Draft
North Carolina
Oyster
Fishery Management Plan
AMENDMENT 3

By

North Carolina Division of Marine Fisheries

North Carolina Department of Environment and Natural Resources
Division of Marine Fisheries
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September 2012

Petition for rulemaking presented to and approved by MFC	May 2012
Amendment Process Initiated	May 2012
Draft Amendment presented for public and regional AC comments*	July/Aug., 2012
Draft FMP approved by MFC to submit to Secretary and JLCGO for review	August, 2012

DRAFT
Amendment 3 to the N.C. Oyster Fishery Management Plan
Seed Oyster Management Areas
August 31, 2012

I. ISSUE

The issue is a petition for rulemaking submitted by shellfish lease and franchise holders in Onslow County to add a seed oyster management area in the vicinity of New River Inlet to reduce travel time and costs compared to using existing seed oyster management areas in Carteret and Pender counties. The N.C. Marine Fisheries Commission accepted the petition for rule making at the May 9-11, 2012 business meeting. The proposed changes in oyster management strategy require an amendment to the N.C. Oyster Fishery Management Plan.

II. ORIGINATION

This issue originates from Tony and Gilbert Grant and other shellfish culturists in Onslow County.

III. BACKGROUND

The use of natural and managed oyster producing areas as a source of seed for oyster culturists has been a major resource for the oyster industry in many states including Connecticut, New Jersey, Delaware, Virginia, and Louisiana. The oyster areas set aside as a source for seed typically (but not always) contain oyster stocks that exhibit growth or survival characteristics that make them unsuitable for production of marketable oysters. These oysters can be transplanted to more suitable environmental and habitat conditions and produce a marketable product. Transplanting of seed oysters is usually done by holders of private shellfish rights but can also be accomplished by government agencies on public bottoms.

Seed oysters are normally stunted, slow growth or thin, elongated oysters found in areas near the limits of environmental tolerances for the species. When removed from overcrowding and salinity stresses, these oysters change their growth patterns and become suitable for marketing in a period ranging from 10-12 months to three years depending on source and growout area conditions. The importance of seed oyster areas has diminished as relaying of polluted oyster stocks increased due to proliferation of closed harvest areas and a much shorter time to market of from six weeks to four or five months. However, sources of seed continue to be a concern in areas where resources in permanent harvest closure areas are not abundant.

Shellfish lease and franchise holders are required to obtain a permit to transplant oysters from seed oyster management areas and must submit a report of the amount of seed oysters and shell transplanted. Oyster transplanting activities may be conducted from the end of oyster season through September 15 each year. During the period 1997-2011 there were 539 reports filed by shellfish growers holding permits to transplant oysters from seed oyster management areas. They reported transplanting 92,211 bushels of seed oysters during that 15-year period. On average, 36 permit holders each reported transplanting 171 bushels of seed oysters annually [Division of Marine Fisheries (DMF), Resource Enhancement Section]. Transplanting activities are allowed from open harvest areas from April 1 through September 30 each year. Most of the transplanting activity occurs in the Pender County seed oyster management areas.

The resources utilized from seed oyster areas are surprisingly similar to those taken from polluted areas on an average, annual per permit basis: 171 bushels for seed areas vs. 221 bushels for polluted areas. The differences become evident when comparing cumulative numbers over the 15-year analysis period when there were 421 more permit reports filed and

120,324 more bushels reported for relay activities (DMF, Resource Enhancement Section). These differences are most likely attributable to the widespread availability and much larger resource base of polluted areas. However, the amount of oysters transplanted from seed oyster management areas and relayed from polluted areas to private shellfish beds has shown an increasing trend since the last analysis in 2005.

There are currently six designated seed oyster management areas in North Carolina: two in Dare County at the southern end of Roanoke Island, one in Pamlico County in Bay River, one in White Oak River that occurs in Carteret and Onslow counties, and two in Pender County in and near Virginia Creek (Attachment 1). The seed oyster areas in Virginia Creek and White Oak River have been impacted by pollution closures. Pollution closures limit the time allowed for transplanting since relay from polluted areas can only occur during a six-week period following the closure of oyster season.

IV. AUTHORITY

North Carolina General Statutes

113-134. Rules.
113-182. Regulation of fishing and fisheries. Legislative findings and declaration of policy; authority of Marine Fisheries Commission.
113-203. Transplanting of oysters and clams.
143B-289.52. Marine Fisheries Commission – powers and duties.

North Carolina Fisheries Rules for Coastal Waters (15A NCAC)

03K .0208 Seed Oyster Management Areas

V. DISCUSSION

The petitioners assert that the addition of a seed oyster management area in the Swan Point area and Possum Bay would minimize travel time and greatly reduce gasoline consumption (Figure 1). They also claim the proposed seed oyster management areas are not used for harvesting oysters due to their small size.

A survey of the bottom types and shellfish resources in the proposed seed oyster management areas conducted by DMF's Shellfish Mapping staff between June 28 and July 17, 2012 substantially confirmed their assertions. Only 7.5% of the 15,409 oyster sampled in the proposed Possum Bay area and 7.3% of the 12,860 oysters sampled in the proposed area near Swan Point were of legal harvestable size. It should be noted that in each of the proposed areas there were a few meter square samples that produced 200-300 legal-size oysters each with individual percentages of legal-size oysters up to 23%. However, the overall percentages would not indicate high harvest activity especially considering the growth patterns of the oysters in these areas. Oyster resources in areas adjacent to the proposed seed oyster management areas were similar to those sampled within the proposed sites. The vast majority of the oysters sampled were on intertidal, hard, non-vegetated, shell bottoms (Attachment II).

The three largest producers of oysters from private shellfish bottoms are Topsail Sound, Stump Sound and Newport River. These water bodies are located in Pender, Onslow and Carteret counties. These three counties also contain the highest number and acreage of private shellfish bottoms in the state. The proposed seed oyster management areas will be centrally located between the existing areas at Virginia Creek in Pender County and White Oak River on the Onslow-Carteret county border and will be centrally located in the area of highest oyster culture activity and occurrence of privately held shellfish bottoms. In Onslow County there are 27 shellfish franchises encompassing 201 acres and 53 shellfish leases encompassing 488 acres.

