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# APPENDICES



# APPENDIX A

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## APPENDIX A

Species of Submerged Aquatic Plants Found in Chesapeake Bay and Tributaries Exclusive of Marine Algae (Classification and Nomenclature Derived from: Godfrey and Wooten, 1979, 1981; Harvill *et al.*, 1977, 1981; Kartesz and Kartesz, 1980; Radford *et al.*, 1968; Wood and Imahori, 1965, 1964)

| Family                           | Species   | Common name                     |
|----------------------------------|---|---------------------------------|
| Characeae<br>(muskgrass)         | <i>Chara braunii</i> Gm.  | Muskgrass                       |
|                                  | <i>Chara zeylanica</i> Klein.<br>ex Willd., em.                                 | Muskgrass                       |
|                                  | <i>Nitella flexilis</i> (L.) Ag., em.   | Stonewort                       |
| Potamogetonaceae<br>(pondweed)   | <i>Potamogeton perfoliatus</i> L. var.<br><i>bupleuroides</i> (Fernald) Farwell | Redhead grass<br>Leafy pondweed |
|                                  | <i>Potamogeton epihydrus</i> Raf.   | Sago pondweed                   |
|                                  | <i>Potamogeton pectinatus</i> L.  | Curly pondweed                  |
|                                  | <i>Potamogeton crispus</i> L.   | Slender pondweed                |
|                                  | <i>Potamogeton pusillus</i> L.  | American<br>pondweed            |
|                                  | <i>Potamogeton nodosus</i> Poir.  |                                 |
| Ruppiaceae                       | <i>Ruppia maritima</i> L.   | Widgeon grass                   |
| Zannichelliaceae                 | <i>Zannichellia palustris</i> L.  | Horned pondweed                 |
| Najadaceae                       | <i>Najas guadalupensis</i> (Sprengel)<br>Magnus                                 | Southern naiad                  |
|                                  | <i>Najas gracillima</i> (A. Braun)<br>Magnus                                    | Slender naiad                   |
|                                  | <i>Najas minor</i> Allioni  | no common name                  |
|                                  | <i>Najas flexilis</i> (Willd.)<br>Rostk. & Schmidt                              | Northern naiad                  |
|                                  |   |                                 |
| Hydrocharitaceae<br>(frogbit)    | <i>Vallisneria americana</i> Michaux  | Wild celery, tapegrass          |
|                                  | <i>Elodea canadensis</i> (Michaux)  | Common elodea                   |
|                                  | <i>Egeria densa</i> Planchon  | Water-weed                      |
|                                  | <i>Hydrilla verticillata</i> (L.f.)<br>Boyle                                    | Hydrilla                        |
| Pontedariaceae<br>(pickerelweed) | <i>Heteranthera dubia</i> (Jacquin)<br>MacMillian                               | Water stargrass                 |
| Ceratophyllaceae<br>(coontail)   | <i>Ceratophyllum demersum</i> L.  | Coontail                        |
| Trapaceae                        | <i>Trapa natans</i> L.  | Water chestnut                  |
| Haloragaceae<br>(watermilfoil)   | <i>Myriophyllum spicatum</i> L.   | Eurasian watermilfoil           |
| Zosteraceae                      | <i>Zostera marina</i> (L.)  | Eelgrass                        |



# APPENDIX B

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USGS 7.5 Minute Quadrangles for Chesapeake Bay and the Delmarva Peninsula Coastal Bays Showing Distribution, Abundance, and Ground Truthing of SAV in 1997. [Boundaries of Individual SAV Beds Are Delineated by Solid Lines and SAV Beds Are Shaded. Each Bed Is Identified with an Unique One or Two Letter (A-Z, AA-ZA, AB-ZB, etc.) and One Number (1-4) Designation. These Numbers Represent the Density Classification Discussed in the Text and Figure 8, i.e., 1 = <10%; 2 = 10-40%; 3 = 40-70%; 4 = 70-100%. Ground Truthing is Represented by Symbols and Species Codes which Are Explained in the Legend. Dashed Lines Represent Chesapeake Bay Program Segment Boundaries. Chesapeake Bay Program Segments Are Identified by Chesapeake Bay Program Segment Code Designations.]

## Key for 1997 SAV Maps

### SPECIES

- Zm** *Zostera marina* (eelgrass)  
**Rm** *Ruppia maritima* (widgeon grass)  
**C** *Chara* sp. (muskgrass)  
**Cd** *Ceratophyllum demersum* (coontail)  
**Ec** *Elodea canadensis* (common elodea)  
**Ed** *Egeria densa* (water-weed)  
**Hd** *Heteranthera dubia* (water stargrass)  
**Hv** *Hydrilla verticillata* (hydrilla)  
**Ms** *Myriophyllum spicatum* (Eurasian watermilfoil)  
**N** *Najas* sp. (naiad)  
**Nfl** *Najas flexilis* (northern naiad)  
**Ngr** *Najas gracillima* (slender naiad)  
**Ngu** *Najas guadalupensis* (southern naiad)  
**Nm** *Najas minor*  
**Nt** *Nitella* sp. (muskgrass)  
**Pcr** *Potamogeton crispus* (curly pondweed)  
**Pe** *Potamogeton epihydrus* (leafy pondweed)  
**Pn** *Potamogeton nodosus* (American pondweed)  
**Ppc** *Potamogeton pectinatus* (sago pondweed)  
**Ppf** *Potamogeton perfoliatus* (redhead-grass)  
**Ppu** *Potamogeton pusillus* (slender pondweed)  
**Tn** *Trapa natans* (water chestnut)  
**Va** *Vallisneria americana* (wild celery)  
**Zp** *Zannichellia palustris* (horned pondweed)  
**U** Unidentified species composition

### SURVEY STATIONS

- ▲ Army Corps of Engineers
- ♣ Aberdeen Proving Ground (USAEC/ARL)
- ▼ University of Maryland
- ⊗ Citizens Field Observation
- U.S. Environmental Protection Agency
- \* Harford Community College
- Md. Dept. of Natural Resources
- ‡ Naval Air Station –Patuxent River
- ♠ National Oceanographic Atmospheric Administration
- ▧ National Park Service
- ♥ Patuxent River Park
- ☺ Patuxent Wildlife Research Center
- ★ U.S. Fish and Wildlife Service
- ◇ U.S. Geological Survey
- △ VIMS Field Survey
- ▲ Virginia Marine Resources Commission

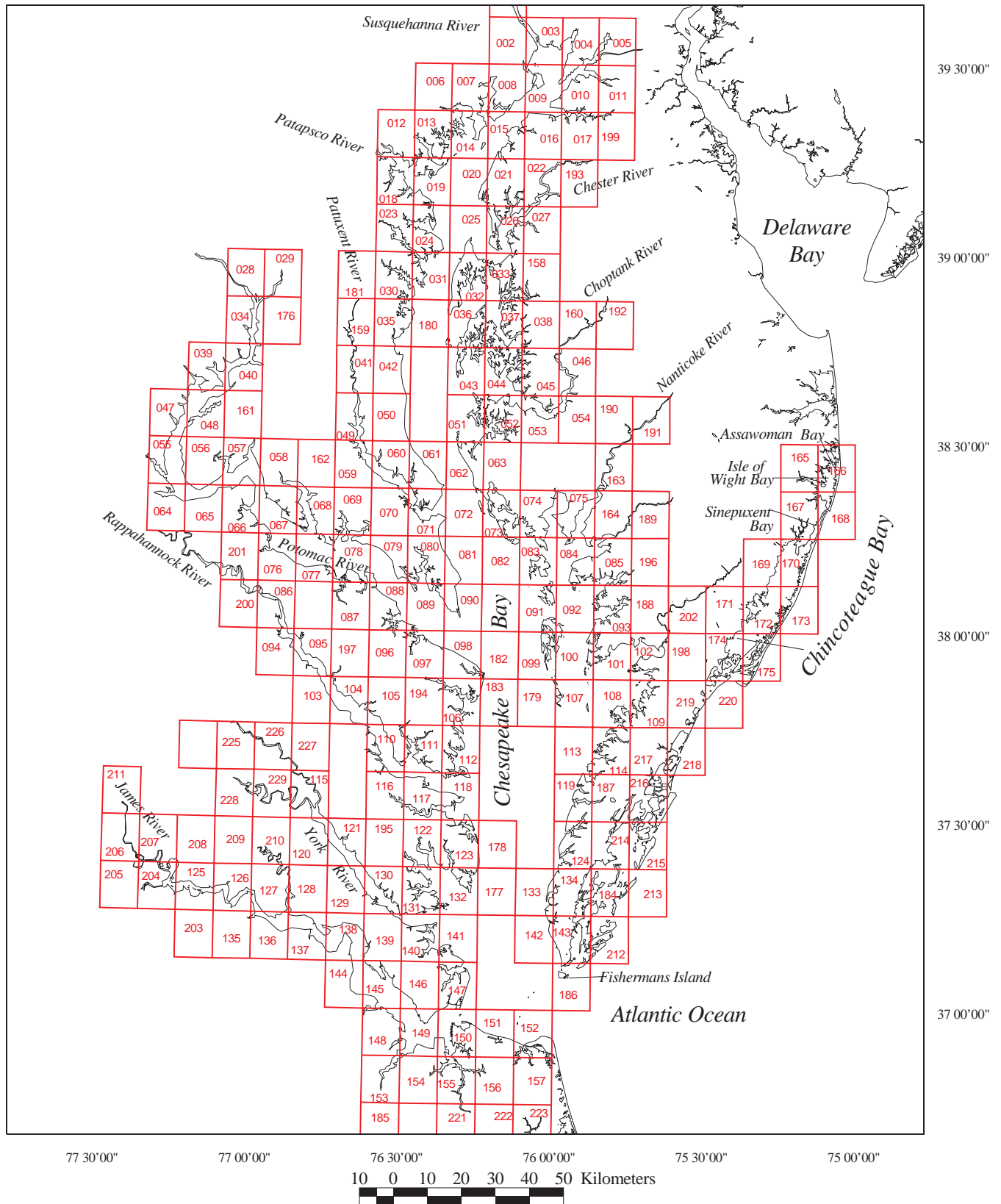


### SAV Bed Labels

A,B,C,....,AA,BA,CA,...

- 1 = 0 – 10% density
- 2 = 10 – 40% density
- 3 = 40 – 70% density
- 4 = 70 –100% density



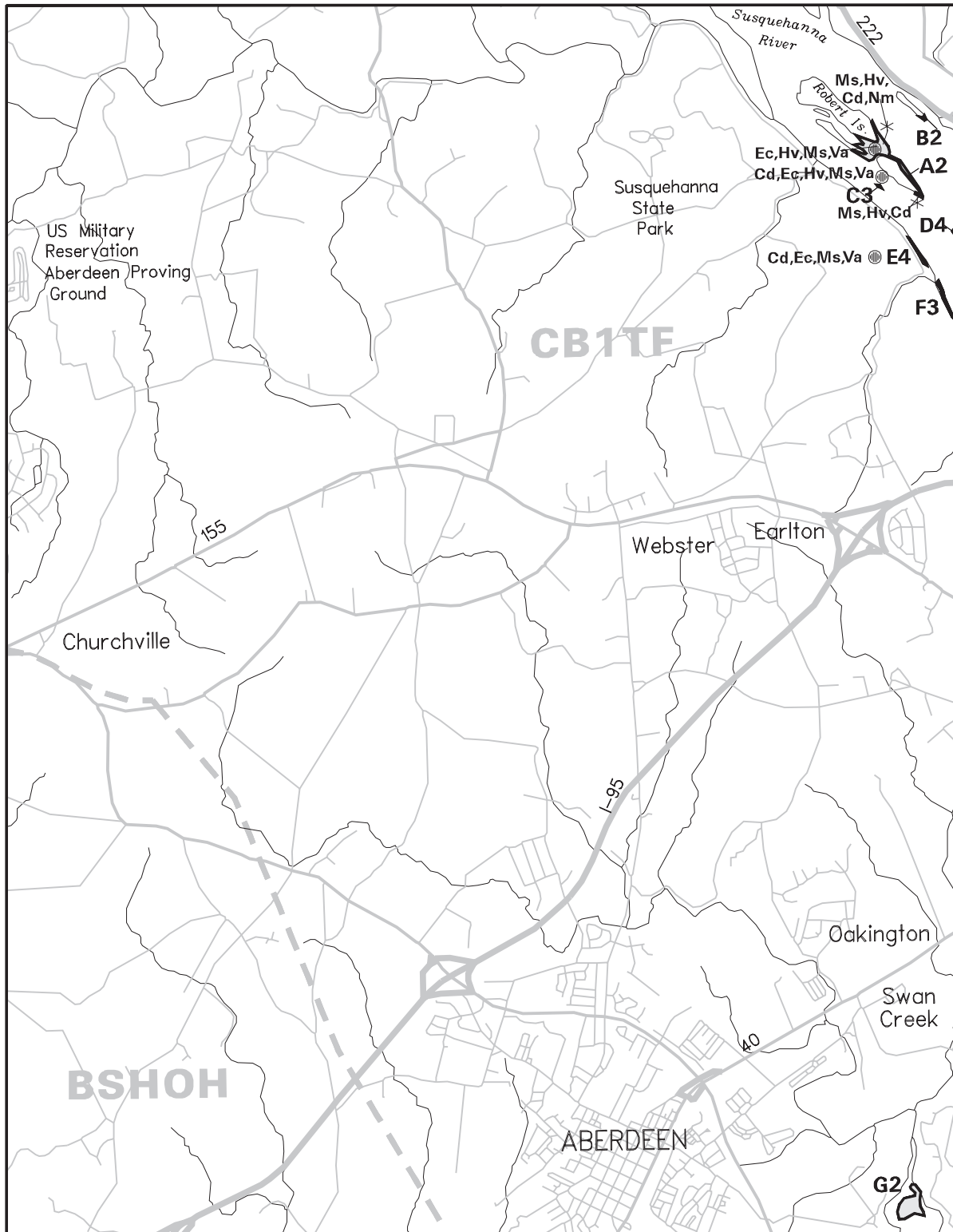


Location of USGS 7.5 minute quadrangles in Chesapeake Bay, its tributaries, and in the coastal bays with corresponding code numbers. (See Table 2 for quad names.)



# Submerged Aquatic Vegetation 1997

Aberdeen, Md. (002)



**Hectares of SAV: 17.06**  
Date Flown: 08/09/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary

1000 0 1000 2000 meters

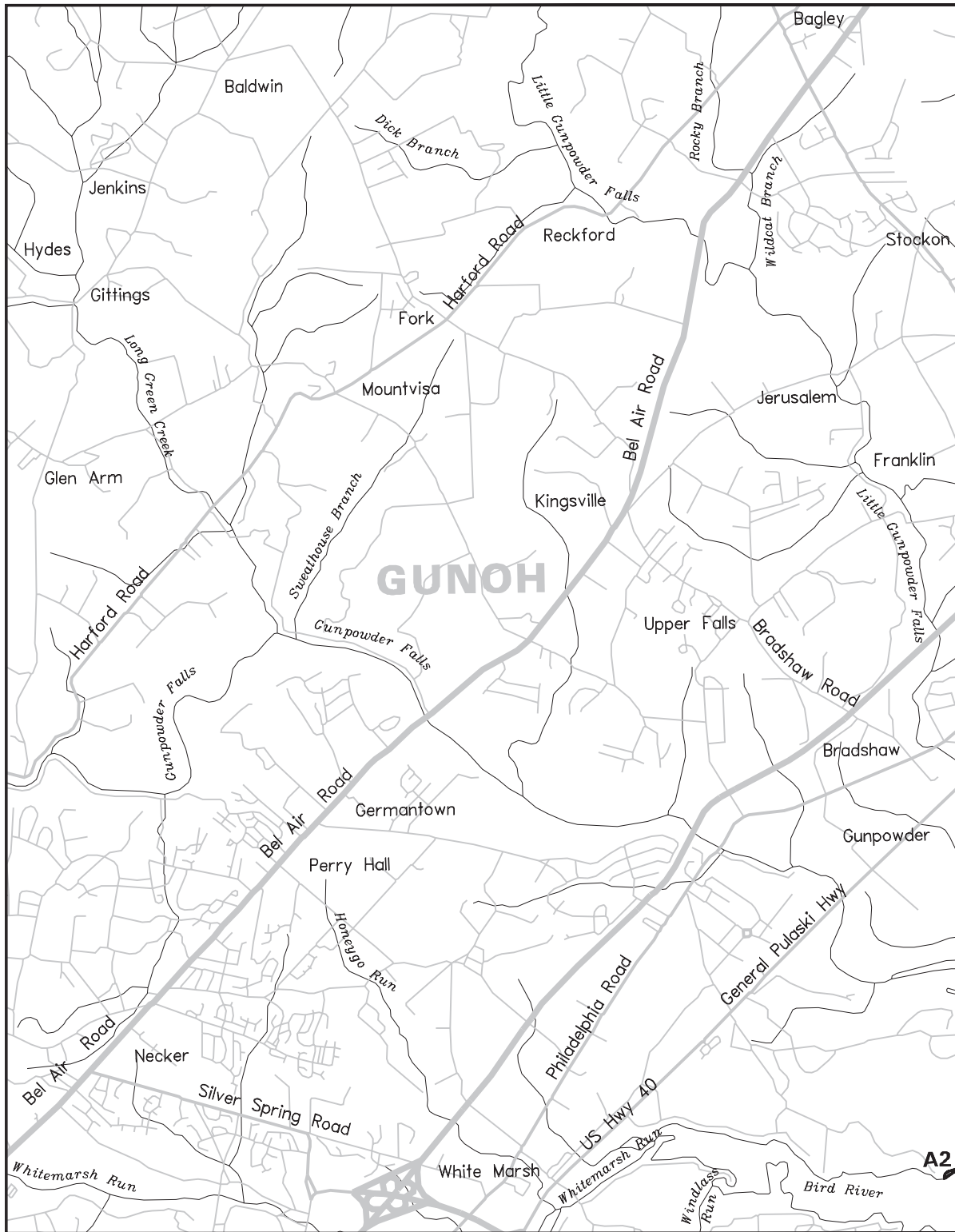
U.S. Geological Survey





# Submerged Aquatic Vegetation 1997

(006) White Marsh, Md.



