

Environmental Support Document
Joint Permit Application
Fire Station #10 Logistics Center – Chesapeake, Virginia

This Environmental Support Document (ESD) provides key information supporting the Joint Permit Application (JPA) filed for wetland and water quality permits required for the construction of the new Fire Station #10 Logistics Center located at 4832 South Military Highway at the intersection with Military Highway (Rt. 58) and Ridgeway Ave. in the Sunray Community of the Deep Creek Borough, Chesapeake, VA.

1. PROJECT LOCATION AND DESCRIPTION

The project site is located in the Coastal Plain region of Virginia. The climate is subtropical according to the WETS Station in Wallaceton (Chesapeake, Virginia). The area averages 55.11 inches of rainfall per year. The hydrology from the site is overland flow directed to perimeter ditches that flow to the north through a stormwater culvert system under Interstate 664 and Military Highway (Rt. 58), eventually discharging into Goose Creek which is a tributary of the Western Branch of the Elizabeth River (HUC 02080208). A USGS quad map and color aerial exhibit are attached showing the project area (**Appendix A**).

The project site was previously utilized for water distribution to the residents of Bowers Hill; however, the site has not been in operation for the last five years and the existing ground tank and attendant features are scheduled for demolition. The southern portion of the project site was underutilized over the years and was allowed to revert to emergent wetlands. This area was historically prior-converted cropland according to the 1959 Norfolk County Soil Survey. A portion of the eastern property was recently acquired from Lewis & Gibbs Corp. to accommodate construction of the new Fire Station #10 and Logistics Center. This portion of the site contains some highly disturbed low value forested wetlands. The portion of the Lewis & Gibbs property recently acquired was a historic borrow pit according to the 1959 Norfolk County Soil Survey. Site photographs are attached for your reference (**Appendix B**).

Current land use south of the project site is primarily undeveloped agricultural land; however, some parcels are zoned light industrial for future logistics development. The land use to the west of the project site is undeveloped agricultural and light industrial/commercial. Furthermore, the land use to the east of the project site is undeveloped with some parcels developed single family residential. Finally, the land use to the north of the project site is primarily owned and operated by the Virginia Department of Transportation (VDOT) as Interstate 664 and locally operated Route 58 (Military Highway); however, there is some land north of the interstate system consisting of government/institutional (Jolliff Middle School) and low density residential development. South of the Sunray community is the northern fringes of the Great Dismal Swamp Wildlife Refuge.

The project site is located on the outskirts of the Sunray Agricultural Rural Historic District (Sunray Historic District). The Sunray Historic District is characterized by rural land tracts and a village center situated at the intersection of the main entrance Hertz Road and the abandoned Virginian Railroad tracks. The Sunray Historic District is comprised of flat lands divided by north-south and east-west oriented roadways. Lining the roadways are single-family dwellings dating to the early 20th century interspersed with mid-20th century dwellings. The rural landscape is situated south of the abandoned railroad tracks and has a grid pattern divided by handmade stormwater ditches. Tree stands, roadways and ditches divide the agrarian fields, which are rectangular in shape. Those south of the railroad line follow the original 1908

plat of the Southern Homestead Corporation and are oriented north-south. The primary crops grown in Sunray are flowering bulbs and soybeans. Early 20th century vernacular farmhouses are located throughout the Sunray Historic District and are characterized by architectural styles and trends of the early 20th century. Agricultural buildings are clustered around the farmhouses and are found in the agricultural fields reflecting the function of the area. Institutional and religious buildings are situated on the main road leading into the agricultural community at its intersection with the abandoned Virginian Railroad line.

The City of Chesapeake intends to design and construct a new one story, four bay Battalion Fire Station #10 approximately 16,000 square-feet within the project site. Provisions for future growth were considered within the original site and building design concepts. The new Fire Station #10 will include the following elements:

- 1-Story, 4-Bay station constructed of concrete/brick masonry and steel frame super-structure
- Type 2B Construction / Sprinkled / Unprotected (Non- Combustible)
- Sloped metal standing seam roof to provide a more “residential friendly” exterior
- Large overhead doors at the Apparatus Bay Area for housing Fire & EMS vehicles
- Bunk Rooms, Kitchen & Dining, Day Room, Offices and other support spaces included

The City also intends to design and construct a new one-story, pre-engineered metal building to accommodate the new Logistics Support Center. The new Logistics Center will be approximately 15,000 square-feet within the project site. The new Logistics Center will include the following elements:

- 1-Story, Pre-Engineered Metal Building System
- Type 2B Construction / Sprinkled / Unprotected (Non- Combustible)
- Sloped metal standing seam roof to provide a more “residential friendly” exterior
- Large overhead doors for delivery and warehousing Fire & EMS equipment
- Provisions for supporting the Fire Department’s Candidate Physical Ability Testing (CPAT) Program
- Delivery areas, warehouse space, general office spaces and other support spaces

The proposed site plan layout and architectural site plans have been attached for your reference (**Appendix J**).

2. PURPOSE AND NEED

The primary purpose and need for the new Fire Station #10 and logistics center is to improve the emergency response system and resource deployment capabilities in the western section of the City of Chesapeake. The western section of the City is designated as the 3rd Battalion and is made up of five fire districts (**Appendix C**). Each district contains a fire station designated to provide emergency services. The 3rd Battalion is responsible for approximately forty-nine square-miles of the western portion of the City. This area does not include approximately seventy-eight square-miles owned and operated by the US Fish and Wildlife Service for the Great Dismal Swamp Wildlife Refuge. Fire Station #10 is responsible for approximately 27% of the emergency services within the 3rd Battalion. The new Fire Station #10 and logistics center will centrally locate critical equipment and personnel to serve the entire western third of the City. Call volume within this portion of the City has steadily increased over the last five years:

- Year 2011: 7,127 emergency incidents
- Year 2012: 7,326 emergency incidents
- Year 2013: 7,511 emergency incidents

These statistics represents a 5.39% increase in call volume and this trend is expected to continue into the future. Population estimates in the 3rd Battalion have also increased approximately 2% since 2012. Long term projections forecasted out to 2034 show this area of the City will experience a 34.7% population increase. The increase in call volume associated with this increase in population is expected to be substantial. Other factors that are anticipated to increase call volume within this area of the City is an aging population, higher use rates at the Hampton Roads Executive Airport, higher density land use patterns and the introduction of high speed and commuter rail service with a hub in the Bowers Hill section of the City.

The existing Fire Station #10 was built in 1971 and provide emergency services for the Bowers Hill community. Fire Station #10 operates from a 4,500 square-foot facility at 629 Homestead Road. The existing Fire Station #10 can only accommodate one Engine Company and four on-duty firefighters. The existing Fire Station #10 is exceptionally small, outdated, and not in compliance with current National Fire Protection Agency (NFPA) 1581 standards. The current location of Fire Station #10 is optimal; however, the current buildable size of the parcel will not accommodate the new battalion sized fire station and the logistic center. The location of the existing Fire Station #10 is centrally located within the western section of the City and has excellent access to both Interstate 664 and Route 58. The central location of Fire Station #10 is critical to provide emergency services to a growing commercial base, as well as servicing a very diverse residential area in Bowers Hill.

