

ENTRIX

MEMORANDUM

TO: Jim Hoff, NOAA
FROM: Gary Harmon, ENTRIX
DATE: September 6, 2000
SUBJECT: July, 2000 Field Effort for the Swanson Creek Oil Spill

cc: Ralph Markarian, ENTRIX
Wayne Kicklighter, ENTRIX
Kevin Smith, MDNR
Rick Ayella, MDE
Jacqui Michel, RPI
Al Rizzo, USFWS

This memo summarizes the major findings and decisions made during the July, 2000 marsh injury assessment effort for the Swanson Creek Oil Spill. Included are plates of photos of each exposure group, a map showing the location of each photoquad, a data summary table for the major vegetation characteristics, a table containing all the information from the field data sheets and a brief description of daily activities summarized below. Information from the benthic samples and sediment chemistry cores are not yet available.

Monday July 17, 2000

- People attending were: Gary Harmon (ENTRIX), Chris Pfeifer (ENTRIX), Angie Morrow (ENTRIX), Al Rizzo (USFWS), Kevin Smith (MDNR), Mitch Keiller (MDNR), Jacqui Michel (RPI), Anne Wearmouth (PEPCO), Jim Hoff (NOAA), Rick Ayella (MDE), Sean Everett (MDNR), and Devon Ray (USFWS).
- Information was collected for 9 photoquads. Chris Pfeifer and Angie Morrow processed samples on the boat and everyone else participated in data collection as a group. The group felt it was necessary to work together initially to provide consistency in the collection of data.

Tuesday July 18, 2000

- People attending were: Gary Harmon (ENTRIX), Chris Pfeifer (ENTRIX), Angie Morrow (ENTRIX), Jacqui Michel (RPI), Anne Wearmouth (PEPCO), Sean Everett (MDNR), Rick Ayella (MDE), Mitch Keiller (MDNR), and Devon Ray (USFWS).
- Information was collected for 13 photoquads.

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- We broke into three groups to expedite the assessment. Mitch Keiller and Rick Ayella updated the information on the McCormick maps for areas in the major creeks. For most of the afternoon, Jacqui Michel, Anne Wearmouth and Devon Ray formed one group for data collection and Gary Harmon and Sean Everett formed a second. Angie Morrow and Chris Pfeifer processed samples.

Wednesday July 19, 2000

- People attending were: Gary Harmon (ENTRIX), Bob Nailon (ENTRIX), Angie Morrow (ENTRIX), Mitch Keiller (MDNR), Jacqui Michel (RPI), and Sean Everett (MDNR).
- Information was collected for 12 photoquads.
- We again broke into two groups for data collection. Jacqui Michel, Bob Nailon and Sean Everett formed one group and Gary Harmon and Mitch Keiller formed a second. Angie Morrow processed sediment samples.
- A photoquad was set up in Trent Hall Creek that was labelled AMT11. The oiled area was adjacent to the shoreline but the photoquad was established more than 10 meters from the shore. This is the only place where we found interior oiling of marsh outside of Swanson Creek. Rather than establish a new exposure category (moderately oiled, interior, *Spartina alterniflora*) we agreed to consider this area all moderately oiled shoreline *Spartina alterniflora*.

Thursday July 20, 2000

- People attending were: Gary Harmon (ENTRIX), Bob Nailon (ENTRIX), Angie Morrow (ENTRIX), Nicole Vesper (ENTRIX), Sean Everett (MDNR), and Devon Ray (USFWS).
- Information was collected for 5 photoquads.