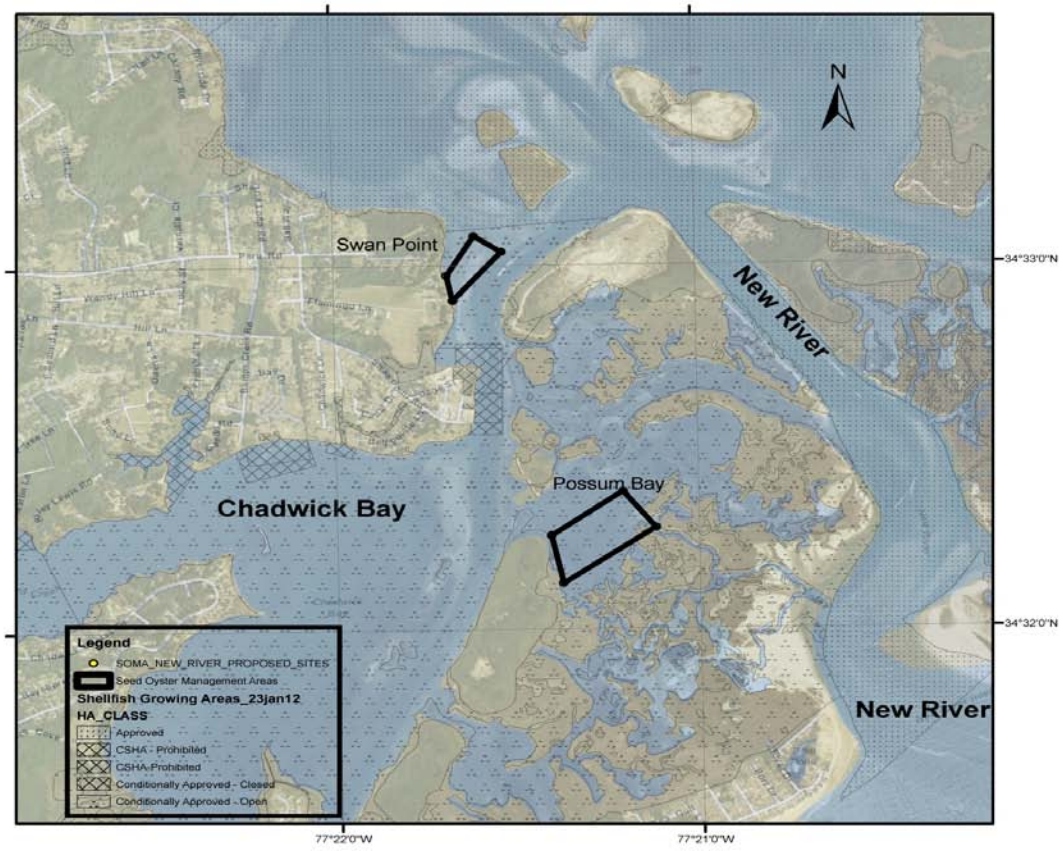

Figure 1. Proposed Seed Oyster Management Areas in Onslow County

In 2011, 37 shellfish franchise and lease holders obtained permits to transplant seed oysters. In 2012, the number obtaining permits was 30. The seed oyster management areas in White Oak River and Virginia Creek have been impacted by pollution closures reducing the time period for transplanting oysters form those areas. Transplanting activities from polluted areas (called relaying) are only allowed during a six-week period following the close of the regular oyster season. Transplanting activities from seed oyster management areas may be conducted from April 1 through September 15.

The Blue Ribbon Advisory Council on Oysters (1995) identified the lack of seed oyster resources as an impediment to oyster culture in North Carolina and recommended establishing managed seed oyster beds in each major coastal water body in the state.

Seed oyster management areas are open to public harvest during the regular oyster season. Shellfish lease and franchise holders are limited to transplanting no more than 100 bushels from

seed oyster management areas for each acre of area held under lease or franchise with a maximum of 1000 bushels for the entire lease or franchise.

VI. PROPOSED RULE(S)

15A NCAC 03R .0116 DESIGNATED SEED OYSTER MANAGEMENT AREAS

The Seed Oyster Management Areas referenced in 15A NCAC 03K .0208 are delineated in the following coastal water areas:

(1) Croatan Sound and tributaries: Cedar Bush Bay Seed Oyster Management Area, within the area described by a line beginning at a point 35° 50.0383' N - 75° 40.0712' W; running easterly to a point 35° 50.2328' N - 75° 39.4930' W; running southeasterly to a point 35° 49.3831' N - 75° 39.1521' W; running southwesterly to a point 35° 48.8000' N - 75° 39.5000' W; running westerly to a point 35° 48.6333' N - 75° 40.7000' W; running northerly to a point 35° 49.7000' N - 75° 40.6333' W; running northeasterly back to the point of beginning;

(2) Croatan and Roanoke sounds and tributaries: Wanchese Marshes Seed Oyster Management Area, within an area described by a line beginning at a point 35° 49.0000' N - 75° 38.3000' W; running northerly to a point 35° 49.2243' N - 75° 38.3000' W; running easterly to a point 35° 49.0806' N - 75° 37.5293' W; running easterly to a point 35° 49.2893' N - 75° 37.0335' W; running northeasterly to point 35° 49.5541' N - 75° 36.9715' W; running southerly to a point 35° 49.0000' N - 75° 36.5500' W; running southwesterly to a point 35° 48.1500' N - 75° 36.9500' W; running westerly to a point 35° 48.1000' N - 75° 37.6333' W; running northwesterly to the point of beginning;

(3) Pamlico Sound and tributaries: Bay River Seed Oyster Management Area, within an area described by a line beginning at a point 35º 10.7670' N - 76º 36.7000' W off Spencer Point; running southeasterly to a point 35º 10.5330' N - 76º 36.4670' W; running westerly to a point 35º 10.4670' N - 76º 36.6500' W; running northwesterly to a point 35º 10.8000' N - 76º 36.9170' W, running easterly to the point of beginning;

(4) White Oak River: White Oak River Seed Oyster Management Area, within an area described by a line beginning at a point 34º 43.0774' N - 77º 06.8610' W on the White Oak River/Stevens Creek polluted area line; running northeasterly to a point 34º 43.4006' N - 77º 06.1293' W on the east shore; running southerly along the shoreline to a point 34º 43.0755' N - 77º 06.1187' W; running southwesterly to a point 34º 42.8800' N - 77º 06.7975' W on the White Oak River/Stevens Creek polluted area line; running northerly to the point of beginning;

(5) New River area:

