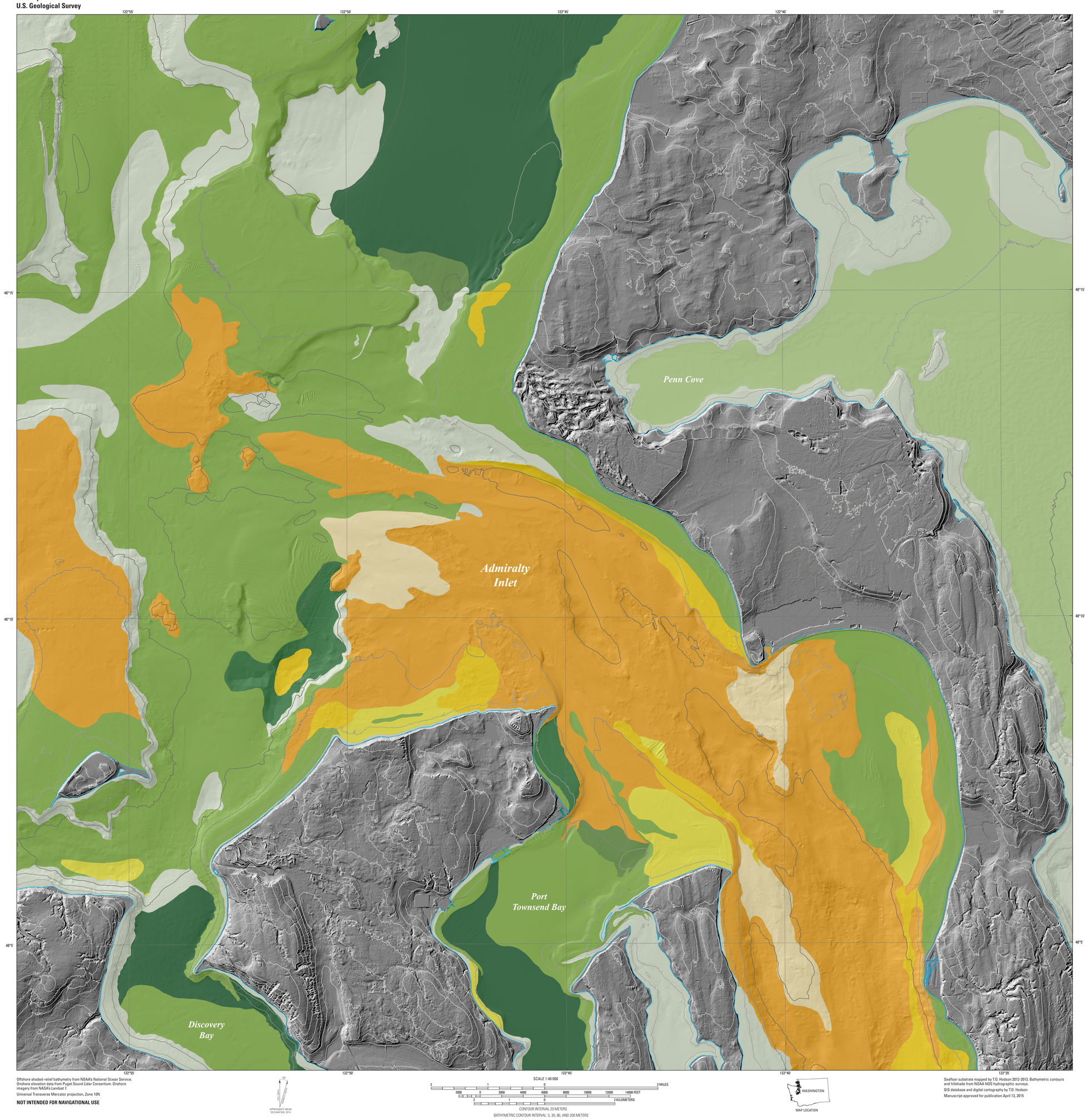
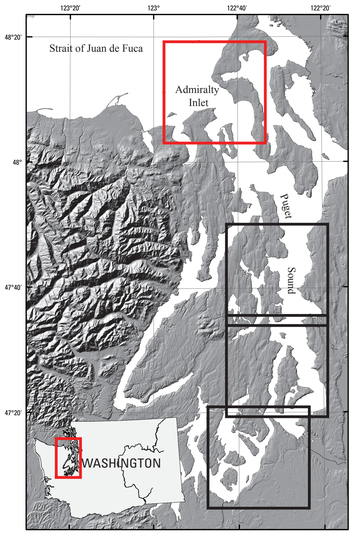
U.S. Department of the Interior
U.S. Geological Survey

Open-File Report 2015–1073
Sheet 3 of 4
Pamphlet accompanies map





DISCUSSION

This seafloor map was produced using manual classification of seafloor substrate based on seafloor video observation, knowledge of estuarine and glacial processes, and two derivative bathymetric properties—seafloor rugosity (a dimensionless measure of seafloor roughness) and slope. In addition, current patterns, inferred from bathymetric position and local morphology, were fundamental to our interpretations.