**Hectares of SAV: 0.58**  
Date Flown: 08/24/97

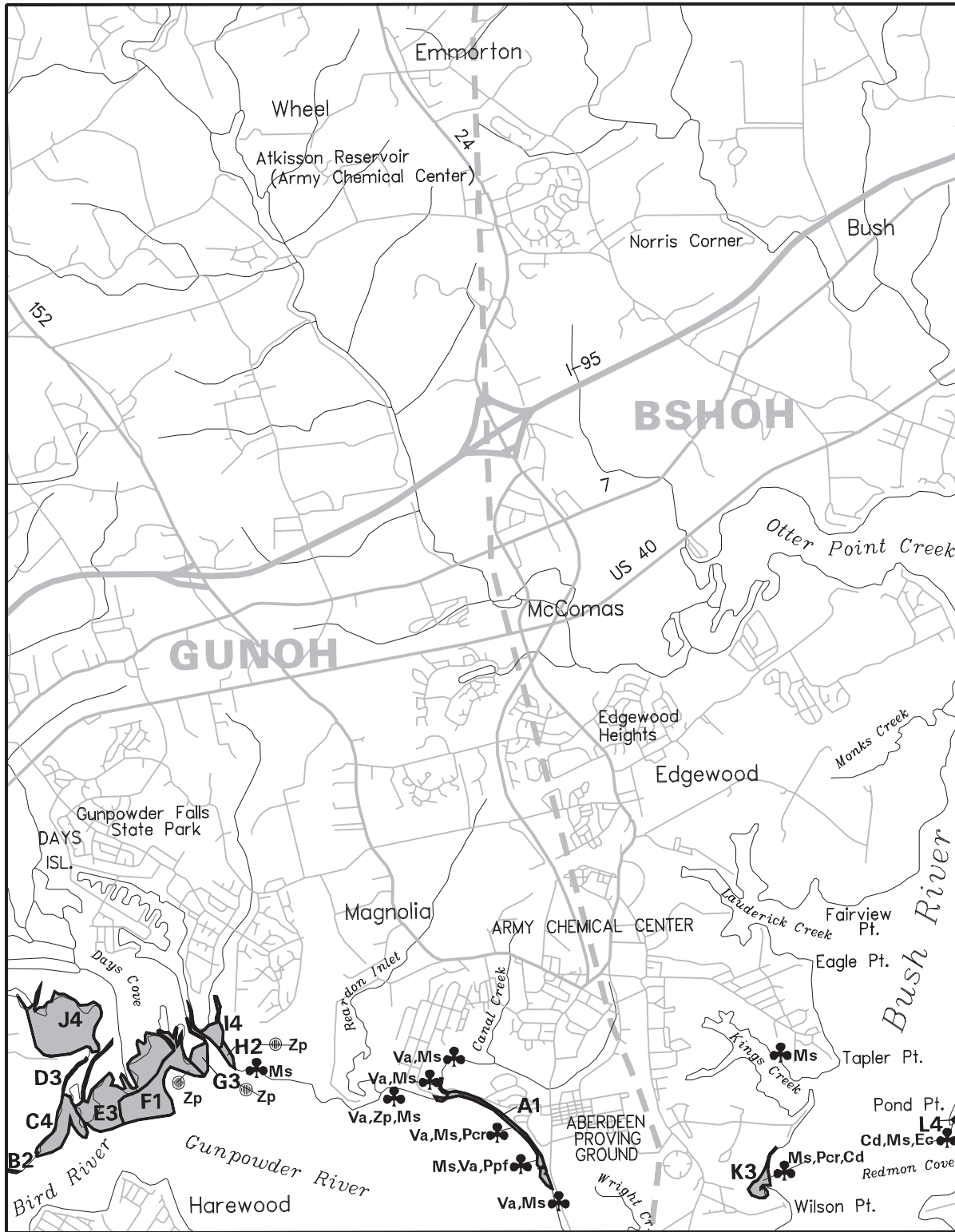
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

158

1000 0 1000 2000 meters

# Submerged Aquatic Vegetation 1997

Edgewood, Md. (007)



**Hectares of SAV: 160.79**  
Date Flown: 08/24/97

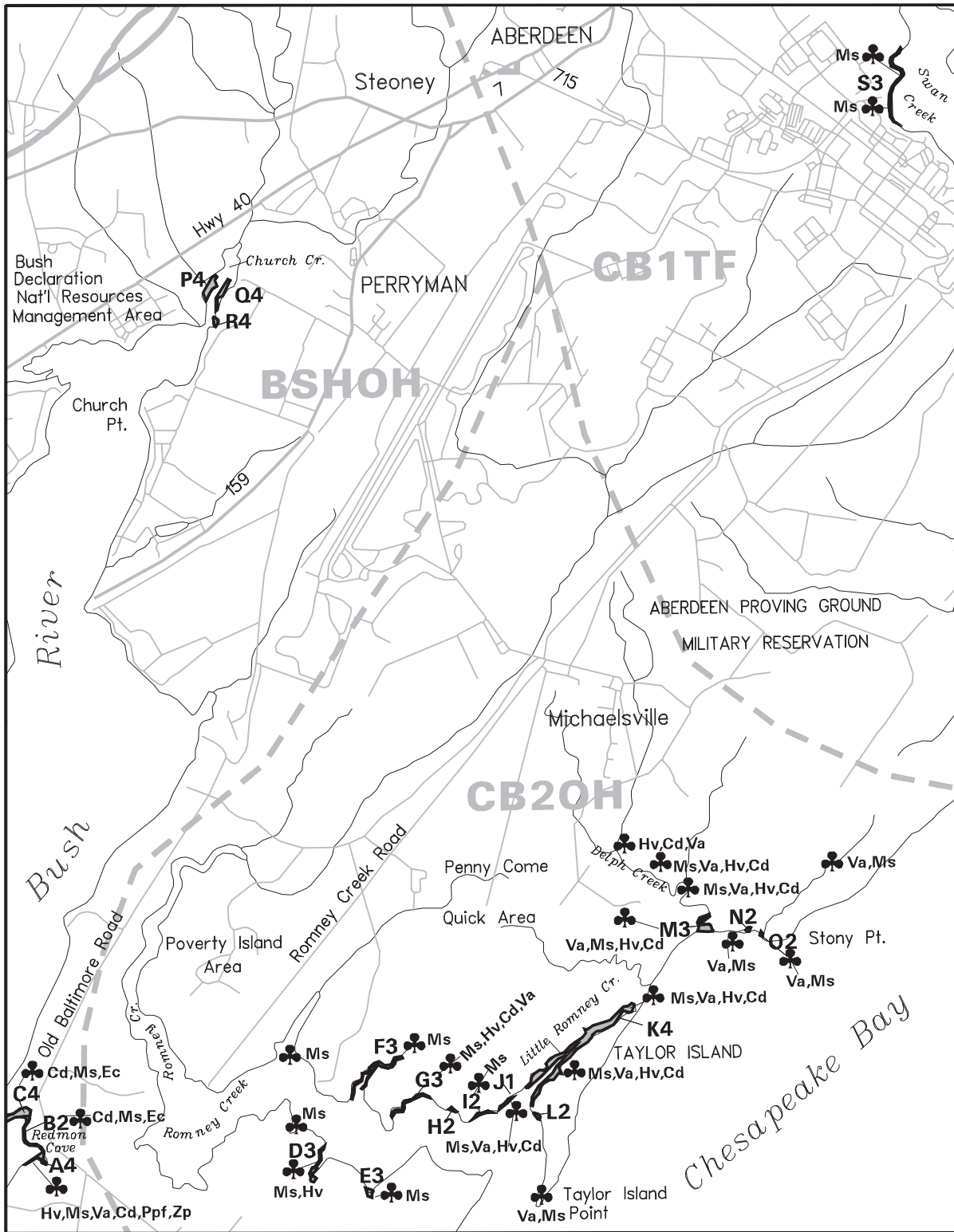
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey





# Submerged Aquatic Vegetation 1997

(008) Perryman, Md.



Hectares of SAV: 30.54  
Date Flown: 08/24/97

Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

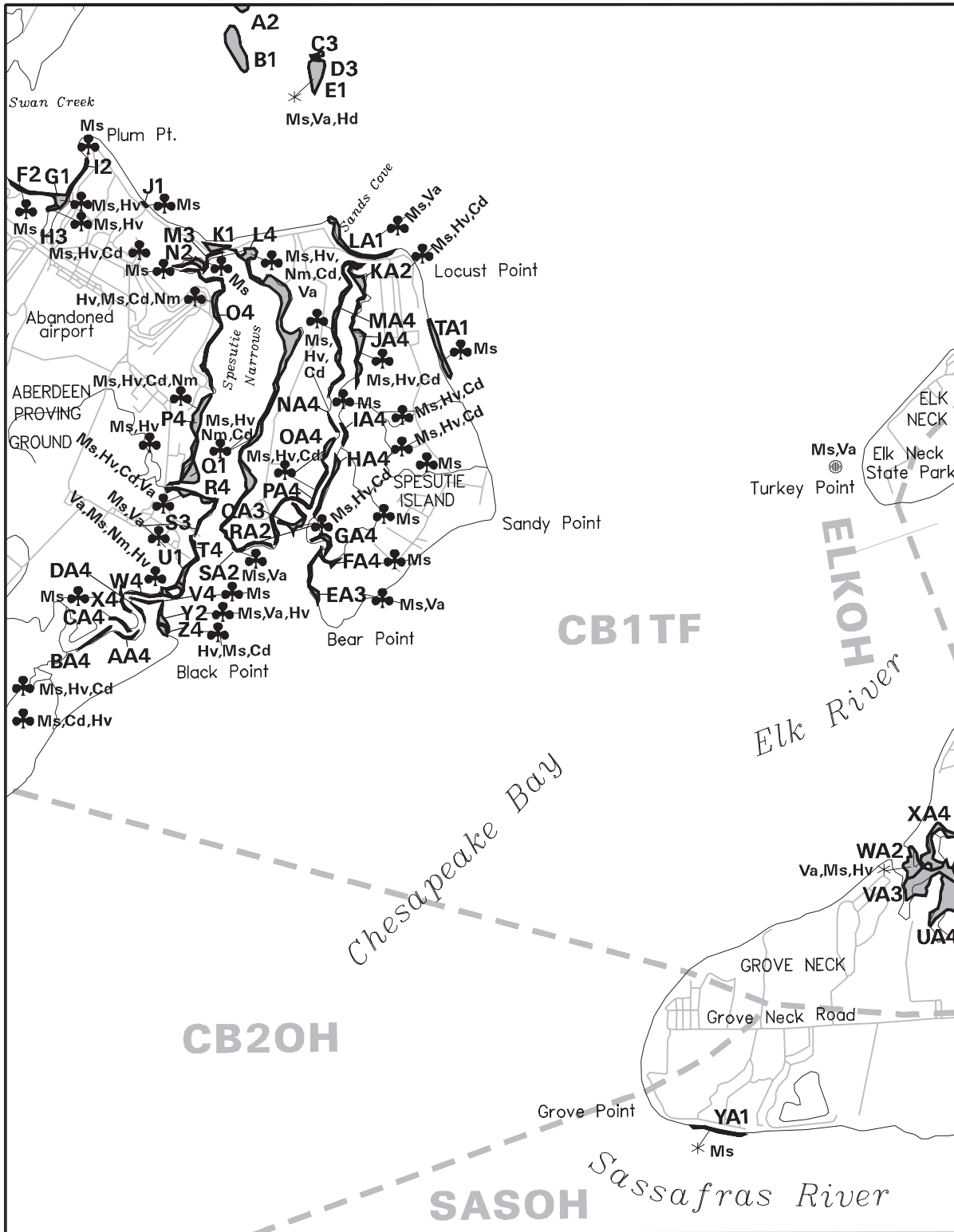
160 1000 0 1000 2000 meters





# Submerged Aquatic Vegetation 1997

Spesutie, Md. (009)



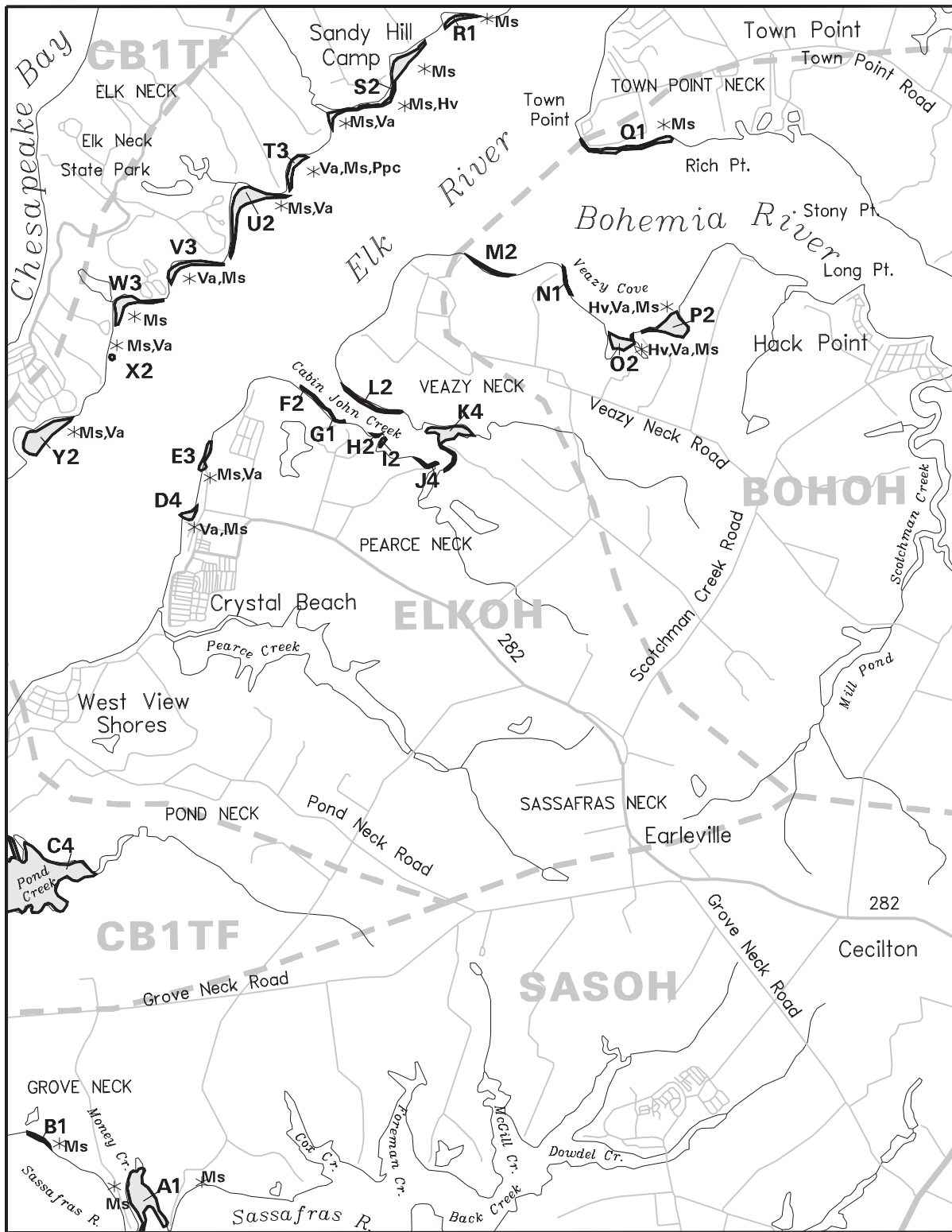
Hectares of SAV: 121.13  
Date Flown: 08/24/97

Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(010) Earleville, Md.



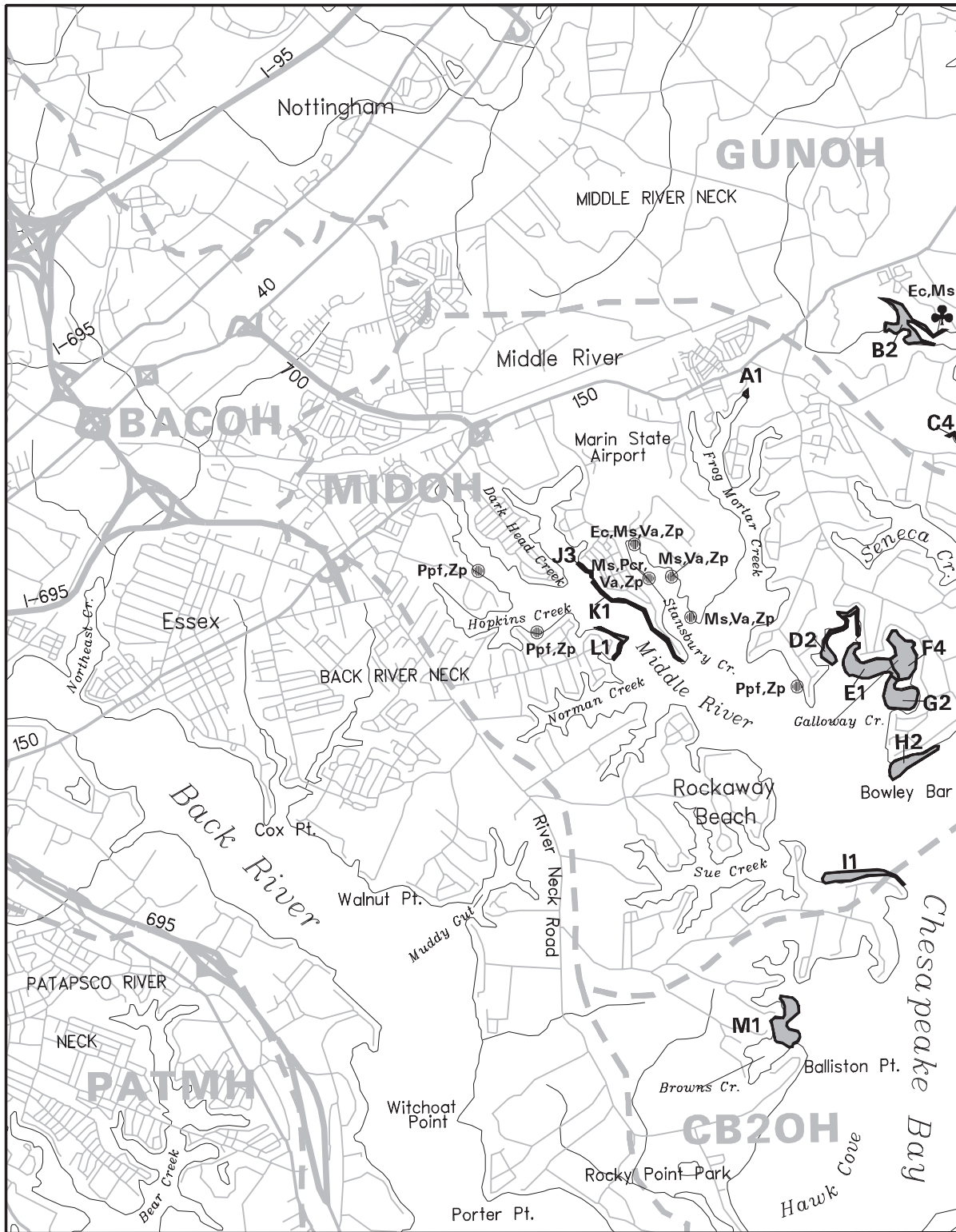
Hectares of SAV: 120.85  
Date Flown: 08/09/97, 08/24/97

Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

162 1000 0 1000 2000 meters

# Submerged Aquatic Vegetation 1997

Middle River, Md. (013)



**Hectares of SAV: 77.18**  
Date Flown: 08/24/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(014) Gunpowder Neck, Md.