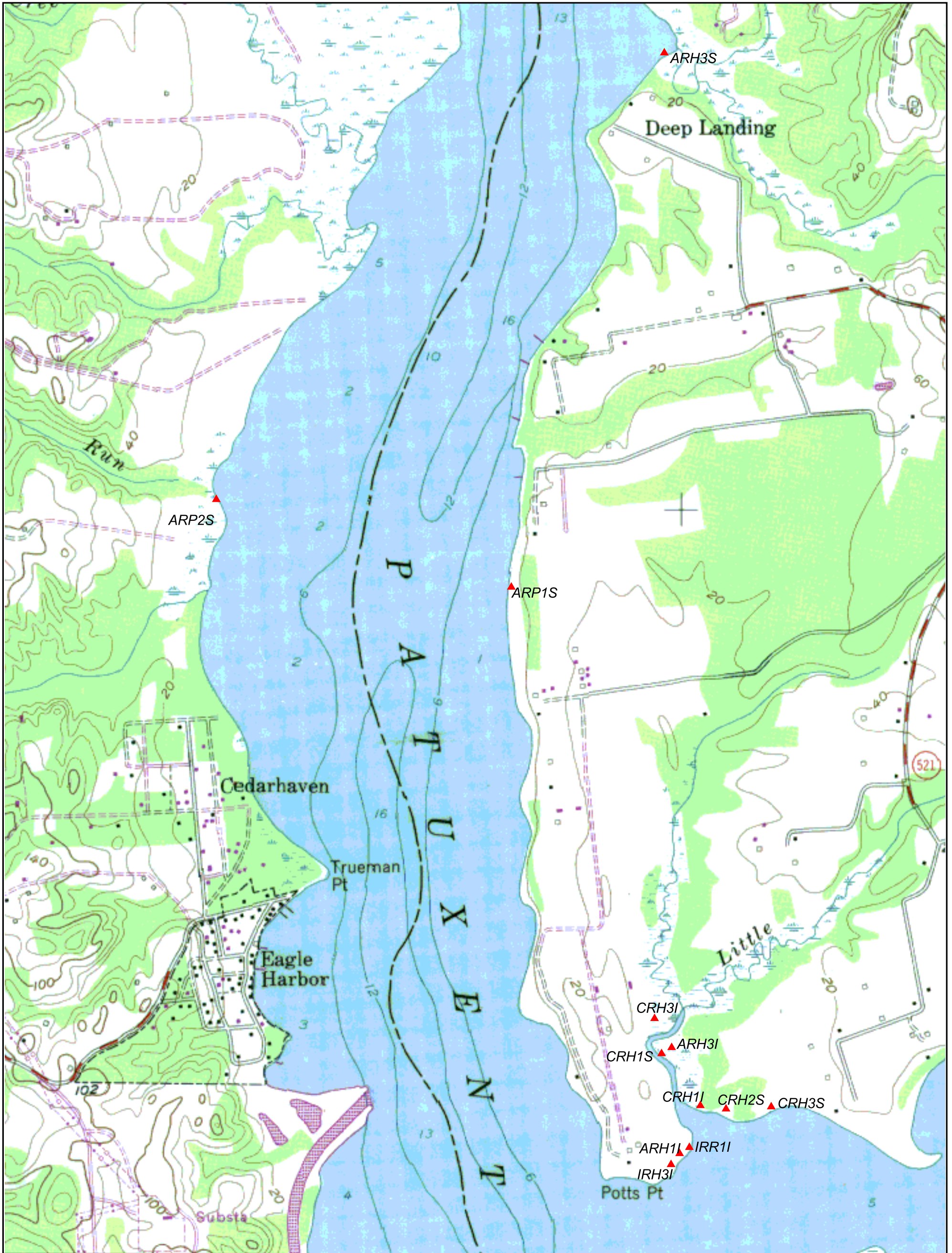
Friday July 21, 2000

- People attending were: Gary Harmon (ENTRIX), Angie Morrow (ENTRIX), Nicole Vesper (ENTRIX), and Art Saunders (ENTRIX).
- Information was collected for 4 photoquads. The group finished early because we did not want to select photoquad locations without Trustee representation.

Thursday July 27, 2000

- People attending were: Gary Harmon (ENTRIX), Angie Morrow (ENTRIX), Nicole Vesper (ENTRIX), Sean Everett (MDNR), Mitch Keiller (MDNR), and Devon Ray (USFWS).
- Information was collected for 6 photoquads.

- We located the three *Typha* reference quads in Swanson Creek. Although we knew the area had been lightly oiled, this area contained the only stands of shoreline *Typha* that resembled the heavily oiled *Typha* communities. We had previously agreed that lightly oiled vegetation seldom showed differences in vegetation characteristics that could be discerned from unoiled areas. The group therefore felt that lightly oiled *Typha* could be used, with caution, as a reference for heavily oiled *Typha*.



