DEPARTMENT OF
ECOLOGY
State of Washington

2013 Addendum to Quality Assurance Project Plan

The Puget Sound Ecosystem Monitoring Program/Urban Waters Initiative: Sediment Monitoring in the Eastern Strait of Juan de Fuca and Elliott Bay

December 2012

Publication No. 12-03-129

Publication Information

Addendum

This addendum is an annual addition and update to an original Quality Assurance Project Plan. The addendum is not a correction (errata) to the original plan.

This addendum is available on the Department of Ecology's website at https://fortress.wa.gov/ecy/publications/summarypages/1203129.html. Data are available on Ecology's Environmental Information Management (EIM) website at www.ecy.wa.gov/eim/index.htm. Search Study IDs UWI2013, UWI2007.

Original Publication

Quality Assurance Project Plan: The Puget Sound Assessment and Monitoring Program: Sediment Monitoring Component

Publication No. 09-03-121.

The Quality Assurance Project Plan is available on the Department of Ecology's website at https://fortress.wa.gov/ecy/publications/summarypages/0903121.html.

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DEPARTMENT OF ECOLOGY

Environmental Assessment Program

December 2012

TO: Puget Sound Ecosystem Monitoring Program Sediment Component
Interested Parties

THROUGH: Robert F. Cusimano, Section Manager, Environmental Assessment Program
Carol Maloy, Unit Supervisor, Environmental Assessment Program

FROM: Margaret Dutch, Environmental Assessment Program

SUBJECT: 2013 Addendum to Quality Assurance Project Plan for: The Puget Sound Assessment and Monitoring Program: Sediment Monitoring Component

Project Code: Project Tracker (99-510); Activity Tracker (01-900)
Publication No: 12-03-129

The Washington State Department of Ecology's (Ecology's) Marine Sediment Monitoring Team (MSMT) will conduct sediment sampling in April and June, 2013, as part of their annual Puget Sound Ecosystem Monitoring Program (PSEMP)[1] and Ecology's Urban Water's Initiative (UWI) Monitoring Program. The goal of these programs is to characterize sediment quality in various regions and urban bays throughout Puget Sound.

April sampling will be conducted at 10 PSEMP Long-Term[2] monitoring stations located throughout Puget Sound. June's PSEMP Regional[3] Monitoring Program sampling will be conducted in the MSMT's Eastern Strait of Juan de Fuca sediment monitoring region. Intensive sampling will also occur in Elliott Bay, as part of the UWI program.

This addendum to the 2009 PSEMP Sediment Monitoring Component Quality Assurance Project Plan (Dutch et al., 2009) provides details about all sampling locations, parameters, quality assurance, and sampling/analysis schedules for each project that will be conducted in 2013.

As with past sampling events, Ecology makes every effort to coordinate these sediment sampling efforts with sampling that may be planned by regional stakeholders. All inquiries about this sediment monitoring work and potential partnership sampling with Ecology can be directed to me at margaret.dutch@ecy.wa.gov or 360-407-6021.

cc: Sandra Weakland, Environmental Assessment Program
Valerie Partridge, Environmental Assessment Program
Kathy Welch, Environmental Assessment Program
Ed Long, Environmental Assessment Program
Joel Bird, Environmental Assessment Program
Bill Kammin, Environmental Assessment Program

[1] Formerly known as the "Puget Sound Assessment and Monitoring Program (PSAMP)"
[2] Formerly known as "Long-term/Temporal"
[3] Formerly known as "Spatial/Temporal"

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Ongoing Monitoring Programs

April 2013 – Ecology-Puget Sound Ecosystem Monitoring Program (PSEMP) Long-Term Monitoring

Purpose: To continue monitoring benthic invertebrate community structure and associated sediment quality at 10 sentinel monitoring stations representing a variety of habitat types located throughout Puget Sound.

Sampling Details: As described in the 2009 Quality Assurance Project Plan for the PSEMP Long-Term Temporal Monitoring Program (Dutch et al., 2009).

Station Locations: 10 historical PSEMP stations throughout Puget Sound (Figure 1, Table 1).

Parameters Sampled: Field measurements, macroinvertebrate abundance, grain size, total organic carbon (Table 2).

Project Schedule: Outlined in Table 3.

Link to further information about this long-term program:
www.ecy.wa.gov/programs/eap/psamp/TemporalMonitoring/Temporal.htm.

June 2013 – Regional Sediment Monitoring in the Eastern Strait of Juan de Fuca

Sampling in June 2013 will be conducted for two on-going sediment monitoring efforts, including Ecology's PSEMP Regional Monitoring Program and Urban Waters Initiative (UWI). A total of 70 stations will be sampled for these two projects, with sampling occurring in the Eastern Strait of Juan de Fuca region and the Elliott Bay urban bay sampling frame, respectively. Details for the PSEMP Regional and UWI projects are given below.

PSEMP Regional Monitoring Program

Purpose: To characterize sediment quality in the PSEMP Eastern Strait of Juan de Fuca sediment monitoring region and to determine change over time.

Sampling Details: As described in the 2009 Quality Assurance Project Plan for the PSEMP Regional Monitoring Program (Dutch et al., 2009).

Station Locations: 40 randomly selected locations in the Eastern Strait of Juan de Fuca Sediment Monitoring Region (Figure 2, Table 4). Alternate station locations are available in case a station location cannot be sampled (Figure 3, Table 5).