(a) Possum Bay Seed Oyster Management Area, within an area described by a line beginning at a point 34° 32.1256' N - 77° 21.3781' W; running northeasterly to a point 34° 32.2773' N - 77° 21.1194' W; running northwesterly to a point 34° 32.3365' N - 77° 21.1720' W; running southwesterly to a point 34° 32.2068' N - 77° 21.3958' W; running south to the point of beginning; and

(b) Swan Point Seed Oyster Management Area, within an area described by a line beginning at a point 34° 32.9863' N - 77° 21.6148' W; running southerly to a point 34° 32.9040' N - 77° 21.6704' W; running northeasterly to a point 34° 33.0376' N - 77° 21.5339' W; running northwesterly to a point 34° 33.0693' N - 77° 21.5923' W; running southwesterly to the point of beginning; and

(6) Topsail Sound and tributaries:

(a) Virginia Creek Seed Oyster Management Area, within an area described by a line beginning at a point 34º 25.4620' N - 77º 36.0074' W on the north shore; running southerly to a point 34º 25.1346' N - 77º 36.0640' W on the south shore; running easterly and southerly along the shoreline to a point 34º 24.9438' N - 77º 35.5325' W on Sloop Point; running northeasterly to a point 34º 25.0988' N - 77º 35.2920' W on the north shore; running northwesterly along the shoreline to the point of beginning; and

(b) Topsail Sound Seed Oyster Management Area, within an area described by a line beginning at a point 34º 24.6555' N - 77º 35.6012' W across the IWW from Sloop Point; running southeasterly to a point 34º 24.3677' N - 77º 35.2015' W; running northeasterly to a point 34º 24.5260' N - 77º 35.1070' W; running northwesterly to a point 34º 24.8690' N - 77º 35.2872' W; running southwesterly to the point of beginning.

History Note: Authority G.S. 113-134; 113-182; ~~113-201;~~ 113-203; ~~113-204;~~ 143B-289.52; Eff. October 1, ~~2008.~~ 2008; Amended Eff. April 1, 2014.

VII. PROPOSED MANAGEMENT OPTIONS

(+ Potential positive impact of action)
(- Potential negative impact of action)

A. Status quo

+ Less harvest pressure and negative habitat impacts on an existing oyster resource and habitat
+ No additional enforcement and administrative responsibilities on limited staff
- Continued hardship on area leaseholders attempting to supply markets with oysters
- Fails to take advantage of an opportunity for expansion of a low impact fishery

B. Create the proposed seed oyster management areas

+ Decreases expenses and travel time for leaseholders transplanting seed oysters for growout
+ Provides an opportunity to expand a low impact fishery
- Creates a modest increase in enforcement and administrative responsibilities for staff
- Increases harvest pressure and habitat impacts on an existing oyster resource and habitat

VIII. RECOMMENDATION

The proposal to create seed oyster management areas at Swan Point and Possum Bay in Onslow County is supported by the Shellfish/Crustacean advisory committee and the Southern and Northern regional advisory committees. The DMF position is support of the designation of the seed oyster management areas with modifications to align the boundaries more closely with the seed oyster producing areas.

The N.C. Marine Fisheries Commission approved draft Amendment 3 to the N.C. Oyster Fishery Management Plan for review by the secretary of the Department of Environment and Natural Resources and the Joint legislative Commission on Governmental Operations at the August 2012 business meeting. The preferred management option selected by the commission for Amendment 3 included the modifications to the boundaries of the seed oyster management

areas in the DMF position. The modified boundaries are included in section VI. Proposed Rule(s) above.

IX. LITERATURE CITED

Frankenberg, D. 1995. North Carolina Blue Ribbon Advisory Council on Oysters: Final Report on Studies and Recommendations. North Carolina Department of Environment, Health, and Natural Resources. Raleigh, NC.

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7/19/2012

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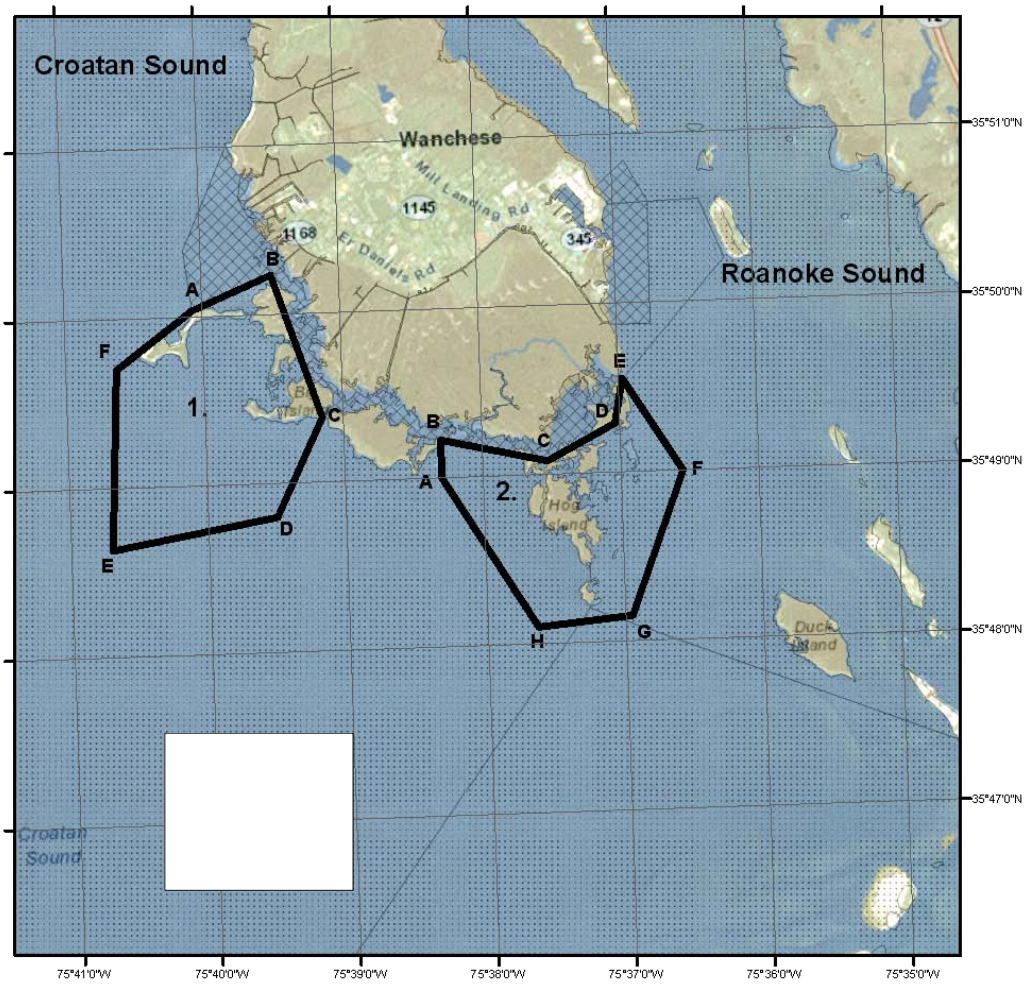
ATTACHMENT 1. EXISTING SEED OYSTER MANAGEMENT AREAS