Legend

▲ Photoquod sampling locations



1000 0 1000 Feet

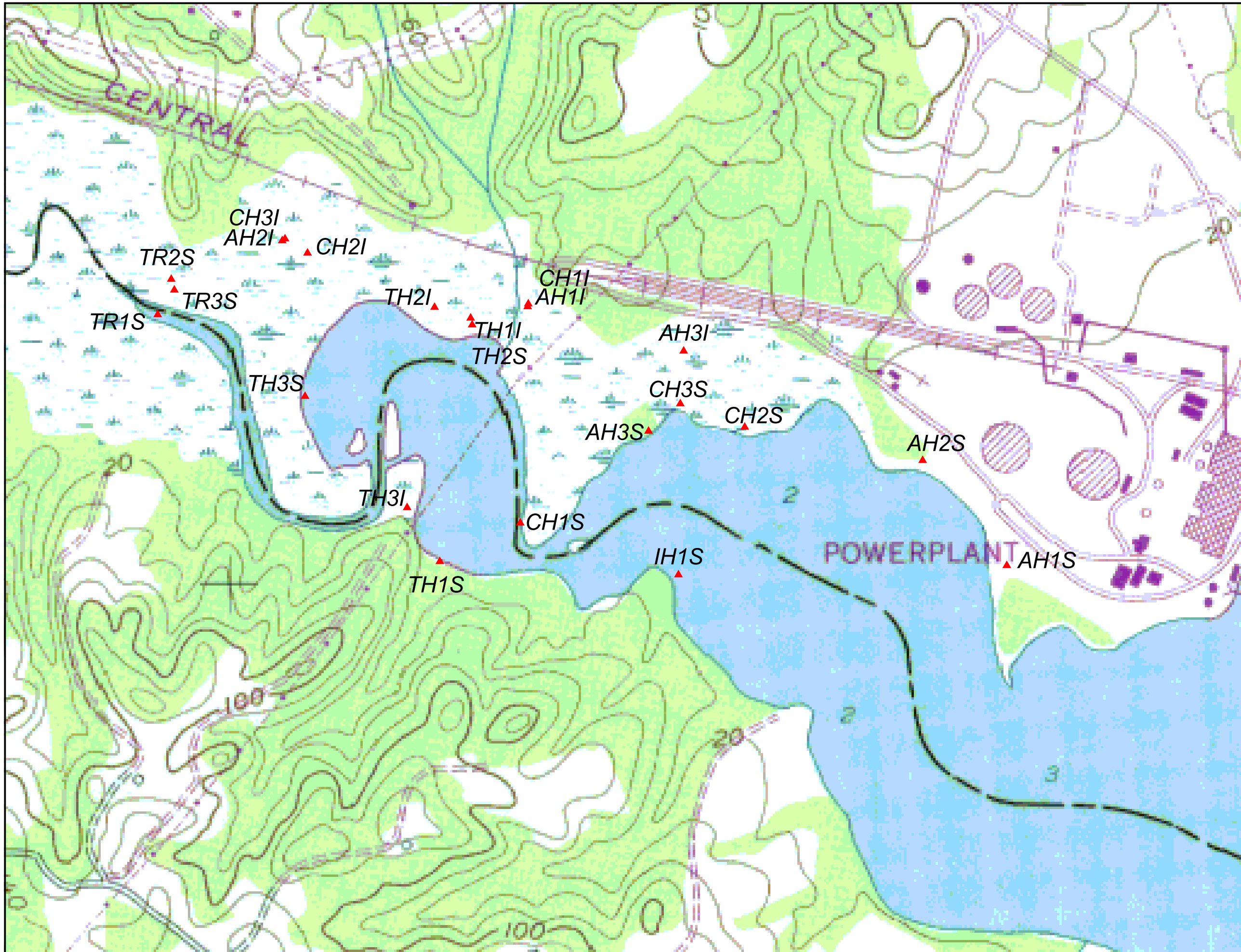
E N T R I X

Photoquod Sampling Locations
July, 2000

Sheet 1 of 3

PROJECT: 729901

DATE: 9/8/2000



Legend

▲ Photoquadrant sampling locations



E N T R I X

Photoquadrant Sampling Locations
July, 2000

Sheet 2 of 3



Legend

▲ Photoquadrant sampling locations



E N T R I X

Photoquadrant Sampling Locations
July, 2000

Sheet 3 of 3



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A AH1S	60.00	1.15	236 (117)
B AH2S	20.00	1.00	36 (19)
C AH3S	30.00	1.12	156 (126)
Average for Site Type	36.67	1.09	142.6 (88)

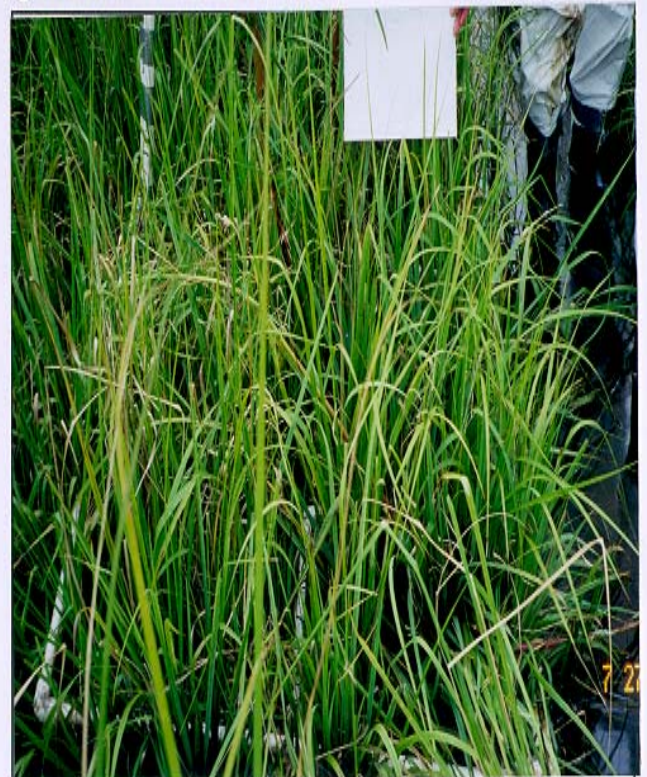
A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A AH11	100.00	1.27	63 (63)
B AH2I	90.00	1.40	272 (272)
C AH3I	80.00	1.22	456 (448)
Average for Site Type	90.00	1.30	263.6 (261)

A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A CH1S	95.00	1.87	72 (52)
B CH2S	100.00	1.62	428 (428)
C CH3S	60.00	1.01	121 (64)
Average for Site Type	85.00	1.50	207 (181.3)



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A CH1I (Picture label is incorrect)	100.00	2.07	50 (50)
B CH2I	10.00	1.04	21 (13)
C CH3I	80.00	1.58	108 (72)
Average for Site Type	63.33	1.56	59.6 (45)

A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A TH1S		2.47	115 (63)
B TH2S	50.00	1.97	36 (36)
C TH3S	30.00	1.87	33 (33)
Average for Site Type	40.00	2.10	61.33 (44.0)

A



B



C

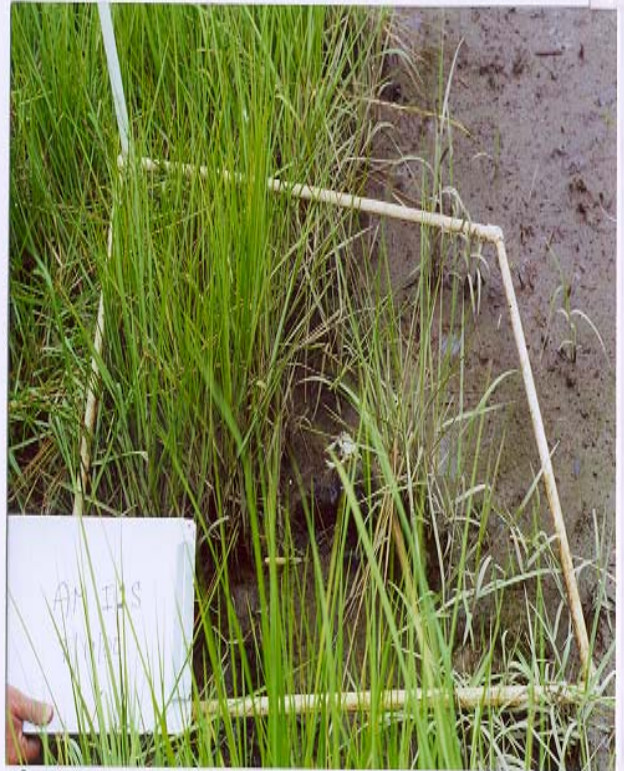


Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A TH11	80.00	2.10	119 (118)
B TH21	50.00	2.27	66 (66)
C TH31	70.00	2.40	151 (151)
Average for Site Type	66.67	2.26	112 (111.6)

A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A AMT1S	90.00	1.30	414 (412)
B AMI2S	35.00	0.63	88 (88)
C AMI3S (Picture label is incorrect)	65.00	0.71	504 (472)
Average for Site Type	63.33	0.88	335.3 (324.0)

A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A CMI1S	80.00	1.72	232 (104)
B CMI3S	100.00	1.79	316 (296)
C CMT1S	100.00	1.60	248 (248)
Average for Site Type	93.33	1.70	265.3 (216)

