

Valentine Creek Water Access P452500/P452554

Feasibility Study

Anne Arundel County,
Maryland



KCI Technologies, Inc.
December 2022
KCI Project Number 171804667.14



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1.0 INTRODUCTION

1.1 Project Description and Location

The County is interested in determining the feasibility and potential costs associated with developing an existing parcel adjacent to Valentine Creek, and to determine the amenities that could be provided for the surrounding community.

The County provided existing parcel mapping for the project site, showing subdivision and paper roads that have not yet been constructed. The goal is to consider providing water access for a soft launch and kayak access. Additionally, the County wants to determine the possibility of adding in a boat ramp, and to identify associated dredging, parking layout, and access road requirements.

Figure 1 displays the project location. The site area is located on the property of 702 Creeks End Ln, Crownsville, Maryland. The total site area is approximately three (3) acres, 130,680 square feet. The stretch of the shoreline investigated for water access is approximately 550 feet long, along the north boundary of the property. The shoreline is adjacent to the conjunction of two tributaries of Valentine Creek, and the closest major body of water is Severn River.

SITE ADDRESS: 702 Creeks End Lane, Crownsville, MD 21032

- The proposed site location is on parcel 0128.
- Site area: 3.00 Acres or \pm 130,680 sq. ft.
- Proposed: Water access boat ramp.
- Existing Zoning:
 - RLD – Residential Low Density
 - OS – Open Space
- Number of Parcels: One
 - Tax Map 0031, Grid 22, Parcel 0128
- The existing land use is wooded and undeveloped.
- The site is located within the Valentine Creek Park.
- The site contains steep slopes with the majority of the land being 15-40% slopes
- There is a 100-year floodplain on site.
- The site is located in the Severn River Watershed.
- The soil present on site is CSF. Information is taken from the USDA Web Soil Survey.
- The site is located within the RCA – Resource Conservation Area critical area.
- There are no known cemeteries on the site.
- There are no historical structures on the site.
- There is no public water and sewer available on site.
- The closest electrical box is \pm 2100 LF

1.2 Current Use

The property is currently wooded and undeveloped without areas for recreation or parking.

Figure 1 – Vicinity Map



1.3 Zoning and Parking Requirements

WATERFRONT PROVISIONS

Front yard of waterfront lots.

The front yard of a waterfront lot is the yard that faces the shoreline. If more than one yard faces the shoreline, the rear yard is the one that provides access to a road and the front yard is determined accordingly.

Principal structures.

The Office of Planning and Zoning designates the location of a principal structure on a waterfront lot based on:

- (1) an approximate average of the location of principal structures on abutting lots intended to keep structures relatively in line with one another;
- (2) the height, location, necessity, and purpose of the proposed structure;
- (3) existing and allowed land uses on the lot and adjacent waterfront properties;

- (4) topographic and other physical features of the lot and adjacent waterfront properties, including shoreline irregularities and restrictions based on the required placement of utilities;
- (5) the impact of the structure on the use and enjoyment of adjacent waterfront properties and their light, air, and view; and
- (6) protection of environmental features and maximization of ESD design criteria.

Accessory structures and uses.

An accessory structure on a waterfront lot may be located in the front yard. The Office of Planning and Zoning designates the location of an accessory structure or use in the front yard on a waterfront lot based on:

- (1) the height, location, necessity, and purpose of the proposed structure;
- (2) existing and allowed land uses on the lot and adjacent waterfront properties;
- (3) topographic and other physical and environmental features of the lot and adjacent waterfront properties including shoreline irregularities and restrictions based on the required placement of utilities;
- (4) the impact of the structure or use on the use and enjoyment of adjacent waterfront properties and their light, air, and view;
- (5) if the accessory structure is to provide access to the waterfront, the minimum disturbance necessary to provide access in accordance with ESD design criteria; and
- (6) compliance with the requirements of COMAR, Title 27 for access to residential piers.

Piers and mooring pilings.

- (1) Location. The Office of Planning and Zoning designates the location of a pier or mooring piling based on its impact on the use and enjoyment of adjacent waterfront lots.
- (2) Setbacks. A pier or mooring piling shall be located at least 15 feet from a lot line extended for a private pier or at least 25 feet from a lot line extended for all other piers. The Office of Planning and Zoning determines the method of the lot line extension in accordance with one or more of the following methods:
 - a. from the side lot line at a 90-degree angle to the shoreline;
 - b. from the extension of the last course of the lot line into the water;
 - c. from the side lot lines to the center of cove; or
 - d. from the side lot lines generally parallel with existing piers located on adjacent lots.
- (3) Length. A pier or mooring piling may not extend into the water any further than the lesser of the following:
 - a. one-half the distance from the mean high-water line to the center line of the body of water on which it is situated;
 - b. one-half the distance from the mean high-water line to the center point of a cove; or
 - c. 300 feet from the waterfront at mean high tide.
- (4) Joint use of private pier. By agreement recorded among the land records, two contiguous waterfront property owners may agree to share the use of a private pier

located on one of their waterfront lots or located as extending from the common lot line or from a line extending from the common lot line over land owned by a homeowner's association.

- (5) Restrictions on mooring or docking. No person may use a private pier or mooring piling for the mooring or docking of watercraft other than the owner or occupant of the lot from which the pier extends, the owners or occupants with a right to use the pier by virtue of an agreement allowed by this article and recorded among the land records, or guests who are visiting those owners or occupants for no more than 30 days in a six-month period. No more than four watercraft exceeding 16 feet in length may be moored or docked at a private pier or mooring piling. Watercraft exceeding 150 feet in length or 35 feet in width may not be moored or docked at a private pier or mooring piling for more than seven days in any 30-day period unless the pier or mooring piling is on the Patapsco River or the Chesapeake Bay.

RLD – RESIDENTIAL LOW-DENSITY DISTRICTS

Bulk regulations.

(1) Generally.

- a. Except as provided otherwise in this article, the following bulk regulations are applicable in an RLD District:

Minimum lot size	40,000 square feet
Maximum coverage by structures	25% of gross area
Minimum width at front building restriction line; for waterfront lots the building restriction line is measured from the rear lot line	150 feet
Minimum setbacks for principal structures:	
Front lot line	50 feet
Rear lot line	40 feet
Side lot line	20 feet
Combined side lot lines	50 feet
Corner side lot line	40 feet
Maximum height limitations:	

Principal structures	45 feet
Accessory structures	45 feet if all setbacks are increased by one foot for each foot of height in excess of 25 feet
Maximum density	One dwelling unit per five acres

- b. A lot with an area of less than 40,000 square feet that was approved by a record plat prior to April 9, 1987, may be reviewed in accordance with the bulk regulations of § 18-4-601

- (2) Setback from certain slopes. A 50-foot planted buffer area shall be located and maintained between the principal structure and the crest of steep slopes.

Parking Requirements.