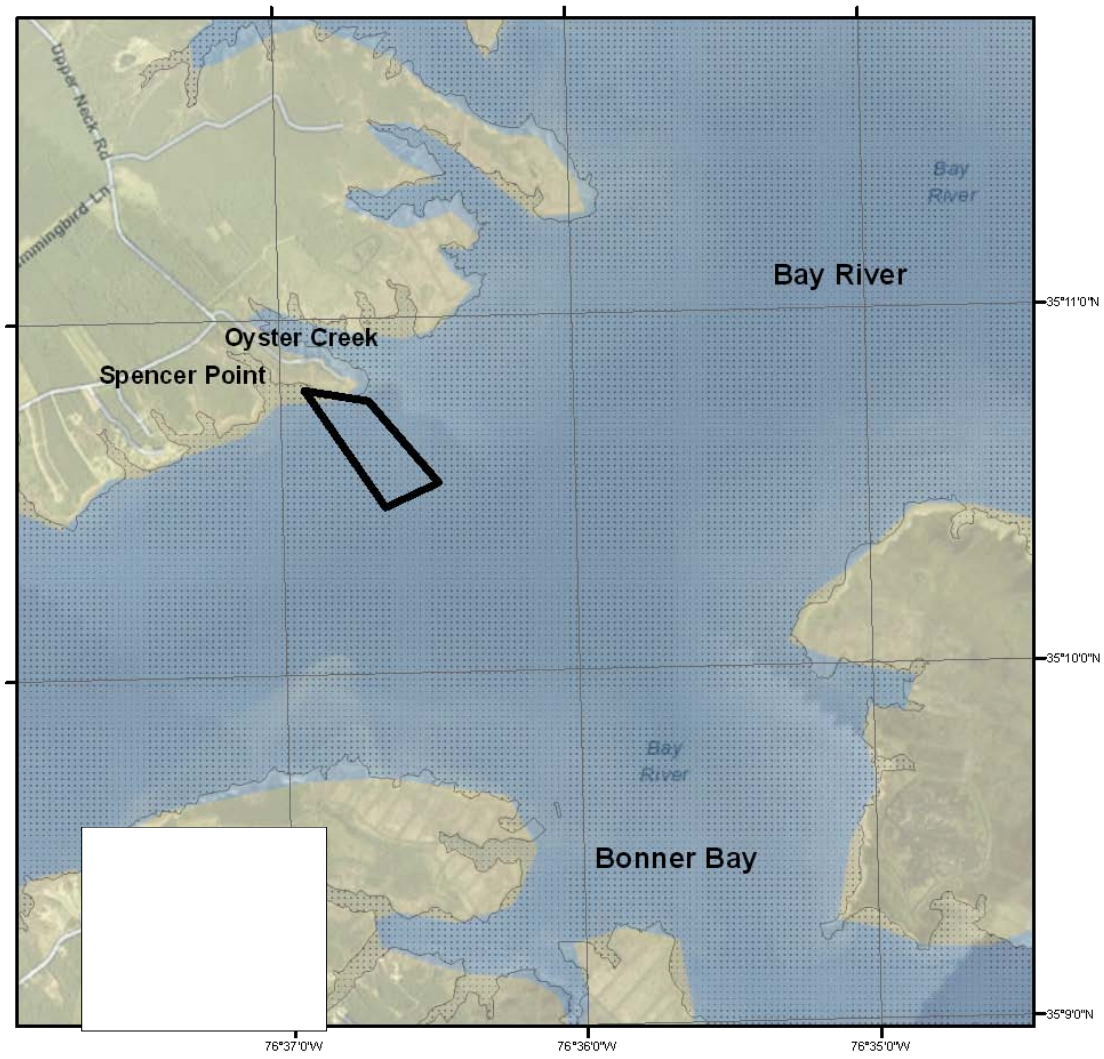
CEDAR BUSH BAY & WANCHESE MARSHES SEED OYSTER MGMT. AREAS

Dare County



BAY RIVER SEED OYSTER MANAGEMENT AREA

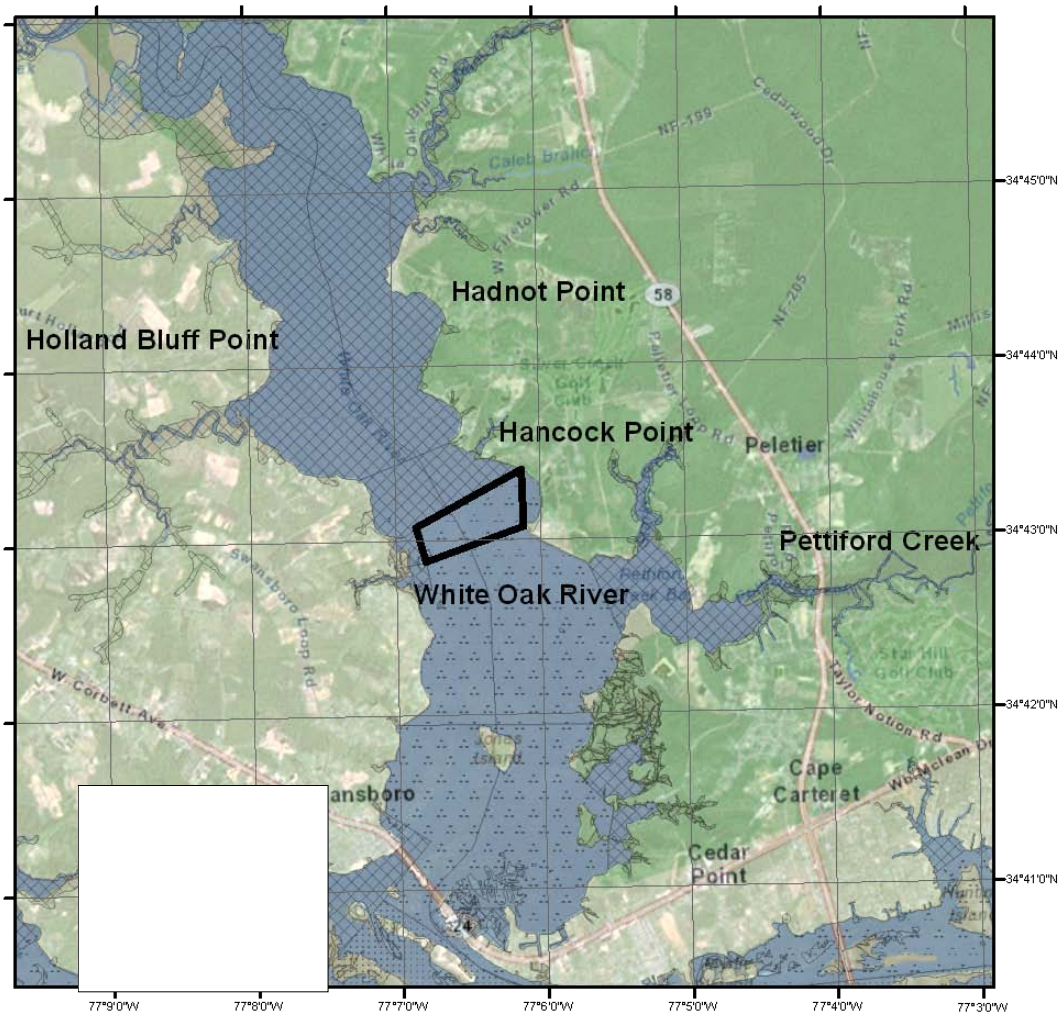
Pamlico County



