SUBMERGED AQUATIC VEGETATION SURVEY
MATTAPONI RIVER,
PROPOSED LARGE COMPONENT TRANSPORT ROUTE
ROLL-OFF FACILITY
KING WILLIAM COUNTY, VIRGINIA

Prepared for:

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Survey for Submerged Aquatic Vegetation
Mattaponi River
King William County, Virginia

Introduction

The North Anna Power Station (NAPS) is located in Louisa County, VA along the southern shoreline of Lake Anna, about 60 miles northwest of Richmond (Figure 1). Dominion Virginia Power proposes to expand power generation at the NAPS site to provide additional electric service to meet the growing regional demand. As part of this expansion, oversized and overweight equipment will need to be delivered to the NAPS site. The Large Component Transport Route (LCTR) is the road network proposed to transport the reactor pressure vessel and other oversized/overweight equipment required to construct the proposed Unit 3 at the NAPS. The equipment will be barged to the proposed Roll-off Facility that is located adjacent to the Walkerton Bridge in King William County, Virginia. The Walkerton Bridge traverses the Mattaponi River.

A submerged aquatic vegetation (SAV) survey was conducted by EA Engineering, Science, and Technology (EA) on 6 September 2012. The study area was bounded on the west by the Walkerton Bridge, to the south by the right bank shoreline of the Mattaponi River, to the north by the left bank shoreline of the Mattaponi River, and to the east by an existing pier (Figure 2). This survey was conducted in accordance with the Special Condition for Threatened and Endangered Species contained in Department of the Army Permit Number 10-V1256/NAO-2008-2534 issued for the proposed NAPS Unit 3 project on September 27, 2011.

Previous Studies

A SAV survey was conducted in September 2010 by Wetland Studies and Solutions, Inc. (WSSI) within the vicinity of the Roll-off Facility. The survey indicated six different types of SAV and other aquatic habitats were present within the study area, including dense SAV beds, sparse SAV beds, dense SAV/mixed flat community, sparse SAV/yellow pond lily community, mixed freshwater community, and intertidal beach community. Areas that contained SAV within the study area in 2010 were dominated by hydrilla (*Hydrilla verticillata*); water celery (*Vallisneria americana*) was also present (WSSI 2010). As part of the 2010 WSSI report, historical data were analyzed concluding that SAV were previously documented within the Mattaponi River in the vicinity of the study area.

Survey Methodology for 2012

Transects were developed in the field and traversed the study area generally from north to south, at approximately 50 ft spacing (Figure 3). Sampling along each transect occurred approximately at 100 ft intervals in water depths that ranged from 2.5 ft to over 5 ft. The survey was comprised of 31 sampling stations on four transects. At each sampling point, SAV presence or absence, species information, and density data were recorded.

The survey was conducted from an open work boat. A Trimble® ProXR Global Positioning System (GPS) was used to collect coordinates of transects and sampling stations. An iron garden rake was used as the collection device. The rake was thrown into the water, pulled across the bottom, and brought to the surface. Five throws of the rake were conducted at each survey station to assess the extent, density, and species composition of the SAV species coverage. Vegetation collected by the rake, if any, was brought to the surface and identified to species level. The density for each rake throw was recorded on field datasheets. Measurements of density were recorded as 0 through 4, based upon methods developed by USFWS (2002) (Figure 4). For the density classification of collected SAV, a "0" corresponded to a lack of SAV, "1" corresponded to a very sparse density class, "2" corresponded to a sparse density class, "3" corresponded to a moderate density class, and "4" corresponded to a dense density class.

To summarize, at each sampling station during the survey, the following approach was taken:

1. Five sample collection (raking) attempts occurred.
2. SAV species collected from the bottom were brought to the surface and identified.
3. SAV species density for each rake throw was recorded.

Photographs were taken during the survey. A photographic record is attached to the end of this report.

Results of 2012 SAV Survey

The survey resulted in the observations of the two SAV species that were also observed in 2010: hydrilla and water celery. SAV was observed within 13 of the 31 sampling stations. Figure 5 depicts the locations and densities of the SAV observed. Table 1 presents the station locations that supported SAV, the SAV species identified, and the average SAV density value observed.