- (1) Public Launching Facilities
 - a. One space for every two boat slips or moorings plus 10 trailer spaces per boat ramp.

2.0 DESKTOP ANALYSIS

2.1 Existing Environmental Resources

A desktop analysis survey was conducted to determine the existing environmental resources present within the proposed project area. The primary soil type identified in the project area is Collington, Wist, and Westphalia soils (CSF) with 25 to 40% slopes. The northern boundary of the project area is adjacent to Valentine Creek, an estuarine, subtidal, unconsolidated bottom, subtidal (E1UBL) open water tidal wetland. The 100-foot Critical Area Buffer, or Habitat Protection Area, extends into the study area. There are no wetlands of special state concern present. Valentine Creek is not identified as a Maryland Tier II High Quality Waters. According to the Maryland 303(d) list of impaired waterways, Valentine Creek is currently listed as Category 4a – impaired, TMDL complete for tidal water for bacteria (*E. Coli*), nutrients (nitrogen and phosphorus), PCBs in fish tissue, sediments (total suspended solids) and Category 5 – impaired, TMDL needed for non-tidal streams for biological impairment.

The project area is located within the Resource Conservation Area (RCA) of the Chesapeake Bay Critical Area. According to the Virginia Institute of Marine Science, there is no presence of submerged aquatic vegetation (SAV) within the project area. Additionally, the United States Fish and Wildlife Service has identified the presence of Northern Long-eared bat (*Myotis*

septendrialis) and the Monarch butterfly (*Danaus plexippus*), however, no critical habitats were identified.

2.2 Shoreline Orientation

The shoreline orientation is the compass direction the shoreline faces and is measured normal to the shore strike, which means the direction the wind, and the direction that a wave strike could have impact on the shoreline. This factor is used to determine the fetch direction and length, which in turn determines the erosive energy at the shoreline. The shoreline orientation is approximately north/northwest as shown in **Figure 2**.

2.3 Fetch

Fetch is the distance along water over which wind blows, generating wave energy. It is one of the most important overall parameters for shoreline stabilization and restoration design since it is used to categorize the wave energy environment and determine the shoreline protection strategies necessary for protection against wave energy (Hardaway, Milligan, and Duhring, 2017). When determining the proper stabilization design, the fetch can help determine which alternatives will be adequate.

Average fetch was calculated by taking the distance to the opposing shore of 5 different lengths as shown in **Figure 2**. The measured fetch lengths were then averaged to get a value of 439.6 ft, or approximately 0.07 nautical miles. The shoreline is therefore classified to have low-energy shoreline. The longest fetch was measured as the distance to the farthest shore from the project site as seen in **Figure 2**. The length was measured to be 673.5 ft, or approximately 0.11 nautical miles.

Figure 2 – Shoreline Orientation, Average Fetch, and Longest Fetch

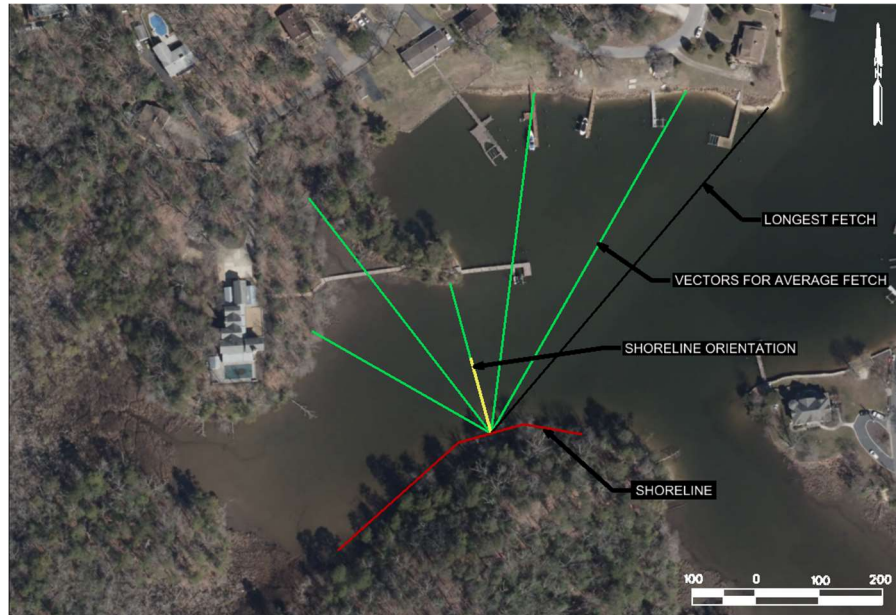


Figure 2: The red line represents the investigated shoreline. The yellow line indicates the shoreline orientation pointing north/northwest. The green lines show the vectors measured to determine the average fetch. The black line represents the longest fetch.

2.4 Shore and Nearshore Morphology

The shore morphology is important as it helps determine the amount of wind and wave energy the shoreline encounters (Hardaway, Milligan, and Duhring, 2017). The project site is located inland where it is likely not receiving the majority of the wind and wave energy. The nearshore morphology is important as it can help determine the launching path and dredging needs. The shore and nearshore morphology data at the project site is not available in Maryland Coastal Atlas.

Depth measurements were taken immediately offshore; however, a full survey was not performed. National Oceanic and Atmospheric Administration nautical charts (NOAA ENC Viewer) has water depth data for the project site. Design guidance for boat ramps calls for a minimum depth of four feet below mean low water (MLW). Based on NOAA's data, the distance from the project site to the area with four feet of water depth is approximately 410 ft. This would represent the approximate length of potential dredging required. There is also an area identified as "Cable Area" which is approximately 215 feet away from the project site into the water. Detailed survey data is necessary to determine the shore/nearshore morphology, water depth, and potential utility obstructions.