Parameters Sampled: Field measurements, toxicity, macroinvertebrate abundance, grain size, total organic carbon, metals, and organic chemical contaminants (Table 6).

Project Schedule: Outlined in Table 7.

Link to further information about this regional monitoring program: www.ecy.wa.gov/programs/eap/psamp/SpatialMon/Spatial.htm.

Ecology's Urban Waters Initiative Monitoring – Elliott Bay

Purpose: To recharacterize sediment quality in the UWI Elliott Bay sampling frame and to compare these data to 1998 baseline and 2007 data to determine change over time.

Sampling Details: As described in the 2009 Quality Assurance Project Plan for the UWI Monitoring Program (Dutch et al, 2009).

Station Locations: 30 random locations, originally selected and sampled in 1998, will be resampled in Elliott Bay (Figure 4, Table 8). Alternate station locations are proposed in case a station location cannot be sampled (Figure 4, Table 9).

Parameters Sampled: Field measurements, toxicity, macroinvertebrate abundance, grain size, total organic carbon, metals, and organic chemical contaminants (Table 6).

Project Schedule: Outlined in Table 7.

Link to further information about this urban monitoring program: www.ecy.wa.gov/programs/eap/psamp/UrbanWaters/urbanwaters.htm.

Future Sediment Monitoring

Future monitoring locations and sampling dates for the PSEMP and UWI programs listed above are indicated in the schedule in Table 10.

For further information or comments, contact Maggie Dutch at 360-407-6021 or margaret.dutch@ecy.wa.gov.

Figures and Tables

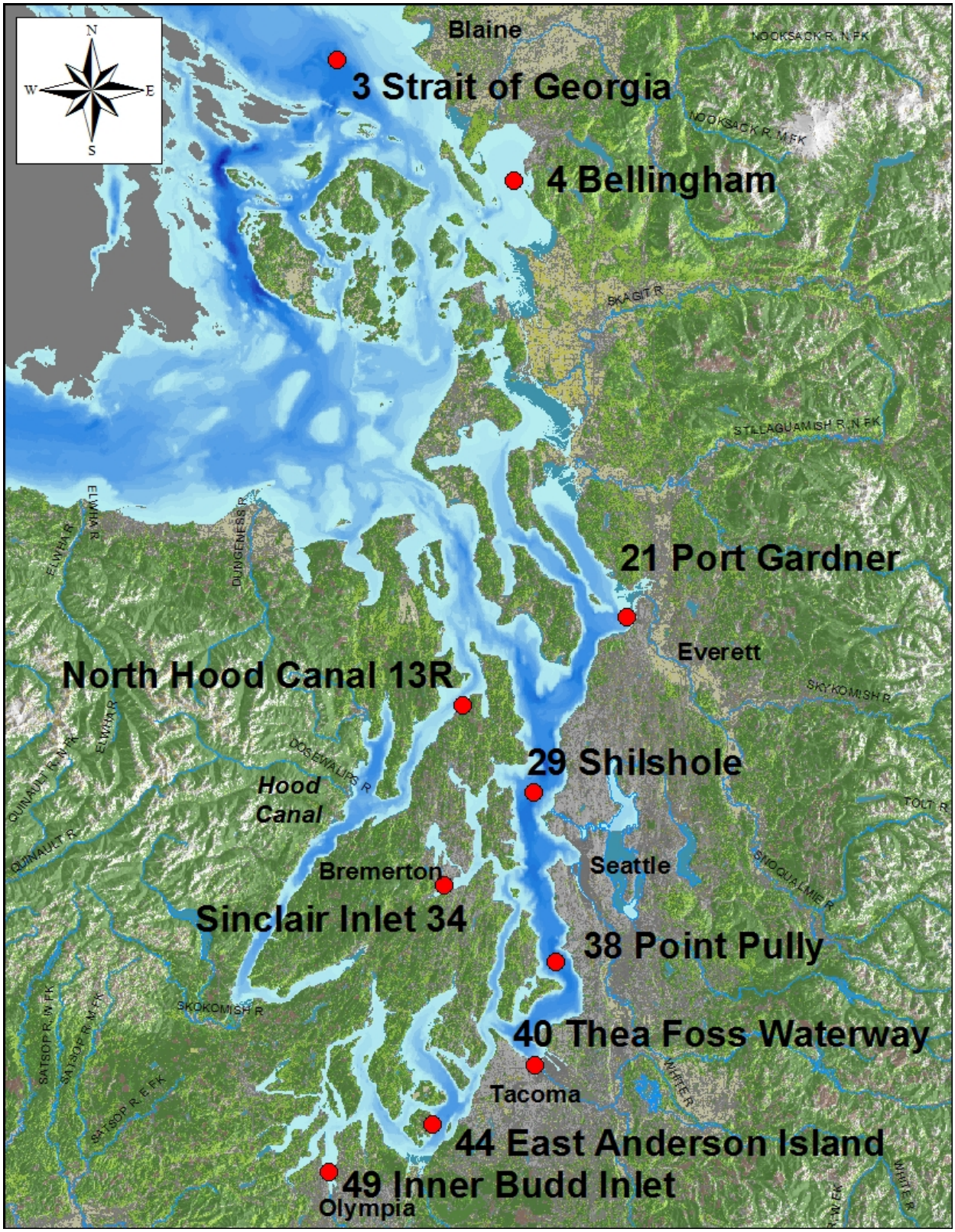

Figure 1. PSEMP 10 Long-Term sediment monitoring stations in Puget Sound.

