

A photograph of a wooden pier extending into the water. In the background, a white building with a satellite dish is visible on the pier. A seagull is perched on a wooden post in the foreground. The sky is overcast.

# Eastern Shore Laboratory

College of William and Mary  
Virginia Institute of Marine Science  
Wachapreague, Virginia

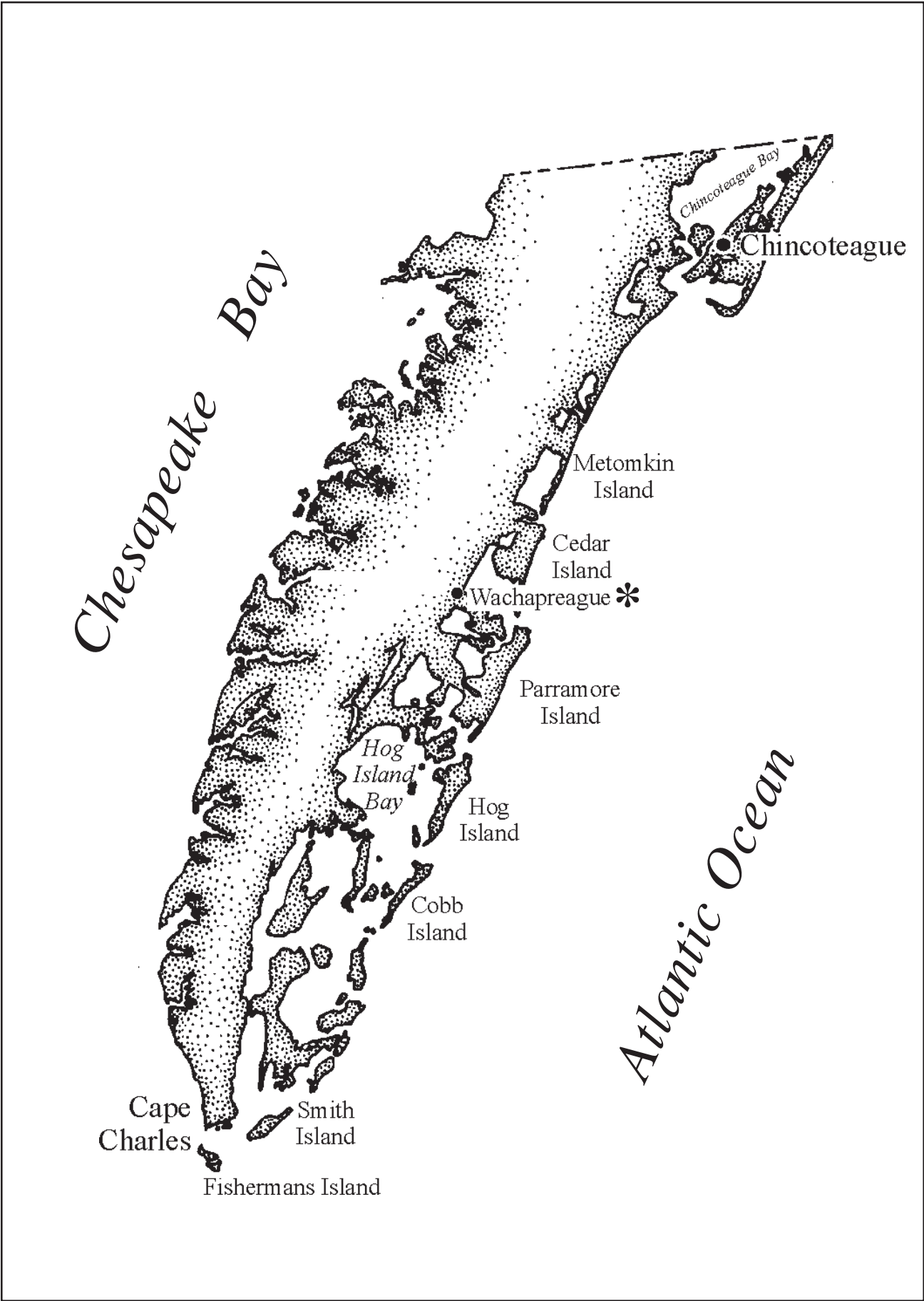
# Introduction

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The Virginia Institute of Marine Science Eastern Shore Laboratory (ESL) is located on a 5 acre site in the seaside village of Wachapreague, VA, on the landward margin of the mid-Atlantic barrier island/salt marsh/lagoonal system. The facility serves as both a field station in support of research and teaching activities and as a base for on-site research in molluscan aquaculture and the ecology of the region. By virtue of its access to the coastal habitats along Virginia's Eastern Shore, excellent water quality and an extensive seawater laboratory, the facility affords educational and research opportunities not available elsewhere within the region.

