

### 3.4 DAINGERFIELD ISLAND SITE

#### 3.4.1 Existing Conditions

##### 3.4.1.1 – Physical Conditions

###### a. Existing Land Use

The site is located at the eastern end of Daingerfield Island, to the south of the existing Washington Sailing Marina. See Figure 3.53. The site is a recreational/open space area under the ownership of the NPS.

###### b. Infrastructure

- **Water:** An existing water system enters the property from the GWMP and services the site. An 8-inch ductile iron water main was recently installed adjacent to Marina Drive. The 8-inch water connects to an existing 6-inch water line that serves the marina facilities. A new 4-inch water main also extends to the nursery and greenhouse areas from the new 8-inch main.
- **Sanitary Sewer:** Record drawings indicate that a 6-inch sanitary sewer force main exists on site to serve the marina facilities. Further analysis would be required to determine the capacity of the existing force main.
- **Electric/Telephone:** The marina is served by electric and telephone systems. Further investigation with the utility owners will be required to determine the capacities in these systems.



Figure 3.53: Existing Conditions, Daingerfield Island Site

### 3.4.1.2 – Environmental Conditions

- **Floodplains:** According to FEMA mapping, the entire Daingerfield Island site is within the 100-year floodplain of the Potomac River (FEMA. 1982).
- **Wetlands:** National Wetland Inventory data indicates that there are wetlands at the Potomac shoreline along the extent of the Daingerfield Island site (see Figure 3.54).
- **Soils:** Soils at the Daingerfield Island site are likely Udorthents, as described for the lower Rosslyn site (Hydel 2001). The soils on the Daingerfield Island site are well vegetated. The riverbank exhibits some signs of erosion such as bank loss and root exposure. However, the bank appears to have previously been stabilized with riprap (see Figure 3.54).
- **Geology:** There are no noticeable significant geologic features on the site. The geology underlying the site is alluvial material (Fleming 1994).
- **Vegetation:** Vegetation on the Daingerfield Island site consists of common suburban tree species and understory species in a large contiguous patch of forest on the eastern portion of the island. A letter from the Virginia Division of Natural Heritage, dated December 10, 2001 states that no natural heritage resources or State Natural Area Preserves have been documented at this site. An additional letter from Natural Heritage dated February 11, 2002 states that the site presents habitat more