The current Fire Station #10 does not meet a number of NFPA 1581 standards. It is not feasible to correct these issues within the confines of the existing building footprint and parcel of land. The new Fire Station #10 and logistics center will remedy these NFPA 1581 deficiencies. The need to provide a NFPA 1581 compliant fire station controlled many of the site layout decisions. The proposed Fire Station #10 and logistics center will provide a high level of functionality to the Fire Department with ideal circulation and parking configurations, simple way-finding for accessing the site for visitors and staff, while minimizing water quality impacts with a cost effective solution. The following design elements are just some of the NFPA 1581 concerns that are being addressed through the proposed fire station and logistics center construction:

- Dedicated public and staff parking is being constructed
- Cost effective drive aisle lengths and construction materials are being utilized
- Functional turning radius are being implemented for optimum circulation and safety
- Prevention measures are being incorporated to eliminate contamination of living and sleeping areas to exhaust emissions
- Dedicated well-ventilated areas are being provided for contaminated Personal Protective Equipment (PPE)
- A designated cleaning area is being provided for cleaning PPE, portable equipment and clothing which is physically separate from the disinfecting and laundry facilities

Currently, the 3rd Battalion's Engine Company, Medic Unit, Ladder Company, Field Medical Officer and the Battalion Chief are spread throughout the western part of the City (**Appendix D**). The secondary purpose and need for this project is to consolidate these critical emergency services into a logistics center to be integrated into the new Fire Station #10. The current logistics center is located at 1210 Scholastics Way. The Fire Department currently leases this commercial space at an approximate cost of \$8,000 a month. This essential facility handles all inventory, supplies, and material for the Fire Department. The logistics center functions as a receiving area, storage and distribution point for the Fire Department's materials and supplies; in addition, the logistics center serves as a staging point for critical emergency equipment for many regional assets including the Hampton Roads Incident Management Team. In addition, the logistics

center hosts training classes and conducts the Fire Department's physical fitness testing for both incumbent members and applicants for the City of Chesapeake and regional Fire Departments.

The existing Ladder Company that serves the western section of the City is currently located at Fire Station #12 (**Appendix D**). This is the most northwestern fire station within the City of Chesapeake and is not optimal for district responses; however, Fire Station #12 is the only station large enough to accommodate this specialized piece of equipment in the 3rd Battalion. The existing Fire Station #10 is not large enough to accommodate the equipment attached to the Ladder Company. An analysis of the current street network reveals that response times between 15 and 20 minutes should be expected for the Ladder Company. When reviewing actual call data, there were numerous calls with extended response times including three in early 2014 with response times of 37 minutes, 34 minutes, and 20 minutes. These substandard response times are a direct result of having the Ladder Company located on the fringes of the City, versus centrally located within its response areas. Relocating the Ladder Company from Fire Station #12 to the new Fire Station #10 will significantly reduce response times because Fire Station #10 is centrally located within the response zones.

The 3rd Battalion Chief and Field Medical Officer are currently located at Fire Station #9 (**Appendix D**). Fire Station #9 is the most eastern station for the 3rd Battalion. Fire Station #9 is the only station large enough to house these two critical units; however, deployment of these resources from Fire Station #9 is not optimal. The current Fire Station #10 is not large enough to house either the Ladder Company or these Command Level Officers. It is critical that the 3rd Battalion Chief and Field Medical Officer deploy with the Ladder Company during emergency responses. Travel times from Fire Station #9 to Fire Station #12 are 14 minutes. Locating these Command Level Officers together with the Ladder Company at the new centrally located Fire Station #10 will reduce response travel times by 50%. Centrally locating these critical units at the new Fire Station #10 will facilitate prompt response times to scenes ensuring a safe and effective operation, while improving firefighter safety and overall scene coordination and management.

Collocating the Logistics Center on the same property with the new Fire Station #10 allows for greater cost savings and operational efficiencies. Some of these savings are realized in the design of the facilities such as the shared stormwater management and parking facilities. This design approach allows for a smaller overall commitment of land resources to accommodate both buildings, as well as reducing the overall need for impervious surfaces and reducing water quality impacts when both buildings are built on the same property. Having both buildings together also increases operational efficiencies and addresses security concerns. Although the new Logistics Center will not be staffed 24 hours a day, the new Fire Station #10 will be operated 24 hours a day. In addition, the staff within the new Fire Station #10 will have access to the Logistics Center and can assist with the distribution of critical equipment, material and supplies after regular business hours. The current Logistics Center has been burglarized, resulting in the theft of expensive equipment, materials and supplies. In addition, several vehicles have been broken into and vandalized at the current logistics center. The chances of this occurring with both the new Fire Station #10 and Logistics Center constructed on the same parcel of land with shared parking will be significantly reduced.

When examining resource deployment for the whole City, the new Fire Station #10 and Logistics Center will be critical components for the effective distribution and coordination of personnel and equipment to handle any emergency incident. Both of these critical facilities will greatly improve the local and regional resource deployment and services in which the Fire Department provides to the citizens, businesses and guests of the City of Chesapeake.

3. EXISTING SITE DESCRIPTION

3.1. Site Description

The project site is located in the Coastal Plain region of Virginia. The climate is subtropical according to the WETS Station in Wallaceton (Chesapeake, Virginia). The area averages 55.11 inches of rainfall per year. A USGS quad map and color aerial exhibit are attached showing the project area (**Appendix A**).

The project site was previously utilized for water distribution to the residents of Bowers Hill; however, the site has not been in operation for the last five years and the existing ground tank and attendant features are scheduled for demolition. The southern portion of the project site was underutilized over the years and was allowed to revert to emergent wetlands. This area was historically prior-converted cropland according to the 1959 Norfolk County Soil Survey. A portion of the eastern property was recently acquired from Lewis & Gibbs Corp. to accommodate construction of the new Fire Station #10 and Logistics Center. This portion of the site contains some highly disturbed low value forested wetlands. The portion of the Lewis & Gibbs property recently acquired was a historic borrow pit according to the 1959 Norfolk County Soil Survey. Site photographs are attached for your reference (**Appendix B**).

Current land use south of the project site is primarily undeveloped agricultural land; however, some parcels are zoned light industrial for future logistics development. The land use to the west of the project site is undeveloped agricultural and light industrial/commercial. Furthermore, the land use to the east of the project site is undeveloped with some parcels developed single family residential. Finally, the land use to the north of the project site is primarily owned and operated by the Virginia Department of Transportation (VDOT) as Interstate 664 and locally operated Route 58 (Military Highway); however, there is some land north of the interstate system consisting of government/institutional (Jolliff Middle School) and low density residential development. South of the Sunray community is the northern fringes of the Great Dismal Swamp Wildlife Refuge.