Table 1. Observed SAV - Station Locations, Water Depths, Species, and Density Classification, September 2012

Station #	Water Depth (feet)	Species	Average Density[1]
6	>5	Hydrilla	0.2
7	5	Hydrilla, Water Celery	3.2
8	3	Hydrilla	3.2
9	3	Hydrilla, Yellow Pond Lily[2]	2
10	5	Hydrilla, Water Celery	2.4
16	3	Hydrilla	1.8
17	2.5	Hydrilla	1.2
18	3	Hydrilla	1
19	4	Hydrilla	2
24	>5	Hydrilla	1.6
25	2.5	Hydrilla	1.2
26	3.5	Hydrilla	4
27	>5	Hydrilla	0.2

[1] Density presented is the average of 5 throws.
[2] Yellow pond lily (*Nuphar luteum*) is an emergent plant.

Four different types of habitats were present within the study area (Figure 5). These habitats include dense SAV beds, sparse SAV beds, sparse SAV/yellow pond-lily community, and mixed freshwater community. The habitat types are described in more detail below:

- Dense SAV Beds – These areas totaled 43,259 square feet (0.99 acres) of the study area and were dominated by hydrilla. Water celery was occasionally present.

- Sparse SAV Beds – These areas totaled 32,363 square feet (0.74 acres) of the study area and were dominated by hydrilla.

- Sparse SAV/Yellow Pond-Lily Community – These areas totaled 23,677 square feet (0.54 acres) and were dominated by hydrilla and yellow pond lily (*Nuphar luteum*), but also included pickerel weed (*Pontederia cordata*), sweet flag (*Acorus calamus*), wild rice (*Zizania aquatic*), American three-square (*Scirpus americanus*), and swamp smartweed (*Polygonum hydropiperoides*).

- Mixed Freshwater Community – These areas totaled 5,480 square feet (0.13 acres) and were dominated by wild rice and swamp smartweed, but also included hydrilla.

The remainder of the study area did not contain SAV. Photographs of the study area are attached to this report.

Conclusions

As stated previously, this SAV survey was conducted to support environmental studies and permitting requirements associated with the proposed NAPS Unit 3 project. SAV was observed within the study area during the 6 September 2012 survey. Hydrilla, a highly invasive non-native species, was the dominant species within the 13 stations that contained SAV. Water celery was present within two of the 13 stations that contained SAV; however, it comprised a very small percentage of the overall area. Four different community types were observed along the transects: dense SAV beds, sparse SAV beds, sparse SAV beds and yellow pond-lily community, and mixed freshwater community.

SAV presence, density, and species composition within a given site often vary from season to season and from year to year. It is not unusual to observe seasonal or yearly changes in SAV populations, densities, or existence within any given project area; however, this study area has appeared to remain stable during the 2010 – 2012 study periods. The SAV species observed in 2010 were present in 2012 and the general distribution of the SAV beds has remained similar.