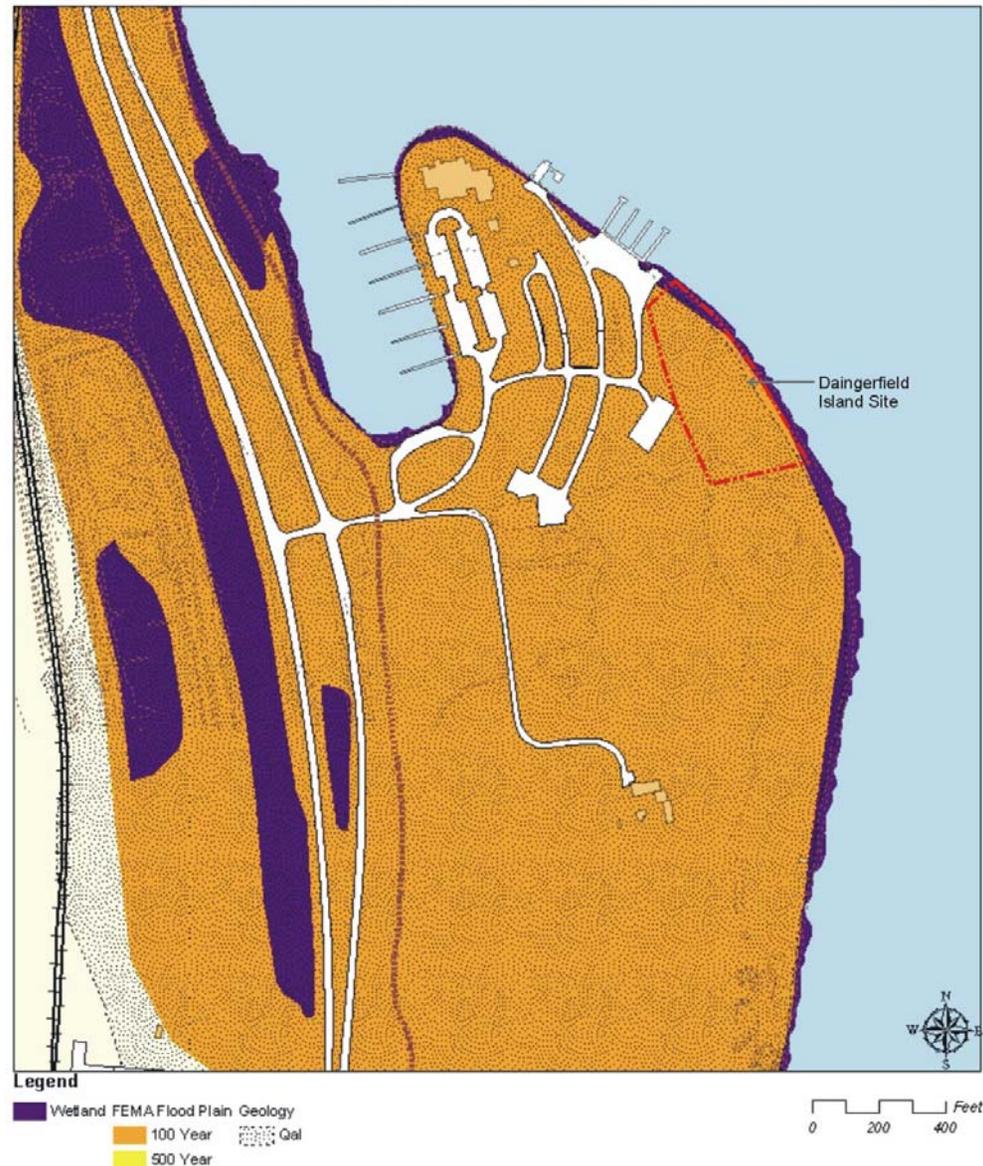


Figure 3.54: Existing Soils and Hydrology, Daingerfield Island Site

suitable for supporting rarities than do the more altered Upper Rosslyn and 14<sup>th</sup> Street Bridge sites for the boathouse, and recommends an inventory of suitable habitat on the Daingerfield Island site (see Figure 3.55).

Shoreline surveys of peak annual subaquatic vegetation growth, conducted in September and October of 2000, found that a dense and wide patch of subaquatic vegetation stretches from the Virginia Potomac shoreline at Reagan National Airport to the middle of the Potomac, extending past the southern tip of Daingerfield Island. Additionally, subaquatic vegetation currently grows along the northern and eastern edges of Daingerfield Island (Ryan 2001).

- **Wildlife:** Wildlife at the Daingerfield Island site likely includes common urban species such as small mammals and birds. Larger species could also utilize the large patch of forest on the peninsula for habitat. However, the forest patch is strongly confined from other forested areas by roadways, fields and water bodies so the movement of large animals into the peninsular forest may be limited. A letter from the Virginia Division of Natural Heritage, dated December 10, 2001 states that no natural heritage resources or State Natural Area Preserves have been documented in this proposed project area. An additional letter from Natural Heritage dated February 11, 2002 states that the site presents habitat more suitable for supporting rarities than do the more altered Upper Rosslyn and 14<sup>th</sup> Street



Figure 3.55: Existing Vegetation, Daingerfield Island Site

Bridge sites for the boathouse, and recommends an inventory of suitable habitat on the Daingerfield Island site.

- **Topography:** The topography of the site is characterized by low elevation level, flood plain morphology. Progressing toward the river, the shore descends gently to the water level.
- **Stormwater:** Stormwater flows gently from west to east across the Daingerfield Island site. There is no evidence of channelization or pooling of stormwater on the site.
- **Noise:** The site is located within the flight path of the Reagan National Airport. Airplanes are very low in this area and tend to be extremely noisy.

### 3.4.1.3 – Operational Factors

#### a. Transportation (Access and Parking)

The site is located to the east of the GWMP. Access to this area is provided at an unsignalized intersection with full access to/from both directions of the parkway.

This portion of the parkway has limited access control. Further to the north, the parkway is almost completely access controlled with interchange ramps at the Reagan National Airport, the 14<sup>th</sup> Street bridge and occasional right-in / right-out access points. The median of the parkway at Daingerfield Island is approximately 140 feet wide and the posted speed limit along the parkway is 40-mph, with observed free flow speeds between 45 and 50-mph throughout

much of the day. There are no other driveways, median breaks or access points along the parkway for a considerable distance (1,000+ feet).

At the entrance to Daingerfield Island, the parkway has two travel lanes in each direction, with no shoulders on either side of the traveled way. The site contains several large parking lots, some paved and some unpaved. The Mount Vernon Trail travels past the site.

