3.3 14TH STREET BRIDGE SITE

3.3.1 Existing Conditions

3.3.1.1 – Physical Conditions

a. Existing Land Use

The site is located to the east of GWMP, just south of the CSX Bridge and to the north of Gravelly Point Park. Mount Vernon Trail runs adjacent to the river through the potential location of the boathouse. The site is an open area under the management of NPS.

b. Infrastructure

There are currently no utility services on the boathouse site. However, a 1,100 SF Comfort Station has been proposed by NPS to serve the Gravelly Point recreation area. Water, sanitary sewer, electric and telephone services could be extended to the boathouse site from this Comfort Station.

3.3.1.2 Environmental Conditions

- Floodplains: According to FEMA mapping, the site is designated an area of minimal flood potential (FEMA 1982) (see Figure 3.33).
- Wetlands: National Wetland Inventory data indicates that there are wetlands at the Potomac shoreline along the length of the site.
- Soils: Soils at the site are likely Udorthents, as described for the lower Rosslyn site (Hydel 2001). The soils are well vegetated, excluding the paved bike

Figure 3.32: Existing Conditions, 14th Street Bridge Site

path that runs adjacent to the riverbank (see Figure 3.33). The riverbank exhibits some signs of erosion such as bank loss and root exposure. However, the bank has previously been stabilized with riprap.

- Geology: There are no noticeable significant geologic features on the 14th Street Bridge site. The underlying geology is alluvial material or fill (Fleming 1994).

- Vegetation: Vegetation on the 14th Street Bridge site consists of common suburban tree species and understory species in a strip along the riverbank and a grassy field extending to the GWMP. The trees at the riverbank exhibit edge characteristics such as prominent vine growth (see Figure 3.34). There are also a variety of mature and healthy specimen trees that have been planted, loosely spread through the grassy field on the western portion of the site. 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 the site. An additional letter from Natural Heritage dated February 11, 2002 states that highly altered sites, such as the 14th Street Bridge and upper Rosslyn sites, would present habitat less suitable for supporting rarities than the other potential boathouse sites.

  Shoreline surveys of peak annual subaquatic vegetation growth, conducted in September and October of 2000, found that a dense swath of subaquatic