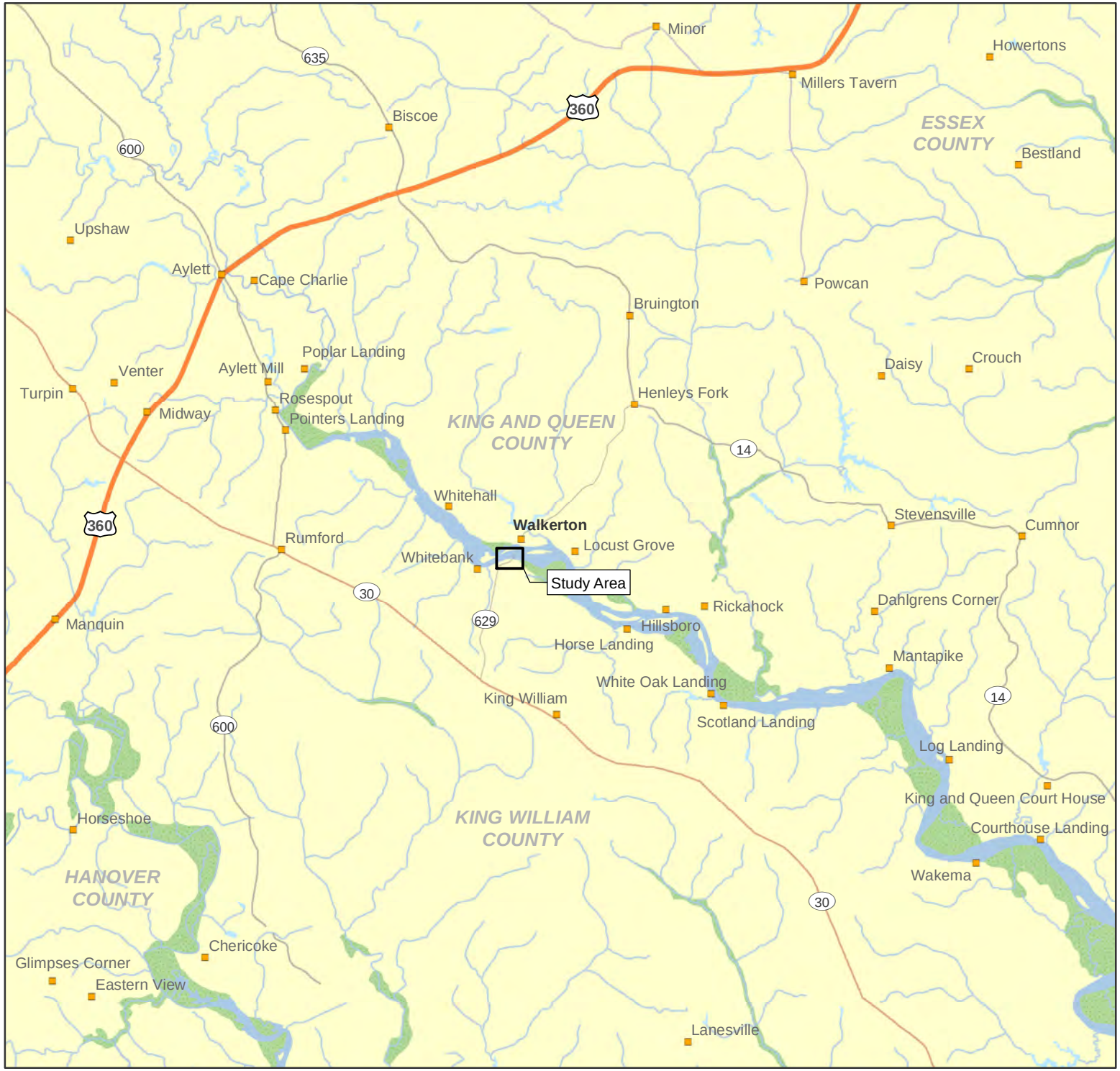
References

USFWS. 2002. Adaptation of Braun-Blanquet Scale to Rate SAV Density through Rake Throws. Adapted from Virginia Institute of Marine Science (VIMS) website. June 2004.

Wetland Studies and Solutions. 2010. *Survey for Submerged Aquatic Vegetation (SAV) and Other Aquatic Habitats*. Prepared for EA Engineering, Science, and Technology. September.