- **Access:** In the northbound direction, access to the Island is provided via a 115-foot taper followed by a 150-foot long full-width deceleration lane. Access from the southbound direction of the parkway is provided via a 175-foot taper followed by a 385-foot long full-width deceleration lane in the median. The 140-foot wide median that divides the parkway contains a short segment of pavement, perpendicular to the parkway lanes, that functions as a two-way street, 95 feet in length from stop bar to stop bar. The median between the northbound and southbound lanes of the parkway is wide enough to store vehicles, including those pulling boat trailers. This facilitates turning movements, because vehicles only have to cross one direction of traffic at a time.

There is currently no acceleration lane from the Daingerfield Island site onto the northbound lanes of the parkway. Due to the fact that the parkway has no shoulder and is closed section (curb-and gutter), larger, heavier vehicles that might otherwise have used an acceleration lane

or a shoulder for merging must wait for an acceptable gap in traffic and then accelerate from a stopped position using the mainline lanes of the parkway during their acceleration. This may be problematic for vehicles pulling loaded boat trailers, especially if traffic is heavy on the parkway. However, it should be noted that large vehicles, including those pulling boat trailers, currently use the existing driveway to access the Washington Sailing Club.

For vehicles exiting the site, sight distance looking to the south is fair, with no nearby obstructions to block a motorist's view of approaching vehicles in the northbound lanes of the parkway. Sight distance is limited only by the horizontal curvature of the parkway. Sight distance is even greater for vehicles making left turns from the median onto the southbound lanes of the parkway. There is no full-width acceleration lane in the southbound direction, just a 250-foot taper. As in the northbound direction, due to the fact that the parkway has no shoulder and is closed section (curb-and gutter), larger, heavier vehicles that might otherwise have used a shoulder or acceleration lane for merging onto the southbound lanes of the parkway must wait for an acceptable gap in traffic and then accelerate from a stopped position using the mainline lanes of the parkway during their acceleration.

Unlike the other sites, there is direct access to Daingerfield Island from the southbound lanes of the parkway. Similarly, there is also direct access from

the site to the southbound lanes of the parkway. The full access available to/from both directions of the parkway is one of this sites best assets.

**Parking:** The existing parking lots at the Washington Sailing Club are quite large. To the north is a paved lot containing 137 spaces, three (3) of which are handicap spaces. To the south of that lot is a large unpaved lot that was being used to dry-dock boat storage during the site visit in November. It appeared that a significant number of vehicles (50+) could be accommodated on this lot if the boats were removed. Further south is a second small paved lot containing 22 spaces and another unpaved lot that can accommodate approximately 120 vehicles. Vehicles pulling trailers should have little difficulty parking or turning around due to the large amount of parking areas and open land (grass).

**b. Rowing Conditions**

- **Depth of Water:** The Tidal Map for the Potomac River indicates that the area immediately adjacent to Daingerfield Island's shore is fairly shallow. However, recently a channel was dredged near the banks which connects to the deeper channel towards the middle of the river. The water to the immediate north and east of the island is fairly shallow and would require careful navigation before a crew could reach sufficient area to practice. There is some protected rowable water in a small harbor to the northwest of the island, however the area here is limited and would not allow the three schools to practice simultaneously.



*Figure 3.56: Potential Conflicting Uses Include Sail Boats that Launch off the Washington Sailing Marina Docks*

- **Available Course:** The rowers at this location could row down to the Woodrow Wilson Bridge and beyond towards the south, and up north to Fletcher's Cove towards the north. South of the 14<sup>th</sup> Street Bridges, rowers row on the left side. Rowers from this location would have to go approximately half a mile south before they would be able to row towards the north.
- **Safety:** Conflicting uses in this area include sailboats from the Washington Sailing Marina that use a launch area just north of the proposed location of the rowing boathouse. In addition, Georgetown's sailing team uses the small

harbor to the northwest to practice. There is a no-wake zone established from Woodrow Wilson Bridge, parallel to the Virginia shoreline that comes up nearly to the proposed location of the boathouse. While this provides some protection to rowboats, there is considerable powerboat, cruise boat and larger boat traffic towards the middle of the river.

- **Days lost due to Weather:** Since the conditions on the river at this location (relative to width and openness) are similar to the location of the Alexandria Boathouse, it is reasonable to assume that the days lost for practice at the site would be similar to the Alexandria Boathouse. According to a crew coach at TC Williams High School, between two and three days in a six-day practice week are lost due to inclement weather conditions during the Spring months.