Table 1. Location (latitude/longitude) for the 2013 PSEMP Sediment Component Long-Term Monitoring Element.

Station	Location	Target (NAD 83, decimal degrees)	
		Latitude	Longitude
3	Strait of Georgia	48.87025	-122.97842
4	Bellingham	48.68397	-122.53820
21	Everett	47.98547	-122.24283
29	Shilshole	47.70075	-122.45403
34	Sinclair Inlet	47.54708	-122.66208
38	Point Pully	47.42833	-122.39363
40	Commencement Bay	47.26130	-122.43730
44	East Anderson Island	47.16133	-122.67358
49	Budd Inlet	47.07997	-122.91347
13R	North Hood Canal	47.83758	-122.62895

Table 2. Parameters measured in Puget Sound sediments for the 2013 PSEMP Sediment Component Long-Term Monitoring Element.

Field Measurements

Sediment temperature
Salinity of overlying water

Macroinvertebrate Abundance

Total Abundance
Major Taxa Abundance
Taxa Richness
Pielou's Evenness
Swartz's Dominance Index

Related Parameters

Grain size
Total organic carbon

Table 3. Proposed schedule for completing the 2013 PSEMP Sediment Component Long-Term Monitoring Element field and laboratory work, EIM data entry, and reports.

Field and laboratory work		
Field work completed		April 2013
Laboratory analyses completed		Total Organic Carbon – July 2013 Grain size – September 2013 Taxonomy – March 2014
Environmental Information System (EIM) system		
Product	Due date	Lead Staff
EIM data loaded	April 2014	Sandra Weakland
EIM QA	May 2014	Maggie Dutch
EIM complete	June 2014	Sandra Weakland
Final report: 2015 PSEMP Long-Term Monitoring		
Author lead		Valerie Partridge
Schedule		
Summary statistics, tables and figures generated and posted to web		As it becomes available: July 2013 – March 2014
Draft due to supervisor		Not applicable: PSEMP Long-Term report published every 5th year; next report after 2015 sampling
Draft due to client/peer reviewer		
Draft due to external reviewer		
Final (all reviews done) due to publications coordinator		
Final report due on web		