WHITE OAK RIVER SEED OYSTER MANAGEMENT AREA

Carteret and Onslow Counties

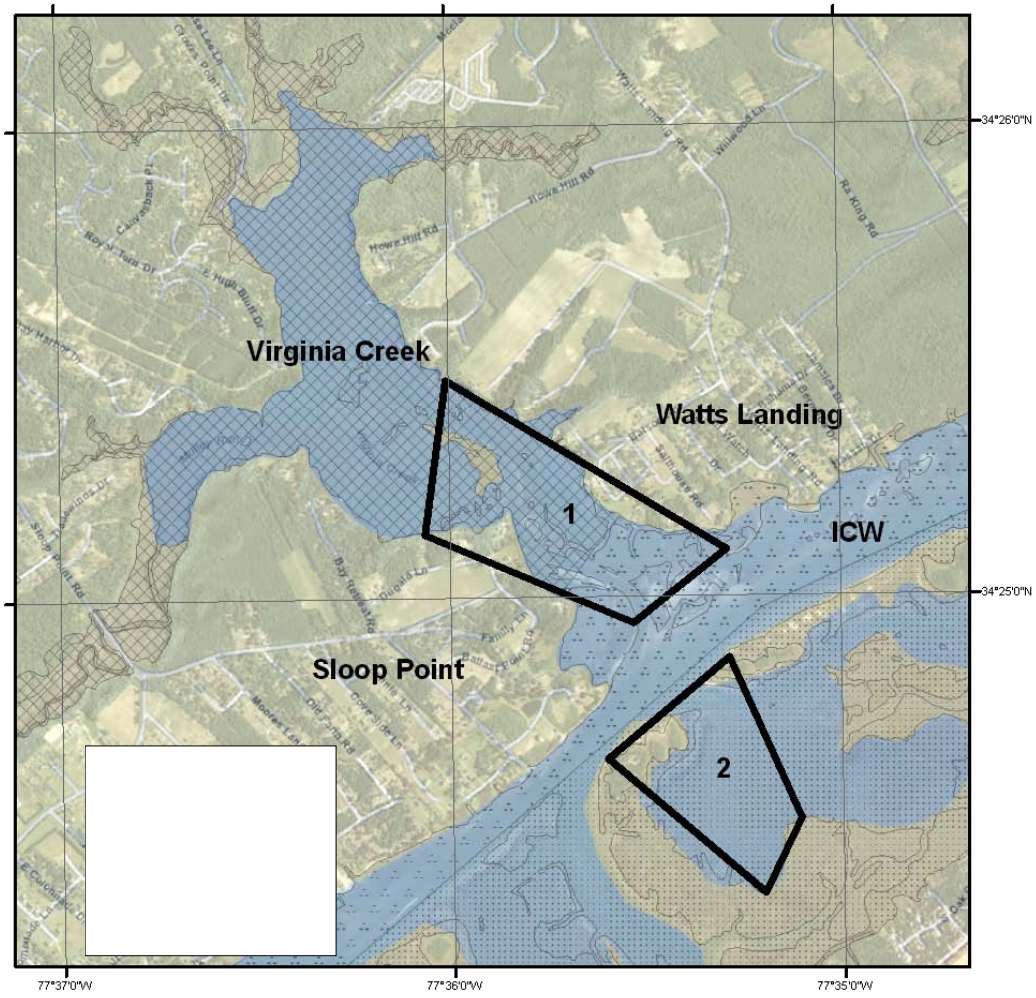
HAND HARVESTING ONLY



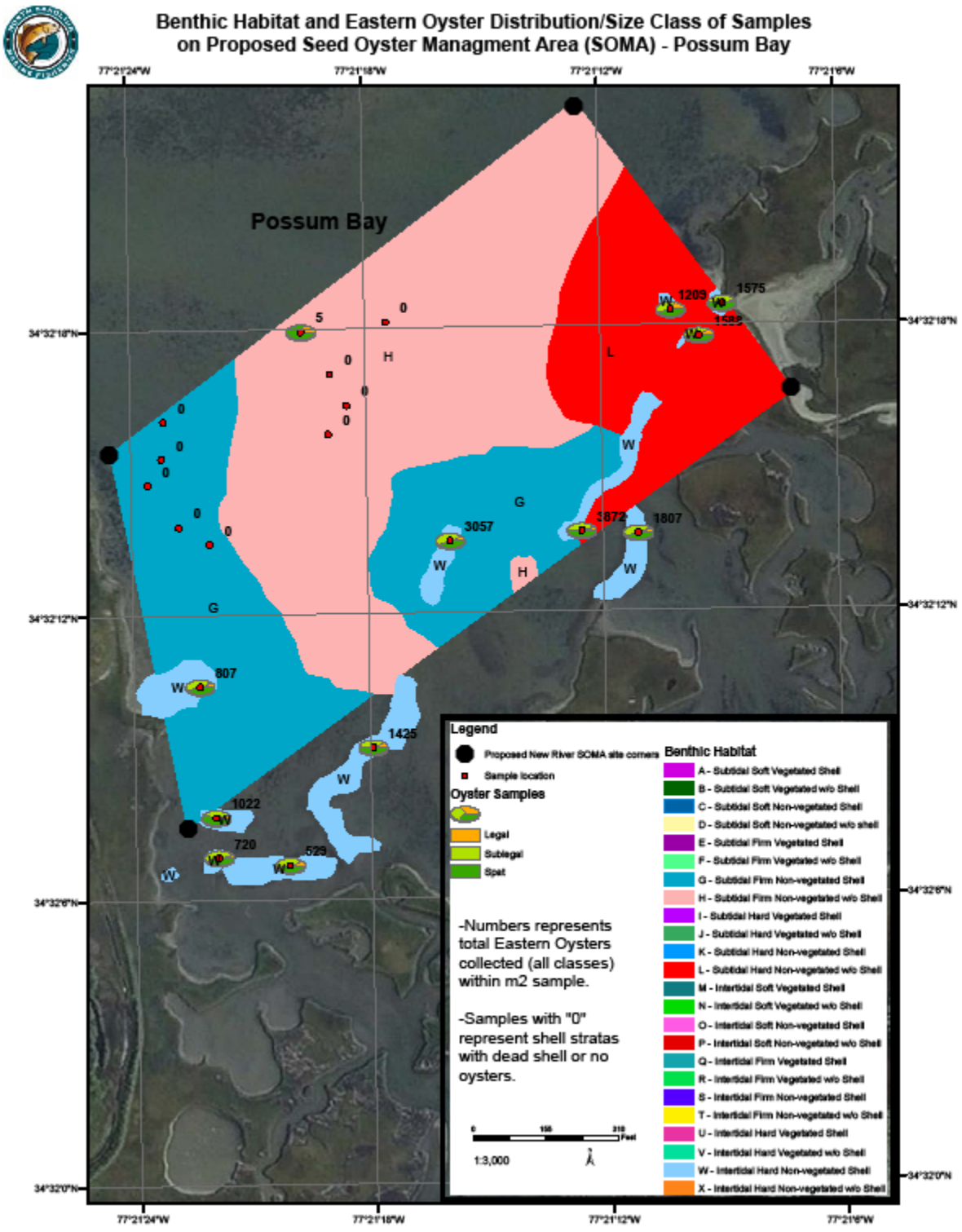
VIRGINIA CREEK SEED OYSTER MANAGEMENT AREAS