3.2. Topography and Surface Drainage

According to the City of Chesapeake's 2013 topographic data, the elevations within the project site range from 12.31 feet to 15.97 feet (NAVD '88') and generally slopes toward the northeast. The 2004 Chesapeake NRCS soil survey depicts the soils within the developed portions of the site and emergent wetlands as Tomotley-Deloss complex, and the forested wetlands were underlain by Udorthents-Urban Land complex. The Tomotley-Deloss complex are poorly drained hydric soils that have a seasonal water tables within 12" of the ground surface and have been primarily utilized for agricultural purposes with artificial drainage (i.e., prior-converted cropland). Udorthents consist of areas of soil material that has been disturbed by excavation and other earthmoving activities. Urban land consists of areas covered by asphalt roadways or parking lots, concrete structures, buildings, and other impervious surfaces. Due to the variability of materials within these highly disturbed soils, their profiles are site specific. The hydrology from the site is overland flow directed to perimeter ditches that flow to the northeast through a stormwater culvert system under Interstate 664 and Military Highway (Rt. 58), eventually discharging into Goose Creek which is a tributary of the Western Branch of the Elizabeth River (HUC 02080208).

3.3. Wetlands

The City of Chesapeake received a Preliminary Jurisdictional Determination (JD) for the majority of the project site on June 11, 2013 for TMN 023000000931 and TMN 0230000002350 (NAO-2014-0429). The recently acquired portion of the project site to the east was delineated by Davis Environmental, and the Lewis-Gibbs Corp. received a JD on March 13, 2014 for TMN 0230000001000, TMN 0230000001070, TMN 0230000001080, and TMN 0230000001090 (NAO-2006-1217). The Hydrogeomorphic classification for the wetlands within the project site are mineral soil flats. The delineations identified 0.63 acres of seasonally flooded palustrine non-tidal forested wetlands (PFO1C) and 1.065 acres of seasonally saturated palustrine non-tidal emergent wetlands (PEM1B), in addition to upland developed areas within the project site. There are no perennial, intermittent or ephemeral stream systems located within the project site; however, the perimeter stormwater ditches were confirmed as “jurisdictional ditches” or PUB. Copies of the JD letters are attached for your reference (**Appendix E**).

3.4. Chesapeake Bay Preservation Act (CBPA)

The project is located in Tidewater, Virginia. The project impacts are within wetlands and waters that drain to Goose Creek, which is a tributary to the Western Branch of the Elizabeth River. No streams or perennial water bodies are located within the project area. The delineated wetlands do not have a perennial connection to Goose Creek; therefore, the Chesapeake Bay Preservation Act (CBPA) Resource Protection Area (RPA) and Resource Management Area (RMA) buffers would not be applicable with this project. According to the City of Chesapeake’s CBPA General Map, the jurisdiction of the CBPA terminates north of Interstate 664 and Route 58. Construction and other activities related to the implementation of the project will comply with all local stormwater management, sedimentation and erosion control and other water quality protection regulations.

3.5. Floodplain

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Chesapeake, Virginia, the project area is not located within the 100-year floodplain (**Appendix F**).

3.6. Threatened & Endangered Species

The Virginia Department of Game and Inland Fisheries’ (DGIF) Virginia Fish and Wildlife Information Service (VaFWIS) database was reviewed for the presence of known or suspected federally and state threatened or endangered (T&E) species identified within the proposed property limits or two-mile radius around the subject property. The VaFWIS Initial Project Assessment Report, dated May 6, 2015 revealed documentation of the state endangered canebrake rattlesnake (*Crotalus horridus*), and the state threatened Dismal Swamp Southeastern Shrew (*Sorex longirostris fisheri*) within a 2-mile radius of the project site.

According to DGIF’s October 1999 species profile for the canebrake rattlesnake, canebrakes usually occupy mature to over mature hardwood and mixed hardwood-pine forests, cane fields, and the ridges and glades of swampy areas. The preferred habitat is mature hardwood forests containing numerous logs and layers of leaves and humus, and the species overwinter in the base of hollow trees or in stumps. Unique habitat associations include downed logs and bottomland hardwoods,

and they can also occupy natural and anthropogenic open habitats adjacent to forests (e.g. clearcuts, agricultural fields, utility easements, etc.). This species requires at least 170 acres or more of contiguous forested land for its habitat migration, which includes mating and foraging for food. Four (4) species collections and/or observations were documented within two miles of the Fire Station #10 Logistics Center project site.

All of the historic collections, including the most recent 2008 post mortem specimen (#320957) were collected and/or observed off of Jolliff Road approximately 1.25 miles northwest of the project site. This area of Jolliff Road abuts a contiguous forest in excess of 256 acres; however, the contiguous forested area south of Jolliff Road is bisected from the City's project site by Interstate 664 and Route 58. The nearest contiguous forested area to the City's project site is over 2,000 linear feet to the west across an expanse of active agricultural fields. The forested wetlands within the project site are less than a ½ acre and are not contiguous to a larger forested area that would sustain a population of canebrake rattlesnake. In addition, according to the NRCS 1959 Norfolk County Soil Survey, the forested areas within the project site consisted of a borrow pit, and the surrounding area was highly manipulated with various land disturbing activities over the last 45 years. Finally, significant low to medium density commercial, light industrial and residential development as taken place within the Bowers Hill area since these observations were made between 1986 and 2008.

Taking all of these facts into account, there does not appear to be sufficient undisturbed and contiguous habitat within the Fire Station #10 Logistics Center project area to support the canebrake rattlesnake. Furthermore, the years of noise and land disturbances that have surrounded the project area due to traffic and utilities have likely deterred any establishment of the species. Therefore, the City does not anticipate any adverse impacts or *taking* of this species during its construction activities. However, due to the unlikely potential during project construction for the canebrake rattlesnake to be encountered, the City will distribute copies of the Virginia Wildlife Species Profile sheet for the canebrake rattlesnake to all site workers prior to any land disturbance. If a canebrake rattlesnake is observed at any time during construction, the City will contact DGIF's John Kleopfer so that the animal may be captured and relocated to a suitable site.

The VaFWIS documented the state threatened Dismal Swamp Southeastern Shrew (*Sorex longirostris fisheri*) within two miles of the Fire Station #10 Logistics Center project area. The Dismal Swamp Southeastern Shrew is associated with a heavy ground cover, such as Japanese honeysuckle, and individual species can be found in all successional stages from grassy openings to closed forests, generally in moist to wet areas in or bordering swamps, marshes, or rivers. The species persists at relatively low densities within mature forests but quickly invades and increases in numbers in early- to mid-successional habitats created by clearing, fires, wind-thrown trees, and other disturbances. The highest densities of the species are usually found in early successional stage habitats.

