

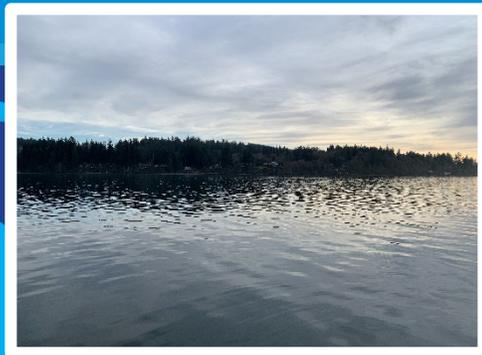


**CONFLUENCE**  
ENVIRONMENTAL COMPANY

Vashon Island - Colvos Passage Site  
**2022 UNDERWATER SEABED AND SAV SURVEY**

*Prepared for:*

**Vashon Kelp Forest, LLC**  
January 31, 2022



# **Vashon Island – Colvos Passage Site 2022 UNDERWATER SEABED AND SAV SURVEY REPORT**

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## 1.0 INTRODUCTION

This document summarizes a field survey that occurred on January 14, 2022, to characterize the seabed, extent of submerged aquatic vegetation (SAV), and presence of other organisms in the vicinity of Colvos Passage, west of Vashon Island and just north of Fern Cove (Figure 1).

Vashon Kelp Forest, LLC is completing preliminary site evaluations with the intent of potentially siting a subtidal kelp and shellfish operation. This activity may require permits from the Washington Department of Fish and Wildlife (WDFW) and the U.S. Army Corps of Engineers (Corps) as well as use authorization from Washington Department of Natural Resources (DNR). Under the Washington Administrative Code (WAC), eelgrass and macroalgae are defined as saltwater habitats of special concern (WACs 220-110-250 [3][a, b]). WDFW requires project proponents to: 1) avoid impacting eelgrass and macroalgae, 2) minimize unavoidable impacts, and 3) mitigate for any impacts (WDFW 2008). The Corps requires similar surveys to determine the distribution of eelgrass at the project site (Corps 2018). Washington DNR requires project proponents to demonstrate that proposed use is appropriate for the site and that impacts to aquatic resources are avoided or minimized.

Confluence Environmental Company (Confluence) was retained to perform a site survey to characterize seabed conditions and evaluate the site for the presence of submerged aquatic vegetation including eelgrass and macroalgae (Table 1). Prior to field surveys, Confluence staff coordinated with Sean Carlson and Jessica Olmstead at Washington DNR to anticipate any requirements from DNR.

Surveys were designed to meet WDFW's as well as the Corps' needs. Confluence followed WDFW's Eelgrass/Macroalgae Habitat Interim Survey Guidelines for preliminary surveys. This method was additionally designed to meet the requirements of the Corps' Tier 1 eelgrass survey guidelines.

**Table 1. Data Collection Categories**

Category	Description
<b>Attached SAV percent cover</b>	Eelgrass or macroalgae with apparent points of attachment to substrate or structure. Categorized as 0%, 1-25%, 26-69%, or >70%.
<b>Eelgrass presence</b>	Presence of any species of seagrass. Categorized as Present or Absent.
<b>Unattached SAV percent cover</b>	Vegetation with no apparent attachment to substrate. Categorized as <10%, 11-25%, 26-75%, or >75%.
<b>Substrate</b>	Characterization of coarseness of substrate. Categorized as Cobble, Gravel/Sand, or Fines
<b>Geoduck presence</b>	Presence of evidence (shell, burrows, visible siphons) of geoduck ( <i>Panopea generosa</i> ). Categorized as Present or Absent.

