

Appendix E. Marine Point Source Model Inputs

The following tables represent the Salish Sea Model marine point source inputs used in the selected scenario, Opt2_8. These loads do not represent facility-specific targets, rather the total sum of them represent the marine point source targets in main body of this plan. All loads are presented in lbs. of total nitrogen (TN). Monthly loads were calculated by summing the daily loads for each facility for each month. Daily loads are calculated by multiplying the daily TN concentration by the daily flow. Loads have been rounded to the nearest whole number. Each marine point source was assigned one of four reduction frameworks:

- 8/5/3 = Effluent is treated to 8 mg dissolved inorganic nitrogen (DIN)/L in cold months, 5 mg DIN/L in warm months, 3 mg DIN/L summer months¹
- 8/3 = Effluent is treated to 8 mg DIN/L in cold months, and 3 mg/L all other months
- 3 = Effluent is treated to 3 mg DIN/L year-round
- E = Effluent is set at 2014 existing loading values

For all reduction frameworks, flows were held constant at 2014 levels. We assumed that any facilities reducing DIN loads would also achieve an annual average carbonaceous biochemical oxygen (CBOD) concentration of 8 mg/L year-round (Tetra Tech, 2011), which is translated to a facility specific reduction in dissolved organic carbon (DOC) load in the model. All permit numbers represent individual NPDES permit numbers, provided as a unique identifier to adequately identify each facility. This does not preclude eligible domestic WWTPs from having their discharge regulated under the Puget Sound Nutrient General Permit, which will have a separate permit number.

The following maps display the marine point sources within each of the eight Puget Sound basins.

Appendices included:

- Appendix E.1. State WWTPs loads
- Appendix E.2. State industrial facilities loads
- Appendix E.3. Federal facilities loads
- Appendix E.4. Marine point source maps

¹ Hot = July–September, Warm = April–June & October, Cool = November–March

Appendix E.1. State WWTPs loads

Northern Bays

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Bellingham	WA0023744	8/5/3	34613	30644	37479	15609	24251	18166	9281	17483	12677	23149	44974	38801	307126
Larrabee State Park	WA0023787	E	4	5	7	8	11	6	12	13	10	17	7	7	106
Total			34616	30649	37485	15617	24262	18172	9293	17496	12687	23166	44982	38808	307232

Whidbey

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Coupeville	WA0029378	8/5/3	734	739	752	342	375	306	293	258	245	355	487	558	5443
Everett	WA0024490	8/5/3	44092	39242	63052	25133	18034	18475	7981	10957	24471	25133	50045	61950	388564
La Conner	WA0022446	8/5/3	825	1067	1067	688	705	494	454	445	452	672	966	1131	8966
Lake Stevens 002	WA0020893	8/5/3	8841	8245	8863	6085	6063	5291	2844	2932	1964	4784	6812	7143	69867
Langley	WA0020702	E	423	146	129	265	496	428	368	107	108	527	571	661	4229
Marysville	WA0022497	8/5/3	17064	15895	14705	432	13272	9480	0	0	0	386	11662	14374	97270
Mt Vernon	WA0024074	8/5/3	16160	14617	14793	9546	11111	7562	4167	4079	2712	5115	10229	12037	112127
Mukilteo	WA0023396	8/5/3	2447	2712	3219	1413	1614	1208	1215	1574	1587	1918	1929	2425	23261
Oak Harbor Lagoon	WA0020567	8/5/3	6702	6900	7033	4255	3792	3924	2030	2180	1332	2954	3682	4431	49216
OF100^	See note	8/5/3	31526	18982	32408	12588	10075	21253	20260	25794	35715	26015	27778	30644	293038
Penn Cove	WA0029386	E	269	461	470	152	46	40	96	313	280	144	38	56	2365
Skagit County 2 Big Lake	WA0030597	E	463	432	496	379	425	328	214	211	234	295	364	390	4232
Snohomish	WA0029548	8/5/3	4828	5379	7187	3109	2910	1625	820	983	659	2623	4564	5181	39868
Stanwood	WA0020290	8/5/3	1556	1063	2132	631	1334	952	635	514	494	802	2447	2161	14720
Warm Beach Campground	WA0029904	E	61	3	5	57	47	59	1	18	2	69	97	95	512
Total			135991	115883	156309	65073	70298	71425	41378	50366	70255	71792	121672	143237	1113680

^Shared outfall covered under Everett and Marysville permits.