A**B****C****D**

Site #	%Cover	Average Height in meters	Stem Count (Iva Only)
A IMT2	90.00	1.73	7.00
B IMT2I	80.00	1.09	7.00
C IMI1S	90.00	1.73	10.00
D IH1S	40.00	1.89	7.00
Average for Site Type	75.00	1.61	7.75

A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A ARP1S	100.00	1.15	240 (236)
B ARP2S	75.00	1.04	576 (576)
C ARH3S	50.00	0.98	536 (452)
Average for Site Type	75.00	1.06	450.6 (421.3)



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A ARH1I	65.00	0.97	202 (202)
B ARH2I	100.00	1.07	122 (96)
C ARH3I (Picture label is incorrect)	100.00	1.46	276 (152)
Average for Site Type	88.33	1.17	200 (150)



A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A CRH1S	90.00	1.35	276 (224)
B CRH2S	100.00	1.98	312 (296)
C CRH3S	90.00	1.96	208 (192)
Average for Site Type	93.33	1.76	265.3 (237.3)

A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A CRH11	80.00	2.00	352 (348)
B CRT21		2.01	51 (19)
C CRH31	55.00	2.25	84 (57)
Average for Site Type	67.50	2.09	162.33 (141.33)

A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A TR1S	60.00	1.97	43 (42)
B TR2S	60.00	2.29	207 (196)
C TR3S	50.00	2.29	136 (124)
Average for Site Type	56.67	2.18	128.67 (120.67)

A



B



C



Site #	%Cover	Average Height in meters	Total Stem Count (Dominant Species)
A TRT1I	80.00	2.50	75 (64)
B TRT2I	50.00	2.12	98 (84)
C TRI3I	70.00	1.78	19 (19)
Average for Site Type	66.67	0.83	64 (55.6)

A



B



C



Site #	%Cover	Average Height in meters	Stem Count (Iva Only)
A IRR11	70.00	1.39	4.00
B IRH31	90.00	1.55	12.00
C IRT4	95.00	1.72	8.00
Average for Site Type	85.00	1.55	8.00

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Vegetation Summary Table: July, 2000 Marsh Assessment

	% cover			Stem Count (/m ²)			Stem Height (m)		
	Heavy	Moderate	Reference	Heavy	Moderate	Reference	Heavy	Moderate	Reference
Alterniflora shoreline	36.67	63.33	75	88	221	421.3	1.09	0.88	1.06
Alterniflora Interior	90		88.33	261		150	1.3		1.17
Cynosuroides shoreline	85	93.33	93.33	168.3	216	237.3	1.50	2.53	1.76
Cynosuroides interior	63.33		67.5	45		104.3	1.56		2.9
Typha shoreline	45		56.67	51.3		89.6	3.72		2.18
Typha Interior	66.67		66.67	111.6		55.6	2.26		2.13
Iva	75		66.67	7.75 /quadrat		8/quadrat	3.6		2.38

note: All data are averages for the exposure group.

Stem counts and heights are for the dominant species only.

Iva quadrats are circular plots with a 2 meter radius, approx. 12.57 m²

Pepco Marsh Assessment Database July 2000 Field Effort

					Stems per m ²											Mean Stem Height											
Quad ID	Sampling Date	Distance from Water (m)	Water Depth (cm)	% Aerial Cover	SC (m ²)-alterniflora	SC (m ²)-cynosuroides	SC (m ²)-Typha	SC (m ²)-Scirpus	SC (12.57 m ² quad)-Iva	SC (m ²)-polygonum	SC (m ²)-orach	SC (m ²)-marsh hemp	SC (m ²)-pontedaria	SC (m ²)-peltandra	SC (m ²)-other	MSH (m)-alterniflora	MSH (m)-cynosuroides	MSH (m)-Typha	MSH (m)-Scirpus	MSH (m)-Iva	MSH (m)-polygonum	MSH (m)-orach	MSH (m)-marsh hemp	MSH (m)-pontedaria	MSH (m)-peltandra	MSH (m)-other	
AH1S	7/17/00	1.15	30.5	60	117			119								1.15			1.37								
AH2S	7/17/00	1.28	36.6	20	19	17										1	1.24										
AH3S	7/17/00	1.65		30	126			30								1.12			0.73								
AH1I	7/20/00			100	63											1.27											
AH2I	7/18/00	91.44	10	90	272											1.4											
AH3I	7/27/00	scale off map	12.2	80	448							8				1.22							1.49				
CH1S	7/17/00	1.22	19.8	95		52		20									1.87										
CH2S	7/17/00	1.7		100		428											1.62										

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Pepco Marsh Assessment Database July 2000 Field Effort

Quad ID	Sampling Date	Distance from Water (m)	Water Depth (cm)	% Aerial Cover	Stems per m ²										Mean Stem Height																				
					SC (m ²)- alterniflora	SC (m ²)- cynosuroides	SC (m ²)-Typha	SC (m ²)-Scirpus	SC (12.57 m ² quad)-Iva	SC (m ²)- polygonum	SC (m ²)-orach	SC (m ²)-marsh hemp	SC (m ²)- pontedaria	SC (m ²)- peltandra	SC (m ²)-other	MSH (m)- alterniflora	MSH (m)- cynosuroides	MSH (m)-Typha	MSH (m)-Scirpus	MSH (m)-Iva	MSH (m)- polygonum	MSH (m)-orach	MSH (m)-marsh hemp	MSH (m)- pontedaria	MSH (m)- peltandra	MSH (m)-other									
CH3S	7/17/00	3		60	53	64		4									0.79	1.01																	
CH1I	7/20/00			100		50												2.07																	
CH2I	7/18/00	by GPS	10	10		13		8										1.04		1.1															
CH3I	7/18/00	91.44	25	80	36	72											not measured	1.58																	
TH1S	7/17/00	9					63													2.47															1.35
TH2S	7/21/00	0.9	15.2	50			36													1.97															
TH3S	7/18/00		5.1	30			33													1.87															
TH1I	7/21/00	14.4	19.1	80			118				1									2.1															