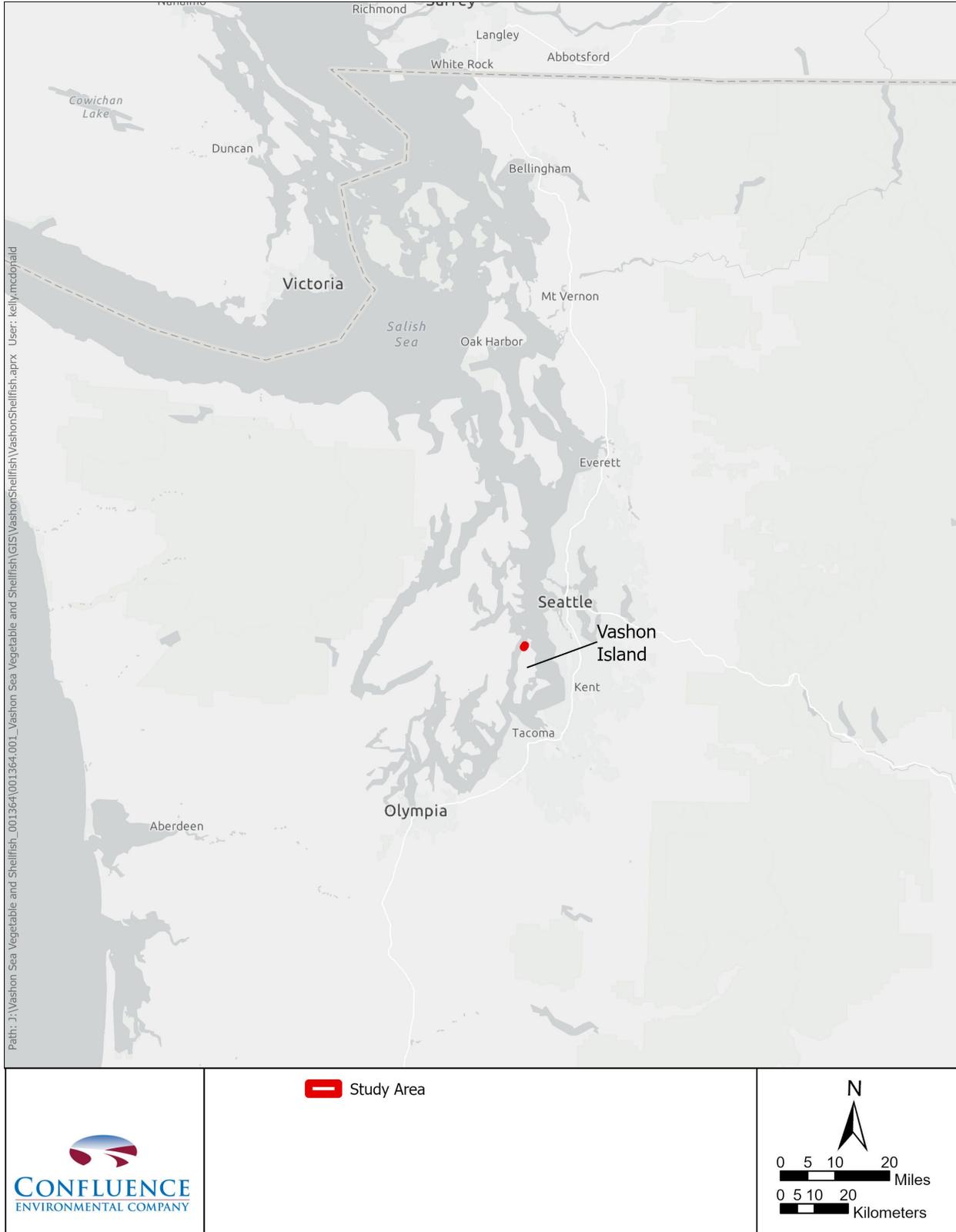


Figure 1. Survey Vicinity

## 2.0 METHODS

Towed video data were collected by surveying a series of video transects approximately parallel to the western shore of nearby Vashon Island (Figure 2). The initial 4 transects were spaced 50 feet apart while the final 5 transects were 100 feet apart. The area surveyed was a polygon composed of two quadrilaterals, with a total length of approximately 0.55 mile (886 meters) and width of 0.13 mile (210 meters). A towed video system with integrated global positioning system (GPS) was used to collect information about the seafloor vegetative cover and substrate material. The video system electronically recorded latitude and longitude to aid in the mapping of the collected characteristic data. The boat maintained a speed of approximately 1 knot and the video was constantly monitored to confirm that the camera was close enough to the seafloor to determine vegetative cover and substrate. Every attempt was made to follow the planned transects shown in Figure 2. Navigation difficulties associated with wind, current, and waves resulted in minor differences in the actual vs. planned transects (Figure 3). Actual position of the boat was recorded at all times during the surveys (Figure 3).