VIMS first established the Eastern Shore Laboratory in 1960 as an outpost to monitor for the spread of oyster pathogens *Perkinsus marinus* and *Haplosporidium nelsoni* in nearby waters. The facility regularly serves in a support role for graduate and undergraduate education at VIMS/College of William & Mary by providing a field station for classes in coastal geology, experimental ecology, malacology and invertebrate zoology. Additionally, the field station is used extensively by other institutions for undergraduate education.

Over the past few years, the Institute has expanded the use of the ESL as a field station for research and education. The ESL has extensive wet laboratory space, including flow-through seawater tables, recirculating tanks, a seawater flume and a quarantine hatchery/laboratory for working with non- indigenous species. The Lab also houses a molluscan hatchery and nursery facility operated by the VIMS Aquaculture Genetics and Breeding Center. A dual line seawater system, redundancy in pump capacity and excellent water quality insure a consistent, year-round wet lab capability. A 3,200 sq. ft building contains laboratory and classroom space for visiting classes and investigators. An on-site dormitory provides accommodations for students and visiting researchers.



# Geography

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The barrier island/salt marsh/lagoonal system along Virginia's Eastern Shore is unique in the contiguous United States in its extent of undeveloped barrier islands. Along its 100 km Atlantic coastline 10 of the 13 barrier islands lack any development. The only barrier islands accessible by bridge are the sites of Assateague National Wildlife Refuge and NASA's Wallops Island launch facility. The Nature Conservancy, a Washington-based, non-profit organization, owns all or part of 10 of the barrier islands, approximately 40,000 acres of marshland and 10,000 acres of uplands adjacent to the marsh. The region, designated by UNESCO as part of their Biosphere Reserve System, has received National Natural Landmark status by the U. S. Department of the Interior, and is included within the Western Hemisphere Shorebird Reserve Network.

At its widest point, the Eastern Shore of Virginia is only 20 miles across from the landward margin of the salt marsh to the shores of Chesapeake Bay. The estuarine environments along Chesapeake Bay's eastern shore differ considerably from those of its western shore. In contrast to the large riverine systems discharging into the western side of the Bay, freshwater input from the east are via small creeks rarely more than ½ km wide and 10 km long. As a result, descriptive and manipulative studies of estuarine processes often are more tractable in these smaller subsystems.

The VIMS-ESL is uniquely positioned to provide easy access to the eastern portion of Chesapeake Bay and the barrier island/salt marsh/lagoonal system along the Atlantic shore.

# Lab Staff

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A small resident staff at the Eastern Shore Lab is responsible for maintaining the facility and conducting research, educational and advisory activities. Additionally, this staff supports the efforts of visiting researchers and instructors in a variety of ways, including field assistance and the maintenance of animals.

Visiting researchers who are not certified with vessel operation in the local environments will require the assistance of a resident staff member for boat operation. Resident staff are generally required for the operation of all boats on class field trips.

For most first time users of the lab, it is appropriate to first contact the Director to discuss your needs. As you become more familiar with the operation of the facility, you will often be able to contact appropriate individual staff members directly.



<b>Alan Birch</b>	Marine Scientist	787-5835	ajbirch@vims.edu
<b>Reade Bonniwell</b>	Facilities Manager	787-5839	bonniwell@vims.edu
<b>Stephanie Bonniwell</b>	Hatchery Manager	787-0957	sbenwitz@vims.edu
<b>Al Curry</b>	Lab Specialist	787-5836	curry@vims.edu
<b>Sean Fate</b>	Watercraft Operations Manager	787-5575	sfate@vims.edu
<b>Mark Luckenbach</b>	Professor and Director	787-5816	luck@vims.edu
<b>P. G. Ross</b>	Sr. Marine Scientist	787-5837	pg@vims.edu
<b>Edward Smith</b>	Watercraft Operator II	787-0959	edsmith@vims.edu
<b>Linda Ward</b>	Admin. Asst./Business Manager	787-5816	lward@vims.edu
<b>James Powell</b>	Building and Grounds Assistant	757-787-5832	jpowell@vims.edu

# *Classroom & Laboratory Facilities*

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A new 3,200 sq. ft. building at the Eastern Shore Lab provides office, laboratory and classroom space for use by visitors. One room serves as library/classroom/conference room with a total seating capacity of 75. A teaching laboratory has work stations for 30 students and is equipped with dissecting and compound microscopes. Laboratory bench space is available in a common use equipment room which contains most of the equipment listed below. Other features include a fume hood, environmental chambers, an autoclave and deionized water.