Figure 3 – NOAA ENC Data

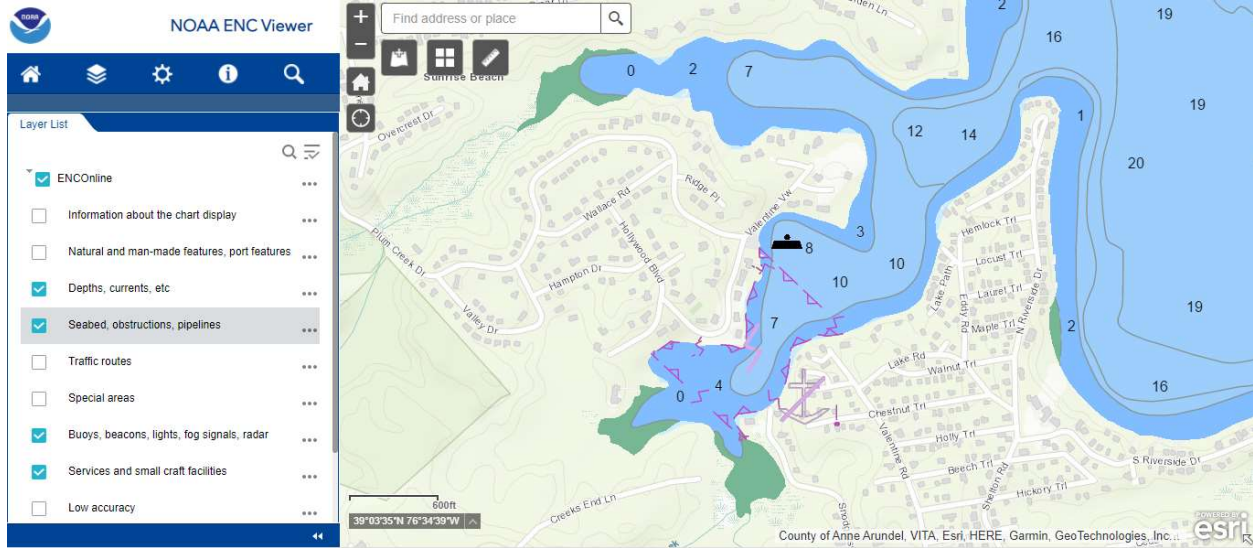


Figure 3: The blue area represents the area with water depth data. The numbers represent the water depth values in feet. The pink area represents the area with cable.

2.5 Tides

Using the National Oceanic and Atmospheric Administration data, the closest data point to the project location is Annapolis Station 8575512.

The level of the water, typically measured from mean low water (MLW), is usually determined by the tide which is important when trying to determine the dredging needs for boat launching. The tide data for the area around the project site is available at NOAA Tides and Currents website. Data of the Annapolis Station is included in **Appendix A**. These data were used to estimate the mean low water of -0.55. The station data, converted to NAVD88 using Annapolis reference, is shown in **Table 1**.

Table 1: Tidal Elevations (NAVD 88 feet)

Mean High Water (MHW)	Mean Low Water (MLW)	Mean Higher-High Water (MHHW)	Mean Tide Level (MTL)	Mean Lower-Low Water (MLLW)
0.42	-0.55	0.66	-0.07	-0.77

2.6 Shoreline Change Rate

The shoreline change rate for the project site is -0.98 ft/year (less than 2 ft/year) on average which indicates slight erosion level, by comparing the historic shoreline data of 1990s and 2000s. The historic shoreline data is available on Maryland Coastal Atlas.

2.7 Sea Level Rise (SLR)

When designing a boat or soft launching facility, SLR is a factor to account for as it will affect the project longevity. It is a factor that will force long term consideration as it will lead to higher inundation levels, landward recession or erosion of shorelines, and saltwater intrusion and landward advance of tidal limits in estuaries, among other unknown consequences. The sea level is expected to continue to rise for the foreseeable future even if the air temperature increase is kept to a minimum, so it is a factor that must be considered during design (Hardaway and Milligan, 2021). The SLR is likely to have more water depth which will ease the dredging requirements, but will require revisions at the launching spot as the launching ramp is likely to be inundated more and become shorter.

According to the US Army Corps of Engineers Sea-Level Change Calculator, the city of Annapolis is expected to experience significant SLR. Annapolis was used as the reference as it is only approximately 7 miles from the project site. The expected SLR for Annapolis in 2050 ranges from .6 to 1.9 ft with .9 ft being the intermediate estimate. This is likely to have large effects on the project site as the site is relatively shallow to begin with. Furthermore, Annapolis is predicted to experience a range of 1.1 to 5.5 ft increase by 2100 with 2.2 ft being the intermediate estimate. The SLR in the area will continue to have a large impact on the project making it a factor that should be considered in the design.

3.0 FIELD RECONNAISSANCE

3.1 Shoreline Banks

Shoreline banks are thickly vegetated. Banks are moderately eroded in the center of the study area with exposed roots visible and a bank height of 1-2 feet.

3.2 Nearshore Observations

A preliminary site investigation was conducted on February 10, 2022. During the site investigation, various hiking trails were identified throughout the project area to access the waterfront. The site investigation confirmed the presence of the E1UBL wetland along the shoreline of the area. The surrounding riparian forest had a size class range of 6" diameter at breast height (dbh) to 29.9" dbh. Species identified in the area include pitch pine (*Pinus rigida*), sweetbay magnolia (*Magnolia virginiana*), American beech (*Fagus grandifolia*), red cedar (*Juniperus virginiana*), and ground pine (*Dendrolycopodium obscurum*). Wildlife observed in the area include raccoon (*Procyon lotor*), the common garter snake (*Thamnophis sirtalis*), and blue heron (*Ardea herodias*). The topography in the area is moderately to steeply sloping.

Figure 4 – Site Photographs



Figure 4.1: *Tidal study area.*



Figure 4.2 *Western edge of study area.*



Figure 4.3 Visible stumps ~ 50' from shore in center of study area.



Figure 4.4 Eroded banks and exposed roots in center of study area. Bank heights are approximately 1'-2'.



Figure 4.5 Sandbar on eastern edge of study area.