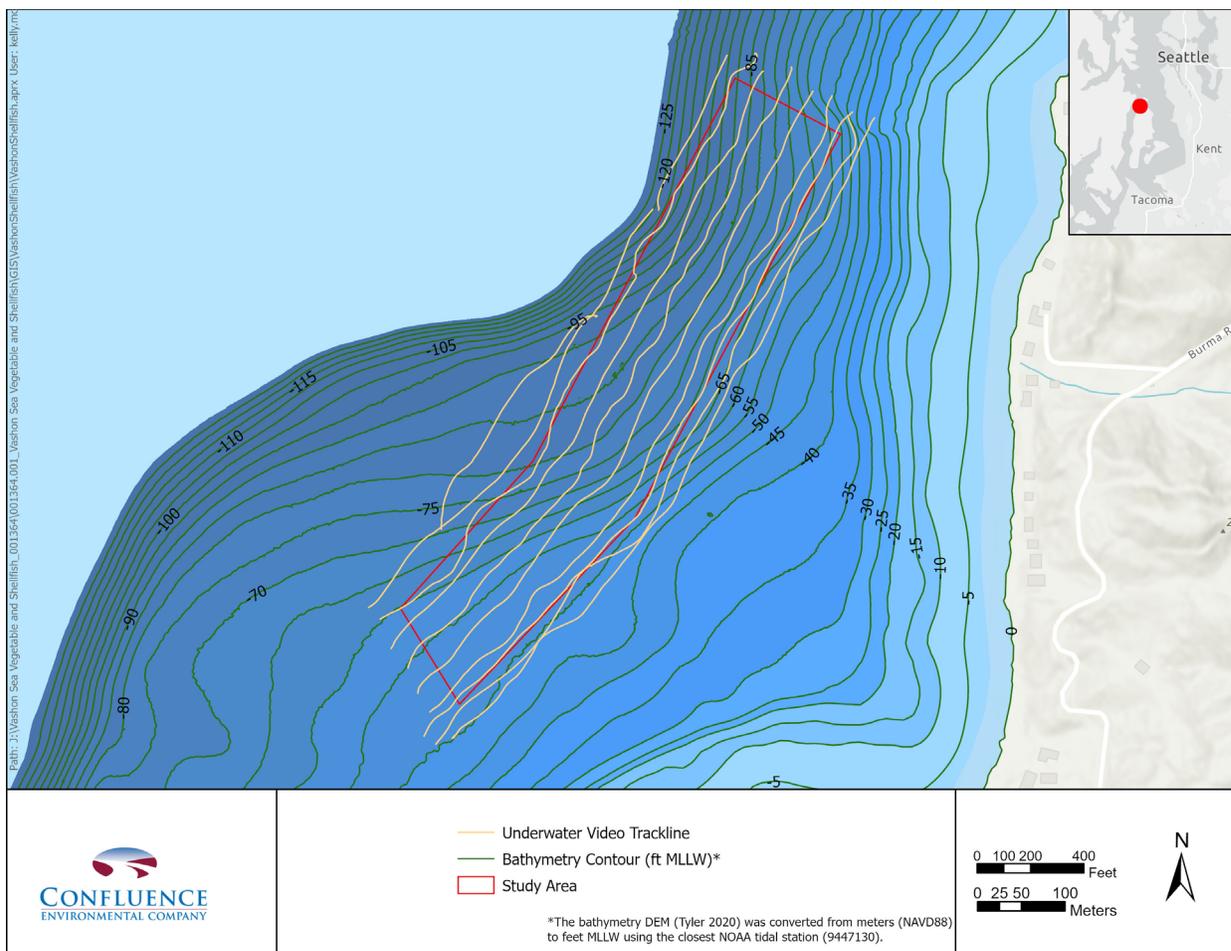