Main

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Alderwood	WA0020826	8/5/3	28440	6129	7121	5071	5137	5004	11001	2734	1766	3814	5115	5776	87107
Bainbridge Island City	WA0020907	8/5/3	882	783	1396	1144	1160	952	622	439	602	985	1431	1870	12264
Bainbridge Kitsap Co 7	WA0030317	3	211	256	293	151	155	107	124	114	121	163	168	227	2091
Bremerton	WA0029289	3	3660	5049	6614	5556	4034	3064	4079	2998	3351	11684	4497	12919	67505
Brightwater	WA0032247	8/3	41667	42770	53352	21230	17174	16535	16469	15653	18409	18850	42549	49163	353819
Central Kitsap	WA0030520	8/5/3	9281	7650	8796	9171	8598	4630	8378	6989	2403	4696	8047	9149	87788
Edmonds	WA0024058	8/5/3	8422	9789	14859	6107	5423	4630	2954	2976	2910	5688	10141	13117	87016
Gig Harbor	WA0023957	8/5/3	2535	3924	5556	4189	4012	3285	2734	2491	1909	1883	1847	2535	36901
Kitsap Co Kingston	WA0032077	E	287	317	390	269	262	231	258	273	287	311	245	300	3430
Lakota	WA0022624	8/5/3	15432	19621	14286	9259	7165	8444	3594	6437	4718	11266	12566	14418	127207
Lynnwood	WA0024031	8/5/3	8554	9502	17593	9965	15036	6989	2888	4101	5644	9502	10097	16292	116161
Manchester	WA0023701	E	467	551	631	331	434	320	399	425	470	694	485	668	5875
Messenger House	WA0023469	E	11	10	11	7	7	7	8	11	8	11	8	9	108
Midway	WA0020958	8/5/3	18717	24251	31085	13735	9811	11045	3968	2888	3748	6945	10274	12721	149187
Miller Creek	WA0022764	8/5/3	6283	9700	15476	6129	8091	6349	6482	2822	2337	4321	6967	8554	83511
Port Orchard	WA0020346	3	1354	2734	1903	3549	6019	3505	1221	2293	1219	1455	2734	1664	29650
Redondo	WA0023451	8/5/3	9480	8333	10670	4101	5798	6614	2601	2185	2057	6349	6437	7408	72034
Salmon Creek	WA0022772	8/5/3	7363	9392	14727	6261	4828	2734	2646	3682	1986	4189	6614	7562	71983
South King	WA0029581	8/3	231485	257941	277782	120152	128529	114640	90610	90610	91271	119711	235894	266759	2025384
Tacoma Central	WA0037087	8/3	45415	62832	76280	17902	16909	14220	12192	12346	12059	15653	51147	70107	407061
Tacoma North	WA0037214	8/5/3	8488	12743	29542	12434	16292	6636	3263	2800	6019	7826	25133	15344	146519
Vashon	WA0022527	8/5/3	265	386	271	200	223	37	97	187	124	194	377	562	2922
West Point	WA0029181	8/5/3	206132	231485	313056	118168	130293	118168	85319	95019	62170	173283	264554	346125	2143772
Total			654831	726146	901689	375080	395391	338146	261904	260472	225587	409473	707328	863250	6119298

South Sound

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Boston Harbor	WA0040291	E	164	273	348	278	287	258	220	140	153	196	282	190	2789
Carlyon	WA0037915	E	331	373	351	375	72	31	287	328	287	229	30	38	2730
Chambers Creek	WA0039624	8/5/3	54234	108908	61068	34172	55997	55777	13691	34392	81571	23369	38360	41667	603206
Hartstene	WA0038377	E	23	26	31	39	212	96	13	8	5	36	359	478	1328
LOTT	WA0037061	8/5/3	20878	28660	26676	20349	10318	7496	6173	6239	6570	7694	14550	23589	179192
McNeil Is	WA0040002	E	586	527	516	481	478	353	282	337	348	428	392	450	5179
Rustlewood	WA0038075	E	85	134	147	89	81	50	56	60	67	106	140	157	1172
Seashore Villa	WA0037273	E	69	33	24	26	24	18	19	22	22	27	28	27	341
Shelton	WA0023345	8/5/3	6592	4740	3527	2121	1572	1605	1146	1528	2249	3814	5842	7518	42254
Tamoshan	WA0037290	E	37	69	78	50	40	27	35	45	41	43	38	46	549
Taylor Bay	WA0037656	E	8	8	8	7	5	2	5	3	3	5	6	14	75
Total			83006	143751	92775	57986	69086	65713	21927	43103	91315	35948	60029	74174	838814

Hood Canal

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Alderbrook	WA0037753	E	45	52	42	4	35	68	15	64	99	33	26	18	500
Port Gamble*	WA0022292	E	26	50	56	21	19	14	15	16	13	19	24	49	323
Total			72	101	98	25	54	82	30	80	112	52	50	67	823

*Individual NPDES municipal wastewater permit that was terminated in 2017 and no longer discharges to Puget Sound. Loads represent the 2014 TN loads used in the selected Salish Sea Model scenario.

Admiralty

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Port Ludlow	WA0021202	E	1327	1649	1832	218	223	215	1389	1387	1228	211	193	342	10213
Port Townsend	WA0037052	E	2491	2513	2668	1704	1711	1219	1133	1047	1389	2187	2557	3616	24235
Total			3818	4162	4500	1922	1933	1435	2522	2434	2617	2398	2750	3957	34449

Strait of Juan de Fuca

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Clallam Bay POTW	WA0024431	E	95	113	135	85	67	48	64	67	69	100	90	118	1051
Clallam DOC	WA0039845	E	503	617	908	677	723	516	256	227	247	408	326	441	5849
Port Angeles	WA0023973	E	12897	13933	17020	13757	11376	11310	11927	11839	9811	11773	12037	15454	153133
Sekiu	WA0024449	E	206	714	767	204	159	101	342	306	373	831	300	357	4660
Sequim	WA0022349	E	869	743	666	509	328	236	289	1105	267	902	1135	1241	8289
Total			14569	16120	19496	15231	12654	12211	12877	13544	10766	14013	13889	17612	172982