Figure 5 – Field Observations

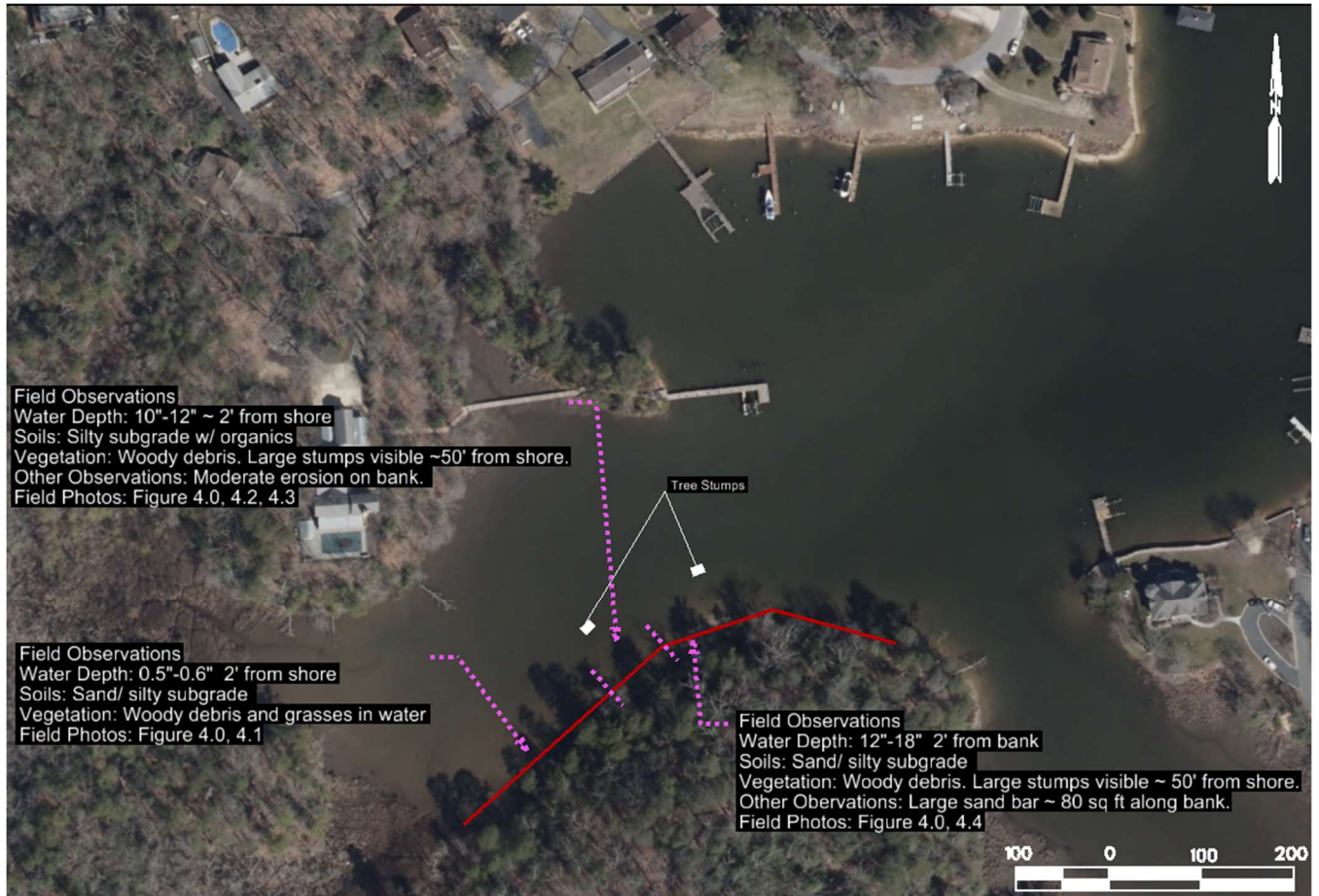


Figure 5: Sketch of observed conditions.

4.0 CONCEPT

KCI developed several conceptual plans that illustrate potential improvements to the property. Amenities considered include a boat ramp, soft launch, fishing pier, associated parking, and trails. Concept plans are included in Appendix B. Cost estimates are included in Appendix C.

4.1 Boat Ramp

For a future boat ramp, KCI recommends using the existing road and right-of-way to connect. Due to the 15%-40% grades on site, the boat ramp will need to switchback using the slopes to minimize the steep grades on the ramp. Based on observations, the deeper area of water for the boat ramp to enter the water will need to be towards the point (north side of the property). This area has very steep slopes (1:1) and may require retaining walls. Retaining walls may be needed along the entire boat ramp to help meet the required grades. To meet stormwater management requirements, pervious pavement will be used, as well as sheet flow to buffer. At

the bottom of the boat ramp there will need to be a turnaround large enough for drivers to pull down and back boats into the water. After launching their boats, a parking area on top of the hill will be needed meeting the requirements of Anne Arundel County for parking provided (see requirements Section 1.3).

Potential Site Challenges

1. Research for this property uncovered the following challenges:
 - a. The entire site is located within the Resource Conservation Area.
 - b. There are very steep slopes throughout the site. Designing a boat ramp may come with challenges to meet the maximum grades.
 - c. We will need to provide on-site water for a stand pipe in case of any fires.
 - d. Electricity will need to be run at least 2100 LF for use near the boat ramp.
 - e. Parking for the boat ramp cannot be located on steep slopes, therefore, it will need to be located at the top of the hill.
 - f. Retaining walls may be needed to account for cutting a road through the steep slopes.
 - g. If pervious pavement and sheet flow to buffer is not acceptable, stormwater management will need to be addressed another way.

4.2 Soft Launches and Fishing Pier

For a soft launch, the ideal location would be to the west of the boat ramp, or if the ramp is not installed, in the approximate same location. This will allow for a shallower area to enter the water, as well as being able to use the boat ramp for walking or driving down and dropping kayaks/canoes near the water's edge if both are installed.

Construction of only the soft launch would allow for less infrastructure at the bottom of the hill. A turn-around would still be required; however, trailer access would not be needed. Alternatively, parking and loading/unloaded could be located at the top of the hill or further up toward the entrance, and visitors would need to portal their boats down to the shore. This would eliminate the need for a turn around at the bottom; however, accessibility will still require significant grading. Due to the overall slope, loading and unloading in this situation would be a significant distance from the shore.

4.3 Concept Plans

Concept A: Concept A includes 22 parking spaces sized for boat trailers, a turn-around loop at the waterfront, and a boat ramp. Dredging of a 20' wide channel would be required to a depth of four feet, approximately 400 feet long. A dumpster and porta potty are provided. The estimated cost to implement this concept is approximately \$1,290,000.

Concept B: Concept B includes 42 parking spaces sized for vehicles without trailers. An access drive down to a soft launch is provided, but without a turn-around. No dredging would be required for the soft launch. A dumpster and porta potty are provided. The estimated cost to implement this concept is approximately \$670,000.

Concept C: Concept C combines Concepts A and B, and includes both a boat ramp and soft launch. Dredging requirements are longer; approximately 460 feet. A dumpster and porta potty are provided. The estimated cost to implement this concept is approximately \$1,341,000.

Concept D: Following a meeting with regulators and the community, feedback indicated that the disturbance and clearing associated with concepts A-C were higher than desired. As a result, Concept D was prepared to provide parking up near the entrance (40 regular-sized spaces), and a soft launch and fishing pier at the water's edge. No dredging would be required for the soft launch. The trail between the provided parking and the soft launch / fishing pier would be improved, providing more accessible access to the water. A network of existing trails would be tied into the proposed work. A dumpster and porta potty are provided. The estimated cost to implement this concept is approximately \$271,000.

5.0 RECOMMENDATION AND CONCLUSION

Based on the feedback provided by stakeholders and regulators, there does not appear to be much interest in developing the site with a boat ramp, or providing amenities in close proximity to the water. As such, the best option would be Concept D. This has the added benefit of having less overall disturbance to existing forest and the network of trails, and the most inexpensive option.