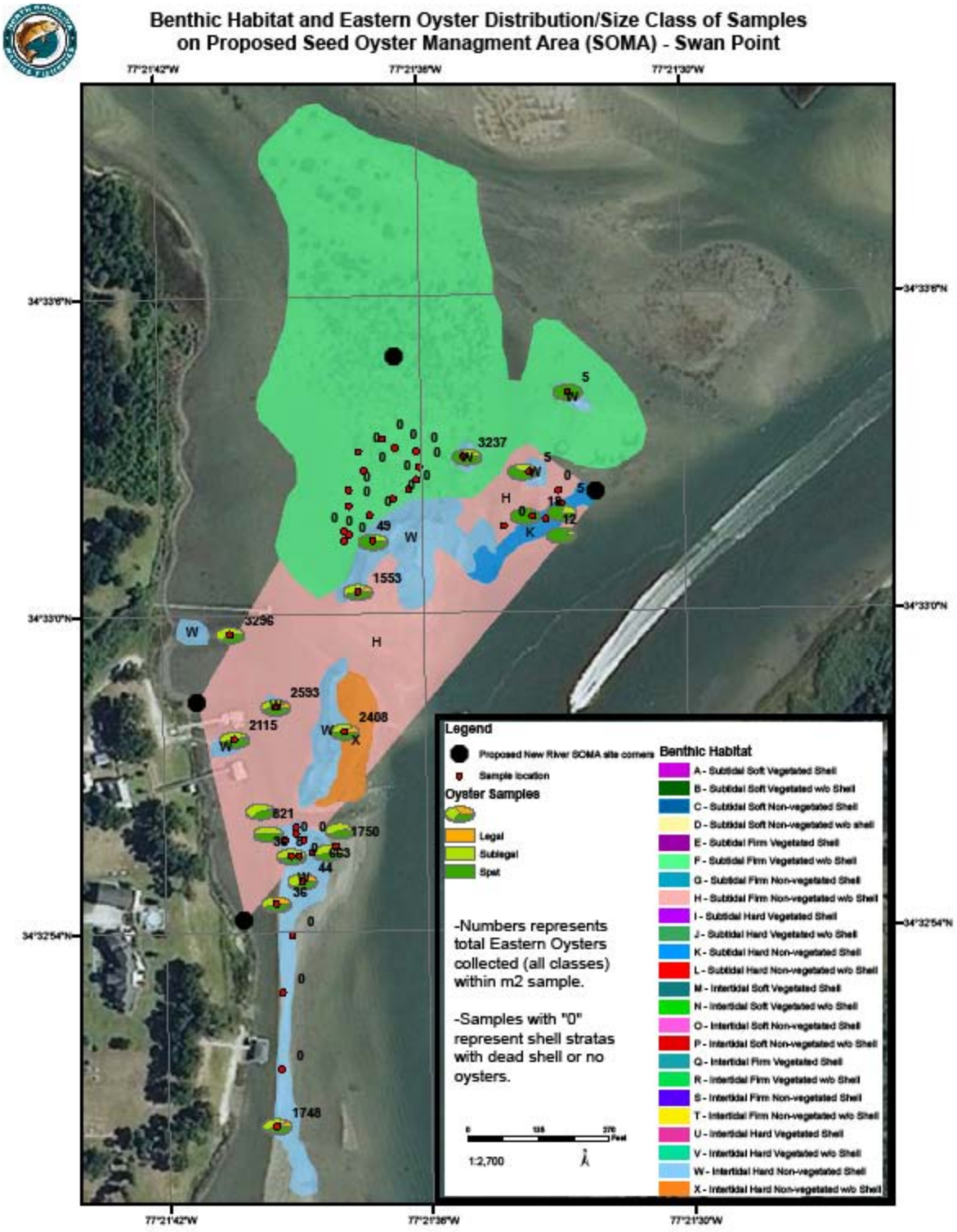
Pender County

HAND HARVESTING ONLY



Attachment II. Shellfish Bottom Survey Results for the Proposed Possum Bay and Swan Point Seed Oyster Management Areas