Three 144 ft<sup>2</sup> offices, located in this building, are available for use by visitors. Each office contains desk and lab bench space, telephone and a personal computer (Macintosh or Windows platforms). Assignments to offices are made on the basis of need and the order of requests.

A hallmark of the Eastern Shore Lab is a large flexible seawater system. Approximately 50 flowing seawater tables are located at the facility, some inside a building, others outside. Tanks and aquaria of various sizes, ranging from 10 to 15,000 gal, are available for use in either flow-through or recirculating modes. [Maintenance and experimentation with animals in these tanks may require compliance with animal care procedures; potential users should read the section entitled “Animal Maintenance” and complete the accompanying forms.]

A 5-m long recirculating seawater flume can be used for controlled flow experiments. This flume features steady 2-dimensional flow for modeling benthic boundary layer conditions. Temperature control, filtration and velocity characterization are available.

## Partial Equipment List

- Spectrophotometer (UV/visible)
- Analytical balance
- Fluorometer
- Top loading electronic balance
- Acoustic Doppler velocimeter
  
- (2) 20-ft<sup>3</sup> environmental chambers
- Muffle furnace
- Autoclave
- Compound and dissecting microscopes
- Dredge
- Otter trawl
- Plankton net
- Image Analysis System





# Dormitory Facilities

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There are three dormitory facilities at the Eastern Shore Lab. The Owens House is a 4,000 sq. ft., two-story house, converted from a single family dwelling. Total sleeping capacity is 32 people. The downstairs has three private rooms each with a single bed, one room with 4 beds and one room with 3 beds. The upstairs has three large rooms with a total of 22 beds. Two restroom and shower facilities are located on each floor. Handicap access to the lower floor is provided.

The King House is a 1,800 sq. ft. two-story house with a sleeping capacity of 6-8. There are four bedrooms. Two of the bedrooms have two beds each. The remaining two bedrooms have a full size bed each. Two restrooms are shared between occupants.

The Council House is a 1,135 sq. ft. one-story rancher. Total sleeping capacity is 6 people. There are three bedrooms with 2 single beds in each room. One restroom is shared between occupants.

Each dorm has a full service kitchen with dining area. Appliances and cookware are available, but all food must be brought by the guests. Consideration of other guests requires that these facilities be maintained clean and orderly by all users.

Visitors should bring their own linens for a single size bed, pillow, blanket and towels. Janitorial service is limited and guests are required to keep the dorm clean and neat. A full listing of dormitory rules is provided on the following page.

There is a telephone in each dormitory. After hours there is no one in the administration building to answer the phone. If you are expecting personal calls, the dormitory number should be used.

Owens House phone: (757)787-5838

Council House phone: (757)302-2098

King House phone: (757)787-5563

Dormitory Rates: All visitors will be charged \$12 per person/per night.

# Dormitory Rules

Each dormitory is the property of the Commonwealth of Virginia, and, as such, laws and rules which apply to Commonwealth property will be applied here. Further, because these are dormitories, rules of the Accomack public health service and the fire marshal will be enforced.

1. The College of William and Mary's policy on alcohol in dormitories is to be observed in the ESL dormitory. Policy states that all faculty, staff, visitors and guests will observe Virginia law as it pertains to the purchase and consumption of alcoholic beverages.
  - a. Persons who are not 21 years of age may not purchase, possess, or consume any type of alcoholic beverage.
  - b. Alcoholic beverages shall not be sold to or served to individuals who appear or are intoxicated.

No person shall be served or consume alcoholic beverages at or in any unlicensed public area (any area for which a special license has not been requested from the Alcoholic Beverage Control Board) on campus or college property. Public areas include those areas where the general public has access such as lobby/lounge/living room areas of College residence halls including fraternity and sorority houses, and outdoor areas.

2. No smoking in the dormitories.
3. No food or drink except in kitchen and dining room.
4. No pets inside the building at any time.
5. Do not move furniture between rooms.
6. Put all refuse and recyclables in the appropriate containers.