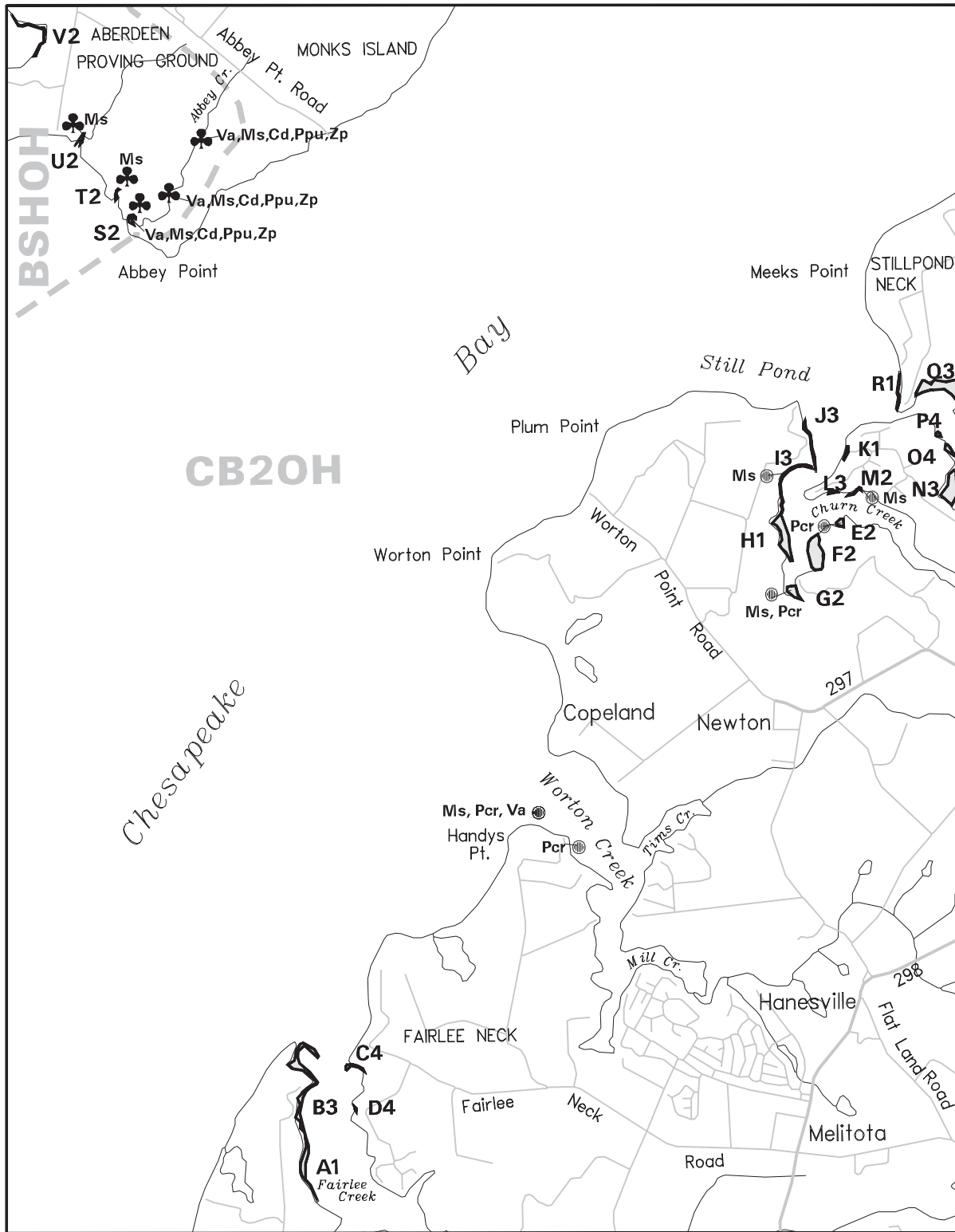
**Hectares of SAV: 589.84**  
Date Flown: 08/24/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

164 1000 0 1000 2000 meters

# Submerged Aquatic Vegetation 1997

Hanesville, Md. (015)



**Hectares of SAV: 33.93**  
Date Flown: 08/24/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary

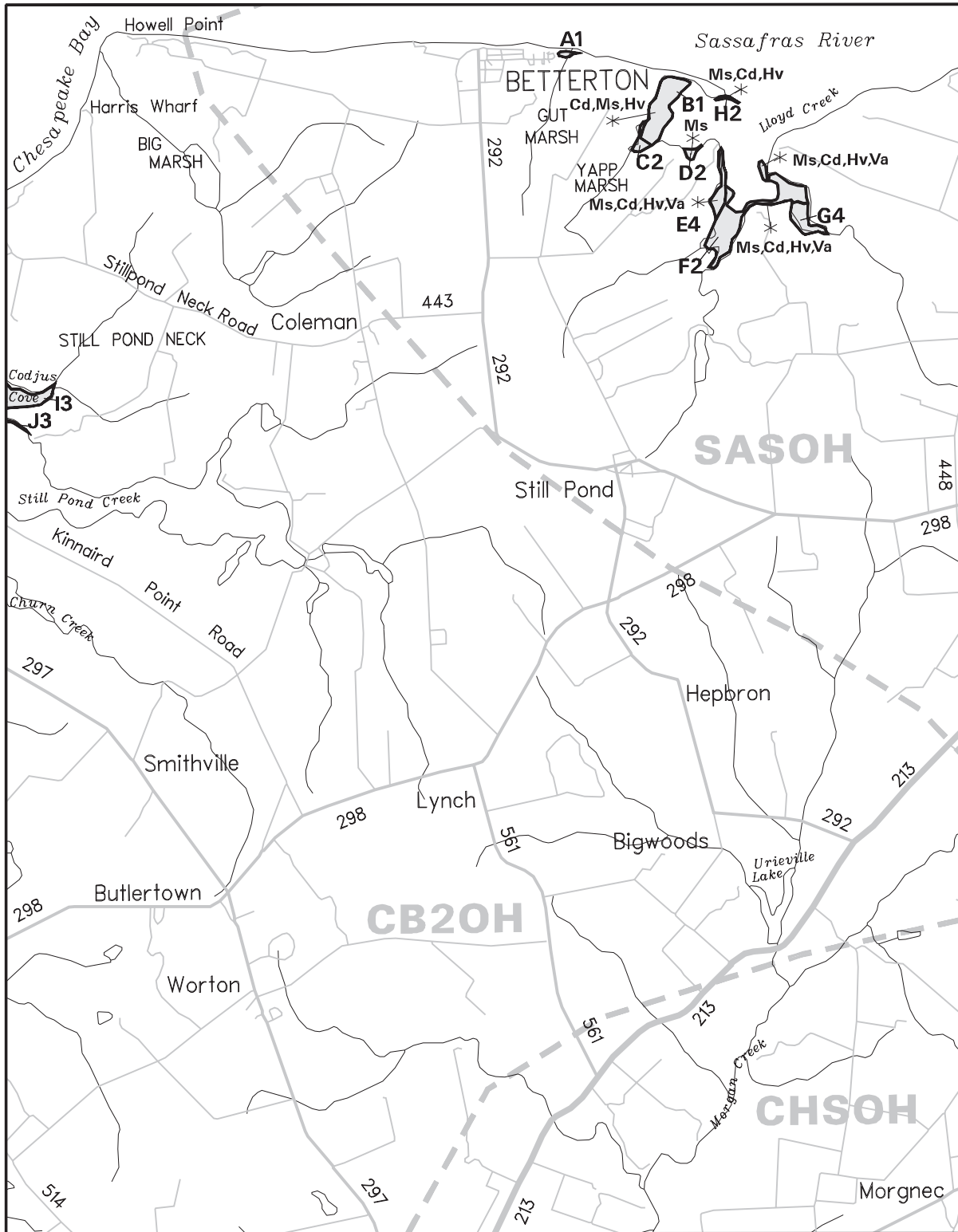


U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(016) Betterton, Md.



**Hectares of SAV: 72.96**  
Date Flown: 08/24/97

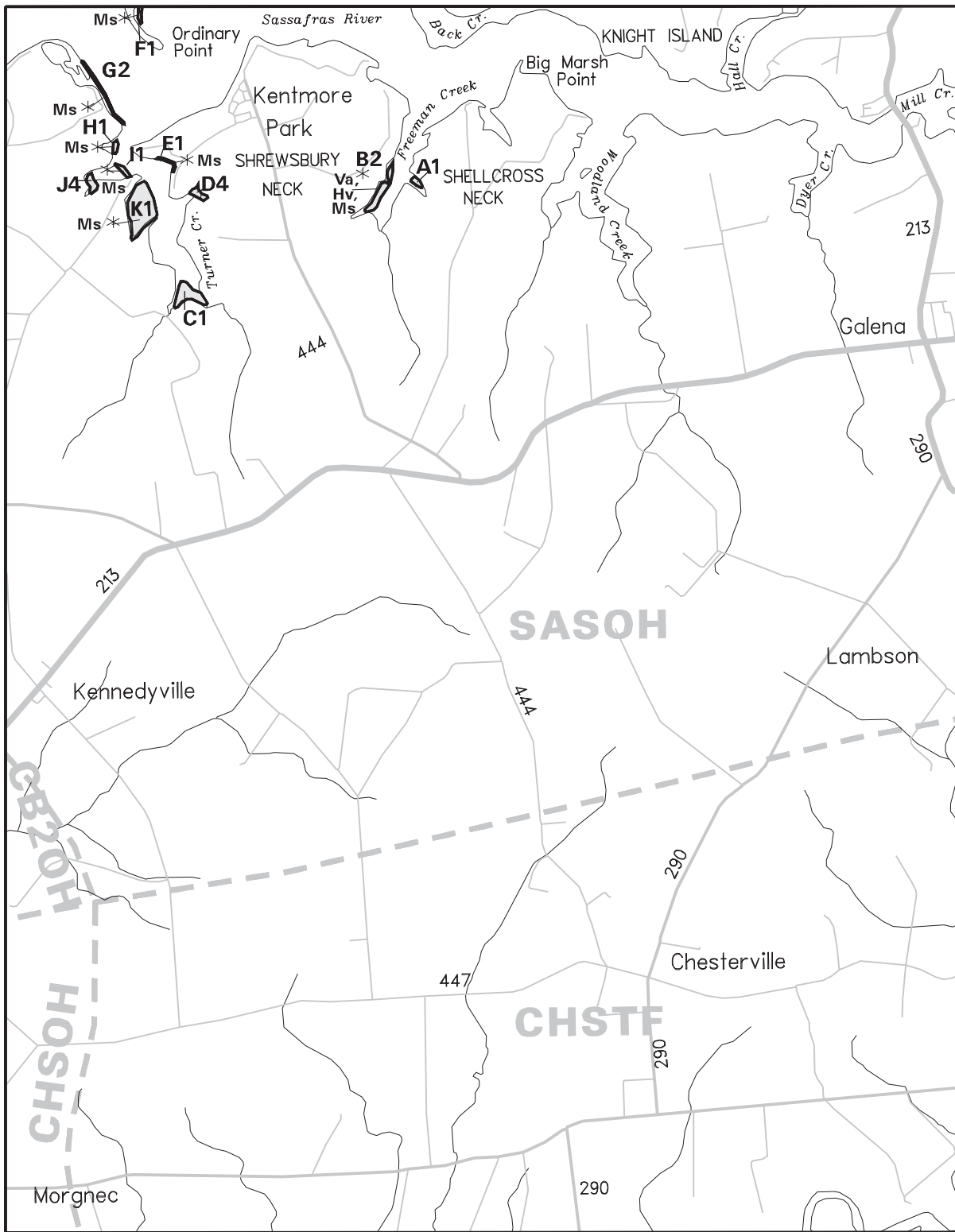
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

166 1000 0 1000 2000 meters



# Submerged Aquatic Vegetation 1997

Galena, Md. (017)



**Hectares of SAV: 32.59**  
Date Flown: 08/24/97

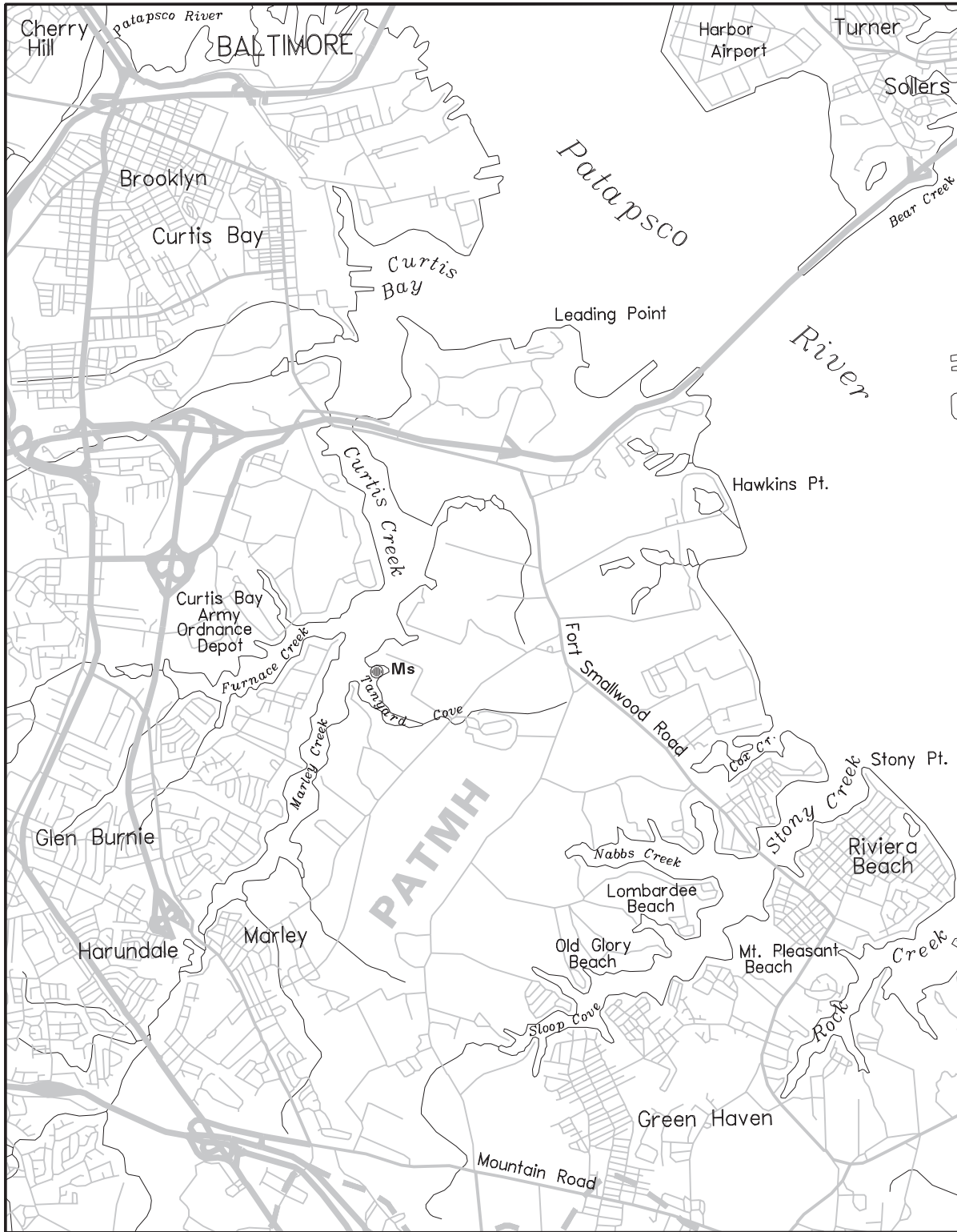
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary



U.S. Geological Survey

# Submerged Aquatic Vegetation 1997

(018) Curtis Bay, Md.



**Hectares of SAV: 0.00**  
Date Flown: 09/22/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

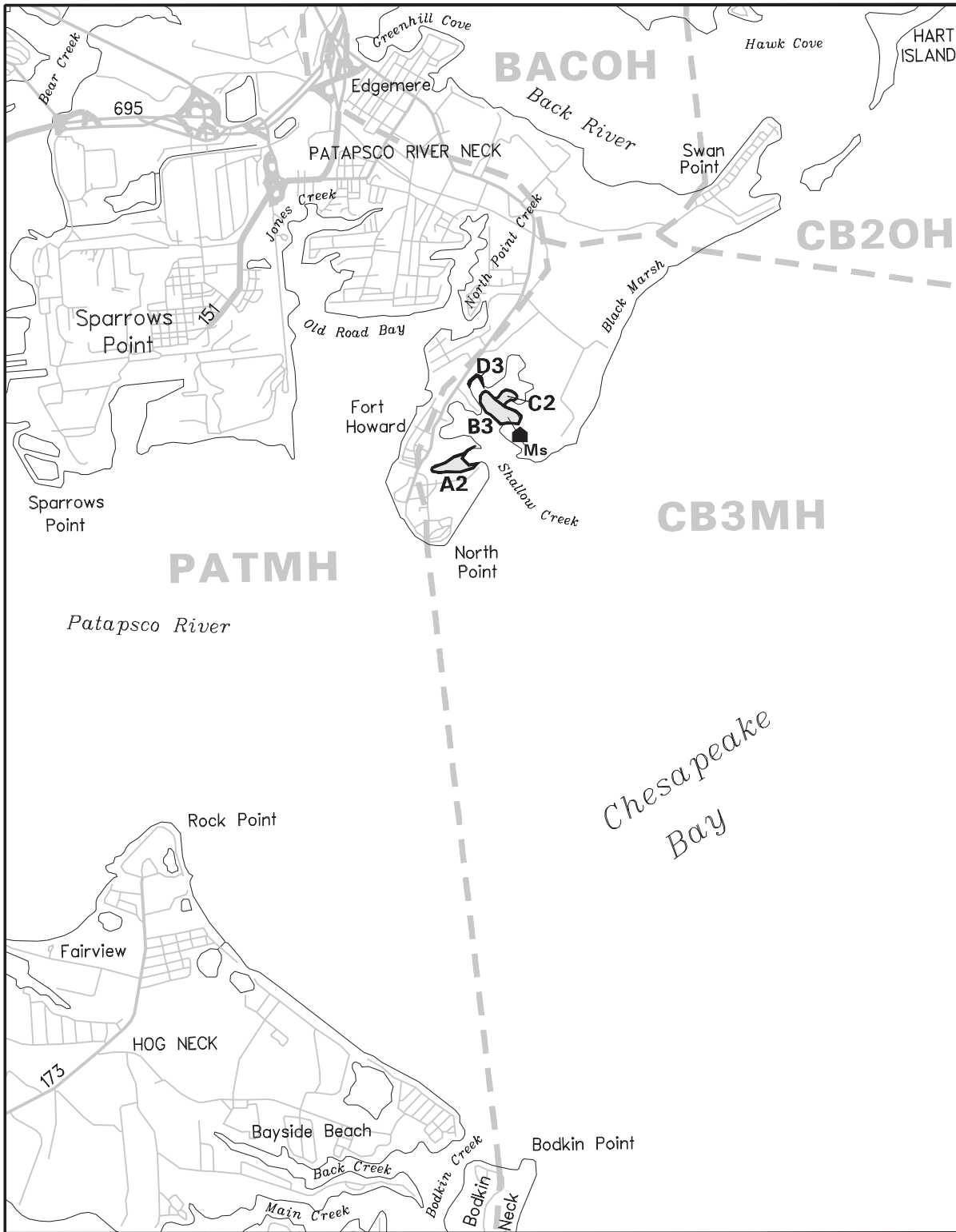
168

1000 0 1000 2000 meters



# Submerged Aquatic Vegetation 1997

Sparrows Point, Md. (019)



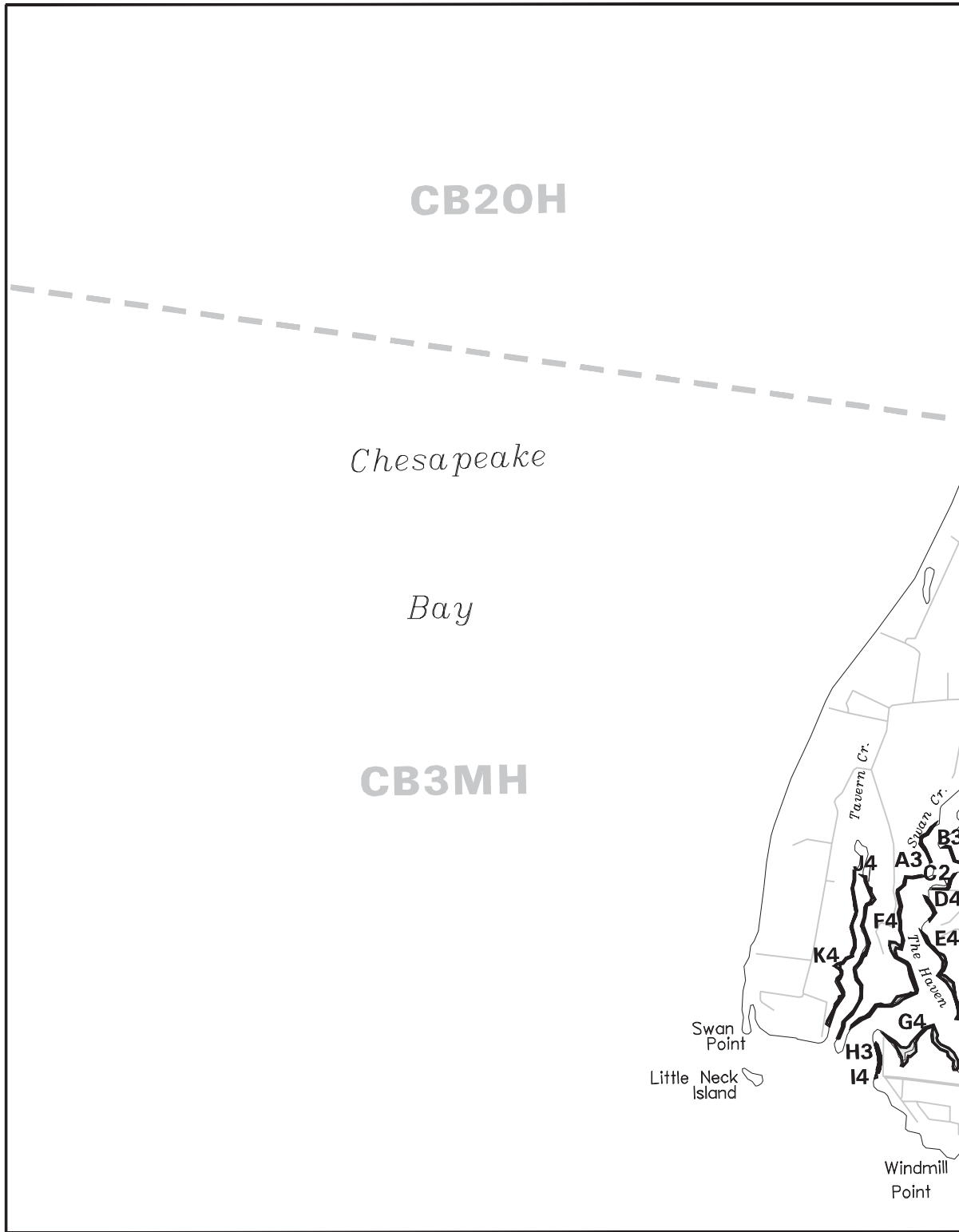
**Hectares of SAV: 16.82**  
Date Flown: 08/24/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(020) Swan Point, Md.