The most recent collection was over 20 years ago and was located within the same habitat that was documented for the 2008 canebrake collection. Again, this habitat is located off of Jolliff Road approximately 1.25 miles northwest of the project site. This area of Jolliff Road abuts a contiguous forest in excess of 256 acres; however, the contiguous forested area south of Jolliff Road is bisected from the City's project site by Interstate 664 and Route 58. The nearest contiguous forested area to the City's project site is over 2,000 linear feet to the west across an expanse of active agricultural fields. The forested wetlands within the project site are less than a ½ acre and are not contiguous to a larger forested area that would provide suitable habitat for the Dismal Swamp Southeastern Shrew. Furthermore, the species native habitat, the Great Dismal Swamp is located over two and

a half miles south of the project site and is separated by extensive agricultural and residential land uses. In addition, none of the habitat documented within or adjacent to the project site borders natural swamps, marshes or rivers. Finally, the forested areas documented within the project site are mid- to late- successional habitats with light ground cover not dominated by species such as Japanese honeysuckle.

Taking all of these facts into account, there does not appear to be sufficient habitat within the Fire Station #10 Logistics Center project area to support the Dismal Swamp Southeastern Shrew. Furthermore, the years of noise and land disturbances that have surrounded the project area due to traffic and utilities have likely deterred any establishment of the species. These surrounding perturbations have also severed any type of habitat migration corridor that may have existed between the forested wetlands onsite and the surrounding contiguous wetlands, including the Great Dismal Swamp. Therefore, the City does not believe that critical habitat for this species exists within the project area, nor does the City anticipate any adverse impacts or *taking* of this species during its construction activities.

The City also searched the Virginia Department of Conservation and Recreation (DCR) Division of Natural Heritage's (DNH) Biotics Data System for occurrences of natural heritage resources in the vicinity of the project area, and the May 6, 2015 report concluded that natural heritage resources were documented within two miles of the project area and/or potential habitat for natural heritage resources intersected the project area. The natural heritage conservation site that was identified within two miles of the project area was the Great Dismal Swamp. In addition, several vertebrate, invertebrate and vascular species were identified as natural heritage resources within two miles of the project area; however, all the species were associated with the Great Dismal Swamp (e.g., Dismal Swamp Southeastern Shrew, Elliott's Aster, and canebrake rattlesnake.) The City's project will not impact the Great Dismal Swamp; therefore, we do not anticipate any adverse effects to these natural heritage resources from the project activities.

Finally, the U.S. Fish and Wildlife Service's iPAC system was searched and the Official Species List reported the federally threatened Northern Long Eared Bat (*Myotis septentrionalis*) within the vicinity of the project area. No critical habitats were identified within the project area. The Center for Conservation Biology's Virginia Eagles Nest Locator confirmed no Eagle nest sites within 660 linear feet of the project area.

As of April 2, 2015, the US Fish and Wildlife Service (FWS) has published its 4(d) Rule within the Federal Register to officially list the Northern Long Eared Bat (NLEB) as a Federally threatened species on May 4, 2015. The new 4(d) Rule contains incidental take exemptions and conservation measures for construction projects in Virginia. The City's Fire Station #10 Logistics Center project meets the terms and conditions of the incidental take exemption contained within the new 4(d) Rule. Specifically, the City's project meets the terms and conditions of the new 4(d) Rule exemption for *minimal tree removal*. The FWS defines minimal tree removal as those activities involving cutting or removal of individual or limited numbers of trees that will not significantly change the overall nature and function of the local forested habitat. With respect to the term "minimal," the FWS limits the effect to an impact of one acre of contiguous habitat or one acre in total within a larger tract of land. The City's project will result in the removal of less than one-half acre of low value non-contiguous forest habitat. In addition, the FWS has confirmed that there are no known NLEB hibernacula located within the East Coast of Virginia and there are no documented NLEB maternity roost trees within a ¼ mile of the project location. The incidental take that may result from this project is exempted by the 4(d) rule and no further action is necessary to comply with Endangered Species Act prohibitions to protect the NLEB. No potential or critical

habitat is present within the project area; therefore, an Online Project Review Certification Letter was produced on May 6, 2015 and concluded that the project as proposed would “not likely to adverse effect” Federal T&E species.

Based on the above referenced conditions, the City does not anticipate any adverse effects to state or Federal threatened or endangered plant or animal species from the proposed construction of the new Fire Station #10 and Logistics Center. Copies of the VaFWIS IPA report, FWS iPAC report, and DCR-DNH database review are attached for your reference (**Appendix G**).

3.7. Cultural Resources

The Virginia Department of Historic Resources’ (DHR) Virginia Cultural Resource Information System (V-CRIS) was reviewed on May 6, 2015 for information regarding archeological and architectural historic resources within the Area of Potential Affect (APE). No historic archeological or historic architectural resources were identified with the project APE. A 500-foot buffer analysis within V-CRIS system from the project APE revealed one historic architectural resource and one historic district (**Appendix H**).

The project site is located on the outskirts of the Sunray Agricultural Rural Historic District (DHR ID 131-5325) and approximately 1,500 linear feet north of 604 Homestead Road (DHR ID 131-0389). The Sunray Historic District is characterized by rural land tracts and a village center situated at the intersection of the main entrance Hertz Road and the abandoned Virginian Railroad tracks. The Sunray Historic District is comprised of flat lands divided by north-south and east-west oriented roadways. Lining the roadways are single-family dwellings dating to the early 20th century interspersed with mid-20th century dwellings. The rural landscape is situated south of the abandoned railroad tracks and has a grid pattern divided by handmade stormwater ditches. Tree stands, roadways and ditches divide the agrarian fields, which are rectangular in shape. Those south of the railroad line follow the original 1908 plat of the Southern Homestead Corporation and are oriented north-south. The primary crops grown in Sunray are flowering bulbs and soybeans. Early 20th century vernacular farmhouses are located throughout the Sunray Historic District and are characterized by architectural styles and trends of the early 20th century. Agricultural buildings are clustered around the farmhouses and are found in the agricultural fields reflecting the function of the area. Institutional and religious buildings are situated on the main road leading into the agricultural community at its intersection with the abandoned Virginian Railroad line.

The historic architectural resource located at 604 Homestead Road (DHR ID 131-0389) is known as The Pavlovetz House and was built in 1923 by local architect Michael Pavlovetz. Pavlovetz had built a Colonial Revival-style house on the site in 1918. When that house burned in 1922, the current house was built in its place. The Pavlovetz House incorporates elements of the Colonial Revival and is a unique house in Chesapeake. Most significant are the parquet floors of the first floor, each executed in a different design by Pavlovetz. The Pavlovetz House retains a high degree of architectural integrity. This house was recommended individually as potentially eligible to the National Register under Criterion C for design and craftsmanship. The Pavlovetz House may also be a contributing resource under Criterion A&B in the Sunray Historic District.

