



USER REPORT: PUGET SOUND IV, WASHINGTON NATIONAL WETLANDS INVENTORY MAPS

A. INTRODUCTION

The U.S. Fish & Wildlife Service's National Wetlands Inventory is producing maps showing the location and classification of wetlands and deepwater habitats of the United States. The Classification of Wetlands and Deepwater Habitats of the United States by Cowardin et al. is the classification system used to define and classify wetlands. Photo interpretation conventions, hydric soils lists and wetland plant lists are also available to enhance the use and application of the classifications system.

B. PURPOSE

The purpose of the notes to users is threefold: (1) to provide localized information regarding the production of NWI maps, including specific imagery and interpretation discussion; (2) to provide a descriptive crosswalk from wetland codes on the map to common names and representative plant species; and (3) to explain local geography, climate, and wetland communities.

C. STUDY AREA

Geography:

The Puget Sound IV, Washington study area encompasses a narrow strip of land directly east of the Puget Sound water body, from its southern most reaches north to the Canadian border. The project is bounded on the east generally by the 122^o meridian, the south by the 47^o parallel and to the north by the 49^o parallel. (Figure—1) It includes quads contained in the Seattle NE, Seattle SE, Wenatchee NW, Victoria SE and Victoria NE 1:100,000 maps.

Vegetation:

According to Bailey, Description of the Ecoregions of the United States (1980), the majority of the study area is described as the Willamette-Puget Forest Province (no section) and physiographically as the Puget-Willamette Lowlands. This is the area directly adjacent to Puget Sound and the surrounding floodplains. Vegetation of this region, before cultivation, is characteristic of the forested marine west

coast. Dense coniferous forest dominated with the principal species of western red cedar, western hemlock, and Douglas fir. Along floodplains and interior valleys, the deciduous species of big-leaf maple, Oregon ash, and black cottonwood become prevalent. The valleys also support open prairie and oaks. Poorly drained sites with swamp or bog communities are abundant.

The eastern extent of the study area is described by Bailey as Pacific Forest Province, Silver-Fir-Douglas-fir Section. Physiographically known as the Cascade Mountain Range, this part of the province is primarily a humid conifer forest with Douglas-fir, Western hemlock, Western red cedar, and sitka spruce as dominant species.

Climate:

The climate of this portion of Washington is categorized by Koppen as Marine West Coast, temperate and rainy with warm summers. Locally, in King County, the annual precipitation increases from 35 inches in the Puget Sound lowlands to 150 inches on the wettest slopes of the Cascades (directly east of the study area). Most of this rainfall arrives in the winter months, 75% from October to March. Snowfall ranges 20 to 400 inches accordingly.

Temperatures characteristically range from a summer high in the seventies to a winter low in the mid twenties on the lowlands of the Sound. In the Mountainous regions to the east in the Cascades, temperatures can be expected to decrease three to four degrees with each 1000 feet of elevation. The growing season is also then quite variable in this study area with an average of 190-220 days in the sound and 145-175 days in the foothills and valleys of the Cascades. (King County Soil Survey)

Soils:

The soils, along with the landforms of the area, were formed largely by glacial drift deposits of the late Pleistocene period. The major kinds of materials left by the glaciers are till, recessional outwash and pro-glacial lacustrine and outwash sediments. Following deglaciation, alluvium accumulated in the valleys.

The major limitations to the use of the soils in the area are erosion and wetness. Several series of hydric soils listed by the SCS are common in the area. These occur predominantly in the depression and lowland areas of the outwash plains and along drainage systems. These soils are covered by water for varying times during the year, supporting many different species of hydrophytic vegetation.

D. WETLAND CLASSIFICATION CODES AND WATER REGIME DESCRIPTIONS

Table - Cowardin Classification Codes and Descriptions (1 of 2)

NWI CODE WATER REGIME	NWI DESCRIPTION	COMMON DESCRIPTION	CHARACTERISTIC VEGETATION
E1UB (L)	Estuarine, Sub-tidal Unconsolidated Bottom	Sound	
R1UB (V)	Riverine, Tidal, Unconsolidated Bottom	Tidal river	
R1UB (R,S)	Riverine, Tidal, Unconsolidated Shore	Tidal banks	
R2UB (H)	Riverine, Lower Perennial, Unconsolidated Bottom	River	
R2US (C)	Riverine, Lower Perennial, Unconsolidated Shore	River flats	
R3UB (H)	Riverine, Upper Perennial, Unconsolidated Bottom	Mountain river or stream	
R4SB (C)	Riverine, Intermittent, Stream Bed	Creek, stream	
L1UB (H)	Lacustrine, Limnetic, Unconsolidated Shore	Lake, reservoir	
L2US (C)	Lacustrine, Littoral, Unconsolidated Shore	Lake shore or flat	
L2AB (H,F)	Lacustrine, Littoral, Aquatic Bed	Aquatic bed	<u>Lemna minor</u> <u>Myriophyllum sp.</u> <u>Brasenia schreberi</u> <u>Nymphaea, sp.</u> <u>Nuphar polysepalum</u> <u>Potamogeton sp.</u>
PUB (H,F,K)	Palustrine, Unconsolidated bottom	Pond, pit, hatchingery	
PUS (C)	Palustrine, Unconsolidated shore	Shallow pond	