**Hectares of SAV: 26.73**  
Date Flown: 08/24/97

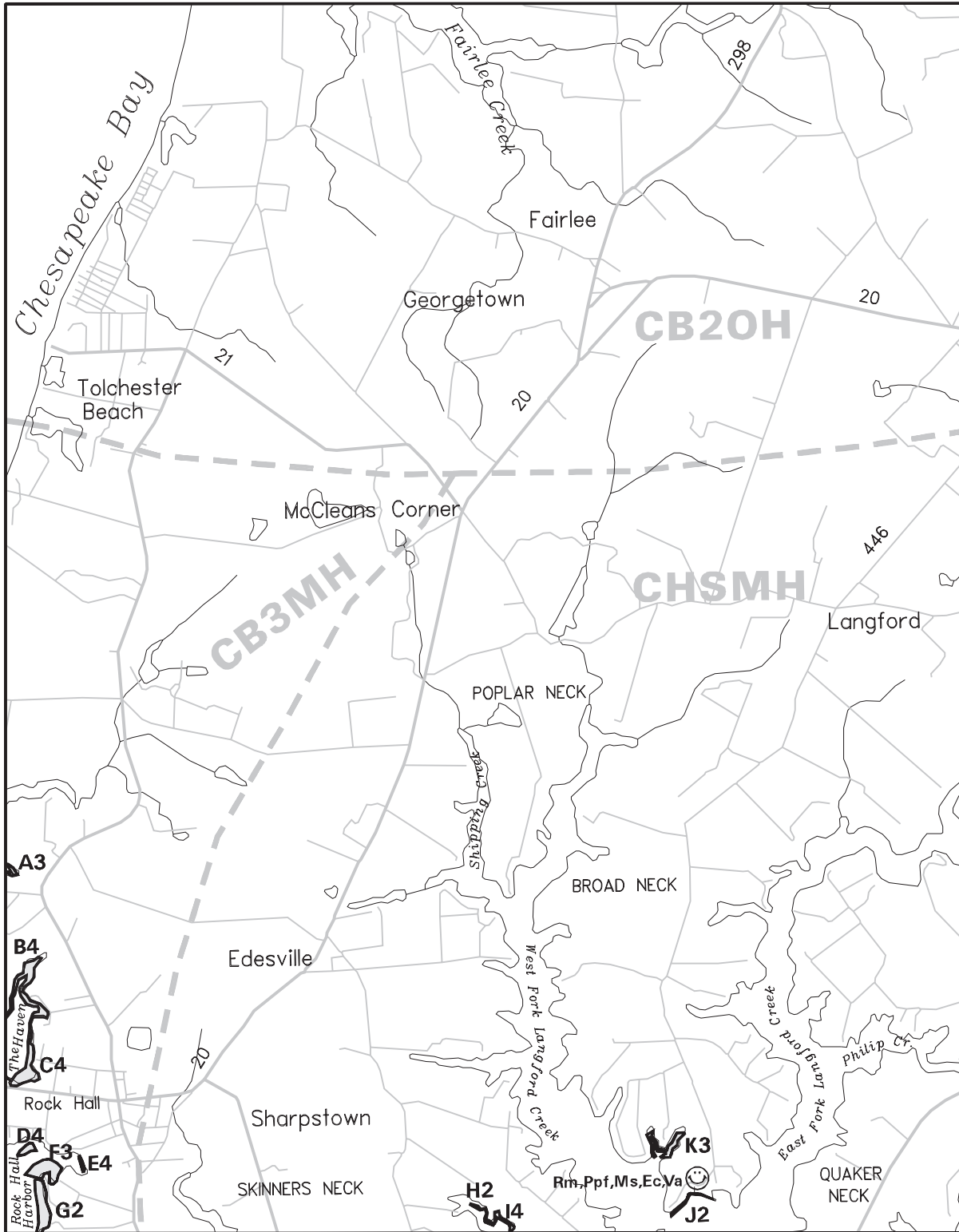
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

170



# Submerged Aquatic Vegetation 1997

Rock Hall, Md. (021)



**Hectares of SAV: 35.90**  
 Date Flown: 08/24/97, 09/26/97

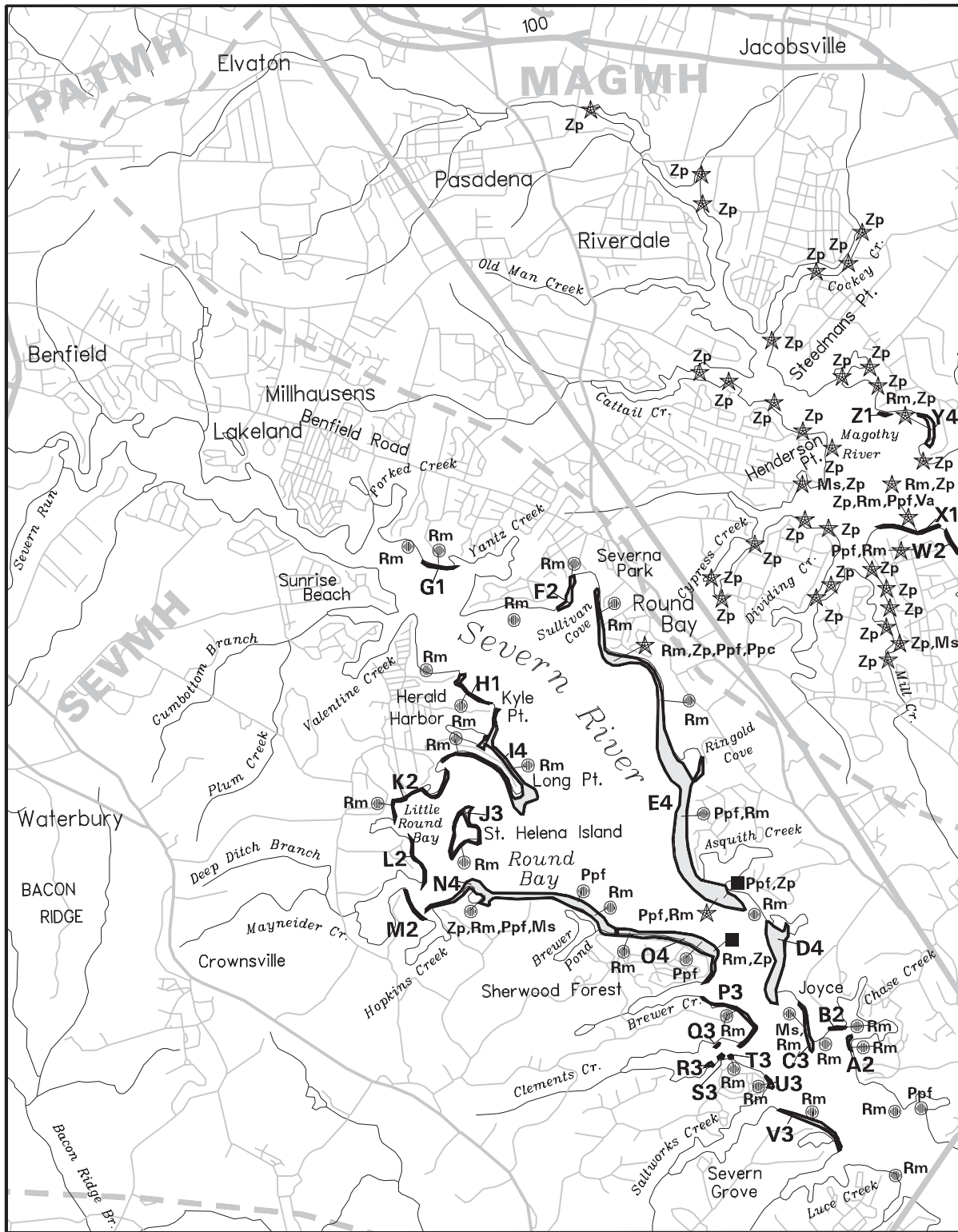
**Sources:** School of Marine Science  
 Virginia Institute of Marine Science  
 College of William and Mary



U.S. Geological Survey

# Submerged Aquatic Vegetation 1997

(023) Round Bay, Md.



**Hectares of SAV: 128.46**  
Date Flown: 07/31/97, 08/30/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

172 1000 0 1000 2000 meters



# Submerged Aquatic Vegetation 1997

Gibson Island, Md. (024)



**Hectares of SAV: 50.82**  
Date Flown: 08/30/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary

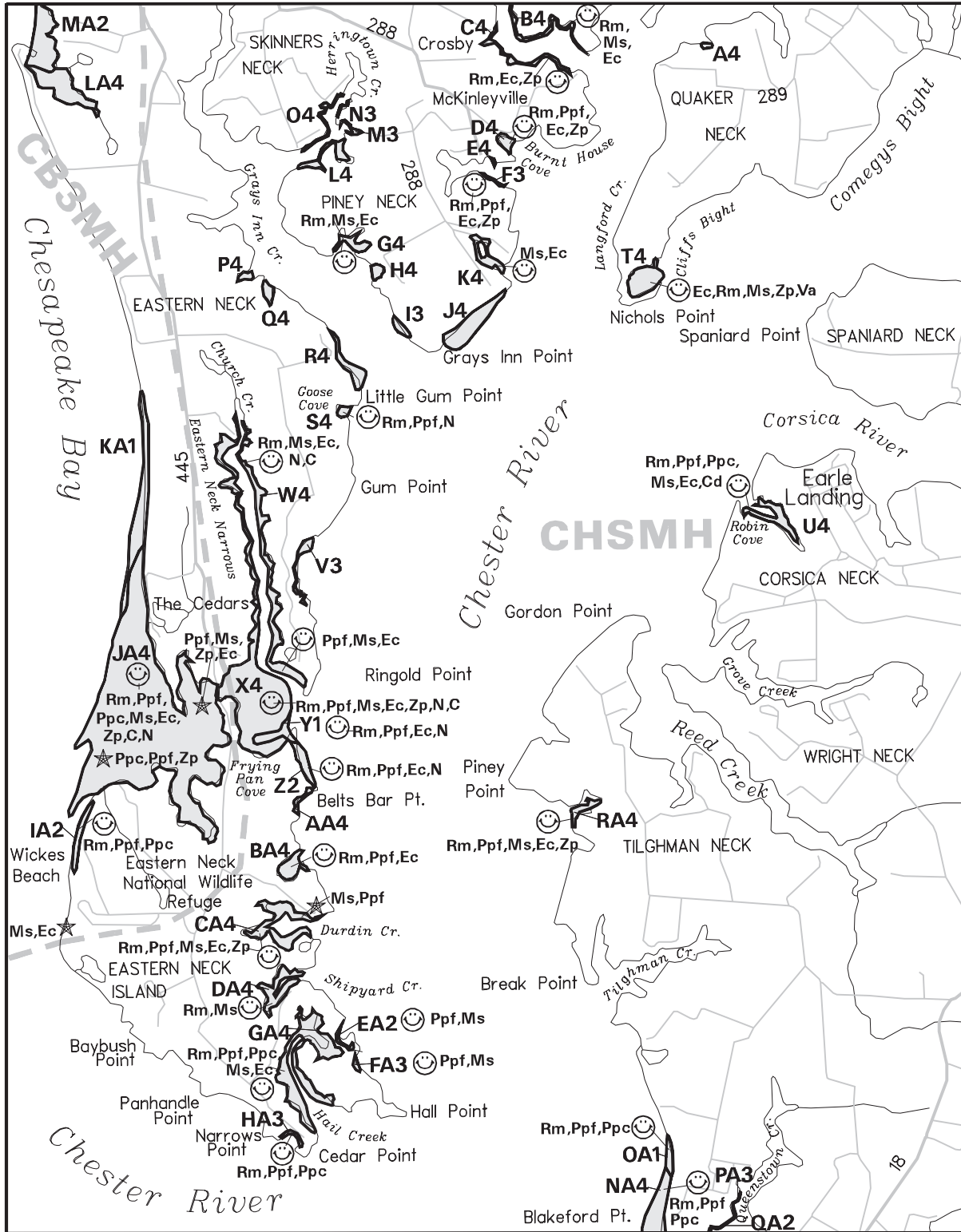


U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(026) Langford Creek, Md.

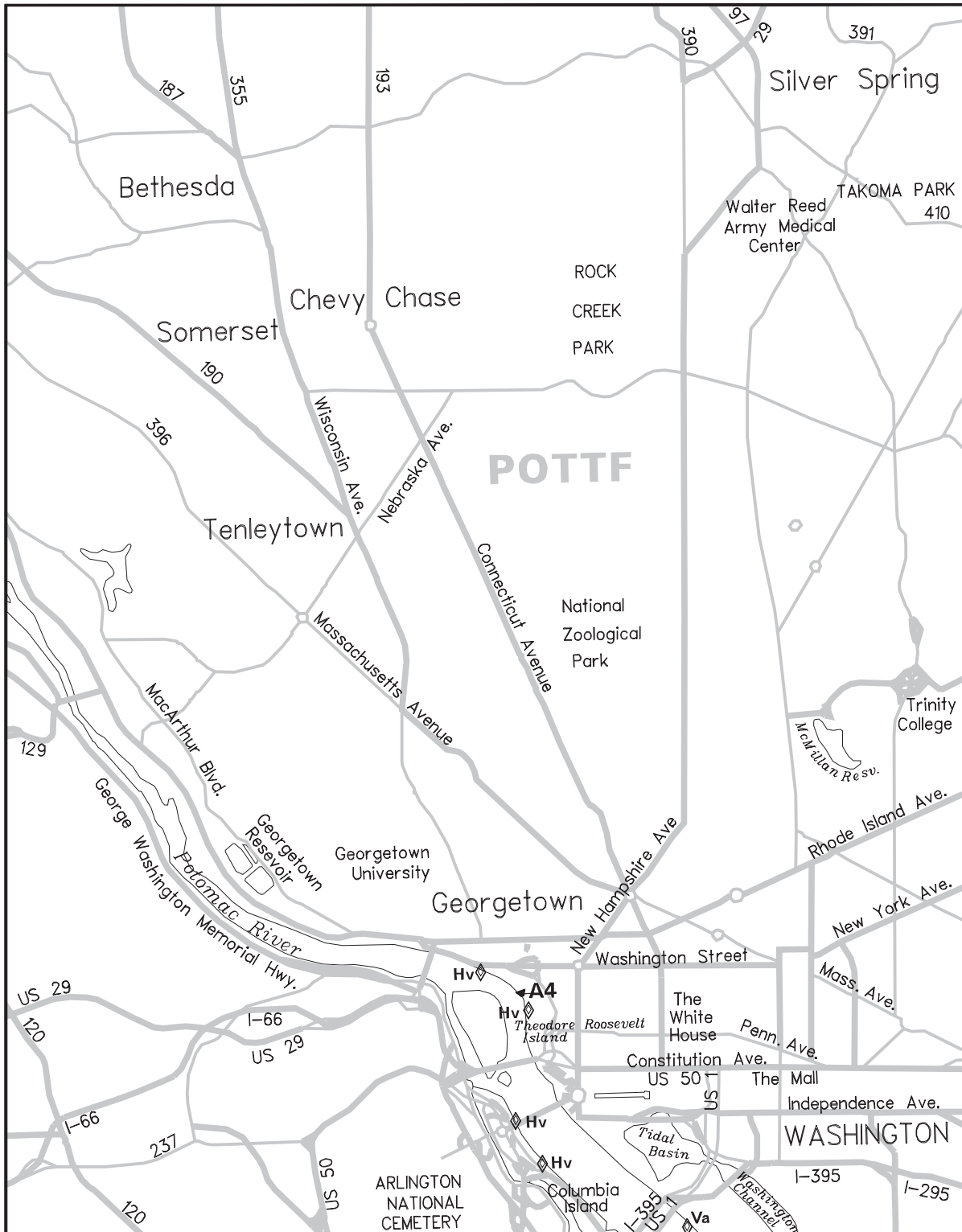


Hectares of SAV: 563.50  
Date Flown: 08/24/97, 09/22/97

Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

# Submerged Aquatic Vegetation 1997

Washington West, Md.–D.C.–Va (028)