6.0 REFERENCES

1. "NOAA Current Predictions - Current Predictions." (n.d.). Tides and Currents, National Oceanic and Atmospheric Administration. Retrieved from https://tidesandcurrents.noaa.gov/noaacurrents/Predictions?id=cb1101_4
2. Federal Emergency Management Agency. (2014 November). Flood Insurance Study, Queen Anne's County, Maryland and Incorporated Areas, Flood Insurance Study Number 24035CV000A, p27.
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7. Maryland Department of Natural Resources. (2016). *Characterization of Individual Sanctuaries*. Retrieved from <https://dnr.maryland.gov/fisheries/Documents/Appendix%20A%20-%20DRAFT%2020160727.pdf>
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11. US Army Corps of Engineers. (2021). "Sea-Level Curve Calculator." Retrieved from https://cwbi-app.sec.usace.army.mil/rccslc/slcc_calc.html

APPENDIX A

ANNAPOLIS STATION TIDE DATA



[Home \(/\)](#) /
 [Products \(products.html\)](#) /
 [Datums \(stations.html?type=Datums\)](#) /
 [8575512 Annapolis, MD](#)
[Favorite Stations](#)

[Station Info](#)
 [Tides/Water Levels](#)
 [Meteorological Obs. \(/met.html?id=8575512\)](#)
 [Phys. Oceanography \(/physocean.html?id=8575512\)](#)
 [PORTS® \(/ports/ports.html?id=8575512\)](#)
[OFS \(/ofs/ofs_station.html?sname=Annapolis&ofs=cb&stnid=8575512&subdomain=0\)](#)

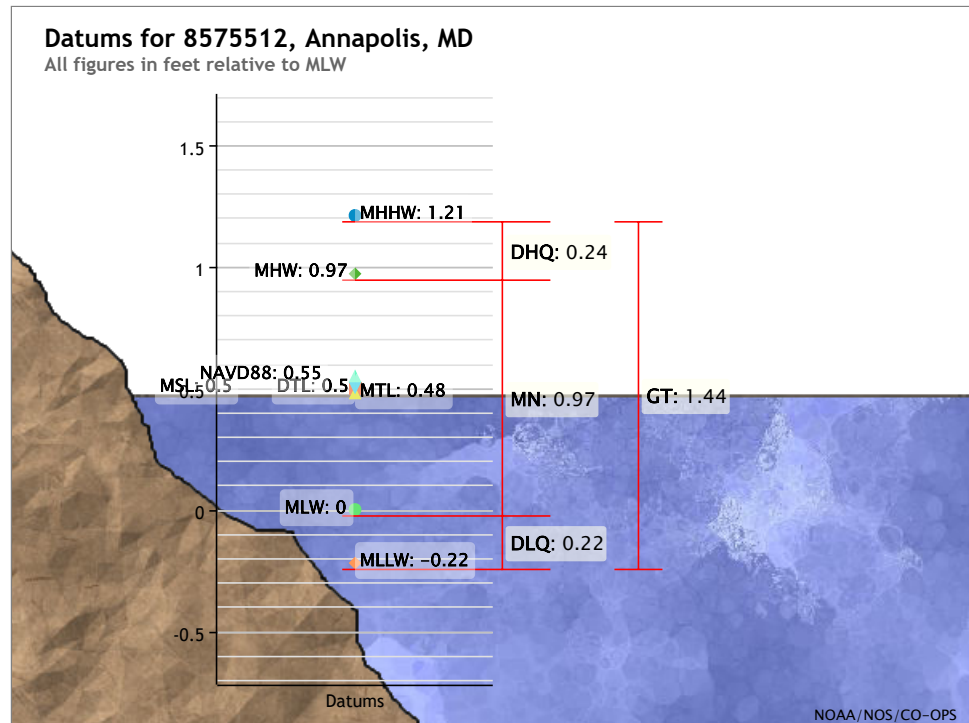
Datums for 8575512, Annapolis MD

NOTICE: All data values are relative to the MLW.

Elevations on Mean Low Water

Station: 8575512, Annapolis, MD **T.M.:** 75
Status: Accepted (Oct 12 2011) **Epoch:**
Units: Feet [\(/datum_options.html#NTDE\)](#) 1983-2001
Control Station: **Datum:** MLW

Datum	Value	Description
MHHW (/datum_options.html#MHHW)	1.21	Mean Higher-High Water
MHW (/datum_options.html#MHW)	0.97	Mean High Water
MTL (/datum_options.html#MTL)	0.48	Mean Tide Level
MSL (/datum_options.html#MSL)	0.50	Mean Sea Level
DTL (/datum_options.html#DTL)	0.50	Mean Diurnal Tide Level
MLW (/datum_options.html#MLW)	0.00	Mean Low Water
MLLW (/datum_options.html#MLLW)	-0.22	Mean Lower-Low Water
NAVD88 (/datum_options.html)	0.55	North American Vertical Datum of 1988
STND (/datum_options.html#STND)	-4.74	Station Datum
GT (/datum_options.html#GT)	1.44	Great Diurnal Range
MN (/datum_options.html#MN)	0.97	Mean Range of Tide



Showing datums for

Datum	Value	Description
DHQ (/datum_options.html#DHQ)	0.24	Mean Diurnal High Water Inequality
DLQ (/datum_options.html#DLQ)	0.22	Mean Diurnal Low Water Inequality
HWI (/datum_options.html#HWI)	10.04	Greenwich High Water Interval (in hours)
LWI (/datum_options.html#LWI)	3.97	Greenwich Low Water Interval (in hours)
Max Tide (/datum_options.html#MAXTIDE)	6.94	Highest Observed Tide
Max Tide Date & Time (/datum_options.html#MAXTIDEDT)	09/19/2003 11:54	Highest Observed Tide Date & Time
Min Tide (/datum_options.html#MINTIDE)	-4.14	Lowest Observed Tide
Min Tide Date & Time (/datum_options.html#MINTIDEDT)	12/31/1962 20:12	Lowest Observed Tide Date & Time
HAT (/datum_options.html#HAT)	1.72	Highest Astronomical Tide
HAT Date & Time	06/14/2003 10:00	HAT Date and Time
LAT (/datum_options.html#LAT)	-0.86	Lowest Astronomical Tide
LAT Date & Time	01/14/2040 15:48	LAT Date and Time

Tidal Datum Analysis Periods

01/01/1983 - 12/31/2001

8575512 Annapolis, MD

Datum

MLW

Data Units ☒ Feet

☐ Meters

Epoch ☒ Present (1983-2001)

☐ Superseded (1960-1978)

Submit

Show nearby stations

Products available at 8575512 Annapolis, MD

TIDES/WATER LEVELS

Water Levels (/waterlevels.html?id=8575512)

METEOROLOGICAL/OTHER

Meteorological Observations (/met.html?id=8575512)

Water Temp/Conductivity

OPERATIONAL FORECAST SYSTEMS

Chesapeake Bay (/ofs/cbofs/cbofs.html)

OFS product page for Annapolis



NOAA Tide Predictions (/noaatidepredictions.html?id=8575512)

Harmonic Constituents (/harcon.html?id=8575512)

Sea Level Trends (/sltrends/sltrends_station.shtml?id=8575512)

Datums (/datums.html?id=8575512)

Bench Mark Sheets (/benchmarks.html?id=8575512)

Extreme Water Levels (/est/est_station.shtml?stnid=8575512)

Reports (/reports.html?id=8575512)

PORTS®

Chesapeake Bay North PORTS® (/ports/index.html?port=cn)