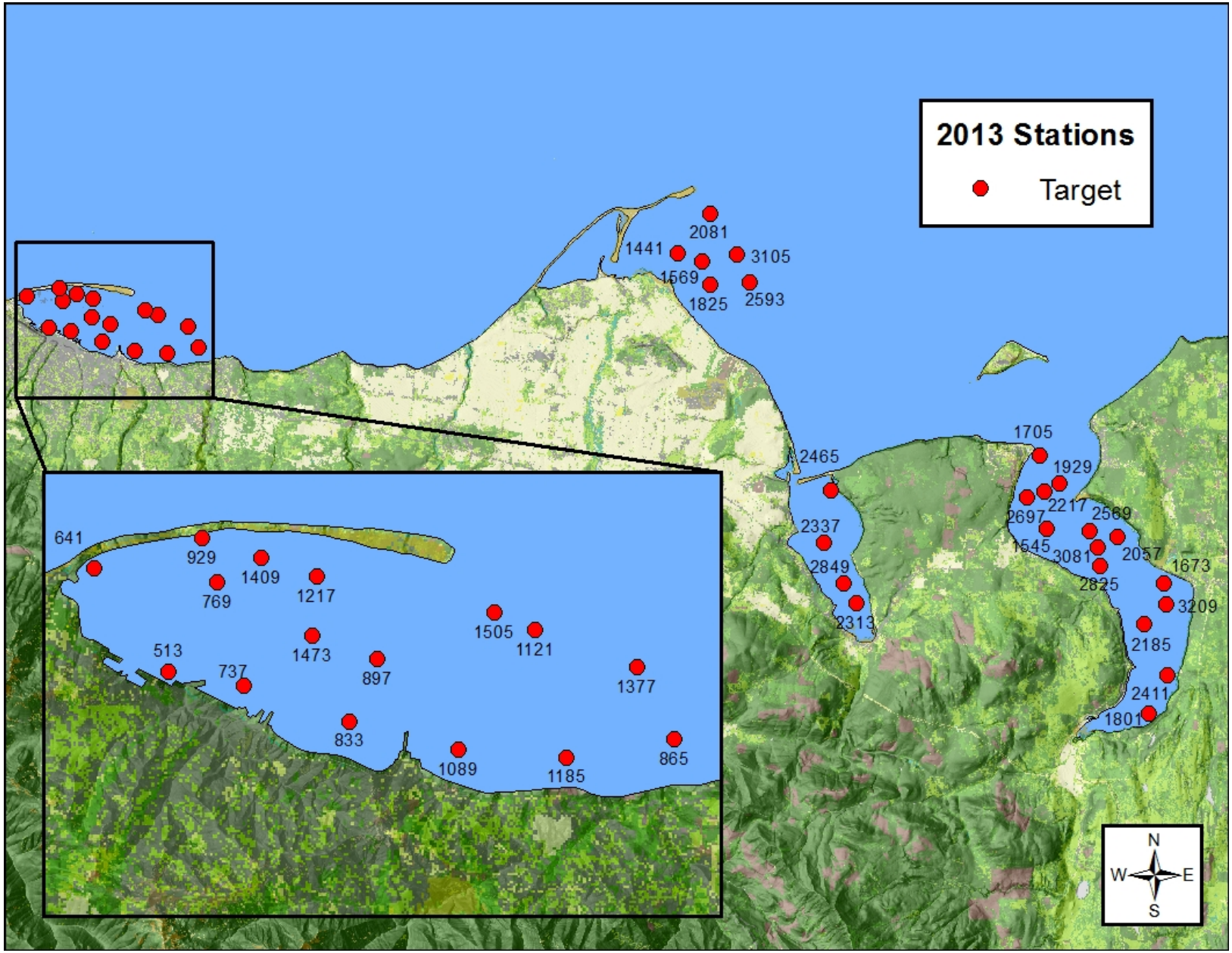

Figure 2. Ecology's 2013 PSEMP Sediment Component Regional Monitoring Element – 40 target sediment monitoring stations in the Eastern Strait of Juan de Fuca Sediment Monitoring Region.

Table 4. Target location (latitude/longitude) for Ecology's 2013 PSEMP Regional Monitoring Program – 40 stations in the Eastern Strait of Juan de Fuca sediment monitoring region.

Station	Strata	Location	Station Location (NAD 83, decimal degrees)	
			Latitude	Longitude
Target Stations				
513	Harbor	Port Angeles (inner harbor)	48.12589	-123.44633
641	Harbor	Port Angeles (inner harbor)	48.13656	-123.45881
737	Harbor	Port Angeles (inner harbor)	48.12471	-123.43415
769	Urban	Port Angeles	48.13556	-123.43917
833	Harbor	Port Angeles (inner harbor)	48.12126	-123.41717
865	Urban	Port Angeles	48.12061	-123.36520
897	Urban	Port Angeles	48.12800	-123.41314
929	Harbor	Port Angeles (inner harbor)	48.14024	-123.44172
1089	Urban	Port Angeles	48.11867	-123.39965
1121	Urban	Port Angeles	48.13171	-123.38810
1185	Urban	Port Angeles	48.11826	-123.38236
1217	Urban	Port Angeles	48.13658	-123.42317
1377	Urban	Port Angeles	48.12819	-123.37147
1409	Urban	Port Angeles	48.13832	-123.43223
1441	Rural	Dungeness Bay	48.16048	-123.10943
1473	Urban	Port Angeles	48.13021	-123.42361
1505	Urban	Port Angeles	48.13345	-123.39455
1545	Rural	Discovery Bay	48.06564	-122.90674
1569	Rural	Dungeness Bay	48.15792	-123.09608
1673	Rural	Discovery Bay	48.04727	-122.84304
1705	Rural	Discovery Bay	48.09196	-122.91178
1801	Rural	Discovery Bay	48.00053	-122.84869
1825	Rural	Dungeness Bay	48.14934	-123.09159
1929	Rural	Discovery Bay	48.07902	-122.90824
2057	Rural	Discovery Bay	48.06338	-122.86861
2081	Rural	Dungeness Bay	48.17519	-123.09269
2185	Rural	Discovery Bay	48.03263	-122.85304
2217	Rural	Discovery Bay	48.08191	-122.90075
2313	Rural	Sequim Bay	48.03666	-123.00736
2337	Rural	Sequim Bay	48.05830	-123.02582
2411	Rural	Discovery Bay	48.01449	-122.83958
2465	Rural	Sequim Bay	48.07699	-123.02330
2569	Rural	Discovery Bay	48.06537	-122.88360

Station	Strata	Location	Station Location (NAD 83, decimal degrees)	
			Latitude	Longitude
2593	Rural	Dungeness Bay	48.15100	-123.07010
2697	Rural	Discovery Bay	48.07670	-122.91751
2825	Rural	Discovery Bay	48.05307	-122.87762
2849	Rural	Sequim Bay	48.04391	-123.01456
3081	Rural	Discovery Bay	48.05942	-122.87888
3105	Rural	Dungeness Bay	48.16056	-123.07759
3209	Rural	Discovery Bay	48.03993	-122.84109