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Pepco Marsh Assessment Database July 2000 Field Effort

Quad ID	Sampling Date	Distance from Water (m)	Water Depth (cm)	% Aerial Cover	Stems per m ²										Mean Stem Height																
					SC (m ²)- alterniflora	SC (m ²)- cynosuroides	SC (m ²)-Typha	SC (m ²)-Scirpus	SC (12.57 m ² quad)-Iva	SC (m ²)- polygonum	SC (m ²)-orach	SC (m ²)-marsh hemp	SC (m ²)- pontedaria	SC (m ²)- peltandra	SC (m ²)-other	MSH (m)- alterniflora	MSH (m)- cynosuroides	MSH (m)-Typha	MSH (m)-Scirpus	MSH (m)-Iva	MSH (m)- polygonum	MSH (m)-orach	MSH (m)-marsh hemp	MSH (m)- pontedaria	MSH (m)- peltandra	MSH (m)-other					
TH-2I	7/18/00	11.8	15	50			66											2.27													
TH3I	7/18/00	13.1	0	70			151											2.4													
AMTIS	7/17/00	1.67	0	90	412	2											1.3	1.68													
AM-I2S	7/19/00	8	0	35	88												0.63														
AMI3S	7/21/00	1	0-12.7	65	472	32											0.71	1.2													
CMI1S	7/19/00	1.8	0	80	36	104		92									1.09	1.72	1.41												

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Pepco Marsh Assessment Database July 2000 Field Effort

Quad ID	Sampling Date	Distance from Water (m)	Water Depth (cm)	% Aerial Cover	Stems per m ²										Mean Stem Height																						
					SC (m ²)-alterniflora	SC (m ²)-cynosuroides	SC (m ²)-Typha	SC (m ²)-Scirpus	SC (12.57 m ² quad)-Iva	SC (m ²)-polygonum	SC (m ²)-orach	SC (m ²)-marsh hemp	SC (m ²)-pontedaria	SC (m ²)-peltandra	SC (m ²)-other	MSH (m)-alterniflora	MSH (m)-cynosuroides	MSH (m)-Typha	MSH (m)-Scirpus	MSH (m)-Iva	MSH (m)-polygonum	MSH (m)-orach	MSH (m)-marsh hemp	MSH (m)-pontedaria	MSH (m)-peltandra	MSH (m)-other											
CMI3S	7/19/00	1.9	0	100		296		20											1.79		N/A																
CMT1S	7/19/00	1.05	0	100		248													1.6																		
IMT2	7/19/00	3.3	0	90		0.4			7										1.8																		
IMT2I	7/19/00	8.5	0	80					7																												
IMI1S	7/19/00	6.8	0	90					10																												
IH1S	7/18/00	2.2	0	40					7																												
ARPIS	7/20/00	1.9	0-30.5	100	236	4														1.15	1.3																
ARP2S	7/20/00	1.7	20.3	75	576															1.04																	
ARH3S	7/20/00	1.9	2.5	50	452			84																													

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Pepco Marsh Assessment Database July 2000 Field Effort

					Stems per m ²										Mean Stem Height												
Quad ID	Sampling Date	Distance from Water (m)	Water Depth (cm)	% Aerial Cover	SC (m ²)-alterniflora	SC (m ²)-cynosuroides	SC (m ²)-Typha	SC (m ²)-Scirpus	SC (12.57 m ² quad)-Iva	SC (m ²)-polygonum	SC (m ²)-orach	SC (m ²)-marsh hemp	SC (m ²)-pontedaria	SC (m ²)-peltandra	SC (m ²)-other	MSH (m)-alterniflora	MSH (m)-cynosuroides	MSH (m)-Typha	MSH (m)-Scirpus	MSH (m)-Iva	MSH (m)-polygonum	MSH (m)-orach	MSH (m)-marsh hemp	MSH (m)-pontedaria	MSH (m)-peltandra	MSH (m)-other	
ARH11	7/18/00	10.9	0	65	202											0.97											
ARH21	7/27/00	24.9	0	100	96					3	23					1.07					0.52	N/A; vine					
ARH31	7/27/00	29.75	0-25	100	152	16					108					1.46	2.32					N/A					
CRH1S	7/18/00	2.5	0	90		224					40	12										small					
CRH2S	7/18/00	2.6	0	100		296		16									1.98		1.38								
CRH3S	7/18/00	1.9	0	90		192		16									1.96										
CRH11	7/21/00	4	0	80		348						4					2										
CRT2I	7/19/00	11.6	0			19		28		4							2.01		1.33								
CRH3I	7/17/00	138	small pockets of water	55	27	57										0.96	2.25										
TRIS	7/27/00	5.2	0-3.0	60			42								1			1.97									
TR2S	7/27/00	4.8	18.3	60			196								11			2.29								0.91	

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Quad ID	Sampling Date	Distance from Water (m)	Water Depth (cm)	% Aerial Cover	Stems per m ²											Mean Stem Height											
					SC (m ²)-alterniflora	SC (m ²)-cynosuroides	SC (m ²)-Typha	SC (m ²)-Scirpus	SC (12.57 m ² quad)-Iva	SC (m ²)-polygonum	SC (m ²)-orach	SC (m ²)-marsh hemp	SC (m ²)-pontedaria	SC (m ²)-peltandra	SC (m ²)-other	MSH (m)-alterniflora	MSH (m)-cynosuroides	MSH (m)-Typha	MSH (m)-Scirpus	MSH (m)-Iva	MSH (m)-polygonum	MSH (m)-orach	MSH (m)-marsh hemp	MSH (m)-pontedaria	MSH (m)-peltandra	MSH (m)-other	
TR3S	7/27/00		21.3	50			124						12					2.29							0.99		
TRT11	7/19/00	~30	0	80			64								11			2.5									
TRT21	7/19/00	>30		50		10	84								4			2.12									
TRI31	7/19/00	~60	0	70			19	?										1.78									
IRR11	7/18/00	8.85	0	70	?	?			4											1.39							
IRH31	7/18/00	11	0	90	?				12		?									1.55							
IRT4	7/19/00	12.19	0	95		?			8											1.72							