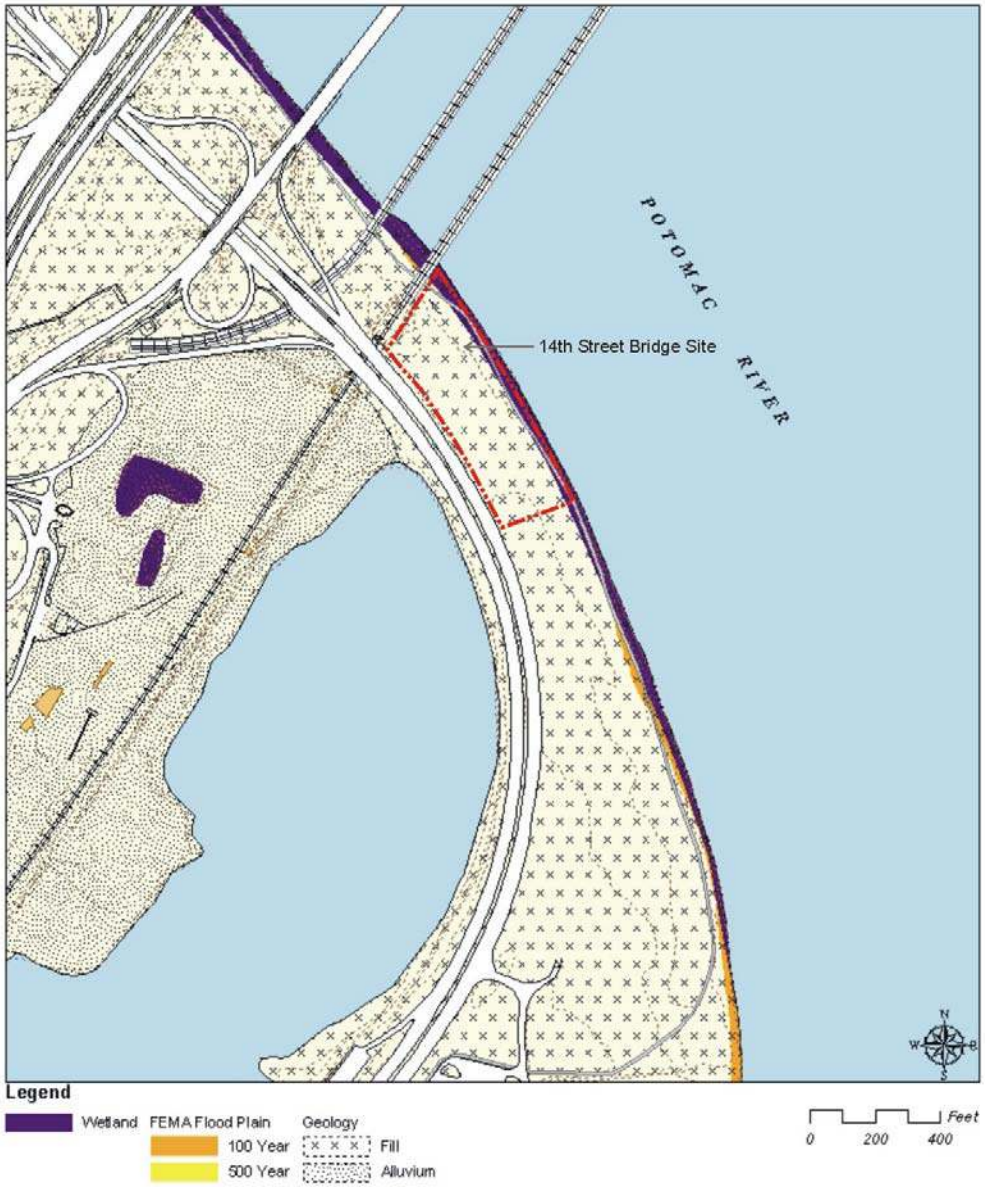

Figure 3.33: Existing Soils and Hydrology, 14th Street Site

vegetation exists at the Virginia shoreline along the length of the site (see Figure 3.34). There is also a dense patch of subaquatic vegetation in the middle of the Potomac River adjacent to the site (Ryan 2001).

- Wildlife: Wildlife on the site likely includes common urban species such as small mammals and birds. There is not enough vegetation on the site to provide sufficient habitat or movement corridors for larger animals. 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 the 14th Street Bridge Site. An additional letter from Natural Heritage dated February 11, 2002 states that highly altered sites, such as the 14th Street Bridge and upper Rosslyn sites, would present habitat less suitable for supporting rarities than the other potential boathouse sites.

- Topography: The topography of the riverside site is characterized by relatively level land that gently slopes toward the east to a steep bank at the edge of the Potomac River.

- Stormwater: In general, stormwater flows from west to east across the site from near the GWMP towards the Potomac River. 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.

Figure 3.34 Existing Vegetation, 14th Street Site

Airplanes are very low in this area and tend to be extremely noisy.

3.3.1.2 – Operational Factors

a. Transportation (Access and Parking)

The subject site is located to the east of the GWMP. Probable access to this site would be provided via the entrance to Gravelly Point Park, which is located approximately 2,500 feet south of the proposed boathouse site. The only access to Gravelly Point is provided from the northbound lanes of the parkway by means of right-in / right-out movements. There is no access from the southbound lane.

This portion of the parkway is access controlled, with interchanges to the north and south of the site at the 14th Street Bridge and at Reagan National Airport, respectively. Further to the south, near Daingerfield Island, the parkway has limited access control, with occasional breaks in the median to allow left turns. 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. At the entrance to Gravelly Point, the parkway has three travel lanes in each direction, with no shoulders on either side of the traveled way.

- Access: The existing entrance to the site from the northbound lanes of the parkway is located nearly equidistant between the adjacent interchanges (at the 14th Street Bridge and at Reagan National Airport); the entrance is located approximately 2,000 feet north of the acceleration ramp from the airport and approximately 2,000 feet south of the diverge ramp to the 14th Street Bridge. The resultant spacing between the interchanges and the park entrance results in very little turbulence within the flow of traffic due to weaving vehicles.

- The existing acceleration lane from Gravelly Point Park is 150 feet long, followed by a 250-foot taper. Since the parkway has no shoulder and is closed section (curb-and gutter), larger, heavier vehicles that might otherwise use a shoulder to "extend" their merge area must accelerate from a stopped condition to approximately 40-mph in only 150 feet, or use the mainline lanes of the parkway for their acceleration. This may be problematic for vehicles pulling loaded boat trailers, especially if traffic is heavy on the parkway. Similarly, the deceleration lane for Gravelly Point Park is just 65 feet long, with a 145-foot taper. Similar comments can be made about the effect of this relatively short distance on the ability of larger (and those pulling trailers) to decelerate without affecting the flow of traffic in the mainline lanes of the parkway. However, it should be noted that large vehicles, including those pulling boat trailers, currently use the existing driveway to access to the boat ramp at Gravelly Point Park.