#### 3.4.1.4 – Cultural/Visual Conditions

##### a. Cultural Resources

In undisturbed areas of Daingerfield Island, potential archeological resources include possible locations for artifacts from prehistoric Native American settlements. There are also potential colonial period artifacts from initial clearing and settlement on the island (Arlington County 1993). The GWMP is a National Historic Register property that is near the project site.



Figure 3.57: Potential Existing Historical/Cultural Resources, Daingerfield Island Site

**b. Visual Conditions**

The site is part of a wooded area located at the edge of the Potomac River (see Figures 3.62 and 3.64). To the immediate north is the Washington Sailing Marina, an area that includes outdoor boat storage and boat launching facilities. The site is only visible from the river.

**3.4.2 Conceptual Site Plan**

Two conceptual plans were prepared to test the potential of locating a boathouse at this site. Figures 3.58 and 3.59 illustrate a smaller boathouse with a footprint of 10,000 SF. Figure 3.60 illustrates a larger boathouse with a footprint of 14,000 SF. In both plans, a new access road with a drop-off area, off the existing road network, is proposed. The boathouse and docks are proposed slightly



Figure 3.58: Conceptual Site Plan

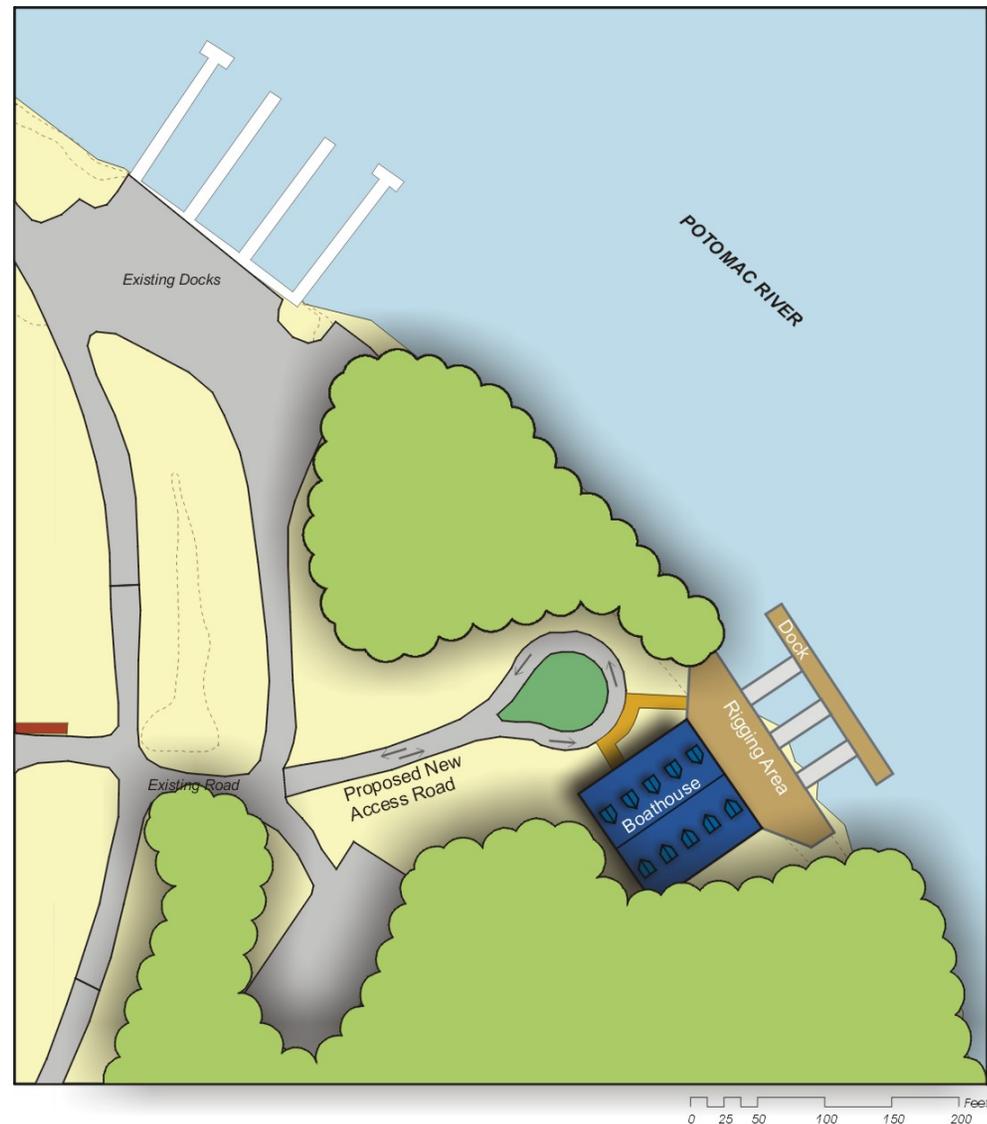


Figure 3.59: Enlarged Conceptual Site Plan, Minimum Program Boathouse

more than 400 feet to south of the existing sailboat launch area.