Pepco Marsh Assessment Database July 2000 Field Effort

Oiling Characteristics																	
Quad ID	Chlorosis	Oiling Interval (cm)	% Cover of Veg. Oil	Veg. Oil Thickness	Veg. Oil Location	Veg. Oil Descriptor	Vegetation Oiling Comments	Sed. Oil Present?	Hydro-carbon Odor?	Sed. Oil Thickness	% Sed. Surface Oiled	Oil Penetration Depth (cm)	Sediment Oil Descriptors	Core Description	Sediment Oiling Comments	Wrack Present?	Wrack Oiled?
AH1S	slight		trace	coat	stem only	tacky		yes; slight sheen when sediment disturbed		N/A water							
AH2S	slight	top to bottom	trace	coat	entire plant	tacky		yes; black oil droplets on water surface	yes; water too deep for surface characterization							no	
AH3S	slight		trace	coat	entire plant	tacky		yes	yes	film; on water surface sheen	N/A; underwater	top 5cm with oil filled pores	oil filled pores; in sediment/pebble substrate			no	
AH1I	slight							yes	yes	4-5"	100						
AH2I	moderate; spotted on entire leaf	0-30	100	coat	stems lower leaves	tacky		yes	yes	underwater	can't determine, but black droplets on water surface even before disturbance	N/A; underwater	probably partially filled pores, since not collected @ this time black oil droplets are released			no	
AH3I	moderate	0-10	100	film	all plants at base	other; film	sheen over all water surface with oil blots	yes	yes	N/A; inundated	N/A; inundated; droplets and sheen present	N/A; can't tell depth inundated site	N/A	N/A	oil droplets coming out of water	no	
CH1S	slight	0-25	trace	coat	oil on dead stems	tacky		yes	yes	N/A (underwater)	N/A (underwater)	N/A (underwater)	N/A		large amounts of black oil droplets on water surface	no	
CH2S	slight	none	0		8 dead stems with coat and cover in whole quad (1m ²)	tacky	tacky	no	no	none	0				mud crab next to core barrel, but not in quad		yes

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Pepco Marsh Assessment Database July 2000 Field Effort

Oiling Characteristics																	
Quad ID	Chlorosis	Oiling Interval (cm)	% Cover of Veg. Oil	Veg. Oil Thickness	Veg. Oil Location	Veg. Oil Descriptor	Vegetation Oiling Comments	Sed. Oil Present?	Hydro-carbon Odor?	Sed. Oil Thickness	% Sed. Surface Oiled	Oil Penetration Depth (cm)	Sediment Oil Descriptors	Core Description	Sediment Oiling Comments	Wrack Present?	Wrack Oiled?
CH3S	slight	trace on lower half	trace	coat	bottom half only	dry		yes	yes	film mostly	100	5 (into entire rootmatter; deeper along root channel)	oil filled pores	black, medium oil	black oil from shoreline; sheen on water surface	no	
CH1I	slight							yes	yes	top 2"	100						
CH2I	moderate	0-40	100	coat/stain	entire plant; stem/leaves	tacky		yes	yes	underwater	black droplets on water surface	underwater	probably partially filled pores - bored on slides on water			no	
CH3I	moderate; spots on entire leaf	0-50	50	coat	stems, lower leaf	tacky		yes	yes	underwater	black oil on water	oil core taken this day; too wet/soft				no	
TH1S	30% Peltandra; slight typha	0-1' water; 1'-2.5' oil band	trace	coat	stem only; 2.5ft	tacky		yes	yes	not visible because of tide; abundant black oil droplets after disturbance	N/A	N/A				yes; light	
TH2S	slight	entire plant trace	trace	coat	entire plant	dry		yes	yes	on surface		entire plant		root mat product		no	
TH3S	moderate; every stem tip brown most stems only top; 5cm some; 1/3 of the leaf length	all plant	5	coat	entire plant	dry		yes	yes	black oil droplets released from sediment; lots of oil forming a sheen on surface	water covered						
TH1I	slight				no oil on stem		little sheen; possibly from wrack	yes	yes	water in quad some sheen				clay and root mat		yes	

Pepco Marsh Assessment Database July 2000 Field Effort

Oiling Characteristics																	
Quad ID	Chlorosis	Oiling Interval (cm)	% Cover of Veg. Oil	Veg. Oil Thickness	Veg. Oil Location	Veg. Oil Descriptor	Vegetation Oiling Comments	Sed. Oil Present?	Hydro-carbon Odor?	Sed. Oil Thickness	% Sed. Surface Oiled	Oil Penetration Depth (cm)	Sediment Oil Descriptors	Core Description	Sediment Oiling Comments	Wrack Present?	Wrack Oiled?
TH-2I	moderate; both tips and leaves	0-40	100	coat; stain	stem	tacky	100% coat on dead stems	yes	yes	N/A; underwater	N/A, but heavy black oil droplets on water after we disturbed the substrate	N/A; underwater, but heavy black oil droplets on water after we disturbed the substrate; no oil @ bottom of 12" core		lots of roots in muddy/organic rich sediments		no	
TH3I	moderate; 100% tips yellow/brown	0-30	trace <1%	coat	stem	dry		yes	yes	film	100		partially filled pores	very soft mud			
AMTIS	slight; moderate	0	0		0	0	no oil apparent, but some dark flecks that are probably organic	yes	yes	none apparent, but produces a sheen				root mat, clay, some product in sample	black oil from walking; not in quad		
AM-I2S	slight	0	0					yes	no	film	10	0	0	in bare area, thin 3mm algae mat over 10cm dark organic rich mud, over brown mineral mud		no	
AMI3S	slight						no oil visible on plant	yes; very slight	no		0			light sheen from fauna core; sand root mat		no	
CM11S	slight; lots of rust	0-20	<1	coat	entire plant (rack with oil and last yrs.) growth	dry	dead veg. 1.5 ft.	yes	yes (slight)		0	<2		root mat with redox features, mostly peat	although little oil appeared to be present, disturbed soils released a slight sheen	no	