  For vehicles exiting the site, sight distance looking to the south is quite good, with no obstructions to block a motorist's view of approaching vehicles in the northbound lanes of the parkway for at least 750 feet from the entrance.

  There is no direct access to the site from the southbound lanes of the parkway. To reach the site, southbound vehicles can use the interchange ramps to Reagan National Airport, to turn around, however, internal circulation within the airport roads can be complicated. Unless a motorist were familiar with the airport's internal circulation patterns, it may be advisable to direct southbound motorists all the way to the left turn at Marina Drive (at Daingerfield Island), which is located approximately two miles south. This would result in motorists traveling a total of four miles out of their way to reach the site.

  If southbound motorists used the Reagan National Airport ramp to turn around (assuming they would use the southern interchange) they would travel approximately 2 miles out of their way, via a somewhat more circuitous route.

  Vehicles exiting the site, that wish to head southbound on the parkway, have a more direct route to follow; proceeding about ½-mile north, exiting at the loop ramp to southbound I-395 and then immediately taking the loop ramp back to the southbound lanes of the parkway. This route would send motorists approximately one mile out of their way.

- Parking: The existing parking lot at Gravelly Point Park is quite large, containing 78 spaces for automobiles (19.5 feet long), 4 handicap automobile spaces (also 19.5 feet long), 17 double length spaces (39 feet long) for vehicles pulling trailers, and one double length

space (39 feet long) designated as a handicap space. These extended parking spaces appear to be adequately sized, with the typical truck/trailer measuring 38 to 40 feet in length, and are meant to be used by persons accessing the boat-launch ramp. All of the spaces are angled and allow vehicles to pull-through. There is ample room within this lot for large vehicles (bus, truck or car with trailer) to turn around. No trailer parking for the boathouse is anticipated in this lot.

There is a substantial amount of open space (grass fields) near the site that could be used for overflow/temporary parking, if needed, for regattas or other special events.

b. Rowing Conditions

- Depth of Water: There is sufficient depth around this site to allow rowing activities. The Tidal Map for the Potomac River indicates that the water is approximately four feet deep at the shore during low tide. The river becomes significantly deeper towards the middle.

- Available Course: The rowers at this site would have access to waters to the south, down to the Woodrow Wilson Bridge and beyond. The rowers would also have access to waters to the north of the 14th Street Bridges. However, to row there, rowers would have to cross to the other side of the river, in keeping with existing rowing patterns in the river.

- Safety: There are a number of potential conflicting situations in this area. These include powerboats exiting or entering the Columbia Marina and powerboats using the boat-ramp at Gravelly Point. This area does not have a wake-free zone so powerboats, cruise-boats or jet skies that frequent this area are allowed to travel at maximum speeds. Also, there is a cable buried under the river that connects to the shore at around the area of the proposed boathouse. This location will have to be closely examined while siting the boathouse. While there are no other rowing boathouses immediately around this area, the Columbia Island Marina and the boat-ramp off Gravelly Point could provide help on the water during emergencies. Other potential conflicts could include the abutments of the four bridges (CSX Railroad Bridge, the two 14th Street Bridges and the Metro Bridge) that can potentially act as obstacles between the northern portions of the

Figure 3.35: Bridge Abutments in the Site Vicinity that could Potentially Hinder Rowing

Potomac River and the water to the south. These abutments could cause trouble for novice rowers.

- Days lost due to Weather: Since there are no rowing boathouses in this immediate area, it was difficult to gauge how many days could be lost due to inclement weather. However, since the conditions on the river at this location (relative to width and openness) are somewhat 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. Alexandria loses between two and three days in a six-day practice week during the Spring months.

3.3.1.4 – Cultural/Visual Conditions

a. Cultural Resources

Potential archeological resources include possible locations, in undisturbed areas of the Potomac riverbank, for artifacts from prehistoric Native American settlements. Additionally, the site could hold 19th century artifacts from the Long Bridge Site and the Fort Jackson site from the Civil War. (Arlington County 1993).

The GWMP is a National Historic Register property that is near the project site.