Strait of Georgia

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Anacortes	WA0020257	E	35274	15322	15080	16028	13625	13250	15454	16116	13669	12103	17086	13977	196983
Birch Bay	WA0029556	E	4916	4564	6658	4916	5820	5754	5644	6614	7143	5578	4145	6614	68365
Blaine	WA0022641	E	1951	1781	2557	1488	1684	1076	1078	1089	1087	1706	1724	1967	19189
Eastsound Orcas Village	WA0030911	E	5	5	8	5	5	7	10	13	10	8	4	5	86
Eastsound Water District	WA0030571	E	796	238	269	767	955	820	992	948	811	732	778	864	8971
Fisherman Bay	WA0030589	E	203	60	64	51	216	151	207	56	54	193	216	251	1723
Friday Harbor	WA0023582	E	1382	2033	2888	584	1008	514	840	556	774	511	1052	708	12849
Roche Harbor	WA0021822	E	80	97	109	26	86	53	72	101	54	32	28	48	785
Rosario Utilities	WA0029891	E	37	42	49	36	44	68	125	67	60	48	25	35	636
Total			44645	24141	27682	23901	23442	21692	24424	25559	23661	20913	25057	24469	309587

Appendix E.2. State industrial facilities loads

Note: No permitted marine point source industrial facilities located in Whidbey, South Sound, or Hood Canal basins.

Northern Bays

Facility Name	NPDES No.	Industry	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Shell Oil	WA0002941	Oil Refinery	E	7606	7165	7297	7187	10825	9370	11155	10053	9656	14749	8664	7363	111091
Tesoro	WA0000761	Oil Refinery	E	2579	2359	2712	2271	2097	1958	2469	2866	2712	3086	2403	3020	30532
Total				10185	9524	10009	9458	12921	11327	13625	12919	12368	17835	11067	10384	141623

Main

Facility Name	NPDES No.	Industry	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
US Oil & Refining~	WA0001783	Oil Refinery	E	1347	529	2046	1400	1179	838	825	992	1171	1213	1625	1512	14676
West Rock	WA0000850	Pulp Mill	E	2888	3439	2888	2866	2557	3946	4145	3990	3792	3924	3660	3770	41866
Total				4235	3968	4934	4266	3737	4784	4969	4982	4963	5137	5284	5282	56542

~Permit is active, but facility is not currently discharging. Loads represent the 2014 TN loads used in the selected Salish Sea Model scenario.

Admiralty

Facility Name	NPDES No.	Industry	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Port Townsend Paper	WA0000922	Pulp Mill	E	1711	1645	1755	1693	1803	1700	1766	1746	1590	1590	1338	1567	19903
Total				1711	1645	1755	1693	1803	1700	1766	1746	1590	1590	1338	1567	19903

Strait of Juan de Fuca

Facility Name	NPDES No.	Industry	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Nippon Paper~	WA0002925	Pulp Mill	E	4299	4475	4564	5181	6570	5159	4894	4960	4608	4233	2403	1607	52953
Total				4299	4475	4564	5181	6570	5159	4894	4960	4608	4233	2403	1607	52953

~Permit is active, but facility is not currently discharging. Loads represent the 2014 TN loads used in the selected Salish Sea Model scenario.

Strait of Georgia

Facility Name	NPDES No.	Industry	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
BP Cherry Point	WA0022900	Oil Refinery	E	13162	13007	16028	12059	12566	11751	12346	10781	10406	10450	14286	14837	151678
Conoco Phillips	WA0002984	Oil Refinery	E	6173	5049	7760	5534	5004	4497	4762	4894	5159	6900	7408	7540	70680
Intalco	WA0002950	Aluminum	E	1157	1164	1733	952	809	525	606	545	644	957	1193	1338	11623
Total				20492	19220	25521	18545	18380	16773	17714	16219	16208	18307	22886	23715	233981

Appendix E.3. Federal facilities loads

Note: No permitted marine point source federal facilities located in Northern Bays, Hood Canal, or Admiralty basins.

Whidbey

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Swinomish	WA0024422	E	655	686	564	373	538	258	337	302	346	386	483	476	5404
Tulalip	WA0024805	E	626	694	743	564	531	395	573	500	403	511	520	602	6665
Total			1281	1380	1307	937	1069	653	911	802	750	897	1003	1078	12068

Main

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Puyallup	WA0037168	8/5/3	13977	16887	18519	11332	10207	8113	4409	4630	3153	7518	10759	11111	120615
Suquamish	WA0023256	8/5/3	534	827	1162	597	500	370	304	293	278	439	516	871	6691
Total			14511	17714	19681	11929	10708	8483	4713	4923	3430	7956	11274	11982	127306

South Sound

Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
JBLM Solo Point	WA0021954	8/5/3	4762	6812	12125	7606	6592	4784	2174	2138	1376	2734	3704	4784	59591
Total			4762	6812	12125	7606	6592	4784	2174	2138	1376	2734	3704	4784	59591