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Oiling Characteristics																	
Quad ID	Chlorosis	Oiling Interval (cm)	% Cover of Veg. Oil	Veg. Oil Thickness	Veg. Oil Location	Veg. Oil Descriptor	Vegetation Oiling Comments	Sed. Oil Present?	Hydro-carbon Odor?	Sed. Oil Thickness	% Sed. Surface Oiled	Oil Penetration Depth (cm)	Sediment Oil Descriptors	Core Description	Sediment Oiling Comments	Wrack Present?	Wrack Oiled?
CMI3S	slight	0	0		none	dry oil on dead stems		no	no	N/A	N/A	0		very sandy clay; no sheen released from sediment in water		no	
CMT1S	slight; moderate	0	0			dry oil on dead stems		yes	yes	film mostly	10	0-2		thickly matted/veg. Mud, very cohesive, heavy sheen released with a few oil drops from 0-10cm section		no	
IMT2	moderate; <5% of leaves chlorotic	0-34	10	cover	stem only; lower portion	tacky; one is dry		yes	no	just a sheen from shoreline sediment	0	light sheen comes out of washed fauna core	light sheen comes out of washed fauna core	root mat			
IMT2I								yes	no	film	1						
IMI1S	moderate	0-30	10	coat	stem only	dry		yes	no	film	20	no visible evidence of penetration			very slight sheen on shoreline	no	
IH1S	slight	0-40		cover	stem only	tacky		yes	yes	cover	10; around vegetation						yes
ARPIS	slight; rust present													medium grain with root mat			
ARP2S	none													sandy			
ARH3S	none													core sandy		no	

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Pepco Marsh Assessment Database July 2000 Field Effort

Oiling Characteristics																	
Quad ID	Chlorosis	Oiling Interval (cm)	% Cover of Veg. Oil	Veg. Oil Thickness	Veg. Oil Location	Veg. Oil Descriptor	Vegetation Oiling Comments	Sed. Oil Present?	Hydro-carbon Odor?	Sed. Oil Thickness	% Sed. Surface Oiled	Oil Penetration Depth (cm)	Sediment Oil Descriptors	Core Description	Sediment Oiling Comments	Wrack Present?	Wrack Oiled?
ARH11	slight; rust present													Benthic sample very thin layer if clay over root mat		no	
ARH21	slight													clay and root mass			
ARH31	slight													clay with root mat			
CRHIS	slight													66% compaction soft mud throughout			
CRH2S	slight; with rust													vegetative mat surface with muddy sand below			
CRH3S	slight													33% compaction		no	
CRH11	slight													root mat and fine sand		no	
CRT21	slight																
CRH31	very slight																
TRIS														clay with root mat			
TR2S	slight													clay with root mat		no	

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Oiling Characteristics																	
Quad ID	Chlorosis	Oiling Interval (cm)	% Cover of Veg. Oil	Veg. Oil Thickness	Veg. Oil Location	Veg. Oil Descriptor	Vegetation Oiling Comments	Sed. Oil Present?	Hydro-carbon Odor?	Sed. Oil Thickness	% Sed. Surface Oiled	Oil Penetration Depth (cm)	Sediment Oil Descriptors	Core Description	Sediment Oiling Comments	Wrack Present?	Wrack Oiled?
TR3S														clay with root mat			
TRT11																	
TRT21																no	
TRI31	slight; moderate; tips are brown/yellow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
IRR11	slight													50% compaction			
IRH31	slight; a few chlorotic leaves													50% compression			
IRT4	slight							no	no	N/A	N/A					no	

Pepco Marsh Assessment Database July 2000 Field Effort

Quad ID	Fauna		General Comments
	Fauna Present?	Types/Numbers Fauna	
AH1S	yes	1 stink bug	rust present
AH2S	no		1 dead stem in a hole in the quad; some evidence of rust; 4cm of compaction oxidizezone - 2cm; 12cm of sand over mud
AH3S	yes	grasshopper	very narrow Spatina fringe going to lva upland; lost bottom 10cm from soil core
AH1I			rhizoctonia; no water saturated @ surface; fauna - leaf hoppers numerous; photo and stake say AH21
AH2I	yes	white leaf hoppers (>10)	high marsh of dense clumps with ~50% cover of clumps; rest small channels tried 3x to collect cores got Benthic, but tide to high too get chemistry core; too soupy
AH3I	no	stink bug adjacent to quad	adjacent to broken marsh area, near boardwalk, near sample W1C3
CH1S	no		1 seed head in quad; 26 dead stems in quarter quad
CH2S		1 spider	8 dead stems with coat and cover; localized algae mat (discontinuous on surface); some rust may be cause of chlorosis

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Pepco Marsh Assessment Database July 2000 Field Effort

Quad ID	Fauna		General Comments
	Fauna Present?	Types/Numbers Fauna	
CH3S	yes	3 grasshoppers, stink bug	first sediment core taken inland of sampling frame had no oil in core and consisted of mostly mineral soil. New core taken next to quad - oil smeared downside of core
CH1I			fauna - leaf hoppers several; photo and stake say CH2I
CH2I	yes	white leaf hoppers few	in open "eat out" with scattered clumps of veg.; veg. Only in one corner, rest bare
CH3I	yes	1 spider; 1 green insect; >10 white hoppers	Cyno hummocks are high ~50% of surface; rising tide caused us to quickly finish veg. Obs. And leave
TH1S	yes	7 coffee bean snails	30 dead oiled Typha stems; Peltandra virginica; Typha angustifolia
TH2S	yes	>10 snail	5 flower heads in quad; thick black oil droplets and sheen around boat; stem count - entire quad
TH3S	no	1 caterpillar outside of quad	
TH1I	yes	>10 snails; caterpillar several	surface sheen; 8 flowering heads; doesn't appear to be heavy site; pole says PL1I