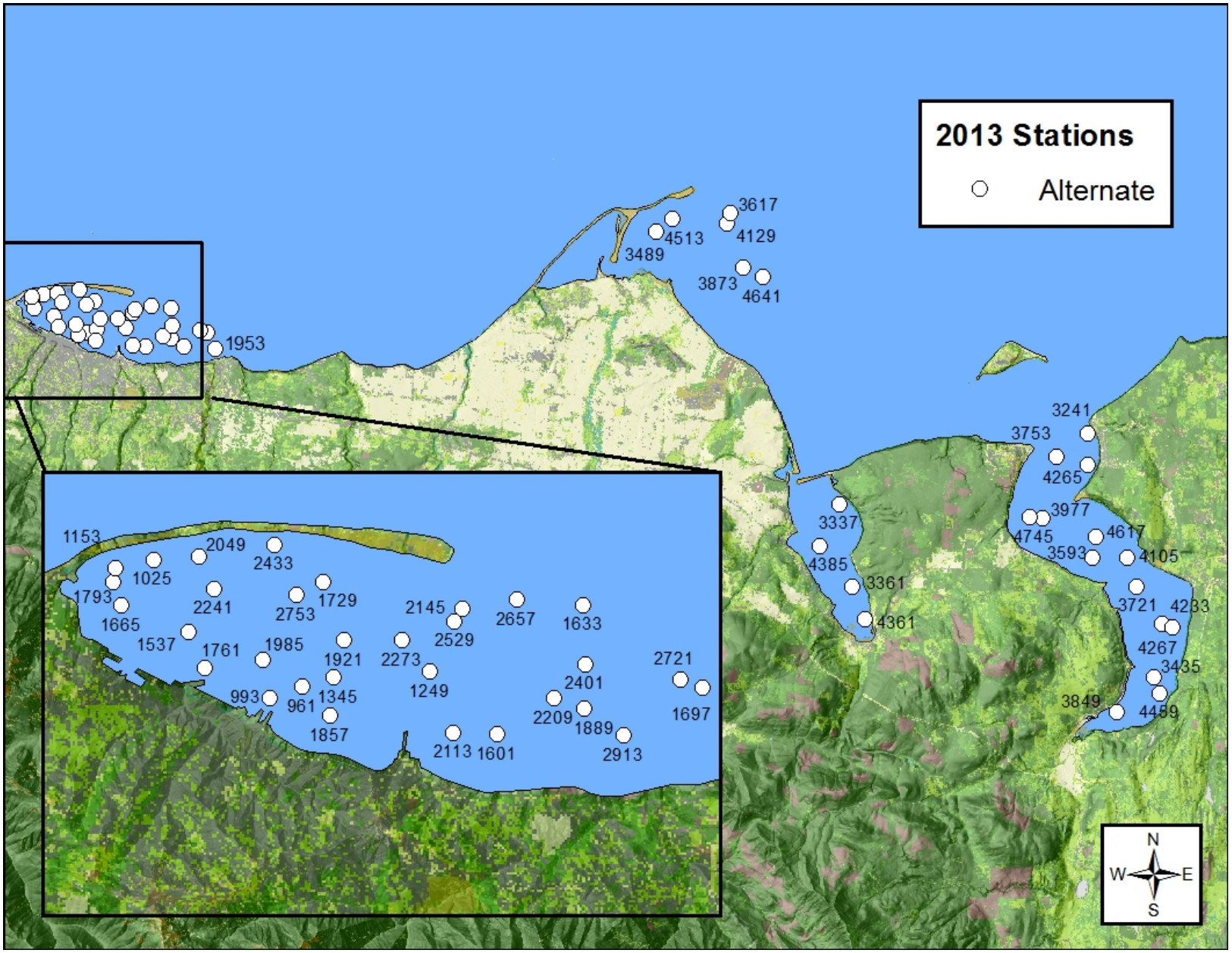

Figure 3. Ecology's 2013 PSEMP Sediment Component Regional Monitoring Element – 30 alternate sediment monitoring stations in the Eastern Strait of Juan de Fuca Sediment Monitoring Region.

Table 5. Alternate locations (latitude/longitude) for Ecology's 2013 PSEMP Sediment Component Regional Monitoring Element –- 56 stations in the Eastern Strait of Juan de Fuca sediment monitoring region.

Station	Strata	Location	Station Location (NAD 83, decimal degrees)	
			Latitude	Longitude
Alternate Stations				
961	Harbor	Port Angeles (inner harbor)	48.12476	-123.42475
993	Harbor	Port Angeles (inner harbor)	48.12342	-123.42984
1025	Harbor	Port Angeles (inner harbor)	48.13766	-123.44923
1153	Harbor	Port Angeles (inner harbor)	48.13523	-123.45557
1249	Harbor	Port Angeles (inner harbor)	48.12687	-123.40452
1345	Harbor	Port Angeles (inner harbor)	48.12589	-123.41982
1537	Urban	Port Angeles	48.13012	-123.44324
1601	Urban	Port Angeles	48.12043	-123.39343
1633	Urban	Port Angeles	48.13462	-123.38037
1665	Harbor	Port Angeles (inner harbor)	48.13267	-123.45419
1697	Urban	Port Angeles	48.12618	-123.36093
1729	Urban	Port Angeles	48.13602	-123.42212
1761	Harbor	Port Angeles (inner harbor)	48.12639	-123.44035
1793	Harbor	Port Angeles (inner harbor)	48.13670	-123.45532
1857	Harbor	Port Angeles (inner harbor)	48.12177	-123.42020
1889	Urban	Port Angeles	48.12349	-123.37971
1921	Urban	Port Angeles	48.12984	-123.41839
1953	Urban	Port Angeles	48.12058	-123.35594
1985	Urban	Port Angeles	48.12747	-123.43125
2049	Urban	Port Angeles	48.13825	-123.44192
2113	Urban	Port Angeles	48.12045	-123.40046
2145	Urban	Port Angeles	48.13235	-123.40088
2209	Urban	Port Angeles	48.12451	-123.38455
2241	Urban	Port Angeles	48.13490	-123.43938
2273	Urban	Port Angeles	48.13013	-123.40902
2401	Urban	Port Angeles	48.12829	-123.37970
2433	Urban	Port Angeles	48.13983	-123.43011
2529	Urban	Port Angeles	48.13373	-123.39967
2657	Urban	Port Angeles	48.13488	-123.39096
2721	Urban	Port Angeles	48.12702	-123.36433
2753	Urban	Port Angeles	48.13452	-123.42616
2913	Urban	Port Angeles	48.12081	-123.37310