Substrate classification follows the Coastal and Marine Ecological Classification Standard (CMECS, v. III, June 2009) developed by the National Oceanic and Atmospheric Administration (NOAA) and NatureServe (Madden and others, 2009). Units displayed on this map represent the substrate component class, subclass, or group level of the CMECS classification draped over the shaded bathymetry. Bathymetric contours represent the division between the Shallow Infralittoral (0–5 m), Deep Infralittoral (5–30 m), Circalittoral (30–80 m), Circalittoral offshore (80–200 m), and Mesobenthic (200–1,000 m) depth zones.

The distribution of benthic organisms is closely tied to physical attributes of the seafloor, such as substrate, morphology, current exposure, and water depth. As a result, these attributes are often used to predict the distribution of benthic habitats in lieu of direct observation. Substrate abundace statistics are presented in table 1. Seafloor substrates, and therefore habitats, in the Southern Salish Sea are quite diverse, ranging between fine mud in the deeper basins and sheltered lagoons, coastal and deltaic sands, and course cobbles and boulders on the tidally winnowed sills and submarine moraines. The distribution of potential habitats is strongly influenced by tidal currents, proximity to modern sediment sources (for example, rivers feeding sediment from inland or landslides induced by anthropogenic activity and the historic seismicity of the region), and local variability in the underlying stratigraphy.

REFERENCES CITED

Madden, C.J., Goodin, K., Allee, R.J., Cicchetti, G., Moses, C., Finkbeiner, M., and Bamford, D., 2009, Coastal and marine ecological classification standard, version 3: National Oceanic and Atmospheric Administration and NatureServe, 126 p., http://coast.noaa.gov/digitalcoast/publications/cmecs/.

Table 1. Substrate distribution in the Admiralty Inlet vicinity.

CMECS substrate classification	Percentage of total area	Area (km2)
Unconsolidated mineral substrate	15.5	96.9
Coarse unconsolidated substrate	2.3	14.1
Gravel	22.5	140.4
Gravel Mix	1.9	12.1
Gravelly	1.9	11.7
Fine unconsolidated substrate	10.2	63.8
Sand	35.1	219.0
Sandy mud	0.6	3.6
Muddy sand	1.1	6.8
Mud	8.8	54.9

EXPLANATION

- Unconsolidated mineral substrate
  - Coarse unconsolidated substrate
    - Gravel
    - Gravel mix
    - Gravelly
  - Fine unconsolidated substrate
    - Sand
    - Sandy mud
    - Muddy sand
    - Mud

Offshore shaded-relief bathymetry from NOAA's National Ocean Service.
Onshore elevation data from Puget Sound Lidar Consortium. Onshore imagery from NASA's Landsat 7.
Universal Transverse Mercator projection, Zone 10N

NOT INTENDED FOR NAVIGATIONAL USE

APPROXIMATE MEAN DECLINATION, 2015

SCALE 1:40 000

2 0 1 0 2 MILES
2000 0 2000 4000 6000 8000 10000 12000 14000 FEET
2 1 0 2 KILOMETERS

CONTOUR INTERVAL 20 METERS
BATHYMETRIC CONTOUR INTERVAL: 5, 30, 80, AND 200 METERS

WASHINGTON
MAP LOCATION

Seafloor substrate mapped by T.O. Hodson 2012-2013. Bathymetric contours and hillshade from NOAA NOS hydrographic surveys.
GIS database and digital cartography by T.O. Hodson
Manuscript approved for publication April 13, 2015

CMECS Substrate Component Map of the Admiralty Inlet Map Area, Washington

By
Timothy O. Hodson,[1] Guy R. Cochrane,[2] Andrew C. Ritchie,[3] and Crescent H. Moegling[4]

2015

[1]Northern Illinois University;
[2]U.S. Geological Survey;
[3]National Park Service;
[4]National Oceanic and Atmospheric Administration

ISSN 2331-1258 (online)
http://dx.doi.org/10.3133/ofr20151073

For sale by U.S. Geological Survey, Information Services, Box 25286, Federal Center, Denver, CO 80225, 1–888–ASK–USGS

Digital files available at http://pubs.usgs.gov/of/2015/1073 and http://dx.doi.org/10.3133/ofr20151073

Suggested Citation: Hodson, T.O., Cochrane, G.R., Ritchie, A.C., and Moegling C.H, 2015, CMECS Substrate Component Map of the Admiralty Inlet map area, Washington; sheet 3 in, Cochrane, G.R., Dethier, M.N., Hodson, T.O., Kull, K.J., Golden, N.E., Ritchie A.C., Moegling, C.H., and Pecurnik, R.E., (G.R. Cochrane, ed.), 2015, Salish Sea Map Series—Admiralty Inlet, Washington: U.S. Geological Survey Open-File Report 2015–1073, pamphlet 34 p., 4 sheets, scale 1:40,000, http://dx.doi.org/10.3133/ofr20151073.