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Pepco Marsh Assessment Database July 2000 Field Effort

Fauna			
Quad ID	Fauna Present?	Types/Numbers Fauna	General Comments
TH-2I	yes	white leaf hopper; 1 caterpillar	4 seed heads; site on edge of open, unvegetated area
TH3I	yes	1 caterpillar; leaf hoppers (>10); spiders (>10)	2 seed heads; alterniflora in between typha clumps; 1 caterpillar; leaf hoppers (>10); spiders (>10); sediment sample adjacent to eat out; heavy oiled
AMTIS	yes	<5 very small grasshoppers; >50 white leaf hoppers	just to east of quad looks like erosion with hummocks exposure roots and undercut root mat; there appears to be oil all around the quad when surface is disturbed, but the plants and sediment surface in the quad appear clean; however sediments removed from quad will cause sheen in the water
AM-I2S	yes	white leaf hoppers (>10); in bare spots, numerous tube worm burrows	very open marsh; isolated clumps of <i>S. alter</i> growing from 1 parent clump; lots of small fish in puddles so well flushed
AMI3S	yes	1 beetle; leaf hoppers >20	
CMI1S		<5 beetles	Mitch and I disagreed on this site and took a shovel sample back to Jacqui Michel who confirmed no visible oil was present

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Pepco Marsh Assessment Database July 2000 Field Effort

Quad ID	Fauna		General Comments
	Fauna Present?	Types/Numbers Fauna	
CMI3S	yes	white leaf hoppers (>10, abundant)	in sheltered pocket, but fronted by sand beach; part of fringing veg. On edge of wide meadow
CMT1S	yes	white leaf hoppers (>100, abundant)	right on edge of undercut marsh scarp; scarp edge sed sheened when disturbed; 50% compaction in core
IMT2	yes	snails >50; spittle bugs	cynosuroides, alterniflora, oiled wrack, patens
IMT2I	yes	white and green leaf hoppers abundant; 1 spider	both short Iva appear to be clipped sparse growth in between; 1/3 - 1/2 branches are dead on taller Iva shrubs; oil on dead stems; silver sheen on water table when disturbed
IMI1S	yes	spittle bugs >20; spiders >10; a few snails; paper wasp nest	cynosuroides, alterniflora, Scirpus, eleocharis patens; some areas near quad show oil dried into a sheet
IH1S	yes; 1 ant		just outside permanent boom; gravel substrate, understory Scirpus Americana (several individual plants >10, <20 individuals) GPS point was taken approx. 2m from stake in the water due to interference from vegetation and high bank.
ARPIS	yes	hopper >50	4 unidentified herbs
ARP2S	no		no epifauna (vegetation submerged)
ARH3S	no	site submerged	quarter quad - unidentified herbaceous/quad - 1 waterhemp; few baby Iva; no epifauna (site submerged no fauna on veg.)

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Pepco Marsh Assessment Database July 2000 Field Effort

Quad ID	Fauna		General Comments
	Fauna Present?	Types/Numbers Fauna	
ARH11	yes	spiders (>10); hoppers (>10); amphipods (>10); ant (>10); 1 water	soft mud sediment ~1/3 of general locations is vegetated
ARH21	yes	>10 snails	hummocky marsh; more diverse than most oiled sites
ARH31	yes	1 spider; 1 beetle; ants; 1 snail	
CRH1S	yes	many ants; 7 spiders; 1 snail; leaf hoppers	outside of a meander bend exposed bluff on opposite shore; buthic sample shredded veg. Matter in a clay matrix; in small creek ~15m wide
CRH2S	yes	1 unidentified insect	open to large fetch of Patuxent; oligocheates and red worm; substrate sandy silt with shredded vegetative matter
CRH3S	yes	ants; 1 snail; leaf hopper; spider; 1 amphipod; black beetle	substrate silty clay in root zone with sandy silt below; clam shells on surface (abundant) understory of low grass?
CRH1I	yes	>10 snails; lots of leaf hoppers	too close for interior move quad; use 2nd GPS location
CRT2I	yes	small black snails many on stems >10	bird nest <1m from quad
CRH3I	yes	>10 snails; 1 spider; 1 beetle; >50 ants	high tide site; may have access from shore, but can't get up Little Lyons Creek at low waters
TRIS	no	no	near extent of light oil line; sample taken away from shore to minimize oiling potential
TR2S	yes	>10 snails in quad	counted in 1m ² area; Typha counted in 0.25m ² quad; lots of dead plants in quad site near extent of light oiling; muskrat lodge within about 10m of quad

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Pepco Marsh Assessment Database July 2000 Field Effort

Fauna			
Quad ID	Fauna Present?	Types/Numbers Fauna	General Comments
TR3S	yes	>10 snails	
TRT11	yes	1 stink bug; coffee bean snail (>100); white leaf hoppers (>10)	very few seed heads in area; none in quad
TRT2I	yes	spiders; white leaf hoppers	thick stalks
TRI3I	yes	coffee bean snail (>10) 0.5cm lg. Bivalve (>10)	not very representative of oiled sites on landward edge of extensive wetland with Scirpus then Juncus then Cyno; sediment very uniform elevation; no well defined channels
IRR1I	yes	snails >100; spiders >10; hoppers >10	other species orache, hummocky, clay with root mat
IRH3I	yes	>10 spiders; ants; some snails; >10 beetles	understory alterniflora, hummocks with some water between
IRT4	yes	many ants; lots of spiders; small snails	polygonum orache; s. patens; lots of cynosuroides