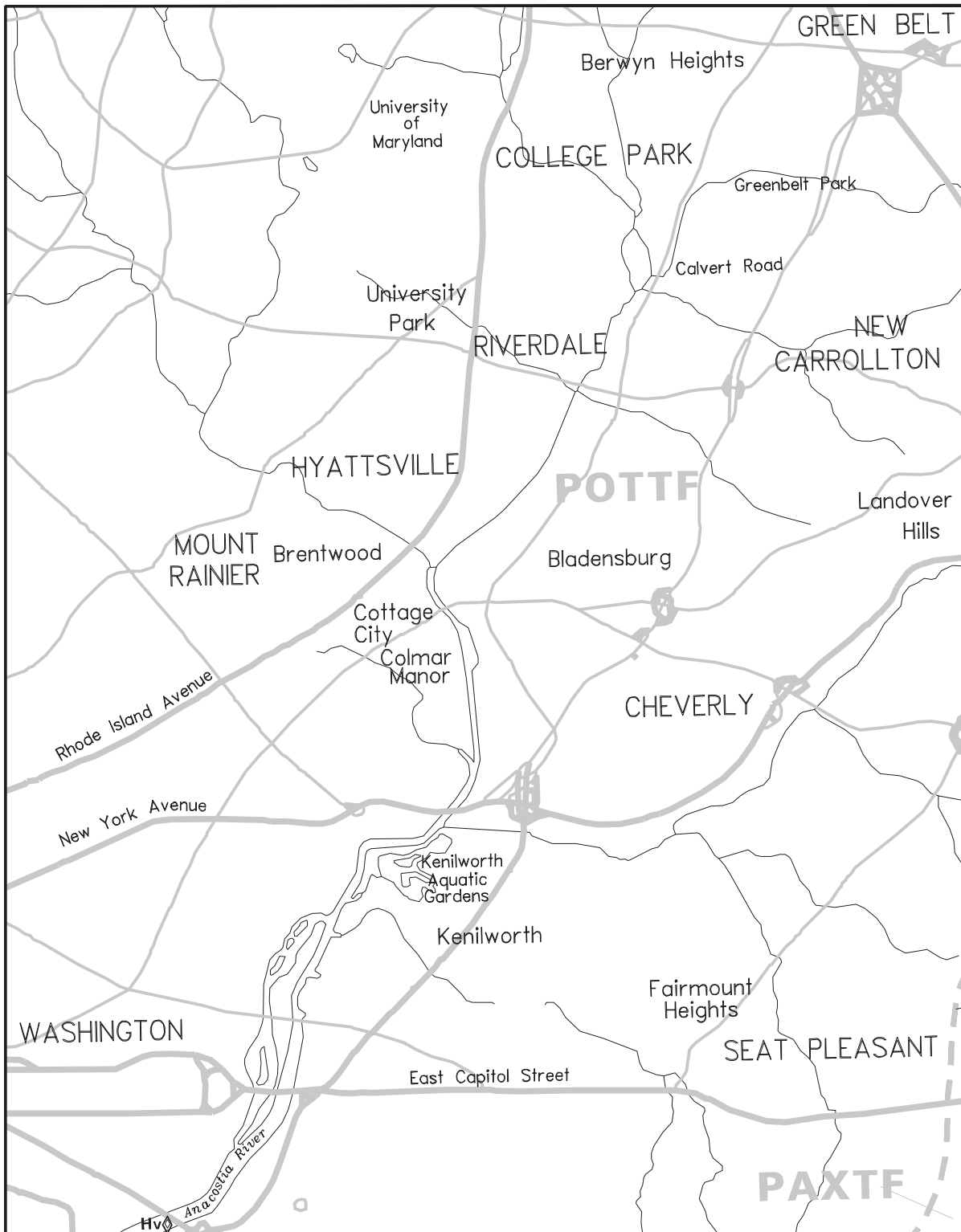
**Hectares of SAV: 0.20**  
Date Flown: 08/23/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(029) Washington East, D.C.–Md.



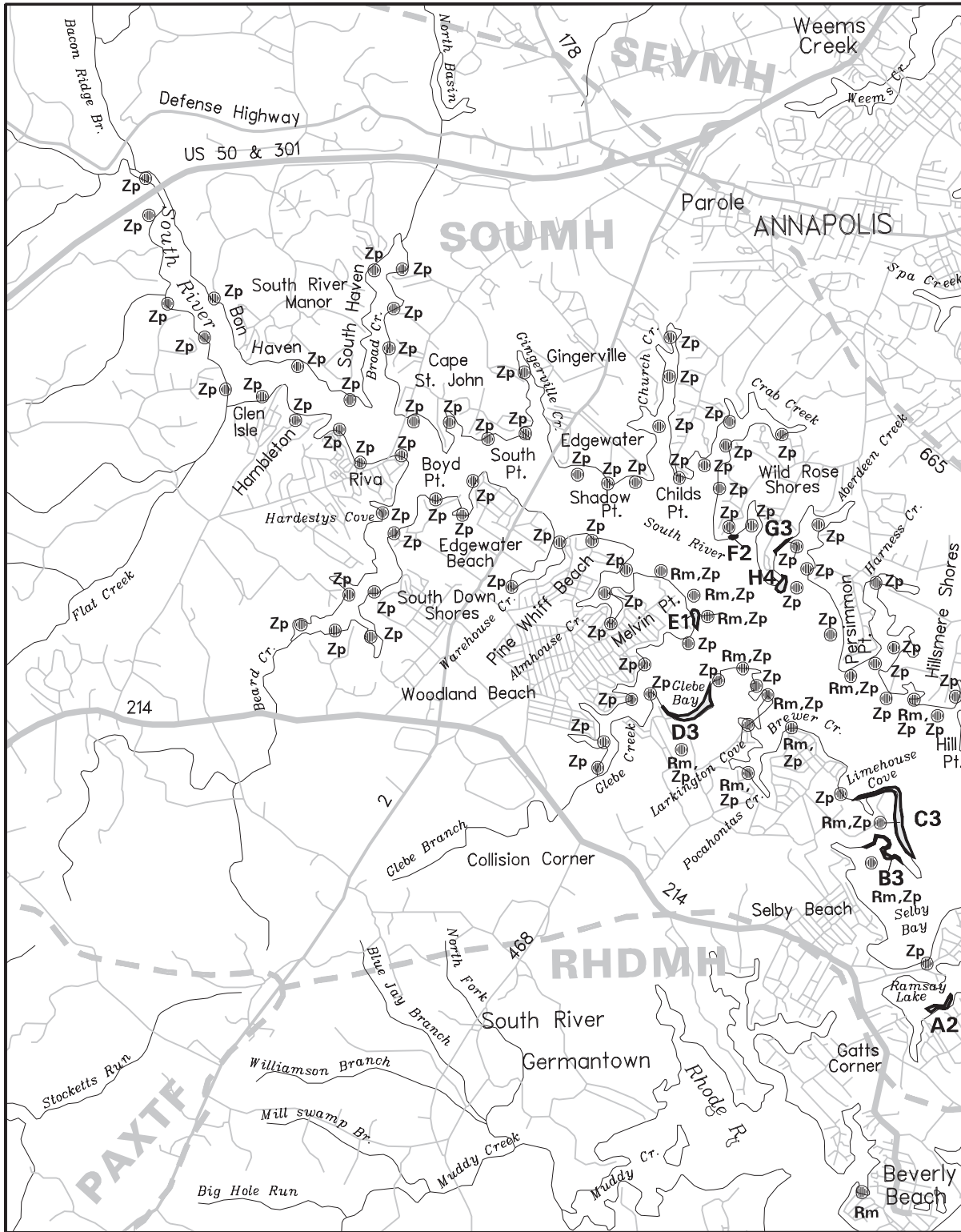
**Hectares of SAV: 0.00**  
Date Flown: 08/23/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

South River, Md. (030)



**Hectares of SAV: 16.35**  
Date Flown: 07/31/97

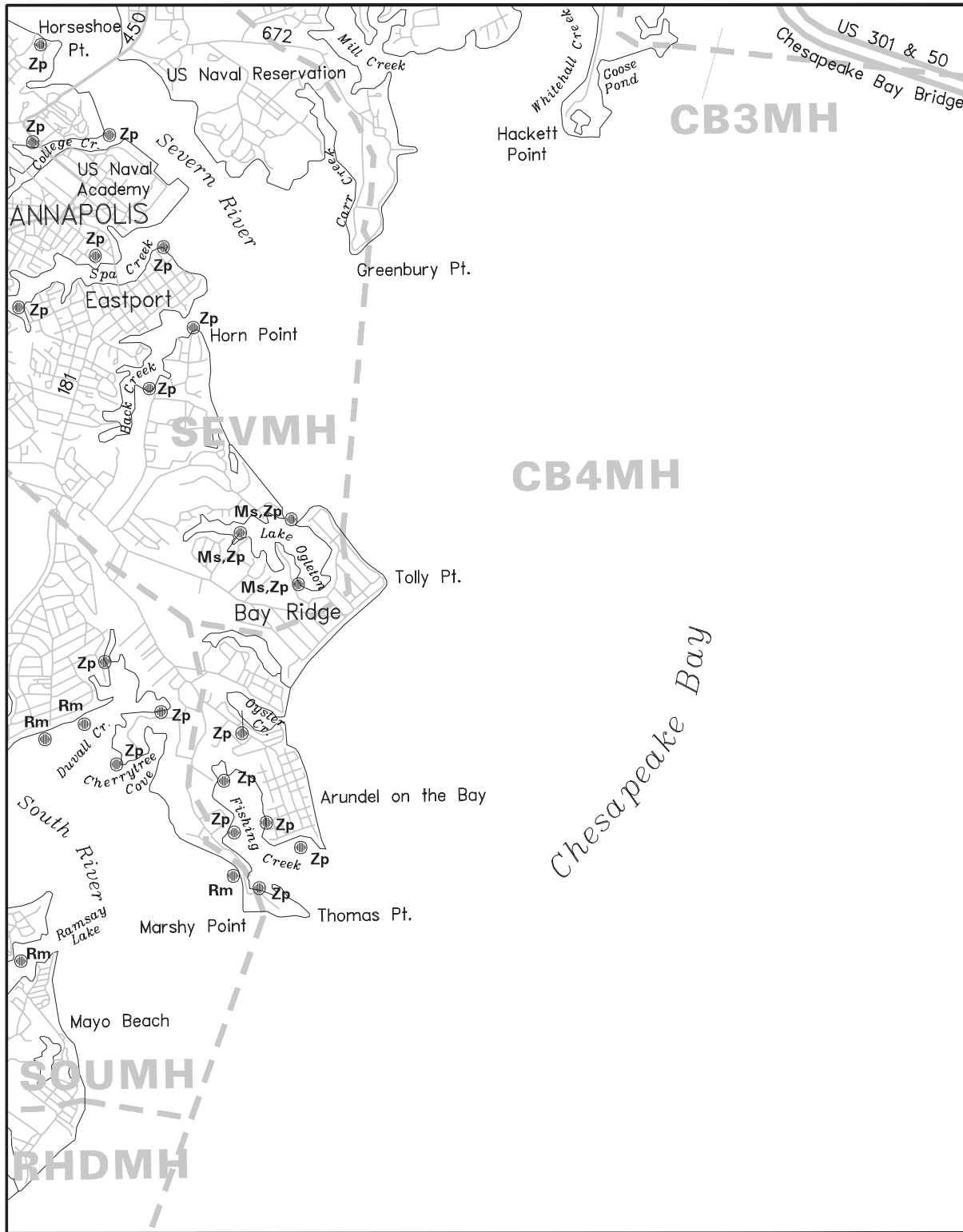
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary



U.S. Geological Survey

# Submerged Aquatic Vegetation 1997

(031) Annapolis, Md.



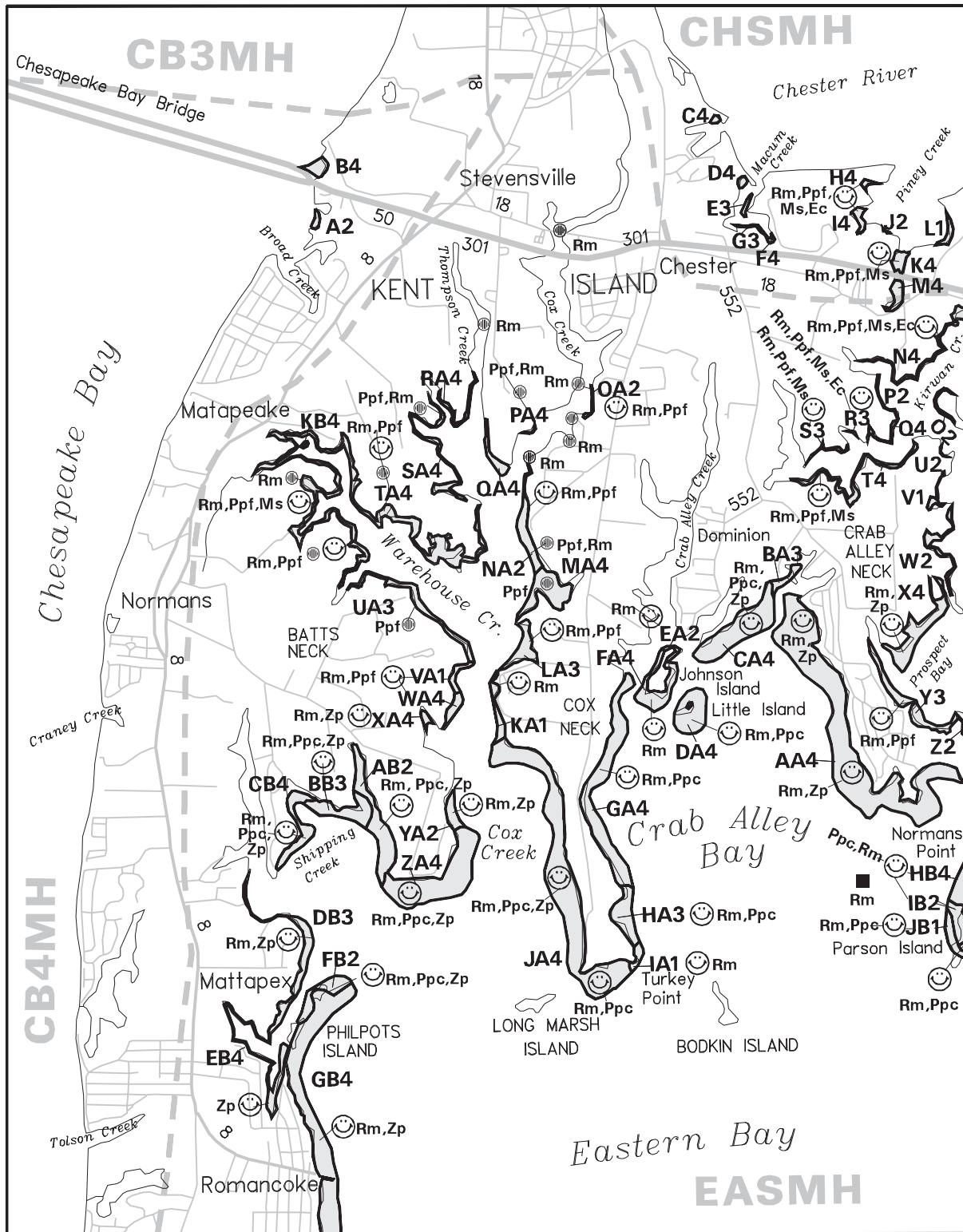
**Hectares of SAV: 0.00**  
Date Flown: 08/30/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

178 1000 0 1000 2000 meters

# Submerged Aquatic Vegetation 1997

Kent Island, Md. (032)



Hectares of SAV: 683.88  
 Date Flown: 07/31/97

Sources: School of Marine Science  
 Virginia Institute of Marine Science  
 College of William and Mary  
 U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(033) Queenstown, Md.



Hectares of SAV: 527.43  
Date Flown: 07/31/97

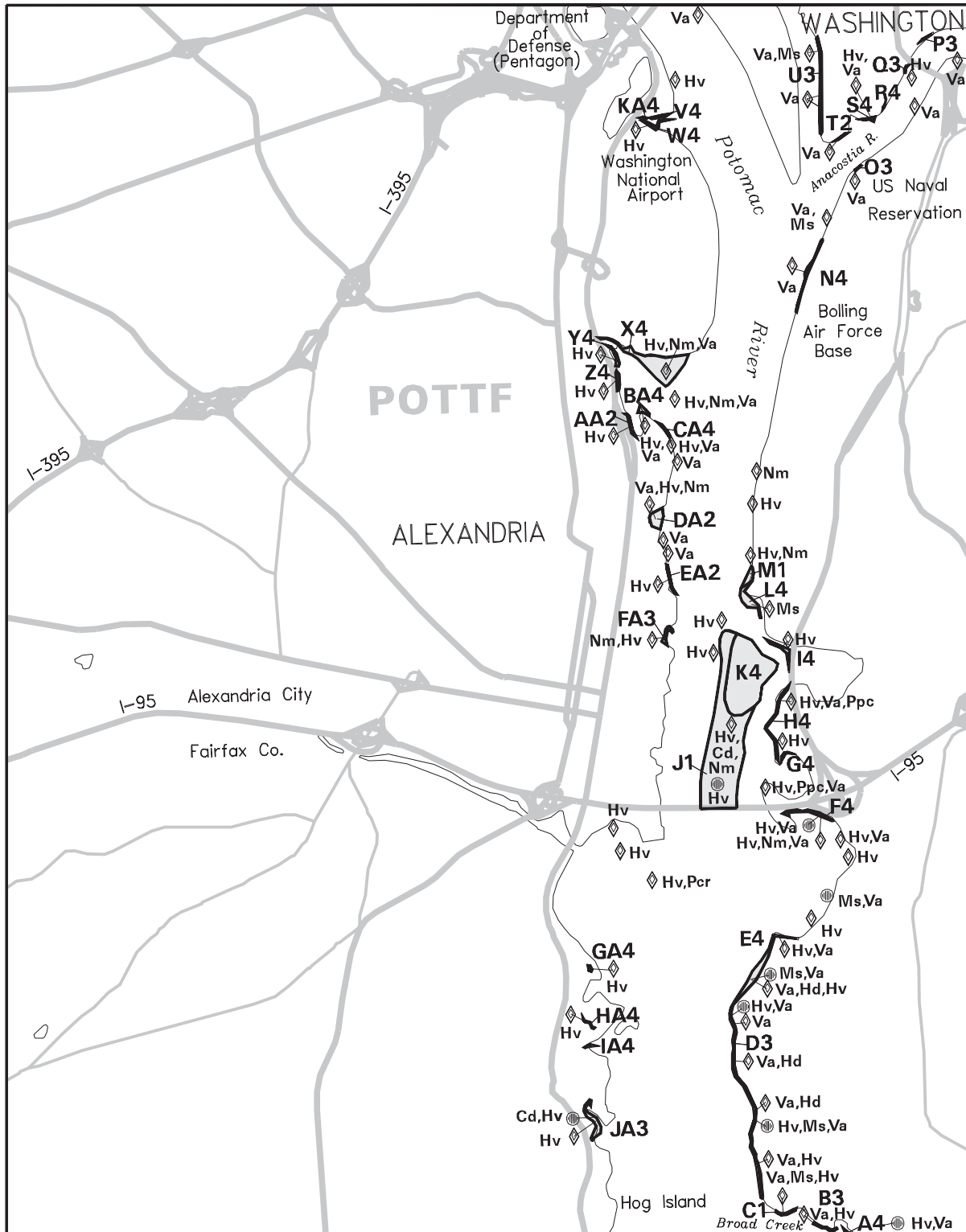
Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey





# Submerged Aquatic Vegetation 1997

Alexandria, Va.–D.C.–Md. (034)