PORTS® product page for Annapolis (/ports/ports.html?id=8575512)

INFORMATION

Station Home Page (/stationhome.html?id=8575512)

Data Inventory (/inventory.html?id=8575512)

Measurement Specifications (/measure.html)

Website Owner: Center for Operational Oceanographic Products and Services

National Oceanic and Atmospheric Administration (<http://www.noaa.gov>) • National Ocean Service (<http://oceanservice.noaa.gov>) • Privacy Policy (</privacy.html>) • Disclaimer (</disclaimers.html>) • Take Our Survey (</survey.html>) • Freedom of Information Act (<https://www.noaa.gov/foia-freedom-of-information-act>) • Contact Us (</contact.html>)

APPENDIX B

CONCEPT PLANS



VALENTINE CREEK

ANNE ARUNDEL COUNTY, MARYLAND

APRIL 27, 2022



KCI Project No. 171804667.14





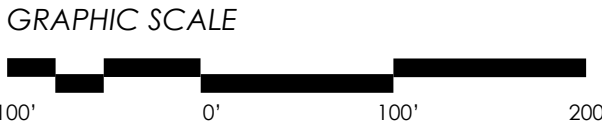
PARCELS OWNERSHIP LEDGEND

- PRIVATE RESIDENTS
- ANNE ARUNDEL COUNTY
- VALENTINE CREEK COMMUNITY OPEN SPACE
- VALENTINE CREEK COMMUNITY RECREATION AREA
- STATE OF MARYLAND

VALENTINE CREEK

ANNE ARUNDEL COUNTY, MARYLAND

APRIL 27, 2022



KCI Project No. 171804667.14





CONCEPT PLAN A

LEGEND

- 1 VISITORS/SOFT LAUNCH PARKING
- 2 BOAT TRAILER PARKING
- 3 PARALLEL ACCESSIBLE PARKING
- 4 BOAT LAUNCH
- 5 BOAT LAUNCH PIER
- 6 PICNIC AREA
- 7 SIDEWALK (TYP.)
- 8 PORTA POTTY / COMFORT STATION AREA
- 9 DUMPSTER
- 10 3:1 SLOPE
- 11 EXISTING TREES TO REMAIN (TYP.)
- 12 PROPOSED TREES (TYP.)

PLAN NOTES:

- 1) ALL DRIVE AISLES ARE 24' IN WIDTH.
- 2) ALL VISITOR AND BOAT TRAILER PARKING SPACES PROPOSED AS PERMEABLE GRASSCRETE.



VALENTINE CREEK

ANNE ARUNDEL COUNTY, MARYLAND

APRIL 27, 2022



KCI Project No. 171804667.14





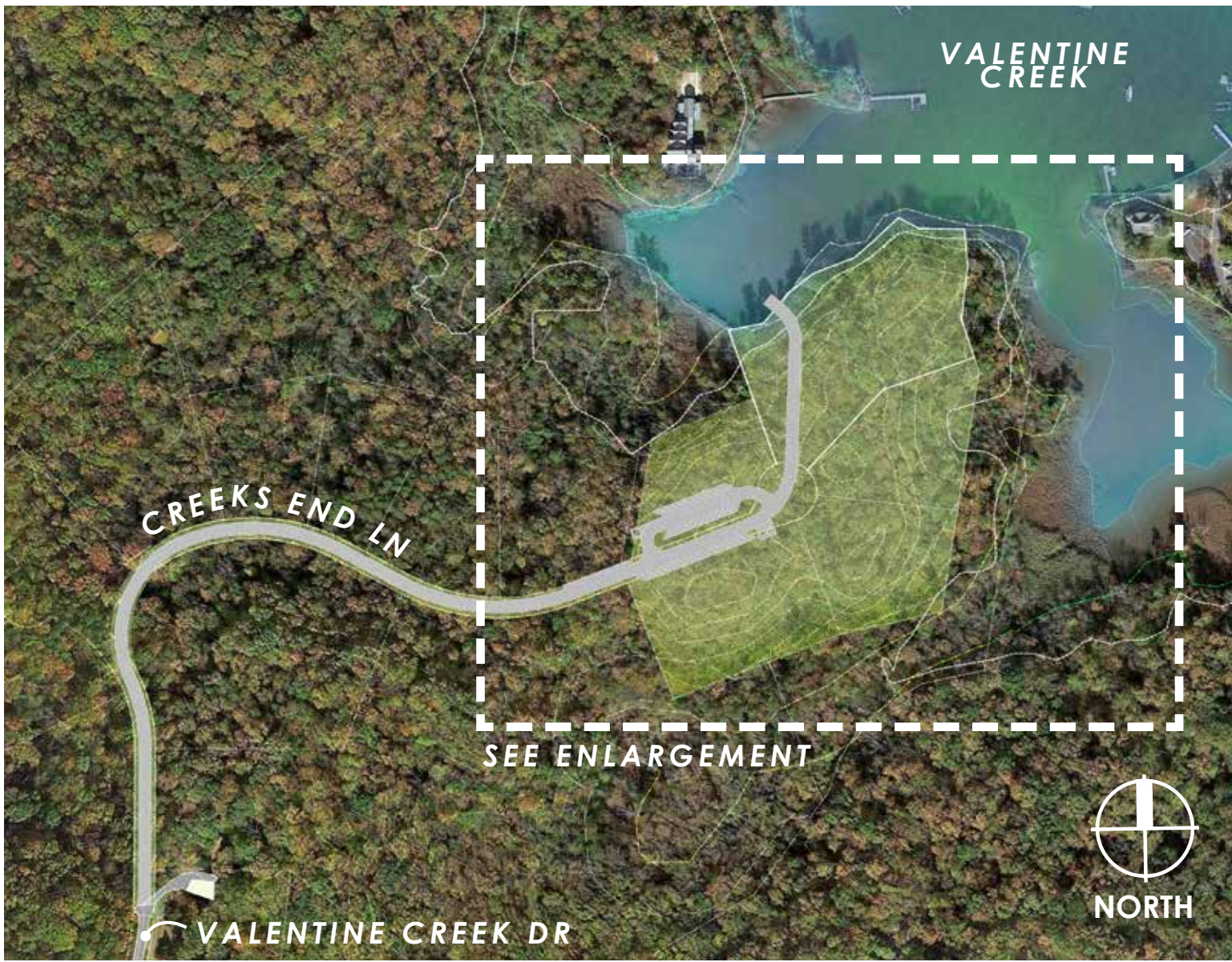
CONCEPT PLAN B

LEGEND

- 1 VISITORS PARKING
- 2 SOFT LAUNCH (CANOE AND KAYAK)
- 3 PORTA POTTY / COMFORT STATION AREA
- 4 DUMPSTER
- 5 3:1 SLOPE
- 6 EXISTING TREES TO REMAIN (TYP.)
- 7 PROPOSED TREES (TYP.)

