SITE HAZARD ASSESSMENT

WORKSHEET 1

Summary Score Sheet

SITE INFORMATION:

Anacortes Port Log Yard
718 4th St
Anacortes, WA 98221
Skagit County Parcel ID: P32908

Latitude: 48.52068
Longitude: -122.60684
FSID #: 21898438
CSID #: 3604

Site scored/ranked for the August 2017 update of the Site Register by Polly Dubbel, Skagit County Public Health Department on April 13, 2017.

SITE DESCRIPTION:

The Anacortes Port Log Yard Site (site) is located within the near shore sediments of Guemes Channel. The site has also been referred to as Anacortes Port Frontier Ind and Frontier Industries Inc. The site does not include upland areas, only the wood waste impacted intertidal and marine sediment portions of parcel 32908, owned by Port of Anacortes (Port) and extending into Guemes Channel. The area is within the City of Anacortes and is zoned Commercial Marine. Refer to Figure 1 for an aerial view of the site from 2015.

The site is surrounded by parcels owned by the Port to the west, east, and south. The north portion of the site includes and is bordered by Guemes Channel. The 14 acre Pier 2 borders the site to the west and Dock 61 borders the site to the east. The City of Anacortes Wastewater Treatment Plant discharges their treated water through a pipe located just to the west of Pier 2.

Pier 2 is a deep water moorage marine terminal facility used for berthing and multiple products loading and offloading, including petroleum coke and prilled sulfur loading. A truck/tire washing facility is present on Pier 2 and used to avoid track out from the site. A marine float manufacturer occupies a temporary structure on the southeast portion of Pier 2. All stormwater and industrial waste water from Pier 2 discharge to the City of Anacortes waste water treatment plant.

Dock 61 is used for commercial transient vessel moorage. Pier 1 and upland property to the south of the site are occupied by Port offices and facilities, Dakota Creek Industries, Inc. shipbuilding and repair business, and Puget Sound Rope industrial rope manufacturing. Upland and to the east of Pier 61 is a full service restaurant.

The former Wyman's Marina and Wholesale Supply, FSID 2821735, is located to the east of the restaurant, approximately 270 feet from the Port Log Yard site. This was a contaminated upland and marine sediment site that achieved No Further Action through Voluntary Clean Up in 2015. A habitat mitigation project was completed at Wyman's Marina site in 2014.

The upland properties surrounding the site are served by City of Anacortes for drinking water and sanitary sewer. Since the site is a marine sediment site only the presence of wells within 2 miles of the site was not evaluated.

SITE BACKGROUND:

From the mid-1960's to 2004 the site was used for handling logs being floated in on rafts from Guemes Channel. Logs were hauled out to Pier 2 and the south uplands for sorting and storage. The aerial photograph of the site from 1969 confirms significant log storage on Pier 2 and south uplands (Figure 2). After 2004, Dock 61 on the east side of the side site appears to have been in use for small commercial vessels and barges, similar to its current use. Pier 2 continued to be used as deep water moorage. The temporary structure and other areas on Pier 2 were used in some years since 2004 for Port storage of dredging and wood waste during various cleanup actions.

SITE CONTAMINATION:

Following closure of the log haul out, the Port worked with the Washington State Department of Ecology (Ecology) to characterize sediment contamination at the site. Surface sediments at the site were found to contain up to 75 percent wood waste by volume. In addition to wood waste, the investigation found levels of organic carbon and volatile solids above recommended levels.

Sediment characterization studies were completed at the site in 2004, 2008, 2009, 2010, 2012, and 2015. A benthic evaluation was completed in 2010. Per Ecology, 2014, investigations from 2008 to 2010 found that sediment samples failed to meet Ecology's regulatory levels: the Sediment Cleanup Objective and Cleanup Screening Levels criteria for benthic invertebrate community health (i.e., living in or near marine sediments). These investigations also indicated the site may contain dioxins/furans at levels that exceed human health risk based sediment cleanup levels.