Strait of Juan de Fuca

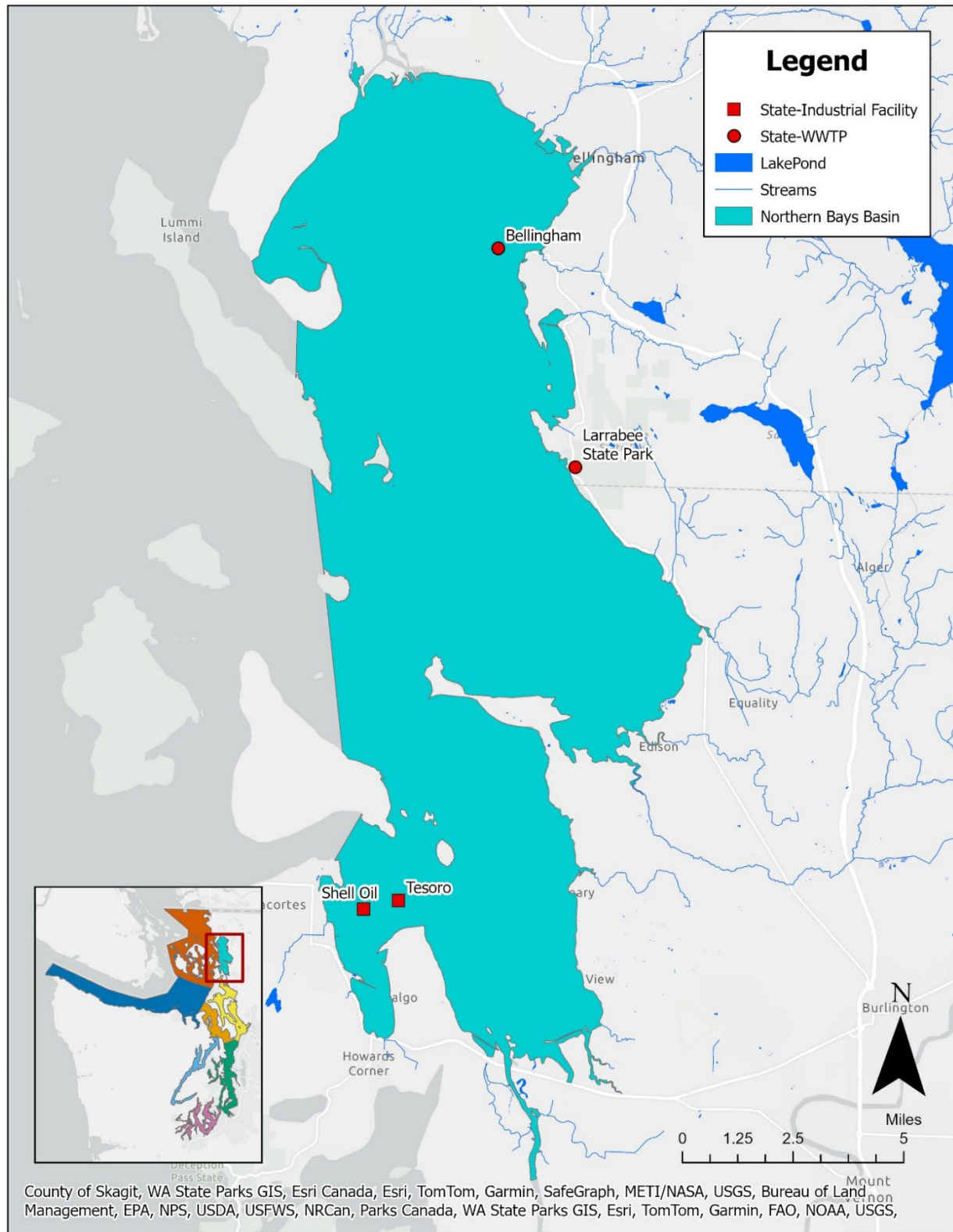
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Makah	WA0023213	E	748	866	898	627	937	340	397	420	399	420	730	759	7541
Total			723	895	891	637	919	342	399	419	399	430	730	758	7542