PLAN NOTES:

- 1) ALL DRIVE AISLES ARE 24' IN WIDTH.
- 2) ALL VISITOR AND BOAT TRAILER PARKING SPACES PROPOSED AS PERMEABLE GRASSCRETE.



VALENTINE CREEK

ANNE ARUNDEL COUNTY, MARYLAND

APRIL 27, 2022



KCI Project No. 171804667.14



CONCEPT PLAN C

LEGEND

- 1 VISITORS/SOFT LAUNCH PARKING
- 2 BOAT TRAILER PARKING
- 3 PARALLEL ACCESSIBLE PARKING
- 4 BOAT LAUNCH
- 5 BOAT LAUNCH PIER
- 6 SOFT LAUNCH (CANOE AND KAYAK)
- 7 PICNIC AREA
- 8 SIDEWALK (TYP.)
- 9 PORTA POTTY / COMFORT STATION AREA
- 10 DUMPSTER
- 11 3:1 SLOPE
- 12 EXISTING TREES TO REMAIN (TYP.)
- 13 PROPOSED TREES (TYP.)

PLAN NOTES:

- 1) ALL DRIVE AISLES ARE 24' IN WIDTH.
- 2) ALL VISITOR AND BOAT TRAILER PARKING SPACES PROPOSED AS PERMEABLE GRASSCRETE.



VALENTINE CREEK

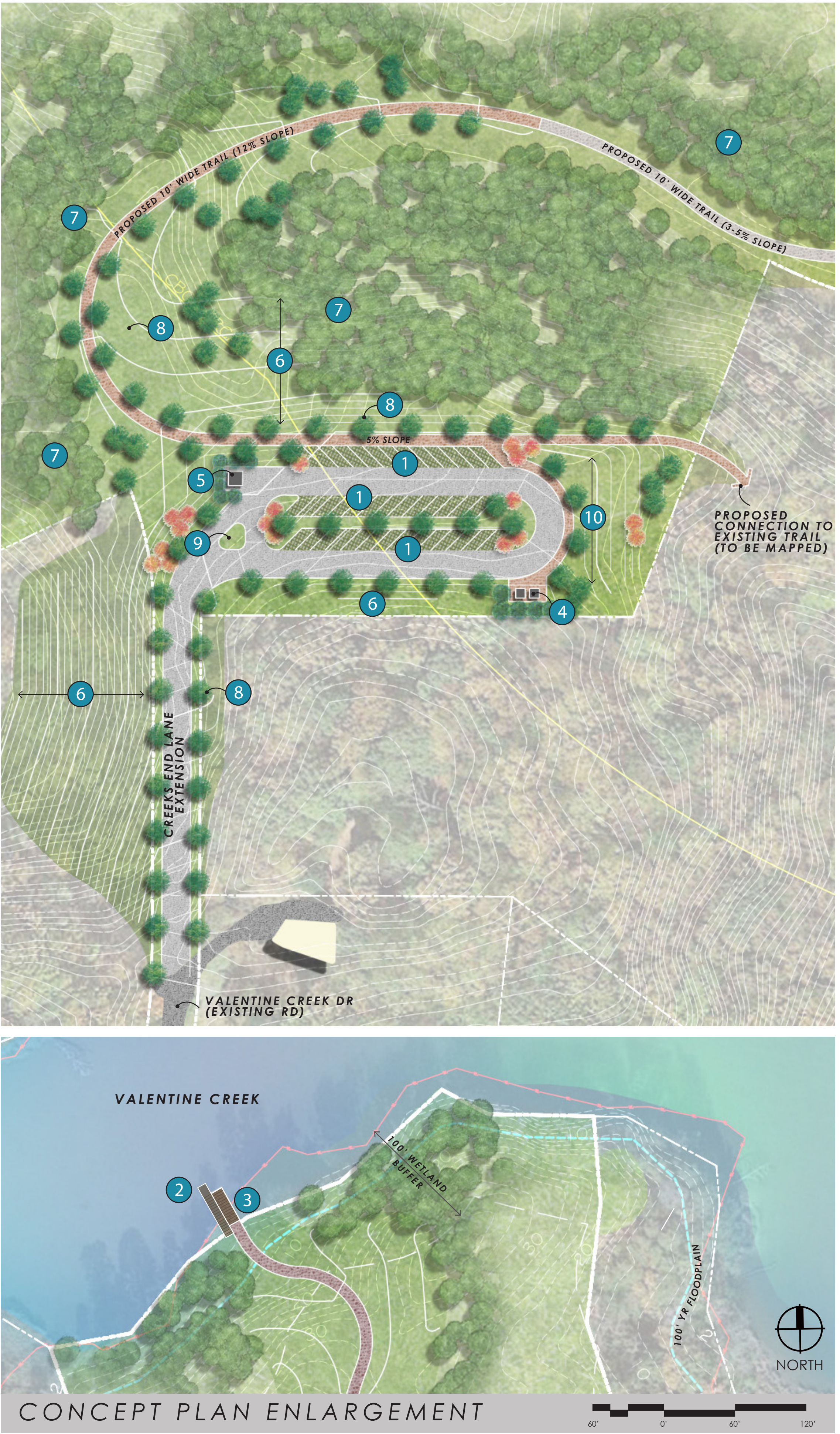
ANNE ARUNDEL COUNTY, MARYLAND

APRIL 27, 2022



KCI Project No. 171804667.14





VALENTINE CREEK

ANNE ARUNDEL COUNTY, MARYLAND

DECEMBER, 2022

KCI Project No. 171804667.14



APPENDIX C

CONCEPTUAL COST ESTIMATES



Conceptual Design Cost Estimate

Project:

VALENTINE CREEK
CONCEPT PLAN A

Project# 171804667

Date 4/12/2022

Designer: BC

ITEM NO.	CAT. CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL	% OF TOTAL
CLEARING & SEEDING							
1		CLEARING	SF	413,637	\$ 1.25	\$ 517,046.00	40.08%
2		2" TOPSOIL & SEEDING	CY	54,076	\$ 4.00	\$ 216,304.00	16.77%
ROAD WORK							
1		4" CONCRETE SIDEWALK	SF	10,250	\$ 6.50	\$ 66,625.00	5.16%
2		3" GRAVEL SURFACE COURSE	CY	430	\$ 70.00	\$ 30,093.00	2.33%
3		4" GRAVEL BASE COURSE	CY	573	\$ 70.00	\$ 40,124.00	3.11%
4		4" CRUSHED STONE (CR6)	CY	573	\$ 49.00	\$ 28,077.00	2.18%
5		WATERBORNE TRAFFIC PAINT- 4" WHITE	LF	1,886	\$ 0.25	\$ 471.50	0.04%
LANDSCAPE							
1		GREENSPIRE LITTLELEAF LINDEN 2.5" CAL. B&B	EA	90	\$ 300.00	\$ 27,000.00	2.09%
2		EASTERN REDBUD 2.5" CAL. B&B	EA	35	\$ 200.00	\$ 7,000.00	0.54%
MISCELLANEOUS							
1		DUMPSTER - STEEL	EA	3	\$ 4,500.00	\$ 13,500.00	1.05%
2		CONCRETE PAD - DUMBSTER LOCATION	SF	875	\$ 6.50	\$ 5,687.50	0.44%
3		PERMEABLE GRASSCRETE	SF	27260	\$ 5.00	\$ 136,300.00	10.56%
4		BOAT LAUNCH PIER	SF	421	\$ 4.50	\$ 1,894.50	0.95%
5		DREDGING	LS	1	\$ 200,000.00	\$ 200,000.00	15.50%
		TOTAL				\$ 1,290,122.50	