**Hectares of SAV: 136.56**

Date Flown: 08/23/97

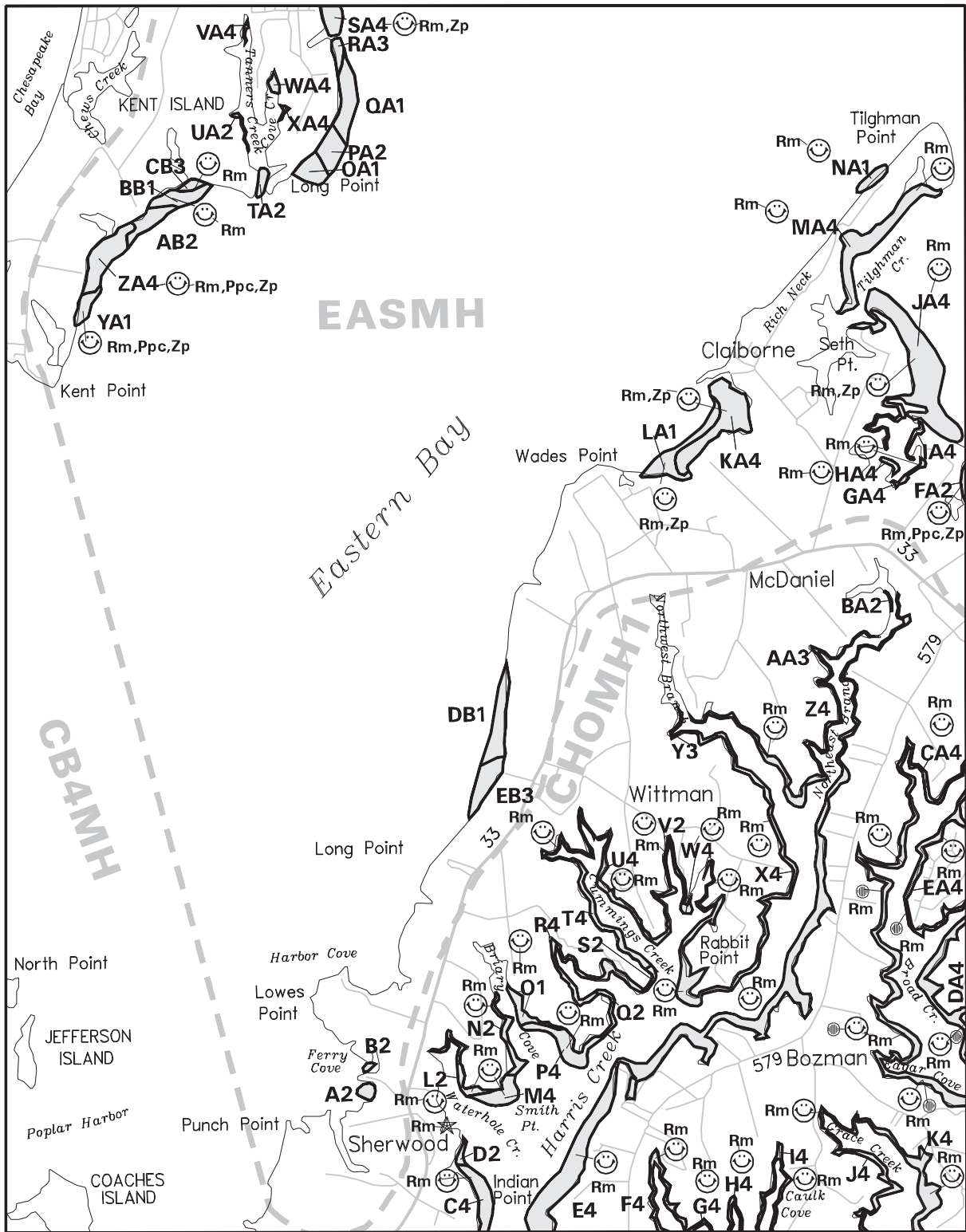


**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary

U.S. Geological Survey

# Submerged Aquatic Vegetation 1997

(036) Claiborne, Md.



**Hectares of SAV: 661.30**  
Date Flown: 07/18/97, 07/31/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

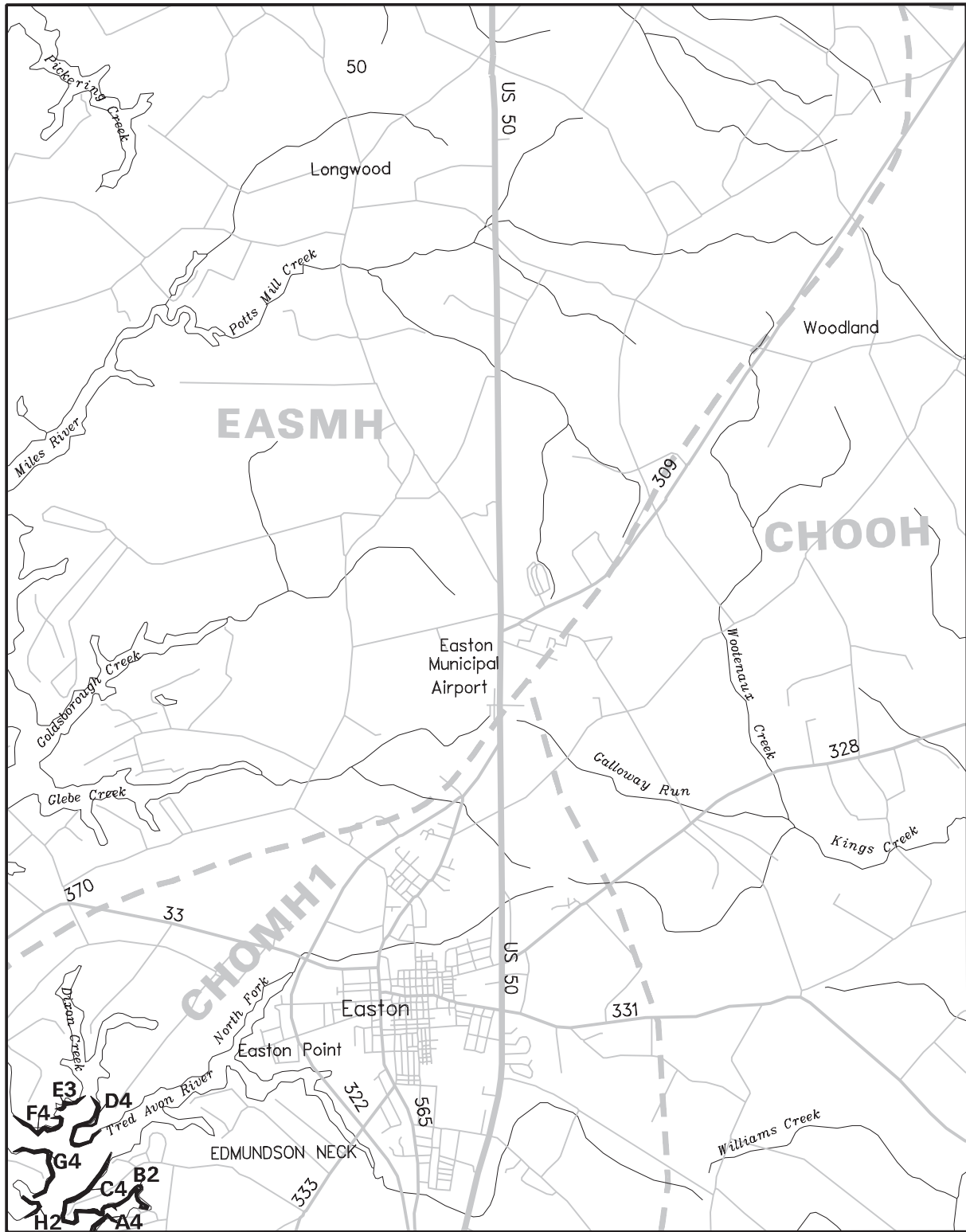
182 1000 0 1000 2000 meters





# Submerged Aquatic Vegetation 1997

(038) Easton, Md.



**Hectares of SAV: 12.45**  
Date Flown: 07/31/97

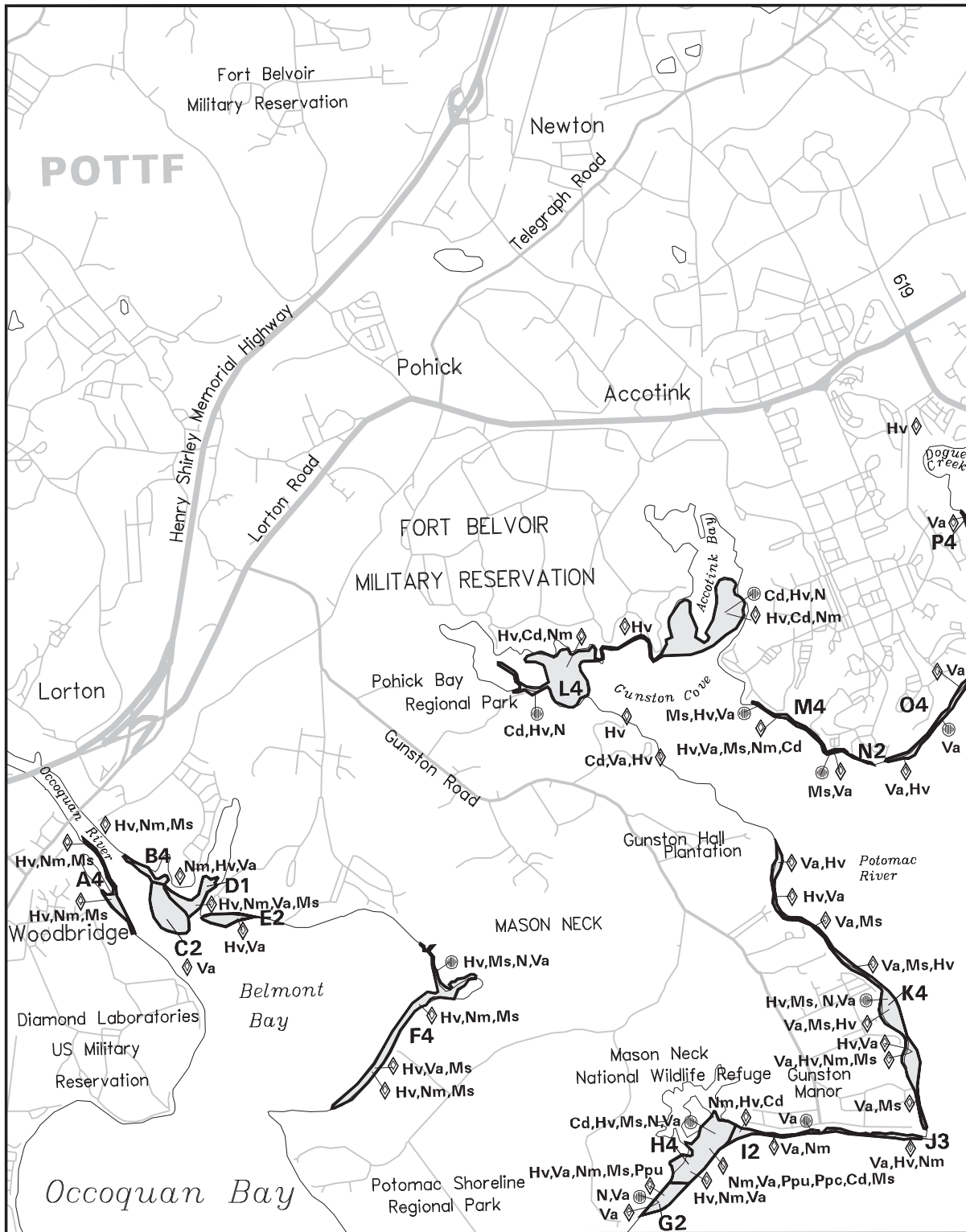
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

184 1000 0 1000 2000 meters



# Submerged Aquatic Vegetation 1997

Fort Belvoir, Va.–Md. (039)



**Hectares of SAV: 206.77**  
Date Flown: 08/24/97, 09/26/97

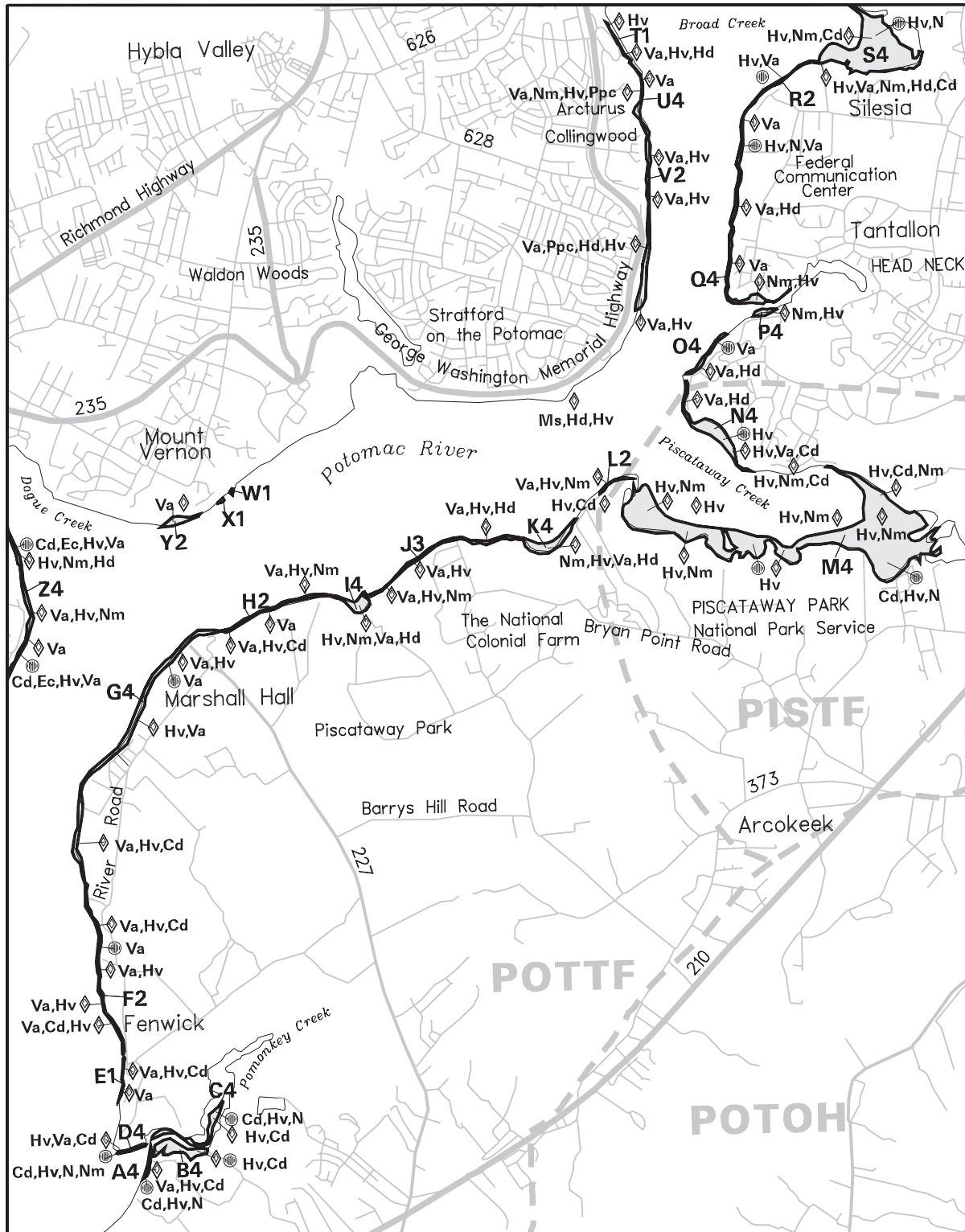
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary



U.S. Geological Survey

# Submerged Aquatic Vegetation 1997

(040) Mt. Vernon, Md.–Va.



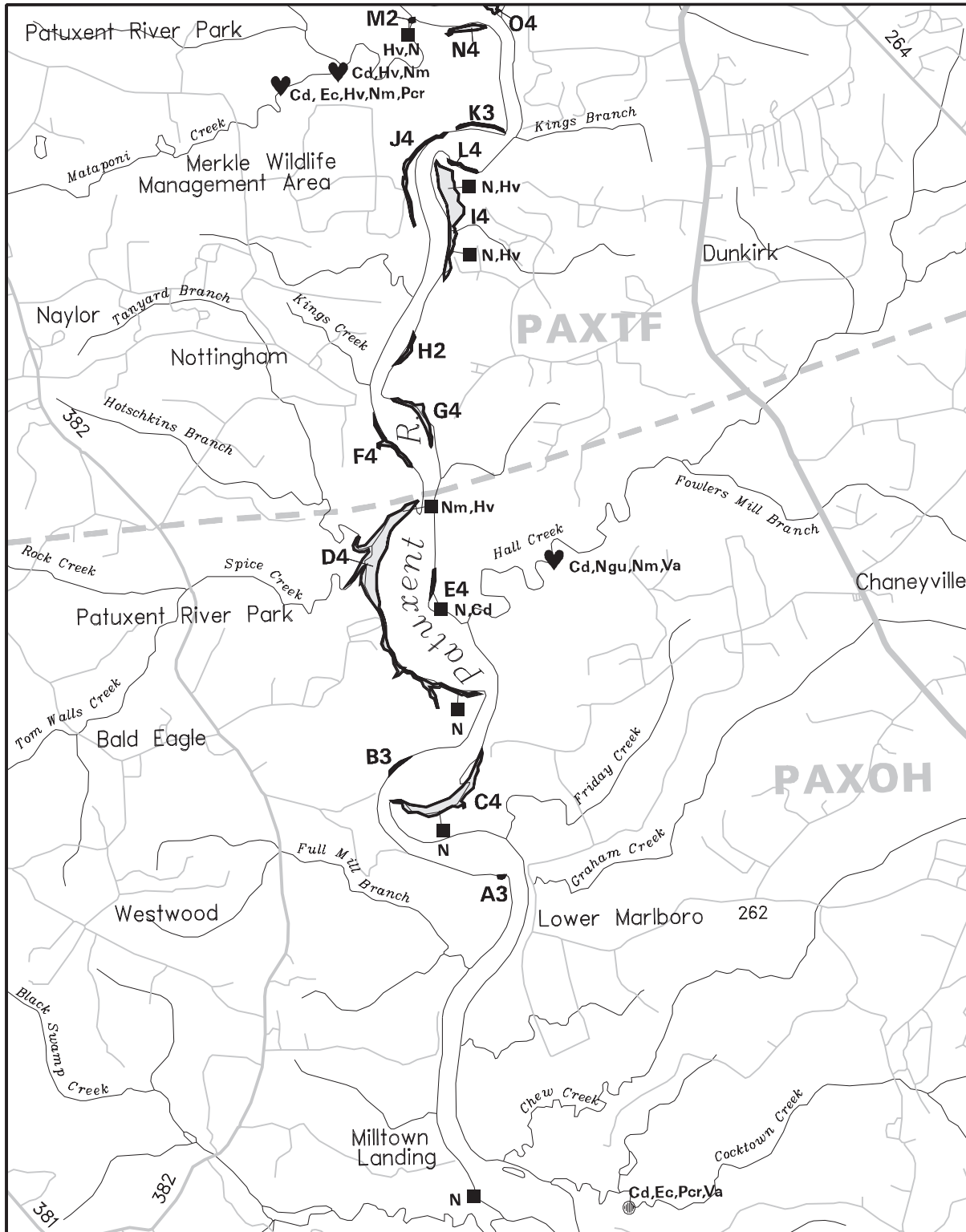
**Hectares of SAV: 247.05**  
 Date Flown: 08/24/97, 09/26/97

**Sources:** School of Marine Science  
 Virginia Institute of Marine Science  
 College of William and Mary  
 U.S. Geological Survey

186 1000 0 1000 2000 meters

# Submerged Aquatic Vegetation 1997

Lower Marlboro, Md. (041)



