	6	13
WHA009C		6	7	6	8

Advisories / Closures

Advisories

+ CLOSED

Beach closed for swimming

Closed by the local health department or the Public Health Officer. Often due to sewage spills.

! CAUTION

Children, elderly, and those in ill health are advised not to swim.

Increased levels of bacteria are present.

● SWIMMING BEACH WATER QUALITY

Open for swimming

Bathing after swimming is recommended. Harmful bacteria may still be present.

■ Beach not monitored

Washington State's Beach Environmental Assessment, Communication and Health (BEACH) Program monitors [170 beaches](#) for health risks.



What beaches should be monitored? **Tell us.**

[Take our survey >](#)

Public Beaches

Search by place

Enter place

Example: Cline Spit

Find

Search by beach

Search by county

Search by city

Find

Search by amenities

- Restrooms
- Camping
- Wheelchair access
- Drinking water
- Showers
- Stairs to beach
- Picnic facilities
- Marina
- Boat launch
- Dock or pier

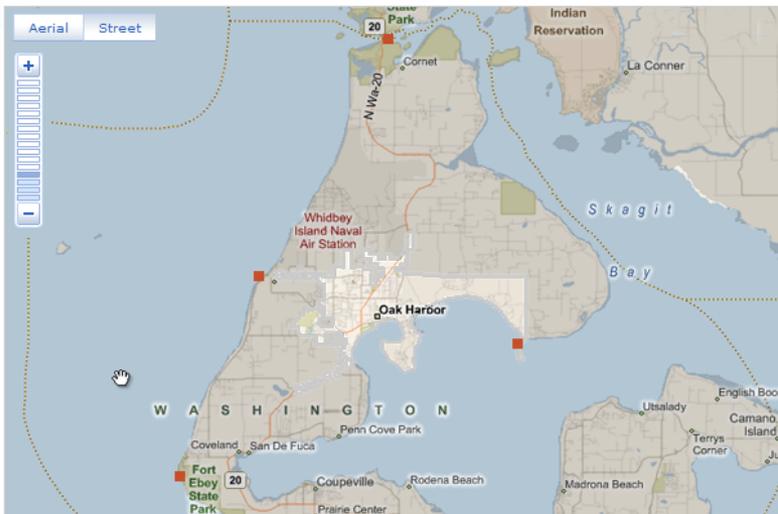
Search by activities

- Hiking
- Biking
- Tidepooling
- Camping
- Whale watching
- Surfing
- SCUBA
- Crabbing
- Fishing
- Boating
- Horseback riding

Find

Home > Public Beaches > Island County

Find public beaches



Your search returned 30 results

Sort by: Most popular 1 2 3



Deception Pass State Park
City: Oak Harbor
County: Island
Activities: camping, hiking, boating, tidepooling, fishing, whale watching, sightseeing, horseback riding
[More >](#)



Fort Ebey State Park
City: Oak Harbor
County: Island
Activities: fishing, hiking, biking, camping, sightseeing
[More >](#)



Asa Spit
City: Oak Harbor
County: Island
Activities: hiking, sightseeing
[More >](#)



Cavelero Beach
City: Oak Harbor
County: Island
Activities: fishing, boating, hiking
[More >](#)



When you visit the shore...

Don't trespass.
Many public access beaches are bordered by private property. Please stay within park boundaries.

Check before you dig.
Before harvesting shellfish, check for [beach closures](#).

Pick up trash.
Glass, plastic, and other trash is hazardous to wildlife and people.

Control pets.
Keep pets on a leash and away from wildlife. Use your scooper.

Take only pictures.
Leave marine life at the beach. A beach stripped of plants and animals takes decades to recover.

Do not disturb wildlife.
Give marine mammals, birds, and other wildlife plenty of space. Remember, you are visiting their home.

[Learn more >](#)

And now, to talk about information on public access
to marine shorelines:

Deborah Purce
Ecology Shorelands Program
NOAA Coastal Management Fellow