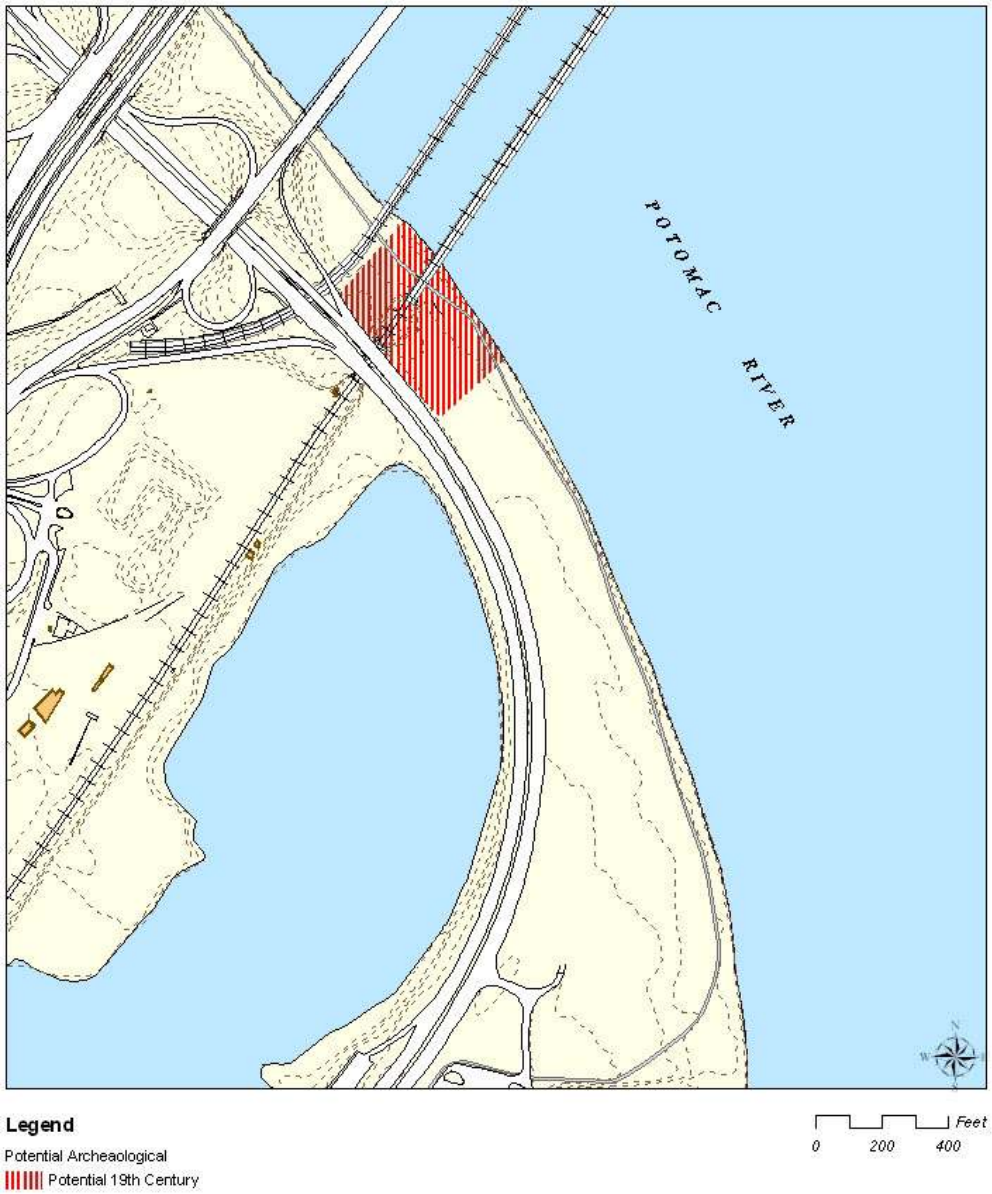

Figure 3.36: Potential Existing Historical/Cultural Resources, 14th Street Site

b. Visual Resources

The site is a grassy area that sits at the northern end of Gravelly Point Park, an active recreational area, between the river and GWMP (see Figures 3.41, 3.43, 3.45, 3.47 and 3.49). To its immediate north is the CSX Railroad Bridge. There is a row of vegetation that lines the riverbank and there are some trees along the parkway. The site is visible from Gravelly Point Park, GWMP, the river and the Mount Vernon Trail.