In 2014 the Port and Ecology entered into an Agreed Order for the Anacortes Port Log Yard under the Model Toxics Control Act. The 2015 sediment evaluation was conducted for the Remedial Investigation/Feasibility Study (RI/FS) to determine the preferred clean up action at the site. Results from the RI/FS are in the review process at Ecology. From the RI/FS draft summary of sediment data from 2004 through 2015 the following chemicals of concern were found:

Anacortes Port Log Yard
Preliminary Sediment Cleanup Level Exceedances
GeoEngineers, 2016 File No. 5147-016-06

Chemical	Benthic Health	Human Health
Arsenic		X
Cadmium		X
cPAHs		X
Dioxin/Furans	X	X
PCBs		X
Tributyltin	X	X

PAST REMEDIATION ACTIVITIES:

Remediation activities are pending at the site.

CURRENT SITE CONDITIONS:

I visited the site on Wednesday March 22, 2017 at approximately 4:10 pm with representatives from the Port of Anacortes. The weather was cloudy with gusting winds and temperatures in the low 50s. The site conditions and land use were as shown in the aerial site diagram (Figure 1), photos (Figure 3) and discussed in the site description. There were no visual or odor indicators of contamination at the site. The tide was between 4 and 5 feet at the time and no sediments were exposed.

SPECIAL CONSIDERATIONS:
Checked boxes indicate routes applicable for WARM scoring. This is a marine sediment only site so the air routes and groundwater routes were not applicable to this scoring.

☒ **Surface Water**

☐ **Air**

☐ **Groundwater**

ROUTE SCORES:

Surface Water/Human Health:	40.0	Surface Water/Environmental:	85.0
Air/Human Health:	NS	Air/Environmental:	NS
Groundwater/Human Health:	NS		

OVERALL RANK: 2

SOURCES USED IN SCORING

1. April 2017, Skagit County Health Department, Anacortes Port Log Yard files and notes.
2. September 6, 2016, GeoEngineers, Draft Summary of Sediment Field Screening, Observed Wood and Chemical Analytical Data, Anacortes Port Log Yard, Anacortes, Washington.
3. September 2014, Washington State Department of Ecology, Anacortes Port Log Yard, Publication Number 14-09-063.
4. February 25, 2011, GeoEngineers, Supplemental Sediment Characterization Report, Pier 2 Log Haul Out Facility, Anacortes, Washington.
5. December 2010, NewFields, Port of Anacortes Log Haul Out site – Benthic Evaluation.
6. April 1992, Washington Department of Ecology, WARM Scoring Manual.
7. November 2008, Washington Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring.
8. April 1966, National Weather Service, Washington Climate Data.
9. April 2017, Skagit County Mapping, GeoSkagit Version 2.1.

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

List those substances to be considered for scoring: Source: 1, 2, 3, 4, 5
Arsenic, PCBs, Benzo(a)pyrene (toxicity values also apply to cPAHs), Dioxins/Furans.

Explain basis for choice of substance(s) to be used in scoring.
Substances documented in surface sediments at levels exceeding human health and benthic health cleanup screening levels.

List those management units to be considered for scoring: Source: 1, 2, 3, 4, 5
Surface sediments

Explain basis for choice of unit to be used in scoring.
Documented benthic invertebrate impact at the site exceeding the clean-up screening level (CSL). Documented surface sediment contamination. Surface sediments directly impacts surface water.

2. AIR ROUTE

List those substances to be considered for scoring: Source:
Route not scored. Site is a marine sediment site only.

Explain basis for choice of substance(s) to be used in scoring.
NA

List those management units to be considered for scoring: Source:
NA

Explain basis for choice of unit to be used in scoring.
NA

3. GROUND WATER ROUTE

List those substances to be considered for scoring: Source:
Route not scored, site is a marine sediment site only.

Explain basis for choice of substance(s) to be used in scoring.
NA

List those management units to be considered for scoring: Source:
NA

Explain basis for choice of unit to be used in scoring.
NA

WORKSHEET 4
Surface Water Route

1.0 SUBSTANCE CHARACTERISTICS

1.2 Human Toxicity

	Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE	PF*	
1	Arsenic	50	8	763	5	0.001	5	A	1.75	4
3	PCBs	0.5	10	1315	3	ND	ND	B2	ND	6
4	Benzo(a)pyrene	0.2	10	50	10	ND	ND	B2	12	7
5	Dioxins/Furans	$5.0x10^{-5}$	10	ND	ND	ND	ND	B2	0.03	8

* *Potency Factor*

Source: 1,2,4

Highest Value: 10
(Max = 10)

Plus 2 Bonus Points +2

Final Toxicity Value: 12
(Max = 12)

1.2 Environmental Toxicity – Marine Water

	Substance	Acute Water Quality Criteria		Non-Human Mammalian Acute Toxicity	
		(µg/L)	Value	(mg/kg)	Value
	Benthic abundance testing data used; supersedes chemical toxicity. Maximum value assigned due to documented benthic invertebrate impact at site.				
1					
2					
3					
4					

Source: 1,3,5

Highest Value: 10
(Max = 10)

1.3 Substance Quantity

Explain Basis: Estimated of area of wood waste contamination in surface sediments = 62,500 square feet.