Strait of Georgia

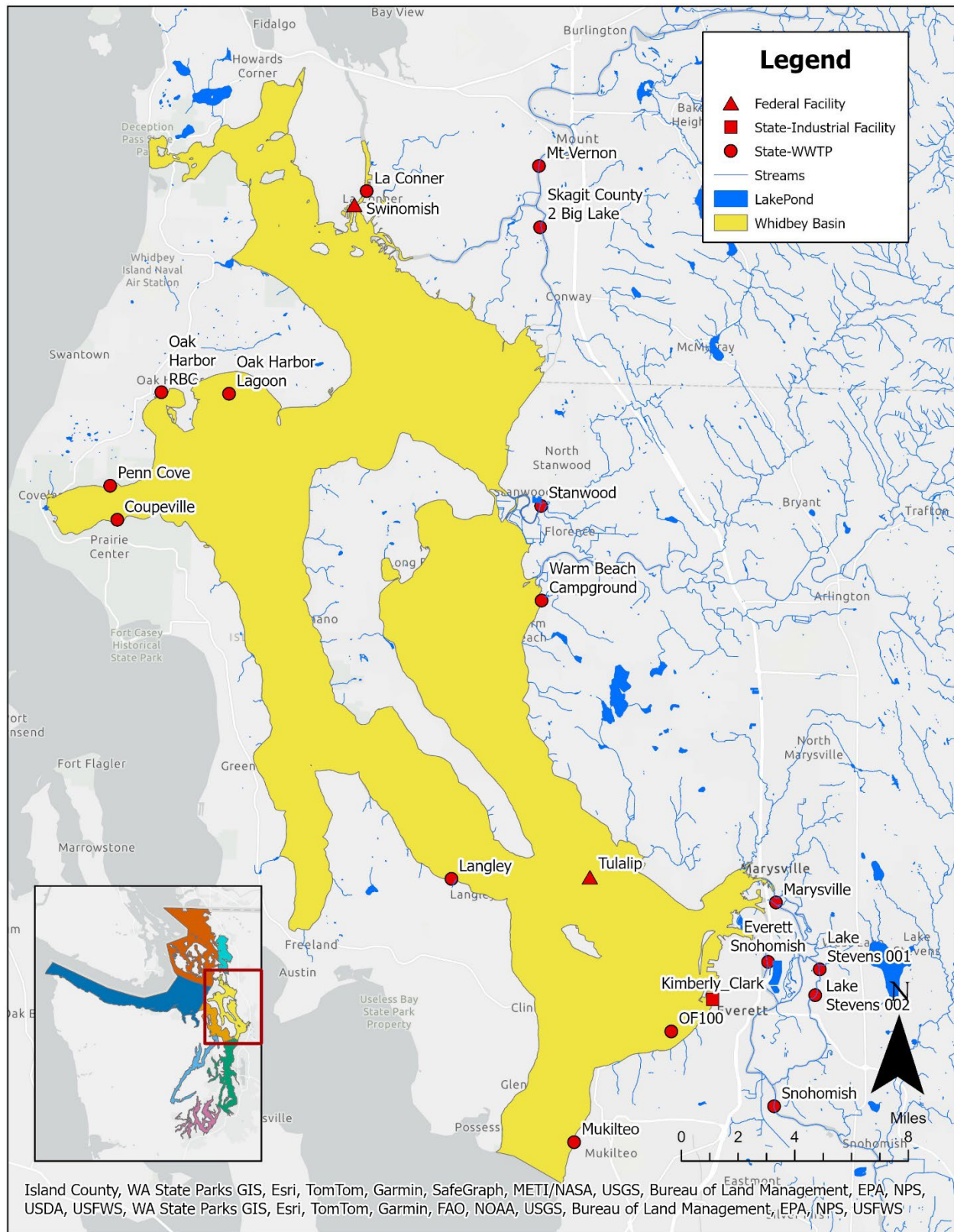
Facility Name	NPDES No.	Framework	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Lummi Goose Pt	WA0025666	E	787	862	1124	668	655	454	450	408	432	553	708	915	8016
Lummi Sandy Pt	WA0025658	E	300	293	326	306	423	443	223	47	179	399	289	386	3615
Whidbey Air Station Ault Field	WA0003468	E	818	869	844	653	664	487	571	562	549	637	560	767	7981
Total			1905	2024	2295	1627	1742	1385	1243	1017	1161	1590	1556	2068	19612