3.3.2 Conceptual Site Plan

Two conceptual plans were prepared to test the potential of locating a boathouse at this site. Figures 3.37 and 3.38 illustrate a smaller

Figure 3.37: Conceptual Site Plan

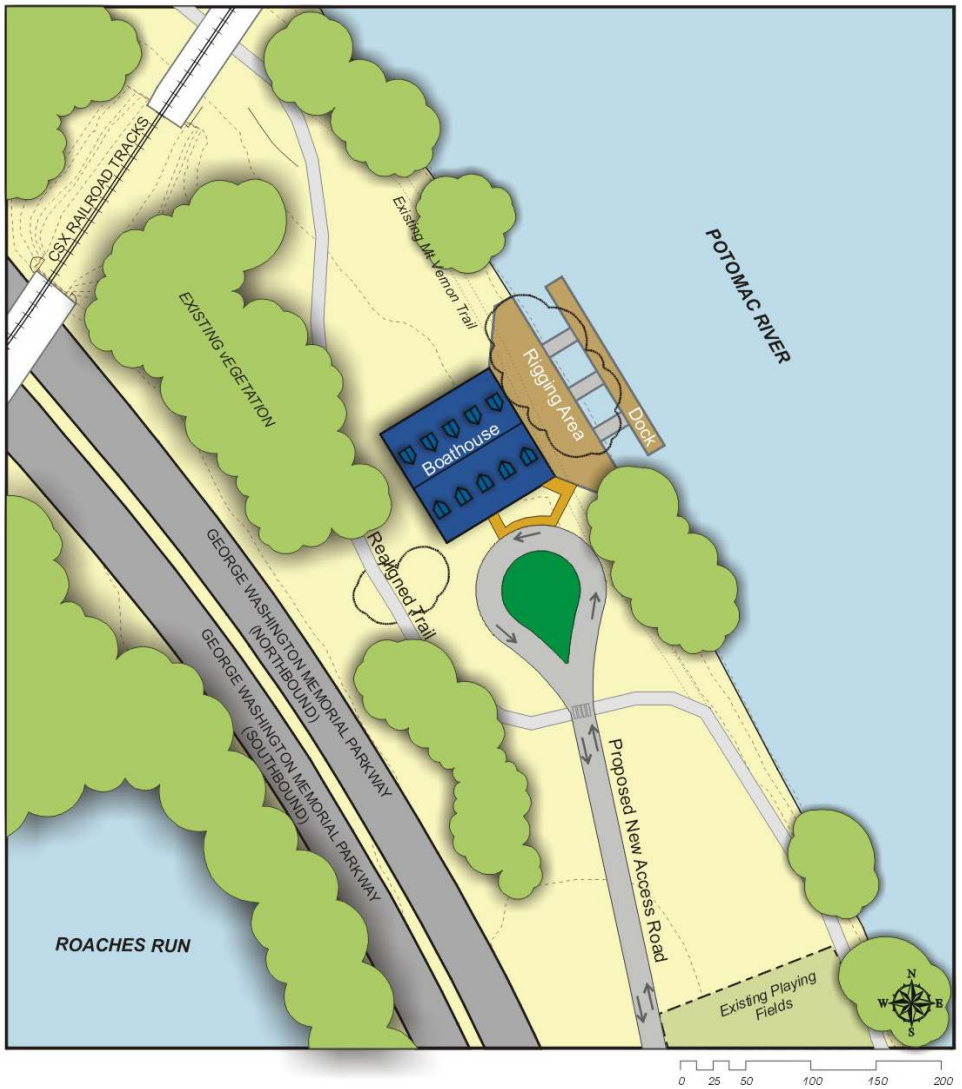

Figure 3.38: Enlarged Conceptual Site Plan, Minimum Program Boathouse

boathouse with a footprint of 10,000 SF. Figure 3.38 illustrates a larger boathouse with a footprint of 14,000 SF. In both plans, a new access road with a drop-area is proposed off Gravelly Point Park. Also, in either plan, the Mount Vernon Trail is realigned to avoid potential conflicts between the rowers and the trail-users. The smaller boathouse is located slightly to the north, in reference to the larger boathouse, to provide a comparison between potential multiple locations at this site. The coaches' boats would be tied to the dock during most of the rowing season and removed within the boathouse when needed.

3.3.3 Site Analysis

Summary: A boathouse, based on the proposed minimum and maximum program, with a footprint that ranges from 10,000 SF to 14,000 SF, could be accommodated at the 14th Street Bridge site. However, there are a number of measures and improvements that would be necessary for these plans to work, including the following:

- A new road and drop-off location would be required to provide boathouse access to trailers, school buses and emergency vehicles. This road could be located between GWMP and the existing playing fields to the east. The smaller boathouse would require approximately 1,950 running feet of new road (including the drop off area), and the larger boathouse would require approximately 1,800 running feet of new road.