Source: 1,2,9

Value: 8
(Max = 10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment:** No containment **Explain basis:** Contaminated surface sediment, no containment	1, 2,3,4,5,6	**10** (Max = 10)
2.2	**Surface Soil Permeability:** Default to maximum value due to contaminated sediment in direct contact with surface water.	1,2,3,4,5,6	**7** (Max = 7)
2.3	**Total Annual Precipitation:** Default to maximum value due to contaminated sediment in direct contact with surface water.	6,8	**5** (Max = 5)
2.4	**Max 2yr/24hr Precipitation:** Default to maximum value due to contaminated sediment in direct contact with surface water.	6	**2** (Max = 2)
2.5	**Flood Plain:** Default to maximum value due to contaminated sediment in direct contact with surface water.	1,2,3,6	**2** (Max = 2)
2.6	**Terrain Slope:** Default to maximum value due to contaminated sediment in direct contact with surface water.	1,2,3,6	**5** (Max = 5)

3.0 TARGETS

		Source	Value
3.1	**Distance to Surface Water:** 0 feet, surface sediment adjacent to surface water	1,2,3,6	**10** (Max = 10)
3.2	**Population Served within 2 miles (see WARM Scoring Manual Regarding Direction):** NA, marine water site	NA	**0** (Max = 75)
3.3	**Area Irrigated by surface water within 2 miles :** NA, marine water site	NA	**0** (Max = 30)
3.4	**Distance to Nearest Fishery Resource:** Guemes Channel <1000feet	1,6,9	**12** (Max = 12)
3.5	**Distance to, and Name(s) of, Nearest Sensitive Environment(s):** Guemes Channel <1000 feet	1,6,9,	**12** (Max = 12)

4.0 RELEASE

Explain Basis: Substance documented in surface sediments, score as release to surface water.	Source: 1,2,3,5,6 **Value: 5** (Max = 5)

Surface Water Route – Human Health Pathway

$SW_H = (SUB_{SH} \bullet 40/175) \bullet [(MIG_S \bullet 25/24) + REL_S + (TAR_{SH} \bullet 30/115)] / 24$

where,

SW_H =	Pathway Score for Surface Water-Human Health
SUB_{SH} =	(Human Toxicity Value + 3) • (Containment + 1) + Substance Quantity
MIG_S =	Soil Permability + Annual Precip. + Rainfall Frequency + Floodplain + Slope
REL_S =	Release to the Surface Water
TAR_{SH} =	Distance to Surface Water + Population Served by Surface Water + Area Irrigated

$SW_H = 48.6$ QUINTILE (February 2017) = 5

Surface Water Route – Environmental Pathway

$SW_E = (SUB_{SE} \bullet 40/153) \bullet [(MIG_S \bullet 25/24) + REL_S + (TAR_{SE} \bullet 30/34)] / 24$

where,

SW_E =	Pathway Score for Surface Water-Environmental
SUB_{SE} =	(Env. Toxicity Value + 3) • (Containment + 1) + Substance Quantity
MIG_S =	Soil Permeability + Annual Precip. + Rainfall Frequency + Floodplain + Slope
REL_S =	Release to Surface Water
TAR_{SE} =	Distance to Nearest Surface Water + Distance to Fisheries Resource + Distance to Sensitive Environment

$SW_E = 93.6$ QUINTILE (February 2017) = 5

SCORE

HUMAN HEALTH PRIORITY = $(H^2 + 2M + L)/8$
= $5^2/8$
= 3.12
= **4**

ENVIRONMENTAL HEALTH PRIORITY = $(H^2 + 2L)/7$
= $5^2/7$
= 3.57
= **4**

FINAL MATRIX RATING = 2 [TP(1)]