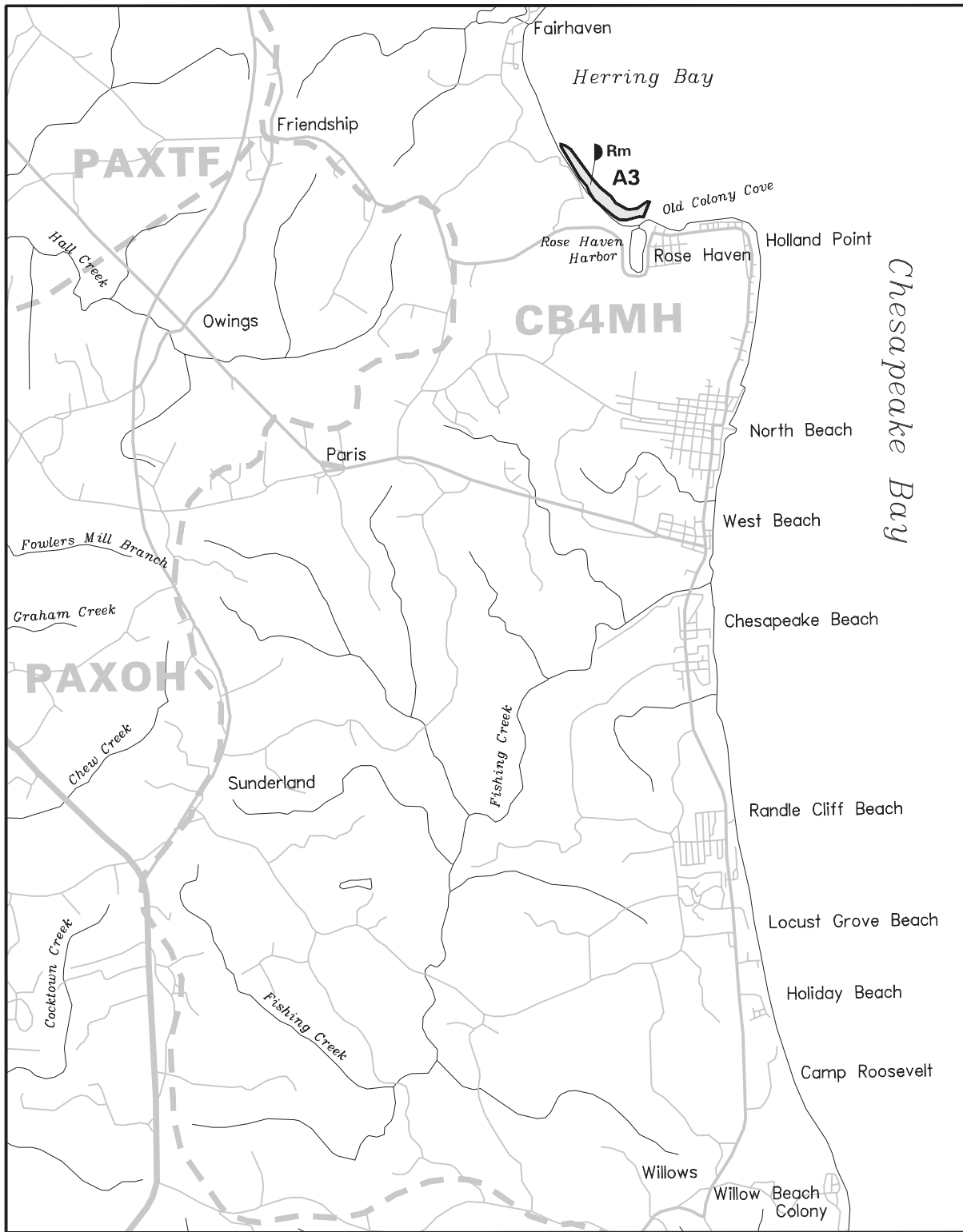
**Hectares of SAV: 69.28**  
Date Flown: 08/01/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(042) North Beach, Md.



**Hectares of SAV: 15.31**  
Date Flown: 07/18/97

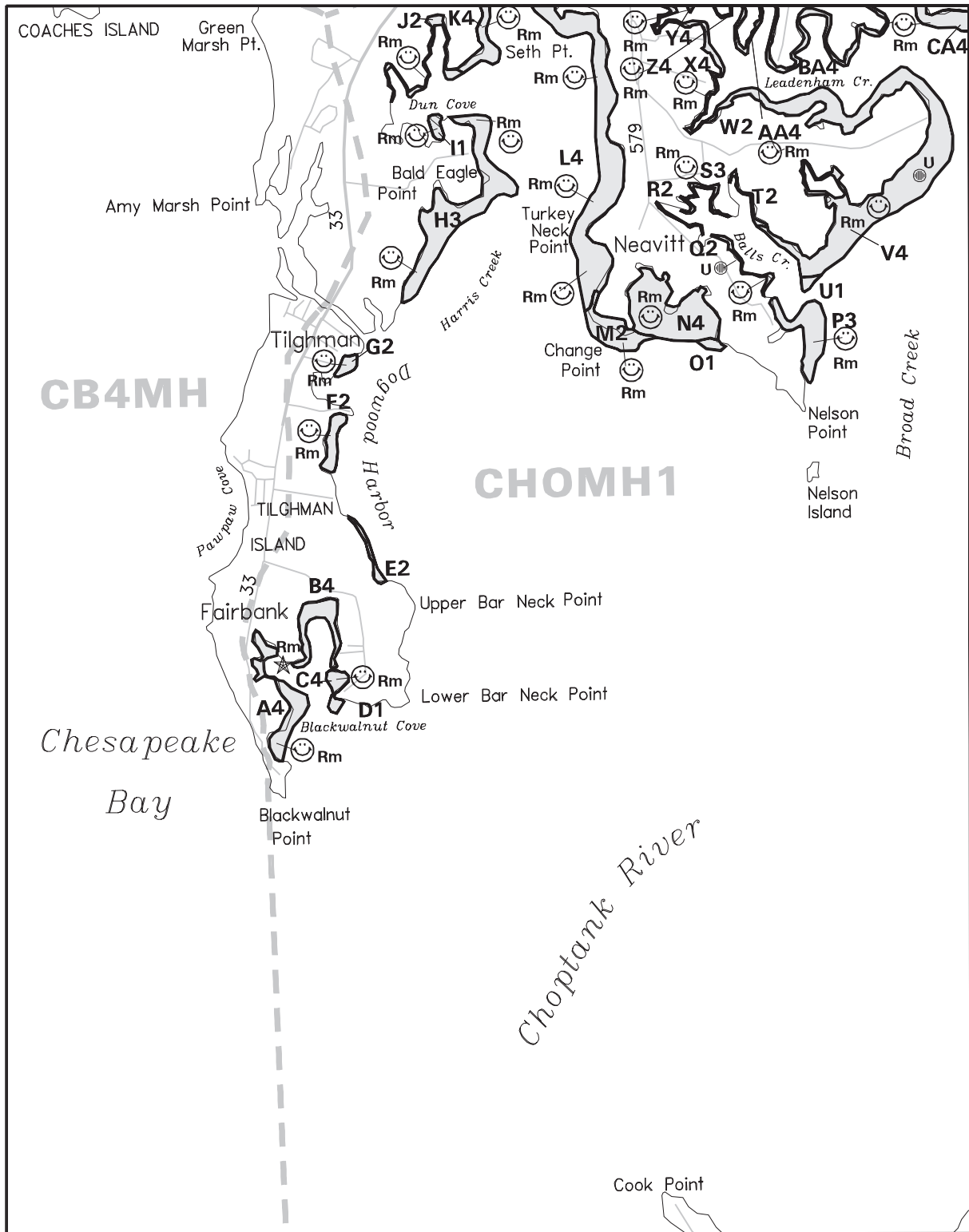
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

188

1000 0 1000 2000 meters

# Submerged Aquatic Vegetation 1997

Tilghman, Md. (043)



**Hectares of SAV: 528.07**  
Date Flown: 07/18/97

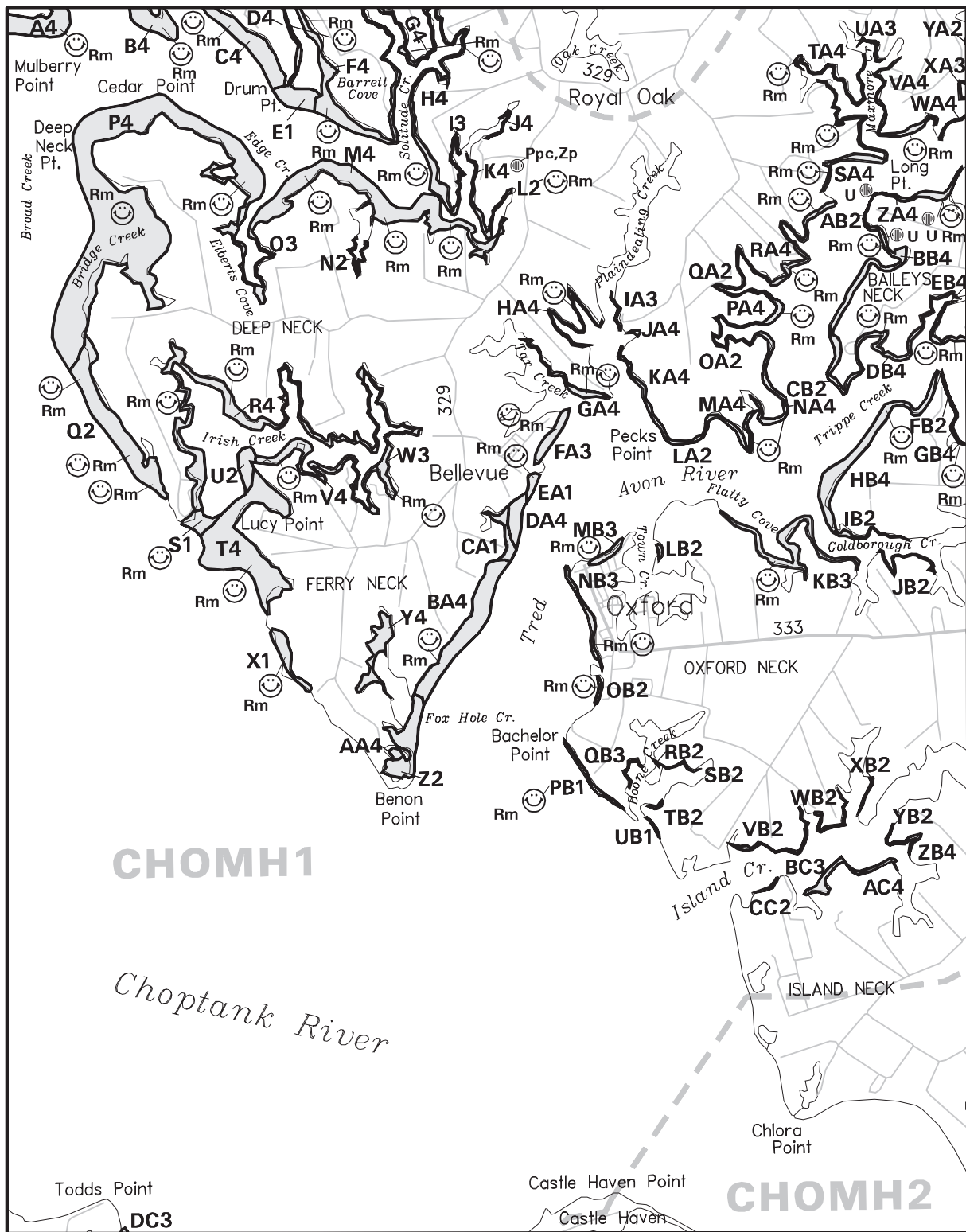
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey





# Submerged Aquatic Vegetation 1997

(044) Oxford, Md.



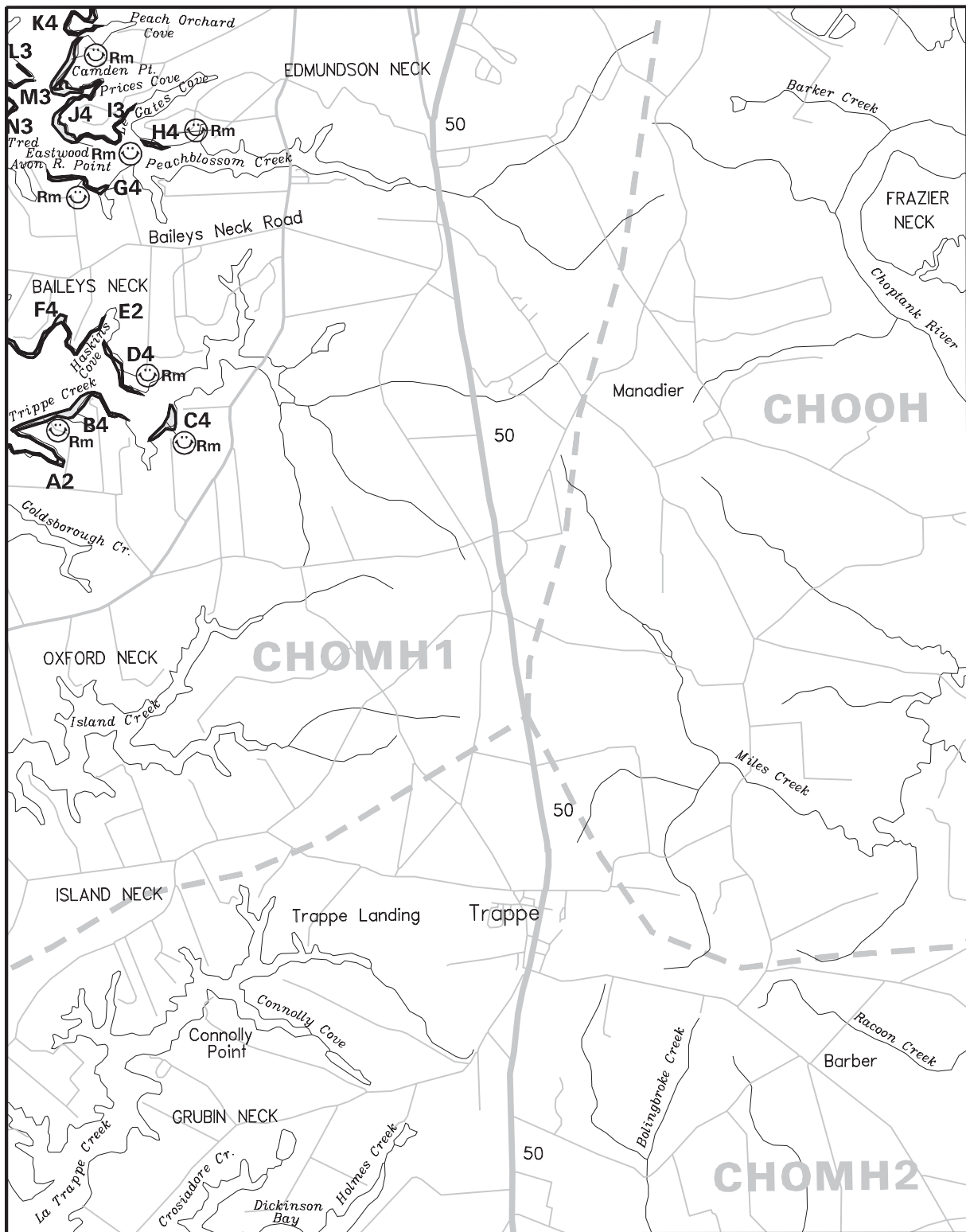
Hectares of SAV: 820.84  
Date Flown: 07/31/97

Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

Trappe, Md. (045)



**Hectares of SAV: 40.74**  
Date Flown: 07/31/97

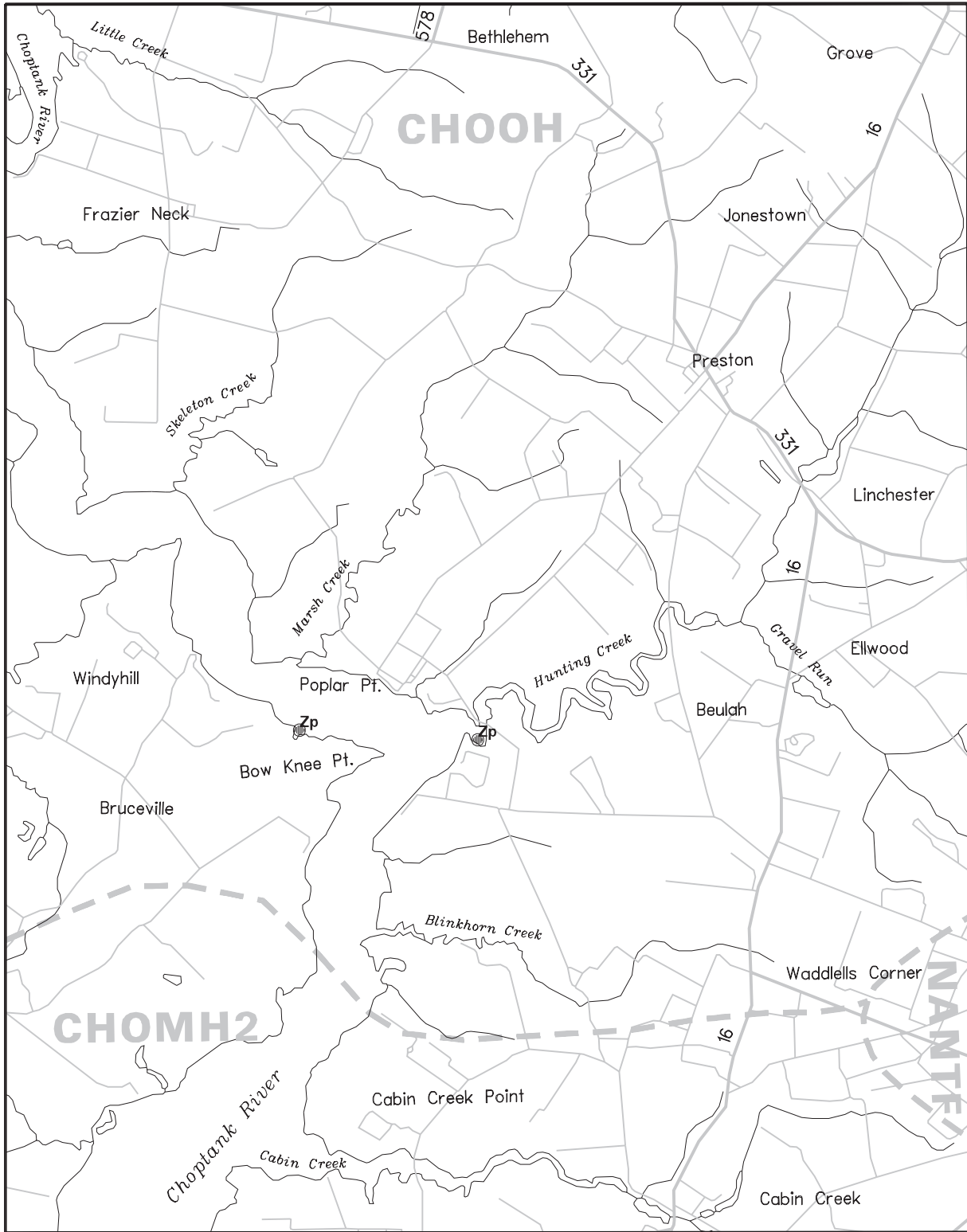
**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey





# Submerged Aquatic Vegetation 1997

(046) Preston, Md.