- Portions of the existing Mount Vernon Trail would need to be relocated away from the river to create space for the

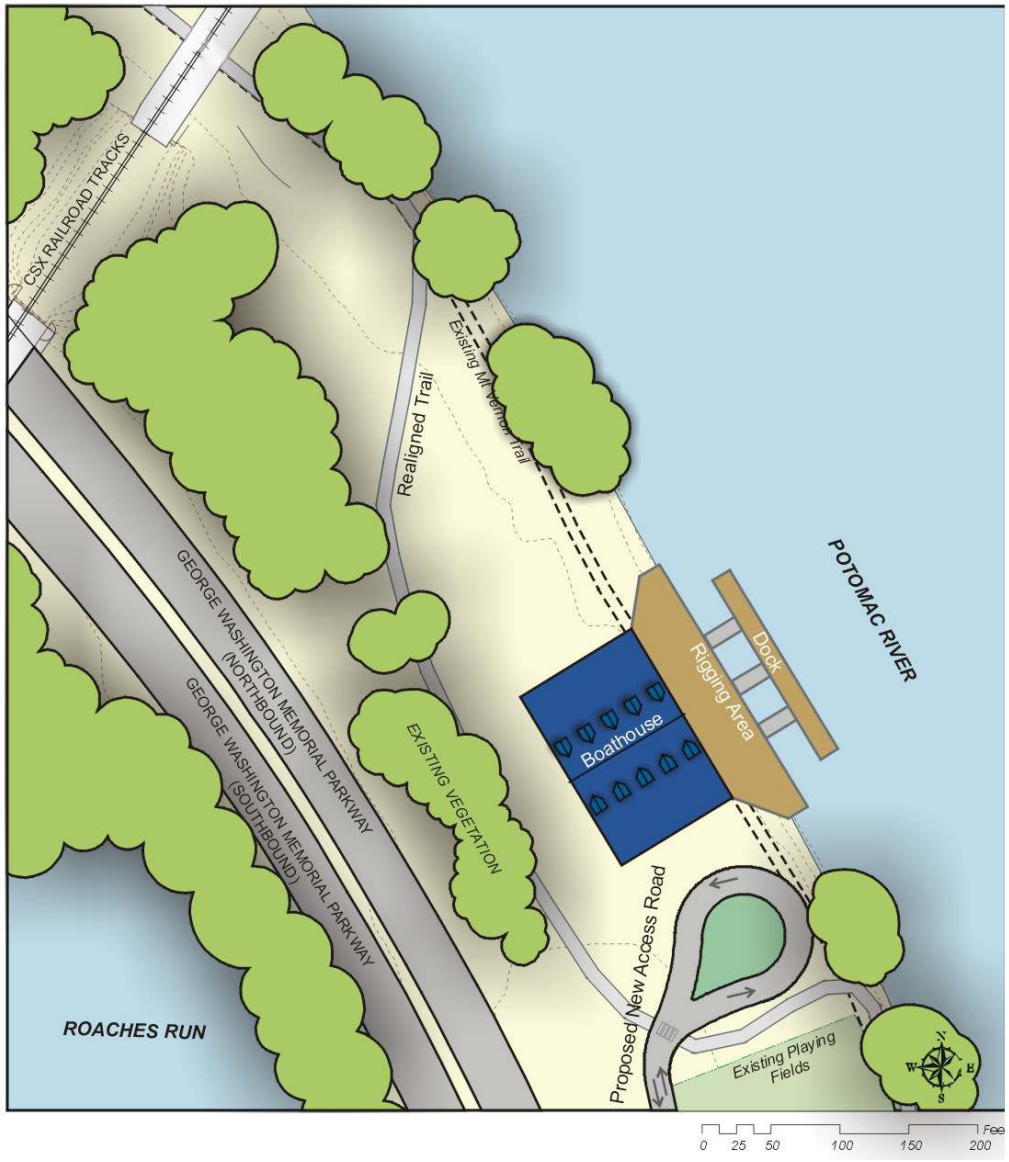

Figure 3.39: Conceptual Site Plan, Maximum Program Boathouse

boathouse. The smaller boathouse would result in removing approximately 590 feet of the trail, while the larger boathouse would result in removing approximately 650 feet of the trail.

3.3.3.1 – Physical Conditions

a. Existing Land Use

A proposed boathouse would add to the existing recreational uses in this area. Although, the boathouse would introduce a building in an area that predominantly consists of bridges and open space.

b. Infrastructure

Based on the description of the proposed Comfort Station in the National Park Service PMIS 59801 document it is assumed that the location of the Comfort Station is in the vicinity of the existing parking lot at Gravelly Point. Therefore new utility services would need to be extended from the Comfort Station area approximately 2,400-feet to the proposed boathouse. The boathouse roof drains may outfall to gutters and downspouts or could be collected in a storm drain system. The driveway and drop-off area may also be collected in a storm drain system.