FIGURE 1 ANACORTES PORT LOG YARD AND ENVIRONS

2015 aerial photograph with overlays by Polly Dubbel
Photo from GeoSkagit version 2.1, Note: All locations are approximate

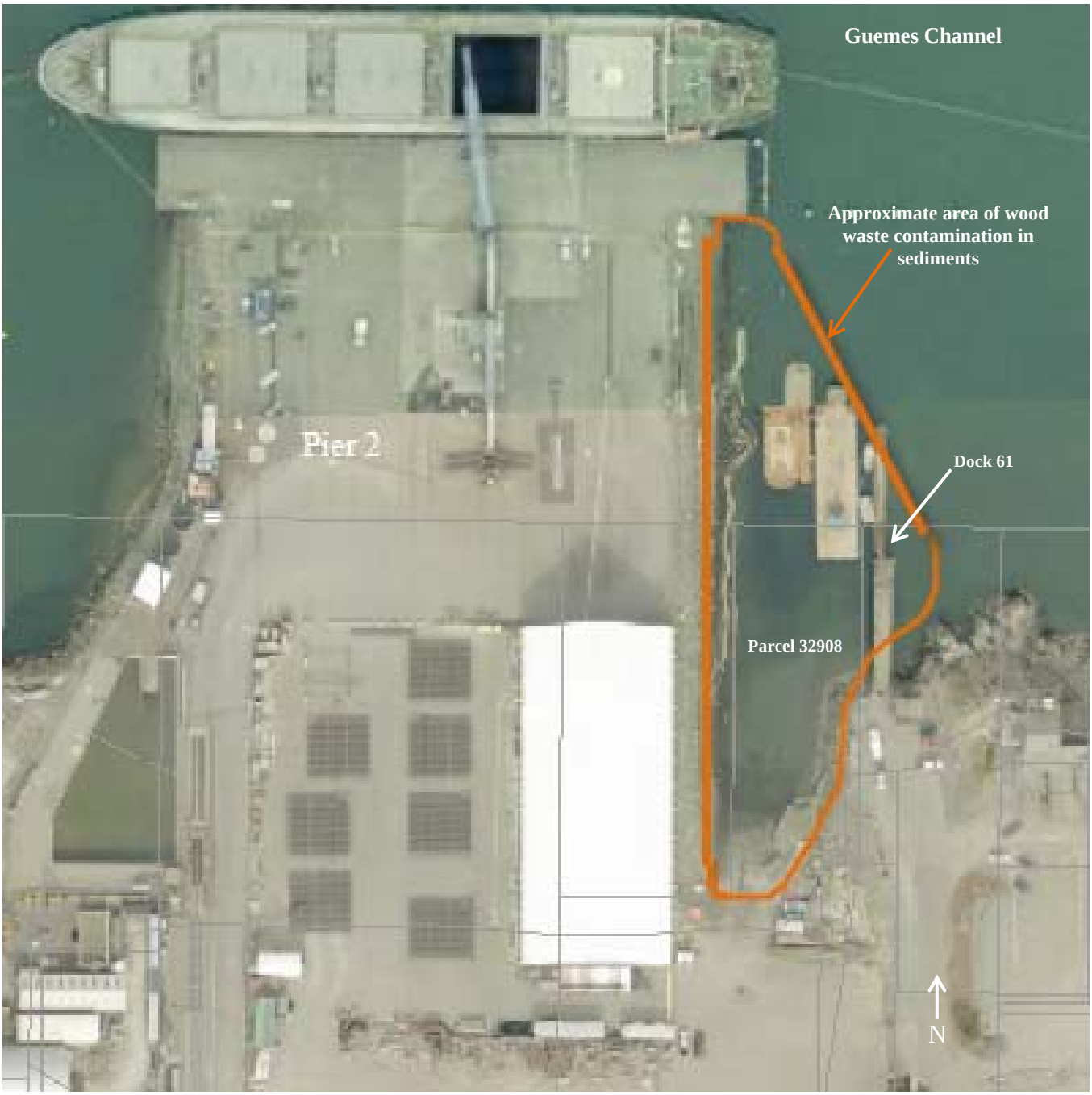

FIGURE 2 ANACORTES PORT LOG YARD AND ENVIRONS 1969