Station	Strata	Location	Station Location (NAD 83, decimal degrees)	
			Latitude	Longitude
3241	Rural	Discovery Bay	48.10054	-122.88598
3337	Rural	Sequim Bay	48.07223	-123.01806
3361	Rural	Sequim Bay	48.04268	-123.00959
3435	Rural	Discovery Bay	48.01322	-122.84628
3489	Rural	Dungeness Bay	48.16793	-123.12131
3593	Rural	Discovery Bay	48.05581	-122.88131
3617	Rural	Dungeness Bay	48.17187	-123.08323
3721	Rural	Discovery Bay	48.04566	-122.85677
3753	Rural	Discovery Bay	48.09147	-122.90238
3849	Rural	Discovery Bay	48.00036	-122.86569
3873	Rural	Dungeness Bay	48.15637	-123.07351
3977	Rural	Discovery Bay	48.06933	-122.90854
4105	Rural	Discovery Bay	48.05598	-122.86219
4129	Rural	Dungeness Bay	48.17547	-123.08179
4233	Rural	Discovery Bay	48.03266	-122.84266
4265	Rural	Discovery Bay	48.08902	-122.88506
4267	Rural	Discovery Bay	48.03165	-122.83740
4361	Rural	Sequim Bay	48.03113	-123.00221
4385	Rural	Sequim Bay	48.05702	-123.02801
4459	Rural	Discovery Bay	48.00767	-122.84267
4513	Rural	Dungeness Bay	48.17269	-123.11253
4617	Rural	Discovery Bay	48.06326	-122.87974
4641	Rural	Dungeness Bay	48.15296	-123.06304
4745	Rural	Discovery Bay	48.06956	-122.91545

Table 6. Parameters measured in Puget Sound sediments for the 2013 PSEMP Sediment Component Regional Monitoring Element and Urban Waters Initiative (UWI).

Field Measurements

Sediment temperature
Salinity of overlying water

Toxicity Parameters

Amphipod Survival (solid phase)
Urchin Fertilization (porewater)

Macroinvertebrate Abundance

Total Abundance
Major Taxa Abundance
Taxa Richness
Pielou's Evenness
Swartz's Dominance Index

Related Parameters
Grain Size
Total organic carbon

Metals

Priority Pollutant Metals
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Zinc

Element
Tin

Organics

Chlorinated Alkenes
Hexachlorobutadiene

Chlorinated and Nitro-Substituted Phenols
Pentachlorophenol

Chlorinated Aromatic Chemicals
1,2,4-Trichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2-Chloronaphthalene
Hexachlorobenzene

Chlorinated Pesticides
2,4'-DDD
2,4'-DDE
2,4'-DDT
4,4'-DDD
4,4'-DDE
4,4'-DDT
Aldrin
Cis-Chlordane (Alpha-Chlordane)
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Endrin Ketone
Gamma-BHC (Lindane)
Heptachlor
Heptachlor Epoxide
Mirex
Oxychlordane
Toxaphene
Trans-Chlordane (Gamma)

Polynuclear Aromatic Hydrocarbons

LPAHs
1,6,7-Trimethylnaphthalene
1-Methylnaphthalene
1-Methylphenanthrene
2,6-Dimethylnaphthalene
2-Methylnaphthalene
2-Methylphenanthrene
Acenaphthene
Acenaphthylene
Anthracene
Biphenyl
Dibenzothiophene
Fluorene
Naphthalene
Phenanthrene
Retene
Calculated values:
total LPAHs

HPAHs
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(e)pyrene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Indeno(1,2,3-c,d)pyrene
Perylene
Pyrene
Calculated values:
total HPAH
total Benzofluoranthenes

Miscellaneous Extractable Chemicals
Benzoic Acid
Benzyl Alcohol
Beta-coprostanol
Carbazole
Cholesterol
Dibenzofuran
Isophorone

Organonitrogen Chemicals
Caffeine
N-Nitrosodiphenylamine

Phenols
2,4-Dimethylphenol
2-Methylphenol
4-Methylphenol
Phenol
Phenol, 4-Nonyl-

Phthalate Esters
Bis(2-Ethylhexyl) Phthalate
Butylbenzylphthalate
Diethylphthalate
Dimethylphthalate
Di-N-Butylphthalate
Di-N-Octyl Phthalate

Polybrominated Diphenylethers
PBDE-47
PBDE-49
PBDE-66
PBDE-71
PBDE-99
PBDE-100
PBDE-138
PBDE-153
PBDE-154
PBDE-183
PBDE-184
PBDE-191
PBDE-209

Polychlorinated Biphenyls

Aroclors
PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248
PCB-1254
PCB-1260
PCB-1262
PCB-1268

Congeners
PCB-8
PCB-18
PCB-28
PCB-44
PCB-52
PCB-66
PCB-77
PCB-101
PCB-105
PCB-118
PCB-126
PCB-128
PCB-138
PCB-153
PCB-169
PCB-170
PCB-180
PCB-187
PCB-195
PCB-206
PCB-209

Added in 2009
Bisphenol A
Tri(2-chloroethyl)phosphate (TCEP)
Triclosan
Triethyl citrate

Table 7. Proposed schedule for completing the 2013 PSEMP Sediment Component Regional Monitoring Element and Urban Waters Initiative field and laboratory work, data entry into EIM, and reports.