The project site was developed with a City potable ground tank to serve the Sunray District in the mid-70s. The ground tank is approximately thirty-two feet in height and 104 feet in diameter. The ground tank was constructed of welded steel with column and rafter framing support system. In addition, several attendant features have been located on the project site since the mid-70s

consisting of the following structures. Ground photographs of the current site conditions showing the attendant structures and ground tank are attached for your reference (**Appendix B**):

1. One 380 square-foot single story (15' height) sloped framed roof shed
2. One 850 square-foot single story (15' height) sloped framed roof brick building
3. One 1,200 square-foot single story (15' height) sloped framed roof brick building
4. One 210 square-foot single story (15' height) sloped framed structure
5. One 290 square-foot single story (15' height) sloped framed masonry block structure

The proposed improvements within the APE will not physically destruct or damage any historic archeological or architectural resources. In addition, considering the historic use of the project site as a water distribution facility and attendant features, the proposed structures on the property will not alter viewshed impacts from what has existed on the site since the mid-70s. The construction of the new Fire Station #10 and Logistics Center will have no adverse effect on the Sunray Historic District or The Pavlovetz House because this undertaking will not affect the qualities that make these resources eligible to the NRHP in a way that diminishes their integrity of location, design, setting, materials, workmanship, feeling or association.

4. ALTERNATIVES ANALYSIS

4.1. Offsite Alternative Analysis

The City of Chesapeake performed a Geographic Information System (GIS) analysis of suitable offsite alternatives for the construction of the new Fire Station #10 and Logistics Center. The GIS analysis identified seven sites within the 3rd Battalion's Fire District #10 that were at least four and a half acres in size and owned and/or operated by the City of Chesapeake. Based on a number of factors, the City's preferred offsite alternative for the new Fire Station #10 and Logistics Center is located at 4832 South Military Highway:

- 4832 South Military Highway: This site is 4.584 acres in size and is located at the intersection of Homestead Road and Route 58 (Military Highway). This site is less than two tenths of a mile from the current Fire Station #10 and is strategically located within Fire District #10 and the 3rd Battalion. In addition, the site has direct access to Interstate 664 and Route 58. The City made a substantial financial commitment to this site last year when it acquired a portion of the Lewis-Gibbs property to the east, and the site can easily accommodate the consolidation of the new Fire Station #10, Logistics Center, Ladder Company, Battalion Chief, and Field Medical Officer. The site contains 2.889 acres of uplands, 0.630 acres of forested nontidal wetlands and 1.065 acres of emergent nontidal wetlands. The site is located outside of the FEMA 100-year floodplain and is located outside of the Chesapeake Bay Preservation Act (CBPA). This site is the preferred offsite alternative for the new Fire Station #10 and Logistics Center.
- 629 Homestead Road: This is the existing Fire Station #10 site that fronts Homestead Road. The existing Fire Station #10 site is combined with a Community Center on the same City parcel. The parcel entire parcel is only 1.45 acres in size which includes the Community Center. The new Fire Station #10 and Logistics Center will require at least 4.5 acres of land to accommodate the new facilities, roadway entrances, stormwater management, and parking. Furthermore, the depth of the existing Fire Station #10 parcel is approximately 200 feet which would be insufficient for the required front and rear entry to the new expanded vehicle bay. In addition, the existing station could not be rebuilt and

turned perpendicular to Homestead Road because the required building setbacks would be violated. There is no condition under which both the new Fire Station #10 and Logistics Center could both be constructed within the existing site. The new Fire Station #10 and Logistics Center are ideally suited to be co-located because of the savings in manpower costs and cooperative use of equipment and training facilities. The Department of Parks and Recreation has also indicated the existing Community Center is used extensively and its relocation would result in an adverse impact to the Sunray community. Finally, the new preferred offsite location at 4832 South Military Highway will allow for better alarm call response times when compared to the existing location of Fire Station #10 at 629 Homestead Road.

- 4229 Airline Blvd.: This site is approximately 4.86 acres in size and fronts Airline Blvd.; however, the site is located almost one mile from Interstate 664 and one and a half miles from the existing Fire Station #10. In addition, the site has already been reserved for a future community library. The site is not located within the FEMA 100-year floodplain. Furthermore, a perennial stream extends along the southern boundary of the site which will encumber a portion of the property with CBPA Resource Protection Area (RPA) restrictions. This site is not feasible or practicable for the new Fire Station #10 and Logistics Center.
- 4016 Airline Blvd.: This site is approximately 4.98 acres in size and fronts Airline Blvd.; however, the site is located almost one and a half miles from Interstate 664 and two miles from the existing Fire Station #10. In addition, the site is currently owned and operated by the City of Chesapeake's Parks and Recreation Department as Southwestern Park. The site is not located within the FEMA 100-year floodplain, nor is the site within the CBPA. This site is not feasible or practicable for the new Fire Station #10 and Logistics Center.
- 4036 Airline Blvd.: This site is approximately 18.34 acres in size and is set back from Airline Blvd.; however, the site is located almost one mile from Interstate 664 and one and a half miles from the existing Fire Station #10. In addition, the site is currently owned and operated by the City of Chesapeake's Parks and Recreation Department as Lake Ahoy Park. A portion of the site is located within the FEMA 100-year floodplain. Furthermore, wetlands and open water features will encumber a portion of the property with CBPA Resource Protection Area (RPA) restrictions. This site is not feasible or practicable for the new Fire Station #10 and Logistics Center.
- 5416 West Military Highway: This site is approximately 44.53 acres in size and fronts West Military Highway; however, the site is located almost two miles from Interstate 664 and three miles from the existing Fire Station #10. In addition, the site is currently owned and operated by the City of Chesapeake's Public Utilities Department as a water treatment plant. The site is not located within the FEMA 100-year floodplain, nor is the site within the CBPA. This site is not feasible or practicable for the new Fire Station #10 and Logistics Center.
- 3900 South Military Highway: This site is approximately 5.48 acres in size and fronts South Military Highway. The site is located a half mile from Interstate 64. The site is located at the far eastern edge of Fire District #10 and is located over two miles from the existing Fire Station #10. In addition, the site is currently owned and operated by the City of Chesapeake's Public Utilities and Public Works Departments as operations and

maintenance facilities for Bowers Hill. The site is not located within the FEMA 100-year floodplain, nor is the site within the CBPA. This site is not feasible or practicable for the new Fire Station #10 and Logistics Center.

- 3912 South Military Highway: This site is approximately 169 acres in size and is set back from South Military Highway. The site is located a half mile from Interstate 64. The site is located at the far eastern edge of Fire District #10 and is located over two miles from the existing Fire Station #10. In addition, the site is currently owned and operated by the City of Chesapeake’s Public Utilities Department as the In-town Lakes drinking water reservoirs. The site is not located within the FEMA 100-year floodplain; however, a portion of the site is encumbered by CBPA RPA buffer restrictions. This site is not feasible or practicable for the new Fire Station #10 and Logistics Center.