7. Do not wear boots or wading shoes into dorm. Leave them outside or in alcove by the door.
  
8. Before you depart
  - a. Turn heat down to 50°,
  
  - b. Turn off all lights and electric appliances,
  
  - c. Close and lock all windows and doors,
  
  - d. Put garbage in outside trash hut,
  
  - e. Mop up mud and spills,
  
  - f. Put food away,
  
  - g. Pick up and put away personal gear.

# Vessels

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The Eastern Shore Laboratory maintains a fleet of small vessels for the support of research and educational activities. The emphasis in this fleet is on small, shallow draft vessels which provide access to shallow-water habitats along the seaside and bayside of the Eastern Shore. At the present time the fleet includes:

Qty	Vessel	Capacity	Daily Rental
(1)	27' Carolina Skiff	14	\$125
(3)	24' Carolina Skiffs	10	\$100
(1)	19' Carolina Skiff	5	\$90
(1)	29' Monitor	5	\$100
(1)	25' Parker	6	\$200

Small sampling gear, including dredges and trawls, is available at the lab and may be checked out along with the vessels. The monitor has a boom with power winch for retrieval of heavier pieces of gear.

Use of vessels is restricted to VIMS personnel and visiting investigators with training in vessel operations and local area knowledge commensurate with needs.

Vessel use is charged at the rate indicated on the table above. Additional fuel costs may apply. Classes requiring a vessel operator are charged at a rate of \$50/day.

Individuals who are not employees or students of the College of William and Mary should complete the liability waiver on the following page before embarking on a VIMS boat.

Scheduling of vessels should be done in advance by contacting **Linda Ward** at 787-5816 or [lward@vims.edu](mailto:lward@vims.edu). If you have not previously received approval for operating vessels at the Eastern Shore Lab, contact **Mark Luckenbach** at [luck@vims.edu](mailto:luck@vims.edu) to schedule training or the assistance of the staff.



LIABILITY RELEASE AND WAIVER OF CLAIMS FOR ON-THE-WATER ACTIVITIES

Boating and other activities on and near the water are dangerous and involve hazards and risks such as

- Risks related to the water, such as drowning, injury from marine life such as jellyfish stings and shark bites, or injury from plant life or man-made objects in the waters
• Risks arising from unaccustomed physical activity or the use of boating equipment
• Risks arising from being in the dynamic environment of a vessel on the water
• Risks related to the weather and other forces of nature

I am aware that my participation in the activity described below will expose me to these and other risks and dangers and could result in injury, illness, damage to property, or even my death. I also understand that any injury or damages that may result could arise from the actions, inactions, or negligence of others, such as employees of the Virginia Institute of Marine Science (VIMS) of the College of William & Mary (the College).

In consideration of being allowed to participate in this activity, I hereby and forever release the Commonwealth of Virginia, VIMS, the College, its Board of Visitors, and their respective employees, agents, and students from all liability and responsibility for any claims, losses, or demands relating to injury, death, or damages to myself or my property which may result from or arise in the course of such activity, including claims, losses, or demands caused or alleged to be caused in whole or in part by the negligence of VIMS or any of the above entities, except to the extent that such injury, death, or damages is caused solely by any of their gross negligence or willful misconduct.

I also agree to indemnify and hold harmless VIMS, the Commonwealth of Virginia, the College, its Board of Visitors, and any of their respective employees, agents, or students for any injury or damages to any other person caused by my negligence or intentional acts or inactions during this activity.

Despite the risks and dangers and having read and understood this form and the releases, waivers, and indemnifications contained herein, I voluntarily agree to participate in the following activity: (insert description of the activity/voyage)

\_\_\_\_\_

on \_\_\_\_\_, a vessel owned and/or operated by VIMS.

By my signature below, I agree to the releases, waivers, and indemnifications contained in this form. If any person participating in this activity or boarding this vessel is a minor, a parent or legal guardian must sign on that person's behalf.

Signature: \_\_\_\_\_ Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

Emergency Contact Information:

Agency Contact: \_\_\_\_\_ Telephone: \_\_\_\_\_

Family Contact: \_\_\_\_\_ Relationship: \_\_\_\_\_ Telephone: \_\_\_\_\_

# **A** *Animal Maintenance*

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One of the hallmarks of the Eastern Shore Laboratory is the facilities for maintaining and experimenting with live marine and estuarine organisms. A flexible seawater system and large number of seawater tanks, tables and aquaria make it possible to support a variety of marine culture and animal maintenance needs.