Field and laboratory work		
Field work completed		June 2013
Laboratory analyses completed		Total Organic Carbon – July 2013 Grain size – September 2013 Chemistry – March 2014 Toxicity – March 2014 Taxonomy – May 2014
Environmental Information System (EIM) system		
Product	Due date	Lead Staff
EIM data loaded	April 2014	Sandra Weakland
EIM QA	May 2014	Maggie Dutch
EIM complete	June 2014	Sandra Weakland
Final report: 2014 PSEMP Regional and Urban Waters Initiative: Elliott Bay		
Author lead		Valerie Partridge
Schedule		
Summary statistics, graphics, and text generated and posted to web		August (PSEMP), September (UWI) 2014
Drafts due to supervisor		September (PSEMP), October (UWI) 2014
Drafts due to client/peer reviewer		October (PSEMP), November (UWI) 2014
Drafts due to external reviewer		October (PSEMP), November (UWI) 2014
Final reports (all reviews done) due to publications coordinator		November (PSEMP), December (UWI) 2014
Final reports due on web		December 2014 (PSEMP), January 2015 (UWI)

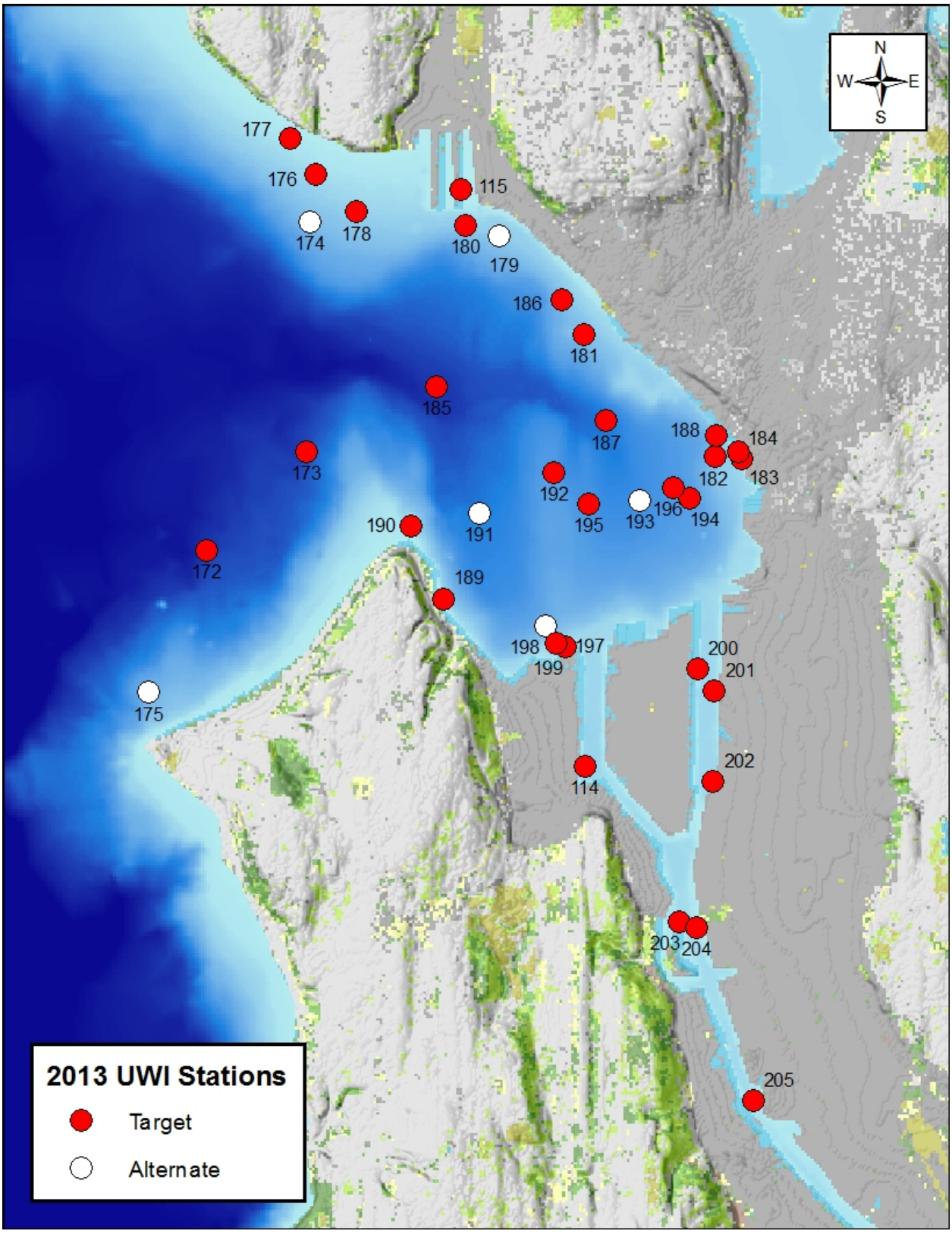

Figure 4. Ecology's 2013 PSEMP Urban Waters Initiative Monitoring – 30 sediment monitoring target stations and 6 alternate stations in Elliott Bay.