### 3.4.3 Site Analysis

*Summary:* A boathouse, as per the proposed minimum and maximum program, with a footprint that ranges from 10,000 SF to 14,000 SF, could be accommodated at the Daingerfield Island site. A number of measures and improvements would be necessary for this plan to work.

- A new road would be required off the existing road network to provide access to the proposed boathouse.
- Apart from the construction of the road and bus/trailer drop-off, a change of contract would be required with the concessionaire who is responsible for the management of the marina. As part of the management, the concessionaire maintains the internal roads and provides 24-hour security to the area.

#### 3.4.3.1 – Physical Conditions

##### a. Existing Land Use

A proposed boathouse would add to the existing recreational uses in this area. The proposed plans would be in conformance with the Development Concept Plan (dated 1983) for the Island which identifies this area as the Development Zone for the Island.

##### b. Infrastructure

- Water: It is anticipated that a new 4-inch service line for the boathouse could be

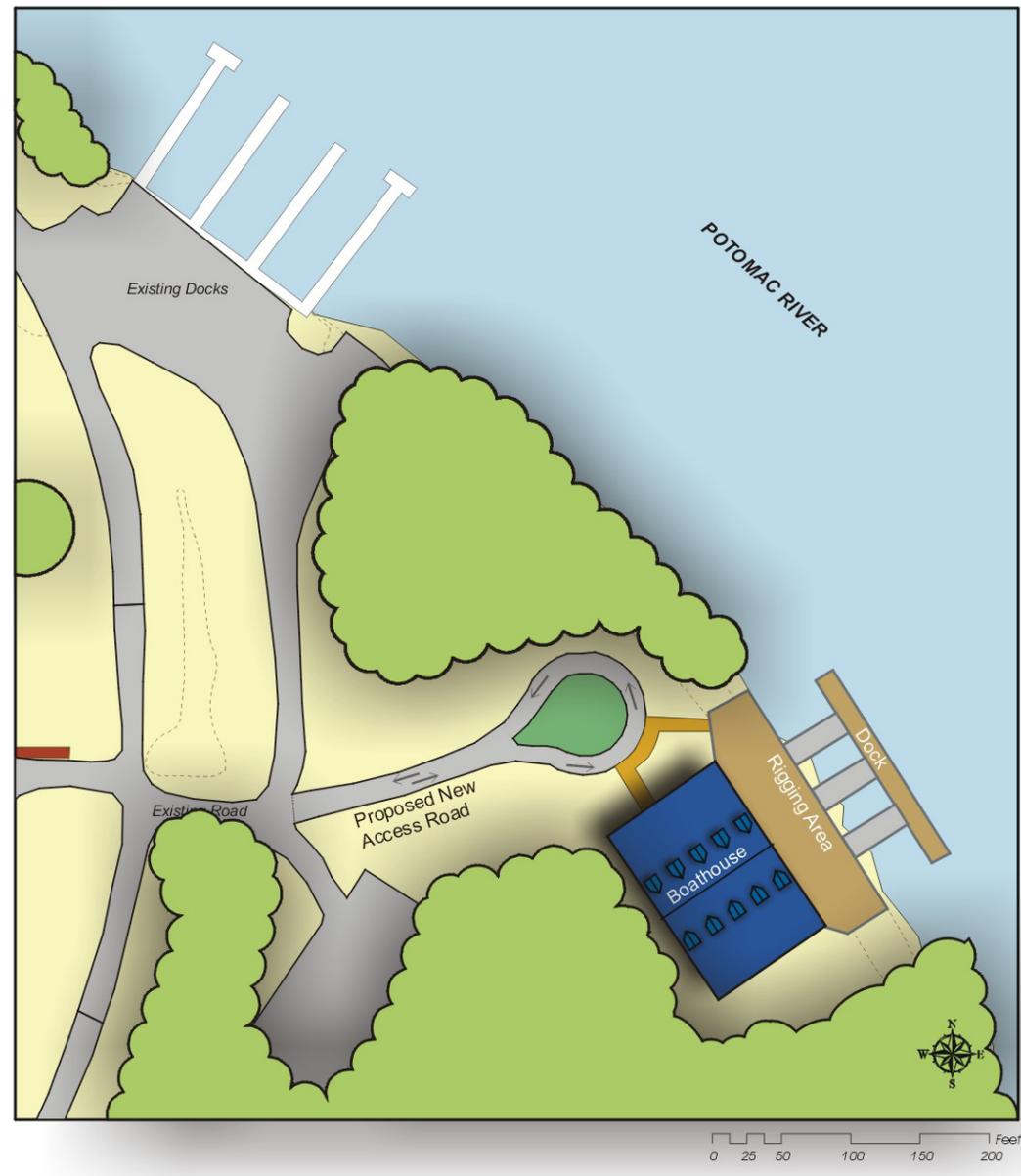


Figure 3.60: Conceptual Site Plan, Maximum Program Boathouse

extended from the 4-inch main at Marina Drive. Approximately 900-feet of 4-inch ductile iron water line would be required to connect to the boathouse. One new fire hydrant is likely to be required for fire protection.

- Sanitary Sewer: For the purposes of this study it is assumed that the boathouse can connect to the existing force main. A new 4-inch force main and ejector pump would be required for the boathouse. Approximately 1,000-feet of 4-inch ductile iron sanitary sewer force main would need to be installed to connect to the existing 6-inch force main.
- Electric/Telephone: For purposes of this study it is assumed that approximately 1,000-feet of new electric and telephone services would be required to serve the boathouse and connect to the existing facilities in Marina Drive.

A summary of the new utility services that are likely to be required for the boathouse is as follows:

- 1,000-feet of 4-inch ductile iron sanitary sewer force main
- one ejector pump/lift station
- 900-feet of 4-inch ductile iron water main
- 1,000-feet of two-way 4-inch PVC electric conduit with handbox
- 1,000-feet of two-way 4-inch PVC telephone conduit with handbox
- 100-feet of 15-inch RCP storm drain
- one fire hydrant
- two storm drain inlets
- one storm drain manhole

- two sanitary sewer manholes

#### 3.4.3.2 – Environmental Conditions

- Floodplains: Observations of the low elevation topography at the potential development site support assessment that the site would be inundated by 100-year flood conditions. To decrease the likelihood of flood damage to the potential boathouse facilities, the habitable areas of the structure could be located on the second floor.