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

- 2,400-feet of 4-inch ductile iron sanitary sewer force main
- one ejector pump/lift station
- 2,400-feet of 4-inch ductile iron water main
- 2,400-feet of two-way 4-inch PVC electric conduit with handbox
- 2,400-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

3.3.3.2 – Environmental Conditions

- Floodplain: Observations of topography at the potential development site support assessment that the site would not likely be inundated under 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 the 14th Street Bridge site would be adjacent to or within existing riparian wetland areas at the Potomac shoreline. Some construction would be required in these areas. In accordance with Section 404 of the Clean Water Act, this 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. Construction of the smaller boathouse could disturb approximately 7,600 square feet of wetland, while the larger boathouse could disturb about 7,700 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: The soils on the site provide a good substrate for vegetative growth and exhibit low 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 2.08 acres of area while development of the larger boathouse would likely disturb about 2.07 acres of acres (the larger boathouse disturbs less area as it is located closer to Gravelly Point parking area and requires slightly less new roadway access).

- Geology: The site for the potential boathouse is underlain by alluvial or fill materials. As this substrate has been 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 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 in the vicinity

of the site indicates that geologic structural conditions would not likely impede development of the boathouse facilities on the site.

- Vegetation: Some vegetation on the 14th Street Bridge site would be removed by development of the potential boathouse facilities. The smaller boathouse would clear approximately 11,500 square feet of treed area; the larger boathouse would clear about 9,600 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.

  The dense SAV growth, near the potential 14th Street Bridge boathouse 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 14th Street Bridge site for the potential boathouse 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. Common urban species inhabiting the site should be readily 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 would be constructed adjacent to 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 14th Street Bridge site would increase the amount of impervious surface on the site. The smaller boathouse would add approximately 52,000 square feet of impervious surfaces while the larger boathouse would add approximately 53,000 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 make critical 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.

3.3.3.3 – Operational Factors

a. Transportation (Access and Parking)

- Access: While, the existing parking lot for Gravelly Point Park may provide parking, it is located at least 2,000 feet from the anticipated site of the Boathouse. Also, during spring and summer months, especially on weekends it is difficult to find parking in this lot. The proposed new road would allow bus, trailer and emergency vehicle access to the boathouse.

- Travel Times: During the week of January 18, 2002, travel times were obtained between the 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 site at approximately 6:00 PM to simulate vehicles leaving the boathouse 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 3.5

School	*Travel Times to Site Depart 3:15 PM*	*Travel Times from Site Depart 6:00 PM*
Washington Lee	16 minutes	16 minutes
Yorktown	20 minutes	16 minutes
Wakefield	16 minutes	12 minutes
Average Travel Time	17 min 20 sec	14 min 40 sec

- *Transit Access:* The closest Metro Station is at Pentagon, approximately 0.66 miles from the site. The Metro Station at National Airport is approximately 1.33 miles from the site. Neither of these stations are easily accessible by pedestrian routes. In addition, there is currently no bus service to the site.

b. Rowing Conditions

- The river at the shore is more than four feet deep and will not hinder rowing.
- There is a heavy growth of sub-aquatic vegetation along the shoreline at this location, which can pose a problem for rowers. As discussed earlier in this chapter, some of this vegetation would need to be removed to allow rowing.
- This area is heavily used by motorized vessels, as the Columbia Island Marina and the existing public ramp at Gravelly Point Park are a short distance away, and jet-skiers. In addition, motorized crafts are not restricted by a 'no-wake' zone in this area. As a result, there is potential for conflicts between the rowers and the motorized vehicles.
- The practicing teams would potentially lose between two and three rowing days per week due to inclement weather.

3.3.3.4 – Cultural/Visual Resources

a. Cultural Resources

As discussed pertaining geology and soils, the 14th Street Bridge site lies on alluvial and/or fill material. The site has most likely been disturbed several times during the construction of the historic Long Bridge, the existing railroad bridge, and the GWMP. Given these disturbed conditions, the development of the potential boathouse facilities at the site, would not likely affect undisturbed ground with high potential to contain Native American artifacts. There is, however, some potential for the presence of 19th century artifacts even in the disturbed ground of the site. 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 the 14th Street Bridge site. Potential impact on the visual character of this historic resource is discussed under following section.

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 3.40).