Conceptual Design Cost Estimate

Project:

VALENTINE CREEK
CONCEPT B

Project# 171804667

Date 4/12/2022

Designer: BC

ITEM NO.	CAT. CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL	% OF TOTAL
CLEARING & SEEDING							
1		CLEARING	SF	413,637	\$ 1.25	\$ 517,046.00	77.16%
2		2" TOPSOIL & SEEDING	CY	2,341	\$ 4.00	\$ 9,364.00	1.40%
ROAD WORK							
2		3" GRAVEL SURFACE COURSE	CY	305	\$ 70.00	\$ 21,350.00	3.19%
3		4" GRAVEL BASE COURSE	CY	406	\$ 70.00	\$ 28,420.00	4.24%
4		4" CRUSHED STONE (CR6)	CY	406	\$ 49.00	\$ 19,894.00	2.97%
5		WATERBORNE TRAFFIC PAINT- 4" WHITE	LF	993	\$ 0.25	\$ 248.25	0.04%
LANDSCAPE							
1		GREENSPIRE LITTLELEAF LINDEN 2.5" CAL. B&B	EA	74	\$ 300.00	\$ 22,200.00	3.31%
2		EASTERN REDBUD 2.5" CAL. B&B	EA	21	\$ 200.00	\$ 4,200.00	0.63%
MISCELLANEOUS							
1		DUMPSTER - STEEL	EA	3	\$ 4,500.00	\$ 13,500.00	2.01%
2		CONCRETE PAD - DUMBSTER LOCATION	SF	972.58	\$ 6.50	\$ 6,321.77	0.94%
3		PERMEABLE GRASSCRETE	SF	5507	\$ 5.00	\$ 27,535.00	4.11%
		TOTAL				\$ 670,079.02	



Conceptual Design Cost Estimate

Project:

VALENTINE CREEK
CONCEPT C

Project# 171804667

Date 4/12/2022

Designer: BC

ITEM NO.	CAT. CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL	% OF TOTAL
CLEARING & SEEDING							
1		CLEARING	SF	413,637	\$ 1.25	\$ 517,046.00	38.56%
2		2" TOPSOIL & SEEDING	CY	54,076	\$ 4.00	\$ 216,304.00	16.13%
ROAD WORK							
1		4" CONCRETE SIDEWALK	SF	10,250	\$ 6.50	\$ 66,625.00	4.97%
2		3" GRAVEL SURFACE COURSE	CY	430	\$ 70.00	\$ 30,093.00	2.24%
3		4" GRAVEL BASE COURSE	CY	573	\$ 70.00	\$ 40,124.00	2.99%
4		4" CRUSHED STONE (CR6)	CY	573	\$ 49.00	\$ 28,077.00	2.09%
5		WATERBORNE TRAFFIC PAINT- 4" WHITE	LF	1,886	\$ 0.25	\$ 471.50	0.04%
LANDSCAPE							
1		GREENSPIRE LITTLELEAF LINDEN 2.5" CAL. B&B	EA	90	\$ 300.00	\$ 27,000.00	2.01%
2		EASTERN REDBUD 2.5" CAL. B&B	EA	35	\$ 200.00	\$ 7,000.00	0.52%
MISCELLANEOUS							
1		DUMPSTER - STEEL	EA	3	\$ 4,500.00	\$ 13,500.00	1.01%
2		CONCRETE PAD - DUMBSTER LOCATION	SF	875	\$ 6.50	\$ 5,687.50	0.42%
3		PERMEABLE GRASSCRETE	SF	27260	\$ 5.00	\$ 136,300.00	10.17%
4		SOFT LAUNCH (CANOE & KAYAK)	SF	576	\$ 1.25	\$ 720.00	0.05%
5		BOAT LAUNCH PIER	SF	421	\$ 4.50	\$ 1,894.50	0.76%
6		DREDGING	LS	1	\$ 250,000.00	\$ 250,000.00	18.64%
		TOTAL				\$ 1,340,842.50	



Conceptual Design Cost Estimate

Project:

VALENTINE CREEK
CONCEPT D

Project# 171804667

Date 12/9/2022

Designer: BC

ITEM NO.	CAT. CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL	% OF TOTAL
CLEARING & SEEDING							
1		CLEARING	SF	63,000	\$ 1.25	\$ 78,750.00	29.02%
2		2" TOPSOIL & SEEDING	CY	389	\$ 4.00	\$ 1,556.00	0.57%
ROAD WORK							
1		4" CONCRETE SIDEWALK	SF	4,222	\$ 6.50	\$ 27,443.00	10.11%
2		3" GRAVEL SURFACE COURSE	CY	234	\$ 70.00	\$ 16,380.00	6.04%
3		4" GRAVEL BASE COURSE	CY	311	\$ 70.00	\$ 21,770.00	8.02%
4		4" CRUSHED STONE (CR6)	CY	311	\$ 49.00	\$ 15,239.00	5.62%
5		MULCH WALKING PATH	SF	23,745	\$ 0.90	\$ 21,370.50	7.88%
6		WATERBORNE TRAFFIC PAINT- 4" WHITE	LF	50	\$ 0.25	\$ 12.50	0.00%
LANDSCAPE							
1		GREENSPIRE LITTLELEAF LINDEN 2.5" CAL. B&B	EA	94	\$ 300.00	\$ 28,200.00	10.39%
2		EASTERN REDBUD 2.5" CAL. B&B	EA	18	\$ 200.00	\$ 3,600.00	1.33%
MISCELLANEOUS							
1		DUMPSTER - STEEL	EA	1	\$ 4,500.00	\$ 4,500.00	1.66%
2		CONCRETE PAD - DUMBSTER LOCATION	SF	818	\$ 6.50	\$ 5,317.00	1.96%
3		PERMEABLE GRASSCRETE	SF	9180	\$ 5.00	\$ 45,900.00	16.92%
		SOFT LAUNCH (CANOE & KAYAK)	SF	250	\$ 1.25	\$ 312.50	0.12%
4		FABRICATED FISHING PIER	EA	1	\$ 1,000.00	\$ 1,000.00	0.37%
		TOTAL				\$ 271,350.50	