Hectares of SAV: 0.00  
Date Flown: 08/29/97

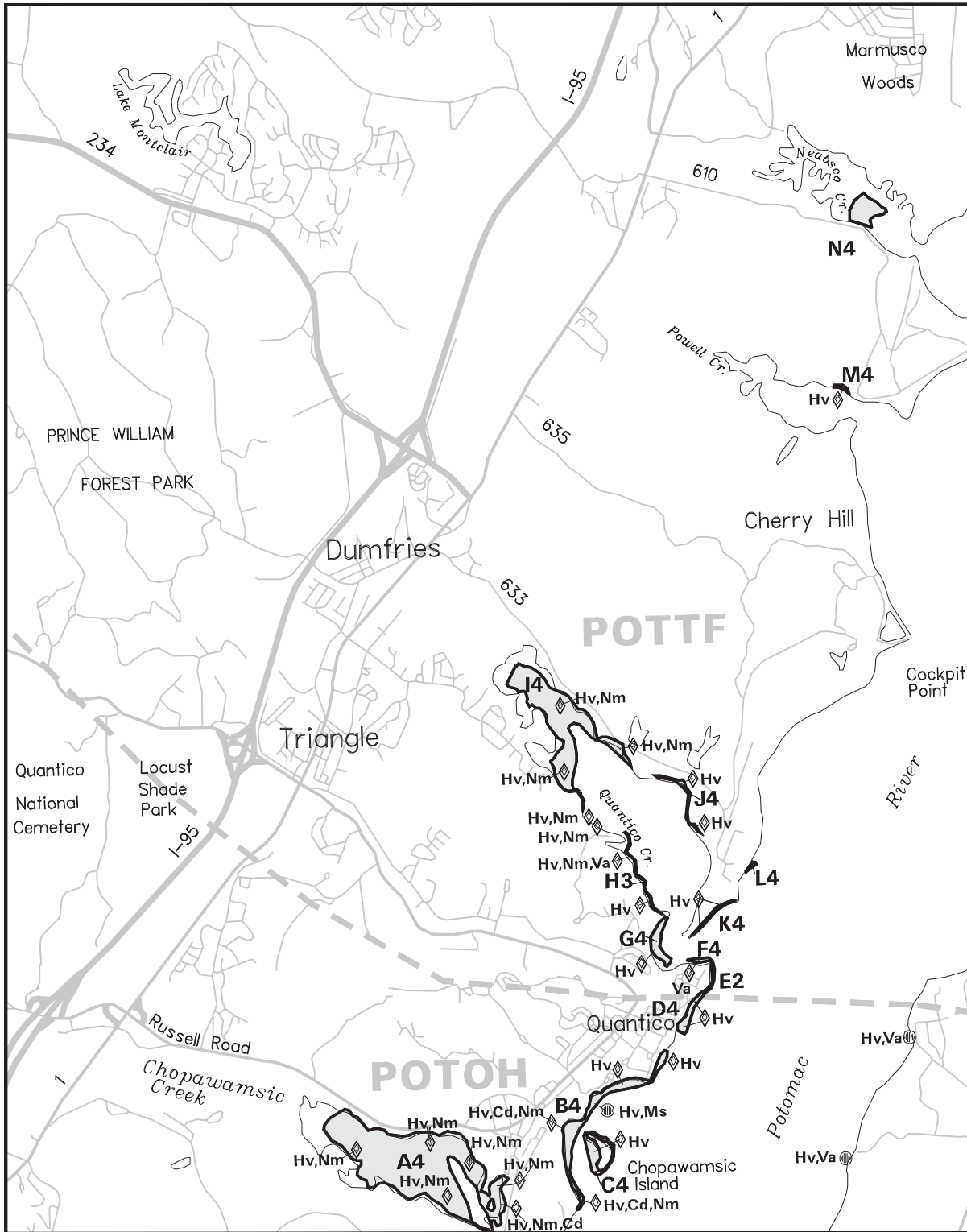
Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

192 1000 0 1000 2000 meters



# Submerged Aquatic Vegetation 1997

Quantico, Va.–Md. (047)



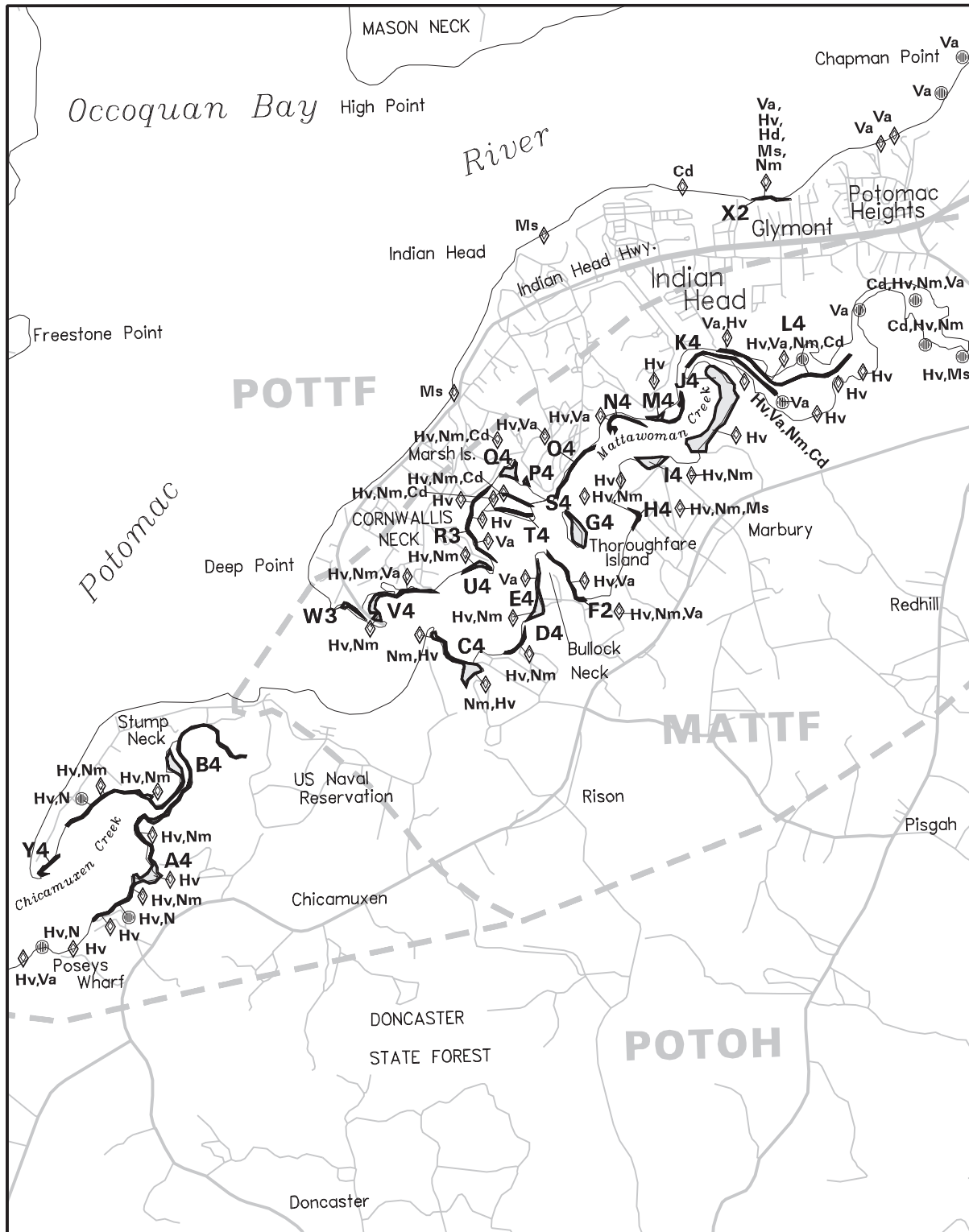
**Hectares of SAV: 212.27**  
Date Flown: 08/24/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(048) Indian Head, Va.–Md.



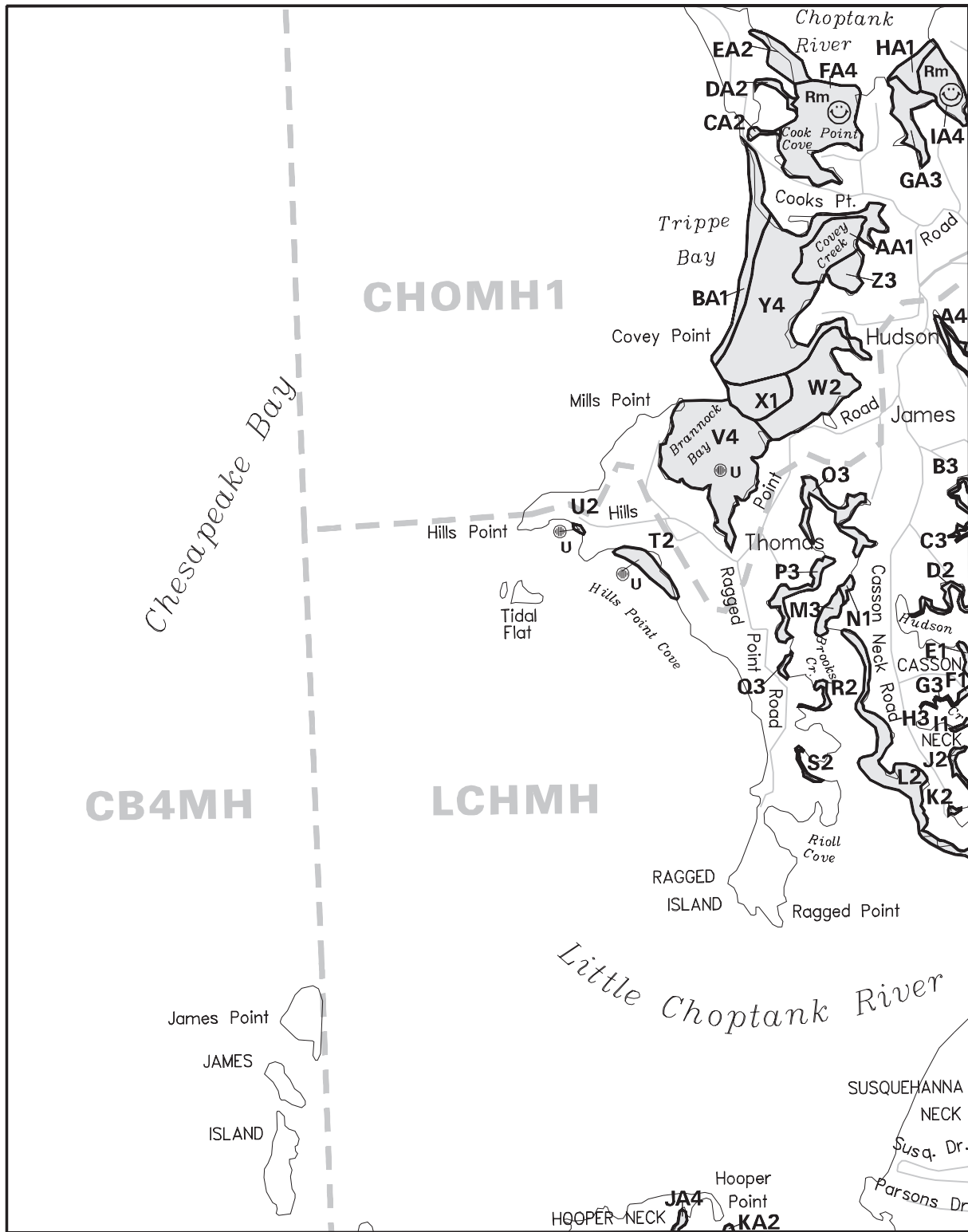
**Hectares of SAV: 65.82**  
Date Flown: 08/24/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

194 1000 0 1000 2000 meters

# Submerged Aquatic Vegetation 1997

Hudson, Md. (051)



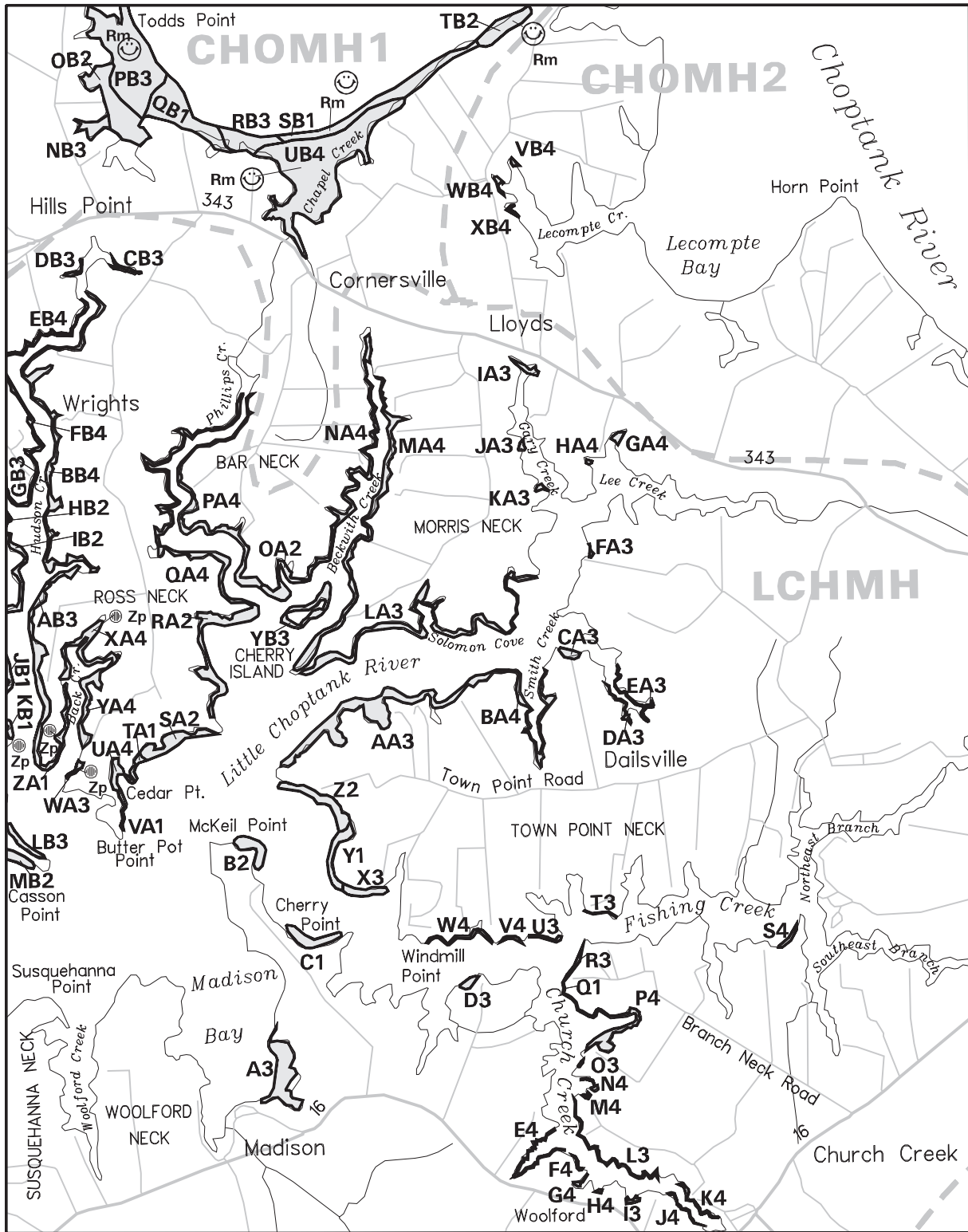
**Hectares of SAV: 703.68**  
Date Flown: 07/18/97

**Sources:** School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

(052) Church Creek, Md.



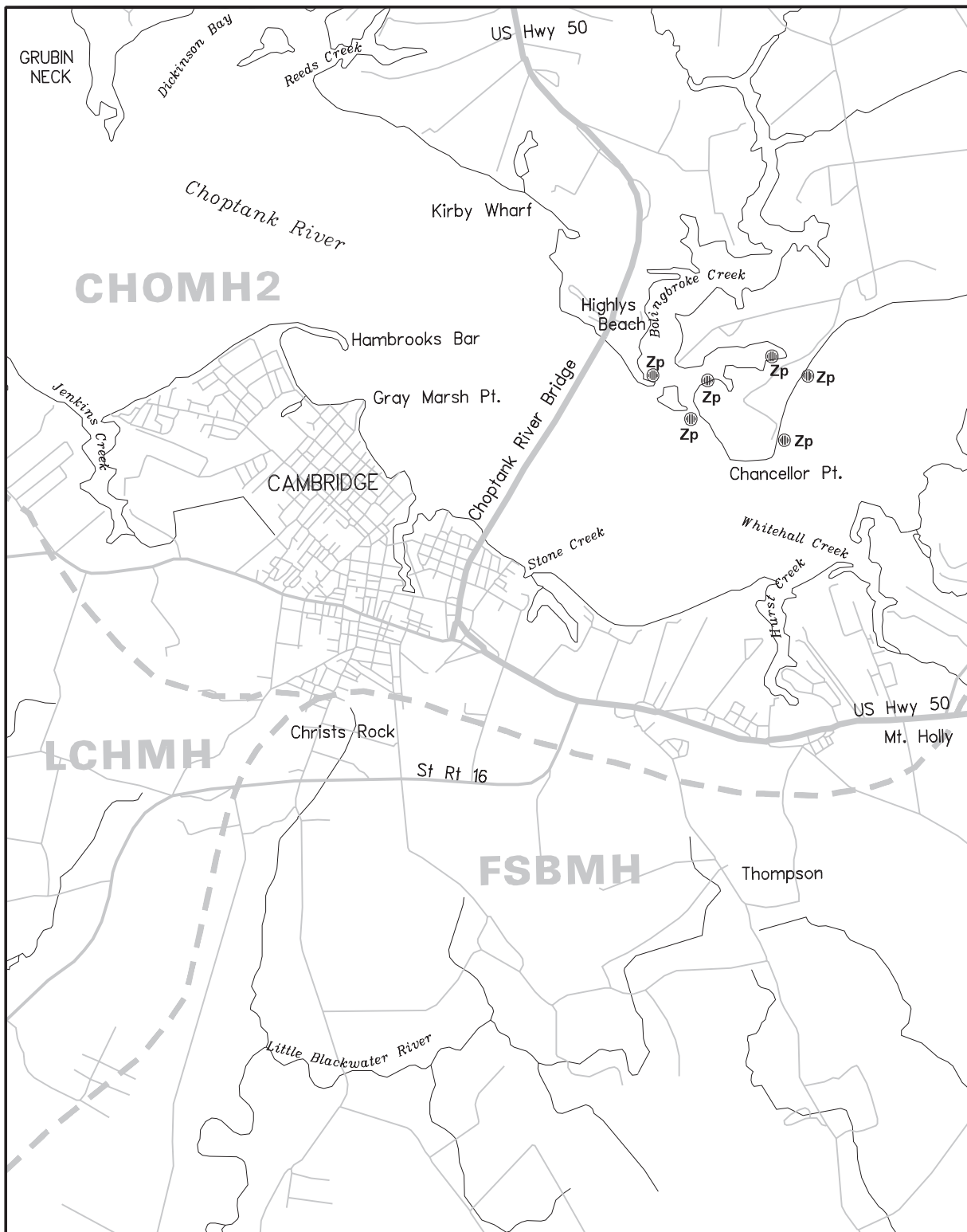
Hectares of SAV: 582.34  
Date Flown: 07/18/97

Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey



# Submerged Aquatic Vegetation 1997

Cambridge, Md. (053)



Hectares of SAV: 0.00  
Date Flown: 07/18/97

Sources: School of Marine Science  
Virginia Institute of Marine Science  
College of William and Mary  
U.S. Geological Survey