Aerial photo from GeoSkagit version 2.1

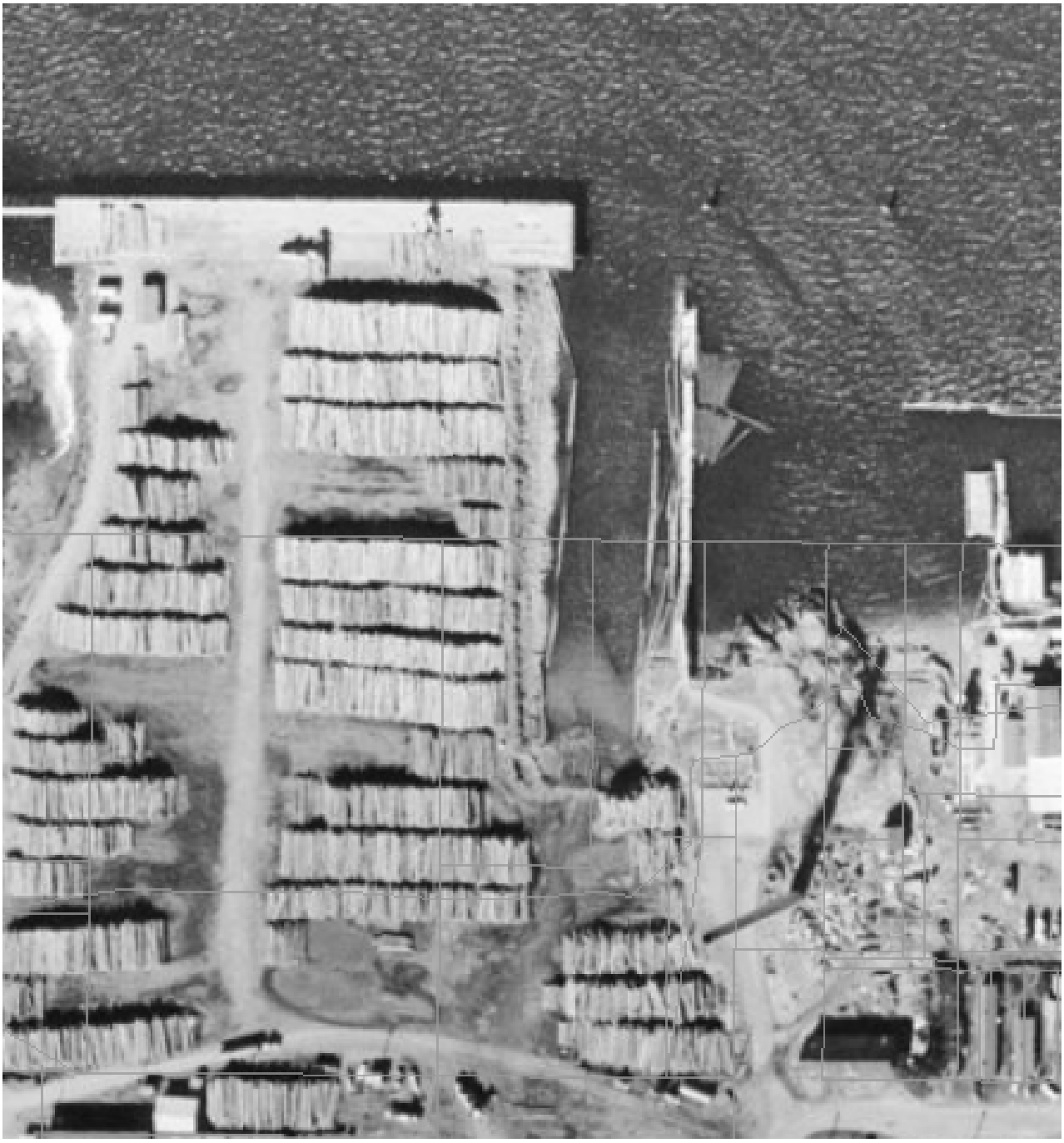

FIGURE 3 PHOTOS FROM 3/22/17 SITE HAZARD ASSESSMENT SITE VISIT

by Polly Dubbel

Anacortes Port Log Yard view to southwest from Pier 61

Anacortes Port Log Yard view to northwest from Pier 61