Individuals wishing to use these facilities for the maintenance of marine organisms should first contact the Director for scheduling purposes. The form on the following page, describing your tank and maintenance needs, should be filled out and returned in advance. If your work will involve the use of vertebrates, you should also complete the form from the Research on Animal Subjects Committee (attached) and send one copy to the Animal Research Committee at the VIMS main campus and one copy to the Eastern Shore Lab.

The proper care and maintenance of organisms generally includes establishing feeding schedules, monitoring water quality, temperature control and the cleaning of tanks, filters and seawater lines. To ensure that we meet all of these needs, it is essential that each investigator work with the Director and staff of the Laboratory to develop a clear maintenance schedule. It is recognized that at a coastal field station investigators will often be away from the laboratory for periods during which their organisms will require maintenance by the resident staff. It is absolutely imperative that this maintenance be the product of prior planning, in writing, with the Director.

**(Note: It is not sufficient to ask someone to look after your study organisms while you are away.)** We require that regular water quality monitoring be a part of any culture or maintenance of marine organisms and that an Animal Maintenance Schedule form be completed for all projects.

# EASTERN SHORE LABORATORY

## Request for Maintenance or Culture of Marine Organisms

Name: \_\_\_\_\_

Institution: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Organism(s): \_\_\_\_\_

Project start date: \_\_\_\_\_ End date: \_\_\_\_\_

Seawater System Needs (fill in as much as you know at this time)

Type of tanks: \_\_\_\_\_

Number of tanks \_\_\_\_\_

Mode of operation:

\_\_\_\_\_ recirculating \_\_\_\_\_ flow-through

Temperature requirements: \_\_\_\_\_

Salinity range: \_\_\_\_\_

Other needs:

Brief project description:

# EASTERN SHORE LABORATORY

## Animal Maintenance Schedule

Name: \_\_\_\_\_

Organism(s): \_\_\_\_\_

Project start date: \_\_\_\_\_ End date: \_\_\_\_\_

Investigator's Schedule (Will you be here for the entire project? If not, note when you will be away ?):

Tanks in use: \_\_\_\_\_

Feeding schedule:

	S	M	T	W	T	F	S
am							
pm							

Food source: \_\_\_\_\_

Dead animal procedures:

Cleaning schedule:



# **H**azardous Materials Use

Faculty, staff, students, volunteers, and guests are expected to follow all established safety regulations and procedures, to include those published in the **Laboratory Safety Handbook and the Hazard Communication Standard Program, Chemical Waste Management Program, April 1996 (2nd Revision)**. We would remind everyone “When chemicals are transferred from the original container to a secondary container, the individual making the transfer will ensure that this container is properly labeled with the chemical identity and appropriate hazard warning(s)” (page 5, **Hazard Communication Standard Program, Chemical Waste Management Program, April 1996 (2nd Revision)**). Chemical names and common names are listed on material safety data sheets (MSDS). Container means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank.

Visitors to the lab should discuss their chemical use and storage needs with the resident staff.