Table - Cowardin Classification Codes and Descriptions (2 of 2)

NWI CODE WATER REGIME	NWI DESCRIPTION	COMMON DESCRIPTION	CHARACTERISTIC VEGETATION
PAB (H,F)	Palustrine, Aquatic bed	Spring head, aquatic pond	(See L2AB)
PEM (H,F,C,A,B, R,S,T)	Palustrine, Emergent	Wet meadow seep, fresh-tidal river flat	<u>Juncus effusus</u> <u>Carex</u> spp. <u>Phalaris arundinacea</u> <u>Equisetum</u> spp. <u>Scirpus</u> spp. <u>Ranunculus</u> spp. <u>Lysichitum americanum</u> <u>Rumex</u> sp. <u>Typha</u> spp.
PSS (F,C,A,B, R,S,T)	Palustrine, Scrub-shrub	Shrub swamp thicket, river flat or bars	<u>Salix</u> spp. <u>Spirea douglasii</u> <u>Alnus rubra</u> <u>Cornus stolonifera</u> <u>Acer</u> spp.
PFO (F,C,A,B, R,S,T)	Palustrine, Forested	Swamp, bottomland or river banks	<u>Alnus rubra</u> <u>Populus trichocarpa</u> <u>Acer macrophyllum</u> <u>Fraxinus latifolia</u> <u>Tsuga heterophylla</u> <u>Thuja plicata</u> <u>Betula papyrifera</u>

WATER REGIME MODIFIERS

Tidal

- (L) Subtidal. The substrate is permanently flooded with tidal water.

Fresh-Water Tidal

- (V) Permanently Flooded-Tidal.
- (T) Semipermanently Flooded-Tidal.
- (S) Temporarily Flooded-Tidal.
- (R) Seasonally Flooded-Tidal.

Non-Tidal

- (H) Permanently Flooded -- Water covers land surface throughout the year in all years.
- ~~(G) Intermittently Exposed -- Surface water is present throughout the year except in years of extreme drought.~~
- (F) Semipermanently Flooded -- Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.
- (C) Seasonally Flooded -- Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is extremely variable, extending from saturated to a water table well below the ground surface.
- (B) Saturated -- The substrate is saturated to surface for extended periods during the growing season, but surface water is seldom present.
- (A) Temporarily Flooded -- Surface water present for brief periods during growing season, but water table usually lies well below soil surface. Plants that grow both in uplands and wetlands are characteristic of this water regime.
- (K) Artificially Flooded -- The amount and duration of flooding is controlled by means of pumps or siphons in combination with dikes or dams.

E. MAP PREPARATION

The wetland classifications that appear on these National Wetlands Inventory (NWI) basemaps are in accordance with Cowardin et al (1977). The delineations were produced through stereoscopic interpretation of 1:58,000 scale color infrared photographs that were taken during July 1980, July 1981, August 1981 and August 1983.

Field checks of areas found within the mapping area were made prior to the actual delineation of wetlands. The first initial reconnaissance was held in August, 1986 with subsequent ground truthing in February, 1988. Field check sites were selected to clarify varying signatures found on the imagery. The photographic signatures were then identified in the field using vegetation types, soil types, and collateral data.

The user of the map is cautioned that, due to the limitations of mapping primarily through aerial photointerpretation, a small percentage of wetlands may have gone unidentified. Since the photography was taken at a particular time and season, there may be discrepancies between the map and current field conditions. Changes in landscape which occurred after the photography was taken would result in such discrepancies. The changes found in this mapping effort were substantial, especially near the urban areas.

Aerial photointerpretation and drafting were completed by Martel Laboratories, Inc., St. Petersburg, Florida.

F. SPECIAL MAPPING PROBLEMS

None

G. MAP ACQUISITION

To discuss any questions concerning these maps or to place a map order:

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To order maps only, contact:

National Cartographic Information Center
U.S. Geological Survey
National Center
Reston, VA 22092

Maps are identified by the name of the corresponding USGS 1:24,000 scale topographic quadrangle name. Topographic map indices are available from the U.S. Geological Survey.

H. LITERATURE CITED

Bailey, Robert G.; 1980. Description of the Ecoregions of the United States ; United States Department of Agriculture, Forest Service. Miscellaneous Publication No. 1391.

Cowardin, L.M.; V. Carter; F.C. Golet, and E.T. LaRoe; 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Department of the Interior, Fish and Wildlife Service. Biological Services Program, Washington, D.C. 103 p.

Soil Survey of King County, Washington. United States Department of Agriculture, Soil Conservation Service.

Soil Survey of Skagit County, Washington. United States Department of Agriculture, Soil Conservation Service.

Soil Survey of Snohomish County, Washington. United States Department of Agriculture, Soil Conservation Service.

Soil Survey of Whatcom County, Washington. United States Department of Agriculture, Soil Conservation Service.

Wetland Plants of the Pacific Northwest, 1984. United States Army Corps of Engineers.

FIGURE 1
LOCATION OF STUDY AREA