4.2. Onsite Alternative Analysis

4.2.1. Design Constraints

A number of site design constraints affected the development of the Fire Station #10 and Logistics Center project. These site design constraints limited the options for avoidance and minimization of wetland resources. Various site design constraints are illustrated within the attached “Initial” and “Final” proposed site plan layouts (**Appendix J**). The following bullets describes the constraints considered during design:

- Cost, maintenance and safety constraints reduced and prioritized ingress and egress locations within the project site.
- Cost and maintenance constraints consolidated the number and configuration of stormwater management features within the project site.
- Cost overrun, traffic control and emergency response constraints reduced the number, lengths and configuration of drive aisles and parking spaces within the project site.
- City was required to accommodate right of way for future access road through project site to residentially zoned land use to the southwest.
- Critical need was identified by Fire Dept. to accommodate for future fifth bay expansion.
- Important to maintain zoning setbacks within the project site.

4.2.2. Onsite Alternatives

Considering the aforementioned site design constraints and wetland impacts, two site plan layouts were developed and analyzed to determine optimal functionality for the facilities, while avoiding and minimizing wetland impacts to the maximum extent practical and feasible (**Appendix J**):

Table 1. Summary of wetlands impacts for each alternative

Site Plan Layout	Forested Wetlands Impacts	Emergent Wetlands Impacts	Temporary Impacts	Total Wetlands Impacts
Initial	0.585 acres	1.035 acres	0.00 acres	1.62 acres
Final	0.466 acres	0.987 acres	0.00 acres	1.45 acres

The “Final” proposed site plan layout is the preferred alternative since it comprehensively addresses all the site design constraints, meets the design standards for the project and avoids and minimizes wetland impacts to the maximum extent practicable and feasible.

5. AVOIDANCE AND MINIMIZATION

Approximately 1.695 acres of wetlands were identified within the project site from the confirmed wetland delineation. All practicable and feasible efforts were made during the design phases to minimize and avoid primary (fill & excavation) impacts to wetlands. The City does not anticipate any secondary (bifurcation or drainage) or temporary impacts to wetlands. For example, stormwater management was reduced to one larger pond and strategically located within the northwest quadrant of the project site to avoid secondary drainage effects to forested wetlands located within the northeast section of the properties. Through the City’s offsite and onsite alternative analysis and implementation of numerous design modifications approximately 0.17 acres of wetlands were avoided within the project site. Through direct avoidance measures, the City has reduced its total wetland impacts within the project site by ten percent. For example, as a direct result of innovative site design measures, the parking areas were consolidated and the drive isles were reduced and reconfigured within the project site, therefore avoiding approximately 0.119 acres of forested wetlands. Complete avoidance of wetland resources is not practicable, nor is it feasible given the many design constraints and configuration of the project site.

6. PROJECT IMPACTS.

6.1. Impacts. The proposed project will result in unavoidable permanent impacts to 0.466 acres of forested wetlands and 0.987 acres of emergent wetlands. No temporarily or secondary wetland impacts are anticipated with this project. The permanent wetland impacts will result from select fill material associated with building, roadway and parking lot construction.

TABLE 2. WETLANDS/WATERS IMPACT SUMMARY							
Impact Site	Impact Description	Wetland/water description	Area Sq Ft	Area Ac	Cowardin Classification	Stream length ft	Stream width ft
Impact Sites 1 & 2	Building, roadway, and parking lot construction	F, NT, PE, V	20,299	0.466	PFO1B	NA	NA
		F, NT, PE, V	42,994	0.987	PEM1B	NA	NA
Total Temporary Impacts			NA	NA			
Total Permanent Impacts			63,293	1.453			
* use all that apply: F=fill, EX=excavation, T=tidal, NT=non-tidal, TE=temporary, PE=permanent, PR=perennial, IN=intermittent, SB=subaqueous bottom, IS=hydrologically isolated, V=vegetated, NV=non-vegetated, MC=Mechanized Clearing of PFO							

7. FUNCTIONAL VALUES ASSESSMENT

The objective of this functions and values assessment is to document existing conditions to determine the impact of fill material into 1.45 acres of wetlands for the proposed Fire Station #10 Logistics Center. The U.S. Army Corps of Engineers *Hydrogeomorphic Classification* was used as a general basis to assess the functions and values of the impacted wetlands. This method will only evaluate functions that are normally found in the wetland types existing within the project site.

The project site is located in the Coastal Plain region of Virginia. The climate is subtropical according to the WETS Station in Wallaceton (Chesapeake, Virginia). The area averages 55.11 inches of rainfall per year. The hydrology from the site is overland flow directed to perimeter ditches that flow to the north through a stormwater culvert system under Interstate 664 and Military Highway (Rt. 58), eventually discharging into Goose Creek which is a tributary of the Western Branch of the Elizabeth River (HUC 02080208).

The City of Chesapeake intends to design and construct a new one story, four bay Battalion Fire Station #10 approximately 16,000 square-feet within the project site. Provisions for future growth were considered within the original site and building design concepts. The new Fire Station #10 will include the following elements:

- 1-Story, 4-Bay station constructed of concrete/brick masonry and steel frame super-structure
- Type 2B Construction / Sprinkled / Unprotected (Non- Combustible)
- Sloped metal standing seam roof to provide a more “residential friendly” exterior
- Large overhead doors at the Apparatus Bay Area for housing Fire & EMS vehicles
- Bunk Rooms, Kitchen & Dining, Day Room, Offices and other support spaces included

The City also intends to design and construct a new one-story, pre-engineered metal building to accommodate the new Logistics Support Center. The new Logistics Center will be approximately 15,000 square-feet within the project site. The new Logistics Center will include the following elements:

- 1-Story, Pre-Engineered Metal Building System
- Type 2B Construction / Sprinkled / Unprotected (Non- Combustible)
- Sloped metal standing seam roof to provide a more “residential friendly” exterior
- Large overhead doors for delivery and warehousing Fire & EMS equipment
- Provisions for supporting the Fire Department’s Candidate Physical Ability Testing (CPAT) Program
- Delivery areas, warehouse space, general office spaces and other support spaces

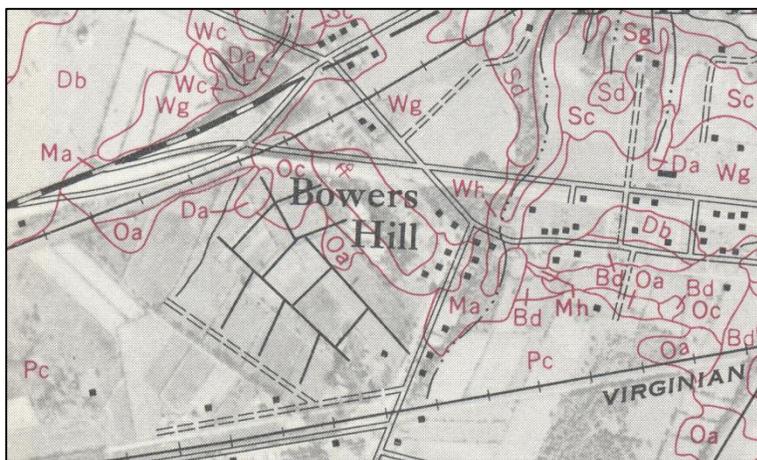
The proposed site plan layout and architectural site plans have been attached for your reference (**Appendix J**).