- Wetlands: As shown on the conceptual site plan, the potential boathouse at Daingerfield Island would be adjacent to or within existing riparian wetland areas at the Potomac shoreline. As discussed regarding topography, the addition of fill material in these areas could be required to construct sound foundations. In accordance with Section 404 of the Clean Water Act, the discharge of fill into wetlands could require permitting by the Army Corps of Engineers. The delineation of the wetlands on and near the project site would be compulsory in order to predict and minimize impacts to these areas by fill material. As per the conceptual site plan, construction of the smaller boathouse could disturb approximately 5,500 square feet of wetland, while the larger boathouse could disturb about 5,900 square feet of wetland area. In contrast to construction for foundations, the placement of beams at the river edge to support decking would reduce impacts to wetlands.

- Soils: Soils on the Daingerfield Island site provide a very good substrate for vegetative growth and exhibit moderate potential for erosion. To preserve soil for the growth of vegetation and to reduce the potential for soil erosion and sedimentation, the development of the potential boathouse facilities should retain the maximum practicable amount of undisturbed surface soil area. Development of the smaller boathouse would likely disturb approximately 0.8 acres of surface soil while development of the larger boathouse would likely disturb about 1.0 acres of surface soil.
- Geology: The Daingerfield Island site for the potential boathouse is underlain by alluvial material. Because this substrate is composed by repeated deposition of material over time, it could be inconsistent in composition and structure. Sample geologic borings would be required prior to detailed design and construction to provide a detailed understanding of the existing geologic material under the development site. If the existing substrate would not provide sufficient structural support for construction of the boathouse and roadways, additional fill material or structural measures could be necessary to support the boathouse facilities. However, previous development of similar land at Daingerfield Island indicates that geologic structural conditions would not likely significantly impede development of the boathouse facilities on the site.
- Vegetation: Some vegetation on the Daingerfield Island site would be removed

by development of the potential boathouse facilities. The smaller boathouse would clear approximately 35,400 square feet of treed area; the larger boathouse would clear about 42,100 square feet of treed area. Based on visual surveys and Virginia Natural Heritage Department records, the trees that would likely be removed are not rare, threatened or endangered species and are not part of critical habitat. However, performance of a site inventory of suitable habitat for rare species, as recommended by the Virginia Natural Heritage program, would allow further identification of potential impacts to critical habitat.