Table 8. Location (latitude/longitude) for Ecology's 2013 Urban Waters Initiative Monitoring Program – 30 target stations in Elliott Bay.

Station	Strata	Location	Station Location (NAD 83, decimal degrees)	
			Latitude	Longitude
Target Stations				
114	Harbor	West Harbor Island	47.57545	-122.36071
115	Harbor	Shoreline Elliott Bay	47.62811	-122.37938
172	Basin	Outer Elliot Bay	47.59440	-122.41267
173	Basin	Outer Elliot Bay	47.60369	-122.39946
176	Urban	Shoreline Elliott Bay	47.62918	-122.39910
177	Urban	Shoreline Elliott Bay	47.63237	-122.40278
178	Urban	Shoreline Elliott Bay	47.62581	-122.39357
180	Harbor	Shoreline Elliott Bay	47.62482	-122.37868
181	Harbor	Shoreline Elliott Bay	47.61504	-122.36230
182	Harbor	Shoreline Elliott Bay	47.60421	-122.34413
183	Harbor	Shoreline Elliott Bay	47.60399	-122.34041
184	Harbor	Shoreline Elliott Bay	47.60466	-122.34099
185	Urban	Mid Elliott Bay	47.60997	-122.38203
186	Urban	Mid Elliott Bay	47.61820	-122.36534
187	Urban	Mid Elliott Bay	47.60719	-122.35899
188	Urban	Mid Elliott Bay	47.60606	-122.34391
189	Urban	Mid Elliott Bay	47.59051	-122.38049
190	Urban	Mid Elliott Bay	47.59716	-122.38506
192	Urban	Mid Elliott Bay	47.60231	-122.36595
194	Urban	Mid Elliott Bay	47.60025	-122.34734
195	Urban	Mid Elliott Bay	47.59957	-122.36105
196	Urban	Mid Elliott Bay	47.60120	-122.34965
197	Harbor	West Harbor Island	47.58636	-122.36371
199	Harbor	West Harbor Island	47.58666	-122.36504
200	Harbor	East Harbor Island	47.58464	-122.34579
201	Harbor	East Harbor Island	47.58262	-122.34344
202	Harbor	East Harbor Island	47.57433	-122.34334
203	Harbor	Duwamish Waterway	47.56139	-122.34744
204	Harbor	Duwamish Waterway	47.56093	-122.34510
205	Harbor	Duwamish Waterway	47.54511	-122.33688

Table 9. Alternate location (latitude/longitude) for Ecology's 2013 Urban Waters Initiative Monitoring Program – 6 stations in Elliott Bay.

Station	Strata	Location	Station Location (NAD 83, decimal degrees)	
			Latitude	Longitude
Alternate Stations				
174	Basin	Outer Elliot Bay	47.62479	-122.39984
175	Basin	Outer Elliot Bay	47.58127	-122.42014
179	Harbor	Shoreline Elliott Bay	47.62394	-122.37410
191	Urban	Mid Elliott Bay	47.59842	-122.37583
193	Urban	Mid Elliott Bay	47.59998	-122.35420
198	Harbor	West Harbor Island	47.58822	-122.36656

Table 10. PSEMP Regional, PSEMP Long-Term, Focus, and Urban Waters Initiative sediment sampling schedule (1997-2024).

	Number of Stations Collected																Number of Stations Expected													
year sampled:	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Spatial/Temporal Monitoring																														
San Juan Archipelago						**90 (81 new +9 old)**										**40**											**40**			
Eastern Strait of Juan de Fuca																	**40**											**40**		
Admiralty Inlet																		**40**												**40**
Strait of Georgia and Bellingham	**100**									**40**											**40**									
Whidbey Basin											**40**											**40**								
Central Sound (north)		**100**										**30**											**40**							
Central Sound (south)													**50**												**40**					
South Sound			**100**												**43**											**40**				
Hood Canal								**30**												**40**										
Urban Waters Initiative																														
Elliott Bay/Lower Duwamish											**30**						**30**						**30**						**30**	
Commencement Bay												**30**						**30**						**30**						**30**
Bainbridge Basin, including Sinclair and Dyes Inlets													**33**						**33**						**33**					
Bellingham Bay														**30**						**30**						**30**				
Budd Inlet															**30**						**30**						**30**			
Everett Harbor/Port Gardner																**30**						**30**						**30**		
Long Term/Temporal Monitoring*	**10**	**10**	**10**	**10+**	**10**	**10**	**10**	**10**	**10+**	**10**	**10**	**10**	**10**	**10+**	**10**	**10**	**10**	**10**	**10+**	**10**	**10**	**10**	**10**	**10+**	**10**	**10**	**10**	**10**	**10+**	**10**
Focus Study/Special Projects														**40[1]**																

* 10 (3 replicates per station) = Grain Size/Total Organic Carbon/Benthos collected; 10+ = Grain Size/Total Organic Carbon/Benthos/Chemistry collected

Focus Studies:
40[1] = 2010 - Pharmaceuticals and Personal Care Products (PPCPs), Perfluorinated Chemicals (PFCs) at 10 Long-Term stations and at 30 UWI Bellingham Bay stations.