Current land use south of the project site is primarily undeveloped agricultural land; however, some parcels are zoned light industrial for future logistics development. The land use to the west of the project site is undeveloped agricultural and light industrial/commercial. Furthermore, the land use to the east of the project site is undeveloped with some parcels developed single family residential. Finally, the land use to the north of the project site is primarily owned and operated by the Virginia Department of Transportation (VDOT) as Interstate 664 and locally operated Route 58 (Military Highway); however, there is some land north of the interstate system consisting of government/institutional (Jolliff Middle School) and low density residential development. South of the Sunray community is the northern fringes of the Great Dismal Swamp Wildlife Refuge.

The project site is located at the northern fringes of the Sunray Agricultural Historic District (Sunray Historic District). The Sunray Historic District is characterized by rural land tracts and a village center situated at the intersection of the main entrance Hertz Road and the abandoned Virginian Railroad tracks. The Sunray Historic District is comprised of flat lands divided by north-south and east-west oriented roadways. Lining the roadways are single-family dwellings dating to the early 20th century interspersed with mid-20th century dwellings. The rural landscape is situated south of the abandoned railroad tracks and has a grid pattern divided by handmade stormwater ditches. Tree stands, roadways and ditches divide the agrarian fields, which are rectangular in shape. Those south of the railroad line follow the original 1908 plat of the Southern Homestead Corporation and are oriented north-south. The primary crops grown in Sunray are flowering bulbs and soybeans. Early 20th century vernacular farmhouses are located throughout the Sunray Historic District and are characterized by architectural styles and trends of the early 20th century. Agricultural buildings are clustered around the farmhouses and are found in the agricultural fields reflecting the function of the area. Institutional and religious buildings are situated on the main road leading into the agricultural community at its intersection with the abandoned Virginian Railroad line.

The Hydrogeomorphic classification for the wetlands within the project site are mineral soil flats. The U.S. Fish and Wildlife Service’s (FWS) National Wetlands Inventory (NWI) does not map the wetlands delineated within the project site; however, the delineated wetlands were confirmed by the US Army Corps of Engineers (Corps) with two classifications; seasonally saturated emergent non-tidal wetlands (PEM1B) and seasonally flooded forested non-tidal wetlands (PFO1C). There are no perennial, intermittent or ephemeral stream systems located within the project site; however, the perimeter stormwater ditches were confirmed as “jurisdictional ditches” or PUB.

According to the NRCS 1959 Norfolk County Soil Survey, the project site consisted of two historic land uses that influenced the development of the current wetland types. The forested wetlands were depicted as a borrow pit on the 1959 soil survey, and the surrounding area was highly manipulated with various land disturbing activities over the last 45 years. The emergent wetland areas were classified as Portsmouth loam within the 1959 soil survey. It should be noted that during the March 2014 jurisdictional determination for the emergent wetlands, Chapter 5 of the Corps’ Atlantic & Coastal Plain Regional Supplement had to be deployed to determine their jurisdictional status because the emergent areas lacked positive indicators for hydrophytic vegetation. The emergent areas were dominated by upland areas that contained hydric soils and primary wetland hydrology indicators (saturated soils). The wetland confirmation of these areas provides evidence of their marginal aquatic functions and values.



The 2004 Chesapeake NRCS soil survey depicts the soils within the emergent wetlands as Tomotley-Deloss complex, and the forested wetlands were underlain by

Udorthents-Urban Land complex. The Tomotley-Deloss complex are poorly drained hydric soils that have a seasonal water tables within 12” of the ground surface and have been primarily utilized for agricultural purposes with artificial drainage (i.e., prior-converted cropland). Udorthents consist of areas of soil material that has been disturbed by excavation and other earthmoving activities. Urban land consists of areas covered by asphalt roadways or parking lots, concrete structures, buildings, and other impervious

surfaces. Due to the variability of materials within these highly disturbed soils, their profiles are site specific. Onsite observations documented hydric soil indicators (reduced matrix) with loamy textures.

The wetlands were assessed for their ability to maintain characteristic water level regimes, plant communities, animal communities, biogeochemical processes, and sediment trapping. Since there was no reference wetland to compare to the project wetlands, the functional capacity index was not used. Functions in the project wetlands were compared to the typical functions of these wetland types. Instead of using the functional capacity index rating from 0.0 to 1.0, the functional capacities have been assessed in a more general sense, by using the ratings of high, medium, and low. Considering the already degraded nature of the project wetlands, these general ratings give enough information to assess the values of the current functions of the wetlands on site.

Function 1: Maintain Characteristic Water Level Regime

Surface water storage within the project wetlands does not appear to provide a value to the community and businesses where the wetlands are located, nor do these wetlands appear to provide critical surface water storage to communities and businesses located downstream in the watershed. The project wetlands may provide minimal pre-treatment within the watershed prior to stormwater entering Goose Creek. Most wetland ecosystems help attenuate water during storm events and reduce flood frequency and duration within surrounding communities. Stormwater attenuation and detention is valuable from a human health & safety economic perspective, such as cost of flood damage and insurance.

The wetlands located within the project area store minimal surface water during normal rainfall periods and storm events; however, no stormwater drainage is directed towards the wetland areas. Stormwater from the upstream communities is directed around the project wetlands through roadside ditch networks. The wetlands attenuate minimal stormwater before it discharges through culverts under Interstate 664 and Route 58. Stormwater ditches located along Military Highway (Rt. 58) direct stormwater around the wetlands, and the numerous agricultural ditches surrounding the project wetlands capture most of the natural overland flow of surface water. The surrounding agricultural and stormwater ditches vary in depth and may have changed the characteristic water level regime of the wetlands over the last 50 years. In addition, the surrounding interstate expansions and industrial/commercial land use may have affected the recharge to the groundwater table aquifer within these wetlands. The project wetlands were rated low for their ability to maintain characteristic water level regime due to the impervious surfaces and agricultural areas with artificial drainage modifications surrounding the wetlands, in addition to the highly disturbed nature of the wetlands from historic land use (i.e., borrow pit).

Function 2: Sediment Trapping

Characteristic mineral soil flat wetlands allow stormwater to dissipate over wetlands as it flows downgradient. Energy dissipation occurs as stormwater diffuses over wetlands. As the stormwater slows down, sediment settles out before it can travel further down the watershed and affect normal ecological functions. Stability of sediment load in a stream or wetland system is important for the ecosystems to maintain its functional characteristics. Sediment downstream can affect many natural processes because nutrients are transported together with the sediment load. Excess sediment can settle in a stream and cover important habitat for fish, amphibians, and macro-invertebrates.