The dense SAV growth near the site could significantly interfere with rowers utilizing the facilities. If operation of the potential boathouse at this site would necessitate rowing through SAV, means of coping with the complications while not negatively impacting the Potomac would be necessary.

- **Wildlife:** There is no documented critical habitat on the site and there are no records of rare, threatened or endangered species within the vicinity of the site. Accordingly, development of the potential boathouse at the site would not likely disturb sensitive wildlife species. Performance of a site inventory of suitable habitat for rare species, as recommended by the Virginia Natural Heritage program, would allow further identification of potential impacts to critical habitat. Common urban species inhabiting the site should readily be able to utilize other similar habitat along the

Potomac River, in proximity to the site, if disturbed by development of the boathouse.

- **Topography:** The potential boathouse at Daingerfield Island would be constructed near the riverbank on the eastern extent of the site. Since there is minimal change of grade at this location, the cut/fill that may be required at this site would be minimal.
- **Stormwater:** Construction of the potential boathouse facilities on the Daingerfield Island site would increase the amount of impervious surface on the site. As per the conceptual site plan, the smaller boathouse would add 18,900 square feet of impervious surfaces while the larger boathouse would add 23,200 square feet of impervious surfaces. This increase in impervious surfaces would increase the potential runoff volume on the site. The proximity of the facilities to the Potomac River would necessitate the development of stormwater measures to effectively restrict any infiltration of uncontrolled runoff into the river.
- **Noise:** This area is likely to experience a considerable amount of aircraft noise as planes are at a fairly low altitude as they approach/depart from National Airport.

#### 3.4.3.3 – Operational Factors

##### a. Transportation (Access and Parking)

- **Travel Times:** During the week of January 18, 2002, travel times were obtained between this site and the three public

high schools. Vehicles departed the schools at approximately 3:15 PM to simulate vehicles leaving the schools and traveling to after-school practice. Vehicles departed the Boathouse sites at approximately 6:00 PM to simulate vehicles leaving the Boathouses after practice and returning to school. These times were based on information received from the coaches of the rowing teams at Washington-Lee and Wakefield High Schools.

**Table 3.7**

School	Travel Times to Site	Travel Times from Site
	Depart 3:15 PM	Depart 6:00 PM
Washington Lee	16 minutes	19 minutes
Yorktown	20 minutes	19 minutes
Wakefield	16 minutes	15 minutes
Average Travel Time	17 min 20 sec	17 min 40 sec

- **Transit Access:** The closest Metro Station at the National Airport is about 1.7 miles from the site and not easily accessible by pedestrian routes. In addition, there is currently no bus service to the site.

##### b. Rowing Conditions

- A channel was recently dredged along the eastern shoreline of the island that provides sufficient depth for rowing. Rowers would have to row south in this channel till it meets with the main channel in the river, at which location they could go north towards Chain Bridge, or south past Woodrow Wilson Bridge.
- This channel and the area to the north and northwest of Daingerfield Island are

heavily used by sailboats from the Washington Sailing Marina. In addition, this area is frequented by small powerboats. As a result, there is potential for conflicts between rowing shells, sailing crafts and the motorized vehicles. There is a 'no-wake' zone that extends ½ a mile north of the Woodrow Wilson Bridge which could be extended to the location of the proposed boathouse to reduce potential conflicts with the powerboats.

- The practicing teams would potentially lose between two and three rowing days per week due to inclement weather.

#### 3.4.3.4 – Cultural/Visual Resources

##### a. Cultural Resources

As discussed pertaining to geology and soils, the site lies on alluvial and/or fill material. The Daingerfield Island peninsula has been repeatedly disturbed by colonial settlement and by use as a nursery area during construction of the GWMP (EDAW, Cultural Landscape Report, Mount Vernon Memorial Highway). Due to these disturbed conditions, the development of the potential boathouse facilities at the site, as per the conceptual plan, is not likely to be located on undisturbed ground with high potential to contain prehistoric archaeological artifacts. Performance of careful historic and archeological studies of the project site and adjacent areas, prior to initiation of construction, would help to insure against the loss of potentially valuable cultural resources due to development of boathouse facilities.

The GWMP would not be directly affected by construction of the boathouse facilities at this site. The visual character associated with the historic property could be affected by the development as discussed regarding the visual simulations of the conceptual plan.