Benthic Habitat and Eastern Oyster Distribution/Size Class of Samples
on Proposed Seed Oyster Managment Area (SOMA) - Swan Point
77°21'42"W
77°21'36"W
77°21'30"W
34°33'6"N
34°33'0"N
34°32'54"N
Legend
Proposed New River SOMA site corners
Sample location
Oyster Samples
Legal
Sublegal
Spat
-Numbers represents total Eastern Oysters collected (all classes) within m2 sample.
-Samples with "0" represent shell stratas with dead shell or no oysters.
1:2,700
Benthic Habitat
A - Subtidal Soft Vegetated Shell
B - Subtidal Soft Vegetated w/o Shell
C - Subtidal Soft Non-vegetated Shell
D - Subtidal Soft Non-vegetated w/o shell
E - Subtidal Firm Vegetated Shell
F - Subtidal Firm Vegetated w/o Shell
G - Subtidal Firm Non-vegetated Shell
H - Subtidal Firm Non-vegetated w/o Shell
I - Subtidal Hard Vegetated Shell
J - Subtidal Hard Vegetated w/o Shell
K - Subtidal Hard Non-vegetated Shell
L - Subtidal Hard Non-vegetated w/o Shell
M - Intertidal Soft Vegetated Shell
N - Intertidal Soft Vegetated w/o Shell
O - Intertidal Soft Non-vegetated Shell
P - Intertidal Soft Non-vegetated w/o Shell
Q - Intertidal Firm Vegetated Shell
R - Intertidal Firm Vegetated w/o Shell
S - Intertidal Firm Non-vegetated Shell
T - Intertidal Firm Non-vegetated w/o Shell
U - Intertidal Hard Vegetated Shell
V - Intertidal Hard Vegetated w/o Shell
W - Intertidal Hard Non-vegetated Shell
X - Intertidal Hard Non-vegetated w/o Shell

Sample #	Location	Station ID	Strata	Date	Oyster seed	Oyster Sublegal	Oyster Legal	Total Oyster	Clam seed	Clam L.N.	Clam Cherry	Clam Chow	Total Clams	Total Scallop	Shellfish Comment	Sample area (m2)
1	Proposed Swan Point SCMA	W-1	W	6/29/12	735	890	125	1,750	0	2	0	0	2	0		1.00
2	Proposed Swan Point SCMA	W-2	W	6/29/12	0	0	0	0	0	0	0	0	0	0	dead shell	1.00
3	Proposed Swan Point SCMA	W-3	W	6/29/12	336	453	42	831	0	2	0	0	2	0		1.00
4	Proposed Swan Point SCMA	W-4	W	6/29/12	0	0	0	0	0	0	0	0	0	0	dead shell	1.00
5	Proposed Swan Point SCMA	W-5	W	6/29/12	0	0	0	0	0	0	0	0	0	0	dead shell	1.00
6	Proposed Swan Point SCMA	W-6	W	6/29/12	230	330	41	601	0	0	0	0	0	0		1.00
7	Proposed Swan Point SCMA	W-7	W	6/29/12	4	4	0	8	0	0	0	0	0	0	dead shell	1.00
8	Proposed Swan Point SCMA	W-8	W	6/29/12	16	20	0	36	0	0	0	0	0	0	dead shell	1.00
9	Proposed Swan Point SCMA	W-9	W	6/29/12	16	30	0	46	0	0	0	0	0	0	dead shell	1.00
10	Proposed Swan Point SCMA	W-10	W	6/29/12	16	8	12	36	0	1	0	0	1	0	dead shell	1.00
11	Proposed Swan Point SCMA	W-11	W	6/29/12	0	0	0	0	0	0	0	0	0	0	dead shell	1.00
12	Proposed Swan Point SCMA	W-12	W	6/29/12	0	0	0	0	0	0	0	0	0	0	dead shell	1.00
13	Proposed Swan Point SCMA	W-13	W	6/29/12	0	0	0	0	0	0	0	0	0	0	dead shell	1.00
14	Proposed Swan Point SCMA	W-14	W	6/29/12	744	832	172	1,748	1	3	0	0	4	0		1.00
15	Proposed Swan Point SCMA	W-15	W	6/29/12	1,205	911	292	2,408	0	3	0	0	3	0		1.00
16	Proposed Swan Point SCMA	W-16	W	6/29/12	690	659	201	1,550	0	4	0	0	4	0		1.00
17	Proposed Swan Point SCMA	W-17	W	6/29/12	39	9	1	49	0	3	0	0	3	0		1.00
18	Proposed Swan Point SCMA	W-18	W	6/29/12	2,308	1,006	23	3,337	2	12	6	0	20	0		1.00
19	Proposed Swan Point SCMA	W-19	W	6/29/12	3	2	0	5	2	15	0	0	17	0		1.00
20	Proposed Swan Point SCMA	W-20	W	6/29/12	5	0	0	5	1	5	0	1	7	0		1.00
21	Proposed Possum Bay SCMA	W-21	W	7/2/12	738	560	128	1,425	0	0	0	0	0	0	mussels	1.00
22	Proposed Possum Bay SCMA	W-22	W	7/2/12	241	249	38	528	1	2	0	0	3	0		1.00
23	Proposed Possum Bay SCMA	W-23	W	7/2/12	321	363	36	720	0	0	0	0	0	0	mussels	1.00
24	Proposed Possum Bay SCMA	W-24	W	7/2/12	551	405	66	1,022	0	0	0	0	0	0		1.00
25	Proposed Possum Bay SCMA	W-25	W	7/2/12	312	337	58	707	0	2	0	0	2	0		1.00
26	Proposed Possum Bay SCMA	W-26	W	7/3/12	1,308	1,452	297	3,057	1	0	0	0	1	0		1.00
27	Proposed Possum Bay SCMA	W-27	W	7/3/12	1,924	1,720	228	3,872	0	2	0	0	2	0	mussels	1.00
28	Proposed Possum Bay SCMA	W-28	W	7/3/12	784	920	123	1,827	0	0	0	0	0	0	mussels	1.00
29	Proposed Swan Point SCMA	W-29	W	7/3/12	1,280	1,864	72	3,216	0	1	0	0	1	0		1.00
30	Proposed Possum Bay SCMA	W-30	W	7/10/12	552	444	233	1,229	0	0	0	0	0	0		1.00
31	Proposed Possum Bay SCMA	W-31	W	7/10/12	718	658	182	1,558	0	0	0	0	0	0		1.00
32	Proposed Possum Bay SCMA	W-32	W	7/10/12	835	677	93	1,605	0	0	0	0	0	0		1.00
33	Proposed Swan Point SCMA	W-33	W	7/11/12	1,212	1,147	234	2,593	0	0	0	0	0	0		1.00
34	Proposed Swan Point SCMA	W-34	W	7/11/12	656	1,327	132	2,115	0	10	0	0	10	0		1.00
35	Proposed Swan Point SCMA	F-1	F	7/10/12	0	0	0	0	0	0	0	0	0	0		1.00
36	Proposed Swan Point SCMA	F-2	F	7/10/12	0	0	0	0	0	1	0	0	1	0		1.00
37	Proposed Swan Point SCMA	F-3	F	7/10/12	0	0	0	0	0	1	0	0	1	0		1.00
38	Proposed Swan Point SCMA	F-4	F	7/10/12	0	0	0	0	0	0	0	0	0	0		1.00
39	Proposed Swan Point SCMA	F-5	F	7/10/12	0	0	0	0	0	0	0	0	0	0		1.00
40	Proposed Swan Point SCMA	F-6	F	7/10/12	0	0	0	0	0	1	1	0	2	0		1.00
41	Proposed Swan Point SCMA	F-7	F	7/10/12	0	0	0	0	0	0	0	0	0	0		1.00
42	Proposed Swan Point SCMA	F-8	F	7/10/12	0	0	0	0	0	0	0	0	0	0		1.00
43	Proposed Swan Point SCMA	F-9	F	7/10/12	0	0	0	0	0	0	0	0	0	2		1.00
44	Proposed Swan Point SCMA	F-10	F	7/10/12	0	0	0	0	0	0	0	0	0	2		1.00
45	Proposed Swan Point SCMA	F-11	F	7/10/12	0	0	0	0	0	0	0	0	0	2		1.00
46	Proposed Swan Point SCMA	F-12	F	7/10/12	0	0	0	0	0	1	0	0	1	0		1.00
47	Proposed Swan Point SCMA	F-13	F	7/10/12	0	0	0	0	0	0	0	0	0	0		1.00
48	Proposed Swan Point SCMA	F-14	F	7/10/12	0	0	0	0	0	0	0	0	0	0		1.00
49	Proposed Swan Point SCMA	F-15	F	7/10/12	0	0	0	0	0	0	0	0	0	0		1.00