No stormwater runoff from developed or disturbed areas is directed toward the project wetlands. It is unlikely that sediment laden stormwater would enter the project wetlands; therefore, the project wetlands were ranked low for their ability to trap sediment.

Function 3: Maintain Characteristic Plant Community

The vegetation composition varies greatly within the two project wetland areas. The forested wetland areas contain typical facultative vegetation including loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), American elm (*Ulmus Americana*), black gum (*Nyssa sylvatica*), Eastern red cedar (*Juniperus virginiana*), soft rush (*Juncus effuses*), browntop (*Microstegium Nees*), Japanese honeysuckle (*Lonicera japonica*), trumpet creeper (*Campsis radicans*), and common reed (*Phragmites australis*). The emergent wetlands (PC land) are dominated by mostly upland plants such as Japanese Bristle Grass (*Setaria faberi*), Purple Dead-nettle (*Lamium purpureum*), Common Chickweed (*Stellaria media*), Indian Hemp (*Apocynum cannabinum*), Common Reed (*P. australis*), Sticky -Willy (*Galium aparine*), curly dock (*Rumex crispus*), Sweet Vernal Grass (*Anthoxanthum odoratum*), Carolina Geranium (*Geranium carolinianum*), Bird's-eye Speedwell (*Veronica persica*), and vetch (*Vicia sp.*).

Historic land manipulation through agriculture and mining activities, as well as overall development within the watershed have likely altered the characteristic plant communities within the project wetlands precipitating emergent wetlands dominated by upland vegetation and sterile facultative forested wetlands. The forested areas are within their early successional stages of plant growth containing all three vegetative strata; however, the understory was very sparse, indicating a somewhat sterile nature due to years of land disturbance. The surrounding agricultural and urban development has likely effected past vegetation composition as these land uses altered normal hydrology on the site. There is low diversity within the current composition of wetland plants within the both project wetland sites. The wetlands are degraded and fragmented and do not contain habitat for rare, threatened or endangered plants, or unique or exemplary natural communities.

The wetland areas are highly disturbed and were ranked low for maintaining a characteristic plant community. The wetland areas do not contain special obligate aquatic species, nor were any highly organic soils identified within the project wetland sites.

Function 4: Maintain Characteristic Animal Community

Wetlands may provide habitat for mammals, birds, reptiles, amphibians, and fish. Fish are not expected to be found readily in mineral soil flat wetlands due to the hydrologic regime. Undisturbed mineral flat wetlands can readily provide valuable habitat for small mammals, birds, reptiles, and amphibians. The wetland and upland habitats can provide cover, food sources, and water sources.

The project wetlands contain a mixture of highly disturbed emergent and forested wetlands. The forested areas may provide habitat for small mammals, birds, reptiles and amphibians. The emergent wetlands may provide habitat for small mammals and reptiles. Due to the amount of commercial, industrial, residential and transportation development surrounding the sites, the project wetlands are not able to provide quality habitat to larger mammals. In addition, the surrounding urban and commercial development and highly disturbed nature of the wetlands from historic land manipulations has significantly reduced the quality of habitat for the small mammals, birds, amphibians, and reptiles. There are no significant natural corridors leading from the project wetlands to other natural contiguous habitat areas such as the Great Dismal Swamp which is located approximately two miles to the south.

The project wetlands were rated low for their ability to maintain characteristic animal communities. The animal communities that once lived within these areas have been affected by surrounding development and transportation highways, adjacent industrial and commercial land uses, historic land manipulation, and lack of migration corridors to other large contiguous natural areas. With this being said, the project wetlands are still able to provide limited habitat for bird, reptiles, amphibians, and small mammals.

Function 5: Maintain Characteristic Biogeochemical Processes

Biogeochemical processes that occur in wetlands include cycling nutrients, removal of elements and compounds, retentions of particulates and the export of organic carbon. It was assumed that biogeochemical processes would maintain normal characteristics within the project wetlands if the systems were not altered. The project wetlands have been significantly altered by the surrounding urban, commercial and agricultural development. The project wetlands have also been physically isolated by the surrounding development and transportation system. Furthermore, the soils, vegetation and hydrology within the project wetlands have been significantly impacted over years of agricultural and mining land uses. Biogeochemical processes are assumed to have been limited by these modifications. Due to these alterations, the project wetlands were rated low for maintaining characteristic biogeochemical processes. This rating was given because while alterations on sites have affected biogeochemical processes, these processes are assumed to still be functioning at a lower level.

Summary

The U.S. Army Corps of Engineers *Hydrogeomorphic Classification* was used as a general basis for evaluation during the assessment of functions and values. Only functions that are normally found in the wetland types existing within the project areas were evaluated. Since there were no reference wetlands to compare to the project areas, the functional capacity index was not used. Functions in the project wetlands were compared to the typical functions of these types of wetlands. The functional capacities have been assessed by using the ratings of high, medium, and low. The overall rating for the project wetlands is low, and the functions of the project wetlands have been significantly affected by surrounding development and years of land manipulation associated with mining and agricultural activities.

Function	Wetland Assessment Area Ranking
Maintain Characteristic Water Level Regime	Low
Sediment Trapping	Low
Maintain Characteristic Plant Community	Low
Maintain Characteristic Animal Community	Low
Maintain Characteristic Biogeochemical Processes	Low
Overall Functions	Low

8. CONCEPTUAL COMPENSATORY MITIGATION PLAN

The City of Chesapeake proposes to purchase commercial mitigation bank credits from an agency-approved compensatory mitigation bank serving the project HUC for unavoidable impacts to wetlands. Credit availability letters from The Great Dismal Swamp Restoration Bank, LLC and the Chesapeake Wetland Mitigation Bank are attached for your reference (**Appendix I**). The City does not anticipate any temporary or secondary wetland impacts associated with this project. The City proposes to compensate at a 2:1 replacement-to-impact ratio for all unavoidable permanent impacts to 0.466 acres of forested wetlands and at a 1:1 replacement-to-impact ratio for all permanent impacts to 0.987 acres of emergent wetlands. The City anticipates acquiring 1.92 credit/acres from an approved compensatory wetland mitigation bank to comply with no loss of wetland functions and values from the project impacts.

Appendices:

- A. USGS Quad Map & Color Aerial Exhibit
- B. Site Photographs
- C. 3rd Battalion Map
- D. 3rd Battalion Resource Distribution Map
- E. COE Preliminary JDs
- F. FEMA FIRM
- G. FWS iPAC, DGIF VaFWIS, & DCR-DNH database reports
- H. DHR DSS Report
- I. Credit Availability Letters
- J. Wetland Impact Site Plan Layouts & Architectural Site Plans