Appendix E.4. Marine point source maps

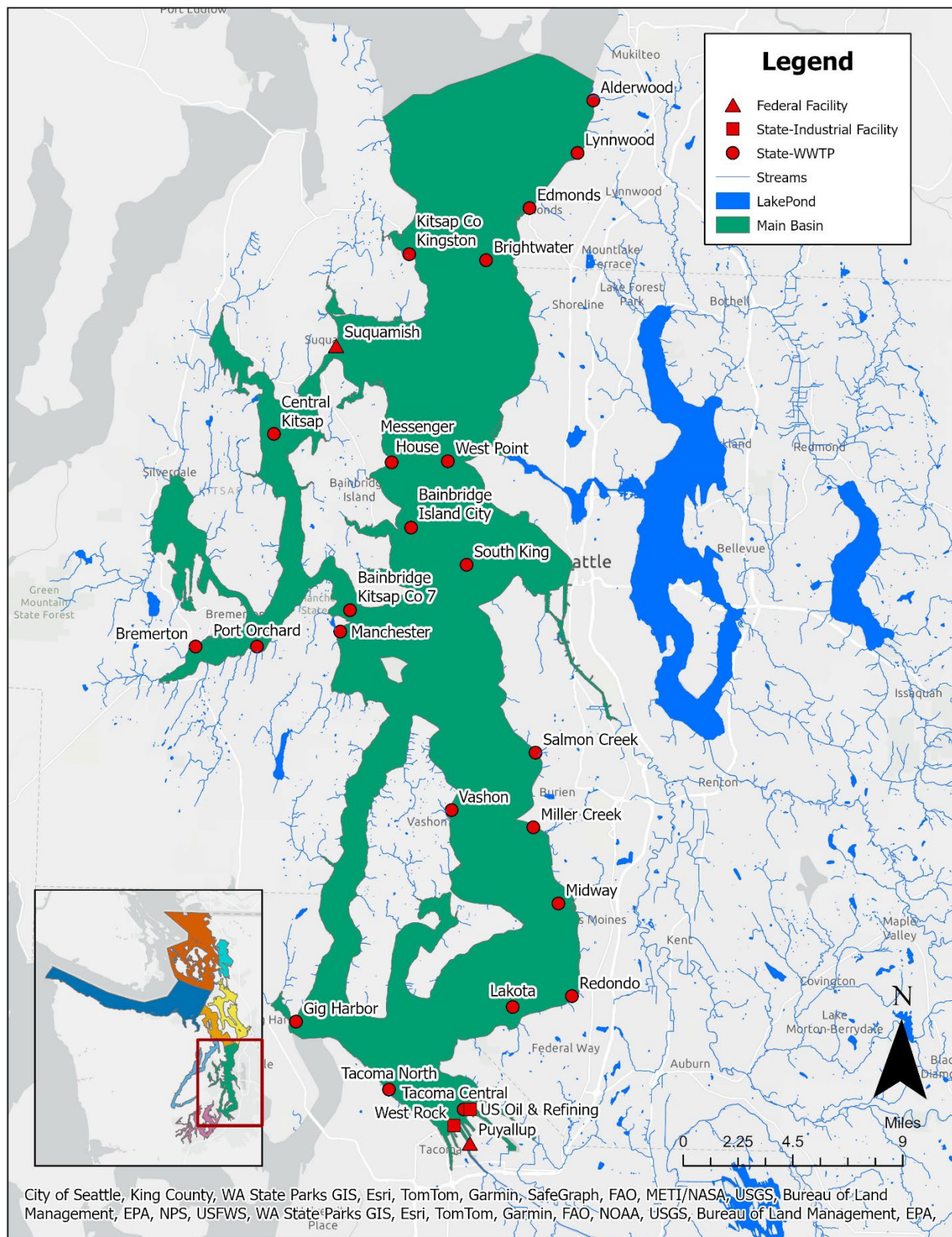
Northern Bays



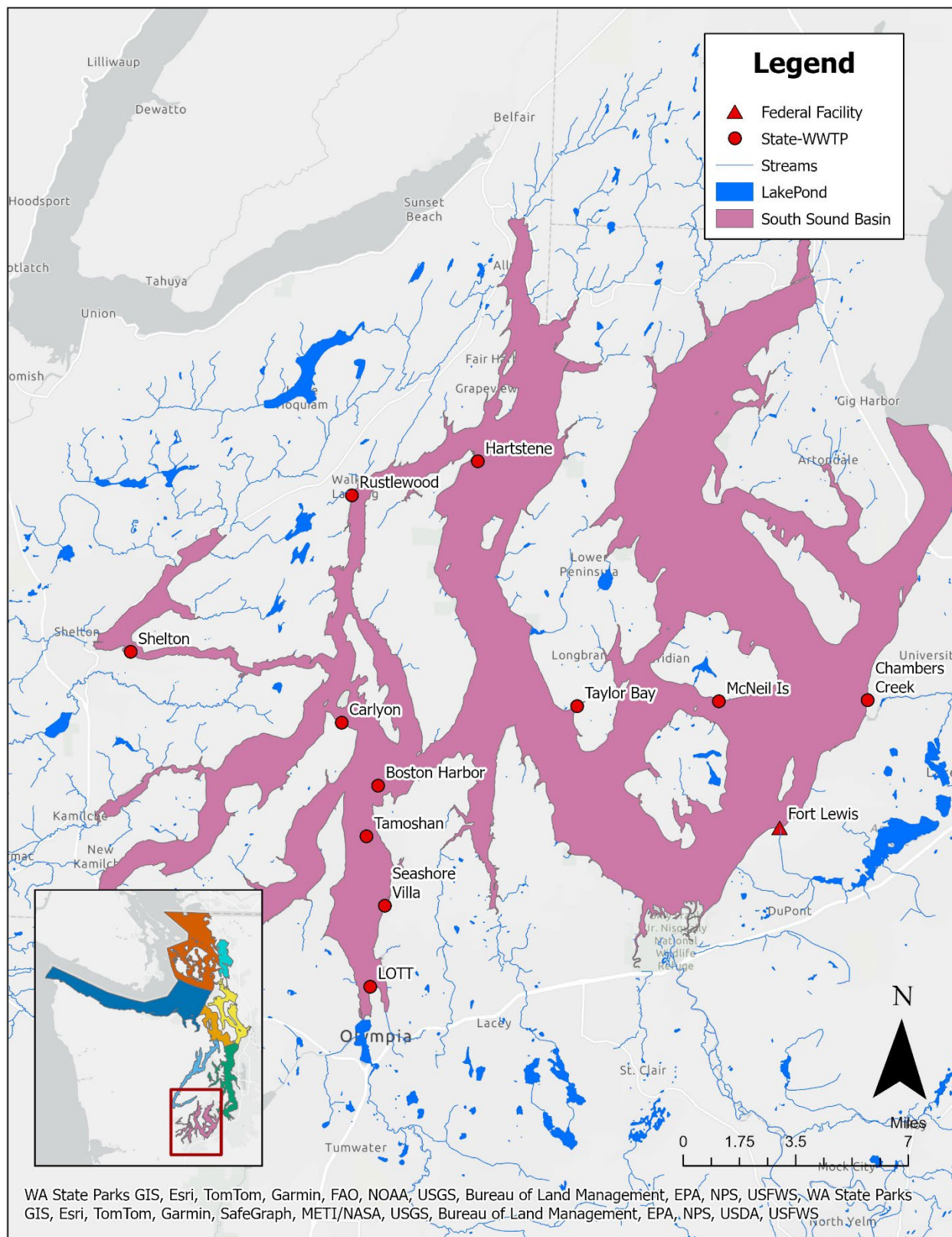