Figure 1

Vicinity Map



0 0.5 1 2

Miles

Source: ESRI, 2006

Path: J:\EA\projects\1439101\SAV_2012\VicinityMap.mxd

Figure 2

Site Map

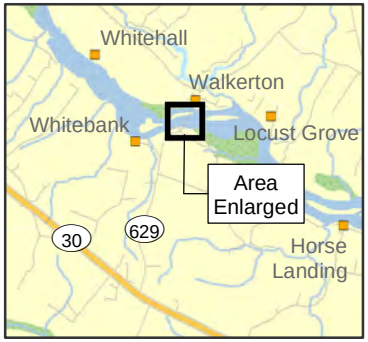
Legend

Study Area

0 100 200 400

Feet

Sources: Bing Maps, 2012; ESRI, 2006



Path: J:\EA\projects\1439101\SAV_2012\SiteMap.mxd

Figure 3

SAV Survey Station Locations

Legend

Station

0 50 100 200

Feet

Sources: Bing Maps, 2012; ESRI, 2006

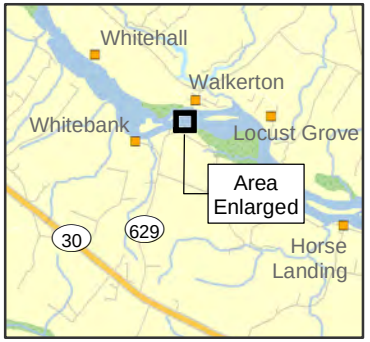


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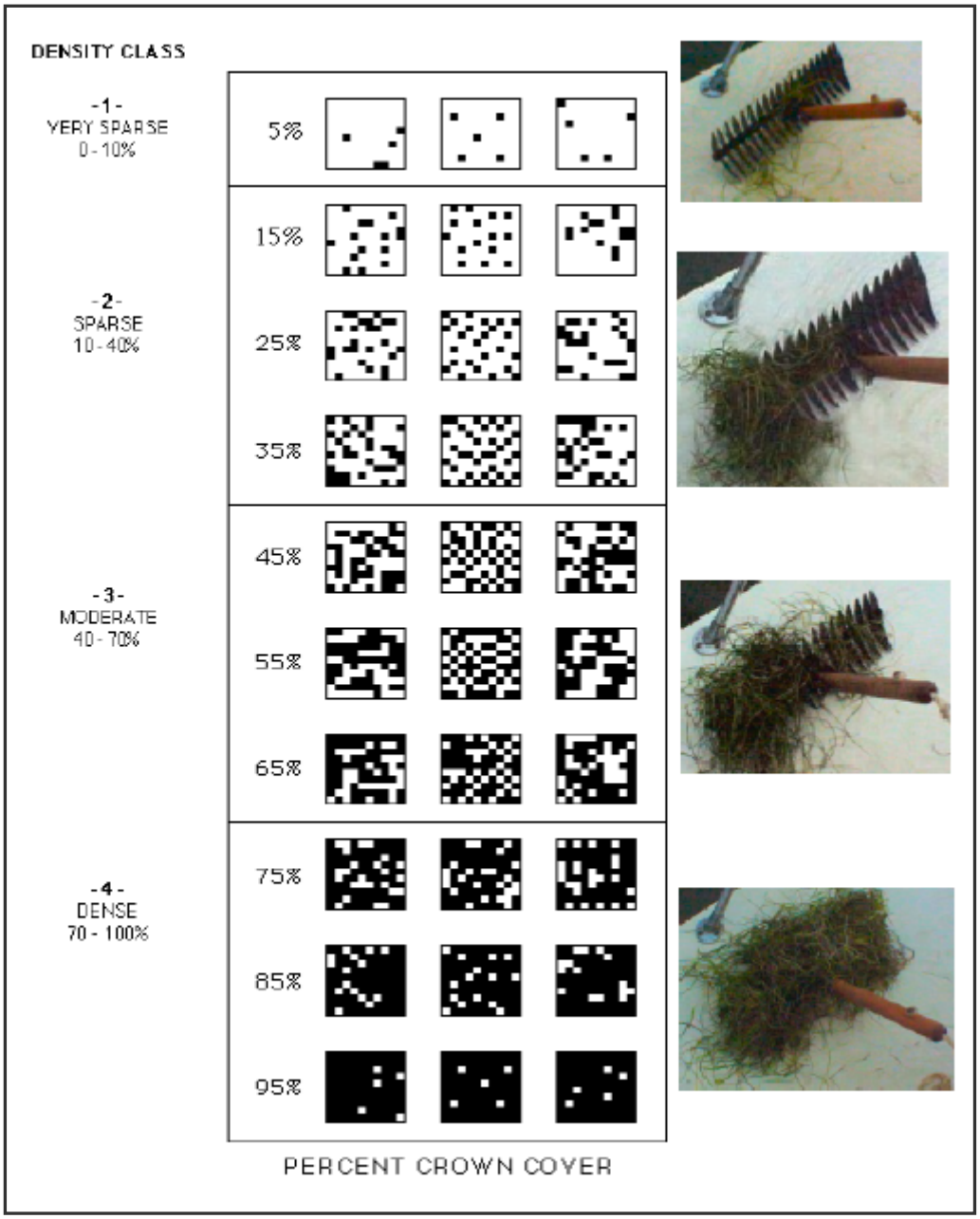
Figure 4 Density Classification of Collected SAV



Source: U.S. Fish and Wildlife Service, adapted from Braun-Blanquet scale used to rate SAV density through rake throws, adapted from VIMS website.