##### b. Visual

To assess potential visual impacts of the proposed boathouse, simulations of the boathouse were prepared and overlapped with existing images. The locations of the images were determined based on their level of visibility from public places (see Figure

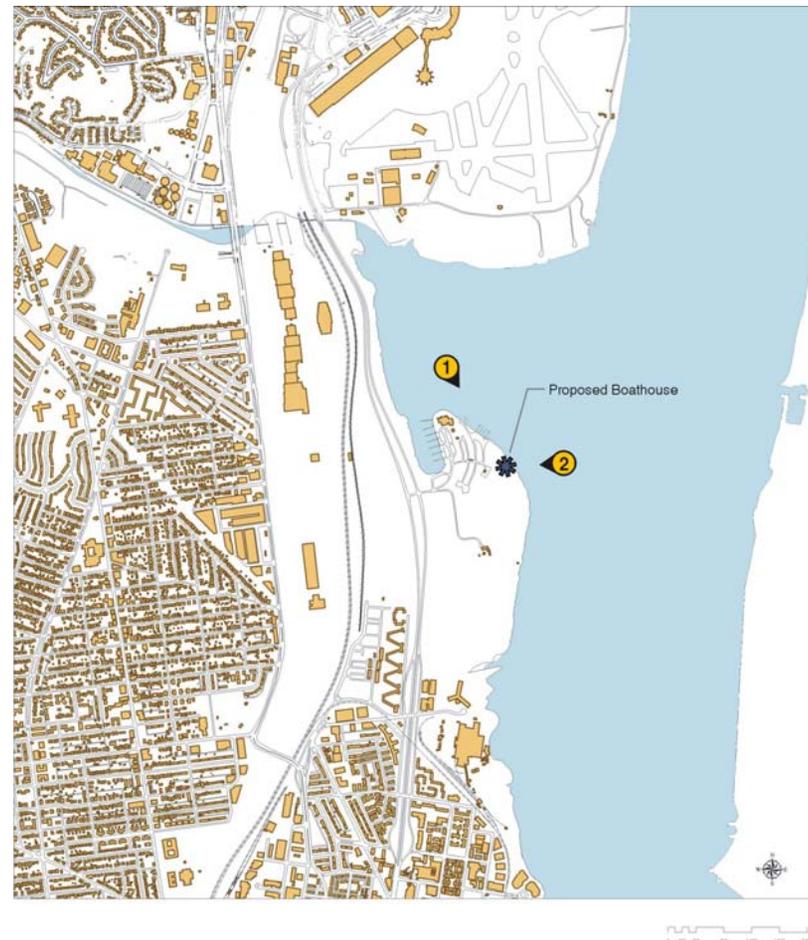


Figure 3.61: Location of Visual Simulations

3.61). The existing boathouse at Alexandria was used as a model for the simulated architectural style of the proposed boathouse.



*Figure 3.62: Existing View from Upstream along the Potomac River*

*View 1:* From the Potomac River, north of the Daingerfield Island, the boathouse would not be visible (see Figure 3.63). However, the docks would be visible. The boathouse would be located just beyond an existing stand of trees (shown here by an outline).



*Figure 3.63: Simulation of Proposed Smaller Boathouse – View from Upstream along the Potomac River*



*Figure 3.64: Existing View from Downstream along the Potomac River*

View 2: From the Potomac River, south of the Daingerfield Island, the boathouse and the docks would be visible within the strand of existing trees (see Figure 3.65). The simulation illustrates the relationship of the proposed boathouse to the existing piers for Washington Sailing Marina.



*Figure 3.65: Simulation of Proposed Smaller Boathouse – View from Downstream along the Potomac River*



*Figure 3.66: Existing View from Downstream along the Potomac River*

View 3: From the Potomac River, south of the Daingerfield Island, the larger boathouse and the docks would be visible within the strand of existing trees (see Figure 3.67). The larger boathouse would have a greater potential impact due to its larger size.

#### 3.4.3.4 – Order of Magnitude Cost

A preliminary cost estimate of the conceptual plans, prepared for comparison purposes only, indicates that the redevelopment of this site with a potential boathouse could cost the following:

**Table 3.8: Preliminary Cost Estimates**

	Smaller	Larger
Boathouse @\$200/SF	\$3.0 million	\$3.8 million
Site Improvements	\$0.85 million	\$1.0 million
30% Contingency	\$1.15 million	\$1.4 million
<b>Total</b>	<b>\$5.0 million</b>	<b>\$6.2 million</b>



*Figure 3.67: Simulation of Proposed Larger Boathouse – View from Downstream along the Potomac River*