Whidbey



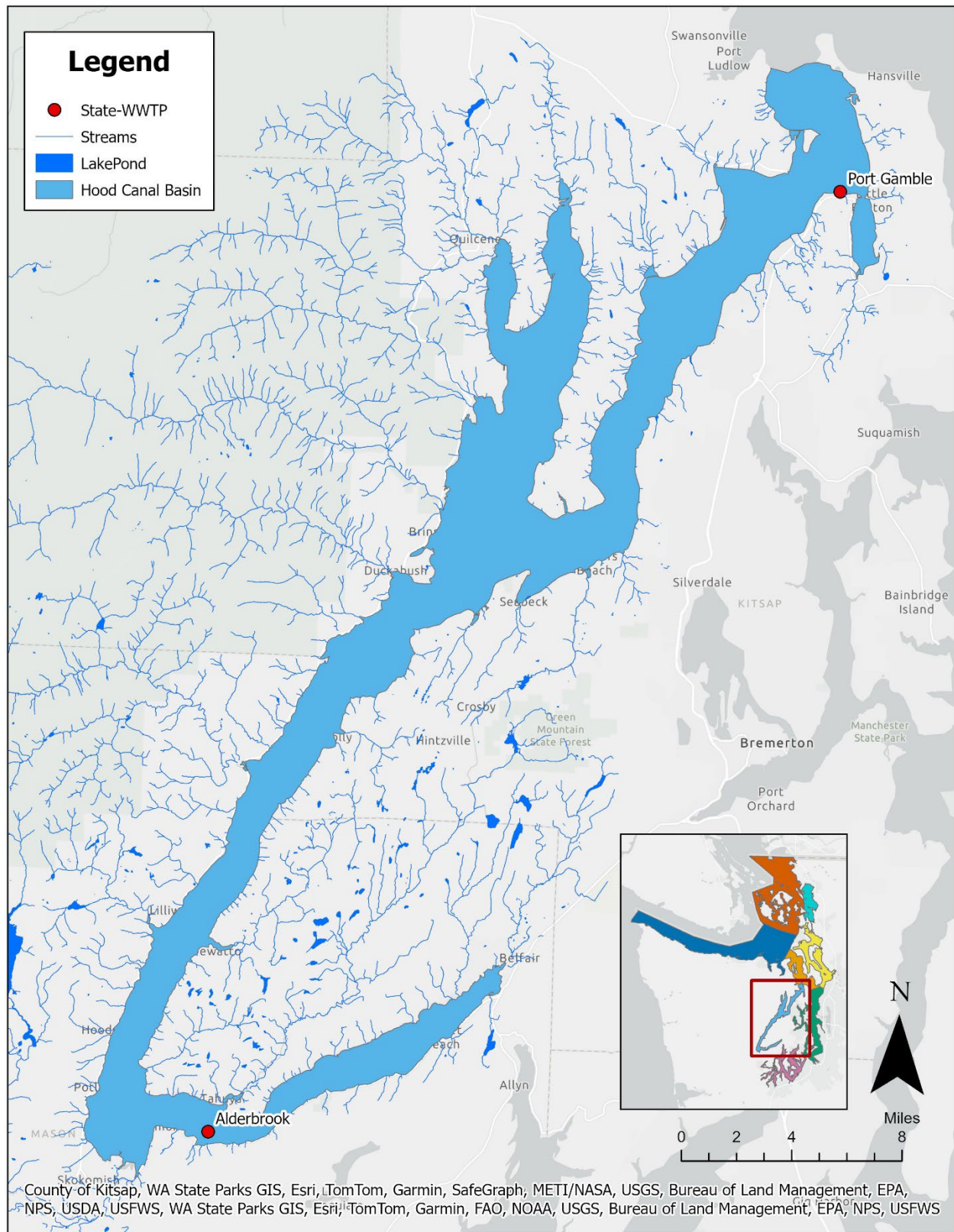
Main



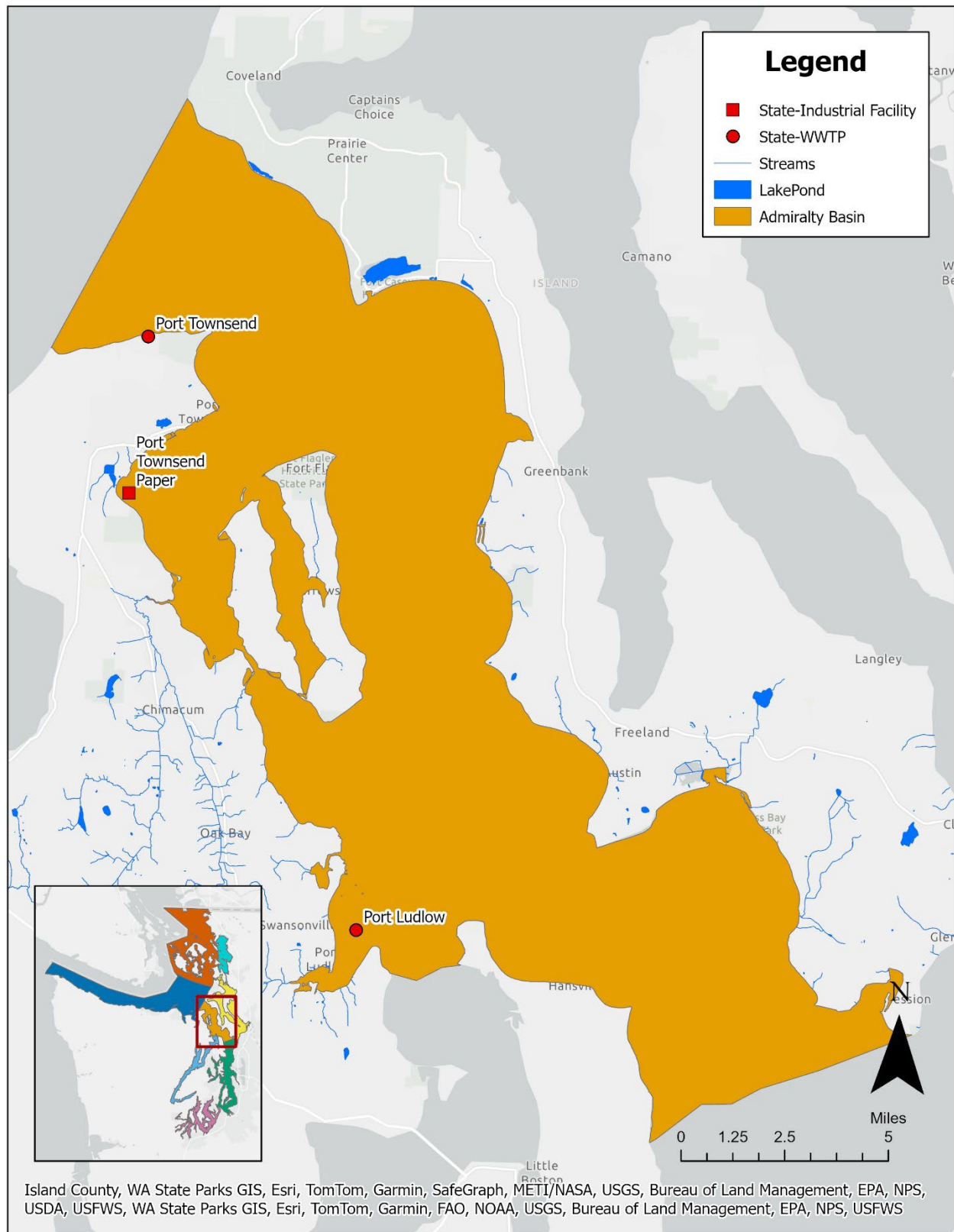