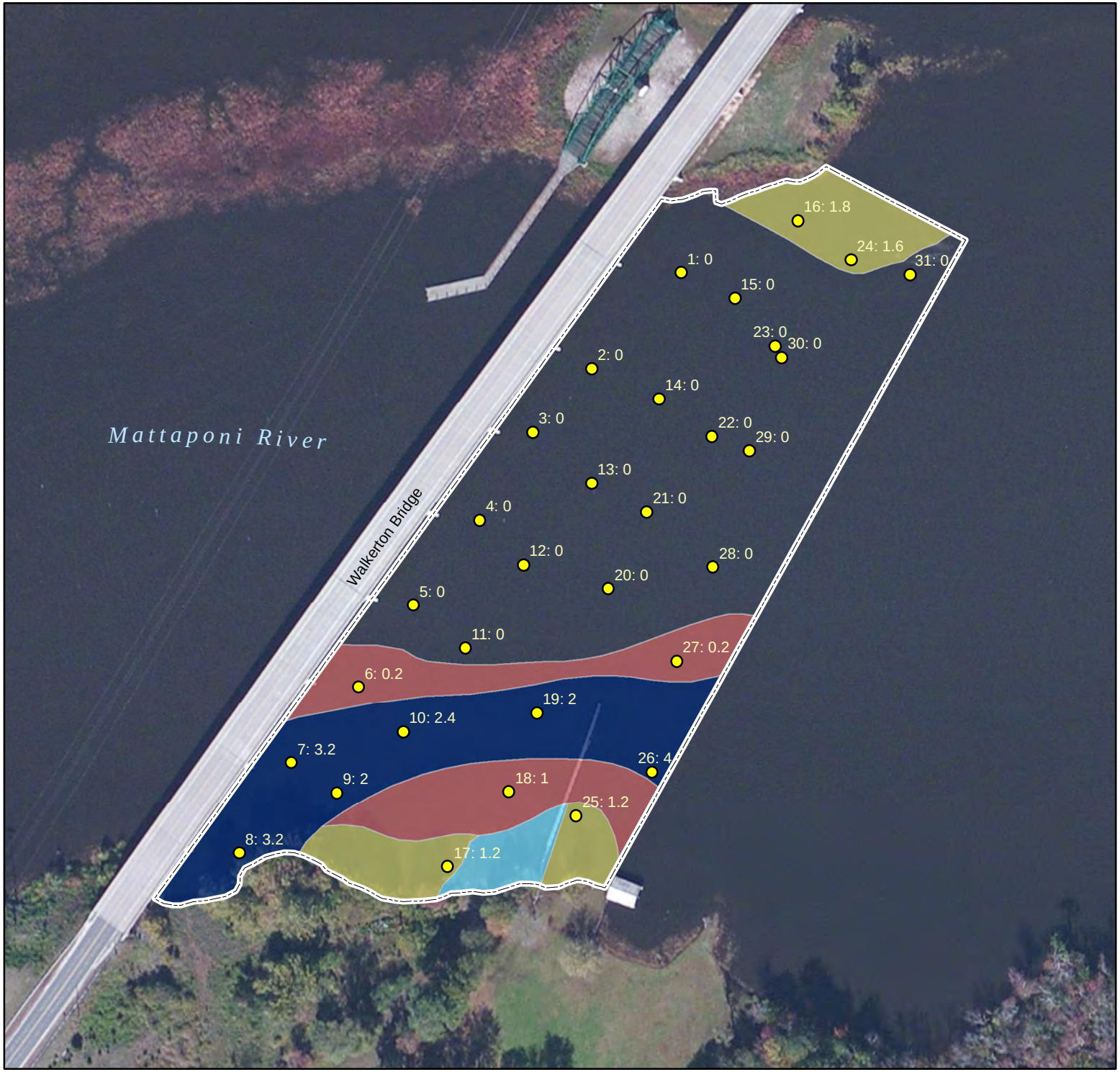


Figure 5

SAV Bed Locations and Densities

Legend

- Station (Station #: Density)
- Study Area

SAV Categories

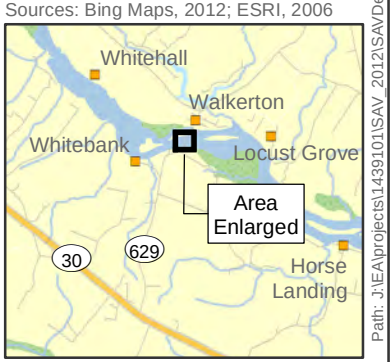
- Dense SAV
- Mixed Freshwater Community
- Sparse SAV
- Sparse SAV and Yellow Pond-lilly Community

N

0 50 100 200

Feet

Sources: Bing Maps, 2012; ESRI, 2006



Path: J:\EA\projects\1439101\SAV_2012\SAVDensity.mxd

EA Engineering, Science, and Technology, Inc.

Photographic Record

SAV Survey - Proposed Roll-Off Facility
Walkerton, King William County, Virginia
September 2012

Looking south at study area.

Looking south at study area along bridge.

Hydrilla collected by rake in dense SAV area.

Looking southeast at study area.

Looking southeast at mixed freshwater community.

Looking south at sparse SAV and yellow pond-lily community.