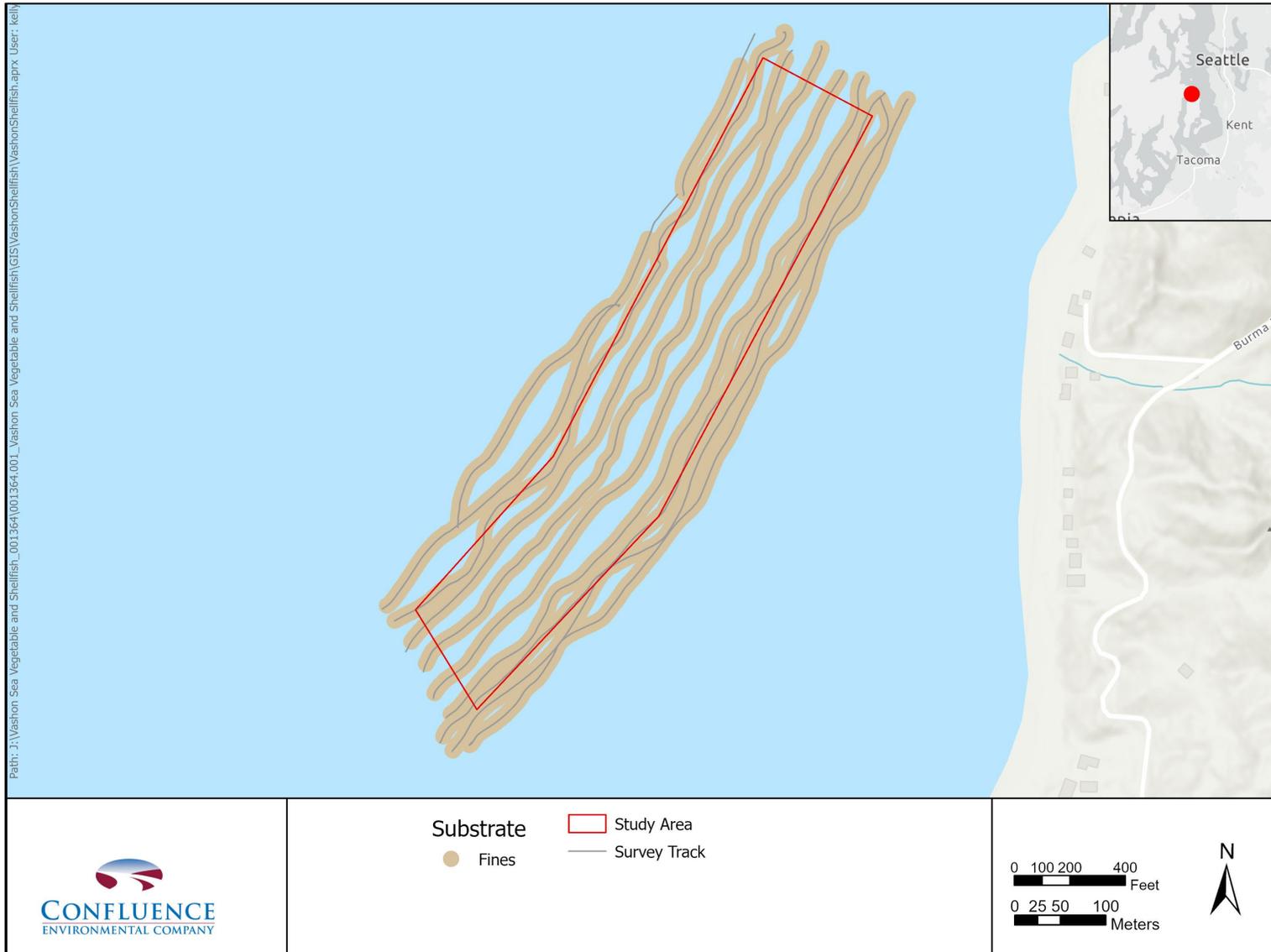