South Sound



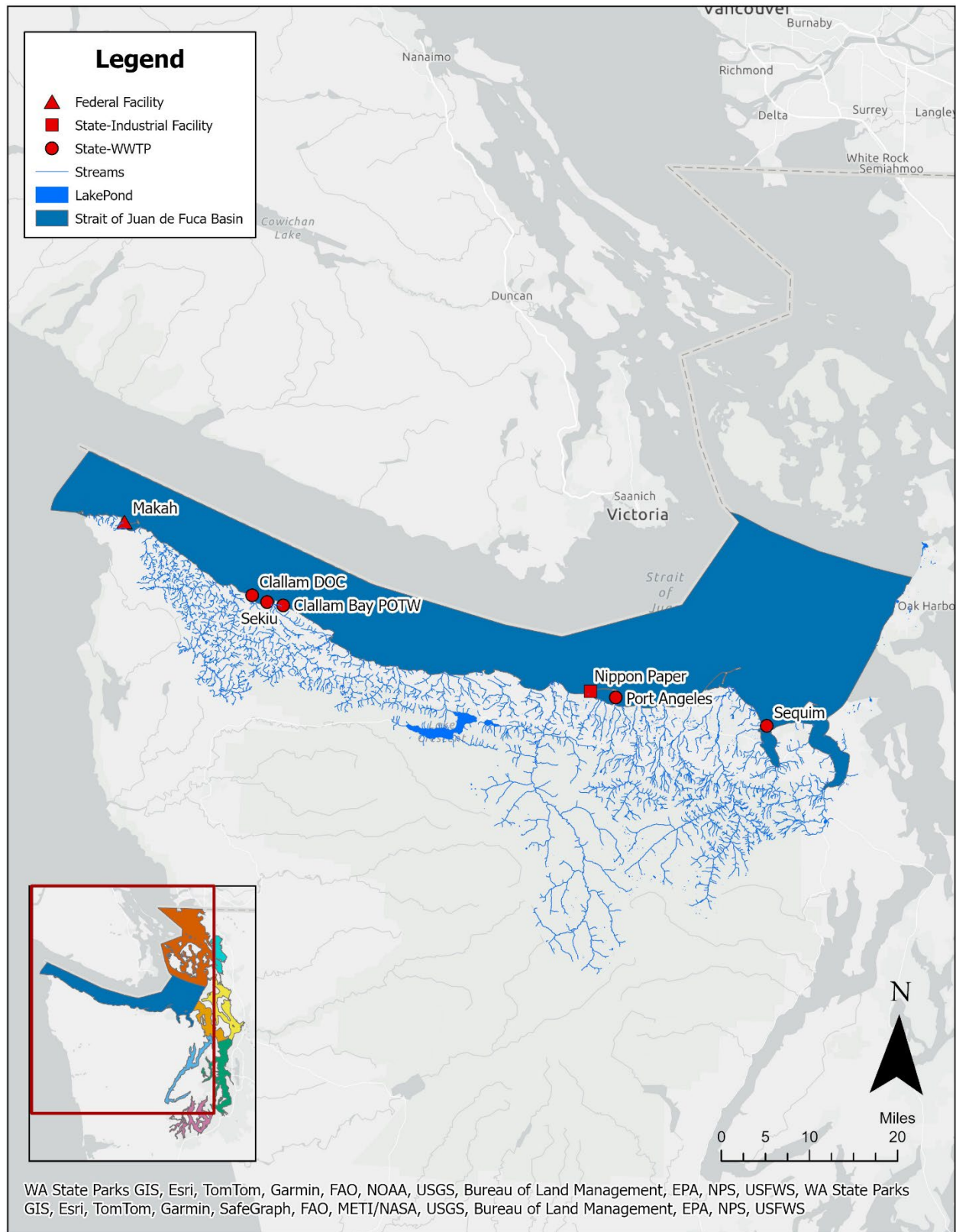
Hood Canal



Admiralty



Strait of Juan de Fuca



Strait of Georgia