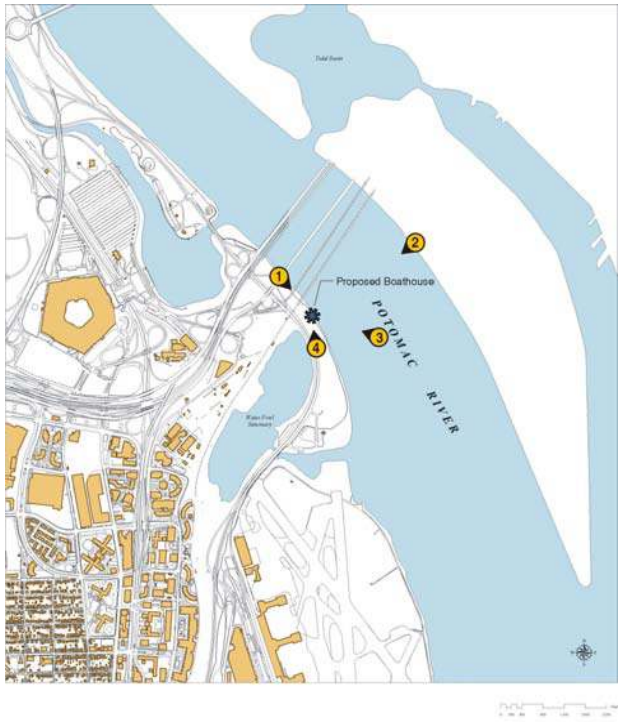

Figure 3.40: Location of Visual Simulations

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

Figure 3.41: Existing View from Mt Vernon Trail Looking South

View 1: From the Mount Vernon Trail, looking south, the overhead bridges and portions of the Potomac River are visible (see Figure 3.41). From this location, the boathouse would be visible beneath the existing rail bridges (see Figure 3.42). The boathouse would terminate the view looking south along the trail.

Figure 3.42: Simulation of Proposed Smaller Boathouse – View from Mt Vernon Trail Looking South (the boathouse outline is indicated to identify its location)

Figure 3.43: Existing View from Haines Point Across the River

View 2: From Haines Point, the Potomac River occupied most of the view with portion of the opposite visible in the distance (see Figure 3.43). From this location, the boathouse and dock area would be visible (see Figure 3.44)

Figure 3.44: Simulation of the Proposed Smaller Boathouse – View from Haines Point Across the River

Figure 3.45: Existing View from Down-River

View 3: From down-river, southeast of the proposed location of the boathouse, portions of the boathouse would be visible between existing vegetation. The proximity of the boathouse to the existing rail bridges along with the CSX Bridge would be seen from this location (see Figure 3.46).

Figure 3.46: Simulation of the Proposed Smaller Boathouse – View from Down-River

Figure 3.47: Existing View from Down-River

View 4: While this is the same vantage point as Figure 3.45, the simulation illustrates the larger boathouse which has been located to the south of the smaller boathouse illustrated in Figure 3.46 (see Figures 3.47 and 3.48). From this location, the boathouse would be slightly south of the bridges and will be more visible. However, there is sufficient space to add new vegetation that may screen a greater portion of the boathouse.

Figure 3.48: Simulation of the Proposed Larger Boathouse – View from Down-River

Figure 3.49: Existing View from GWMP Northbound

View 5: From the GWMP northbound lanes, a significant portion of the open space between the parkway and the river are visible. From this location, most of the boathouse would be visible, along with portions of the dock area. This view of the boathouse could potentially be screened with new plantings, similar to those that exist along the parkway.

Figure 3.50: Simulation of the Proposed Smaller Boathouse – View from GWMP Northbound

Figure 3.51: Existing View from GWMP Northbound

View 6: While this is the same vantage point as Figure 3.49, the simulation illustrates the larger boathouse which has been located to the south of the smaller boathouse illustrated in Figure 3.50 (see Figures 3.51 and 3.52). From this location, the entire boathouse along with portions of the dock area would be visible. Similar to the smaller boathouse, this view of the boathouse could potentially be screened with new plantings, similar to those that exist along the parkway.

3.3.3.5 – 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 3.4: Preliminary Cost Estimates

	Smaller	Larger
Boathouse @$200/SF	$3.0 million	$3.8 million
Site Improvements	$1.4 million	$1.4 million
30% Contingency	$1.3 million	$1.6 million
Total	**$5.7 million**	**$6.8 million**

Figure 3.52: Simulation of the Proposed Larger Boathouse – View from GWMP Northbound