Figure 2. Survey Transects and Bathymetry



**Figure 3. Substrate Types Observed During 2022 Field Survey**

The shallower subtidal habitat shoreward of the surveyed area was previously monitored by Washington DNR in 2018. DNR recorded presence of eelgrass at depths up to approximately 18 feet below mean lower low water (MLLW). The 2022 survey area lies further from shore and in deeper water than the 2018 DNR survey.

The recorded video was analyzed by a Confluence biologist who recorded substrate characteristics, percent cover of both attached and unattached SAV, and presence and absence of both eelgrass and geoducks for the entirety of each survey transect. One data point per second was recorded from the survey video and integrated GPS data. At a boat speed of approximately 1 knot, sample data points were spaced approximately 0.5 meters apart. These data are presented in Figure 3 and Figure 4.

### 3.0 FINDINGS

The surveyed area lies between approximately 50 feet below MLLW and 120 feet below MLLW. The substrate surveyed was uniformly composed of fine-grained soft sediments with scattered empty shells of bivalves (primarily oysters and medium-sized clams). There was no evidence of larger grained sediments, rocky outcrops, or other hard substrate.

The survey track approached within approximately 0.13 mile (208 meters) of the nearest shoreline at the northeast corner of the parcel area. The southwest corner of the survey area was furthest from shore, approximately 0.45 mile (717 meters) from the nearest shoreline.

Limited debris was observed within the survey lines. Two individual pieces of pipe or lumber (<10 feet) were the most significant debris. A small number of pieces of litter (cans or bottles) were also observed.

Attached eelgrass or order Laminaria kelp was not observed in the surveyed area. No areas or specimens of Laminariales (kelp) or eelgrass were observed anywhere in the surveyed area. Much of the observed SAV was patches of detached or loosely aggregated macroalgae. Detached algal material is comprised of fragments that break off of algal blades or stipes. Many algae and kelp species die back in the winter and vegetative material drifts along the seabed before decomposing. The vegetation observed is comprised of detached kelp detritus that has likely drifted to the site from adjacent shallow subtidal areas. Much of the detached material is in clumps or waves along the seabed. From the condition of the algal specimens observed and the quality of video, it was not possible to positively identify any observed algae. Based on visual observations, substrate type, and habitat (depth and location), it was possible to determine that neither large kelps nor eelgrass are present in the surveyed area. Apart from occasional debris, no suitable material for kelp attachment was observed on the seabed.

Invertebrates were abundant in the survey area. The most numerous invertebrates were members of the phylum Cnidaria, including, in order of abundance, slender sea pen (*Stylatula elongata*), Gurney's

sea pen (*Ptilosarcus gurneyi*), plumose anemone (*Metridium senile*), and burrowing anemone (*Pachycerianthus fimbriatus*). Empty shells of bivalves were abundant, including identifiable shells of Pacific oyster (*Crassostrea gigas*) and heart cockle (*Clinocardium nuttallii*), with other shells of medium sized clams, though no living specimens were observed. Observed echinoderms were approximately a dozen individuals each of leather star (*Dermasterias imbricata*) and California sea cucumber (*Apostichopus californicus*). A small number of individual adult Dungeness crab (*Metacarcinus magister*) and several pieces of crab shells were observed.

A small number of demersal finfish occurred in the area surveyed. Unidentified flatfish (<10) and two unidentified sculpin-like fish were observed.

Motion blur in the captured video from low light conditions largely precludes inclusion of still frame images of representative organisms. Appendix A contains some representative images of the substrate and example photos of observed organisms.