# *Directions, etc.*

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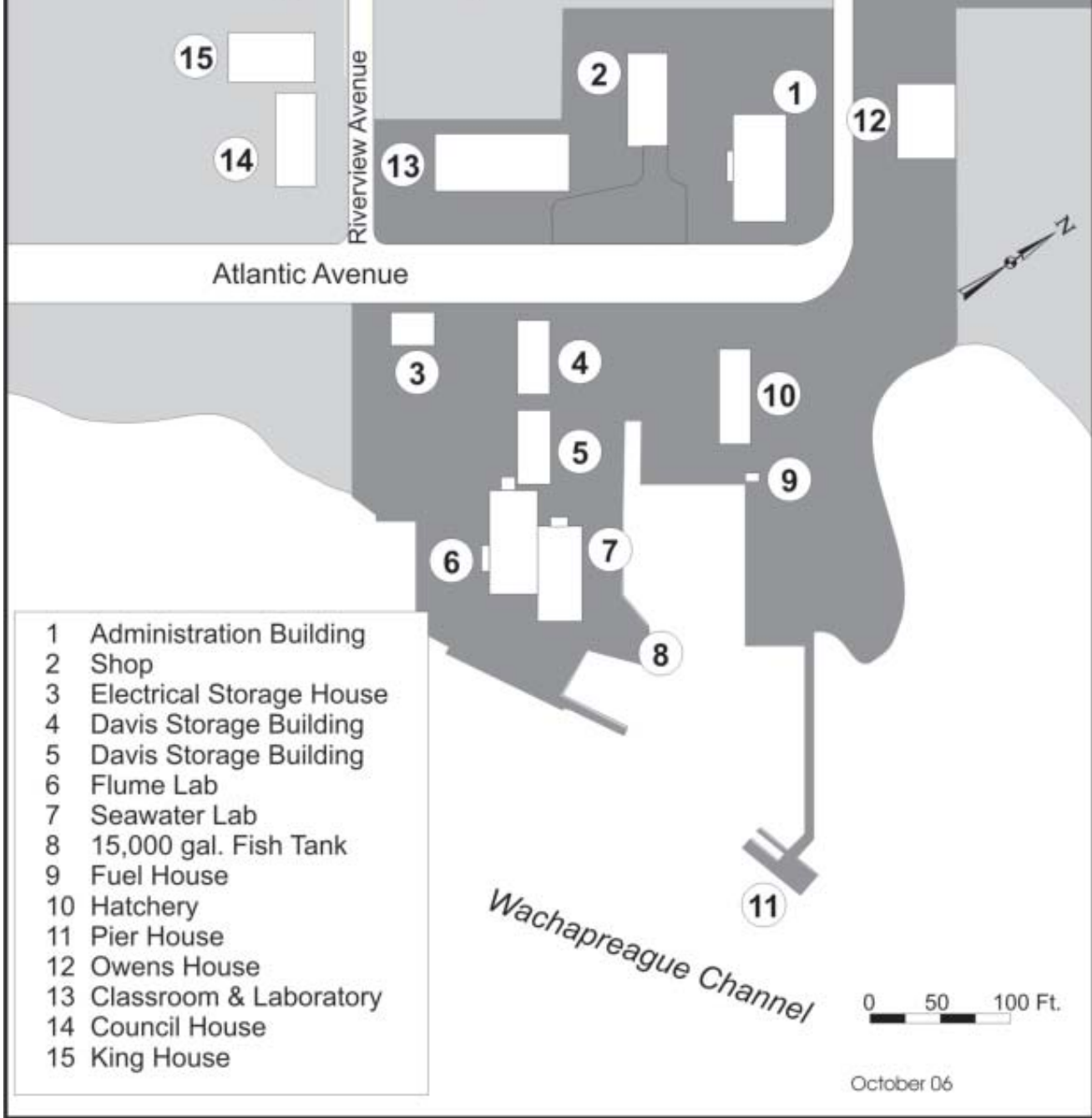
To reach the Eastern Shore Laboratory: On Highway 13 approximately 40 miles north of the Chesapeake Bay Bridge Tunnel and 30 miles south of the Virginia/Maryland line, in the small town of Keller, take Highway 180 East. Follow for approximately 4 miles until it ends at the waterfront street in Wachapreague. Take a left on the waterfront street (Atlantic Avenue) and travel approximately 400 yards to the ESL campus. The main administration office is in the one-story brick building.

- During winter months, there is no restaurant open for any meals. Off-season the restaurant is open only on certain days. In summer, the restaurant is open all week.
- There is a small grocery store/sandwich shop within walking distance of the campus.
- There is a post office within walking distance of the campus.
- Wachapreague does not have a bank or ATM.
- For these facilities, restaurants or fast food, it is necessary to drive back to Highway 13.
- It is important to have transportation if you plan to be at the ESL for several days.

**Mailing address:** Virginia Institute of Marine Science  
Eastern Shore Laboratory  
P.O. Box 350  
Wachapreague, VA 23480

**Administrative phone:** (757) 787-5816  
**Dormitory phones:** Owens House (757) 787-5838  
Council House (757) 302-2098  
King House (757) 787-5563

Virginia Institute of Marine Science  
 College of William & Mary  
**Wachapreague  
 Campus Map**



- 1 Administration Building
- 2 Shop
- 3 Electrical Storage House
- 4 Davis Storage Building
- 5 Davis Storage Building
- 6 Flume Lab
- 7 Seawater Lab
- 8 15,000 gal. Fish Tank
- 9 Fuel House
- 10 Hatchery
- 11 Pier House
- 12 Owens House
- 13 Classroom & Laboratory
- 14 Council House
- 15 King House

October 06