Sample #	Gear	Sediment Type/ Bottom	SAV Density Class	SAV Species	Depth (m)	Temp Surface (°C)	Temp Bottom (°C)	Salinity Surface (ppt)	Salinity Bottom (ppt)	DO (mg/L) Surface	DO (mg/L) Bottom	LAT_DD MM.mmm	LON_DD MM.mmm	LAT_DD	LON_DD
1	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.627	77 21.035	[illegible]	[illegible]
2	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.629	77 21.054	[illegible]	[illegible]
3	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.650	77 21.050	[illegible]	[illegible]
4	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.651	77 21.050	[illegible]	[illegible]
5	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.629	77 21.047	[illegible]	[illegible]
6	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.625	77 21.044	[illegible]	[illegible]
7	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.624	77 21.049	[illegible]	[illegible]
8	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.624	77 21.052	[illegible]	[illegible]
9	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.615	77 21.048	[illegible]	[illegible]
10	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.630	77 21.059	[illegible]	[illegible]
11	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.630	77 21.052	[illegible]	[illegible]
12	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.631	77 21.056	[illegible]	[illegible]
13	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.657	77 21.057	[illegible]	[illegible]
14	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.659	77 21.059	[illegible]	[illegible]
15	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.650	77 21.031	[illegible]	[illegible]
16	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 33.037	77 21.025	[illegible]	[illegible]
17	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 33.020	77 21.019	[illegible]	[illegible]
18	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 33.049	77 21.594	[illegible]	[illegible]
19	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 33.040	77 21.559	[illegible]	[illegible]
20	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 33.059	77 21.544	[illegible]	[illegible]
21	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.150	77 21.299	[illegible]	[illegible]
22	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.112	77 21.335	[illegible]	[illegible]
23	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.115	77 21.385	[illegible]	[illegible]
24	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.129	77 21.386	[illegible]	[illegible]
25	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.175	77 21.372	[illegible]	[illegible]
26	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.225	77 21.285	[illegible]	[illegible]
27	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.229	77 21.209	[illegible]	[illegible]
28	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.227	77 21.185	[illegible]	[illegible]
29	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.594	77 21.074	[illegible]	[illegible]
30	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.305	77 21.170	[illegible]	[illegible]
31	[illegible]	S/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.298	77 21.158	[illegible]	[illegible]
32	[illegible]	T/A	0		0	30.6	30.5	37.0	37.0	5.1	5.1	34 32.307	77 21.148	[illegible]	[illegible]
33	[illegible]	T/A	0		0	28.0	28.0	33.0	33.0	4.8	4.8	34 32.971	77 21.057	[illegible]	[illegible]
34	[illegible]	T/A	0		0	28.0	28.0	33.0	33.0	4.8	4.8	34 32.981	77 21.073	[illegible]	[illegible]
35	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.020	77 21.030	[illegible]	[illegible]
36	[illegible]	S/B	1	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.025	77 21.029	[illegible]	[illegible]
37	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.025	77 21.030	[illegible]	[illegible]
38	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.031	77 21.030	[illegible]	[illegible]
39	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.034	77 21.029	[illegible]	[illegible]
40	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.050	77 21.029	[illegible]	[illegible]
41	[illegible]	S/B	2	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.058	77 21.011	[illegible]	[illegible]
42	[illegible]	S/B	3	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.059	77 21.005	[illegible]	[illegible]
43	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.045	77 21.022	[illegible]	[illegible]
44	[illegible]	S/B	3	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.051	77 21.024	[illegible]	[illegible]
45	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.042	77 21.002	[illegible]	[illegible]
46	[illegible]	S/B	3	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.048	77 21.001	[illegible]	[illegible]
47	[illegible]	S/B	3	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.051	77 21.002	[illegible]	[illegible]
48	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.056	77 21.015	[illegible]	[illegible]
49	[illegible]	S/B	4	Shoal Grass	0.5	31.5	31.5	34.0	34.0	4.3	4.3	34 33.052	77 21.010	[illegible]	[illegible]