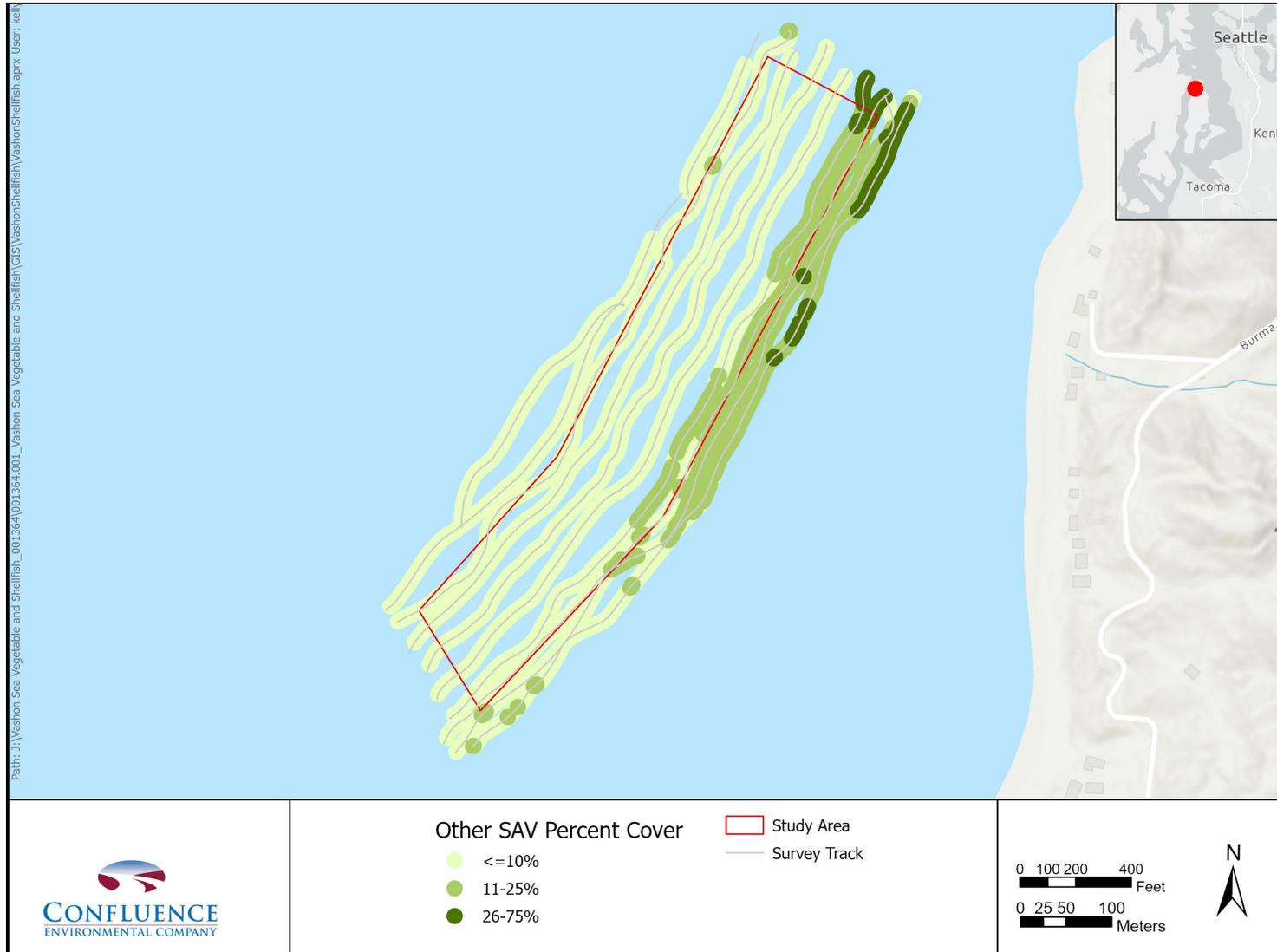


Figure 4. Submerged Aquatic Vegetation (SAV) Observed During 2022 Field Survey

## 4.0 REFERENCES

- Corps. (U.S. Army Corps of Engineers). 2018. Components of a Complete Eelgrass Delineation Report. January 9, 2018. Available online at:  
<https://www.nws.usace.army.mil/Portals/27/docs/regulatory2/FormsEtc/Components%20of%20Eelgrass%20Delineation%2020180109.pdf?ver=2018-01-12-102015-010>
- Washington Department of Fish and Wildlife. 2008. Eelgrass/Macroalgae Habitat Interim Survey Guidelines. Rev. 06/16/2008.

A large, light blue abstract shape that starts as a thin horizontal line at the top left and curves downwards and to the right, ending in a rounded bottom edge. It serves as a background for the text.

# Appendix A

## Site Photos

## Representative and Example Photos



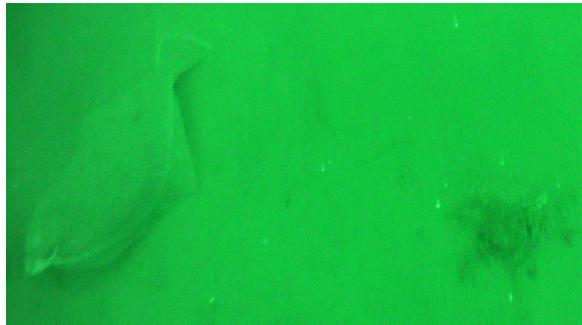
**Gurney's sea pen (Representative Image)**



**Dungeness crab (Representative Image)**



**California sea cucumber (Vashon Site)**



**Flatfish (Vashon Site)**



**Plumose anemone (Vashon Site)**



**Unidentified algae fragments (Vashon Site)**



**Fine substrate and red or brown algae(Vashon Site)**



**Fine substrate and unattached SAV example (Vashon Site)**



**Panoramic view of Vashon Island shoreline from south edge of study area.**